

Geochemical Database of Feed Coal and Coal Combustion Products (CCPs) from Five Power Plants in the United States

Selected Coal Utilization References

By Kelly L. Conrad and Ronald H. Affolter



Pamphlet to accompany
Data Series 635

U.S. Department of the Interior
U.S. Geological Survey

U.S. Department of the Interior
KEN SALAZAR, Secretary

U.S. Geological Survey
Marcia K. McNutt, Director

U.S. Geological Survey, Reston, Virginia: 2011

About USGS Products

For product and ordering information:

World Wide Web: <http://www.usgs.gov/pubprod>

Telephone: 1-888-ASK-USGS

For more information on the USGS—the Federal source for science about the Earth, its natural and living resources, natural hazards, and the environment:

World Wide Web: <http://www.usgs.gov>

Telephone: 1-888-ASK-USGS

About this Product

Publishing support provided by
Denver Science Publishing Network

For more information concerning this publication, contact:

Center Director, USGS Central Energy Resources Science Center

Box 25046, Mail stop 939

Denver, CO 80225

(303) 236-7775

or visit the Central Energy Resources Science Center Web site at:

<http://energy.cr.usgs.gov>

Suggested citation:

Affolter, R.H., Groves, Steve, Betterton, W.J., Benzel, William, Conrad, K.L., Swanson, S.M., Ruppert L.F., Clough J.G., Belkin, H.E., Kolker, Allan, and Hower, J.C., 2011, Geochemical database of feed coal and coal combustion products (CCPs) from five power plants in the United States: U.S. Geological Survey Data Series 635, pamphlet, 19 p.

Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Although this report is in the public domain, permission must be secured from the individual copyright owners to reproduce any copyrighted materials contained within this report.

ISBN 978-1-4113-3268-3

Cover: Photograph of a coal-fired power plant in the northwestern United States. Photograph by Ronald H. Affolter.

Contents

Selected Coal Utilization References1

Geochemical Database of Feed Coal and Coal Combustion Products (CCPs) from Five Power Plants in the United States

By Kelly L. Conrad and Ronald H. Affolter

Selected Coal Utilization References

[Bracketed numbers indicate total page counts. These are provided to aid identification for the work.]

The purpose of this bibliography is to provide a source of information to assist decision makers, land and resource managers, other Federal and State agencies, the domestic energy industry, foreign governments, nongovernmental groups, academia, and other scientists making decisions in the face of rapid energy development in the U.S. This document attempts to encompass the most relevant literature that will help serve as a foundation on which to appropriately understand the complexities of coal utilization. Since the early 1970s, the U.S. Geological Survey has been involved in evaluations of data collected from various coal utilization and power plant-related studies. The publications in this bibliography cover the last 50+ years and include many past, unique, and current studies involving coal utilization. Subject material ranges from utilization of coal to disposal of coal combustion products (CCPs) with topics on new technology and regulations. These references were compiled as a source of associated material for this Data Series—Geochemical database of feed coal and coal combustion products (CCPs) from five power plants in the United States: consisting of major-, minor-, and trace- element contents, proximate and ultimate analyses, forms of sulfur, calorific values, ash fusion temperatures, mineralogy, petrological data, and selected coal utilization references.

Aaranson, M.L., Krishna, K., Mahr, D., and Nechvatal, T.M., eds., 1990, Fuel strategies—coal supply, dust control, and byproduct utilization: Fact, v. 8, 101 p. [Presented at the International Joint Power Generation Conference, October 21–25, 1990, Boston, Mass.].

Abbas, T., Costen, P., and Lockwood, F.C., 1992, The influence of near burner region aerodynamics on the formation and emission of nitrogen oxides in a pulverized coal-fired furnace: Combustion and Flame, v. 91, no. 3–4, p. 346–363.

Abbott, M.F., and Austin, L.G., 1985, Studies on slag deposit formation in pulverized-coal combustors: Fuel, v. 64, p. 832–838.

Abd-Elhady, M.S., Clevers, S.H., Adriaans, T.N.G., Rindt, C.C.M., Wijers, J.G., and van Steenhoven, A.A., 2007, Influence of sintering on the growth rate of particulate fouling layers: International Journal of Heat and Mass Transfer, v. 50, p. 196–207.

- Abel, W.T., and Fisher, E.P., 1976, Limestone to remove hydrogen sulfide from hot producer gas: Morgantown, W.V., U.S. Department of Energy, Research and Development Administration, 24 p.
- Abel, W.T., Rice, R.L., Shang, J.Y., Turek, D.G., and Ayers, W.J., 1981, Combustion of western coal in a fluidized bed: Morgantown, W.V., U.S. Department of Energy, Morgantown Energy Technology Center, Report DOE/METC/RI-178, 32 p.
- Abel, W.T., Zulkoski, M., Brady, G.A., and Eckerd, J.W., 1973, Removal of pyrite from coal by dry separation methods—Report of investigations: U.S. Bureau of Mines Research Investigations Report RI-7732, 26 p.
- Abel, W.T., Zulkoski, M., and Gauntlett, G.J., 1972, Dry separation of pyrite from coal: Industrial Engineering Chemistry Product Research and Development, v. 11, no. 3, p. 342–347.
- Abrams, Courteny, 2009, America's biggest polluters: carbon dioxide emissions from power plants in 2007: Environment Arizona Research and Policy Center, last accessed 28 July 2011, at <https://pincdn.s3.amazonaws.com/assets/334c7bc17d52073fc5e9737c2131091e/Americas-Biggest-Polluters.pdf>, November, 2009, [53] p.
- Abu-Zahra, M.R.M., Schneiders, L.H.J., Niederer, J.P.N., Feron, P.H.M., and Versteeg, G.F., 2007, CO₂ capture from power plants: Part I. A parametric study of the technical performance based on monoethanolamine: International Journal of Greenhouse Gas Control, v. 1, no. 1, p. 37–46.
- Ackerman, F., Biewald, B., White, D., Woolf, T., and Moomaw, W., 1999, Grandfathering and coal plant emissions: the cost of cleaning up the Clean Air Act: Energy Policy, v. 27, p. 929–940.
- Acuna-Caro, C., Thorwarth, H., Scheffknecht, G.A., 2006, A thermodynamic study on the effects of individual flue gas components on mercury speciation: Power Plant Chemistry, no. 8, p. 374–381.
- Adamczyk, Z., and Bialecka, B., 2005, Hydrothermal synthesis of zeolites from Polish coal fly ash: Polish Journal of Environmental Studies, v. 14, no. 6, p. 713–719.
- Adams, B., and Senior, C., 2006, Curbing the blue plume: SO₃ formation and mitigation: Power, v. 150, no. 4, p. 39–41.
- Adams, D.M.B., 2004, Utilisation of CFBC and IGCC residues: London, United Kingdom, International Energy [IEA] Coal Research, Report IEACCC/93, 38 p.
- Adams, D.M.B., and Fernando, R., 1998, Coal-fired power station effluents: London, United Kingdom, International Energy [IEA] Coal Research, Report IEACCC/10, 63 p.
- Adams, D.M.B., and Smith, I.M., 1995, Sulphates, climate and coal: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEAPER/16, 30 p.
- Adams, J.L., 2002, Field scale study results for the beneficial use of coal ash as fill material in saturated conditions, Varra Coal Ash Burial Project, Weld County, Colorado, *in* Vories, K.C. and Throgmorton, Dianne, eds., Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 151–154.

- Adams, J.L., and Warner, J.W., 2002a, A feasibility study for the beneficial use of coal ash as fill material in water saturated sediments [abs.], *in* Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 2.
- Adams, J.L., and Warner, J.W., 2002b, A feasibility study for the beneficial use of coal ash as fill material in saturated conditions, *in* Vories, K.C. and Throgmorton, Dianne, eds., *Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 13–14.
- Adams, L.M., Capp, J.P., and Gillmore, D.W., 1972, Coal mine spoil and refuse bank reclamation with powerplant fly ash: *Journal of Compost Science*, v. 13, p. 20–26.
- Adams, R.G., Alin, J., Biede, O., Booth, N.J., deMontigny, D., Drew, R., Idem, R., Laursen, M., Peralta-Solorio, D., Sanpasertparnich, T., and Trunkfield, A., 2009, CAPRICE Project—engineering study on the integration of post combustion capture technology into the power plant gas path and heat cycle: *Energy Procedia*, v. 1, no. 1, p. 3801–3808.
- Adriano, D.C., Page, A.L., Elseewi, A.A., Chang, A.C., and Straughan, I., 1980, Utilization and disposal of fly ash and other coal residues in terrestrial ecosystems: a review: *Journal of Environmental Quality*, v. 9, p. 333–344.
- Adrović F., Ninković, M., and Todorović, D., 1997a, Natural radioactivity of soil within the zone of influence of the Kosovian coal power plants: *Balkan Physics Letters, Proceedings Supplement*, v. 5, part 3, p. 1813–1816.
- Adrović, F., Ninković, M., and Todorović, D., 1997b, Natural radionuclides and radiation measurements in the vicinity of the Kosovian coal-fired power plants, *in* Sabol, Jozef, ed., *Proceedings of the IRPA Regional Symposium on Radiation Protection in Neighbouring Countries of Central Europe*: Prague, Czech Republic, 8–12 September, 1997: International Radiation Protection Association, p. 334–336.
- Adrović, F., Prokić, M., Ninković, M., and Glišić, R., 2004, Measurements of environmental background radiation at location of coal-fired power plants: *Radiation Protection Dosimetry*, v. 112, no. 3, p. 439–442.
- Adrović, F., Todorović, D., Ninković, M., and Prokić, M., 1996, Investigation of the contents of natural radionuclides in coal and ashes from Kosovian power plant, *in* International Radiation Protection Association, eds., *Proceedings of the International Congress of the International Radiation Protection Association*, April 14–19, 1996, Vienna, Austria, 9th Congress: p. 681–683.
- Afanas'eva, O.V., and Mingaleeva, G.R., 2009, Energy efficiency of small coal-fired power plants as a criterion of their wide applicability: *Solid Fuel Chemistry*, v. 43, no. 1, p. 55–59.
- Affolter, R.H., 1998, The chemical composition of feed coal, fly ash, and bottom ash, *in* Breit, G.N., and Finkelman, R.B., eds., *Characterization of coal and coal combustion products from a coal-burning power plant—preliminary report and results of analyses*: U.S. Geological Survey Open-File Report 98-342, p. 17–43.

- Affolter, R.H., 2007, Introduction, project summary, and trace elements, *in* Ellis, M.S., and Affolter, R.H., eds., *From Cradle to Grave, The Power of Coal*, International Technical Conference on Coal Utilization and Fuel Systems, June 10–15, 2007, Clearwater, Fla., 32nd Conference: U.S. Geological Survey Open-File Report 2007-1160, p. 6–23.
- Affolter, R.H., Betterton, W.J., and Olea, R., 2009, Chemical and mineral variation of coal and coal combustion products from a western power plant utilizing Powder River Basin coal [abs.]: Geological Society of America, Abstracts with Programs, v. 41, no. 7, p. 333.
- Affolter, R.H., Betterton, W.J., Olea, R., Brownfield, M.E., and Ellis, M.S., 2009, Preliminary results of the characterization of coal and coal combustion products (CCPs) from a western power plant utilizing Powder River Basin coal from the Wyodak-Anderson Coal Zone, *in* Coal Technology Association and American Public Power Association, eds., *Coal—world energy security*, Proceedings of the International Technical Conference on Clean Coal and Fuel Systems, May 31–June 4, 2009, Clearwater, Fla., 34th Conference: Gaithersburg, Md., Coal Technology Association, p. 1178–1189.
- Affolter, R.H., Brownfield, M.E., and Breit, G.N., 1997, Temporal variations in the chemistry of feed coal, fly ash, and bottom ash from a coal-fired power plant, *in* University of Kentucky Center for Applied Energy Research and U.S. Federal Energy Technology Center, eds., *Pushing the Envelope*, Proceedings, 1997 International Ash Utilization Symposium, October 20–22, 1997, Lexington, Kentucky: Lexington, University of Kentucky Center for Applied Energy Research [CAER], p. 757–764.
- Affolter, R.H., Brownfield, M.E., and Cathcart, J.D., 1999, Chemical variation of feed coal and coal combustion products from an Indiana power plant utilizing low sulfur Powder River Basin coal, *in* Schmidt, C.E. and Robl, T.L., *Materials for the next millennium*, Proceedings, International Ash Utilization Symposium, October 18–20, 1999, Lexington, Kentucky. 3rd Symposium: Lexington, University of Kentucky Center for Applied Energy Research [CAER], 7 p.
- Affolter, R.H., Ruppert, L., and Swanson, S.M., 2008, Preliminary results of the U.S. Geological Survey's power plant cradle to grave studies: goals for future planning, *in* American Society of Mechanical Engineers Power Division, U.S. Dept. of Energy National Energy Technology Laboratory, Coal Technology Association, and American Public Power Association, eds., *Proceedings of the 33rd International Technical Conference on Clean Coal and Fuel Systems*, June 1–5, 2008, Clearwater, Florida: Gaithersburg, Md., Coal Technology Association, p. 818.
- Agrawal, M., and Agrawal, S.B., 1989, Phytomonitoring of air pollution around a thermal power plant: *Atmospheric Environment*, v. 23, no. 4, p. 763–769.
- Agrawal, M., and Singh, J., 2000, Impact of coal power plant emission on the foliar elemental concentrations in plants in a low rainfall tropical region: *Environmental Monitoring and Assessment*, v. 60, p. 261–282.
- Agrawal, M., Singh, J., Jha, A.K., and Singh, J.S., 1993, Coal-based environmental problems in a low-rainfall tropical region, *in* Keefer, R.F., and Sajwan, K.S., eds., *Trace elements in coal and coal combustion residues*: Boca Raton, Fla., Lewis Publishers, p. 27–57.
- Ahlberg, M., Berghem, L., Nordberg, G., Persson, S.A., Rudling, L., and Steen, B., 1983, Chemical and biological characterization of emissions from coal and oil fired power plants: *Environmental Health Perspectives*, v. 47, p. 85–102.
- Aho, M., Paakinen, K., Pirkonen, P., and Hupa, M., 1995, The effects of pressure, oxygen partial pressure and temperature on the formation of N₂O, NO, and NO₂ from pulverized coal: *Combustion and Flame*, v. 102, p. 387–400.

- Aho, M., Rantanen, J., Hernberg, R., and Häyrynen, V., 1995, Factors influencing the vaporisation of sodium and potassium in pressurized coal combustion, *in* Carvalho, M.G., ed., Proceedings of the International Conference on Combustion Technologies for a Clean Environment, Lisbon, Portugal, July 3–6, 1995, 3rd Conference: Lisbon, Portugal, Instituto de Combustão, v. 2, p. 1–5.
- Aho, M., Rantanen, J., and Linna, V., 1989, N₂O, NO, and NO₂ emissions in pulverized fuel combustion between 730 and 950°C, *in* Korhonen, M., ed., Proceedings of the Symposium on Low-grade Fuels, June 12–16, 1989, Helsinki, Finland: Espoo, Finland, Valtion teknillinen tutkimuskeskus, Symposium series 108, v. 2., p. 175–186.
- Aho, M., Vainikka, P., Taipale, R., and Yrjas, P., 2008, Effective new chemicals to prevent Cl-originated superheater corrosion in power plants: *Fuel*, v. 87, p. 647–654.
- Aikin, T.L.H., Cashion, J.D., and Ottreya, A.L., 1984, Mössbauer analysis of iron phases in brown coal ash and fireside deposits: *Fuel*, v. 63, no. 9, p. 1269–1275.
- Aineto, M., Acosta, A., Rincón, J.M., and Romero, M., 2006, Thermal expansion of slag and fly ash from coal gasification in IGCC power plant: *Fuel*, v. 85, p. 2352–2358.
- Ainsworth, C.C., and Rai, D., 1987, Chemical characterization of fossil fuel combustion wastes: Batelle, Pacific Northwest Laboratories Report published as Electric Power Research Institute [EPRI] Report no. EA-5321, 148 p.
- Air Pollution Work Sub-group, 1972, Air Pollution Aspects: United States. Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Office of Research and Monitoring, Office of Air Programs, 54 p.
- Air Pollution Work Sub-group, 1972, Appendix A, Southwest Energy Study, air pollution aspects of Southwest Energy Study, southwest power plant air pollutant emissions: Research Triangle Park, N.C., U.S. Environmental Protection Agency, Office of Air and Water Programs, Office of Air Programs, Stationary Source Pollution Control Programs, Applied Technology Division, Air Quality Management Branch, National Source Inventory Section, 89 p.
- Air Pollution Work Sub-group, 1972, Appendix B, Southwest Energy Study, air pollution aspects of Southwest Energy Study, selected information of pollution aspects of mercury emissions from Four Corners Power Plant: Research Triangle Park, N.C., U.S. Environmental Protection Agency, Office of Research and Monitoring, 12 p.
- Air Pollution Work Sub-group, 1972, Appendix C, Southwest Energy Study, air pollution aspects of Southwest Energy Study, rules and regulations for southwest power plants: Research Triangle Park, N.C., U.S. Environmental Protection Agency, Office of Air and Water Programs, Office of Air Programs, Stationary Source Pollution Control Programs, Standards Development and Implementation Division, Plans Management Branch, 14 p.
- Air Pollution Work Sub-group, 1972, Appendix D, Southwest Energy Study, air pollution aspects of Southwest Energy Study, conventional air pollution control alternatives for power plants: Research Triangle Park, N.C., U.S. Environmental Protection Agency, Office of Air and Water Programs, Office of Air Programs, Stationary Source Pollution Control Programs, Standards Development and Implementation Division, Performance Standards Branch, 57 p.
- Air Pollution Work Sub-group, 1972, Appendix E, Southwest Energy Study, air pollution aspects of Southwest Energy Study, unconventional methods of air pollution control for power plants: Research Triangle Park, N.C., U.S. Environmental Protection Agency, Office of Air and Water Programs, Office of Air Programs, Stationary Source Pollution Control Programs, Control Systems Division, Office of Engineering Analysis, Technical Analysis and Evaluation Section, 66 p.

- Air Pollution Work Sub-group, 1972, Appendix F, Southwest Energy Study, air pollution aspects of Southwest Energy Study, selected information on air pollution effects on visibility: Research Triangle Park, N.C., U.S. Environmental Protection Agency, Office of Research and Monitoring, National Environmental Research, Division of Chemistry and Physics, Atmospheric Chemistry and Physics Branch, 11 p.
- Air Pollution Work Sub-group, 1972, Appendix G, Southwest Energy Study, air pollution aspects of Southwest Energy Study, meteorological estimates of air pollution concentrations and effects on meteorological range due to Navajo and Kaiparowits Generating Stations, Arizona–Utah: Research Triangle Park, N.C., U.S. Environmental Protection Agency, Office of Research and Monitoring, National Environmental Research, Division of Chemistry and Physics, Atmospheric Chemistry and Physics Branch, 19 p.
- Air and Waste Management Association, 2003, Controlling mercury emissions from coal-fired power plants: Pittsburgh, Pa., Air and Waste Management Association, 1 vol., variously paged.
- Airey, D., 1982, Contributions from coal and industrial materials to mercury in air, rain-water, and snow: *The Science of The Total Environment*, v. 25, p. 19–40.
- Ake, T., Erickson, C., Medeiros, Hutcheson, L., Barger, M., and Rutherford, S., 2003, Limestone injection for protection of SCR catalyst, *in* Air and Waste Management Association, U.S. Environmental Protection Agency, Electric Power Research Institute, and U.S. National Energy Technology Laboratory, eds., *Proceedings of the Department of Energy-Electric Power Research Institute-Air and Waste Management Association, Combined Power Plant Air Pollutant Control “Mega” Symposium, May 19–22, 2003, Washington, D.C.: Riley Power Inc., Worcester, Mass.*, 10 p.
- Akers, D., and Arnold, B., 1998, Assessment of coal cleaning for trace element control: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-111852, 110 p.
- Akers, D., and Dospoy, R., 1994, Role of coal cleaning in control of air toxics: *Fuel Processing Technology*, v. 29, no. 1-3, p. 73–86.
- Akers, D.J., 1993, Coal cleaning: a trace element control option, *in* Chow, W., and others, eds., *Managing Hazardous Air Pollutants: State of the Art*: Electric Power Research Institute [EPRI] Report no. TR-101890, Boca Raton, Fla., Lewis Publishers, p. 483–493.
- Akers, D.J., and Harrison, C.D., 1995, Precombustion control options for air toxics: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 40, no. 4, p. 823-827, last accessed June 2010 at, http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/40_4_CHICAGO_08-95_0823.pdf.
- Akers, D.J., Norton, G.A., Buttermore, W.H., and Markuszewski, R., 1989, Trace elements in coal and coal wastes: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. GS-6575, 1 volume, variously paged.
- Alarie, Y.C., Krumm, A.A., Busye, W.M., Ulrich, C.E., and Kantz, R.J., 1975, Long-term exposure to sulphur dioxide, sulfuric acid mist, fly ash, and their mixtures: results of studies in monkeys and guinea pigs: *Archives of Environmental Health*, v. 30, p. 254–262.
- Alastuey, A., Querol, X., Chaves, A., Ruiz, C.R., Carratala, A., and López-Soler, A., 1999, Bulk deposition in a rural area located around a large coal-fired power station, northeast Spain: *Environmental Pollution*, v. 106, p. 359–367.

- Albert, A.P., Evan, J.G., Andrew, K., Richard, A.H., William, J.O., and Henry, W.P.A., 2006, A kinetic approach to the catalytic oxidation of mercury in flue gas: *Energy and Fuels*, v. 20, p. 1941–1945.
- Alie, C., Douglas, P.L., and Davison, J., 2009, On the operability of power plants with CO₂ capture and storage: *Energy Procedia*, v. 1, no. 1, p. 1521–1526.
- Aljundi, I.H., 2009, Energy and exergy analysis of a steam power plant in Jordan: *Applied Thermal Engineering*, v. 29, no. 3, p. 324–328.
- Allen, R.P., and Battista, R.A., 1991, Characteristics of an advanced gas turbine with coal-derived fuel gases: *American Society of Mechanical Engineers [ASME]*, October 6–10, 1991, San Diego, California, ASME-Paper 91-JPGC-GT-5, 5 p.
- Allmann-Lecourt, C., Bailey, T.H., and Cox, M., 2002, Purification of combustion fly ashes using the SERVO process: *Journal of Chemical Technology and Biotechnology*, v. 77, no. 3, p. 260–266.
- Al-Otoom, A.Y., Elliott, L.K., Wall, T.F., and Moghtaderi, B., 2000, Measurement of the sintering kinetics of coal ash: *Energy and Fuels*, v. 14, no. 5, p. 994–1001.
- Alpert, S.B., 1991, Clean coal technology and advanced coal-based power plants: *Annual Review of Energy and the Environment*, v. 16, p. 1–23.
- Altman, R., 2006, Update of particulate control guidelines; a state-of-the-art report for utility wet electrostatic precipitators: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report 1009775, 64 p.
- Altmann, W., 1984, Prediction of tendency of slagging and fouling of European lignite by new statistical and experimental methods: *Fuel*, v. 29, no. 4, p. 262–269.
- Alva, A.K., Bilski, J.J., Sajwan, K.S., and van Clief, D., 1999, Leaching of metals from soils amended with fly ash and organic byproducts, *in* Sajwan, K.S., Alva, A.K., and Keefer, R.F., eds., *Biogeochemistry of trace elements in coal and coal combustion byproducts*: New York, N.Y., Kluwer Academic/Plenum Publishers, p. 193–206.
- Alva, A.K., Paramasivam, S., Prakash, O., Sajwan, K.S., Ornes, W.H., and van Clief, D., 1999, Effects of fly ash and sewage sludge amendments on transport of metals in different soils, *in* Sajwan, K.S., Alva, A.K., and Keefer, R.F., eds., *Biogeochemistry of trace elements in coal and coal combustion byproducts*: New York, N.Y., Kluwer Academic/Plenum Publishers, p. 207–222.
- Alva, A.K., Zhu, B., Hostler, H.K., and Obreza, T.A., 1999, Citrus tree growth and fruit production response to flue-gas desulfurization gypsum amendment in sandy soils, *in* Sajwan, K.S., Alva, A.K., and Keefer, R.F., eds., *Biogeochemistry of trace elements in coal and coal combustion byproducts*: New York, N.Y., Kluwer Academic/Plenum Publishers, p. 293–308.
- Alvarez, M.C., and Garzon, L., 1989, Assessment of radiological emissions from Spanish coal power plants: radioactive releases and associated risks: *Health Physics*, v. 57, p. 765–769.
- Alvarez, M.C., Dopico, M.T., and Amengual, P.A., 1994, A study of the correlation between ash content and natural radionuclide content in hard coals from northern Spain: *Journal of Coal Quality*, v. 13, no. 2, p. 40–43.
- Aly, A.I.M., Abdel-Aal, M.M., Ahmed, M.A., and Sabek, M.G., 1994, Radiation doses resulting from a proposed coal-fired power plant in the Suez Canal area: *Energy*, v. 19, no. 1, p. 55–61.

- Amadeo, N., Bajano, H., Comas, J., Daverio, J.P., Laborde, M.A., Poggi, J.A., and Gómez, D.R., 2005, Assessment of CO₂ capture and storage from thermal power plants in Argentina: *Greenhouse Gas Control Technologies*, v. 7, p. 243–251.
- American Coal Ash Association [ACAA], 2003, Fly ash facts for highway engineers: Aurora, Colorado, American Coal Ash Association Report FHWA-IF-03-019, 73 p.
- American Society of Testing and Materials [ASTM], 1998a, Standard test method for forms of sulphur in coal, designation: D 2492 - 90 (Reapproved 1994): West Conshohocken, Pa., American Society of Testing and Materials [ASTM], p. 262-266.
- American Society of Testing and Materials [ASTM], 1998b, Standard test method for moisture in the analysis sample of coal and coke, designation: D 3173 - 87 (Reapproved 1996): West Conshohocken, Pa., American Society of Testing and Materials [ASTM], p. 301-302.
- American Society of Testing and Materials [ASTM], 1998c, Standard test methods for total sulfur in the analysis sample of coal and coke, designation: D 3177 - 89 (Reapproved 1997): West Conshohocken, Pa., American Society of Testing and Materials [ASTM], p. 312-315.
- American Society of Testing and Materials [ASTM], 1998d, Standard test method for total mercury in coal by the oxygen bomb combustion/atomic absorption method, designation: D 3684 - 94: West Conshohocken, Pa., American Society of Testing and Materials [ASTM], p. 356-358.
- Amrhein, J., Donnelly, B., Sjoström, S., Baldrey, K., 2004, Predicting mercury sorbent performance in a fabric filter: comparison of slipstream and full-scale results, *in* EPA-DOE-EPRI Combined Power Plant Air Pollutant Control Symposium, The Mega Symposium, August 30–September 2, 2004, Washington, D.C., 11 p., last accessed January 2011 at <http://www.adaes.com/news/papers/>.
- Anderson, B., Huynh, D., and Johnson, T.R., 1996, Clean-coal technology for brown coal power generation—construction of a 10 MW-scale IDGCC demonstration facility, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 221–227.
- Anderson, B.M., 1983, Changes in trace-element composition of sagebrush close to Bridger Powerplant, Wyoming: U.S. Geological Survey Professional Paper 1375, p. 198.
- Anderson, B.M., and Keith, J.R., 1976, Soil and sagebrush chemistry near the Jim Bridger Powerplant: U.S. Geological Survey Open-File Report 76-729, p. 37–47.
- Anderson, B.M., and Keith, J.R., 1977, A new multi-traverse study of soil and sagebrush chemistry around the Dave Johnston Powerplant, Wyoming: U.S. Geological Survey Open-File Report 77-872, p. 14–54.
- Anderson, C.H., and Goddard, C.W., 1968, Equilibrium SO₃ pressures of inner layers of fireside deposits from coal-fired boilers: *Journal of the Institute of Fuel*, v. 41, p. 357.
- Anderson, C.M., and Billings, J.A., 1991, Simple calculation measures NH₃ slip for cogeneration units, *Power Engineering*, April 1991, p. 42–44.
- Anderson, K., and Ceballa, F., 1993, Concurrent front end control for fossil-fired power plants using rate optimal, multi-variable controller, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 20–24, 1993, Pittsburgh, Pennsylvania, 10th Conference: Pittsburgh, Pa., University of Pittsburgh, p. 477.

- Anderson, M., 1996, New Mexico's regulatory requirements for the use of coal combustion by-products, *in* Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., *Coal Combustion By-Products Associated with Coal Mining—Interactive Forum*, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 87–88.
- Anderson, M.A., Bertsch, P.M., and Zelazny, L.W., 1993, Multicomponent transport through soil subjected to coal pile runoff under steady saturated flow, *in* Keefer, R.F., and Sajwan, K.S., eds., *Trace elements in coal and coal combustion residues*: Boca Raton, Fla., Lewis Publishers, p. 137–164.
- Anderson, O.L., 1976, Utah coal for Southern California power: the general issues: *Energy*, v. 1, no. 3, p. 214–281.
- Anderson, O.L., Rogozen, M.B., Margler, L.W., Mankiewicz, P., and Axelrod, M.H., 1978, Water pollution control for coal slurry pipelines – final report: Institute of Geophysics, California University, Los Angeles, Calif., and Science Applications, Inc., Los Angeles, Calif., Report no. SAI-068-79-516 to U.S. Department of Energy, 226 p.
- Anderson, T., and Leventhal, J.S., 1998, Coal ash environmental leaching: pH, *in* Breit, G.N., and Finkelman, R.B., eds., *Characterization of coal and coal combustion products from a coal-burning power plant—preliminary report and results of analyses*: U.S. Geological Survey Open-File Report 98-342, p. 74–75.
- Anderson, W.L., and Smith, K.E., 1977, Dynamics of mercury at coal-fired power plant and adjacent cooling lake: *Environmental Science and Technology*, v. 11, no. 1, p. 75–80.
- Andersson, K., and Johnsson, F., 2006, Process evaluation of an 865 MWe lignite fired O₂/CO₂ power plant: *Energy Conversion and Management*, v. 47, no. 18-19, p. 3487–3498.
- Andrade, L.B., Rocha, J.C., and Cheriaf, M., 2009, Influence of coal bottom ash as fine aggregate on fresh properties of concrete: *Construction and Building Materials*, v. 23, no. 2, p. 609–614.
- Andren, A., Anderson, M., Loux, N., and Talbot, R., 1980, Element flow in aquatic systems surrounding coal-fired power plants, *in* Wisconsin Power Plant Impact Study [Report series]: Duluth, Minn., U.S. Environmental Protection Agency [EPA], Environmental Research Laboratory, Office of Research and Development Report no. EPA/600/3-80/076, p. 1–84.
- Andren, A.W., Klein, D.H., and Talmi, K., 1975, Selenium in coal-fired steam plant emissions: *Environmental Science and Technology*, v. 9, no. 9, p. 856–858.
- Andrews, C.B., and Anderson, M.P., 1980, Impacts of coal-fired power plants on local ground-water systems, *in* Wisconsin Power Plant Impact Study [Report series]: Duluth, Minn., U.S. Environmental Protection Agency [EPA], Environmental Research Laboratory, Office of Research and Development, Report no. EPA/600/3-80/079, p. 1–203.
- Andrianova, A.V., Zavoruev, V.V., Zadelennov, V.A., Lopatin, V.N., Mikhaleva, T.V., and Shchur, L.A., 2006, Assessment of the present-day state of cooling-basin ecosystem at the Berezovskaya State Regional Power Plant, Krasnoyarsk Territory: *Water Resources [Pleides Publishing]*, v. 33, no. 2, p. 176–186.
- Anlauf, K.G., Fellin, P., Wiebe, H.A., and Melo, O.T., 1982, The Nanticoke shoreline diffusion experiment, June 1978—IV. A. Oxidation of sulphur dioxide in a power plant plume. B. Ambient concentrations and transport of sulphur dioxide, particulate sulphate and nitrate, and ozone: *Atmospheric Environment*, v. 16, no. 3, p. 455–466.

- Anson, D., 1976, Fluidized bed combustion of coal for power generation: Progress in Energy and Combustion Science, v. 2, no. 2, p. 61–82.
- Anson, D., 1977, Availability of fossil fired steam power plants: Palo Alto, Calif., Electric Power Research Institute [EPRI], Report no. FP-422-SR, 47 p.
- Arditsoglou, A., Petaloti, C., Terzi, E., Sofoniou, M., and Samara, C., 2004, Size distribution of trace elements and polycyclic aromatic hydrocarbons in fly ashes generated in Greek lignite-fired power plants: The Science of The Total Environment, v. 323, no. 1-3, p. 153–167.
- Argonne National Laboratory [ANL], 1977, Preliminary assessment of the health and environmental impacts of fluidized-bed combustion of coal as applied to electrical utility systems: Argonne, Ill., Argonne National Laboratory, Report no. ANL-77-XX-64, 138 p.
- Armento, W.J., 1974. Effects of design and operating variables on NO_x from coal-fired furnaces: Phase I: Washington, D.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-650/2-74-002a, 1 volume, variously paged.
- Armento, W.T., and Sage, W.L., 1973, The effect of design and operating variables on NO_x formation in coal-fired furnaces, *in* Hall, R.E., and Pershing, D.W., eds., Proceedings, Coal Combustion Seminar, June 19–20, 1973, Research Triangle Park, North Carolina: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA] Research, Report no. EPA-650/2-73-021, 75 p.
- Armor, A., ed., 1988, Proceedings International Conference on improved coal-fired power plants, November 19–21, 1986, Palo Alto, Calif., 1st Conference: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-5581-SR, 1 volume, variously paged.
- Armor, A., and others, eds., 1989, Proceedings International Conference on improved coal-fired power plants, November 2–4, 1988, Palo Alto, Calif., 2nd Conference: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. GS-6422, 2 volumes, variously paged.
- Armor, A.F., 1996, Power plant efficiency and its impact on the worldwide emissions of carbon dioxide, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3-7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 677–684.
- Armor, A.F., Parkes, J.B., Leaver, D.E., 1981, Root cause analysis of fossil power plant equipment failures, The EPRI Program: Power Engineering Review, v. 1, no. 6, p. 40.
- Armstrong, J.A., Russell, P.A., and Williams, R.E., 1978, Balloon-borne particulate sampling for monitoring power plant emissions: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Office of Research and Development, Industrial Environmental Research Laboratory, Report no. EPA-600/7-78-205, 50 p.
- Arnold, B.J., 2004, Efficient handling of coal for power plants: Development of a coal handleability index: Coal Preparation, v. 24, no. 3-4, p. 139–158.
- Arnold, B.J., Hervol, J.D., and Harrison, C.D., 1988, Workshop proceedings on defining coal handleability: its cost impact and control: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report CS-6015, 1 volume, variously paged.

- Arnold, M.St.J., Minchener, A.J., and Dawes, S.G., 1993, Clean power from coal: the British Coal Topping Cycle, *in* Chow, W., and others, eds., Managing Hazardous Air Pollutants: State of the Art: Electric Power Research Institute [EPRI] Report no. TR-101890, Boca Raton, Fla., Lewis Publishers, p. 509–519.
- Arnot, J.A., and Brown, T.M., 1988, Guidelines for fireside testing in coal-fired power plants: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. RP1891-3, 1 volume, variously paged.
- Aroonwilas, A., and Veawab, A., 2007, Integration of CO₂ capture unit using single- and blended-amines into supercritical coal-fired power plants: implications for emission and energy management: *International Journal of Greenhouse Gas Control*, v. 1, no. 2, p. 143–150.
- Aroonwilas, A., and Veawab, A., 2009, Integration of CO₂ capture unit using blended MEA-AMP solution into coal-fired power plants: *Energy Procedia*, v. 1, no. 1, p. 4315–4321.
- Arora, N., and Kumar, D., 1997, Availability analysis of steam and power generation systems in the thermal power plant: *Microelectronics and Reliability*, v. 37, no. 5, p. 795–799.
- Arora, N., and Kumar, D., 1997, Stochastic analysis and maintenance planning of the ash handling system in the thermal power plant: *Microelectronics and Reliability*, v. 37, no. 5, p. 819–824.
- Arroyo, Fátima, 2007, Recovery of germanium present in the fly ash produced in an IGCC plant that uses coal from ENCASUR (Puertollano): Seville, University of Seville, Spain, School of Engineering, Chemical and Environmental Engineering Department, Ph.D. Dissertation [in Spanish].
- Arroyo, Fátima, Fernández-Pereira, C., and Coca, P., 2010, Precipitation of germanium from coal fly ash leachates: *Combustion and Gasification Products*, v. 2, p. 28–34.
- Arroyo-Figueroa, G., Solis, E., Villavicencio, A., and Sucar, L.E., 1998, SADEP—a fuzzy diagnostic system shell-an application to fossil power plant operation: *Expert Systems with Applications*, v. 14, no. 1-2, p. 43–52.
- Arroyo-Figueroa, G., Sucar, L.E., and Villavicencio, A., 1998, Probabilistic temporal reasoning and its application to fossil power plant operation: *Expert Systems with Applications*, v. 15, no. 3-4, p. 317–324.
- Arthur, M.A., Rubin, G., Woodbury, P.B., and Weinstein, L.H., 1993, Gypsum amendment to soil can reduce selenium uptake by alfalfa grown in the presence of coal fly ash: *Plant and Soil*, v. 148, p. 83–90.
- Arvelakis, S., Folkedahl, B., Frandsen, F.J., and Hurley, J., 2008, Studying the melting behavior of fly ash from the incineration of MSW using viscosity and heated stage XRD data: *Fuel*, v. 87, p. 2269–2280.
- Aschner, F., 1978, Planning fundamentals of thermal power plants: New York, N.Y., Wiley, 738 p.
- Asokan, P., Saxena, M., Aparna, A., and Asoletar, S.R., 2004, Characteristics variation of coal combustion residues in an Indian ash pond: *Waste Management and Research*, v. 22, no. 4, p. 265–275.
- Attalla, M.I., Malfroy, H.R., Morgan, S., Riley, K., and Nelson, P.F., 2004, Hazardous pollutants in power station emissions: Cooperative Research Centre for Coal in Sustainable Development [CCSD] Research Report 51, front matter and p. 1–47.

- Attalla, M.I., Morgan, S., Riley, K., Bryant, G., and Nelson, P.F., 2004, Trace element deportment in combustion processes: Cooperative Research Centre for Coal in Sustainable Development [CCSD] Research Report 70, 134 p.
- Attig, R.C., and Duzy, A.F., 1969, Coal ash depositional studies and application to boiler design, *in* Proceedings of the American Power Conference, April 22–24, 1969, Chicago, Illinois, 31st Conference: American Power Conference Proceedings, v. 31, p. 299.
- Atwood, T., 1996, Environmental role of clean coal technologies as a potential solution to greenhouse gas and climate emissions, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 671–676.
- Aunela-Tapola, L., Hatanpää, E., Hoffren, H., Laitinen, T., Larjava, K., Rasila, P., and Tolvanen, M., 1998, A study of trace element behavior in two modern coal-fired power plants. II. Trace element balances in two plants equipped with semi-dry flue gas desulphurisation facilities: Fuel Processing Technology, v. 55, no. 1, p. 13–34.
- Aust, A.E., Ball, J.C., Hu, A.A., Lighty, J.S., Smith, K.R., Straccia, A.M., Veranth, J.M., and Young, W.C., 2002, Particle characteristics responsible for effects on human lung epithelial cells: Health Effects Institute Research Report 110, p. 1–65; discussion: p. 67–76.
- Ayçık, G.A., and Ercan, A., 1997, Radioactivity measurements of coals and ashes from coal-fired power plants in the southwestern part of Turkey: Journal of Environmental Radioactivity, v. 35, no. 1, p. 23–35.
- Ayers, G.P., Gillett, R.W., Selleck, P.W., and Bentley, S.T., 1995, Rainwater composition and acid deposition in the vicinity of fossil fuel-fired power plants in southern Australia: Water, Air, and Soil Pollution, v. 85, p. 2313–2318.
- Aytekin, H., and Baldik, R., 2008, On the radiological character of a coal-fired power plant at the town of Çatalağzı, Turkey: Turkish Journal of Engineering and Environmental Science, v. 32, p. 101–105.
- Aytekin, H., Baldik, R., Bayata, S., and Çelebil, N., 2008, Radon measurements in the Çatalağzı Thermal Power Plant, Turkey: Radiation Protection Dosimetry, v. 128, no. 2, p. 251–253.
- Baas-Becking, L.G.M., Kaplan, I.R., and Moore, D., 1960, Limits of the natural environment in terms of pH and oxidation-reduction potentials: Journal of Geology, v. 68, no. 3, p. 243–284.
- Baba, Alper, 2000, Investigation of environmental geology of Yatagan (Mugla, Turkey) Thermal Power Plant waste: Izmir, Dokuz Eylul University Graduate School of Natural and Applied Sciences, Turkey, Ph.D. thesis, 194 p.
- Baba, Alper, 2002, Assessment of radioactive contaminants in by-products from Yatagan (Mugla, Turkey) Coal-Fired Power Plant: Environmental Geology, v. 41, p. 916–921.
- Baba, A., 2003, Geochemical assessment of environmental effects of ash from Yatagan (Mugla, Turkey) Thermal Power Plant: Water, Air, and Soil Pollution, v. 144, p. 3–18.
- Baba, A., and Gurdal, G., 2006, Concentrations of heavy metals in fly ash from ÇAN Coal Combustion Thermal Power Plant (Çanakkale, Turkey)-II: Chinese Journal of Geochemistry, v. 25, supplement, p. 53.

- Baba, A., Gurdal, G., Sengunalp, F., and Ozay, O., 2008, Effects of leachant temperature and pH on leachability of metals from fly ash. A case study: Çan Thermal Power Plant, Province of Çanakkale, Turkey: *Environmental Monitoring and Assessment*, v. 139, p. 287–298.
- Baba, A., and Kaya, A., 2004, Leaching characteristics of fly ash from thermal power plants of Soma and Tunçbilek, Turkey: *Environmental Monitoring and Assessment*, v. 91, p. 171–181.
- Baba, A., and Kaya, A., 2004, Leaching characteristics of solid wastes from thermal power plants of western Turkey and comparison of toxicity methodologies: *Journal of Environmental Management*, v. 73, no. 3, p. 199–207.
- Baba, A., Kaya, A., and Birsoy, Y., 2003, The effect of Yatagan thermal power plant (Mugla, Turkey) on the quality of surface and ground waters: *Water, Air, and Soil Pollution*, v. 149, p. 93–111.
- Baba, A., and Turkman, A., 2001, Investigation of geochemical and leaching characteristics of solid wastes from Yenikoy (Mugla, Turkey) power plant: *Turkish Journal of Engineering and Environmental Sciences*, v. 25, p. 315–319.
- Baba, A., and Usmen, M.A., 2006, Effects of fly ash from coal-burning electrical utilities on ecosystem and utilization of fly ash, in Baba, A., Howard, K.W.F., and Gunduz, O., eds., *Groundwater and Ecosystems*: Amsterdam, The Netherlands, IOS Press and Dordrecht, The Netherlands, Springer, in conjunction with the NATO Public Diplomacy Division, p. 15–31.
- Babcock and Wilcox Company, 1995, SO_x-NO_x-Rox BoxTM flue gas clean-up demonstration, Babcock and Wilcox Ohio Coal Development Office [OCDO] Report no: CDO/D 87-58: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no: RP 3004-40, 354 p.
- Babcock and Wilcox Company, 1969, Guide specifications; cyclone furnace fuel systems; Coal 1A5; 9P4; 2A1111: Alliance, Ohio, Babcock and Willcox Company, 7 p.
- Babcock and Wilcox Company, 1978, *Steam, its generation and use* (39th ed.): New York, N.Y., Babcock and Wilcox Company, 615 p.
- Babcock Power Environmental Incorporated, 2006, Wet flue gas desulfurization: Worcester, Mass., Babcock Power Environmental Incorporated, 5 p.
- Bacher, J.R., Collins, R.J., Taylor, J.A., and Miller, M.A., 1996, Coal combustion fly ash as construction material in a sanitary landfill district, in Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., *Coal Combustion By-Products Associated with Coal Mining—Interactive Forum*, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 201–210.
- Backreedy, R.I., Jones, J.M., Ma, L., Pourkashanian, M., Williams, A., Arenillas, A., Arias, B., Pis, J.J., and Rubiera, F., 2005, Prediction of unburned carbon and NO_x in a tangentially fired power station using single coals and blends: *Fuel*, v. 84, no. 17, p. 2196–2203.
- Baer, S.H., and Luftglass, B.K., 1996, The NOVACON Process: A new class of in-furnace sorbent technology, in Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1412–1418.

- Baes, C.F.J., Goeller, H.E., Olson, J.S., and Rotty, R.M., 1976, The global carbon dioxide problem: Oak Ridge, Tennessee, Oak Ridge National Laboratory Report no. ORNL-5194, 72 p.
- Bahor, M.P., and Ogle, K.L., 1981, Economic analysis of wet versus dry ash disposal systems: Chattanooga, Tennessee, Tennessee Valley Authority, Division of Energy Demonstrations and Technology, and Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Industrial Environmental Research Laboratory, Office of Environmental Engineering and Technology, Report no. TVA/OP/EDT-81/30; EPA-600/7-81-013, variously paged.
- Bailey, C.W., Bryant, G.W., Matthews, E.M., and Wall, T.F., 1998, Investigation of the high temperature behavior of excluded siderite grains during pulverized fuel combustion: *Energy and Fuels*, v. 12, no. 3, p. 464–469.
- Bajpai, R., Upreti, D.K., Nayaka, S., and Kumari, B., 2010, Biodiversity, bioaccumulation, and physiological changes in lichens growing in the vicinity of coal-based thermal power plant of Raebareli district, north India: *Journal of Hazardous Materials*, v. 174, no. 1-3, p. 429–436.
- Baker, B., 1981, Controlling slagging and fouling when burning lignite fuel in pulverized fuel generators: American Society of Mechanical Engineers [ASME], Conference Paper No. 81-WA/FU-6, 10 p.
- Baker, D.E., Baker, C.S., and Sajwan, K.S., 1999, Evaluation of coal combustion products as components in disturbed land reclamation by the Baker Soil Test, in Sajwan, K.S., Alva, A.K., and Keefer, R.F., eds., *Biogeochemistry of Trace Elements in Coal and Coal Combustion Byproducts*: New York, N.Y., Kluwer Academic/Plenum, p. 145–166.
- Baker, D.E., Baker, C.S., and Wommack, G., 1996, Baker Soil Test: development and field case studies provide theory and data showing that plants don't grow in soils, in Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., *Coal Combustion By-Products Associated with Coal Mining—Interactive Forum*, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining, p. 235–246.
- Baker, D.E., Pannebaker, F.G., Senft, J.P., and Coetzee, J.P., 1993, Baker Soil Test: Applications for land reclamation, animal health, and food chain protection, in Keefer, R.F. and Sajwan, K.S., eds., *Trace elements in coal and coal combustion residues*: Boca Raton, Fla., Lewis Publishers, p. 119–133.
- Baker, G., Clarke, P., Gerstle, R.W., Mason, W., and Phillips, M.F., 1984, Project summary; Emission characterization of major fossil fuel power plants in the Ohio River Valley: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Environmental Sciences Research Laboratory, Report no. EPA-600/S3-83-109, 258 p.
- Baker, J.I., and Hites, R.A., 2000, Is combustion the major source of polychlorinated dibenzo-p-dioxins and dibenzofurans to the environment? A mass balance investigation: *Environmental Science and Technology*, v. 34, no. 14, p. 2879–2886.
- Bakharev, T., 1997, Chemical evolution of cementitious materials with high proportion of fly ash and slag [abs.]: *Fuel and Energy Abstracts*, v. 38, no. 6, p. 401.
- Bakharev, T., 2006, Heat resistance of geopolymer materials prepared using Class F fly ash: *Journal of the Australasian Ceramic Society*, v. 42, no. 1, p. 36–44.
- Bakharev, T., 2006, Thermal behavior of geopolymers prepared using Class F fly ash and elevated temperature curing: *Cement and Concrete Research*, v. 36, no. 6, p. 1134–1147.

- Bala Sundar, S., Danalakshmia, B., and Santhanama, R., 2008, Radon measurements in fly ash buildings near major thermal power stations in India using SSNTD: Radiation Measurements, v. 43, Supplement 1, p. S392–S394.
- Balat, M., 2008, Coal-fired power generation: Proven Technologies and Pollution Control Systems: Energy Sources, Part A: Recovery, Utilization, and Environmental Effects, v. 30, no. 2, p. 1055–1058.
- Baldeck, C., and Kalb, G.W., 1973, The determination of mercury in stack gases of high SO₂ content by the Gold Amalgamation Technique: U.S. Environmental Protection Agency [EPA], Report no. EPA-R2-73-153, 125 p.
- Ball, C., 1996, State of Kentucky requirements for disposal of coal combustion by-products in surface mined areas, *in* Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., Coal Combustion By-Products Associated with Coal Mining—Interactive Forum, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 79–81.
- Ballantine, D.S., Van Hook, R.I., Shults, W.D., Cunningham, P.T., Crawford, T.V., Jones, H.C., Morrow, P.E., and others, 1976, Effects of trace contaminants from coal combustion, *in* Workshop on the Effects of Trace Contaminants from Coal Combustion, Knoxville, Tennessee: Washington, D.C., U.S. Energy Research and Development Administration [ERDA], Division of Biomedical and Environmental Research, p. 79.
- Balling, L., and Hein, D., 1989, De-NO_x catalytic converters for various types of furnaces and fuels—development, testing, and operation, *in* Eskinazi, D., and Linak, W.P., 1989 Symposium on Stationary Combustion Nitrogen Oxide Control, San Francisco, California, March 6-9, 1989: Palo Alto, Calif., Electric Power Research Institute [EPRI], Report no. GS-6423, v. 2, p. 7A-27–7A-40.
- Balling, L., and Hein, D., 1989, DeNO_x catalysts for different furnace types and fuels: development, testing, implementation: Dichea Monograph, no. 118, p. 55–72.
- Baltrus, J.P., Wells, A.W., Fauth, D.J., Diehl, J.R., and White, C.M., 2001, Characterization of carbon concentrates from coal-combustion fly ash: Energy and Fuels, v. 15, no. 2, p. 455-462.
- Ban, H., Li, T.X., Hower, J.C., Schaefer, J.L., and Stencel, J.M., 1997, Dry triboelectrostatic beneficiation of fly ash: Fuel, v. 76, no. 8, p. 801–805.
- Bandyopadhyay, S., Bera, N.C., and Bhattacharyya, S., 2001, Thermoeconomic optimization of combined cycle power plants: Energy Conversion and Management, v. 42, no. 3, p. 359–371.
- Bange, P., 1993, Hidden photostationary equilibrium: A case study on the effect of monitor averaging on the calculated oxidation rate of NO to NO₂ in the plume of a power plant: Atmospheric Environment, v. 27A, p. 573–580.
- Bangham, M., Hunt, M., Travers, T., and Mancini, R., 1993, An integrated computer environment for power plant optimization, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 20–24, 1993, Pittsburgh, Pennsylvania, 10th Conference: Pittsburgh, Pa., University of Pittsburgh, p. 471–476.
- Banisi, S., and Yahyaei, M., 2008, Feed dilution-based design of a thickener for refuse slurry of a coal preparation plant: International Journal of Coal Preparation and Utilization, v. 28, no. 4, p. 201–223.
- Barber, D.E., and Giorgio, H.R., 1977, Gamma-ray activity in bituminous, sub-bituminous, and lignite coals: Health Physics, v. 32, p. 83–88.

- Baril, R.G., and Dobson, J.K., 1978, Public attitudes to nuclear and coal power in site selection for a future energy centre: Toronto, Ontario, Ontario Hydro, [presented at the technical session on Public Acceptance at the 18th Annual International Conference of the Canadian Nuclear Association, June 11–14, 1978], 18 p.
- Barnes, D.I., 2002, Novel products from combustion ash—legislative and marketing issues: *Journal of Chemical Technology and Biotechnology*, v. 77, no. 3, p. 229–233.
- Barnes, D.I., Lewitt, M.W., and Smith, M., 1994, The slagging behavior of three UK power station coals in an ash deposition rig, *in* Williamson, J., and Wigley, F., eds., *The Impact of Ash Deposition on Coal Fired Plants*; Proceedings of the Engineering Foundation Conference, June 20–25, 1993, Solihull, United Kingdom: Washington, D.C., Taylor and Francis, p. 285–296.
- Barnes, H.M., 1980, Characterization of scrubbed and unscrubbed power plant plumes: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-600/7-80-070, 64 p.
- Barnhart, D.H., and Williams, P.C., 1956, The Sintering Test, an index to ash fouling tendency: *Transactions American Society Mechanical Engineers [ASME]*, Institute of Mining Engineers, v. 78, p. 1229–1236.
- Barnwal, J.P., Majumder, A.K., Govindarajan, B., and Rao, T.C., 2006, Modeling of coal flotation in a batch and continuous cell operation: Part 1—Kinetic approach: *Coal Preparation*, v. 26, no. 3, p. 123–136.
- Baró, J., Sanchez-Reyes, A., Chinchón, J.S., López-Soler, A., Vázquez, E., and Yagüe, A., 1988, Natural radiation in fly ashes from coal thermal power stations in Spain: *Cement and Concrete Research*, v. 18, no. 1, p. 131–137.
- Barrett, R.E., Tuckfield, R.C., and Thomas, R.E., 1987, Slagging and fouling in pulverized-coal-fired utility boilers, volume 1: a survey and analysis of utility data: Palo Alto, Calif., Electric Power Research Institute [EPRI], Report CS-5523, v. 1, variously paged.
- Barrick, S.M., and Moore, G.F., 1976, Empirical correlation of coal ash viscosity with ash chemical composition, *in* American Society of Mechanical Engineers [ASME], Fuels Division, Winter Annual Meeting: New York, N.Y., American Society of Mechanical Engineers, p. H-1–H-9.
- Barroso J., Ballester, J., Ferrer, L.M., and Jimenez, S., 2006, Study of coal ash deposition in an entrained flow reactor—influence of coal type, blend composition and operating conditions: *Fuel Processing Technology*, v. 87, p. 737–752.
- Barroso, J., Ballester, J., and Pina, A., 2007, Study of coal ash deposition in an entrained flow reactor: assessment of traditional and alternative slagging indices: *Fuel Processing Technology*, v. 88, no. 9, p. 865–876.
- Barta, L.E., Lewis, P.F., and Beér, J.M., 1996, Low NO_x combustion of pulverized coal using the Radially Stratified Flame Core Burner, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 390.
- Bartok, W., 1973, Control of nitrogen oxide emissions from power plant boilers: *Aware*, v. 38, p. 12–14.

- Bartok, W., Crawford, A.R., and Piegari, G.J., 1972, Systematic field study of NO_x emissions and combustion control methods for power plant boilers, air pollution, and its control: American Institute of Chemical Engineers [AIChE], Symposium Series, v. 68, no. 126, p. 66–74.
- Bartok, W., Crawford, A.R., and Skopp, A., 1971, Nitrogen oxide pollution: control of NO_x emissions from stationary sources: Chemical Engineering Progress, v. 67, no. 2, p. 64–72.
- Bartok, W., and Sarofim, A.E., eds., 1989, Fossil fuel combustion: a Source book: New York, N.Y., Wiley, 866 p.
- Barton, T.P., and Ziemer, P.L., 1986, The effects of particle size and moisture content on the emanation of radon from coal ash: Health Physics, v. 50, p. 581–588.
- Bartoňová, L., Klika, Z., and Spears, D.A., 2007, Characterization of unburned carbon from ash after bituminous coal and lignite combustion in CFBs: Fuel, v. 86, p. 455–463.
- Bashkin, V.N., and Wongyai, K., 2002, Environmental fluxes of arsenic from lignite mining and power generation in northern Thailand: Environmental Geology, v. 41, p. 883–888.
- Basson, L., and Petrie, J.G., 2000, The development of a decision support framework for fossil fuel based power generation, *in* American Institute of Chemical Engineers [AIChE], Annual Meeting, Los Angeles, California: New York, N.Y., American Institute of Chemical Engineers Manuscript Center, paper 225c.
- Bauer, C.F., and Andren, A.W., 1985, Emissions of vapor-phase fluorine and ammonia from the Columbia coal-fired power plant: Environmental Science and Technology, v. 19, p. 1099–1103.
- Bauer, C.F., and Andren, A.W., 1988, Variability of particulate trace element emissions from the Columbia coal-fired power plant, Portage, Wisconsin: The Science of The Total Environment, v. 68, p. 251–266.
- Bauer, C.F., and Natusch, D.F.S., 1981, Identification and quantification of carbonate compounds in coal fly ash: Environmental Science and Technology, v. 15, no. 7, p. 783–787.
- Bauer, T.K., and Spendle, R.G., 1984, Selective catalytic reduction for coal-fired power plants: feasibility and economics: Palo Alto, Calif., Electric Power Research Institute [EPRI], Report no. CS-3603, 164 p.
- Baum, M.M., and Street, P.J., 1971, Predicting the combustion behavior of coal particles: Combustion Science and Technology, v. 3, p. 231–243.
- Bauman, A., and Horvat, D., 1981, The impact of natural radioactivity from a coal-fired power plant: The Science of The Total Environment, v. 17, no. 1, p. 75–81.
- Baumann, P.C., and Gillespie, R.B., 1986, Selenium bioaccumulation in gonads of large-mouth Bass and Bluegill from three power plant cooling reservoirs: Environmental Toxicology and Chemistry, v. 5, no. 7, p. 695–701.
- Baxter, M.S., 1993, Environmental radioactivity: a perspective on industrial contributions: International Atomic Energy Agency [IAEA] Bulletin 2, p. 33–38.
- BCC Research, 2009, Air pollution control for coal-fired power plants: Wellesley, Mass., BCC Research, 134 p.

- Beasley, D.E., Postle, M.C., and Pence, D.V., 1996, Instantaneous pressure and heat transfer in pulse-stabilized fluidization, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 49–54.
- Beauregard-Tellier, F., 2005, Ontario's electricity system: Is there light at the end of the tunnel?: Library of Parliament Canada, Report no. PRB 05-34E, p. 1–10.
- Bechtel, T.F., 1995, Fossil energy technologies for the 21st Century, *in* Carter, L., ed., *Energy and the Environment—Application of Geosciences to Decision-Making*, Program, and Short Papers: U.S. Geological Survey Circular 1108, p. 119–120.
- Beck, H.L., 1989, Radiation exposures due to fossil fuel combustion: *International Journal of Radiation Applications and Instrumentation, Part C: Radiation Physics and Chemistry*, v. 34, no. 2, p. 285–293.
- Beck, H.L., Gogolak, C.V., Miller, K.M., and Louder, W.M., 1980, Perturbations to the natural radiation environment due to the utilization of coal as an energy source, *in* Gesell, T.F., and Lowder, W.M., eds., *Natural Radiation Environment III*: U.S. Department of Energy Symposium Series CONF-780422, v. 2, p. 1521–1528.
- Beck, H.L., and Miller, K.M., 1979, Some radiological aspects of coal combustion: *Institute of Electrical and Electronics Engineers [IEEE] Transactions on Nuclear Science*, v. NS-27, no. 1, p. 689–694.
- Becker, H.B., 1971, The mode of ash fouling on heat transfer to boiler tubes: State Electrical Commission of Victoria, Australia, Technical Report no. 245,
- Bednarik, V., Vondruska, M., Sild, M., and Vondruskova, E., 2000, Characterization of products from fluidized-bed combustion of coal: *Journal of the Air and Waste Management Association*, v. 50, no. 11, p. 1920–1928.
- Bedrosian, P.A., Easterly, D.G., and Cummings, S.L., 1970, Radiological survey around power plants using fossil fuel: U.S. Environmental Protection Agency [EPA], Office of Research and Monitoring, Eastern Environmental Radiation Laboratory, Report EERL 71-3, 16 p.
- Beér, J.M., 2000, Combustion technology developments in power generation in response to environmental challenges: *Progress in Energy and Combustion Science*, v. 26, no. 4-6, p. 301–327.
- Beér, J.M., 2004, Electric Power Generation – fossil fuel, *in* Cleveland, C.J., and Ayres, R.U., eds., *Encyclopedia of Energy*: Amsterdam, The Netherlands, Elsevier, v. 2, p. 217–228.
- Beér, J.M., 2007, High efficiency electric power generation – the environmental role: *Progress in Energy and Combustion Science*, v. 33, no. 2, p. 107–134.
- Beér, J.M., 2009, Higher efficiency power generation reduces emissions: National Coal Council Issue Paper 2009, 8 p., last accessed 3 January 2011 at <http://web.mit.edu/mitel/docs/Reports/beer-emissions.pdf>.
- Beér, J.M., Sarofim, A.F., and Barta, L.E., 1992, From coal mineral matter properties to flyash deposition tendencies – a modelling route, *in* Benson, S.A., ed., *Inorganic Transformation and Ash Deposition During Combustion*: New York, N.Y., Engineering Foundation Press, p. 71–94.
- Behr-Andres, C.B., 1991, Utilization of industrial coal ash; characterization, market identification, and environmental impact: Houghton, Mich., Michigan Technology University, Ph.D. thesis, 1 volume, variously paged.

- Behrens, E.S., Ikeda, S., Yamashita, T., Mittelbach, G., and Yanai, M., 1991, SCR cuts NO_x emissions successfully at coal-fired plants: *Power Engineering*, September 1991, p. 49–52.
- Behrens, G.P., Orr, D.A., Wetherold, R.G., O’Neil, B.T., 1996. Use of the PISCES database – power plant aqueous stream compositions: *Water, Air, and Soil Pollution*, v. 90, p. 113–122.
- Beim, A.M., Grosheva, E.I., and Pavlov, B.K., 1993, Complex ecological assessment influence of pulp mills and power plants emissions on the environment, *in* Chow, W., and others, eds., *Managing Hazardous Air Pollutants: State of the Art: Electric Power Research Institute [EPRI] Report no. TR-101890*, Boca Raton, Fla., Lewis Publishers, p. 235–236.
- Beittel, R., Reicker, E., Ake, T., and Owens, W., 1996, Subsystem testing of a low-NO_x slag-tap firing system, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 160.
- Belkin, H.E., Tewalt, S.J., Hower, J.C., Stucker, J.D., and O’Keefe, J.M.K., 2009, Geochemistry and petrology of selected coal samples from Sumatra, Kalimantan, Sulawesi, and Papua, Indonesia: *International Journal of Coal Geology*, v. 77, p. 260–268.
- Belkin, H.E., Zheng, B., Zhou, D., and Finkelman, R.B., 2008, Chapter 17—Chronic arsenic poisoning from domestic combustion of coal in rural china: a case study of the relationship between earth materials and human health, *in* De Vivo, B., Belkin, H.E., and Lima, A., eds., *Environmental Geochemistry Site Characterization, Data Analysis, and Case Histories*: Amsterdam, The Netherlands, Elsevier, p. 401–420.
- Bem, H., Wieczorkowski, P., and Budzanowski, M., 2002, Evaluation of technologically enhanced natural radiation near the coal-fired power plants in the Lodz region of Poland: *Journal of Environmental Radioactivity*, v. 61, no. 2, p. 191–201.
- Bender, M., Adams, J., Campbell, C., Sullivan, T., By, C., and Piccolo, N., 2008, Local impacts of mercury emissions from three Pennsylvania coal fired power plants: Upton, N.Y., Brookhaven National Laboratory, Environmental Sciences Department/Environmental Research and Technology Division Report BNL-80047-2008-IR, 37 p.
- Bendig, L., 1995, Wet scrubbers: match the spray nozzle to the operation: *Environmental Engineering World*, v. 1, no. 2, p. 12–17.
- Benetto, E., Rousseaux, P., and Blondin, J., 2004, Life cycle assessment of coal by-products based electric power production scenarios: *Fuel*, v. 83, p. 957–970.
- Bennett, B.H., 1996, The changing face of the utility industry and its impact on coal combustion by-product management, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1524–1527.
- Benoit, J.M., Fitzgerald, W.F., and Damman, A.W.H., 1994, Historical atmospheric mercury deposition in the Mid-Continent U.S. as recorded in an ombrotrophic peat bog, *in* Watras, C.J., ed., *Mercury Pollution: Integration and Synthesis*: Boca Raton, Fla., Lewis Publishers, p. 187–202.
- Benson, P., 1999, PISCES [Power Plant Integrated Systems-Chemical Emissions Study] water characterization field study: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-112433-V1, p. i–xx.

- Benson, P., Fink, D., Sanders, K., Higgins, T., Lehmann, S., Newman, J., and Steglitz, B., 1997, PISCES [Power Plant Integrated Systems-Chemical Emissions Study] water characterization field study Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-108891-V1, p. i–xx.
- Benson, P., Fink, D., Sanders, K., Higgins, T., Lehmann, S., Newman, J., and Steglitz, B., 1997, PISCES [Power Plant Integrated Systems-Chemical Emissions Study] water toxics field study Report: site C: volume 1: site C Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-108891-V1, 130 p.
- Benson, P., Fink, D., Sanders, K., Higgins, T., McKnight, A., and Krousel, E., 1997, PISCES water characterization field study: sites A and B Appendices: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-108890-V1, 138 p.
- Benson, S.A., and Holm, P.L., 1985, Comparison of inorganics in three low-rank coals: Industrial and Engineering Chemistry Product Research and Development, v. 24, no. 1, p. 145–149.
- Benson, S.A., Holmes, M.J., McCollor, D.P., Mackenzie, J.M., Crocker, C.R., Kong, L., and Galbreath, K.C., 2007, Large-scale mercury control technology testing for lignite-fired utilities—oxidation systems for wet FGD: Energy and Environmental Research Center [EERC], Grand Forks, Univ. North Dakota, and URS Corporation, Austin, Tex., Report no. R2007-EERC-03-12, 329 p.
- Benson, S.A., Holmes, M.J., and Pavlish, J.H., 2004, Elemental mercury oxidation in North Dakota lignite flue gas, *in* Sakkestad, Barbara A., ed., Proceedings, International Technical Conference on Coal Utilization and Fuel Systems, April 18–22, 2004, Clearwater, Florida, 29th Conference. Gaithersburg, Md., Coal Technology Association, p. 705–711, [CD-ROM].
- Benson, S.A., Laumb, J.D., Crocker, C.R., and Pavlish, J.H., 2005, SCR catalyst performance in flue gases derived from subbituminous and lignite coals: Fuel Processing Technology, v. 86, no. 5, p. 577–613.
- Benson, S.A., and Sondreal, E.A., 1996, Impact of low-rank coal properties on advanced power systems, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 484–498.
- Benson, S.A., Zygarlicke, C.J., and Sondreal, E.A., 2000, Efficient and clean power production – minimizing impacts of inorganic components in coal and other fuels: American Chemical Society, Fuel Chemistry Division, Preprints, v. 45, no. 1, p. 88–92, last accessed June 2010 at, http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/45_1_SAN%20FRANCISCO_03-00_0088.pdf.
- Benusa, M.D., and Klima, M.S., 2008, An evaluation of a two-stage spiral processing ultrafine bituminous coal: International Journal of Coal Preparation and Utilization, v. 28, no. 4, p. 237–260.
- Berg, M., Bering, H., and Payne, R., 1993, NO_x reduction by urea injection in a coal fired utility boiler, *in* Zammit, K., project manager, 1993 Joint Symposium on Stationary Combustion NO_x Control, Vol. 2, sponsored by Electric Power Research Institute [EPRI] and U.S. Environmental Protection Agency [EPA], May 24–27, Miami Beach, Florida: Palo Alto, Calif., Electric Power Research Institute [EPRI], Report no. TR-103265-V2, p. 6A-41–6A-56.
- Berger, R., and Krabbe, H.J., 1998, Simulation of heavy metal emissions of a hard coal-fired power plant: VGB PowerTech, v. 9, p. 78–84.

- Bergmann, C.P., Bragana, S.R., da Silva, M.C., da Rosa, J.J., and Rubio, J., 2004, Optimizing coal feed in a Brazilian thermal power plant: A case study: *Coal Preparation*, v. 24, p. 69–83.
- Bergström, J., 1983, Separation of mercury in electrostatic filters and by flue gas desulfurization: Vällingby, Sweden, Swedish State Power Board KHM Technical Report no. 89.
- Bergstrom, J.G.T., 1986, Mercury behaviour in flue gases: *Waste Management Research*, v. 4, no. 1, p. 57–64.
- Bergstrom, R.W., Seigneur, C., Babson, B.L., Holman, H.-Y., and Wojcik, M.A., 1981, Comparison of the observed and predicted visual effects caused by power plant plumes: *Atmospheric Environment*, v. 15, no. 10/11, p. 2135–2150.
- Berkenpas, M.B., Rubin, E.S., and Toole-O’Neil, B., 1996, Evaluating trace chemical emissions from electric power plants, in ECOS ‘96, International Symposium—Efficiency, Costs, Optimization, Simulation, and Environmental Aspects of Energy Systems: Royal Institute of Technology, Stockholm, Sweden: 6 p.
- Berkowitz, N., 1979, *An introduction to coal technology*: New York, N.Y., Academic Press, 345 p.
- Berkowitz, N., Fryer, J.F., Ignasiak, B.S., and Szadow, A.J., 1974, Behavior differences between Carboniferous and Cretaceous bituminous coals of similar rank: *Fuel*, v. 53, no. 2, p. 141.
- Berlin, E., 1985, Excess capacity, plant abandonments and prudence: the appropriate regulatory standard: *Resources and Energy*, v. 7, no. 1, p. 75–89.
- Berman, N.S., 1981, Visibility of a NO₂ plume in Northern Arizona, in Reynolds, J.P., McCarthy, W.N., Jr., and Theodore, L., eds., *Environmental and Economic Considerations In Energy Utilization*: Ann Arbor, Michigan, Ann Arbor Science Publishers, p. 19–24.
- Bern, J., 1976, Residues from power generation: Processing, recycling and disposal, land application of waste materials: Ankeny, Iowa, Soil Conservation Society of America, p. 226–248.
- Berner, R.A., 1969, The synthesis of framboidal pyrite: *Economic Geology*, v. 64, p. 383–384.
- Bernstein, M.A., Feldman, S.L., and Schinnar, A.P., 1990, Impact of pollution controls on the productivity of coal-fired power plants: *Energy Economics*, v. 12, no. 1, p. 11–17.
- Berry, D., Kaldenbach, T.A., Walker, B.G., and Hernandez, D.I., 2002, Descriptions of State of Colorado regulatory programs associated with coal combustion waste (CCW) mine placement [abs.], in *Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 21.

- Berry, W.L., and Wallace, A., 1974, Trace elements in the environment—their role and potential toxicity as related to fossil fuels a preliminary study: Los Angeles, Calif., University of California Laboratory of Nuclear Medicine and Radiation Biology Report UCLA-12-946, 66 p. Beskid, N.J., and Wyman, D.J., 1980, Handling of combustion and emission-abatement wastes from coal-fired power plants: implications for fish and wildlife resources: Washington, D.C., U.S. Department of the Interior, U.S. Fish and Wildlife Service Report no. FWS/OBS-80/33, 184 p.
- Bhanarkar, A.D., Gavane, A.G., Tajne, D.S., Tamhane, S.M., and Nema, P., 2008, Composition and size distribution of particules emissions from a coal-fired power plant in India: *Fuel*, v. 87, p. 2095–2101.
- Bhardwaj, R., Chen, X., and Vidic, R.D., 2009, Impact of fly ash composition on mercury speciation in simulated flue gas: *Journal of the Air and Waste Management Association*, v. 59, no. 11, p. 1331–1338.
- Bhatt, M.S., 2007, Effect of air ingress on the energy performance of coal fired thermal power plants: *Energy Conversion and Management*, v. 48, no. 7, p. 2150–2160.
- Bhattacharya, S., and Maitra, A.K., 2007, Impact of coal beneficiation on rail transport in India: *Coal Preparation*, v. 27, no. 1–3, p. 149–166.
- Bhattacharyya, S., Donahoe, R.J., and Patel, D., 2009, Experimental study of chemical treatment of coal fly ash to reduce the mobility of priority trace elements: *Fuel*, v. 88, no. 7, p. 1173–1184.
- Bhumbla, D.K., Singh, R.N., and Keefer, R.F., 1999, Effect of rock phosphate on arsenic uptake from fly ash treated mine soil, *in* Sajwan, K.S., Alva, A.K., and Keefer, R.F., eds., *Biogeochemistry of Trace Elements in Coal and Coal Combustion Byproducts*: New York, N.Y., Kluwer Academic/Plenum, p. 279–292.
- Biede, O., Lund, J.S., and Hansen, S.L., 1996, Measurements and modelling of gas temperatures and irradiation of a 270 MW pulverized-coal-fired furnace under different firing conditions, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1125–1130.
- Biewick, L.R.H., Hardie, J.K., Williamson, C., and Arndt, H.H., 1990, Evaluation of coal resources in the eastern part of the Fort Peck Indian Reservation, Montana: U.S. Geological Survey Bulletin 1869, 136 p.
- Bignell, J.D., 1993, Removal of pyrite from coal before combustion, *in* Chow, W., and others, eds., *Managing Hazardous Air Pollutants: State of the Art*: Electric Power Research Institute [EPRI] Report no. TR-101890, Boca Raton, Fla., Lewis Publishers, p. 469–472.
- Bignoli, G., Goetz, L., and Sabbioni, E., 1988, Health risks of chromium from disposed ash of coal-burning power plants: *The Science of The Total Environment*, v. 71, no. 3, p. 571.
- Bilek, J., Fiker, S., and Janeckoua, V., 1976, Effect of power plant fly ashes on the skin in a model experiment: *Cesk Dermatologie*, v. 51, p. 73–76.
- Billings, C.E., and Matson, W.R., 1971, Draft Report #1, analysis of mercury emissions from Unit No. 4, Four Corners power plant: Fruitland, New Mexico, Arizona Public Service Company (Operations Agent) and Environmental Science Associates, Inc., 30 p.

- Billings, C.E., and Matson, W.R., 1972, Mercury emissions from coal combustion: *Science*, v. 176, no. 16, p. 1232–1233.
- Billings, C.E., Saco, A.M., Matson, W.R., Griffin, R.M., Coniglio, W.R., and Harley, R.A., 1973, Mercury balance on a large pulverized coal-fired furnace: *Journal of the Air Pollution Control Association*, v. 23, no. 9, p. 773–777.
- Bilonick, R.A., Connell, D., Talbott, E., Zborowski, J., and Kim, M., 2007, Design and feasibility assessment of a retrospective epidemiological study of coal-fired power plant emissions in the Pittsburgh Pennsylvania region: University of Pittsburgh, Pittsburgh, and South Park, Pa., CONSOL Energy Research and Development, 386 p.
- Bird, M.J., MacIntosh, D.L., and Williams, P.L., 2004, Occupational exposures during routine activities in coal fueled power plants: *Journal of Occupational and Environmental Hygiene*, v. 1, p. 403–413.
- Birge, W.J., 1984, Toxicological studies on aquatic contaminants originating from coal production and utilization – the induction of tolerance to silver in laboratory populations of fish and the chronic toxicity of nickel to fish early life stages: Lexington, University of Kentucky Water Resources Research Institute Report no. 151, 27 p.
- Bisselle, C.A., and Brown, R.D., 1984, Radionuclides in U.S. coals and their implications with respect to energy development, *in* Veziroğlu, T.N., ed., *The Biosphere, Problems and Solutions*: Amsterdam, The Netherlands, Elsevier, *Studies in Environmental Science* 25, p. 119–143.
- Biswas, P., 1999, Mercury measurement and its control – what we know, have learned, and need to further investigate. Critical review discussion: *Journal of the Air and Waste Management Association*, v. 49, no. 12, p. 1469–1473.
- Blackmore, G., 1981, Coal preparation improves utility efficiency: *Coal Age*, v. 86, no. 1, p. 70–77.
- Blaha, U., Sapkota, B., Appel, E., Stanjek, H., and Rösler, W., 2008, Micro-scale grain-size analysis and magnetic properties of coal-fired power plant fly ash and its relevance for environmental magnetic pollution studies: *Atmospheric Environment*, v. 42, p. 8359–8370.
- Blake, M.W., and Robin, T.T., 1982, Coal quality influence on operating plant cost, *in* Filipovits, Robert ed., *Proceedings of the Annual Engineering Conference on Reliability for the Electric Power Industry*, June 16–18, 1982, Hershey, Pennsylvania, 9th Annual Conference: Milwaukee, Wis., American Society for Quality Control [ASQC] Press, p. 214.
- Blanchard, L.J., and Robertson, J.D., 1996, Determination of total mercury in coal: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 41, no. 3, p. 811–814, last accessed March 2010 at, http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/41_3_ORLANDO_08-96_0811.pdf.
- Blanchard, L.J., Robertson, J.D., and Srikantapura, S., 1995, Potentially hazardous trace elements in Kentucky Coals: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 40, no. 4, p. 828–832, last accessed June 2010 at, http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/40_4_CHICAGO_08-95_0828.pdf.
- Bland, A., 2008, Re-imaging coal: novel process removes mercury while retaining ash sales: *Ash at Work*, no. 2, p. 18–20.
- Block, C., and Danis, R., 1976, Study of fly ash emission during combustion of coal: *Environmental Science and Technology*, v. 10, p. 1011–1017.

- Bloem, P.J.C., Cornelissen, H.A.W., and Gast, C.H., 1997, Assessment of impacts of NOX reduction technologies on coal ash use, v. 2, European perspective: Arnhem, The Netherlands, KEMA, Report prepared for Electric Power Research Institute. Palo Alto, Calif., Electric Power Research Institute [EPRI] Report TR-106747-V2 3176-18, variously paged.
- Bloom, N.S., 1993, Mercury speciation in flue gases – overcoming the analytical difficulties, in Chow, W., and others, eds., *Managing Hazardous Air Pollutants: State of the Art*: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-101890, p. 148–161.
- Blumenthal, D.L., Ogren, J.A., and Anderson, J.A., 1978, Airborne sampling system for plume monitoring: *Atmospheric Environment*, v. 12, p. 613–620.
- Blumenthal, D.L., Richards, L.W., Macias, E.S., Bergstrom, R.W., Wilson, W.E., and Bhardwaja, P.S., 1981, Effects of a coal-fired power plant and other sources on southwestern visibility (interim summary of EPA's Project VISTTA): *Atmospheric Environment*, v. 15, no. 10/11, p. 1955–1969.
- Blythe, G., Phillips, J., and Smolenski, J., 1996, Ultra-high velocity testing on the TECO Big Bend Unit 4 FGD system, in Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1456–1461.
- Boardman, R.D., and Smoot, L.D., 1989, Prediction of fuel and thermal NO in advanced combustion systems, in Eskinazi, D., and Linak, W.P., eds., *Proceedings of the 1989 Symposium on Stationary Combustion Nitrogen Oxide Control*, March 6-9, 1989, San Francisco, California: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. GS-6423, p. 6B-20–6B-21.
- Boavida, D., Lobo, L.S., Gulyurtlu, I., and Cabrita, I., 1996, The importance of heterogeneous decomposition reactions for the emission levels of NO and N₂O during fluidized bed combustion of coal, in Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 371–376.
- Bockelie, M., Cremer, M., Davis, K., Denison, M., Sarofim, A., Senior, C., Shim, H.-S., Swenson, D., Hurt, B., Suuberg, E., Eddings, E., Whitty, K., Baxter, L., Bartholomew, C., and Hecker, W., 2006, NO_x control options and integration for U.S. coal fired boilers: U.S. Department of Energy final technical Report [June 30, 2006] for cooperative agreement no: DE-FC26-00NT40753, last accessed January 3, 2011 at http://www.osti.gov/bridge/product.biblio.jsp?osti_id=927773, 369 p.
- Bockelie, M., Swensen, D., Denison, M., and Borodai, S., 2008, A virtual engineering framework for simulating advanced power system: Final Technical Report [December 12, 2008] for U.S. Department of Energy Cooperative Agreement No., DE-FC26-05NT42444, last accessed January 3, 2011 at http://www.osti.gov/bridge/product.biblio.jsp?osti_id=947100, 121 p.
- Bocola, W., and Cirillo, M.C., 1989, Air pollutant emissions by combustion processes in Italy: *Atmospheric Environment*, v. 23, no. 1, p. 17–24.
- Bogdanović, I., Fazinić, S., Itskos, S., Jakšić, M., Karydas, E., Katselis, V., Paradellis, T., Tadić, T., Valković, O., and Valković, V., 1995, Trace element characterization of coal fly ash particles – nuclear instruments and methods: *Physics Research Section B. Beam Interactions with Materials and Atoms*, v. 99, no. 1-4, p. 402–405.

- Boggs, B., 2002, Coal Combustion By-Products in Mine Fill Applications [abs.], *in* Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 2–3.
- Bohm, M.C., Herzog, H.J., Parsons, J.E., and Sekar, R.C., 2007, Capture-ready coal plants-options, technologies and economics: *International Journal of Greenhouse Gas Control*, v. 1, no. 1, p. 113–120.
- Boix, A., Jordan, M.M., Querol, X., and Sanfeliu, T., 2001, Characterization of total suspended particles around a power station in an urban coastal area in eastern Spain: *Environmental Geology*, v. 40, p. 891–896.
- Bojakowska, I., and Szczesniak, H., 1993, Mercury hazards to the natural environment in Poland caused by coal combustion: *Przegląd Geologiczny*, v. 41, no. 4, p. 252–257.
- Bolten, J.G., 1985, Estimating the chronic health risk from coal-fired power plant toxic emissions: *Journal of Hazardous Materials*, v. 10, no. 2-3, p. 351–387.
- Bolton, N.E., Carter, J.A., Emery, J.F., Feldman, C., Fulkerson, W., Hulett, L.D., and Lyon, W.S., 1973, Trace element mass balance around a coal-fired steam plant: *Fuel*, v. 18, no. 4, p. 114–123.
- Bolton, N.E., Van Hook, R.I., Fulkerson, W., Lyon, W.S., Andren, A.W., Carter, J.A., and Emery, J.F., 1973, Trace element measurements at the coal-fired Allen Steam Plant, Progress Report June 1971–January 1973: Oak Ridge, Tenn., Oak Ridge National Laboratory Report ORNL-NSF-EP-43, 83 p.
- Bonetti, J.E., and Brendel, G.F., 1996, Assessing the water quality impacts of fly ash structural fill projects, *in* Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., *Coal Combustion By-Products Associated with Coal Mining—Interactive Forum*, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 91–96.
- Bool, L.E.I., Helble, J.J., Shah, N., Shah, A., Huffman, G.P., Huggins, F.E., Rao, K.R.P.M., Sarofim, A.F., Zeng, T., Reschke, R., Gallien, D., and Peterson, T.W., 1995, Fundamental study of ash formation and deposition: Effect of reducing stoichiometry: Andover, Massachusetts, Physical Sciences Inc. [PSI] Technologies, final technical report prepared for U.S. Department of Energy, Pittsburgh Energy Technology Center, Pittsburgh, Pa., Report no. PSIT-1178/TR-1407, 382 p.
- Boone, R., Tardif, J., and Westwood, R., 2004, Radial growth of oak and aspen near a coal-fired station, Manitoba, Canada: *Tree-Ring Research*, v. 60, no. 1, p. 45–58.
- Boonjob, W., Miró, M., and Cerdà, V., 2008, Multiple stirred-flow chamber assembly for simultaneous automatic fractionation of trace elements in fly ash samples using a multisyringe-based flow system: *Analytical Chemistry*, v. 80, no. 19, p. 7319–7326.
- Booras, G.S., and Smelser, S.C., 1991, An engineering and economic evaluation of CO₂ removal from fossil-fuel-fired power plants: *Energy*, v. 16, no. 11-12, p. 1295–1305.
- Booth, C.A., Spears, D.A., Krause, P., and Cox, A.G., 1999, The determination of low level trace elements in coals by laser ablation-inductively coupled plasma-mass spectrometry: *Fuel*, v. 78, no. 14, p. 1665–1670.
- Borderieux, S., Wu, C.-W., Bonzongo, J.-C., and Powers, K., 2004, Control of elemental mercury vapor in combustion systems using Fe₂O₃ nanoparticles: *Aerosol and Air Quality Research*, v. 4, no. 1, p. 74–90.

- Boreman, J., 1977, Impacts of power plant intake velocities on fish: Ann Arbor, Michigan, U.S. Fish and Wildlife Service, Office of Biological Services, Power Plant Project Report FWS/OBS-76/20.1, 10 p.
- Boreman, J., 2000, Surplus production, compensation, and impact assessments of power plants: *Environmental Science and Policy*, v. 3, supplement 1, p. 445–449.
- Borgwardt, R.H., 1980, Combined flue gas desulfurization and water treatment in coal-fired power plants: *Environmental Science and Technology*, v. 14, no. 3, p. 294–298.
- Borm, P.J.A., 1997, Toxicity and occupational health hazards of coal fly ash (CFA). A review of data and comparison to coal mine dust: *Annals of Occupational Hygiene*, v. 41, p. 659–676.
- Boscak, V., Jensen, B.H., and Lading, S.B., 1996, SNAP demonstration for combined SO_x/NO_x control in Denmark, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1406–1411.
- Boshu, H., and Changhe, C., 2002, Energy ecological efficiency of coal fired plant in China: *Energy Conversion and Management*, v. 43, no. 18, p. 2553–2567.
- Bothe, J.V.J., and Brown, P.W., 1999, Arsenic immobilization by calcium arsenate formation: *Environmental Science and Technology*, v. 33, p. 3806–3811.
- Boulding, J.R., 1992, Disposal of coal combustion waste in Indiana: An analysis of technical and regulatory issues: Indianapolis, Ind., Hoosier Environmental Council, 104 p.
- Bounds, W.J., and Johannesson, K.H., 2007, Arsenic addition to soils from airborne coal dust originating at a major coal shipping terminal: *Water, Air, and Soil Pollution*, v. 185, no. 1–4, p. 195–207.
- Boutacoff, D., 1991, New focus on air toxics; the Clean Air Act: *Electric Power Research Institute [EPRI] Journal*, March 1991, p. 4–13.
- Boux, J.F., 1969, Canadians pioneer new fly ash processing system: *Minerals Processing*, v. 10, p. 3.
- Bowman, C.T., 1992, Control of combustion-generated nitrogen oxide emissions – technology driven by regulation: *Symposium (International) on Combustion*, v. 24, no. 1, p. 859–878.
- Boyd, R.J., 2004, Trace elements in coal from Collinsville, Bowen Basin, Australia – in-ground mode of occurrence and behavior during utilisation: PhD Thesis, Townsville, Queensland, Australia, James Cook University, 532 p.
- Bradford, G.R., Page, A.L., Straughan, I.R., and Phung, H.T., 1978, A study of the deposition of fly ash on desert soils and vegetation adjacent to a coal-fired generating station, *in* Adriano, D.C., and Brisbin, I.L., Jr, eds., *Environmental Chemistry and Cycling Processes*, April 28–May 1, 1976, Augusta, Georgia: U.S. Department of Energy [DOE], Energy Research and Development Administration [ERDA], Symposium Series Conference 760429, Symposium Series no. 45, p. 383–393.
- Braunig, V.H., 1929, Operating experience proves pulverized lignite a satisfactory fuel: *Power*, v. 70, no. July–Dec, p. 13–16.
- Breit, G.N., and Finkelman, R.B., eds., 1998, Characterization of coal and coal combustion products from a coal burning power plant—preliminary report and results of analyses: U.S. Geological Survey Open-File Report 98-342, 101 p.

- Breit, G.N., Finkelman, R.B., Affolter, R.H., Belkin, H., Brownfield, M., Cathcart, J., Crowley, S., Leventhal, J., McGee, J., Palmer, C.A., Reynolds, R., Rice, C., Zielinski, R., and Eble, C., 1996, Systematic investigation of the compositional variations in solid coal combustion waste products, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1356–1361.
- Breit, G.N., Finkelman, R.B., Eble, C.F., and Affolter, R.H., 1997, Variations in element abundance and distribution in feed coal and solid combustion products from two coal-fired power units, *in* *The Economic and Environmental Aspects of Coal Utilization*, 7th Conference: Santa Barbara, Calif. Engineering Foundation.
- Breit, G.N., and Motooka, J.M., 1998, Water-soluble anions: implications for soluble phases on combustion product surfaces, *in* Breit, G.N., and Finkelman, R.B., eds., *Characterization of coal and coal combustion products from a coal-burning power plant—preliminary report and results of analyses*: U.S. Geological Survey Open-File Report 98-342, p. 72–73.
- Bresolin, C.S., Diniz da Costa, J.C., Rudolph, V., and Schneider, P.S., 2007, Fourier transform method for sensitivity analysis in coal fired power plant: *Energy Conversion and Management*, v. 48, no. 10, p. 2699–2707.
- Bretz, E.A., 1991, Life management; in praise of old powerplants: *Electrical World*, v. 205, no. 3, p. 6–9.
- Bretz, E.A., 1991, Navajo cited for canyon haze: *Electrical World*, v. 205, no. 3, p. 16.
- Bretz, E.A., 1991, Power Generation – innovation key to finding unusual ash-disposal options: *Electrical World*, v. 205, no. 7, p. 56–57.
- Bretz, E.A., 1991, Zimmer generating station – world’s first nuclear-to-coal conversion goes commercial: *Electrical World*, v. 205, no. 4, p. 41–44, 46–48.
- Breuer, C.T., 1977, Assessment of coal for utility steam-raising, fluidized-bed combustion compared to currently proven technologies: Cambridge, Massachusetts Institute of Technology, Department of Nuclear Engineering, Ph.D. thesis, 616 p.
- Brickett, L., Chu, P., Lee, C.W., Srivastava, R., Laudal, D.L., Wocken, C.A., and Thompson, J.S., 2003, Impact of SCR on mercury speciation for coal-fired boilers, *in* DOE-EPRI-EPA-A&WMA Power Plant Air Pollution Control “Mega” Symposium, May 19-21, 2003, Washington, D.C.: Pittsburgh, Pa. Air and Waste Management Association, 1 CD-ROM, Paper No. 106,
- Briggs, D.L., and Lindsay, C.G., 1986, High-temperature interactions among minerals occurring in coal, *in* Vorres, K.S., ed., *Mineral Matter and Ash in Coal*: Washington, D.C., American Chemical Society, p. 128–137.
- British Standards Institution, 2001, Air quality: stationary source emissions; manual method of determination of concentration of total mercury: London, United Kingdom, British Standards Institution, 26 p.
- Brock, C.A., Washenfelder, R.A., Trainer, M., Ryerson, T.B., Wilson, J.C., Reeves, J.M., Huey, L.G., Holloway, J.S., Parrish, D.D., Hübler, G., and Fehsenfeld, F.C., 2002, Particle growth in the plumes of coal-fired power plants: *Journal of Geophysical Research—Atmospheres*, v. 107, no. D12, p. 9-1–9-14.
- Brocksen, R., Chow, W., and Connor, K., 1996, Addressing electric utility surface water challenges: *Water, Air, and Soil Pollution*, v. 90, no. 1-2, p. 21–29.

- Brockway, D.J., and Jackson, P.J., 2003, Improving efficiency of lignite based power generation, in Proceedings International Coal Science Conference, 2–6 November, 2003, Cairns, Queensland, Australia, 12th Conference: Cairns, Australia, Commonwealth Scientific and Industrial Research Organisation [CSIRO], 1 CD-ROM.
- Brook, J.R., Woodhouse, S.A., Blanchard, P., Dann, T., Dabek-Zlotorzynska, E., Goldthorp, S., Wiebe, A., Li, S.M., Guise-Bagley, L., Hoff, R., Mamedov, A., Hanson-Smith, L., Nejedly, Z., Campbell, J.L., and Chow, J.C., 2000, Chemical mass balance analyses of Toronto area PM_{2.5}: Toronto, Ontario, Environment Canada Report no. AES/AQRB-PERD-04, 179 p.
- Brooks, B., McCloskey, T.H., Pace, S.E., and Lansing, N.F., eds., 1988, Proceedings of the Electric Power Research Institute [EPRI], Power Plant Valves Symposium, August 25–26, 1987, Kansas City, Missouri: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report CS/NP-5878-SR, 1 vol., variously paged.
- Brooks, Gary, 1989, Estimating air toxics emissions from coal and oil combustion sources: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-450/2-89-001, 1 vol., variously paged.
- Brooks, W.E., 2004, Mercury: U.S. Geological Survey Minerals Yearbook 2004, p. 49.1–49.4.
- Brosset, C., 1983, Emissioner av kvicksilverföreningar med rökgaser Vattenlösliga (oxiderade) kvicksilverformer i luft och nederbörd [Emissions of mercury compounds from flue gases]: Vallingby, Sweden, Swedish State Power Board Technical Report no. 76, 87 p.
- Brosset, C., 1983, Transport of airborne mercury emitted by coal burning into aquatic systems: Water Science Technology, v. 15, p. 59–66.
- Brower, R.P., Gerritsen, J., Zankel, K.L. Huggins, A., Peters, N., Campbell, S.A., and Nilsson, R., 1990, Risk assessment study of the Dickerson site: Annapolis, Md., Maryland Department of Natural Resources Power Plant and Environmental Review Division, Report PPSE-SH-4, 3 vols.
- Brown, D.W., and Miles, N.J., 2004, Assessment of coal handleability: Coal Preparation, v. 24, p. 99–122.
- Brown, Lester, 2010, Coal-fired power on the way out?: Gristmill, February 24, 2010, last accessed 9 Mar 2010, at <http://www.grist.org/article/coal-fired-power-on-the-way-out/>, unpagged.
- Brown, N., 2001, Modifications to pf burners to reduce NO_x emissions: Stanwell Power Station: Palo Alto, Calif., Electric Power Research Institute, 1 vol., variously paged.
- Brown, R.A., and McKinsey, R.R., 1996, Repowering an existing utility power plant with a circulating PFBC boiler, in Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 267–272.
- Brown, R.D., Ouellette, R.P., and Cheremisinoff, P.N., 1983, Pollution control at electric power stations –comparisons for U.S. and Europe: Ann Arbor, Michigan, Ann Arbor Science, 113 p.
- Brown, T., and Lissianski, V., 2009, First full-scale demonstration of mercury control in Alberta: Fuel Processing Technology, v. 90, no. 11, p. 1412–1418.

- Brown, T.D., 1999, Critical review discussion—mercury measurement and its control: what we know, have learned, and need to further investigate – summary: *Journal of the Air and Waste Management Association*, v. 49, no. 12, p. 1472–1473.
- Brown, T.D., Schmidt, C.E., and Radziwon, A., 1993, Comprehensive assessment of toxic emissions from coal-fired power plants, *in* Chow, W., and others, eds., *Managing Hazardous Air Pollutants: State of the Art*: Electric Power Research Institute [EPRI] Report no. TR-101890, Boca Raton, Fla., Lewis Publishers, p. 116–125.
- Brown, T.D., Smith, D.N., O’Dowd, W.J., and Hargis, R.A., Jr., 2000, Control of mercury emissions from coal-fired power plants: a preliminary cost assessment and the next steps for accurately assessing control costs: *Fuel Processing Technology*, v. 65–66, p. 311–341.
- Brownfield, M.E., 2007, Characterization of feed coal and fly ash using x-ray diffraction and microbeam methods, *in* Ellis, Margaret, and Affolter, R.H., eds., *From Cradle to Grave, The Power of Coal*, International Technical Conference on Coal Utilization and Fuel Systems, June 10–15, 2007, Clearwater, Fla., 32nd Conference: U.S. Geological Survey Open-File Report 2007-1160, p. 52–67.
- Brownfield, M.E., Affolter, R.H., Cathcart, J.D., Meeker, G.P., Rice, C.A., Zielinski, R.A., and Hower, J.C., 2002, Characterization and modes of occurrence of elements in feed coal and fly ash – an integrated approach: U.S. Geological Survey Fact Sheet 02-0038, 4 p., last accessed 8 January 2011 at <http://pubs.usgs.gov/fs/fs-0038-02/fs-0038-02.pdf>.
- Brownfield, M.E., Cathcart, J.D., and Affolter, R.H., 1997, Characterization of feed coals and waste products from a coal burning power plant in Kentucky, *in* University of Kentucky Center for Applied Energy Research [CAER], eds., *Pushing the envelope*, 1997 International Ash Utilization Symposium, October 20–22, 1997, Lexington, Kentucky: Lexington, University of Kentucky Center for Applied Energy Research [CAER], p. 780–784.
- Brownfield, M.E., Cathcart, J.D., Affolter, R.H., Brownfield, I.K., Rice, C.A., O’Connor, J.T., Zielinski, R.A., Bullock, J.H., Jr., Hower, J.C., and Meeker, G.P., 2005, Characterization and modes of occurrence of elements in feed coal and coal combustion products from a power plant utilizing low-sulfur coal from the Powder River Basin, Wyoming: U.S. Geological Survey Scientific Investigations Report 2007-5271, 36 p.
- Brownfield, M.E., Affolter, R.H., Cathcart, J.D., and O’Connor, J.T., 1999, Characterization of feed coal and coal combustion products from power plants in Indiana and Kentucky, *in* Sakkestad, Barbara A., ed., *Proceedings of the International Technical Conference on Coal Utilization and Fuel Systems*, March 8–11, Clearwater, Fla., 24th Conference: Washington, D.C., Coal & Slurry Technology Association, p. 989–1000.
- Bruck, G.J., Lippert, T.E., and Domeracki, W.F., 1996, Advanced hot gas filter for the Pinon Pine Coal Gasification Power Plant, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, *Proceedings of the Annual International Pittsburgh Coal Conference*, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1278–1283.
- Brumsack, H., Heinrichs, H., and Lange, H., 1984, West German coal power plants as sources of potentially toxic emissions: *Environmental Technology Letters*, v. 5, p. 7–22.

- Bryenton, D.L., and Gasper, J.H., 1996, Design and construction guidelines for coal combustion by-product utilization in abandoned mine land settings—A case study, *in* Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., *Coal Combustion By-Products Associated with Coal Mining—Interactive Forum*, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 105–116.
- Bryers, R.W., ed., 1978, Ash deposits and corrosion due to impurities in combustion gases, *in* *Proceedings of the International Conference on Ash Deposits and Corrosion from Impurities in Combustion Gases*, June 26–July 1, 1977, Henniker, New Hampshire: Washington, D.C., Hemisphere Publishing Corporation, 691 p.
- Bryers, R.W., ed., 1983, Fouling and slagging resulting from impurities in combustion gases, *in* *Proceedings of the Engineering Foundation Conference*, July 12–17, Henniker, New Hampshire: New York, N.Y., Engineering Foundation, 558 p.
- Bryers, R.W., 1986, Influence of segregated mineral matter in coal on slagging, Chapt. 25, *in* Vorres, Karl S., ed., *Mineral Matter and Ash in Coal*: Washington, D.C., American Chemical Society Symposium Series, v. 301, p. 353–374.
- Bryers, R.W., 1996, Fireside slagging, fouling, and high-temperature corrosion of heat-transfer surface due to impurities in steam-raising fuels: *Progress in Energy and Combustion Science*, v. 22, no. 1, p. 29–120.
- Bryers, R.W., and Taylor, T.E., 1975, An examination of the relationship between ash chemistry and ash fusion temperatures in various coal size and gravity fractions using polynomial regression analysis, *in* American Society of Mechanical Engineers [ASME], Corrosion and Deposits Research Division, Winter Annual Meeting, Houston, Tex., ASME Paper no. 75-Wa/CD-3, p. 1–12.
- Bubenick, D.V., 1978, Economic comparison of selected scenarios for electrostatic precipitators and fabric filters: *Journal of the Air Pollution Control Association*, v. 28, p. 279–283.
- Buck, T., and Schuler, U., 1974, Design and operating experience of steam generators for low-grade brown coal: U.S. Bureau of Mines Information Circular 8650, p. 168–195.
- Buecker, B., 1997, *Power plant water chemistry: a practical guide*: Tulsa, Okla., PennWell Books, 251 p.
- Buecker, B., 2000, *Fundamentals of steam generation chemistry*: Tulsa, Okla., PennWell Books, 334 p.
- Bugge, J., Kjær, S., and Blum, R., 2006, High-efficiency coal-fired power plants development and perspectives: *Energy*, v. 31, no. 10-11, p. 1437–1445.
- Buhr, M.P., Fehsenfeld, F.C., Goldan, P.D., Hübler, G., Jobson, B.T., Kuster, W.C., Parrish, D.D., Roberts, J.M., Ryerson, T.B., Sueper, D.T., Trainer, M., and Williams, J., 1996, Loss of primary emissions of NO₂ and SO₂ from power plant plumes [abs.]: *Eos, Transactions, American Geophysical Union*, v. 77, no. 46, p. F88.
- Buhre, B., Hinkley, J., Gupta, R., Nelson, P., and Wall, T., 2007, Factors affecting the vaporisation of silica during coal combustion: *Fuel Processing Technology*, v. 88, no. 2, p. 157–164.
- Buhre, B.J., Elliott, L.K., Sheng, C.D., Gupta, R.P., and Wall, T.F., 2005, Oxy-fuel combustion technology for coal-fired power generation: *Progress in Energy and Combustion Science*, v. 31, no. 4, p. 283–307.
- Buhre, B.J.P., Hinkley, J.T., Gupta, R.P., Wall, T.F., and Nelson, P.F., 2005, Submicron ash formation from coal combustion: *Fuel*, v. 84, p. 1206–1214.

- Buhre, B.L.P., Hinkley, J.T., Gupta, R.P., Nelson, P.F., and Wall, T.F., 2006, Fine ash formation during combustion of pulverized coal—Coal property impacts: *Fuel*, v. 85, no. 2, p. 185–193.
- Builtjes, P.J.H., Beugeling, G.L.H., and Vije, J., 1985, Verspreidingsmodellen voor rookpluimen van kolengestookte installaties met het oog op omzetting en droge depositie [Plume dispersion models of coal fired power plants with respect to chemical transformation and dry dispersion]: Apeldoorn, TNO, Hoofdgroep Maatschappelijke Technologie, Report 85-01234, 48 p. [in Dutch].
- Builtjes, P.J.H., Janssen, L.H.J.M., Beugeling, G.L.H., and Elshout, A.J., 1986, Chemical reactive plumes; field experiments and modelling, *in* Hartmann, Hanns, ed., Proceedings of the World Clean Air Conference, August 25–29, Sydney, Australia, 7th Conference: Eastwood, N.S.W., Australia, Clean Air Society of Australia and New Zealand, p. 540–548.
- Bulut, Y., and Karayığıt, A.I., 2006, Petrography of feed coals in the Soma power plant, Manisa, Turkey: *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, v. 28, no. 16, p. 1447–1459.
- Bulut, Y., Karayığıt, A.I., Hower, J.C., and Sakulpitakphon, T., 2002, Characterization of feed coal, fly ash and bottom ash from the Soma power plant, *in* Proceedings of the Annual International Pittsburgh Coal Conference, September 23–27, 2002, Pittsburgh, Pennsylvania, 19th Conference: Pittsburgh, Pa., Pittsburgh Coal Conference, 1 CD-ROM.
- Bunt, J.R., 2006, A new dissection methodology and investigation into coal property transformational behaviour impacting on a commercial-scale Sasol–Lurgi MKIV fixed bed gasifier: PhD thesis, Potchefstroom, University of the North-West, South Africa.
- Bunzl, K., Hotzl, H., Rosner, G., and Winkler, R., 1984, Spatial distribution of radionuclides in soil around a coal-fired power plant: ^{210}Pb , ^{210}Po , ^{226}Ra , ^{232}Th , ^{40}K emitted with the fly ash and ^{137}Cs from the worldwide weapon testing fallout: *The Science of The Total Environment*, v. 38, p. 15–31.
- Bunzl, K., Rosner, G., and Schmidt, W., 1983, Distribution of lead, cobalt and nickel in the soil around a coal-fired power plant: *Zeitschrift für Pflanzenernährung und Bodenkunde*, v. 146, no. 6, p. 705–713.
- Burgess, R.M., Perron, M.M., Friedman, C.L., Suuberg, E.M., Pennell, K.G., Cantwell, M.G., Pelletier, M.C., Ho, K.T., Serbst, J.R., and Ryba, S.A., 2008, Evaluation of the effects of coal fly ash amendments on the toxicity of a contaminated marine sediment: *Environmental Toxicology and Chemistry*, v. 28, no. 1, p. 26–35.
- Buskies, U., 1996, The efficiency of coal-fired combined-cycle powerplants: *Applied Thermal Engineering*, v. 16, no. 12, p. 959–974.
- Bustard, C.J., Durham, M., Lindsey, C., Starns, T., Baldrey, K., Martin, C., Schlager, R., Sjostrom, S., Slye, R., Renninger, S., Monroe, L., Miller, R., and Chang, R., 2002, Full-scale evaluation of mercury control with sorbent injection and COHPAC at Alabama Power E.C. Gaston: *Journal of the Air and Waste Management Association*, v. 52, no. 8, p. 918–926.
- Bustard, J., Durham, M., Starns, T., Lindsey, C., Martin, C., Schlager, R., and Baldrey, K., 2004, Full-scale evaluation of sorbent injection for mercury control on coal-fired power plants: *Fuel Processing Technology*, v. 85, no. 6–7, p. 549–562.
- Butler, C.J., Green, A.M., and Chaffee, A.L., 2007, The fate of trace elements during MTE and HTD dewatering of Latrobe Valley brown coals: *Coal Preparation*, v. 27, no. 4, p. 210–229.

- Butz, J., and Albiston, J., 2000, Use of fly ash fractions from western coals for mercury removal from flue gas streams, *in* Benson, Steven A., ed., Mercury, trace elements, and particulate matter, Proceedings of the Air Quality Conference, September 19–21, 2000, McLean, Virginia, 2nd Conference: Amsterdam, The Netherlands, Elsevier Science, Paper A4-4.
- Butz, J., Turchi, C., Broderick, T., and Albiston, J., 2000, Options for mercury removal from coal-fired gas streams: Pilot-scale research on activated carbon, alternative and regenerative sorbents, *in* Morsi, B.I., ed., Proceedings of the Annual International Pittsburgh Coal Conference, September 11–14, 2000, Pittsburgh, Pennsylvania, 17th Conference: Pittsburgh, Pa., International Pittsburgh Coal Conference, Paper 19b-3.
- Cagnetta, A.C.J., and Zelensky, G., 1982, Coal quality—designing a power plant for a wide range of dedicated coal supply, *in* Coal Technology '82, International Coal and Lignite Utilization Exhibition and Conference, December 7–9, Houston, Texas, 5th Conference: Houston, Tex., American Gas Association, p. 7–33.
- Cai, J., Ma, X., and Li, Q., 2009, On-line monitoring the performance of coal-fired power unit – a method based on support vector machine: *Applied Thermal Engineering*, v. 29, no. 12, p. 2308.
- Cai W.J., Wang C., Liu W.L., Mao Z.W., Yu, H.C., and Chen J.N., W., 2009, Sectoral analysis for international technology development and transfer: Cases of coal-fired power generation, Cement and Aluminium in China: *Energy Policy*, v. 37, no. 6, p. 2283–2291.
- Cain, D., and Divakaruni, S.M., eds., 1988, Proceedings, 1987 conference on expert-system applications in power plants, May 27–29, 1987, Boston, Massachusetts: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report CS-6080, 1 vol., variously paged.
- Calderon Garcia, P.A., Peris M.E., and Parrilla J.J., 1997, Engineering properties of the coal ashes stored in the “Valdeserrana” Lagoon, Andorra Power Plant (Spain), *in* Goumans, J.J.J.M., Senden, G.J., and van der Sloot, H.A., eds., Waste Materials in Construction; Putting Theory into Practice, Proceedings of the International Conference on the Environmental and Technical Implications of Construction with Alternative Materials, WASCON '97, June 4–6, 1997, Houthem St. Gerlach, The Netherlands: Amsterdam, The Netherlands, Elsevier, Studies in Environmental Science 71, p. 167–173.
- Caldwell, R.D., Crosby, R.F., and Lockard, N.P., 1970, Radioactivity in coal mine drainage, *in* Reinig, W.C., ed., Environmental Surveillance in the vicinity of Nuclear Facilities: Springfield, Ill., C.C. Thomas Publisher, p. 438–445.
- California Air Resources Board, Stationary Source Control, and Regional Programs Divisions, 1981, Proposed guidelines for the control of emissions from coal-fired power plants: Sacramento, California, Air Resources Board, Stationary Source Control and Regional Programs Divisions, State document no. A1173 C62, 1 v., variously paged.
- Callen, A.M., Patel, B., Zhou, J., and Galvin, K.P., 2008, Development of water-based methods for determining coal washability data: *International Journal of Coal Preparation and Utilization*, v. 28, no. 1, p. 33–50.
- Calvo Revuelta, C., De La Fuente Santiago, E., and Rodríguez Vázquez, J.A., 1999, Characterization of polycyclic aromatic hydrocarbons in emissions from coal-fired power plants—the influence of operation parameters: *Environmental Technology*, v. 20, no. 1, p. 61–68.
- Calzonetti, F.J., and Elmes, G.A., 1981, Metal recovery from power plant ash: An ecological approach to coal utilization: *GeoJournal*, v. 3, supplementary issue, p. 59–70.

- Cammarota, A., Chirone, R., Solimene, R., and Urciuolo, M., 2008, Beneficiation of pulverized coal combustion fly ash in fluidised bed reactors: Experimental Thermal and Fluid Science, v. 32, no. 7, p. 1324–1333.
- Campbell, J.A., Smith, R.D., Davis, L.E., and Smith, K.L., 1979, Characterization of micron-size flyash particles by X-ray photoelectron spectroscopy (ESCA): The Science of The Total Environment, v. 12, p. 75.
- Can, O.F., Celik, N., and Dagtekin, I., 2009, Energetic-exergetic-economic analyses of a cogeneration thermic power plant in Turkey: International Communications in Heat and Mass Transfer, v. 36, no. 10, p. 1044–1049.
- Candelaria, R.B., and Palomino, G.E., 1982, Characterization of Navajo Generating Station emissions measured during the June–July 1979 VISTTA Field Program: Atmospheric Environment, v. 16, no. 10, p. 2287–2298.
- Cannon, H.L., and Anderson, B.M., 1972, Trace element content of the soils and vegetation in the vicinity of the Four Corners Power Plant: Southwest Energy Study Management Team, p. 1–44.
- Cannon, H.L., and Swanson, V.E., 1975, Contributions of major and minor elements to soils and vegetation by the coal-fired Four Corners Power Plant, San Juan County, New Mexico: U.S. Geological Survey Open-File Report 75-170, 33 p., tables.
- Cannon, H.L., and Swanson, V.E., 1980, Contributions of major and minor elements to soils and vegetation by the coal-fired Four Corners Power Plant, San Juan County, New Mexico: U.S. Geological Survey Professional Paper 1129-A-1, p. B1–B13.
- Cantrell, B.K., and Whitby, K.T., 1978, Aerosol size distributions and aerosol volume formation for a coal-fired power plant plume: Atmospheric Environment, v. 12, no. 1-3, p. 323–333.
- Cao, D.-z., Selic, E., and Herbell, J.-D., 2008, Utilization of fly ash from coal-fired power plants in China: Journal of Zhejiang University; Science A, v. 9, no. 5, p. 681–687.
- Cao, Y., Chen, B., Wu, J., Cui, H., Smith, J., Chi-Kuan Chen, Chu, P., and Pan, W.-P., 2007, Study of mercury oxidation by a selective catalytic reduction catalyst in a pilot-scale slipstream reactor at a utility boiler burning bituminous coal: Energy and Fuels, v. 21, p. 145–156.
- Cao, Y., Gao, Z., Zhu, J., Wang, Q., Huang, Y., Chiu, C., Parker, B., Chu, P., and Pan, W.-P., 2008, Impacts of halogen additions on mercury oxidation, in a slipstream selective catalyst reduction (SCR), reactor when burning subbituminous coal: Environmental Science and Technology, v. 42, no. 1, p. 256–261.
- Capp, J.P., and Gillmore, D.W., 1974, Fly ash from coal burning power plants: An aid in revegetating coal mine refuse and spoil banks, in Bituminous Coal Research, Inc., and others, eds., Papers presented before the first symposium on Mine and Preparation Plant Refuse Disposal, Coal and the Environment Technical Conference, October 22–24, 1974, Louisville, Kentucky, 1st Symposium: Washington, D.C., National Coal Association, p. 200–211.
- Capp, J.P., and Gillmore, D.W., 1974, Soil-making potential of power plant fly ash in mined-land reclamation: U.S. Bureau of Mines Information Circular 8640, p. 258–268.
- Cardu, M., and Baica, M., 2005, Regarding the relation between the NO_x content and CO content in thermo power plants flue gases: Energy Conversion and Management, v. 46, no. 1, p. 47–59.

- Carey, T.R., Hargrove, O.W., Richardson, C.F. and Chang, R., 1998, Factors affecting mercury control in utility flue gas using activated carbon: *Journal of the Air and Waste Management Association*, v. 48, p. 1166–1174.
- Carlin, N.T., Annamalai, K., Harman, W.L., and Sweeten, J.M., 2009, The economics of reburning with cattle manure-based biomass in existing coal-fired power plants for NO_x and CO₂ emissions control: *Biomass and Bioenergy*, v. 33, no. 9, p. 1139–1157.
- Carlson, C.L., and Adriano, D.C., 1991, Growth and elemental content of two tree species growing on abandoned coal fly ash basins: *Journal of Environmental Quality*, v. 20, p. 581–587.
- Carlson, C.L., and Adriano, D.C., 1993, Environmental impacts of coal combustion residues: *Journal of Environmental Quality*, v. 22, p. 227–247.
- Carlton, R., Chu, P., Levin, L., Offen, G., and Yager, J., 2005, EPRI Comments on U.S. Environmental Protection Agency Notice of Data Availability (NODA) regarding a proposed Clean Air Mercury Rule (CAMR); proposed national emission standards for hazardous air pollutants; and, in the alternative, proposed standards of performance for new and existing stationary sources, Electric Utility Steam Generating Units: Palo Alto, Calif., Electric Power Research Institute [EPRI], 91 p., plus appendices.
- Carnegie Mellon University and Electric Power Research Institute, 1999, PISCES – Power Plant Chemical Assessment Model (3.03) – User Documentation: Carnegie Mellon University, Pittsburgh, Pa., Report no. CM-112347, variously paged.
- Carpenter, A., 1995, Coal blending for power stations: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/81, 83 p.
- Carpenter, A., 1998, Switching to cheaper coals for power generation: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACCC/01, 87 p.
- Carpenter, A., 1999, Management of coal stockpiles: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACCC/23, 65 p.
- Carpenter, S.B., Montgomery, T.L., Leavitt, J.M., Colbaugh, W.C., and Thomas, F.W., 1971, Principal plume dispersion models; TVA power plants: *Journal of the Air Pollution Control Association*, v. 21, p. 491–495.
- Carr, R.C., and Smith, W.B., 1984, Fabric filter technology for utility coal-fired power plants, part IV – pilot-scale and laboratory studies of fabric filter technology for utility applications: *Journal Air Pollution Control Association*, v. 34, p. 399–413.
- Carras, J.N., 1995, The transport and dispersion of plumes from tall stacks, in Swaine, D.J., and Goodarzi, F., eds., *Environmental Aspects of Trace Elements in Coal*: Dordrecht, The Netherlands, Kluwer, p. 146–177.
- Cary, E.E., Gilbert, M., Bache, C.A., Gutenmann, W.H., and Lisk, D.J., 1983, Elemental composition of potted vegetables and millet grown on hard coal bottom ash-amended soil: *Bulletin of Environmental Contamination and Toxicology*, v. 31, no. 4, 418–423.
- Casagrande, D.J., 1987, Sulfur in peat and coal, in Scott, A.C., ed., *Coal and coal-bearing strata—recent advances—keynote addresses and invited papers to a conference held at Royal Holloway and Bedford New College, University of London, 8–10 April 1986*: Oxford, United Kingdom, Geological Society of London, p. 87–105.

- Casella, V.R., Bishop, C.T., Glosby, A.A., and Phillips, C.A., 1980, Radiochemical determination of uranium, thorium, and lead-210 in coal and coal ash, *in* Lyon, W.S., ed., Radioelement Analysis Progress and Problems, Proceedings of the Conference on Analytical Chemistry in Energy Technology, October 9–11, 1979, Gatlinburg, Tennessee, 23rd Conference: Ann Arbor, Mich., Ann Arbor Science Publishers, p. 271–277.
- Cashion, J.D., Maguire, B., and Kiss, L.T., 1981, Desulfurization of hot coal gases by regenerative sorption [abs.], *in* Cooper, Bernard R., and Petrakis, Leonard, eds., Chemistry and Physics of Coal Utilization, Proceedings American Physical Society Conference, June 2–4, 1980, Morgantown, West Virginia: New York, N.Y., American Physical Society, p. 457.
- Cathonnet, M., 1994, Chemical kinetic modeling of combustion from 1969 to 2019: Combustion Science and Technology, v. 98, no. 4–6, p. 265–279.
- Cato, G.A., Buening, H.J., DeVivo, C.C., Morton, B.G., Robinson, J.M., 1974, Field testing: application of combustion modifications to control pollutant emissions from industrial boilers – phase I: U.S. Environmental Protection Agency [EPA], Report no. EPA-650/2-74-078-a, 213 p.
- Cauch, B., Silcox, G.D., Lighty, J.S., Wendt, J.O., Fry, A., and Senior, C.L., 2008, Confounding effects of aqueous-phase impinger chemistry on apparent oxidation of mercury in flue gases: Environmental Science and Technology, v. 42, p. 2594–2599.
- Čech, B., Janalik, R., and Matoušek, J., 1996, Burning Process Diagnostics, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1119–1124.
- Cecil, C.B., Stanton, R.W., and Dulong, F.T., 1981, Geology of contaminants in coal – phase I Report of investigations: U.S. Geological Survey Open-File Report 81-953-A, 92 p.
- Celik, H., 2009, An analysis of mass balance and fractional particle size distributions of coal and magnetite in a dense-medium cyclone circuit: International Journal of Coal Preparation and Utilization, v. 29, no. 2, p. 68–83.
- Celik, M., Donbak, L., Unal, F., Yüzbasioğlu, D., Aksoy, H., and Yılmaz, S., 2007, Cytogenetic damage in workers from a coal-fired power plant: Mutation Research/Genetic Toxicology and Environmental Mutagenesis, v. 627, no. 2, p. 158–163.
- Central Power Research Institute, 1992, Workshop on advanced coal conversion technologies for power generation, June 29–30, 1992, technical papers: Bangalore, India, Central Power Research Institute [CPRI], 330 p.
- Cereda, E., Braga Marazzan, G.M., Pedretti, M., Grime, G.W., and Baldacci, A., 1995, The microscopic nature of coal fly ash particles investigated by means of nuclear microscopy: Atmospheric Environment, v. 29, no. 17, p. 2323–2329.
- Cereda, E., Braga Marazzan, G.M., Pedretti, M., Grime, G.W., and Baldacci, A., 1996, Influence of the elemental composition of individual fly ash particles on the efficiency of the electrostatic precipitators: Journal of Aerosol Science, v. 27, no. 4, p. 607–619.
- Cerny, J., and Weishauptova, Z., 1994, Effect of extractable matter on combustion of coal: Energy and Fuels, v. 8, no. 4, p. 881–885.
- Cevik, U., Damla, N., and Nezir, S., 2007, Radiological characterization of Cayirhan coal-fired power plant in Turkey: Fuel, v. 86, no. 16, p. 2509–2513.

- Cevik, U., Damla, N., Koz, B., and Kaya, S., 2008, Radiological characterization around the Afsin-Elbistan coal-fired power plant in Turkey: *Energy and Fuels*, v. 22, no. 1, p. 428–432.
- CH2M Hill Canada Ltd., 1982, Pollution control implications of fluidized bed technology for coal-fired steam electric power generation: Canada Environmental Protection Service, Water Pollution Directorate Report EPS 3-WP-82-2, 114 p.
- Chadwick, B.L., Ashman, R.A., Campisi, A., Crofts, G.J., Godfrey, P.D., Griffin, P.G., Ottrey, A.L., and Morrison, R.J.S., 1996, Development of techniques for monitoring gas-phase sodium species formed during coal combustion and gasification: *International Journal of Coal Geology*, v. 32, no. 1-4, p. 241–253.
- Chae, J.O., and Chun, Y.N., 1991, Effect of two-stage combustion on NO_x emissions in pulverized coal combustion: *Fuel*, v. 70, no. 6, p. 703–707.
- Chagger, H.K., Jones, J.M., Pourkashanian, M., Williams, A., Owen, A., and Fynes, G., 1999, Emission of volatile organic compounds from coal combustion: *Fuel*, v. 78, no. 13, p. 1527–1538.
- Chakraborty, N., Mukherjee, I., Santra, A.K., Chowdhury, S., Chakraborty, S., Bhattacharya, S., Mitra, A.P., and Sharma, C., 2008, Measurement of CO₂, CO, SO₂, and NO emissions from coal-based thermal power plants in India: *Atmospheric Environment*, v. 42, no. 6, p. 1073–1082.
- Chakraborty, R., and Mukherjee, A., 2009, Mutagenicity and genotoxicity of coal fly ash water leachate: *Ecotoxicology and Environmental Safety*, v. 72, p. 838–842.
- Chalmers, H., Leach, M., Lucquiaud, M., and Gibbins, J., 2009, Valuing flexible operation of power plants with CO₂ capture: *Energy Procedia*, v. 1, no. 1, p. 4289–4296.
- Chandra, A., and Chandra, H., 2004, Impact of Indian and imported coal on Indian thermal power plants: *Journal of Scientific and Industrial Research*, v. 63, p. 156–162.
- Chang, M.-C.O., Chow, J.C., Watson, J.G., Hopke, P.K., Yi, S.-M., and England, G.C., 2004, Measurements of ultrafine particles size distribution from coal-, oil-, and gas-fired stationary combustion sources: *Journal of the Air and Waste Management Association*, v. 54, no. 12, p. 1494–1505.
- Chang, R., Sjostrom, S., and Richardson, C., 2002, The evaluation of mercury emissions and control options for Ontario Power Generation Nanticoke Station: Palo Alto, Calif., Electric Power Research Institute [EPRI], and Toronto, Ontario, Canada, Ontario Power Generation, Electric Power Research Institute [EPRI] Report no. 1007256, variously paged.
- Chang Wu-Ming, 1982, Influence of washability on distribution of macerals, mineral matter, major oxides and trace elements of certain Alaskan coal: Fairbanks, AK., University of Alaska, Master of Science thesis, 138 p.
- Charan, T.G., Jha, G.S., Chattopadhyay, P.C., Haldar, D.D., and Sen, K., 2007, Cleaning potential of Samleshwari noncoking coal by washability investigation: *Coal Preparation*, v. 27, p. 138–148.
- Chatterjee, B., Hötzl, H., Rosner, G., and Winkler, R., 1979. Untersuchungen über die emission von radionukliden aus kohlekraftwerken, analysenverfahren und messungen für ein steinkohle und ein braunkohlekraftwerk, in GSF-Report-S-617, Gesellschaft für Strahlen- und Umweltforschung mbH, München, 109 p.
- Chatzimouratidis, A.I., and Pilavachi, P.A., 2008, Multicriteria evaluation of power plants impact on the living standard using the analytic hierarchy process: *Energy Policy*, v. 36, no. 3, p. 1074–1089.

- Chaudhary, S., and Banerjee, D.K., 2007, Speciation of some heavy metals in coal fly ash: Chemical Speciation and Bioavailability, v. 19, no. 3, p. 95–102.
- Chen, G., Li, B., Chen, F., and Huang, S., 2008, Study and practice on condition-based maintenance of induced fans in coal-fired power plants: *Frontiers of Energy and Power Engineering in China*, v. 2, no. 2, p. 211–215.
- Chen, H.L., Chen, I.J., and Chia, T.P., 2010, Occupational exposure and DNA strand breakage of workers in bottom ash recovery and fly ash treatment plants: *Journal of Hazardous Materials*, v. 174, no. 1-3, p. 23–27.
- Chen, J.P., Buzanowski, M.A., Yang, R.T., and Chicanowicz, Z.E., 1990, Deactivation of the Vanadia catalyst in the selective catalytic reduction process: *Journal of the Air and Waste Management Association*, v. 40, no. 10, p. 1403–1409.
- Chen L., Duan Y., Zhuo Y., Yang L. Zhang L., Yang X., Yao Q., Jiang Y., and Xu X., 2007, Mercury transformation across particulate control devices in six power plants of China – the co-effect of chlorine and ash composition: *Fuel*, v. 86, no. 4, p. 603–610.
- Chen L., Zhuo Y., Zhao X., Yao Q., and Zhang L., 2007, Thermodynamic comprehension of the effect of basic ash compositions on gaseous mercury transformation: *Energy and Fuels*, v. 21, p. 501–505.
- Chen, S.L., Heap, M.P., Pershing, D.W., and Martin, G.B., 1982, Fate of coal nitrogen during combustion: *Fuel*, v. 61, no. 12, p. 1218–1224.
- Cheng J., Zhou J.H., Liu J.Z., Cao X.Y., and Cen K., 2009, Transformations and affinities for sulfur of Chinese Shenmu Coal Ash in a pulverized coal-fired boiler: *Energy Sources Part A: Recovery, Utilization and Environmental Effects*, v. 31, no. 11, p. 956–966.
- Cheng J., Zhou J.H., Liu J.Z., Cao X.Y., Zhou Z.J., Huang Z.Y., Zhao X., and Cen K., 2004, Physicochemical properties of Chinese pulverized coal ash in relation to sulfur retention: *Powder Technology*, v. 146, no. 3, p. 169–175.
- Cheng, C.-M., Hack, P., Chu, P., Chang Y.-N., Lin T.-Y., Ko C.-S., Chiang P.-H, He C.-C., Lai Y.-M. and Pan, W.-P., 2009, Partitioning of mercury, arsenic, selenium, boron, and chloride in a full-scale coal combustion process equipped with selective catalytic reduction, electrostatic precipitation, and flue gas desulfurization systems: *Energy and Fuels*, v. 23, no. 10, p. 4805–4816.
- Cheng, R.J., Mohnene, V.A., Shen, T.T., Current, M., and Hudson, J.B., 1976, Characterization of particulates from power plants: *Journal of the Air Pollution Control Association*, v. 26, p. 786–790.
- Chenini, A., Koslin, M., Malaviya, B.K., and White, F.A., 1979, Trace element analysis of radiological effluents from coal burning power plants: *Transactions of the American Nuclear Society*, v. 32, p. 136–137.
- Chew, P.E., 2003, PF-fired supercritical power plant: *Proceedings of the Institution of Mechanical Engineers, Part A, Journal of Power and Energy*, v. 217, no. 1, p. 35–43.
- Chikkatur, A.P., Sagar, A.D., Abhyankar, N., and Sreekumar, N., 2007, Tariff-based incentives for improving coal-power-plant efficiencies in India: *Energy Policy*, v. 35, no. 7, p. 3744–3758.
- Chi, Y., Yan, N., Qu, Z., Qiao, S., and Jia, J., 2009, The performance of iodine on the removal of elemental mercury from the simulated coal-fired flue gas: *Journal of Hazardous Materials*, v. 166, no. 2-3, p. 776.

- Chinchon, J.S., Querol, X., Fernández-Turiel, J.L., and López-Soler, A., 1991, Environmental impact of mineral transformations undergone during coal combustion: *Environmental Geology and Water Science*, v. 106, p. 63–76.
- Chindaprasirt, P., Jaturapitakkul, C., Chalee, W., and Rattanasak, U., 2009, Comparative study on the characteristics of fly ash and bottom ash geopolymers: *Waste Management*, v. 29, no. 2, p. 539–543.
- Chindaprasirt, P., and Rattanasak, U., 2010, Utilization of blended fluidized bed combustion (FBC) ash and pulverized coal combustion (PCC) fly ash in geopolymer: *Waste Management*, v. 30, no. 4, p. 667–672.
- Chmovzh, V.E., and Kropp, L.I., 1981, Suppressing emission of toxic microelements during fly ash removal in thermal plants: *Teploenergetika [Moscow]*, v. 7, p. 55–56.
- Choi, J.H., Ha, S.J., and Jang, H.J., 2004, Compression properties of dust cake of fine fly ashes from a fluidized bed coal combustor on a ceramic filter: *Powder Technology*, v. 140, p. 106–115.
- Choi, P., Dee, N., and Reiquam, H., 1975, Interdependence of air, water, and soil pollution control strategies in a power plant and a kraft mill: *Water, Air, and Soil Pollution*, v. 4, p. 381–394.
- Choi, S.-K., Lee, S., Song, Y.-K., and Moon, H.-S., 2002, Leaching characteristics of selected Korean fly ashes and its implications for the groundwater composition near the ash disposal mound: *Fuel*, v. 81, p. 1083–1090.
- Chou, C., 2006, Geochemistry of sulfur and hazardous trace elements in coals and its bearing on human health [abs.]: *Chinese Journal of Geochemistry*, v. 25, supplement 1, p. 21.
- Choudhury, N., Boral, P., Mitra, T., Adak, A.K., Choudhury, A., and Sarkar, P., 2007, Assessment of nature and distribution of inertinite in Indian coals for burning characteristics: *International Journal of Coal Geology*, v. 72, no. 2, p. 141–152.
- Choung, J., Mak, C., and Xu, Z., 2006, Fine coal beneficiation using an air dense medium fluidized bed: *Coal Preparation*, v. 26, no. 1, p. 1–15.
- Chow, J.C., and Watson, J.G., 2002, Review of PM_{2.5} and PM₁₀ apportionment for fossil fuel combustion and other sources by the chemical mass balance receptor model: *Energy and Fuels*, v. 16, p. 222–260.
- Chow, J.C., Watson, J.G., Feldman, H.J., Nolen, J.E., Wallerstein, B., Hidy, G.M., Liroy, P.J., McKee, H., Mobley, D., Baugues, K., and Bachmann, J.D., 2007, Will the circle be unbroken – a history of the U.S. National Ambient Air Quality Standards: *Journal of the Air and Waste Management Association*, v. 57, p. 1151–1163.
- Chow, J.C., Watson, J.G., Kuhns, H., Etyemezian, V., Lowenthal, D.H., Crow, D., Kohl, S.D., Engelbrecht, J.P., and Green, M.C., 2004, Source profiles for industrial, mobile, and area sources in the Big Bend Regional Aerosol Visibility and Observational Study: *Chemosphere*, v. 54, no. 2, p. 185–208.
- Chow, W., 1994, Mercury emissions from electric generating stations, *in* Moskowitz, P.D., ed., U.S. Department of Energy [DOE] – U.S. Food and Drug Administration [FDA] – U.S. Environmental Protection Agency [EPA] Workshop on Methylmercury and Human Health, March 22–23, 1994, Bethesda, Maryland: Upton, N.Y., Brookhaven National Laboratory, p. 5.
- Chow, W., and Connor, K.K., eds., 1991, Managing Hazardous Air Pollutants; State of the Art: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-101890, 582 p.

- Chow, W., Miller, M.J., and Torrens, I.M., 1993, Trace chemical emissions from U.S. power plants—measurement and control, in International Congress on Power Stations, September 20–24, 1993, Liege, Belgium, 11th Conference: p. 4–5, 10–11.
- Chow, W., Miller, M.J., and Torrens, I.M., 1994, Pathways of trace elements in power plants: interim research results and implications: *Fuel Processing Technology*, v. 39, no. 1-3, p. 5–20.
- Chow, W., and Torrens, I.M., 1994, Managing power plant trace substances emissions – an overview [abs.]: *Proceedings of the American Power Conference*, v. 56-1, p. 427.
- Chowdhury, B.H., 1996, Emission control alternatives for electric utility power plants: *Energy Sources*, v. 18, p. 393–406.
- Christiano, J.P., and Crume, R.W., 1978, NO_x standards of performance for new lignite-fired steam generators: Grand Forks, N. Dak., Grand Forks Energy Research Center Report GFERC/IC-77/1, p. 274–284.
- Christianson, A.G., 1973, Reviewing environmental impact statements – Power plant cooling systems, engineering aspects: National Environmental Research Center [NERC], Pacific Northwest Environmental Research Laboratory, National Thermal Pollution Research Program, U.S. Environmental Protection Agency [EPA], Report no. EPA-660/2-73-016, 93 p.
- Chu, P., 2002, Power plant evaluation of the effect of selective catalytic reduction in mercury: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no: 1005401, 213 p.
- Chu, P., 2003, Characterizing variation in mercury emissions from coal-fired power plants: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1005401, 90 p.
- Chu, P., Laudal, D., Brickett, L., and Lee, C.W., 2003, Power plant evaluation of the effect of SCR technology on mercury, in Air and Waste Management Association, eds., *Proceedings of the combined power plant air pollutant control mega symposium*, May 19–22, 2003, Washington, D. C.: Pittsburgh, Pa., Air & Waste Management Association, Paper no. 106.
- Chu, P., Nott, B., and Chow, W., 1989, Results and issues from the PISCES field tests, in Chow, Winston, and Levin, Leonard, eds., *Proceedings international conference on managing hazardous air pollutants*, July 15–19, 1993, Washington, D.C., 2nd Conference: Palo Alto, Calif., Electric Power Research Association [EPRI] Report no. TR-104295, p. 5.
- Chu, P., and Porcella, D.B., 1995, Mercury stack emissions from U.S. electric utility power plants: *Water, Air, and Soil Pollution*, v. 80, p. 135–144.
- Chu, P., Roberson, R.L., Laudal, D.L., Brickett, L., and Pan, W.-P., 2003, Characterization of “Longer-Term” mercury emissions from coal-fired power plants, in Air and Waste Management Association, eds., *Proceedings of the combined power plant air pollutant control mega symposium*, May 19–22, 2003, Washington, D. C.: Pittsburgh, Pa., Air & Waste Management Association, Paper No. 223.
- Chu, T.-Y.J., Ruane, R.J., and Krenkel, P.A., 1978, Characterization and re-use of ash pond effluents in coal-fired power plants: *Journal of the Water Pollution Control Federation*, v. 50, p. 2494–2508.
- Chu, T.-Y.J., Ruane, R.J., and Steiner, G.R., 1976, Characteristics of waste-water discharges from coal-fired power plants, in *Proceedings of the Annual Industrial Waste Conference*, 31st Conference: West Lafayette, Ind., Purdue University, p. 690–712.

- Chungen Yin, Zhongyang Luo, Junhu Zhou, and Kefa Cen, 2000, A novel non-linear programming-based coal blending technology for power plants: *Chemical Engineering Research and Design*, v. 78, no. 1, p. 118–124.
- Cicek, A., and Koparal, A.S., 2004, Accumulation of sulfur and heavy metals in soil and tree leaves sampled from the surroundings of Tunçbilek thermal power plant: *Chemosphere*, v. 57, no. 8, p. 1031–1036.
- Cicero, S., Gutiérrez-Solana, F., and Álvarez, J.A., 2007, Structural integrity assessment of different components of a power plant: *Engineering Failure Analysis*, v. 14, no. 2, p. 301–309.
- Ciferno, J.P., Fout, T.E., Jones, A.P., and Murphy, J.T., 2009, Capturing carbon from existing coal-fired power plants: *Chemical Engineering Progress*, April 2009, p. 33–41.
- Ciferno, J.P., Skone, T.J., and Razezan, M., 2008, Carbon capture at an existing power plant: *Power Engineering*, v. 112, no. 5, p. 68.
- Cifre, P.G., Brechtel, K., Hoch, S., García, H., Aspiron, N., Hasse, H., and Scheffknecht, G., 2009, Integration of a chemical process model in a power plant modelling tool for the simulation of an amine based CO₂ scrubber: *Fuel*, v. 88, no. 2, p. 2481–2488.
- Cioni, M., and Bonfanti, L., 1986, Characterization of solid emissions from a coal-fired power plant: *Journal of Aerosol Science*, v. 17, no. 1, p. 627–628.
- Clack, H.L., 2009, Mercury capture within coal-fired power plant electrostatic precipitators: model evaluation: *Environmental Science and Technology*, v. 43, no. 5, p. 1460–1466.
- Clark, R.B., Zeto, S.K., Baligar, V.C., and Ritchey, K.D., 1999, Nickel, lead, cadmium, and chromium concentrations in shoots of maize grown in acidic soils amended with coal combustion byproducts, *in* Sajwan, K.S., Alva, A.K., and Keefer, R.F., eds., *Biogeochemistry of Trace Elements in Coal and Coal Combustion Byproducts*: New York, N.Y., Kluwer Academic/Plenum, p. 259–268.
- Clarke, L., 1992, Applications for coal-use residues: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/50, 406 p.
- Clarke, L.B., 1993, The behavior of trace elements during coal combustion and gasification: an overview, *in* Chow, W., and others, eds., *Managing Hazardous Air Pollutants: State of the Art*: Electric Power Research Institute [EPRI] Report no. TR-101890, Boca Raton, Fla., Lewis Publishers, p. 358–370.
- Clarke, L.B., 1993, The fate of trace elements during coal combustion and gasification – an overview: *Fuel*, v. 72, no. 6, p. 731–736.
- Clarke, L.B., 1995, The fate of trace elements in emissions control systems, *in* Swaine, D.J., and Goodarzi, F., eds., *Environmental Aspects of Trace Elements in Coal*: Dordrecht, The Netherlands, Kluwer, p. 128–145.
- Clarke, L.B., and Sloss, L.L., 1992, Trace elements – emissions from coal combustion and gasification: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/49, 111 p.
- Clemens, A.H., Deely, J.M., Gong, D., Moore, T.A., and Shearer, J.C., 2000, Partitioning behaviour of some toxic trace elements during coal combustion – the influence of events occurring during the deposition stage: *Fuel*, v. 79, no. 14, p. 1781–1784.
- Cliff, D.I., and Young, B.C., 1985, NO_x generation from the combustion of Australian brown and subbituminous coals: *Fuel*, v. 64, no. 11, p. 1521–1524.

- Clift, R., Ghadiri, M., and Hoffman, A.C., 1991, A critique of two models of cyclone performance: *American Institute of Chemical Engineers Journal*, v. 37, p. 285–289.
- Coal Industry Advisory Board [CIAB], 1999, Coal in the Energy Supply of China, Report of the CIAB Asia Committee: London, United Kingdom, International Energy Agency [IEA], 113 p., last accessed 8 January 2011 at <http://www.iea.org/textbase/nppdf/free/1990/coalchina99.pdf>.
- Cocks, A.T., and Fletcher, I.S., 1989, Major factors influencing gas-phase chemistry in power plant plumes during long range transport—II. release time and dispersion rate for dispersion into an ‘urban’ ambient atmosphere: *Atmospheric Environment*, v. 23, no. 12, p. 2801–2812.
- Coda-Zabetta, E., Hupa, M., and Saviharju, K., 2005, Reducing NO_x emissions using fuel staging, air staging, and selective noncatalytic reduction in synergy: *Industrial and Engineering Chemistry Research*, v. 44, no. 13, p. 4552–4561.
- Coelho, P.J., and Carvalho, M.G., 2007, Evaluation of a three-dimensional model for the prediction of heat transfer in power station boilers: *International Journal of Energy Research*, v. 19, no. 7, p. 579–592.
- Cohen, B.L., Jow, H.N., and Lee, I.S., 1978, Methods for calculating population dose from atmospheric dispersion on radioactivity: *Health Physics*, v. 34, p. 569–572.
- Cole, R.A., 1978, Entrainment at a once-through cooling system on western Lake Erie: U.S. Environmental Protection Agency [EPA], Office of Research and Development, Environmental Research Laboratory, Duluth, Minn., Report no. EPA-600/3-78-070, 2 vol.
- Coleman, S.L., and Bragg, L.J., 1990, Distribution and mode of occurrence of arsenic in coal, in Chyi, L. Lynn, and Chou, C. –L., eds., *Recent advances in coal geochemistry*: Boulder, Colo., Geological Society of America Special Paper 248, p. 13–26.
- Coles, D.G., Ragaini, R.C., and Ondov, J.M., 1977, The behavior of the natural radionuclides in western coal-fired power plants: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 22, no. 4, p. 156–161, last accessed May 2010 at, http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/22_4_MON-TREAL_05-77_0156.pdf.
- Coles, D.G., Ragaini, R.C., and Ondov, J.M., 1978, Behavior of natural radionuclides in western coal-fired power plants: *Environmental Science and Technology*, v. 12, no. 4, p. 442–446.
- Coles, D.G., Ragaini, R.C., Ondov, J.M., Fisher, G.L., Silberman, D., and Prentice, B.A., 1979, Chemical studies of stack fly ash from a coal-fired power plant: *Environmental Science and Technology*, v. 13, no. 4, p. 455–459.
- Combs, G.F.J., Barrows, S.A., and Swader, F.N., 1980, Biological availability of selenium in corn grain produced on soil amended with fly ash: *Journal of Agricultural and Food Chemistry*, v. 28, p. 406–409.
- Commission on Natural Resources, National Academy of Sciences, National Academy of Engineering, and National Research Council, 1975, Air quality and stationary source emission control: Washington, D.C., National Academies Press, 955 p.
- Committee on Health and Environmental Effects of Coal Utilization, 1980, Report on health and environmental effects of increased coal utilization: *Environmental Health Perspectives*, v. 36, p. 135–154.

- Conn, R.E., and Austin, L.G., 1984, Studies of sintering of coal ash relevant to pulverized coal utility boilers: 1. Examination of the Raask Shrinkage—Electrical Resistance Method: *Fuel*, v. 63, no. 12, p. 1664.
- Conner, W.D., and Hodkinson, J.R., 1967, Optical properties and visual effects of smoke-stack plumes; a cooperative study; Edison Electric Institute and U.S. Public Health Service: Cincinnati, Ohio, U.S. Department of Health, Education, and Welfare, Bureau of Disease Prevention and Environmental Control, Publication no. 999-AP-30, 89 p.
- Conner, W.D., and White, N., 1981, Correlation between light attenuation and particulate concentration of a coal-fired power plant emission: *Atmospheric Environment*, v. 15, no. 6, p. 939–944.
- Connor, J.J., 1977, Trace-element emissions, Dave Johnston Powerplant, Wyoming: United States. U.S. Geological Survey Open-File Report 77-872, p. 65–76.
- Connor, J.J., Anderson, B.M., Keith, J.R., and Boerngen, J.G., 1976, Soil and grass chemistry near the Four Corners power plant, United States: U.S. Geological Survey Open-File Report 76-729, p. 112–120.
- Conrad, G., 2002, State/Federal initiative addressing mine placement of coal combustion wastes [abs.], in *Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 19.
- Constantinou, E., Gerath, M., Mitchell, D., Seigneur, C., and Levin, L., 1995, Mercury from power plants—a probabilistic approach to the evaluation of potential health risks: *Water, Air, and Soil Pollution*, v. 80, p. 1129–1138.
- Constantinou, E., and Seigneur, C., 1993, Multimedia health risk assessment for power plant air toxic emissions, in Chow, W., and others, eds., *Managing Hazardous Air Pollutants: State of the Art*: Electric Power Research Institute [EPRI] Report no. TR-101890, Boca Raton, Fla., Lewis Publishers, p. 349–356.
- Conzemius, R.J., Welcomer, T.D., and Svec, H.J., 1984, Elemental partitioning in ash depositories and material balances for a coal burning facility by spark source mass spectrometry: *Environmental Science and Technology*, v. 18, no. 1, p. 12–18.
- Cooper, H.B.H., and Dakik, G.A., 1978, Release of radioactive isotopes from coal and lignite combustion, in *Proceedings of the Annual Meeting of the Air Pollution Control Association*, June 25–30, 1978, Houston, Texas, 71st Annual Meeting: Pittsburgh, Pa., Air Pollution Control Association, Paper no. 78.34.1.
- Cooper, J.A., 1994, Recent advances in sampling and analysis of coal-fired power plant emissions for air toxic compounds: *Fuel Processing Technology*, v. 39, no. 1-3, p. 251–258.
- Corbett, J.O., 1983, The radiation dose from coal burning: a review of pathways and data: *Radiation Protection Dosimetry*, v. 4, no. 1, p. 5–19.
- Cortsen, C.E., 1978, An evaluation of coal properties and their Influence on the utilisation in power stations: ELSAM Coal Quality Committee NR2, 124 p.
- Cortsen, C.E., and Klitgaard, J., 1986, Test firing of new coal types at ELSAM: *Journal of Coal Quality*, v. 5, no. 2, p. 51–53.
- Costen, P.G., Lockwood, F.C., and Siddique, M.M., 2000, Mathematical modeling of ash deposition in pulverized fuel-fired combustors: *Proceedings of the Combustion Institute*, v. 28, p. 2243–2250.

- Costle, D.M., 1979, New stationary sources performance standards – electric utility steam generating units. EPA, Federal Register 40 CFR Part 60, 33580-33624: Journal of the Air Pollution Control Association, v. 29, p. 752–753.
- Couch, G.R., 1995, Power from coal – where to remove impurities?: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/82, 87 p.
- Couch, G., 1997, OECD coal-fired power generation – trends in the 1990s: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEAPER/33, 83 p.
- Couch, G., 2000, Opportunities for coal preparation to lower emissions: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACCC/30, 46 p.
- Coulter, J.E., Stevens, D.M., Gehl, S., and Scheibel, J.R., 1988, Acoustic emission monitoring of fossil-fuel power plants: Materials Evaluation, v. 46, no. 2, p. 230–237.
- Coutts, P.T., 2002, Final Report – evaluation of technologies for reducing mercury emissions from the electric power generating sector: Winnipeg, Canadian Council of Ministers of the Environment, 105 p., last accessed 19 Apr 2010 at http://www.ccme.ca/assets/pdf/senes_fnl rpt_feb2002_e.pdf.
- Cprek, N., Shah, N., Huggins, F.E., and Huffman, G.P., 2007, Distinguishing respirable quartz in coal fly ash using computer-controlled scanning electron microscopy: Environmental Science and Technology, v. 41, no. 10, p. 3475–3480.
- Crawford, A.R., Gregory, M., Manny, E., and Bartok, W., 1975, Magnitude of SO₂, NO, CO₂, and O₂ stratification in power plant ducts: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-600/2-75-053, p. 1–160.
- Crawford, A.R., Manny, E.H., and Bartok, W., 1973, NO_x emission control for coal-fired utility boilers, in Hall, Robert E., and Pershing, David W., eds., Proceedings, coal combustion seminar, June 19–20, 1973, Research Triangle Park, North Carolina: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], National Environmental Research Center, Control Systems Laboratory, Combustion Research Section, Report no. EPA-650/2-73-021, p. 214–285.
- Criswell, G., and Parker, J., 2002(a), Colstrip steam electric station/coal combustion byproducts disposal [abs.], in Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 9–10.
- Criswell, G., and Parker, J., 2002(b), Colstrip steam electric station/coal combustion by-products disposal, in Vories, K.C. and Throgmorton, Dianne, eds., Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 115–122.
- Crocker, C.R., Benson, S.A., Holmes, M.J., Zhuang, Y., Pavlish, J.H., and Galbreath, K.C., 2004, Comparison of sorbents and furnace additives for mercury control in low rank fuel combustion systems: Fuel, v. 49, no. 1, p. 289–290.
- Crockett, A.B., and Kinnison, R.R., 1977, Mercury distribution around a large coal-fired power plant: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-600/3-77-063, 16 p.

- Crockett, A.B., and Kinnison, R.R., 1979, Mercury residues in soil around a large coal-fired power plant: *Environmental Science and Technology*, v. 13, no. 6, p. 712–715.
- Croiset, E., Thambimithu, K.V., and Palmer, A.D., 2000, Coal combustion in O₂/CO₂ mixtures: *The Canadian Journal of Chemical Engineering*, v. 78, p. 402–407.
- Croiset, E., and Thambimuthu, K.V., 2001, NO_x and SO_x emissions in O₂/CO₂ recycle coal combustion: *Fuel*, v. 80, p. 2117–2121.
- Crow, L.W., Larsen, R.G., and Hill, C.A., 1971, Joint meteorological Report: Prepared for Navajo Project, San Juan Project, Four Corners Project, Huntington Canyon Project, (2d ed.): Los Angeles, Calif., Dames and Moore, 87 p.
- Crowley, S.S., Finkelman, R.B., Palmer, C.A., and Eble, C.F., 1995, Characterization of hazardous trace elements in solid waste products from a coal-burning power plant in Kentucky, *in* Chiang, S.-H., ed., *Coal – Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 11–15, 1995, Pittsburgh, Pennsylvania, 12th Conference: Pittsburgh, Pa., University of Pittsburgh, p. 1131–1137.
- Crowley, S.S., Finkelman, R.B., Palmer, C.A., and Eble, C.F., 1998, Characterization of hazardous trace elements in solid waste products from a coal-burning power plant in Kentucky, *in* Breit, G.N., and Finkelman, R.B., eds., *Characterization of coal and coal combustion products from a coal-burning power plant—preliminary report and results of analyses*: U.S. Geological Survey Open-File Report 98-342, p. 44–49.
- Crowther, M.A., Thode, H.C.J., and Morris, S.C., 1980, Modules for estimating solid waste from fossil-fuel technologies: Upton, New York, Brookhaven National Laboratory, Dept. of Energy and Environment, National Center for Analysis of Energy Systems, Biomedical and Environmental Assessment Division, Report BNL-51474, 257 p.
- Crozier-Cole, T., 1998, Coal-fired independent power production in developing countries: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACCC/03, 52 p.
- Crutchfield, J., and Ferson, S., 2000, Predicting recovery of a fish population after heavy metal impacts: *Environmental Science and Policy*, v. 3, p. S183–S189.
- Crutchfield, J.U.J., 1995, Establishment and expansion of Redbelly Tilapia and Blue Tilapia in a power plant cooling reservoir, *in* Schramm, H.L., and Piper, R.G., eds., *Uses and effects of cultured fishes in aquatic ecosystems*: Bethesda, Md., American Fisheries Society, p. 452–461.
- Crutchfield, J.U.J., 2000, Recovery of a power plant cooling reservoir ecosystem from selenium bioaccumulation: *Environmental Science and Policy*, v. 3, p. S145–S163.
- Ctvrtnicek, T.E., Rusek, S.J., and Sandy, C.W., 1975, Evaluation of low-sulfur western coal characteristics, utilization, and combustion experience: Washington, D.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-650/2-75-046/PB-243 911, 555 p.
- Cuffe, S.T., and Gerstle, R.W., 1967, Emissions from coal-fired power plants – a comprehensive summary: Durham N.C., U.S. Department of Health, Education, and Welfare, Public Health Service Publication no. 999-AP-35, 26 p.
- Culec, N., Gunal (Calci), B., and Erler, A., 2001, Assessment of soil and water contamination around an ash-disposal site: a case study from the Seyitomer coal-fired power plant in western Turkey: *Environmental Geology*, v. 40, p. 331–344.

- Curtis, K.E., Krishnamurthy, N., and Thorndyke, S.J., 1993, Low level emission of hazardous organic pollutants from coal-fired power plants – fact or artifact?, *in* Chow, W., and others, eds., *Managing Hazardous Air Pollutants: State of the Art*: Electric Power Research Institute [EPRI] Report no. TR-101890, Boca Raton, Fla., Lewis Publishers, p. 105–115.
- Cutler, A.J.B., and Raask, E., 1981, External corrosion in coal-fired boilers: assessment from laboratory data: *Corrosion Science*, v. 21, no. 11, p. 789–800.
- Cutter, G.A., 1986, An examination of selenium geochemistry in power plant receiving waters: Old Dominion University Department of Oceanography, Annual Report to Electric Power Research Institute [EPRI], 105 p.
- Cutter, G.A., 1990, An examination of selenium geochemistry in power plant receiving waters: Old Dominion University Department of Oceanography, Final Report to Electric Power Research Institute [EPRI], v. I, 147 p.; v. II, 130 p.
- Cutter, G.A., 1991, Selenium biogeochemistry in reservoirs, volume 1, time series and mass balance results: Palo Alto, Calif., Electric Power Research Institute Report EN-2781, [111] p.
- Dabrowski, J.M., Ashton, P.J., Murray, K., Leaner, J.J., and Mason, R.P., 2008, Anthropogenic mercury emissions in South Africa – coal combustion in power plants: *Atmospheric Environment*, v. 42, no. 27, p. 6620–6626.
- Daggupaty, S.M., Banic, C.M., and Cheung, P., 2007, Numerical simulation of air concentration and deposition of particulate metals emitted from a copper smelter and a coal fired power plant during the 2000 field experiments on characterization of anthropogenic plumes, *in* Borrego, C., and Norman, A.-L., eds., *Air pollution modeling and its application XVII, Proceedings of the NATO/CCMS International Technical Meeting on Air Pollution Modelling and its Application*, 17th Meeting: New York, N.Y., Kluwer Academic Press, p. 277–285.
- Dahl, O., Nurmesniemi, H., and Pöykiö, R., 2008, Sequential extraction partitioning of metals, sulfur, and phosphorus in bottom ash from a coal-fired power plant: *International Journal of Environmental Analytical Chemistry*, v. 88, no. 1, p. 61–73.
- Dahl, O., Pöykiö, R., and Nurmesniemi, H., 2008, Concentrations of heavy metals in fly ash from a coal-fired power plant with respect to the new Finnish limit values: *Journal of Material Cycles and Waste Management*, v. 10, no. 1, p. 87–92.
- Dai, L., Wei, H., and Wang, L., 2007, Spatial distribution and risk assessment of radionuclides in soils around a coal-fired power plant: A case study from the City of Baoji, China: *Environmental Research*, v. 104, no. 2, p. 201–215.
- Dale, L.S., Lavrencic, S.A., and Fardy, J.J., 1990, The levels of trace elements in Australian export steaming coals, *in* Australia Institution of Engineers, Preprints of papers, 1990 international coal engineering conference, June 19–21, 1990, Sydney: Barton, A.C.T., Institution of Engineers Australia, no. 90/3, p. 145–148.
- Dale, L.S., and Riley, K.W., 1996, New analytical methods for determining trace elements in coal: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 41, no. 3, p. 756–760, last accessed May 2010 at, http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/41_3_ORLANDO_08-96_0756.pdf.
- Daniel, M., 1991, Power station coal use: Prospects to 2000: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/41, 61 p.
- Daniels, J.L., and Das, G.P., 2006, Leaching behavior of lime-fly ash mixtures: *Environmental Engineering Science*, v. 23, no. 1, p. 42–52.

- Danihelka, P., Ochodek, T., and Borovec, K., 1996, Coal combustion and heavy metals pollution, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1067–1072.
- Danihelka, P., Volna, A., Jones, J.M., Williams, A., 2003, Emissions of trace toxic metals during pulverized fuel combustion of Czech coals: *International Journal of Energy Research*, v. 27, p. 1181–1203.
- Darmody, R.G., 1996, A summary of soil Issues related to coal combustion residues and surface mines: site characterization from a mid-western perspective, *in* Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., Coal Combustion By-Products Associated with Coal Mining—Interactive Forum, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 49–52.
- Dasgupta, K., Rai, K., and Verma, N., 2003, Breakthrough and sulfate conversion analysis during removal of sulfur dioxide by calcium oxide sorbents: *Canadian Journal of Chemical Engineering*, v. 81, February, p. 53–62.
- Dastoor, A.P., and Larocque, Y., 2004, Global circulation of atmospheric mercury – a modelling study: *Atmospheric Environment*, v. 38, p. 147–161.
- Datta, A., Sengupta, S., and Duttagupta, 2007, Exergy analysis of a coal-based 210 mw thermal power plant: *International Journal of Energy Research*, v. 31, no. 1, p. 14–28.
- Davidson, B.J., Elliott, A.M., Keeley, K.R., and Loines, J., 1989, A whole plant mathematical modeling system and its application to conventional and advanced power generation cycles: Leatherhead, United Kingdom, Central Electricity Generating Board [CEGB] Central Electricity Research Laboratories, 1 vol.
- Davidson, R., 1999, Experience of cofiring waste with coal: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report CCC/15, 63 p.
- Davidson, R., 2000, How coal properties influence emissions: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report CCC/28, 56 p.
- Davidson, R., and Clarke, L., 1996, Trace elements in coal: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEAPER/21, 60 p.
- Davidson, R.L., Natusch, D.F.S., Wallace, J.R., and Evans, C.A., Jr., 1974, Trace elements in fly ash: *Environmental Science and Technology*, v. 8, no. 11, p. 1107–1113.
- Davidson, R.M., 1993, Organic sulphur in coal: International Energy Agency [IEA] Coal Research, Report CR/60, 79 p.
- Davidson, R.M., 1996, Chlorine and other halogens in coal: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEAPER/28, 46 p.
- Davidson, R.M., 2000, Modes of occurrence of trace elements in coal – results from an international collaborative programme: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report CCC/36, 36 p.
- Davini, P., 2001, SO₂ adsorption by activated carbons with various burnoffs obtained from a bituminous coal: *Carbon*, v. 39, no. 9, p. 1387–1393.

- Davis, B.E., and Miranda, J.E., 1981, Hydration process for enhanced calcium utilization in fluidized-bed combustion [abs.], in Cooper, Bernard R., and Petrakis, Leonidas, eds., *Chemistry and Physics of Coal Utilization—1980*, American Physical Society and American Institute of Physics Conference Proceedings, June 2–4, 1980, Morgantown, West Virginia: New York, N.Y., American Institute of Physics [AIP] Conference Proceedings no. 70, p. 470.
- Davis, D.D., 1977, Laser induced fluorescence to study power plant plume chemistry: Atlanta, Georgia, Georgia Institute of Technology, Engineering Experiment Station, Final Reports 1 and 2 for project A-1933, 2 vols. in 1, separately paged.
- Davis, D.D., 1977, OH radical measurements – impact on power plant plume chemistry: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. EA-465, 46 p.
- Davis, D.D., Heaps, W., Philent, D., and McGee, T., 1979, Boundary layer measurements of the OH radical in the vicinity of an isolated power plant plume: SO₂ and NO₂ chemical conversion times: *Atmospheric Environment*, v. 13, p. 1197–1203.
- Davis, D.D., Smith, G., and Klauber, G., 1974, Trace gas analysis of power plant plumes via aircraft measurement – O₃, NO_x, and SO₂ chemistry: *Science*, v. 186, no. 4165, p. 733–736.
- Davis, E.A., 1979, Environment assessment of Chalk Point Cooling Tower drift and vapor emissions: Laurel, Md., Johns Hopkins University, Applied Physics Laboratory, 210 p.
- Davis, W.J., Harper, H.E., and Noll, K.E., 1976, Fabric filtration for fine particulate control on coal-fired boilers, in Cooper, Hal B. H., ed., *Proceedings of the Air Pollution and Industrial Hygiene Conference on Air Quality Management in the Electric Power Industry*, January 28–30, 1976, Austin Texas, 12th Conference: Austin, Tex, The Center, p. 56–80.
- Davis, W.T., and Fiedler, M.A., 1982, The retention of sulfur in fly ash from coal-fired burners: *Journal of the Air Pollution Control Association*, v. 32, p. 395–397.
- Davison, J., 2007, Performance and costs of power plants with capture and storage of CO₂: *Energy*, v. 32, no. 7, p. 1163–1176.
- Davison, R.L., 1974, Trace elements in coal fly ash: Urbana, Ill., University of Illinois, Master of Science thesis, 75 p.
- Davison, R.L., Natusch, D.F.S., Wallace, J.R., and Evans, C.A.J., 1974, Trace elements in fly ash – dependence of concentration on particle size: *Environmental Science and Technology*, v. 8, no. 12, p. 1107–1113.
- Daza, L., Mendioroz, S., and Pajares, J.A., 1993, Mercury elimination from gaseous streams: *Applied Catalysis B, Environmental*, v. 2, no. 4, p. 277–287.
- De, S., Kaiadi, M., Fast, M., and Assadi, M., 2007, Development of an artificial neural network model for the steam process of a coal biomass cofired combined heat and power (CHP) plant in Sweden: *Energy*, v. 32, no. 11, p. 2099–2109.
- de Groot, G.J., Wiljkstra, J., Hoede, D., and van der Sloot, H.A., 1989, Leaching characteristics of selected elements from coal fly ash as a function of the acidity of the contact solution and the liquid/solid ratio, in Côté, P., and Gilliam, T.M., eds., *Environmental Aspects of Stabilization and Solidification of Hazardous and Radioactive Wastes*: Philadelphia, Pa., American Society for Testing and Materials [ASTM], p. 170–183.

- de Korte, G.J., 2008, The influence of near-dense material on the separation efficiency of dense-medium processes: *International Journal of Coal Preparation and Utilization*, v. 28, no. 2, p. 69–93.
- De Santis, V., and Longo, I., 1984, Coal energy vs. nuclear energy – a comparison of the radiological risks: *Health Physics*, v. 46, p. 73–84.
- Dearborn Environmental Consulting Services, and others, 1983, Feasibility of recirculating bottom ash transport water, in *Coal-Fuelled Power Generating Stations: Canadian Environmental Protection Service*, Report no. 83-1, 167 p.
- DeBarr, J.A., Rapp, D.M., Rostam-Abadi, M., Rood, M.J., Moore, D.M., and DeMaris, P.J., 1996, Valuable products from utility fly ash: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 41, no. 2, p. 604-606, last accessed May 2010 at, http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/41_2_NEW%20ORLEANS_03-96_0604.pdf.
- Deeson, D.R., Gladney, E.S., Owens, J.W., Perkins, B.L., Wienke, C.L., and Wangen, L.E., 1977, Comparison of levels of trace elements extracted from fly ash and levels found in effluent waters from a coal-fired power plant: *Environmental Science and Technology*, v. 11, no. 10, p. 1017–1019.
- Degeare, T., 2002, Overview of U.S. Environmental Protection Agency coal combustion waste mine fill issues, in Vories, K.C. and Throgmorton, Dianne, eds., *Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 237–239.
- Del Monte, M., Braga-Marcazzan, G.M., Sabbioni, C., and Ventura, A., 1983, Morphological, physical and chemical characterization of particles emitted by a coal-fired power plant, Annual Conference of the Association for Aerosol Research (*Gesellschaft für Aerosolforschung*), 11th, Munich, Federal Republic of Germany: *Journal of Aerosol Science*, v. 15, no. 3, p. 325–327.
- Del Monte, M., and Sabbioni, C., 1984, Morphology and mineralogy of fly ash from a coal-fueled power plant: *Archives for Meteorology, Geophysics, and Bioclimatology, Series B*; v. 35, p. 93–104.
- Del Monte, M., and Sabbioni, C., 1987, Characterization of individual fly ash particles emitted from coal- and oil-fired power plants: *Atmospheric Environment*, v. 21, no. 12, p. 2737–2738.
- Delfanti, R., Papucci, C., and Benco, C., 1999, Mosses as indicators of radioactivity deposition around a coal-fired power station: *The Science of The Total Environment*, v. 227, p. 49–56.
- DelVecchio, M., Rogan, J.J., Colsher, R.J., and Woyshner, W.S., 1993, On-line water chemistry monitoring expert advisor system at Philadelphia Electric Company's Eddystone Generating, in Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 20–24, 1993, Pittsburgh, Pennsylvania, 10th Conference: Pittsburgh, Pa., University of Pittsburgh, p. 478.
- Dekkers, M.J., and Pietersen, H.S., 1992, Magnetic properties of low-Ca fly ash – a rapid tool for Fe-assessment and a survey for potentially hazardous elements: *Materials Research Society Symposium Proceedings*, v. 245, p. 37–47.

- Demir, I., Hughes, R.E., and DeMaris, P.J., 2001, Formation and use of coal combustion residues from three types of power plants burning Illinois coals: *Fuel*, v. 80, no. 11, p. 1659–1673.
- Demir, I., Ruch, R.R., and Cahill, R.A., 1996, Washability of air toxics in marketed Illinois coal: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 41, no. 3, p. 769–776, last accessed May 2010 at, http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/41_3_ORLANDO_08-96_0769.pdf.
- Demirak, A., 2007, The influence of a coal-fired power plant in Turkey on the chemical composition of rain water in a certain region: *Environmental Monitoring and Assessment*, v. 129, p. 189–196.
- Demirak, A., Balci, A., Dalman, Ö., and Tüfekci, M., 2005, Chemical investigation of water resources around the Yatagan thermal power plant of Turkey: *Water, Air, and Soil Pollution*, v. 162, p. 171–181.
- Dennis, R., Billings, C.E., Record, F.A., Warneck, P., and Arin, M.L., 1969, Measurements of sulfur dioxide losses from stack plumes, *in* Air Pollution Control Association, Selected Papers, Air Pollution Control Association [APCA] Annual Meeting, June 22–26, 1969, New York, New York, 62nd Annual Meeting: Pittsburgh, Pa., Air Pollution Control Association [APCA], 1 vol., variously paged.
- Depoi, F.S., Pozebon, D., and Kalkreuth, W.D., 2008, Chemical characterization of feed coals and combustion-by-products from Brazilian power plants: *International Journal of Coal Geology*, v. 76, p. 227–236.
- DeVito, M.S., and Carlson, R.J., 1995, Selenium sampling and analysis in coal combustion systems: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 40, no. 4, p. 813–819, last accessed June 2010 at, http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/40_4_CHICAGO_08-95_0813.pdf.
- DeVito, M.S., and Jackson, B.L., 1994, Trace element partitioning and emissions in coal-fired utility systems, *in* Air and Waste Management Association, eds., Proceedings, papers from the Annual Meeting and Exhibition of the Air and Waste Management Association, 19–24 June, 1994, Cincinnati, Ohio, 87th Meeting: Pittsburgh, Pa., Air and Waste Management Association, 16 p.
- DeVito, S., Rosendale, L.W., and Conrad, V.B., 1994, Comparison of trace element contents of raw and clean commercial coals, *in* Benson, S.A., Steadman, E.N., Mehta, A.E., and Schmidt, C.E., eds., Trace Element Transformations in Coal-Fired Systems, April 19–22, 1993, Scottsdale, Arizona, Amsterdam, The Netherlands, Elsevier, 492 p.
- DeVito, S., Rosendale, L.W., Conrad, V.B., and Jackson, B., 1994, Trace elements in coals and their emissions: *Proceedings of the American Power Conference*, v. 56-1, p. 438–443.
- Dhadse, S., Kumari, P., and Bhagia, L.J., 2008, Fly ash characterization, utilization, and government initiatives in India — a review: *Journal of Scientific and Industrial Research*, v. 67, January 2008, p. 11–18.
- Díaz-Somoano, M., and Martínez-Tarazona, M.R., 2002, Retention of trace elements using fly ash in a coal gasification flue gas: *Journal of Chemical Technology and Biotechnology*, v. 77, no. 3, p. 396–402.
- Díaz-Somoano, M., Unterberger, S., and Hein, K.R.G., 2007, Mercury emission control in coal-fired plants – the role of wet scrubbers: *Fuel Processing Technology*, v. 88, no. 3, p. 259–263.

- Diaz-Tous, I.A., Lansing, N.F., and Divakaruni, S.M., 1988, Proceedings – 1987 conference on control systems for fossil fuel power plants, Atlanta, Georgia, February 24–26, 1987: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-6049, 1 vol., variously paged.
- Diehl, R.C., 1972, Fate of trace mercury in the combustion of coal: U.S. Department of the Interior, Bureau of Mines, Managing Coal Wastes, and Pollution Program Technical Progress Report 54, 9 p.
- Dismukes, E.B., 1994, Trace element control in electrostatic precipitators and fabric filters: *Fuel Processing Technology*, v. 39, no. 1-3, p. 403–416.
- Dittenhoefer, A.C., and De Pena, R.G., 1978, A study of production and growth of sulfate particles in plumes from a coal-fired power plant: *Atmospheric Environment*, v. 12, no. 1-3, p. 297–306.
- Dittenhoefer, A.C., and De Pena, R.G., 1980, Sulfate aerosol production and growth in coal-operated power plant plumes: *Journal of Geophysical Research*, v. 85, p. 4499–4506.
- Divan, A.M., Jr., de Oliveira, P.L., Perry, C.T., Atz, V.L., Azzarini-Rostirola, L.N., and Raya-Rodriguez, M.T., 2009, Using wild plant species as indicators for the accumulation of emissions from a thermal power plant, Candiota, South Brazil: *Ecological Indicators*, v. 9, no. 6, p. 1156–1162.
- Diwekar, Urmila, Rubin, E.S., and Frey, H.C., 1996, Optimization of environmental control system design for an IGCC power plant, *in* McBride, Antonia E., ed., *Technology for competition and globalization, proceedings of the American Power Conference*, April 9–11, 1996, Chicago, Illinois, 58th Conference: Chicago, Ill., Illinois Institute of Technology, p. 58–63.
- Dixon, D., and Van Winkle, W., 2002, Evaluating the effects of power plants on aquatic communities – guidelines for selection of assessment models: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-1005176, 1 vol. variously paged.
- Dixon, R.R., Smith, L.P., Divakaruni, S.M., and Poe, G.G., 1988, Proceedings – 1987 conference on fossil plant cycling, Princeton, New Jersey, October 20–22, 1987: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-6048, 1 vol., variously paged.
- Dockery, D.W., Luttmann-Gibson, H., Rich, D.O., Link, M.S., Mittleman, M.A., Gold, D.R., Koutrakis, P., Swartz, J.D., and Verrier, R.L., 2005, Association of air pollution with increased incidence of ventricular tachyarrhythmias recorded by implanted cardioverter defibrillators: *Environmental Health Perspectives*, v. 113, no. 6, p. 670–674.
- Dolezal, R., 1967, Large boiler furnaces – theory, construction, and control: Beér, J.M., ed., *Fuel and Energy Monograph Series*, Amsterdam, The Netherlands, Elsevier, 394 p.
- Dombrowski, K., 2010, Mercury control for plants firing Texas lignite and equipped with ESP-wet FGD – final project Report: Austin, Tex., URS Group, Inc., Report no. 42779R16, 541 p., prepared for U.S. Department of Energy, National Energy Technology Laboratory, last accessed June 2010 at, http://www.osti.gov/bridge/product.biblio.jsp?query_id=1&page=1&osti_id=978670.
- Dombrowski, K., Richardson, C., Padilla, J., Fisher, K., Campbell, T., Chang, R., Eckberg, C., Hudspeth, J., O’Palko, A., and Pletcher, S., 2009, Evaluation of low ash impact sorbent injection technologies for mercury control at a Texas lignite/PRB fired power plant: *Fuel Processing Technology*, v. 90, no. 11, p. 1406–1411.

- Donagi, A.E., Goren, A.I., Toeplitz, R., and Goldsmith, J.R., 1983, Epidemiological monitoring near a coal-fired power plant: *Journal of the Air Pollution Control Association*, v. 33, p. 986–988.
- Donahue, W.F., Allen, E.W., and Schindler, D.W., 2006, Impacts of coal-fired power plants on trace metals and polycyclic aromatic hydrocarbons (PAHs) in lake sediments in central Alberta, Canada: *Journal of Paleolimnology*, v. 35, p. 111–128.
- Donatini, F., Gigliucci, G., Riccardi, J., Schiavetti, M., Gabbrielli, R., and Briola, S., 2009, Supercritical water oxidation of coal in power plants with low CO₂ emissions: *Energy*, v. 34, no. 12, p. 2144–2150.
- Donovan, R.P., 1992, Baghouses and advanced particulate control technologies: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-100471, [790] p.
- Dooley, J.C. Jr., 1976, Fumigation from power plant plumes in the lakeshore environment: Milwaukee, Wis., University of Wisconsin, Air Pollution Analysis Laboratory [APAL] Report no. 18, 119 p.
- Dooley, J.J., and Dahowski, R.T., 2003, Examining planned U.S. power plant capacity additions in the context of climate change, *in* Gale, J., and Kaya, Yoichi, eds., *Proceedings of the International Conference on Greenhouse Gas Control Technologies*, October 1-4, 2002, Kyoto, Japan, 6th Conference: Amsterdam/The Netherlands, Pergamon, p. 1113–1118.
- Dooley, R.L., and Pacey, J., 1981, Groundwater quality monitoring at coal-fired power plants – status and review: Palo Alto, Calif., Electric Power Research Institute [EPRI], Report no. CS-2126, [102] variously paged.
- Doukas, L., 1988, Integrated environmental control model for coal-to-electricity power plants: *Mathematics and Computers in Simulation*, v. 30, no. 1-2, p. 45–53.
- Doukelis, A., Vorrias, I., Grammelis, P., Kakaras, E., Whitehouse, M., and Riley, G., 2009, Partial O₂-fired coal power plant with post-combustion CO₂ capture – a retrofitting option for CO₂ capture ready plants: *Fuel*, v. 88, no. 12, p. 2428–2436.
- Drbal, L.F., Boston, P.G., and Westra, K.L., 1996, *Power Plant Engineering*: New York, N.Y., Springer, 858 p.
- Dressen, D.R., Gladney, E.S., Owens, J.W., Perkins, B.L., Weinke, C.L., and Wangen, L.E., 1977, Comparison of levels of trace elements extracted from fly ash and levels found in effluent waters from a coal-fired power plant: *Environmental Science and Technology*, v. 11, p. 1017–1019.
- Dreesen, D.R., and Wangen, L.E., 1981, Elemental composition of Saltcedar (*Tamarix chinensis*) impacted by effluents from a coal-fired power plant: *Journal of Environmental Quality*, v. 10, p. 410–416.
- Dreher, G.B., 1996, Elements of computer-assisted thermodynamic chemical equilibrium modeling as applied to waste treatment at coal mines, *in* Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., *Coal Combustion By-Products Associated with Coal Mining—Interactive Forum*, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 173–181.
- Driscoll, J.N., Berger, A.W., Becker, J.H., and Sommers, C.S., 1974, The determination of sulfur oxides in flue gases by the barium chloranilate-controlled condensation method: *International Journal of Environmental and Analytical Chemistry*, v. 3, no. 4, p. 293–305.

- Drost, M.K., Somasundaram, S., Brown, D.R., and Antoniuk, Z.I., 1990, Thermal energy storage for coal-fired power generation: Richland, Wash., Pacific Northwest Laboratory Report DE91 005049, p. 1-14, last accessed August 2011 at <http://newfirstsearch.oclc.org/WebZ/...>
- Drzymala, J., Gorke, J.T., and Wheelock, T.D., 2005, A flotation collector for the separation of unburned carbon from fly ash: *Coal Preparation*, v. 25, no. 2, p. 67–80.
- Dubey, P.N., Sanghal, S.P., and Puttevar, S.P., 2000, Elemental concentration versus particulate size profile of the fly ash from Koradi thermal power station, in Verma, C.V.J., Rao, S.V., Kumar, V., and Krishnamoorthy, R., eds., *Proceedings of the International Conference on Fly Ash Disposal and Utilization*, 2nd Conference: p. 48–55.
- Dubnov, J., Barchana, M., Rishpon, S., Leventhal, A., Segal, I., Carel, R., and Portnov, B.A., 2007, Estimating the effect of air pollution from a coal-fired power station on the development of children's pulmonary function: *Environmental Research*, v. 103, p. 87–98.
- Dudas, M.J., 1981, Long-term leachability of selected elements from fly ash: *Environmental Science and Technology*, v. 15, no. 7, p. 840–843.
- Dudas, M.J., and Warren, C.J., 1987, Submicroscopic model of fly ash particles: *Geoderma*, v. 40, no. 1-2, p. 101–114.
- Dulong, F.T., 1998, Bulk x-ray diffraction analysis, in Breit, G.N., and Finkelman, R.B., eds., *Characterization of coal and coal combustion products from a coal-burning power plant—preliminary report and results of analyses*: U.S. Geological Survey Open-File Report 98-342, p. 95–96.
- Duncan, B.N., Stelson, A.W., and Kiang, C.S., 1995, Estimated contribution of power plants to ambient nitrogen oxides measured in Atlanta, Georgia in August 1992: *Atmospheric Environment*, v. 29, no. 21, p. 3043–3054.
- Dunham, G., Olsen, E., and Miller, S., 2000, Impact of flue gas constituents on carbon sorbents, in Benson, Steven A., ed., *Mercury, trace elements, and particulate matter*, *Proceedings of the Air Quality Conference*, September 19–21, 2000, McLean, Virginia, 2nd Conference: Amsterdam, The Netherlands, Elsevier Science, Paper A4-3.
- Dunham, G.E., DeWall, R.A., and Senior, C.L., 2001, Fixed-bed studies of the interactions between mercury and coal combustion fly ashes, in *Air and Waste Management Association, U.S. Environmental Protection Agency [EPA] – U.S. Department of Energy [DOE] – Electric Power Research Institute [EPRI] Combined Power Plant Air Pollution Control Symposium, the Mega Symposium and the Air and Waste Management Association [A and WMA] Specialty Conference on Mercury Emissions – Fate, Effects, and Control*, Arlington Heights, Illinois, August 20–24, 2001: Pittsburgh, Pa., Air and Waste Management Association, 1 CD-ROM, p. 21.
- Dunham, G.E., DeWall, R.A., and Senior, C.L., 2003, Fixed-bed studies of the interactions between mercury and coal combustion fly ash: *Fuel Processing Technology*, v. 82, no. 2-3, p. 197–213.
- Dunham, G.E., Miller, S.J., and Laudal, D.L., 1995, Investigation of mercury in baghouses with sorbents, in Chiang, S.-H., ed., *Coal- Energy and the Environment*, *Proceedings of the Annual International Pittsburgh Coal Conference*, September 11–15, 1995, Pittsburgh, Pa., 12th Conference: Pittsburgh, Pa., University of Pittsburgh, p. 992–996.
- Dunlop, W., and Holstein, R.A. 1981, Coal fired power plant capital cost estimates: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. PE-1865, [264] variously paged.

- Dunstan, T.D., Mauldin, R.F., Jinxian, Z., Hipps, A.D., Wehry, E.L., and Mamantov, G., 1989, Adsorption and photodegradation of pyrene on magnetic, carbonaceous, and mineral subfractions of coal stack ash: *Environmental Science and Technology*, v. 23, p. 303–308.
- Dunxi Y., Minghou X., Hong Y., Xiaowei L., and Ke Z., 2008, A new method for identifying the modes of particulate matter from pulverized coal combustion: *Powder Technology*, v. 183, no. 1, p. 105–114.
- Duong, D.N.B., Tillman, D.A., and Widenman, A., 2008, Fuel blending for combustion management, *in* Miller, B.G., and Tillman, D.A., eds., *Combustion Engineering Issues for Solid Fuel Systems*: Amsterdam, The Netherlands, Elsevier, p. 171–197.
- Duong, P.V., Thanh, V.T., Dien, P.Q., and Binh, N.T., 1995, Application of nuclear activation analysis (NAA) and low-level gamma counting to determine the radionuclide and trace element-pollutant releases from coal-fired power plants in Vietnam: *The Science of The Total Environment*, v. 173–174, p. 339–344.
- Du Plessis, M.P., 1984, Coal utilization options for future energy and feedstock supplies: Edmonton, Alberta, Canada, Coal Research Dept., Alberta Research Council Report no. YCPY-9, 40 p.
- Dupree, W.C., and West, I.J.A., 1972, United States energy through the year 2000: U. S. Department of the Interior, 74 p.
- Durham, M., Bustard, J., Starns, T., Sjostrom, S., Lindsey, C., Martin, C., Schlager, R., Chang, R., Renninger, S., Monroe, L., Berry, M., and Johnson, D., 2003, Full-scale results of mercury control by injecting activated carbon upstream of ESPs and fabric filters, *in* Proceedings, Institute of Clean Air Companies [ICAC] Forum 2003, October 14–15, Nashville, Tennessee, Multi-Pollutant Emission Controls and Strategies, 1 CD-ROM: Arlington, Va., Institute of Clean Air Companies [ICAC], last accessed Jun 2010 at, http://www.icac.com/files/public/ICAC03_Durham.pdf.
- Durmaz, A., 2005, Collective evaluation of combustion problems, performance, and emission behaviour of EÜAŞ Thermal Power Plants: Technical Report prepared for EÜAŞ [Electric Production Company] by GEÇER Research Center, Ankara, Turkey [in Turkish].
- Durmaz, A., and Ercan, Y., 2004, Investigation of combustion problems, performance and emission behavior of Kangal Thermal Power Plant: Technical Report prepared for EÜAŞ [Electric Production Company] by GEÇER Research Center, Ankara, Turkey [in Turkish].
- Durmaz, A., and Ercan, Y., 2004, Investigation of combustion problems, performance, and emission behaviour of Seyitöer Thermal Power Plant: Technical Report prepared for EÜAŞ [Electric Production Company] by GEÇER Research Center, Ankara, Turkey [in Turkish].
- Durmaz, A., and Ercan, Y., 2004, Investigation of combustion problems, performance, and emission behaviour of Tunçbilek Thermal Power Plant: Technical Report prepared for EÜAŞ [Electric Production Company] by GEÇER Research Center, Ankara, Turkey [in Turkish].
- Durmaz, A., and Ercan, Y., 2005, Investigation of combustion problems, performance and emission behaviour of Çatalağı Thermal Power Plant: Technical Report prepared for EÜAŞ [Electric Production Company] by GEÇER Research Center, Ankara, Turkey [in Turkish].

- Durmaz, A., and Topal, H., 2005, Investigation of combustion problems, performance and emission behaviour of Orhaneli Thermal Power Plant: Technical Report prepared for EÜAŞ [Electric Production Company] by GEÇER Research Center, Ankara, Turkey [in Turkish].
- Dutta, B.K., Khanra, S., and Mallick, D., 2009, Leaching of elements from coal fly ash: Assessment of its potential for use in filling abandoned coal mines: *Fuel*, v. 88, no. 7, p. 1314–1323.
- Duzy, A.F., 1965, Fusibility-viscosity of lignite-type ash: American Society of Mechanical Engineers [ASME] Fuels Division, Winter Annual Meeting, Chicago, Ill., conference paper BR-867, p. 9.
- Duzy, A.F., and Land, G.W., 1985, Hot coal – bulk transport and storage: *Mining Engineering*, v. 37, no. 2, p. 139–144.
- Dvorak, A.J., Lewis, B.G., Chee, P.C., Jastrow, J.D., Prioleau, J.C., Kornegay, F.C., and Vinikour, W.S., 1978, Impacts of coal-fired power plants on fish, wildlife, and their habitats: Ann Arbor, Mich., U.S. Fish and Wildlife Service, Biological Services Program, National Power Plant Team Report no. FWS/OBS 78/29, 261 p.
- Dworkin, M., Vale, S., and Crivella, E., 2007, Coal-fired power plants: imprudent investments?: *Science*, v. 315, no. 5820, p. 1791–1792.
- Dyke, P.H., Foan, C., and Fiedler, H., 2003, PCB and PAH releases from power stations and waste incineration processes in the UK: *Chemosphere*, v. 50, no. 4, p. 469–480.
- E O Smith Corporation, Black and Veatch Corporation, and Electric Power Research Institute [EPRI], 1980, Lime FGD system and sludge disposal case study – final Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no., CS-1631, [170] p.
- Early, A.E., 1995, The significance of NO_x emissions from coal-fired power plants in the Middle Tennessee area on troposphere ozone: Knoxville, Tenn., University of Tennessee, Master of Science thesis, 171 p.
- Eary, L.E., Rai, D., Mattigod, S.V., and Ainsworth, C.C., 1990, Geochemical factors controlling the mobilization of inorganic constituents from fossil fuel combustion residues: II. Review of the minor elements: *Journal of Environmental Quality*, v. 19, p. 202–214.
- Eastman, C., Hoffer, P., and Randall, A.J., 1974, A socioeconomic analysis of environmental concern: Case of the Four Corners Electric Power Complex: New Mexico State University, Agricultural Experiment Station, 41 p.
- Eble, C.F., 1998, Kentucky Geological Survey preliminary analytical results on feed coal, fly ash, and bottom ash, *in* Breit, G.N., and Finkelman, R.B., eds., Characterization of coal and coal combustion products from a coal-burning power plant—preliminary report and results of analyses: U.S. Geological Survey Open-File Report 98-342, p. 13–16.
- Eble, C.F., and Cobb, J.C., 1994, Trace elements in coal: the next challenge: Kentucky Geological Survey Information Circular 48, 4 p.
- Eble, C.F., and Hower, J.C., 1997, Coal quality trends and distribution of potentially hazardous trace elements in eastern Kentucky coals: *Fuel*, v. 76, no. 8, p. 711–715.
- EDAW Inc., Platt River Power Authority, and Veatch, B., 1977, Larimer County power plant siting study: Fort Collins, Colo., Platte River Power Authority and EDAW Incorporated, 36 p.

- Eddings, E.G., Pershing, D.W., Molina, A., Sarofim, A.F., Spinti, J.P., and Veranth, J., 1999, Advanced combustor design concept to control NO_x and air toxics: University of Utah, Report to U.S. Department of Energy, Report no. DE-FG22-94PC94223-11, 212 p.
- Eddings, E.G., Sarofim, A.F., Lee, C.M., Davis, K.A., and Valentine, J.R., 2001, Trends in predicting and controlling ash vaporization in coal-fired utility boilers: *Fuel Processing Technology*, v. 71, no. 1-3, p. 39–51
- Edgerton, E.S., Hartsell, B.E., and Jansen, J.J., 2006, Mercury speciation in coal-fired power plant plumes observed at three surface sites in the southeastern U.S.: *Environmental Science and Technology*, v. 40, no. 15, p. 4563–4570.
- Editors of Chemical and Engineering News, 2008, Court blocks coal-fired power plant: *Chemical and Engineering News*, v. 86, no. 27 (July 7), p. 19, last accessed 31 March 2010 at <http://pubs.acs.org/isubscribe/journals/cen/86/i27/html/8627govc.html#5>.
- Editors of Fuel Cells Bulletin, 2009, News, Doosan to develop MCFCs to use CO₂ from thermal power plants: *Fuel Cells Bulletin*, v. 2009, no. 3, p. 4–5.
- Editors of Health Laboratory Science, 1975, Tentative method of analysis for sulfur trioxide and sulfur dioxide emissions from stack gases—colorimetric procedure: *Health Laboratory Science*, v. 12, no. 2, p. 142–149.
- Editors of Nature, 2008, Coal-fired power plants face delay in United States: *Nature*, v. 456, no. 7220, p. 293.
- Editors of Power Magazine, 1974, Coal combustion — a special Report: *Power*, March 1974, p. S-25–S-48.
- Editors of Power Magazine, 1974, Coal handling — a special Report: *Power*, February 1974, p. S-2–S-24.
- Editors of Power Magazine, 1974, Combustion, pollution controls — a special Report: *Power*, April 1974, p. S-49–S-64.
- Egami, R.T., Watson, J.G., Rogers, C.F., Ruby, M.G., Rood, M.J., and Chow, J.C., 1989, Method 502: particle fallout container measurement of dust fall from the atmosphere, in Lodge, J.P.J., ed., *Methods of Air Sampling and Analysis* (3d ed.): Chelsea, Mich., Lewis Publishers, p. 440–445.
- Eggleston, T.E., and Gray, W.C., 1988, Continuous emission monitoring guidelines: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-5998, 1 vol., variously paged.
- Egorov, A.P., 1979, Behaviour of some trace elements in coals with combustion at heat and power Stations [in Russian]: *Thermal Engineering*, v. 26, no. 2, p. 82–85.
- Egorov, A.P., Laktionova, N.V., Novoselova, I.V., and Popinako, N.V., 1978, Evaluation of the passage of trace elements into the environment on the combustion of coals in thermal electric power stations [in Russian]: *Solid Fuel Chemistry*, v. 12, no. 5, p. 73–74.
- Egorov, A.P., Laktionova, N.V., Popinako, N.V., and Novoselova, I.V., 1979, Behavior of some trace elements in coals during combustion in a power station: *Thermal Engineering [USSR] [English translation]*, v. 26, no. 2, p. 82–85.
- Egorov, A.P., Laktionova, N.V., Popinako, N.V., and Novoselova, I.V., 2004, Povedenie Nekotorykh Mikroelementov Iskopaemykh Uglei Pri Szhiganii na Tets [Behavior of some microelements of mined coal during combustion at heat-and-power plants]: *Teploenergetika*, Amsterdam, The Netherlands, Elsevier, No. 2, p. 22–25.

- Eisenbud, M., and Petrow, H.G., 1964, Radioactivity in the atmospheric effluents of power plants that use fossil fuels: *Science, New Series*, v. 144, no. 3616, p. 288–289.
- Eisler, R., 1987, Mercury hazards to fish, wildlife, and invertebrates: a synoptic review: U.S. Fish and Wildlife Service, Patuxent Wildlife Research Center, Laurel, Md., Contaminant Hazard Review Report no. 10, p. iii–ix.
- Ekinici, E., 1993, Fluidized bed combustion studies of Turkish lignites: *Energeia*, v. 4, no. 4, p. 1–5.
- Electric Power Research Institute [EPRI], 1984, Selective catalytic reduction for coal-fired power plants: feasibility and economics: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-3606, [164] p.
- Electric Power Research Institute [EPRI], 1987, Risk assessment of toxic emissions — alternative models and practices: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. EA-5359, [262] p.
- Electric Power Research Institute [EPRI], and Pennsylvania Electric Company, 1988, Laboratory guidelines and procedures for coal analysis: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-5644, 3 vol., variously paged.
- Electric Power Research Institute [EPRI], 1989, Proceedings: reducing power plant emissions by controlling coal quality, Bethesda, Maryland, October 27–28, 1987: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report GS-6281, variously paged.
- Electric Power Research Institute [EPRI], 1990, Preliminary guidelines for integrated controls and monitoring for fossil fuel plants: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. GS-6868, [118] p.
- Electric Power Research Institute [EPRI], 1990, Proceedings, Eighth Particulate Control Symposium: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. GS-7050, 2 vol., variously paged.
- Electric Power Research Institute [EPRI], 1991, New focus on air toxics: the Clean Air Act: Electric Power Research Institute [EPRI] Journal, March 1991, p. 4–13.
- Electric Power Research Institute [EPRI], 1991, WATERMAN — Integrated Power Plant Water Management Version 1.0: Palo Alto, Calif., Electric Power Research Institute [EPRI] Product AP-016799 [software].
- Electric Power Research Institute [EPRI], 1991, Specification for integrated controls and monitoring for fossil power plants: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. GS-7336, [248] p.
- Electric Power Research Institute [EPRI], 1993, Sulfur oxides and human health: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-102231, [56] p.
- Electric Power Research Institute [EPRI], 1993, Retrofit NO_x controls for coal-fired utility boilers: Technology assessment guide for meeting requirements of the 1990 Clean Air Act Amendments: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-102906, [240] p.
- Electric Power Research Institute [EPRI], 1994, Preliminary comparison of advanced control strategies for fossil plant control systems improvements: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-103383, [107] p.
- Electric Power Research Institute [EPRI], 1994, Guidelines for particulate control for advanced SO₂ control processes: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-104594, [282] p.

- Electric Power Research Institute [EPRI], 1994, Electric utility trace substances synthesis Report, v. 1: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-104614-V1, 222 p.
- Electric Power Research Institute [EPRI], 1994, Electric utility trace substances synthesis Report, v. 2, appendices A through N: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-104614-V2, 476 p.
- Electric Power Research Institute [EPRI], 1995, Electric Power Research Institute [EPRI] —U.S. Department of Energy [DOE] international conference on managing hazardous and particulate air pollutants, August 15–17 1995, Toronto, Ontario: Palo Alto, Calif., Electric Power Research Institute [EPRI], 3 vol., variously paged.
- Electric Power Research Institute [EPRI], 1995, Electric utility trace substances synthesis Report, v. 1-4: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-104614-V1, [222] p.
- Electric Power Research Institute [EPRI], 1995, Electric utility trace substances synthesis Report, v. 2, appendices A through N: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-104614-V2, [476] p.
- Electric Power Research Institute [EPRI], 1995, Potential effects of climate change on electric utilities: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-105005, [244] p.
- Electric Power Research Institute [EPRI], 1995, SO₂ and NO_x retrofit control technologies handbook: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-4277-SR, 36 p.
- Electric Power Research Institute [EPRI], 1996, PISCES field chemical emissions monitoring project: Site 20 emissions Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-105624, variously paged.
- Electric Power Research Institute [EPRI], 1996, PISCES field chemical emissions monitoring project: Site 21 emissions Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-105625, variously paged.
- Electric Power Research Institute [EPRI], 1996, PISCES field chemical emissions monitoring project: Site 114 emissions Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-105634; variously paged.
- Electric Power Research Institute [EPRI], 1996, Proceedings: EPRI/EPA 1995 Joint Symposium on Stationary Combustion NO_x Control — v. 1 — Tuesday, May 16, 1995, Sessions 1, 2, 3: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-105978-V1, [158] p.
- Electric Power Research Institute [EPRI], 1996, Proceedings: EPRI/EPA 1995 Joint Symposium on Stationary Combustion NO_x Control — v. 2 — Wednesday, May 17, 1995, Sessions 4 and 5: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-105978-V2, [240] p.
- Electric Power Research Institute [EPRI], 1996, Proceedings: EPRI/EPA 1995 Joint Symposium on Stationary Combustion NO_x Control — v. 3 — Thursday, May 18, 1995, Sessions 6A, 6B, 7A, 7B — v. 4 — Friday, May 19, 1995, Sessions 8A and 8B: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-105978-V3, [492] p.
- Electric Power Research Institute [EPRI], 1996, Mercury in the environment—A research update: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-107695, variously paged.

- Electric Power Research Institute [EPRI], 1997, Retrofit NO_x controls for coal-fired utility boilers–1996 updated addendum: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. R-102906-ADDENDUM, [248] p.
- Electric Power Research Institute [EPRI], 1997, Trace substance emissions from a coal-fired gasification plant: Summary Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-106964, [112] p.
- Electric Power Research Institute [EPRI], 1997, Results of a coal pile and mill rejects investigation at a power generating station: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-107627, 292 p.
- Electric Power Research Institute [EPRI], 1997, PISCES water toxics field study Report: Site C: volume 1: Site C Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-108891-V1, [130] p.
- Electric Power Research Institute [EPRI], 1997, Analyzing health risks due to trace substance emissions from utility fossil-fired plants: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-109206, [70] p.
- Electric Power Research Institute [EPRI], 1998, Coal ash: Its origin, disposal, use, and potential health issues: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. BR-111026, [12] p.
- Electric Power Research Institute [EPRI], 1998, PISCES water characterization field study: volume I: Site D Report; volume II: Site D appendix: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-108892-V1, [142] p.
- Electric Power Research Institute [EPRI], 1998, Impact of Powder River Basin Coal on power and fuel markets: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-109000, 144 p.
- Electric Power Research Institute [EPRI], 1998, Identification of arsenic species in coal ash particles: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-109002, [285] p.
- Electric Power Research Institute [EPRI], 1998, Assessment of NO_x reduction potential from combustion modifications at Illinois Power – Baldwin Unit 1: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-110498, [208] p.
- Electric Power Research Institute [EPRI], 1998, Power plant optimization guidelines: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-110718, [136] p.
- Electric Power Research Institute [EPRI], 1998, Productivity improvement handbook for fossil steam power plants: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-111217, [258] p.
- Electric Power Research Institute [EPRI], 1999, PISCES field chemical emissions monitoring project: Site 10 emissions Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-105615, variously paged.
- Electric Power Research Institute [EPRI], 1999, PISCES field chemical emissions monitoring project: Site 11 emissions Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-105616, variously paged.
- Electric Power Research Institute [EPRI], 1999, PISCES field chemical emissions monitoring project: Site 14 emissions Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-105619, variously paged.

Electric Power Research Institute [EPRI], 1999, PISCES field chemical emissions monitoring project: Site 15 emissions Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-105620, variously paged.

Electric Power Research Institute [EPRI], 1999, PISCES field chemical emissions monitoring project: Site 18 emissions Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-105622, variously paged.

Electric Power Research Institute [EPRI], 1999, PISCES field chemical emissions monitoring project: Site 19 emissions Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-105623, variously paged.

Electric Power Research Institute [EPRI], 1999, PISCES field chemical emissions monitoring project: Site 22 emissions Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-105626, variously paged.

Electric Power Research Institute [EPRI], 1999, PISCES field chemical emissions monitoring project: Site 101 emissions Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-105627, variously paged.

Electric Power Research Institute [EPRI], 1999, PISCES field chemical emissions monitoring project: Site 102 emissions Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-105628, variously paged.

Electric Power Research Institute [EPRI], 1999, PISCES field chemical emissions monitoring project: Volume 1: Sites 103–105 emissions Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-105629-V1, variously paged.

Electric Power Research Institute [EPRI], 1999, PISCES field chemical emissions monitoring project: Site 111 emissions Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-105631, variously paged.

Electric Power Research Institute [EPRI], 1999, PISCES field chemical emissions monitoring project: Site 112 emissions Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-105632, variously paged.

Electric Power Research Institute [EPRI], 1999, PISCES field chemical emissions monitoring project: Site 115 emissions Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-105635, variously paged.

Electric Power Research Institute [EPRI], 1999, PISCES water characterization field study: Sites A and B appendices: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-108890-V1, [138] p.

Electric Power Research Institute [EPRI], 1999, Guidance for co-management of mill rejects at coal-fired power plants: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-108994, 254 p.

Electric Power Research Institute [EPRI], 1999, Proceedings of the International Conference on Managing Hazardous Air Pollutants, 4th: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-111024, [474] p.

Electric Power Research Institute [EPRI], 1999, PISCES water characterization field study: Vol. 1: Site E Report; Vol. 2: Site E Appendix: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-112433-V1, 112 p.

Electric Power Research Institute [EPRI], 1999, Power plant control system tuning: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TE-113653, [24] p.

- Electric Power Research Institute [EPRI], 1999, Groundwater quality at power plants in West Virginia: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-114188, 151 p.
- Electric Power Research Institute [EPRI], 1999, Sulfuric acid control testing at Indianapolis Power and Light Company's Petersburg Station: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TE-114430, [62] p.
- Electric Power Research Institute [EPRI], 1999, Achieving NO_x compliance at least cost: A guideline for selecting the optimum combination of NO_x controls for coal-fired boilers: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-111262 [146] p.
- Electric Power Research Institute [EPRI], 1999, SCICHEM: A new generation plume-in-grid model: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-113097, [162] p.
- Electric Power Research Institute [EPRI], 1999, NO_x control field test results on coal-fired cyclone boilers – CNCIG Programs: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-113643, [102] p.
- Electric Power Research Institute [EPRI], 1999, Investigation of ammonia adsorption on fly ash and potential impacts of ammoniated ash: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-113777, [150] p.
- Electric Power Research Institute [EPRI], 2000, Proceedings: EPRI/EPA 1995 Joint Symposium on Stationary Combustion NO_x Control, vol. 4: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-105978-V4, [204] p.
- Electric Power Research Institute [EPRI], 2000, Retrofit NO_x controls for coal-fired utility boilers - 2000 update: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1000448, [258] p.
- Electric Power Research Institute [EPRI], 2000, Assessment of mercury emissions, transport, fate, and cycling for the continental United States: model structure and evaluation: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1000522, [76] p.
- Electric Power Research Institute [EPRI], 2000, User's guide for RIVRISK version 5.0: A model to assess potential human health and ecological risks from power plant and industrial facility releases to rivers: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1000733, [698] p.
- Electric Power Research Institute [EPRI], 2000, PISCES water characterization field study: Site F Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-114966, variously paged.
- Electric Power Research Institute [EPRI], 2001, Estimation methodology for and elemental mercury emissions from coal-fired power plants: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1001327, variously paged.
- Electric Power Research Institute [EPRI], 2001, Fireside corrosion in pulverized-coal-fired boilers – effect of coal chlorine and combustion parameters: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1001350, [208] p.
- Electric Power Research Institute [EPRI], 2001, Effects of coal quality on power plant management – ash problems, management and solutions: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1001402, variously paged.

- Electric Power Research Institute [EPRI], 2001, Addendum to the user's guide for RIVR-ISK version 5.0 – a model to assess potential human health and ecological risks from power plant and industrial facility releases to rivers: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1001428, [29] p.
- Electric Power Research Institute [EPRI], 2001, Alternative by-products from flue gas desulfurization Systems – utilization of clean coal by-products from SO₂ control processes: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1004611, [55] p.
- Electric Power Research Institute [EPRI], 2001, Occurrence and fate of mercury in coal ash and flue gas desulfurization sludge: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1005212, [96] p.
- Electric Power Research Institute [EPRI], 2002, Release of mercury during curing of concrete containing fly ash and mercury sorbent material: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1004697, [60] p.
- Electric Power Research Institute [EPRI], 2002, Mercury releases from coal fly ash: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1005259, [30] p.
- Electric Power Research Institute [EPRI], 2002, Productivity improvement handbook for fossil steam power plants (2nd ed.): Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1006368, variously paged.
- Electric Power Research Institute [EPRI], 2002, Integrated emissions control–process review – multi-pollutant control technology descriptions and performance: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1006876, [41] p.
- Electric Power Research Institute [EPRI], 2002, The evaluation of mercury emissions and control options for Ontario Power Generation Nanticoke Station: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1007256, [104] p.
- Electric Power Research Institute [EPRI], 2003, Effects of mercury controls on removal and emissions of trace elements and acid gas species: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1004264, [60] p.
- Electric Power Research Institute [EPRI], 2003, Mercury emissions from concrete containing fly ash and mercury-loaded powdered activated carbon: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1004402, [76] p.
- Electric Power Research Institute [EPRI], 2003, Updated cost and performance estimates for clean coal technologies including CO₂ capture – 2003, updated economics of fossil fuel power technologies including an assessment of CO₂ capture – 2003: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1004482, 180 p., variously paged.
- Electric Power Research Institute [EPRI], 2003, Technical status, operating experience, risk and market assessment of clean coal technologies: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1004879, [158] p.
- Electric Power Research Institute [EPRI], 2003, A framework for assessing the cost-effectiveness of electric power sector mercury control policies: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1005224, [71] p.
- Electric Power Research Institute [EPRI], 2003, Review, testing, and evaluation of SCICHEM (Second-Order Integrated Puff Model with chemistry) and CMAQ-APT (Community Multiscale Air Quality Model – advanced plume treatment): Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1005241, [175] p.

- Electric Power Research Institute [EPRI], 2003, Characterizing variation in mercury emissions from coal-fired power plants: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1005401, [90] p.
- Electric Power Research Institute [EPRI], 2003, Potential for methylmercury formation in coal combustion by-product management settings: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1005506, 52 p.
- Electric Power Research Institute [EPRI], 2003, Characterizing coal-fired power plant mercury emissions variability at low concentrations: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1009150, 1 vol., variously paged.
- Electric Power Research Institute [EPRI], 2004, Health effects for boron and borates: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1005502, variously paged.
- Electric Power Research Institute [EPRI], 2004, Evaluation of stringent emission control options for pulverized coal plants: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1008262, [180] p.
- Electric Power Research Institute [EPRI], 2004, Mercury measurements characterizing the impact of SCR on mercury: Site S8—PRB/ bituminous coal-fired power plant with an ESP: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1009866, variously paged.
- Electric Power Research Institute [EPRI], 2004, Mercury measurements characterizing the impact of SCR on mercury: Site S2—bituminous coal-fired power plant with an ESP and FGD, including follow-on tests to evaluate catalyst aging: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1009868, variously paged.
- Electric Power Research Institute [EPRI], 2004, SO₃ mitigation guide update: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1004168, [194] p.
- Electric Power Research Institute [EPRI], 2004, Development and demonstration of mercury control by dry technologies: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1004262, [82] p.
- Electric Power Research Institute [EPRI], 2004, Evaluation of advanced coal technologies with CO₂ capture: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1004880, 80 p.
- Electric Power Research Institute [EPRI], 2004, Atmospheric mercury research update: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1005500, 216 p.
- Electric Power Research Institute [EPRI], 2004, Chemical attenuation coefficients for arsenic species using soil samples collected from selected power plant sites – laboratory studies: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1005505, 64 p.
- Electric Power Research Institute [EPRI], 2004, The formation and fate of trihalomethanes in power plant cooling water systems: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1009486, [60] p.
- Electric Power Research Institute [EPRI], 2004, Pre-combustion management of mercury emissions: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1009771, [58] p.
- Electric Power Research Institute [EPRI], 2004, Analysis of the 1999 SOS-Nashville-NOAA-P3 power plant plume data aimed at resolution of the NO_y loss issue: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1011114, [48] p.

- Electric Power Research Institute [EPRI], 2004, Impact of SCR on mercury speciation and removal: 2004 update: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1011371, variously paged.
- Electric Power Research Institute [EPRI], and Public Service Company of New Mexico, 2004, San Juan life assessment study phase 1: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1011200, [180] p.
- Electric Power Research Institute [EPRI], 2005, Development and demonstration of mercury control by dry technologies: 2005 update: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1004263, [66] p.
- Electric Power Research Institute [EPRI], 2005, Guidelines for controlling flow-accelerated corrosion in fossil and combined cycle plants: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1008082, [154] p.
- Electric Power Research Institute [EPRI], 2005, Mercury emissions during steam-curing of cellular concretes that contain fly ash and mercury-loaded powdered activated carbon: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1008308, [50] p.
- Electric Power Research Institute [EPRI], 2005, Boosted overfire air systems – field experience and numerical model evaluation: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1009647, [86] p.
- Electric Power Research Institute [EPRI], 2005, Utility boiler baghouse update: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1010367, [132] p.
- Electric Power Research Institute [EPRI], 2005, Operating experience, risk and market assessment of clean coal technologies: 2005: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1010455, [114] p.
- Electric Power Research Institute [EPRI], 2005, Plume-in-grid modeling in central California using CMAQ-APT (Comprehensive Multiscale Air Quality Model with advanced plume treatment): Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1011478, variously paged.
- Electric Power Research Institute [EPRI], 2005, Ergonomic interventions for fossil-fueled electric power plants: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1012957, [28] p.
- Electric Power Research Institute [EPRI], 2005, Mercury measurements characterizing the impact of SCR on mercury — Consol test site 5 – Eastern bituminous coal-fired power plant with an SCR, ESP, and wet FGD: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1012993, [50] p.
- Electric Power Research Institute [EPRI], 2006, Mercury TMDLs – significance to the power industry and guidance for individual power plants: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1010102, 300 p.
- Electric Power Research Institute [EPRI], 2006, Longer-term mercury emission characterization of power plants with selective catalytic reduction and flue gas desulfurization systems: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1010154, variously paged.
- Electric Power Research Institute [EPRI], 2006, Enhanced mercury removal by wet FGD systems: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1010343, [106] p.

- Electric Power Research Institute [EPRI], 2006, Impacts of multi-pollutant controls on particulate control devices: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1010365, variously paged.
- Electric Power Research Institute [EPRI], 2006, Soil stabilization with fly ash: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1010386, [50] p.
- Electric Power Research Institute [EPRI], 2006, Operating experience, risk, and market assessment of advanced coal technologies: 2006: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1012221, [122] p.
- Electric Power Research Institute [EPRI], 2006, Development of a method to identify respirable crystalline silica (quartz) in coal fly ash: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1012571, variously paged.
- Electric Power Research Institute [EPRI], 2006, Weathering processes and secondary minerals formed in coal ash: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1012582, 50 p.
- Electric Power Research Institute [EPRI], 2006, Chemical attenuation coefficients for selenium species using soil samples collected from selected power plant sites – laboratory studies: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1012585, 74 p.
- Electric Power Research Institute [EPRI], 2006, Mercury fate in IGCC power plants: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1012608, [32] p.
- Electric Power Research Institute [EPRI], 2006, Potential health effects of crystalline silica exposures from coal fly ash – a literature review: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1012821, [74] p.
- Electric Power Research Institute [EPRI], 2006, Mercury measurements characterizing the impact of SCR on mercury: Consol test site 3 – eastern bituminous coal-fired power plant with an SCR, ESP, and wet FGD; Evaluation of chloride addition: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1013246, [66] p.
- Electric Power Research Institute [EPRI], 2006, Productivity improvement for fossil steam power plants, 2006: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1014598, [414] p.
- Electric Power Research Institute [EPRI], 2007, CoalFleet guideline for advanced pulverized coal power plants: version 1: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1012237, [208] p.
- Electric Power Research Institute [EPRI], 2007, Treatment technology summary for critical pollutants of concern in power plant wastewaters: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1012549, 88 p.
- Electric Power Research Institute [EPRI], 2007, Mercury sorbent traps as a potential reference method: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1012610, variously paged.
- Electric Power Research Institute [EPRI], 2007, Field mercury control test update: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1012676, [132] p.
- Electric Power Research Institute [EPRI], 2007, Ammonia removal from fly ash: process review: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1012697, [42] p.

- Electric Power Research Institute [EPRI], 2007, Development of mercury oxidation catalyst for enhanced mercury capture by wet FGD: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1013356, [62] p.
- Electric Power Research Institute [EPRI], 2007, A review of literature related to the use of spray dryer absorber material – production, characterization, utilization applications, barriers, and recommendations: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1014915, [108] p.
- Electric Power Research Institute [EPRI], 2007, Optical monitoring of NO – alternate sensors for NO_x monitoring: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1014927, variously paged.
- Electric Power Research Institute [EPRI], 2007, Productivity improvement for fossil steam power plants, 2007: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1015445, variously paged.
- Electric Power Research Institute [EPRI], 2008, Multimedia mercury fate at coal-fired power plants equipped with SCR and wet FGD controls: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1014095, variously paged.
- Electric Power Research Institute [EPRI], 2008, Mercury control technology: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1014172, variously paged.
- Electric Power Research Institute [EPRI], 2008, Review of combustion modification emerging technologies: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 014912, variously paged.
- Electric Power Research Institute [EPRI], 2008, Impact of air emissions controls on coal combustion products: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1015544, [80] p.
- Electric Power Research Institute [EPRI], 2008, The leaching behavior of arsenic and selenium from coal fly ash: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1015545, variously paged.
- Electric Power Research Institute [EPRI], 2008, Multimedia fate of selenium and boron at coal-fired power plants equipped with particulate and wet FGD controls: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1015615, variously paged.
- Electric Power Research Institute [EPRI], 2008, Computer-controlled scanning electron microscopy (CCSEM) investigation of respirable quartz in air samples collected during power plant maintenance activities: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1015632, [52] p.
- Electric Power Research Institute [EPRI], 2008, Assessment of alternative post NO_x controls technologies: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1015755, variously paged.
- Electric Power Research Institute [EPRI], 2008, Particulate controls for near-zero emissions plants preliminary assessment: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1016472, variously paged.
- Electric Power Research Institute [EPRI], 2008, Program on technology innovation: nanoparticles at coal and gas fired power plants: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1016820, 172 p.
- Electric Power Research Institute [EPRI], 2009, An engineering and economic assessment of post-combustion CO₂ capture for 1100F ultra-supercritical pulverized coal power plant applications: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1015701, variously paged.

- Electric Power Research Institute [EPRI], 2009, Automation of fossil plant startup/shut-down: instrumentation and controls technology assessment: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1015710, variously paged.
- Electric Power Research Institute [EPRI], 2009, Field evaluation of in situ fourier transform infrared (FTIR) monitor measurements: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1015749, variously paged.
- Electric Power Research Institute [EPRI], 2009, Program on technology innovation: MercScreen Process for mercury control: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1016176, variously paged.
- Electric Power Research Institute [EPRI], 2009, Fossil plant instrumentation and control guidelines: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1017525, variously paged.
- Electric Power Research Institute [EPRI], 2009, Integrated operations and maintenance of fossil plant systems: system health Reporting: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1017528, [78] p.
- Electric Power Research Institute [EPRI], 2009, Updated hazardous air pollutants (HAPs) emissions estimates and inhalation human health risk assessment for U.S. coal-fired electric generating units: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1017980, variously paged.
- Electric Power Research Institute [EPRI], 2009, Evaluation of potential human health inhalation risks from mercury in building and construction materials containing coal combustion products: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1019016, [92] p.
- Electric Power Research Institute [EPRI], 2009, Coal ash: characteristics, management, and environmental issues: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1019022, variously paged.
- Electric Power Research Institute [EPRI], 2009, Human health risks from mercury in concrete and wallboard containing coal combustion products: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1019023, [4] p.
- Electric Power Research Institute [EPRI], 2009, Program on technology innovation – advanced concepts for new unit SCR systems: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1020387, variously paged.
- Electric Power Research Institute [EPRI], 2010, Productivity improvement for fossil steam power plants, 2009: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1020596, variously paged.
- Elevli, S., 2006, Coal quality control with control charts: *Coal Preparation*, v. 26, no. 4, p. 181–199.
- Elliott, T.C., and Editors of Power Magazine, 1989, Standard handbook of powerplant engineering (1st ed.): New York, N.Y., McGraw-Hill, variously paged.
- Ellis, M.S., and Affolter, R.H., eds., 2007, Fly Ash: From Cradle to Grave: U.S. Geological Survey Open-File Report 2007-1160, 80 p.
- Ellison, W., and Shapiro, E., 1979, By-product-utilization/ultimate-disposal of gas cleaning wastes from coal-fired power generation, *in* Faber, John H., Babcock, Allan W., Spencer, John D., and Whieldon, Charles E., eds., Proceedings, International Ash Utilization Symposium, February 25–27, 1979, Atlanta, Georgia, 5th Symposium: Morgantown, W. Va., U.S. Dept. of Energy, Morgantown Energy Research Center, p. 328–343.

- Ellsworth, K., 1975, Electrification – two new Texas coal lines are coming in under the wire: *Railway Age*, v. 176, no. 24, p. 22.
- El-Mogazi, D., Lisk, D.J., and Weinstein, L.H., 1988, A review of physical, chemical, and biological properties of fly ash and effects on agricultural ecosystems: *The Science of The Total Environment*, v. 74, p. 1–37.
- Elsewi, A.A., Page, A.L., and Straughan, I.R., 1984, Soil-coal-fired power plant effluent interactions – an evaluation, *in* Legge, A.H., and Krupa, S.E., eds., *Air Pollutants and their Effects on the Terrestrial Ecosystem*: New York, N.Y., Wiley, p. 415–440.
- Elshout, A.J., and Beilke, S., 1984, Die oxidation von NO zu NO₂ in abgasfahnen von kraftwerken: *VGB Kraftwerkstechnik*, p. 648–654.
- Elswick, E.R., Hower, J.C., Carmo, A.M., Sun, T., and Mardon, S.M., 2007, Sulfur and carbon isotope geochemistry of coal and derived coal-combustion by-products – an example from an eastern Kentucky mine and power plant: *Applied Geochemistry*, v. 22, p. 2065–2077.
- Eltgroth, M.W., 1978, A numerical model of particle interactions in the plumes from coal-fired power plants and comparisons with field measurements: Seattle, Wash., Atmospheric Sciences Department, University of Washington, Ph.D. thesis, 174 p.
- Eltgroth, M.W., and Hobbs, P.V., 1979, Evolution of particles in the plumes of coal-fired power plants—II. a numerical model and comparisons with field measurements: *Atmospheric Environment*, v. 13, no. 7, p. 953–975.
- Ely, F.G., and Barhart, D.H., 1963, Coal ash—its effect on boiler availability, *in* Lowry, H.H., ed., *Chemistry of Coal Utilization, Supplementary Volume*: New York, N.Y., Wiley, p. 820–891.
- Ely, S., and Uhl, M., 2002, Air quality and the Clean Air Act Amendments, *in* Brister, B.S., and Price, L.G., *Decision-Makers Field Conference 2002, New Mexico's Energy, Present and Future: Policy, Production, Economics, and the Environment*: Socorro, N. Mex., New Mexico Bureau of Geology and Mineral Resources, p. 81-84.
- Emmel, B.B., Eskinazi, D., Osborne, M.C., and Peralo, S., 1987, Proceedings of the symposium on stationary combustion nitrogen oxide control, March 23-26, 1978, New Orleans, Louisiana, 4th: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report CS-5361, 2 vol., variously paged.
- Emmel, Thomas E., 1990, Retrofit costs for lime/limestone FGD and lime spray drying at coal-fired utility boilers: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Air and Energy Engineering Research Laboratory, Report no. EPA/600/D-90/217 [1 microfiche].
- Emmel, Thomas E., 1990, Retrofit costs for SO₂ and NO_x control options at 200 coal-fired plants – v. 1 – introduction and methodology: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Air and Energy Engineering Research Laboratory, Report no. EPA/600/S7-90/021A, 98 p.
- Emmel, Thomas E., 1990, Retrofit costs for SO₂ and NO_x control options at 200 coal-fired plants – v. 2 – site specific studies for Alabama, Delaware, Fla., Georgia, Illinois: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Air and Energy Engineering Research Laboratory, Report no. EPA/600/S7-90/021B, 447 p.

- Emmel, Thomas E., 1990, Retrofit costs for SO₂ and NO_x control options at 200 coal-fired plants – v. 3 – site specific studies for Indiana, Kentucky, Massachusetts, Maryland, Michigan, Minnesota: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Air and Energy Engineering Research Laboratory, Report no. EPA/600/S7-90/021C, 425 p.
- Emmel, Thomas E., 1990, Retrofit costs for SO₂ and NO_x control options at 200 coal-fired plants – v. 4 – site specific studies for Missouri, Mississippi, North Carolina, New Hampshire: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Air and Energy Engineering Research Laboratory, Report no. EPA/600/S7-90/021D, 527 p.
- Emmel, Thomas E., 1990, Retrofit costs for SO₂ and NO_x control options at 200 coal-fired plants – v. 5 – site specific studies for Pennsylvania, South Carolina, Tennessee, Virginia: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Air and Energy Engineering Research Laboratory, Report no. EPA/600/S7-90/021E, 569 p.
- Emmel, Thomas E., 1991, Retrofit costs of SO₂ and NO_x control at 200 U.S. coal-fired plants: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Air and Energy Engineering Research Laboratory, Report no. EPA/600/D-91/169, 1 microfiche.
- Emmel, Thomas E., and Maibodi, Mehdi, 1991, Retrofit costs for SO₂ and NO_x control options at 200 coal-fired plants: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Air and Energy Engineering Research Laboratory, Report no. EPA/600/S7-90/021, 14 p.
- Emmel, Thomas E., Maibodi, Mehdi, and Kaplan, Norman, 1990, Retrofit costs of SO₂ and NO_x control at 200 U.S. coal-fired power plants: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Air and Energy Engineering Research Laboratory, Report no. U920838, 29 p.
- Emmel, Thomas E., and Maibodi, Mehdi, and Kaplan, Norman, 1991, Retrofit costs of SO₂ and NO_x control at 200 U.S. coal-fired plants: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Air and Energy Engineering Research Laboratory, Report no. PB91-133322, 14 p.
- Emmel, Thomas E., Piccot, S.D., and Laseke, B.A., 1989, Ohio/Kentucky/TVA coal-fired utility SO₂ and NO_x retrofit study – project summary: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Air and Energy Engineering Research Laboratory, Report no. EPA/600/S7-88/014, 18 p.
- Emmel, Thomas E., and Simko, A.P., 1989, Retrofit issues associated with acid rain controls on large coal-fired boilers: New York, N.Y., American Society of Mechanical Engineers [ASME], 8 p.
- Emmel, Thomas E., South, D.W., and National Acid Precipitation Assessment Program, 1990, Technologies and other measures for controlling emissions – performance, costs and applicability: National Acid Precipitation Assessment Program [NAPAP], Report 25, 1 vol., variously paged.
- Enders, M., Putnis, A., and Albrecht, J., 2000, Temperature-dependent fractionation of particulate matter and sulfates from a hot flue gas in pressurized pulverized coal combustion (PPCC): Energy and Fuels, v. 14, no. 4, p. 806–815.
- Energy and Environmental Research Center [EERC], University of North Dakota, 2006, Mercury in coal and transformations in combustion flue gases, mercury control short course, 18 p.

- Energy and Environmental Research Corporation, 2001, Evaluation of gas reburning and low NO_x burners on a wall-fired boiler; project performance summary, clean coal technology demonstration project, Report to U.S. Department of Energy [DOE], Report no. DOE/FE-0442, 12 p.
- Energy and Environmental Research Corporation, and Electric Power Research Institute [EPRI], 1986, Effects of coal quality on power plant performance and costs: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-4283, 4 vol.
- Engle, M.A., Kolker, A., Mose, D.E., East, J.A., and McCord, J.D., 2008, Summary of mercury and trace element results in precipitation from the Culpepper, Virginia, Mercury Deposition Network Site (VA-08), 2002-2006: U.S. Geological Survey Open-File Report 2008-1232, 28 p.
- Engle, M.A., Tate, M.T., Krabbenhoft, D.P., Kolker, A., Olson, M.L., Edgerton, E.S., DeWild, J.F., and McPherson, A.K., 2008, Characterization and cycling of atmospheric mercury along the central U.S. Gulf Coast: *Applied Geochemistry*, v. 23, p. 419–437.
- Ensor, D.S., 1979, Ceilcote ionizing wet scrubber evaluation: Meteorology Research, Inc. and U.S. Environmental Protection Agency [EPA], Industrial Environmental Research Laboratory, Report no. EPA-600/7-79-246, 1 vol., variously paged.
- Ensor, D.S., Cowen, S.J., Hooper, R., and Markowski, G., 1979, Evaluation of the George Neal No. 3 Electrostatic Precipitator – final Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. FP-1145, 1 vol., variously paged.
- Ensor, D.S., Jackson, B.S., Calvert, S., Lake, C., Wallon, D.A., Nilan, R.E., Campbell, K.S., Cahill, T.A., and Flocchini, R.G., 1975, Evaluation of a particulate scrubber on a coal-fired utility boiler: U.S. Environmental Protection Agency [EPA], Report no. EPA-600/2-75-074, 1 vol., variously paged.
- Ensor, D.S., Markowski, G., Woffinden, G., Legg, R., Cowen, S., Murphy, M., Shendrikar, A.D., Pearson, R., and Scheck, R., 1983, Evaluation of electrostatic precipitator performance at San Juan Unit Number 1: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-3252, 188 p.
- Entropy Environmentalists, Inc., 1993, Fourier transform infrared (FTIR) method validation at a coal-fired boiler: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Document no. 454 R 95004, 175 p.
- Eom, Y., Jeon, S.H., Ngo, T.A., Kim, J., and Lee, T.G., 2008, Heterogeneous mercury reaction on a selective catalytic reduction (SCR) catalyst: *Catalysis Letters*, v. 121, no. 3-4, p. 219–225.
- Erdem, H.H., Akkaya, A.V., Cetin, B., Dagdas, A., Sevilgen, S.H., Sahin, B., Teke, I., Gungor, C., and Atas, S., 2009, Comparative energetic and exergetic performance analyses for coal-fired thermal power plants in Turkey: *International Journal of Thermal Sciences*, v. 48, no. 11, p. 2179–2186.
- Erdem, H., Akkaya, A.V., Dagdas, A., Sevilgen, S.H., Sahin, B., Tek, I., Gungor, C., and Atas, S., 2009, Comparative energetic and exergetic performance analysis for coal-fired thermal power plants in Turkey: *International Journal of Thermal Sciences*, v. 48, no. 11, p. 2179–2186.
- Erdem, H.H., Dagdas, A., Sevilgen, S.H., Cetin, B., Akkaya, A.V., Sahin, B., Teke, I., Gungor, C., and Atas, S., 2010, Thermodynamic analysis of an existing coal-fired power plant for district heating/cooling application: *Applied Thermal Engineering*, v. 30, no. 2-3, p. 181–187.

- Ergun, S., 1981, Sulphur removal potential of American coals as a determinant of sulphur dioxide emissions from coal-fired power plants: *Philosophical Transactions Royal Society of London*, v. A 300, p. 89–98.
- Erickson, T.A., ed., 2002, Mercury, trace elements, and particulate matter, *Proceedings of the International Air Quality Conference*, September 9–12, 2002, Arlington, Virginia, 3rd Conference: Grand Forks, N. Dak., University of North Dakota, Energy and Environmental Research Center, 1 CD-ROM, variously paged.
- Erickson, T.A., Allan, S.E., McCollor, D.P., Hurley, J.P., Srinivasachar, S., Kang, S.G., Baker, J.E., Morgan, M.E., Johnson, S.A., and Borio, R., 1995, Modelling of fouling and slagging in coal-fired utility boilers: *Fuel Processing Technology*, v. 44, no. 1-3, p. 155–171.
- Erol, M., Küçükbayrak, S., and Ersoy-Meriçboyu, A., 2007, Characterization of coal fly ash for possible utilization in glass production: *Fuel*, v. 86, p. 706–714.
- Ersoy, B., Kavas, T., Evcin, A., Başpınar, S., Sarıışık, A., and Önce, G., 2008, The effect of BaCO_3 addition on the sintering behavior of lignite coal fly ash: *Fuel*, v. 87, p. 2563–2571.
- Ertesvåg, I.S., Kvamsdal, H.M., and Bolland, O., 2005, Exergy analysis of a gas-turbine combined-cycle power plant with precombustion CO_2 capture: *Energy*, v. 30, no. 1, p. 5–39.
- Eschenroeder, A.Q., and Martinez, J.R., 1972, Concepts and applications of photochemical smog models, *in* American Chemical Society, Photo-chemical smog and ozone reactions, *Advances in Chemistry Series*, No. 113: Washington, D.C., American Chemical Society, p. 101–168.
- Escobar, I., Oleschko, H., Wolf, K.-J., and Müller, M., 2008, Alkali removal from hot flue gas by solid sorbents in pressurized pulverized coal combustion: *Powder Technology*, v. 180, no. 1-2, p. 51–56.
- Eskin, N., Gungor, A., and Özdemir, K., 2009, Effects of operational parameters on the thermodynamic performance of FBCC steam power plant: *Fuel*, v. 88, no. 1, p. 54–66.
- Esling, S., 1996, Instruments for monitoring the vadose zone of sites reclaimed with coal combustion by-products, *in* Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., *Coal Combustion By-Products Associated with Coal Mining—Interactive Forum*, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 183–197.
- Essenhig, R.H., and Bailey, E.G., 1993, Book review; Coal quality and combustion performance – an international perspective, *in* Unsworth, J.F., Barratt, D.J., and Roberts, P.T., eds., *Combustion and Flame*, v. 95, no. 1-2, p. 244–246.
- Etough, D.J., Bennett, J.R., Lytle, N., Brutsch, M., Luke, T.T., Houtrouw, S., Mangelson, N.F., Hill, M.W., Lewis, E.A., Hansen, L.D., Eatough, N.L., and Farber, R.J., 1987, Identification of the presence of coal-fired power plant emissions using spherical particles and total fluoride as tracers, *in* Bhardwaja, P.S., ed., *Transactions, Visibility Protection: Research and Policy Aspects*: Pittsburgh, Pa., Air Pollution Control Association, p. 720–735.
- Evangelou, V.P., 1996, Coal ash chemical properties and potential influence on water quality, *in* Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., *Coal Combustion By-Products Associated with Coal Mining—Interactive Forum*, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 119–124.

- Evans, D.W., Wiener, J.G., and Horton, J.H., 1980, Trace element inputs from a coal burning power plant to adjacent terrestrial and aquatic environments: *Journal of the Air Pollution Control Association*, v. 30, p. 567–573.
- Evans, H.E., and Kyte, W.S., 1993, The impact of recent legislation on the U.K. Generation Industry, in Chow, W., and others, eds., *Managing Hazardous Air Pollutants: State of the Art*: Electric Power Research Institute [EPRI] Report no. TR-101890, Boca Raton, Fla., Lewis Publishers, p. 44–57.
- Evans, J.C., Abel, K.H., Olsen, K.B., Lepel, E.A., Sanders, R.W., Wilkerson, C.L., Hayes, D.J., and Mangelson, N.F., 1985, Characterization of trace constituents at Canadian coal-fired power plants: Batelle Pacific Northwest Laboratories, Richland, Washington, contract no. 001G194 Report for Canadian Electrical Association [CEA], Montreal, Canada, 3 vol.
- Evans, L., 2002, Regulation of coal combustion wastes at mine sites – environmental concerns, in *Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 21.
- Evans, L., 2002, The disposal of power plant waste in mines – public health, environmental, and regulatory concerns, in *Vories, K.C. and Throgmorton, Dianne, eds., Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 277–290.
- Evans, R.D., 1986, Sources of mercury contamination in the sediments of small headwater lakes in south-central Ontario, Canada: *Archives of Environmental Contamination and Toxicology*, v. 15, p. 502–512.
- Executive Office of the President, Office of Science and Technology, Energy Policy Staff, 1970, *Electric power and the environment*: Washington, D.C., 70 p.
- Fackrell, R.J., Tabberer, J.E., and Young, J.B., 1994, The impact of ash deposition on coal fired plants, in *Williamson, J., and Wigley, F., eds., The Impact of Ash Deposition on Coal Fired Plants; Proceedings of the Engineering Foundation Conference*, June 20–25, 1993, Solihull, United Kingdom: Washington, D.C., Taylor and Francis, p. 123–134.
- Fælleskemikerne, ELSAM, Denmark, 1996, *Proceedings of the International Conference on Power Plant Chemical Technology*: Kolding, Denmark, September 4–6, 1996, p. 1.1–17.22.
- Fahlke, J., and Bursik, A., 1995, Impact of the state-of-the-art of flue gas cleaning on mercury species emissions from coal-fired steam generators: *Water, Air, and Soil Pollution*, v. 80, no. 1–4, p. 209–215.
- Falcone Miller, S., and Miller, B.G., 2004, The effect of cofiring coal and biomass on utilization of coal combustion products: The U.S. Perspective, in *International Conference on Ashes from Power Generation*, 11th Conference: Zakopane, Poland.
- Fan, G.Q., and Rees, N.W., 1997, An intelligent expert system (KBOSS) for power plant coal mill supervision and control: *Control Engineering Practice*, v. 5, no. 1, p. 101–108.
- Fan, M., and Brown, R., 2001, Comparison of the loss-on-ignition and thermogravimetric analysis techniques in measuring unburned carbon in fly ash: *Energy and Fuels*, v. 15, p. 1414–1417.

- Fang, F., Wang, Q., Liu, R., Ma, Z., and Hao, Q., 2001, Atmospheric particulate mercury in Changchun City, China: *Atmospheric Environment*, v. 35, p. 4265–4272.
- Fang, Y., Zhang, J., and Wang, Y., 1996, The study on gasification reactivity of fly ash from fluidized bed gasifier, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pa., 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1437–1442.
- Farber, P.S., 1984, Dry scrubbing for high-sulfur-coal utilization: U.S. Department of Energy Report DE84 014612, 10 p.
- Fardy, J.A., McOrist, G.D., and Farrar, Y.J., 1984, The analysis of coals and fly ash for trace elements and natural radioactivity, *in* Proceedings, Australian Coal Science Conference, December 3–5, 1984, Churchill, Victoria: Churchill, Vict., Australia, Gippsland Institute of Advanced Education, p. 159–166.
- Fardy, J.A., McOrist, G.D., and Farrar, Y.J., 1989, Neutron activation analysis and radioactivity measurements of Australian coals and fly ashes: *Journal of Radioanalytical and Nuclear Chemistry*, v. 133, no. 2, p. 217–226.
- Farthing, G.A., 2004, Mercury control technology: State-of-the-art and future directions, *in* Tutorial on Mercury Evolution and Control, International Technical Conference on Coal Utilization and Fuel Systems, April 18–22, 2004, Clearwater, Florida, 29th Conference: Gaithersburg, Md., Coal Technology Association, 2nd section, 16 p.
- Fathi, Z., Korbicz, J., Ramirez, W.F., and Gilliland, G., 1993, An integrated diagnostic system using analytical redundancy and artificial intelligence for coal-fired power plants: *Control Engineering Practice*, v. 1, no. 3, p. 193–198.
- Federal Power Commission, 1975, Steam-electric plant air and water control data for the year ending December 31, 1972, based on FPC form no. 67, summary report. Washington, D.C., Federal Power Commission Report FPC-S-246, 169 p.
- Feeley, T.J., III, Brickett, L.A., O’Palko, B.A., and Murphy, J.T., 2005, Field testing of mercury control technologies for coal-fired power plants: U.S. Department of Energy [DOE], National Energy Technology Laboratory [NETL], and Science Applications International Corporation [SAIC], 21 p.
- Feeley, T.J., Murphey, J., Brickett, L.A., and Alijoe, W.W., 2004, A review of DOE/NETL’s coal utilization by-products environmental characterization research: U.S. Department of Energy, National Energy Technology Laboratory [NETL], 29 p.
- Feeley, T.J., O’Palko, B.A., and Jones, A.P., 2008, Developing mercury control technology for coal-fired power plants – from concept to commercial reality: *Main Group Chemistry*, v. 7, no. 3, p. 169–179.
- Fei, Y., Aziz, A.A., Nasir, S., Jackson, W.R., Marshall, M., Hulston, J., and Chaffee, A.L., 2009, The spontaneous combustion behavior of some low rank coals and a range of dried products: *Fuel*, v. 88, no. 9, p. 1650–1655.
- Feibus, H., 1999, The role of distributed generation (DG) in a restructured utility environment, *in* Sakkestad, B.A., ed., *Proceedings of the International Technical Conference on Coal Utilization Systems*, March 8–11, 1999, Clearwater, Fla., 24th Conference: Washington, D.C., Coal & Slurry Technology Association, p. 39–44.
- Felsvang, K., Gleiser, R., Juip, G., and Nielsen, K.K., 1994, Activated carbon injection in spray dryer/ESP/FF for mercury and toxics control: *Fuel Processing Technology*, v. 39, no. 1-3, p. 417.

- Feng, K.K., 1985, Spontaneous combustion of Canadian coals: Canadian Institute of Mining, Metallurgy, and Petroleum Bulletin, v. 78, p. 71–75.
- Feng, X., Sommar, J., Lindqvist, O., and Hong, Y., 2002, Occurrence, emissions, and deposition of mercury during coal combustion in the Province Guizhou, China: Water, Air, and Soil Pollution, v. 139, p. 311–324.
- Ferek, R., 1978, Sulfur conversion in a power plant plume determined by aerosol composition relationship: Tallahassee, Fla., Florida State University, Master of Science thesis, 61 p.
- Feretic, D., and Tomsic, Z., 2005, Probabilistic analysis of electrical energy costs comparing: production costs for gas, coal, and nuclear power plants: Energy Policy, v. 33, no. 1, p. 5–13.
- Fernández-Martínez, G., López-Mahía, P., Muniategui-Lorenzo, S., Prada-Rodríguez, D., and Fernández-Fernández, E., 2001, Distribution of volatile organic compounds during the combustion process in coal-fired power stations: Atmospheric Environment, v. 35, no. 33, p. 5823–5831.
- Fernández-Martínez, G., López-Mahía, P., Muniategui-Lorenzo, S., Vazquez-Blanco, E., Prada-Rodríguez, D., and Fernández-Fernández, E., 1999, Development of a method for determination of volatile organic compounds (C6–C9) by thermal desorption-gas chromatography – application to urban and rural atmospheres: Analytical Letters, v. 32, no. 14, p. 2851–2870.
- Fernández-Martínez, G., López-Vilariño, J.M., López-Mahía, P., Muniategui-Lorenzo, S., Prada-Rodríguez, D., Abad, E., and Rivera, J., 2004, First assessment of dioxin emissions from coal-fired power stations in Spain: Chemosphere, v. 57, p. 67–71.
- Fernández-Pereira, C., Galiano, Y.L., Rodríguez-Piñero, M.A., Vale, J., and Querol, X., 2002, Utilisation of zeolitised coal fly ash as immobilising agent of a metallurgical waste: Journal of Chemical Technology and Biotechnology, v. 77, no. 3, p. 305–310.
- Fernández-Turiel, J.-L., de Carvalho, W., Cabañas, M., Querol, X., and López-Soler, A., 1994, Mobility of heavy metals from coal fly ash: Environmental Geology, v. 23, p. 264–270.
- Fernandez-Turiel, J.-L., Georgakopoulos, A., Gimeno, D., Papastergios, G., and Kolovos, N., 2004, Ash deposition in a pulverised coal-fired power plant after high-calcium lignite combustion: Energy and Fuels, v. 18, p. 1512–1518.
- Fernando, R., 2002, Experience of indirect cofiring of biomass and coal: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report CCC/64, 40 p.
- Fernando, R., 2006, Public attitudes to new coal-fired plant: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACCC/117, 44 p.
- Feron, P.H.M., 2009, The potential for improvement of the energy performance of pulverized coal fired power stations with post-combustion capture of carbon dioxide: Energy Procedia, v. 1, no. 1, p. 1067–1074.
- Feron, P.H.M., 2010, Exploring the potential for improvement of the energy performance of coal fired power plants with post-combustion capture of carbon dioxide: International Journal of Greenhouse Gas Control, v. 4, no. 2, p. 152–160.
- Fibinger, V., Janalik, R., and Ceck, B., 1996, Diagnostic measurement of a combustion chamber to achieve environmental and output parameters of pulverized hard coal boilers, in Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 370.

- Figdor, E., 2004, Reel danger – power plant mercury pollution and the fish we eat: U.S. Public Interest Research Group (U.S. PIRG) Education Fund, last accessed 14 April 2010 at http://www.rapca.org/publications/Documents/reel_danger_Report.pdf, 58 p.
- Filipovits, R., 1982, Proceedings of the annual engineering conference on reliability for the electric power industry. June 16–18, 1982, Hershey Lodge, Hershey, Pennsylvania, 9th Conference: Milwaukee, Wis., American Society for Quality Control, 388 p.
- Filipovits, R., 1982, Supplement to the proceedings of the annual engineering conference on reliability for the electric power industry, June 16–18, 1982, Hershey Lodge, Hershey, Pennsylvania, 9th Conference: Milwaukee, Wis., American Society for Quality Control, 54 p.
- Finkelman, A.C., Wong, C.-J.J., Chen, A.C., and Finkelman, R.B., 1991, Bibliography of publications containing major, minor, and trace element data from the National Coal Resources Data System: U.S. Geological Survey Open-File Report 91-123, 19 p.
- Finkelman, R., Breit, G., Eble, C.F., Affolter, R.H., Belkin, H., Brownfield, M.E., Cathcart, J.D., Crowley, S., Hower, J.C., Leventhal, J., McGee, J., Palmer, C., Reynolds, R., Rice, C.A., and Zielinski, R., 1996, Systematic investigation of the compositional variations in solid waste products from coal combustion [abs.]: American Association of Petroleum Geologists Bulletin, v. 80, no. 9, p. 1523.
- Finkelman, R.B., 1981, Modes of occurrence of trace elements in coal: U.S. Geological Survey Open-File Report 81-99, 314 p.
- Finkelman, R.B., 1981, The origin, occurrence, and distribution of the inorganic constituents in low-rank coals, *in* Schobert, Harold H., ed., Proceedings of the Basic Coal Science Workshop, December 8-9, 1981, Houston, Texas: Energy Resources, Cambridge, Mass., p. 69–90.
- Finkelman, R.B., 1982, Modes of occurrence of trace elements and minerals in coal: an analytical approach, *in* Filby, R.H., Carpenter, B.S., and Ragaini, R.C., eds., Atomic and Nuclear Methods in Fossil Energy Research: New York, N.Y., Plenum, p. 141–149.
- Finkelman, R.B., 1993, Trace and minor elements in coal, chapter 28, *in* Engel, M.H., and Macko, S.A., eds., Organic Geochemistry: Principles and Applications: New York, N.Y., Plenum, p. 593–607.
- Finkelman, R.B., 1994, Modes of occurrence of potentially hazardous elements in coal – levels of confidence: Fuel Processing Technology, v. 39, p. 21–34.
- Finkelman, R.B., 1995, Coal quality—a Clean Air Act perspective, *in* Carter, L., ed., Energy and the Environment—Application of Geosciences to Decision-Making, Program and Short Papers: U.S. Geological Survey Circular 1108, p. 14–15.
- Finkelman, R.B., 1997, Coal-quality information: key to the efficient and environmentally sound use of coal: U.S. Geological Survey Fact Sheet FS-97-171, [2] p.
- Finkelman, R.B., 2000, Health impacts of coal combustion: U.S. Geological Survey Fact Sheet 094-00, last accessed March 25, 2010 at <http://pubs.usgs.gov/fs/fs94-00/>, 2 p.
- Finkelman, R.B., 2003, Mercury in coal and mercury emissions from coal combustion, *in* Gray, J.E., ed., Geological Studies of Mercury by the U.S. Geological Survey: U.S. Geological Survey Circular 1248, p. 9–11.
- Finkelman, R.B., 2007, Health impacts of coal: facts and fallacies: Ambio, v. 36, no. 1, p. 103–106.

- Finkelman, R.B., Belkin, H.E., and Centeno, J.A., 2006, Health impacts of coal: should we be concerned?: *Geotimes*, Sept. 2006, p. 30–34.
- Finkelman, R.B., Belkin, H.E., and Zheng, B., 1999, Health impact of domestic coal use in China: *Proceedings of the National Academy of Sciences of the United States of America*, v. 96, p. 3427–3431.
- Finkelman, R.B., and Breit, G.N., 1998, Introduction, *in* Breit, G.N., and Finkelman, R.B., eds., *Characterization of coal and coal combustion products from a coal burning power plant—preliminary report and results of analyses*: U.S. Geological Survey Open-File Report 98-342, p. 8–9.
- Finkelman, R.B., and Gluskoter, H.J., undated, *Characterization of minerals in coal: problems and promises*: Exxon Production Research Company, 34 p.
- Finkelman, R.B., and Gross, P.M.K., 1999, The types of data needed for assessing the environmental and human health impacts of coal: *International Journal of Coal Geology*, v. 40, no. 2-3, p. 91–101.
- Finkelman, R.B., and Krasnow, M.R., 1991, Combustion and leaching behavior of elements in the USGS coal standard CLB-1: U.S. Geological Survey Open-File Report 91-616, 24 p.
- Finkleman, R.B., Palmer, C.A., Krasnow, M.R., Aruscavage, P.J., Sellers, G.A., and Dulong, F.T., 1990, Combustion and leaching behavior of elements in the Argon Premium Coal Samples: *Energy and Fuels*, v. 4, no. 6, p. 766–767.
- Firth, B., and Hart, G., 2008, Size classification in scroll centrifuges: *International Journal of Coal Preparation and Utilization*, v. 28, no. 3, p. 153–173.
- Firth, B., and Hart, G., 2008, Some aspects of modeling partition curves for size classification: *International Journal of Coal Preparation and Utilization*, v. 28, no. 3, p. 174–187.
- Fishbein, L., 1981, Sources, transport and alterations of metal compounds – an overview. 1. arsenic, beryllium, cadmium, chromium, and nickel: *Environmental Health Perspectives*, v. 40, p. 43–64.
- Fisher, G.L., 1980, Emission control from stationary power sources (potential health significance of coal fly ash): *American Institute of Chemical Engineers, Symposium Series*, v. 76, no. 201, p. 172–176.
- Fisher, G.L., 1983, Biomedically relevant chemical and physical properties of coal combustion products: *Environmental Health Perspectives*, v. 47, p. 189–199.
- Fisher, G.L., Chang, D.P.Y., and Brummer, M., 1976, Fly ash collected from electrostatic precipitators – microcrystalline structures and the mystery of the spheres: *Science*, v. 192, no. 4239, p. 553–555.
- Fisher, G.L., Chrisp, C.E., and Raabe, O.G., 1979, Physical factors affecting the mutagenicity of fly ash from a coal-fired power plant: *Science, New Series*, v. 204, no. 4395, p. 879–881.
- Fisher, G.L., and Natusch, D.F.S., 1979, Size-dependence of the physical and chemical properties of coal fly ash, Chap. 54, *in* Karr, I.E., ed., *Analytical Methods of Coal and Coal Products*, v. III: New York, N.Y., Academic Press, p. 489–541.
- Fisher, G.L., Prentice, B.A., Haynes, T.L., and Lai, C.E., 1980, Comparative analysis of coal fly ash by light and electron microscopy: *American Institute of Chemical Engineering*, v. 201, p. 149–153.

- Fisher, G.L., Prentice, B.A., Silberman, D., Ondov, J.M., Biermann, A.H., Ragaini, R.C., and McFarland, A.R., 1978, Physical and morphological studies of size-classified coal fly ash: *Environmental Science and Technology*, v. 12, p. 447–451.
- Fisher, G.L., Prentice, B.A., Silberman, D., Ondov, J.M., Ragaini, R.C., Bierman, A.H., McFarland, A.R., and Pawley, J.B., 1977, Size-dependence of the physical and chemical properties of coal fly ash: American Chemical Society, Fuel Chemistry Division, Preprints, v. 22, no. 4, p. 149–155, last accessed Jun 2010 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/22_4_MONTREAL_05-77_0149.pdf.
- Fisher, G.L., Silberman, D., Prentice, B.A., Heft, R.E., and Ondov, J.M., 1979, Filtration studies with neutron-activated coal fly ash: *Environmental Science and Technology*, v. 13, no. 6, p. 689–693.
- Fisher, G.L., and Wilson, F.D., 1980, The effects of coal fly ash and silica inhalation on macrophage function and progenitors: *Journal of the Reticuloendothelial Society*, v. 27, p. 513–524.
- Fisher, W.H., 1984, Comparison of atmospheric environmental intrusions of various power plants: American Chemical Society, Fuel Chemistry Division, Preprints, v. 29, no. 6, p. p. 130–149, last accessed February 2010 at, http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/29_6_PHILADELPHIA_08-84_0130.pdf.
- Fishman, N.S., Rice, C., Breit, G.N., and Johnson, R.D., 1999, Sulfur-bearing coatings on fly ash from a coal-fired power plant – composition, origin, and influence on ash alteration: *Fuel*, v. 78, p. 187–196.
- Fitzgerald, T., 1996, Public concerns regarding the management of coal combustion wastes, in Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., *Coal Combustion By-Products Associated with Coal Mining—Interactive Forum*, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 153–158.
- Fitzgerald, W.F., Engstrom, D.R., Mason, R.P., and Nater, E.A., 1997, The case for atmospheric mercury contamination in remote areas: *Environmental Science and Technology*, v. 32, no. 1, p. 1–7.
- Flagan, R.C., and Friedlander, S.K., 1978, Particle formation in pulverized coal combustion – a review, in Shaw, D.T., ed., *Recent Developments in Aerosol Research*: New York, N.Y., Wiley, p. 25–29.
- Flanders, P.J., 1999, Identifying fly ash at a distance from fossil fuel power stations: *Environmental Science and Technology*, v. 33, no. 4, p. 528–532.
- Fleming, A., and Foster, D., 2001, *Ageing of coal-fired power plants*: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report CCC/45, 80 p.
- Flores, R.M., 1980, Comparison of depositional models of Tertiary and Upper Cretaceous coal-bearing rocks in some western interior basins of the United States, in Carter, Lorna M., *Proceedings of the Symposium on the Geology of Rocky Mountain Coal*, April 28–29, 1980, Golden, Colorado, 4th Symposium: Denver, Colo., Colorado Geological Survey Resource Series no. 10, p. 17–20.
- Flues, M., Hama, P., Lemes, M.J.L., Dantas, E.S.K., and Fornaro, A., 2002, Evaluation of the rainwater acidity of a rural region due to a coal-fired power plant in Brazil: *Atmospheric Environment*, v. 36, no. 14, p. 2397–2404.
- Flues, M., Moraes, V., and Mazzilli, B.P., 2002, The influence of a coal-fired power plant operation on radionuclide concentrations in soil: *Journal of Environmental Radioactivity*, v. 63, p. 285–294.

- Folsom, B.A., Heap, M.P., Pohl, J.H., Smith, J.L., and Corio, M.R., 1986, Effects of coal quality on power plant performance and costs: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-4283, 3 vol.
- Foner, H.A., Robl, T.L., Hower, J.C., and Graham, U.M., 1997, Preliminary experiments on the characteristics and potential uses of coal fly ash from Israel: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 42, no. 1, p. 341-344, last accessed May 2010 at, http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/42_1_SAN%20FRANCISCO_04-97_0341.pdf.
- Foner, H.A., Robl, T.L., Hower, J.C., and Graham, U.M., 1998, Characterization of fly ash from Israel with reference to its possible utilization: *Fuel*, v. 78, no. 2, p. 215–223.
- Font, J., Casas, M., Forteza, R., Cerda, V., and Garcias, F., 1993, Natural radioactive elements and heavy metals in coal, fly ash, and bottom ash from a thermal power plant: *Journal of Environmental Science and Health, Part A: Toxic/Hazardous Substances and Environmental Engineering Science*, v. A28, no. 9, p. 2061–2073.
- Font, O., Izquierdo, M., Ochoa-Gonzalez, R., Leiva, C., López-Antón, M.A., Querol, X., Díaz-Somoano, M., Martínez-Tarazona, M.R., Fernandez, C., Rico, S., Tomás, A., Gómez, P., Giménez, A., and Alvarez, E., 2009, Fate of air pollutants in PCC-FGD power plants, *in* University of Kentucky, Center for Applied Energy Research [CAER], eds., World of Coal Ash Conference [WOCA], Proceedings, Science, applications and sustainability, May 4–7, 2009, 3rd Conference: Lexington, Ky., University of Kentucky, Center for Applied Energy Research [CAER], [12] p.
- Font, O., Moreno, N., Diez, S., Querol, X., López-Soler, A., Coca, P., and Peña, F.G., 2005, Differential behavior of combustion and gasification fly ash from Puertollano Power Plants (Spain) for zeolite synthesis and silica extraction, *in* University of Kentucky, Center for Applied Energy Research [CAER], eds., Proceedings, World of Coal Ash Conference [WOCA], April 11–15, 2005, Lexington, Kentucky: Lexington, University of Kentucky Center for Applied Energy Research [CAER], [14] p., last accessed March 2010 at <http://www.flyash.info/2005/152fon.pdf>.
- Font, O., Querol, X., Plana, F., Coca, P., Burgos, S., García Peña, F., 2006. Condensing species from flue gas in Puertollano gasification power plant (Spain): *Fuel*, v. 85, p. 2229–2242.
- Font, O., Querol, X., Plana, F., López-Soler, A., Chimenos, J.M., Peña, F.G., and Alliman, C., 2001, Occurrence and distribution of valuable metals in fly ash from Puertollano IGCC Power Plant, Spain, *in* Robl, T., 2001, ed., International Ash Utilization Symposium, October 22–24, 2001, Lexington, Kentucky, 4th Symposium: Lexington, University of Kentucky Center for Applied Energy Research [CAER], Paper no. 98, [8] p., last accessed August 2011 at <http://www.flyash.info/2001/chemin1/98font.pdf>.
- Forney, L.J., and Giz, Z.G., 1980, Slow chemical reactions in power plant plumes – application to sulphates: *Atmospheric Environment*, v. 14, p. 533–541.
- Forney, L.J., and Giz, Z.G., 1981, Fast reversible reactions in power plant plumes – application to the nitrogen dioxide photolytic cycle: *Atmospheric Environment*, v. 15, p. 345–352.
- Forrest, J., Garber, R.W., and Newman, L., 1981, Conversion rates in power plant plumes based on filter pack data – the coal-fired Cumberland Plume: *Atmospheric Environment*, v. 15, no. 10/11, p. 2273–2282.
- Forrest, J., Klein, J.H., and Newman, L., 1973, Sulfur isotope ratios of some power plant flue gases – a method for collecting sulfur oxide: *Journal of Applied Chemistry and Biotechnology*, v. 23, p. 855–863.

- Forrest, J., and Newman, L., 1977, Further studies on the oxidation of sulfur dioxide in coal-fired power plant plumes: *Atmospheric Environment*, v. 11, no. 5, p. 465–474.
- Forrest, J., and Newman, L., 1977, Silver-110 microgram sulfate analysis for the short time resolution of ambient levels of sulfur aerosol: *Analytical Chemistry*, v. 49, no. 11, p. 1579–1584.
- Forsha, M.D., and Nichols, K.E., 1997, Power plants for rural electrification: *Renewable Energy*, v. 10, no. 2-3, p. 409–416.
- Foster, P.M., 1969, The oxidation of sulphur dioxide in power station plumes: *Atmospheric Environment*, v. 3, no. 2, p. 157–175.
- Foulk, M.O., and Colley, R., 1988, EPRI seminar on data acquisition, control, and communications in power plants, San Diego, California, February 23–25, 1988: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report NP-6078-SR, 1 vol., variously paged.
- Four Corners Air Quality Task Force, and Colorado Air Pollution Control Division, 2007, Report of mitigation options: 546 p., last accessed June 2009 at http://www.nmenv.state.nm.us/aqb/4C/DocsPreface_4CAQTF_Draft_Report_vers_6_042507.doc.
- Fransden, F., Dam-Johansen, K., and Rasmussen, P.R., 1994, Trace elements from combustion and gasification of coal – an equilibrium approach: *Progress in Energy and Combustion Science*, v. 20, p. 115–138.
- Freeman, A.M., III, 1996, Estimating the environmental costs of electricity: an overview and review of the issues: *Resource and Energy Economics*, v. 18, no. 4, p. 347–362.
- Freiberg, J., 1976, The application of an isotopic ratio technique to a study of the atmospheric oxidation of sulfur dioxide in the plumes from an oil-fired and a coal-fired power plant – I and II: *Atmospheric Environment*, v. 10, no. 8, p. 672.
- Freidina, E.V., 1997, Selecting a coal energy valuation index: *Journal of Mining Science*, v. 36, no. 6, p. 563–571.
- Freitas, M.C., and Pacheco, A.M.G., 2007, Elemental concentrations of aerosols near Portuguese power plants by INAA and PIXE: *Journal of Radioanalytical and Nuclear Chemistry*, v. 271, no. 1, p. 185–189.
- Frey, H.C., and Carnegie Mellon University Center for Energy and Environmental Studies, 1993, Development of the integrated environmental control model – performance models of selective catalytic reduction NO_x control systems, Quarterly Progress Report, no. DE-AC22-92PC91346-3, to U.S. Department of Energy [DOE], Pittsburgh Energy Technology Center, 59 p., last accessed June 2010 at, http://www.osti.gov/bridge/product.biblio.jsp?query_id=2&page=0&osti_id=10103453.
- Frey, H.C., 1995, Engineering-economic evaluation of SCR NO_x control systems for coal-fired power plants: *Proceedings of the American Power Conference*, v. 57, p. 1583–1588.
- Friedlander, G.D., 1985, How much do US power plants cost?: *Electrical World*, v. 199, no. 3, p. 87–88.
- Friends of the Earth International, 2008, Germany: campaigning against coal-fired power stations: *Chain Reaction*, no. 103, p. 6.
- Frigge, J., 1988, Lysimeter tests to evaluate the disposal behavior of power plant residues: *VGB Kraftwerkstechnik*, v. 68, p. 143–150.

- Froelich, P.N., and Lesley, M.P., 2001, Tracing germanium contamination from coal-fired power plants down the Chattahoochee-Apalachicola System: implications for the toxic metalloids arsenic and selenium, *in* Hatcher, Kathryn J., ed., Proceedings of the 2001 Georgia Water Resources Conference, March 26-27, 2001, Athens, Georgia: Athens, Ga., University of Georgia Institute of Ecology, p. 488–491.
- Froese, R.E., Shonnard, D.R., Miller, C.A., Koers, K.P., Johnson, D.M., 2010, An evaluation of greenhouse gas mitigation options for coal-fired power plants in the US Great Lakes States: Biomass and Bioenergy, v. 34, no. 3, p. 251–262.
- Frolov, V., Pukhov, A., Tseitlin, M., Andreev, A., Frolova, I., Gur'ianov, A., Lyakishev, N., Tsvetkov, Yu., Nozdrenko, G., Ovchinnikov, Yu., Korkishko, G., Glukhov, M., Zhukov, M., Zhuravel, N., and Zasytkin, I., 1993, Metallurgical application of hydrogen-containing gases produced by the plasma coal gasification process at an environmentally clean thermal power station: International Journal of Hydrogen Energy, v. 18, no. 8, p. 665–672.
- Fruchter, J.S., 1988, Leachate chemistry at the Montour fly ash test cell: Electric Power Research Institute [EPRI], Palo Alto, Calif., Report EA-5922, 84 p.
- Fruchter, J.S., Rai, D., and Zachara, J.M., 1990, Identification of solubility-controlling solid phases in a large fly ash field lysimeter: Environmental Science and Technology, v. 24, no. 8, p. 1173–1179.
- Fthenakis, V.M., Lipfert, F.W., Moskowitz, P.D., and Saroff, L., 1995, An assessment of mercury emissions and health risks from a coal-fired power plant: Journal of Hazardous Materials, v. 44, no. 2-3, p. 267–283.
- Fuchs, G.E., 2008, Final Report – Computer aided design of advanced turbine airfoil alloys for industrial gas turbines in coal fired environments: U.S. Dept. of Energy [DOE] Award no. DE-FG26-04NT42168, 21 p., last accessed August 2011 at <http://www.osti.gov/bridge/servlets/purl/945928-1Sk0qU/945928.pdf>.
- Furimsky, E., 2000, Characterization of trace element emissions from coal combustion by equilibrium calculations: Fuel Processing Technology, v. 63, p. 29–44.
- Furr, A.K., Parkinson, T.F., Hinrichs, R.A., Van Campen, D.R., Bache, C.A., Gutenmann, W.H., St. John, L.E., Pakkala, I.S., and Lisk, D.J., 1977, National survey of elements and radioactivity in fly ashes – absorption of elements by cabbage grown in fly ash-soil mixtures: Environmental Science and Technology, v. 11, p. 1194–1201.
- Furuya, K., Miyajima, Y., Chiba, T., and Kikuchi, T., 1987, Elemental characterization of particle size–density separated coal fly ash by spectrophotometry, inductively coupled plasma emission spectrometry, and scanning electron microscopy—Energy dispersive x-ray analysis: Environmental Science and Technology, v. 21, no. 9, p. 898–903.
- Fytianos, K., and Tsaniklidi, B., 1998, Leachability of heavy metals in Greek fly ash from coal combustion: Environmental International, v. 24, no. 4, p. 477–486.
- Gabbard, A., 1993, Coal combustion: Nuclear resource or danger: Oak Ridge National Laboratory Review, v. 26, no. 3/4, p. 25–33.
- Gabetta, G., and Bregani, F., 1994, Corrosion-assisted cracking in life optimisation of power plant components: International Journal of Pressure Vessels and Piping, v. 59, no. 1-3, p. 83–89.
- Gaffney, J.S., and Marleya, N.A., 2009, The impacts of combustion emissions on air quality and climate – From coal to biofuels and beyond: Atmospheric Environment, v. 43, no. 1, p. 23–36.

- Gaggioli, R.A., and Petit, P.J., 1977, Use the second law, first: *Chemtech*, v. 7, p. 496–506.
- Galbreath, K.C., Toman, D.L., Zygarlicke, C.J., and Pavlish, J.H., 2000, Trace element partitioning and transformations during combustion of bituminous and subbituminous U.S. coals in a 7-kW combustion system: *Energy and Fuels*, v. 14, no. 6, p. 1265–1279.
- Galbreath, K.C., and Zygarlicke, C.J., 1996, Mercury speciation in coal combustion and gasification flue gases: *Environmental Science and Technology*, v. 30, p. 2421–2426.
- Galbreath, K.C., and Zygarlicke, C.J., 2000, Mercury transformations in coal combustion flue gas: *Fuel Processing Technology*, v. 65-66, special issue – Mercury, trace elements, and particulate matter, p. 289–310.
- Galbreath, K.C., and Zygarlicke, C.J., 2004, Formation and chemical speciation of arsenic-, chromium-, and nickel-bearing coal combustion PM_{2.5}: *Fuel Processing Technology*, v. 85, no. 6-7, p. 701–726.
- Galbreath, K.C., Zygarlicke, C.J., McCollor, D.P., and Toman, D.L., 1995, Development of a stack plume opacity index for subbituminous coal-fired utility boilers, in Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 11–15, 1995, Pittsburgh, Pennsylvania, 12th Conference: Pittsburgh, Pa., University of Pittsburgh, p. 19–26.
- Galbreath, K.C., Zygarlicke, C.J., Tibbetts, J.E., Schulz, R.L., and Dunham, G.E., 2005, Effects of NO_x, α -Fe₂O₃, γ -Fe₂O₃, and HCl on mercury transformations in a 7-kW coal combustion system: *Fuel Processing Technology*, v. 86, p. 429–448.
- Galbreath, K.C., Zygarlicke, C.J., and Toman, D.L., 1999, Mercury-flue gas-fly ash interactions, in *Mercury in the Environment Specialty Conference*, September 15–17, 1999, Minneapolis, Minnesota: Sewickley, Pennsylvania, Air and Waste Management Association, p. 141–151.
- Galbreath, K.C., Zygarlicke, C.J., Toman, D.L., and Schulz, R.L., 2001, Effects of NO_x and α -Fe₂O₃ on mercury transformations in a 7-kw coal combustion system, in *Air and Waste Management Association*, eds., *Proceedings Annual Conference and Exhibition*, June 24–28, 2001, Orlando Fla., 94th Conference: Pittsburgh, Pa., Air and Waste Management Association, Paper no. 767.
- Gale, T.K., 2005, Mercury control with calcium-based sorbents and oxidizing agents, final Report: Birmingham, Alabama, Southern Research Institute Report to U.S. Department of Energy [DOE], National Energy Technology Laboratory [NETL] Report no. DE-PS26-04NT41183, 137 p., last accessed June 2010 through <http://www.osti.gov/bridge/product.biblio>.
- Galetakis, M.J., and Pavloudakis, F.F., 2009, The effect of lignite quality variation on the efficiency of on-line ash analyzers: *International Journal of Coal Geology*, v. 80, no. 3-4, p. 145–156.
- Galloway, J.N., Thornton, J.D., Norton, S.A., Volchok, H.L., and McLean, R.A., 1982, Trace metals in atmospheric deposition—a review and assessment: *Atmospheric Environment*, v. 16, p. 1677–1700.
- Gallup, D.N., and Hickman, M., 1975, Effects of the discharge of thermal effluent from a power station on Lake Wabamun, Alberta: *Hydrobiologia*, v. 46, no. 1, p. 45–69.
- Ganapathy, T., Alagumurthi, N., Gakkhar, R.P., and Murugesan, K., 2009, Exergy analysis of operating lignite fired thermal power plant: *Journal of Engineering Science and Technology Review*, v. 2, no. 1, p. 123–130.

- Ganic, E., and Seider, W.D., 1977, Computer simulation of potassium-steam combined-cycle, electrical power plants: *Computers and Chemical Engineering*, v. 1, no. 3, p. 161–169.
- Gao, X., and Zhang, M., 2009, NO_x emissions of an opposed wall-fired pulverized coal utility boiler: *Asia-Pacific Journal of Chemical Engineering*, v. 5, no. 3, p. 447–453.
- Garcia, J.P., Beyne-Masclet, S., Mouvier, G., and Masclet, P., 1992, Emissions of volatile organic compounds by coal-fired power stations: *Atmospheric Environment—Part A General Topics*, v. 26 A, no. 9, p. 1589–1597.
- García-Martínez, J., Cazorla-Amorós, D., and Linares-Solano, A., 2002, Selective synthesis of zeolite briquettes from conformed ashes: *Journal of Chemical Technology and Biotechnology*, v. 77, no. 3, p. 287–291.
- García-Nieto, P.J., 2006, Study of the evolution of aerosol emissions from coal-fired power plants due to coagulation, condensation, and gravitational settling and health impact: *Journal of Environmental Management*, v. 79, no. 4, p. 372–382.
- Gardner, B.R., and Lowe, H.J., 1974, The research and development background to the environmental problems of natural draught cooling towers: *Atmospheric Environment*, v. 8, p. 313–320.
- Garlauskas, A.B., Hina, C.E., Blair, T.T., Kangas, M.J., and Cornett, C.L., 1981, Monitoring strategies for fluidized bed combustion coal plants: U.S. Environmental Protection Agency, EPA-600/4-81-019, 299 p.
- Garrett, C.W., 1992, On global climate change, carbon dioxide, and fossil fuel combustion: *Progress in Energy and Combustion Science*, v. 18, no. 5, p. 369–407.
- Gartrell, F.E., Thomas, F.W., and Carpenter, S.B., 1963, Atmospheric oxidation of SO₂ in coal-burning power plant plumes: *American Industrial Hygiene Association Journal*, v. 24, no. 2, p. 113–120.
- Garty, J., 1987, Metal amounts in the lichen *Ramalina duriae* (De Not.) Bagl. transplanted at biomonitoring sites around a new coal-fired power station after 1 year of operation: *Environmental Research*, v. 43, no. 1, p. 104–116.
- Garty, J., and Hagemeyer, J., 1988, Heavy metals in the lichen *Ramalina duriae* transplanted at biomonitoring stations in the region of a coal-fired power plant in Israel after 3 years of operation: *Water, Air, and Soil Pollution*, v. 38, p. 311–323.
- Garty, J., Tomer, S., Levin, T., and Lehr, H., 2003, Lichens as biomonitors around a coal-fired power station in Israel: *Environmental Research*, v. 91, no. 3, p. 186–198.
- Gay, A.J., Littlejohn, R.F., and van Duin, P.J., 1984, Studies of carbonaceous cenospheres from fluidised-bed combustors: *The Science of The Total Environment*, v. 36, p. 239–246.
- Gayer, R.A., Karayigit, A.I., Goldsmith, S., Onacak, T., and Rose, M., 1998, Trace element geochemistry of feed coals, fly and bottom ashes of Turkish power plants – implications for ash utilization, in *Australian Coal Science Conference*, Sydney, December 1998, 8th Conference: p. 339–344.
- Gayer, R.A., Rose, M., Dehmer, J., and Shao, L.-Y., 1999, Impact of sulphur and trace element geochemistry on the utilization of a marine-influenced coal—case study from the South Wales Variscan foreland basin: *International Journal of Coal Geology*, v. 40, no. 2-3, p. 151–174.
- Gebhardt, G.F., 1913, *Steam power plant engineering* (4th ed.): New York, N.Y., Wiley, 989 p.

- Geisbrecht, R., 2008, Repowering coal fired power plants for carbon dioxide capture and sequestration – further testing of NEMS for integrated assessments: U.S. Department of Energy [DOE], National Energy Technology Laboratory [NETL], Report DOE/NETL-2008/1310, unpaginated, last accessed 5 Jan 2011 at http://www.netl.doe.gov/energy-analyses/pubs/repowering_final.pdf.
- Geisbrecht, R., 2008, Retrofitting coal fired power plants for carbon dioxide capture and sequestration—exploratory testing of NEMS for integrated assessments: U.S. Department of Energy [DOE], National Energy Technology Laboratory [NETL], Report DOE/NETL-2008/1309, 26 p., last accessed 5 Jan 2011 at http://www.netl.doe.gov/energy-analyses/pubs/v%203%20-%20FINAL%20-%20retrofit_NEMS_exploratory.pdf.
- Geisbrecht, R., and Dipietro, P., 2009, Evaluating options for US coal fired power plants in the face of uncertainties and greenhouse gas caps: The economics of refurbishing, retrofitting, and repowering: *Energy Procedia*, v. 1, no. 1, p. 4347–4354.
- Geisbrecht, R.A., 2009, Extending the CCS retrofit market by refurbishing coal fired power plants: U.S. Department of Energy [DOE], National Energy Technology Laboratory [NETL], Report DOE/NETL-2009/1374, 11 p., last accessed 4 January 2011 at <http://www.netl.doe.gov/energy-analyses/refshelf/detail.asp?pubID=275>.
- Gellici, J., 2002, Industry perspective on CCP regulatory direction [abs.], in *Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*: Golden, Colorado, p. 20.
- Gentzis, T., and Goodarzi, F., 1999, Chemical fractionation of trace elements in coal and coal ash: *Energy Sources*, v. 21, no. 3, p. 233–256.
- Georgakopoulos, A., Filippidis, A., and Kassoli-Fournaraki, A., 1994, Morphology and trace element contents of the fly ash from Main and Northern Lignite Fields, Ptolemais, Greece: *Fuel*, v. 73, no. 11, p. 1802–1804.
- Georgakopoulos, A., Filippidis, A., Kassoli-Fournaraki, A., Fernandez-Turiel, J.-L., Llorens, J.-F., and Mousty, F., 2002, Leachability of major and trace elements of fly ash from Ptolemais Power Station, Northern Greece: *Energy Sources*, v. 24, p. 103–113.
- Georgakopoulos, A., Filippidis, A., Kassoli-Fournaraki, A., Iordanidis, A., Fernández-Turiel, J.-L., Llorens, J.-F., and Gimeno, D., 2002, Environmentally important elements in fly ashes and their leachates of the power stations of Greece: *Energy Sources*, v. 24, no. 1, p. 83–91.
- Gera, F., Mancini, O., Mecchia, M., and Sarrocco, S., 1991, Utilization of ash and gypsum produced by coal burning power plants: *Studies in Environmental Science*, v. 48, p. 433–440.
- Gerasimov, G., 2005, Investigation of the behavior of mercury compounds in coal combustion products: *Journal of Engineering Physics and Thermophysics*, v. 78, p. 688.
- Gerasimov, G., 2009, Mercury behavior in flue gases of coal-fired power plants – modeling study, in Naylor, T.B., ed., *Flue Gases – Research, Technology, and Economics*: New York, N.Y., Nova Science, p. 263–286.
- Gerhard, L., Kautz, K., Pickhardt, W., Scholz, A., and Zimmermeyer, G., 1985, Investigation of the distribution of trace elements after combustion of hard coal in three power plants [in German]: *VGB Kraftwerkstechnik*, v. 65, no. 8, p. 753–763.
- Germani, M.S., and Zoller, W.H., 1988, Vapor-phase concentrations of arsenic, selenium, bromine, iodine, and mercury in the stack of a coal-fired power plant: *Environmental Science and Technology*, v. 22, no. 9, p. 1079–1085.

- Ghafoori, N., and Bucholc, J., 1996, Investigation of lignite-based bottom ash for structural concrete: *Journal of Materials in Civil Engineering* [American Society of Civil Engineers (ASCE)], v. 8, no. 3, p. 128–137.
- Ghanem, M.M., Porter, D., Battelli, L.A., Vallyathan, V., Kashon, M.L., Ma, J.Y., Barger, M.W., Nath, J., Castranova, V., and Hubbs, A.F., 2004, Respirable coal dust particles modify cytochrome P4501A1 (CYP1A1) expression in rat alveolar cells: *American Journal of Respiratory Cell and Molecular Biology*, v. 31, p. 171–183.
- Ghio, A.J., Sangani, R.G., Brighton, L.E., and Carson, J.L., 2010, MRT letter: Auto-fluorescence by human alveolar macrophages after in vitro exposure to air pollution particles: *Microscopy Research and Technique*, v. 73, no. 6, p. 579–582.
- Ghorishi, S.B., Keeney, R.M., Serre, S.D., Gullett, B.K., and Jozewicz, W.S., 2002, Development of a Cl-impregnated activated carbon for entrained-flow capture of elemental mercury: *Environmental Science and Technology*, v. 36, no. 20, p. 4454–4459.
- Ghorishi, S.B., and Sedman, C.B., 1998, Low concentration mercury sorption mechanisms and control by calcium-based sorbents: application to coal-fired processes: *Journal of the Air and Waste Management Association*, v. 48, p. 1191–1198.
- Ghosh, S., and Singh, M.P., 1987, A scavenging model analysis around a large coal-fired power plant in New Delhi with a particular reference to the scavenging action of the monsoonal rains: *Mathematical Modelling*, v. 8, p. 419–424.
- Ghosh, Tushar K., and Prelas, Mark A., 2009, Coal, Chap. 2, *in* Ghosh, Tushar K., and Prelas, Mark A., *Energy resources and systems*, vol. 1, *Fundamentals and non-renewable resources*: Dordrecht, The Netherlands, Springer, p. 159–279.
- Ghosh-Dasitdar, A., Mahuli, S., Agnihotri, R., Chauk, S., and Fan, L.-S., 1996, High reactivity sorbents for simultaneous removal of trace heavy metals and SO₂, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, *Proceedings of the Annual International Pittsburgh Coal Conference*, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1424–1429.
- Ghuman, G.S., Menon, M.P., Chandra, K., and James, J., 1994, Uptake of multi-elements by corn from fly ash-compost amended soil: *Water, Air, and Soil Pollution*, v. 72, p. 285–295.
- Ghuman, G.S., Sajwan, K.S., and Denham, M.E., 1999, Impact of coal pile leachate and fly ash on soil and groundwater, *in* Sajwan, K.S., Alva, A.K., and Keefer, R.F., eds., *Biogeochemistry of Trace Elements in Coal and Coal Combustion Byproducts*: New York, N.Y., Kluwer, p. 235–246.
- Giavarini, C., Maccioni, F., and Santarelli, M.L., 2010, CO₂ sequestration from coal fired power plants: *Fuel*, v. 89, no. 3, p. 623–628.
- Gibb, W.H., Clarke, F., and Mehta, A.K., 2000, The fate of coal mercury during combustion: *Fuel Processing Technology*, v. 65–66, p. 365–377.
- Gibbon, D.L., 1979, Microcharacterization of fly-ash and analogs: the role of SEM and TEM: *Scanning Electron Microscopy*, v. 1979-1, p. 501–510.
- Gieré, R., Carleton, L.E., and Lumpkin, G.R., 2003, Micro- and nanochemistry of fly ash from a coal-fired power plant: *American Mineralogist*, v. 88, no. 11-12, p. 1853–1865.
- Gieré, R., Smith, K., and Blackford, M., 2006, Chemical composition of fuels and emissions from a coal + tire combustion experiment in a power station: *Fuel*, v. 85, no. 16, p. 2278–2285.

- Giergiczny, Z., 1991, The wastes from power plants as substitute of natural raw materials: *Studies in Environmental Science*, v. 48, p. 619–620.
- Giles, W.E., 1996, Design and management of coal combustion by-product mine back-haul placement areas, *in* Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., *Coal Combustion By-Products Associated with Coal Mining—Interactive Forum*, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 97–103.
- Gillani, N.V., 1978, Project MISST – mesoscale plume modeling of the dispersion, transformation, and ground removal of SO₂: *Atmospheric Environment*, v. 12, p. 569–588.
- Gillani, N.V., Colby, J.A., and Wilson, W.E., 1983, Gas-to-particle conversion of sulfur in power plant plumes – III. Parameterization of plume-cloud interactions: *Atmospheric Environment*, v. 17, no. 9, p. 1753–1763.
- Gillani, N.V., Husar, R.B., Husar, J.D., and Patterson, D.E., 1978, Project MISST – kinetics of particulate sulfur formation in a power plant plume out to 300 km: *Atmospheric Environment*, v. 12, p. 589–598.
- Gillani, N.V., Kohli, S., and Wilson, W.E., 1981, Gas-to-particle conversion of sulfur in power plant plumes – I. Parameterization of the conversion rate for dry, moderately polluted ambient conditions: *Atmospheric Environment*, v. 15, no. 10/11, p. 2293–2313.
- Gillani, N.V., Luria, M., Valente, R.J., Tanner, R.L., Imhoff, R.E., and Meagher, J.F., 1998, Loss rate of NO_x from a power plant plume based on aircraft measurements: *Journal of Geophysical Research*, v. 103, no. D17, p. 22,585–22,592.
- Gillani, N.V., Meagher, J.F., Valente, R.J., Imhoff, R.E., Tanner, R.L., and Luria, M., 1998, Relative production of ozone and nitrates in urban and rural power plant plumes – 1. Composite results based on data from 10 field measurement days: *Journal of Geophysical Research*, v. 103, no. D17, p. 22,593–22,615.
- Gillani, N.V., Meagher, J.F., Valente, R.J., Tanner, R., Imhoff, R.B., and Hardesty, M., 1996, Magnitude, yield and efficiency of ozone production in power plant plumes in the Tennessee Valley Region: *Eos, Transactions, American Geophysical Union [AGU]*, v. 77, no. 46 Supplement, p. F87–F88.
- Gillani, N.V., and Wilson, W.E., 1980, Formation and transport of ozone and aerosols in power plant plumes: *Annals of the New York Academy of Sciences*, v. 338, p. 276–296.
- Gillani, N.V., and Wilson, W.E., 1983, Gas-to-particle conversion of sulfur in power plant plumes – II. Observations on liquid-phase conversions: *Atmospheric Environment*, v. 17, no. 9, p. 1739–1752.
- Ginsztler, J., Penninger, A., Szeidl, L., and Várlaki, P., 1996, Stochastic modelling of stress processes in power plant boiler walls: *International Journal of Pressure Vessels and Piping*, v. 69, no. 2, p. 119–124.
- Gitari, W.M., Petrik, L.F., Etchebers, O., Key, D.L., and Okujeni, C., 2008, Utilization of fly ash for treatment of coal mines wastewater – solubility controls on major inorganic contaminants: *Fuel*, v. 87, no. 12, p. 2450–2462.
- Gladney, E.S., 1974, Trace element emissions of coal-fired power plants – a study of the Chalk Point Electric Generating Station: College Park, University of Maryland, Ph.D. thesis, 349 p.
- Gladney, E.S., and Owens, J.W., 1976, Beryllium emissions from a coal-fired power plant: *Journal of Environmental Science and Health*, v. 11, p. 297–311.

- Gladney, E.S., Small, J.A., Gordon, G.E., and Zoller, W.H., 1976, Composition and size distribution of in-stack particulate material at a coal-fired power plant: *Atmospheric Environment*, v. 10, p. 1071–1077.
- Gladney, E.S., Wangen, L.E., Curtis, D.B., and Jurney, E.T., 1978, Observations on boron release from coal-fired power plants: *Environmental Science and Technology*, v. 12, no. 9, p. 1084–1085.
- Glass, G.B., 1976, Wyoming coal deposits, *in* Murray, D. Keith, ed., *Proceedings of the symposium on the geology of Rocky Mountain coal*, April 26–27, 1976, Golden, Colorado, 1st Symposium: Denver, Colo., Colorado Geological Survey Resource Series, no. 1, p. 73–84.
- Glass, G.B., 1980, Tertiary coal deposits of the Hanna and Carbon Basins, Wyoming, *in* Carter, Lorna M., *Proceedings of the symposium on the Geology of Rocky Mountain Coal*, April 28–29, 1980, Golden, Colorado, 4th Symposium: Denver, Colo., Colorado Geological Survey Resource Series, no. 10, p. 86.
- Gleiser, R., and Felsvang, K., 1994, Mercury emission reduction using activated carbon with spray dryer flue gas desulfurization: *Proceedings of the American Power Conference*, Chicago, Illinois, v. 56, pt. 1, p. 452.
- Glöbel, B., and Andres, C., 1985, Investigations on fly-ash and soil samples in the environment of a coal-fired power plant: *Science of The Total Environment*, v. 45, p. 63–67.
- Glodek, A., and Pacyna, J.M., 2009, Mercury emission from coal-fired power plants in Poland: *Atmospheric Environment*, v. 43, no. 35, p. 5668–5673.
- Glowiak, B.J., and Pacyna, J.M., 1981, Trace metal circulation during coal combustion in fossil-fuel power plants: *Ochrona Powietrza*, v. 15, no. 1, p. 16–21.
- Gluckman, M.J., and Louks, B.M., 1982, Second generation gasification combined-cycle power plants for US utilities – detailed performance and cost estimates: *Applied Energy*, v. 11, no. 2, p. 85–123.
- Gluskoter, H.J., 1977, Trace elements in coal: occurrence and distribution: Research Triangle Park, N.C., Environmental Protection Agency [EPA], Report no. EPA-600/7-77-064, 153 p.
- Gluskoter, H.J., Cahil, R.A., Miller, W.G., Ruch, R.R., and Shimp, N.F., 1976, An investigation of trace elements in coal, aspects for fuels conversions, *in* Ayer, F., ed., *Symposium proceedings, Environmental Aspects of Fuel Conversion Tehnology*, December 1975, Hollywood, Fla., 2nd Symposium: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Office of Research and Development, Report no. EPA-600/2-76-149, p. 38–46.
- Gluskoter, H.J., Ruch, R.R., Miller, W.G., Cahill, R.A., Dreher, G.B., and Kuhn, J.K., 1977, Trace elements in coal: occurrence and distribution: Urbana, Ill., Illinois Geological Survey Circular 499, 154 p.
- Godbeer, W.C., 1995, The deposition of trace elements in the environs of a power station, *in* Swaine, D.J., and Goodarzi, F., eds., *Environmental Aspects of Trace Elements in Coal*: Dordrecht, The Netherlands, Kluwer, p. 178–203.
- Godbeer, W.C., Morgan, N.C., and Swaine, D.J., 1984, The accession of trace elements to the environs of a power station, *in* Hartmann, H.F., ed., *Proceedings of the International Clean Air Conference*, May 7–11, 1984, Sydney, N.S.W., Australia, 8th Conference: Hawthorn, Vict., Australia, Clean Air Society of Australia and New Zealand, p. 883–890.

- Godbeer, W.C., and Swaine, D.J., 1979, Cadmium in coal and fly ash, *in* Hemphill, D.D., ed., *Trace Substances in Environmental Health—XIII: Columbia, University of Missouri*, p. 254–261.
- Godoy, S., Hirji, K.A., and Lockwood, F.C., 1988, Combustion measurements in a pulverised coal-fired furnace: *Combustion Science and Technology*, v. 59, no. 1-3, p. 165–182.
- Godridge, A.M., and Morgan, E.S., 1971, Emissivities of materials from coal and oil-fired water tube boilers: *Journal of the Institute of Fuel*, v. 44, p. 207.
- Goetz, C.L., Abeyta, C.G., and Thomas, E.V., 1987, Application of techniques to identify coal-mine and power-generation effects on surface-water quality, San Juan River Basin, New Mexico and Colorado: U.S. Geological Survey Open-File Report 86-4076, 80 p.
- Godridge, A.M., and Read, A.W., 1976, Combustion and heat transfer in large boiler furnaces: *Progress in Energy and Combustion Science*, v. 2, no. 2, p. 83–95.
- Goetz, L., Bignoli, G., and Sabbioni, E., 1981, Mobilization of heavy metals from coal-fired power plants – potential impact on groundwater: *Studies in Environmental Science*, v. 17, p. 261–264.
- Goetz, L., Springer, A., Pietra, R., and Sabbioni, E., 1981, Mobilization of heavy metals from fossil-fuelled power plants, potential ecological and biochemical implications – III – Heavy metal content in coals burnt in European power plants: Commission of the European Communities, Report EUR 6998 EN, Part III, ISBN 92-825-2384-5, Luxembourg, Office for Official Publications of the European Communities, 56 p.
- Gogineni, M.R., Malki, K., Borio, D.C., and Jones, J.W., 1975, Lime/limestone scrubbing for SO₂ and particulate removal in a marble bed scrubber: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-650/2-75-052, 1 vol., variously paged.
- Goldbrunner, Peter R., and Mahr, Daniel, 1991, The Mecca Biomass Power Plant, *in* Mahr, Daniel, and Nechvatal, T.M., eds., *Fuel strategies for conventional and unconventional fuels, FACT*, v. 11, International Joint Power Generation Conference, October 6–10, 1991, San Diego, California: New York, N.Y., American Society of Mechanical Engineers [ASME], 101 p.
- Goldhaber, M.B., Hatch, J.R., Callender, E., Irwin, E.R., Tuttle, M.L., Reynolds, R.L., Ayuso, R.A., Lee, L., Morrison, J.M., Grossman, J.N., Atkins, J.B., Black, D.D., Zapia, H., Pashin, J.C., Sanzalone, R.F., Ruppert, L.F., Kolker, A., and Finkelman, R.B., 2002, Impact of elevated arsenic in coal on the geochemical landscape of the eastern U.S. [abs.]: *International Symposium on the Geochemistry of the Earth's Surface [GES]*, v. 6, p. 329–331.
- Goldman, S.B., and Golay, M.W., 1979, Strategies for scheduling power plants producing both heat and electric energy: *Energy*, v. 4, no. 6, p. 1033–1051.
- Goldsmith, J.R., Spivey, G.H., and Coulson, A.H., 1984, Feasibility of epidemiological monitoring for a proposed coal-fired power plant, Ivanpah, California: *The Science of The Total Environment*, v. 32, no. 3, p. 247–260.
- Goldstein, N.P., Sun, K.H., and Gonzales, J.L., 1971, Radioactivity in fly ash from a coal-burning power plant: *Transactions of the American Nuclear Society*, v. 14, p. 66.
- Goldstein, R., and Smith, W., 2002, Water and sustainability – v. 3 – U.S. water consumption for power production – the next half century: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1006786, 1 vol., variously paged.

- Goldthorpe, S.H., Cross, P.J.I., and Davidson, J.E., 1992, System studies on CO₂ abatement from power plants: *Energy Conversion and Management*, v. 33, no. 5-8, p. 459–466.
- Gomez, R.A., 1996, Diagnostics and operational responses to the environmental evaluation of the coal-fired power plant. Evaluation of the Cercs power plant [abs.]: *Fuel and Energy Abstracts*, v. 37, no. 3, p. 218.
- Goodarzi, F., 2002, Mineralogy, elemental composition and modes of occurrence of elements in Canadian feed coals: *Fuel*, v. 81, p. 1199–1213.
- Goodarzi, F., 2004, Speciation and mass-balance of mercury from coal fired power plants burning western Canadian subbituminous coal, Alberta, Canada: *Journal of Environmental Monitoring*, v. 6, p. 792–798.
- Goodarzi, F., 2005, Petrology of subbituminous feed coal as a guide to the capture of mercury by fly ash – influence of depositional environment: *International Journal of Coal Geology*, v. 61, no. 1-2, p. 1–12.
- Goodarzi, F., 2006, Assessment of elemental content of milled coal, combustion residues, and stack emitted materials – possible environmental effects for a Canadian pulverized coal-fired power plant: *International Journal of Coal Geology*, v. 65, no. 1-2, p. 17–25.
- Goodarzi, F., 2006, Characteristics and compositions of fly ash from Canadian coal-fired power plants: *Fuel*, v. 84, p. 1418–1427.
- Goodarzi, F., 2006, Morphology and chemistry of fine particles emitted from a Canadian coal-fired power plant: *Fuel*, v. 85, p. 273–280.
- Goodarzi, F., and Hower, J.C., 2008, Classification of carbon in Canadian fly ashes and their implications in the capture of mercury: *Fuel*, v. 87, p. 1949–1957.
- Goodarzi, F., and Huggins, F.E., 2001, Monitoring the species of arsenic, chromium and nickel in milled coal, bottom ash and fly ash from a pulverized coal-fired power plant in western Canada: *Journal of Environmental Monitoring*, v. 2001, no. 3, p. 1–6.
- Goodarzi, F., and Huggins, F., 2004, Speciation of nickel in Canadian subbituminous and bituminous feed coals, and their ash by-products: *Journal of Environmental Monitoring*, v. 6, p. 787–791.
- Goodarzi, F., and Huggins, F.E., 2005, Speciation of arsenic in feed coals and their ash byproducts from Canadian power plants burning subbituminous and bituminous coals: *Energy and Fuels*, v. 19, p. 905–915.
- Goodarzi, F., and Huggins, F.E., 2005, Speciation of chromium in feed coals and ash byproducts from Canadian power plants burning subbituminous and bituminous coals: *Energy and Fuels*, v. 19, p. 2500–2508.
- Goodarzi, F., Huggins, F.E., and Sanei, H., 2008, Assessment of elements, speciation of As, Cr, Ni, and emitted Hg for a Canadian power plant burning bituminous coal: *International Journal of Coal Geology*, v. 74, no. 1, p. 1–12.
- Goodarzi, F., Peel, W.P., Brown, J., Charland, J.P., Huggins, F., and Percival, J., 2002, Chemical and mineralogical characteristics of milled coal, ashes, and stack-emitted material from Unit No. 5, Battle River Coal-Fired Power Station, Alberta, Canada: *Geological Survey of Canada Bulletin* 570, 155 p.
- Goodarzi, F., Reyes, J., and Abrahams, K., 2008, Comparison of calculated mercury emissions from three Alberta power plants over a 33 week period – influence of geological environment: *Fuel*, v. 87, no. 6, p. 915–924.

- Goodarzi, F., Reyes, J., Schulz, J., Hollman, D., and Rose, D., 2006, Parameters influencing the variation in mercury emissions from an Alberta power plant burning high inertinite coal over thirty-eight weeks period: *International Journal of Coal Geology*, v. 65, no. 1-2, p. 26–34.
- Goodarzi, F., and Rose, D., 2003, Petrology of feed coals and chars in ESP fly ash as related to mercury retained in pulverized coal-fired power plants, *in* International Conference on Coal Science, Coal - contributing to sustainable world development, Proceedings of the International Conference on Coal Sciences, 2–6 November, 2003, Cairns, Queensland, Australia, 12th Conference: Cairns, Qld, Australian Institute of Energy, Paper 12P16, [7].
- Goodarzi, F., and Sanei, H., 2006, Plerospheres and their role in reduction of emitted fine fly ash particles: *Chinese Journal of Geochemistry*, v. 25, supplement 1, p. 47–48.
- Goodarzi, F., and Sanei, H., 2009, Plerosphere and its role in reduction of emitted fine fly ash particles from pulverized coal-fired power plants: *Fuel*, v. 88, no. 2, p. 382–386.
- Goodarzi, F., Sanei, H., and Reyes, J., 2006, Concentrations and distribution of elements in milled-coal, power plant ashes and stack-emitted materials in a western Canadian coal-fired power plant: *Chinese Journal of Geochemistry*, v. 25, supplement 1, p. 47.
- Goodarzi, F., and Swaine, D.J., 1994, Paleoenvironmental and environmental implications of the boron content of coals: *Ottawa, Canada Geological Survey Bulletin* 471, 76 p.
- Goodman, P., 2002, Coal-fired electric power generation in New Mexico, *in* Brister, B.S., and Price, L.G., eds., *New Mexico's Energy, Present and Future, Policy, Production, Economics, and the Environment*, Decision-Makers Field Conference, 2002, Socorro, New Mexico: N. Mex. Bureau of Geology and Mineral Resources, p. 78–80.
- Gordon, C.C., and Tourangeau, P.C., 1975, Biological effects of coal-fired power plants, *in* Clark, Wilson F., ed., *Proceedings of the Fort Union Coal Field Symposium*, April 25-26, 1975, Billings, Montana, 1st Conference: Billings, Eastern Montana College [Montana State University] and Montana Academy of Sciences, p. 509–530.
- Gordon, C.C., Tourangeau, P.C., Bromenshenk, J.J., Carlson, C.E., and Rice, P.M., 1977, Pre- and post-operational investigations into the impacts of coal-fired power plant emissions in the northern Great Plains: *Missoula, Montana, University of Montana Environmental Studies Laboratory Report to National Research Council*, Washington, D.C., 57 p.
- Gordon, G.E., and Sheffield, A.E., 1985, Variability of compositions of particles released by coal-fired power plants, *in* Markuszewski, R., and Blaustein, B., eds., *Environmental Science of Fuels*: American Chemical Society, p. 78–84.
- Gordon, R.L., 1975, U.S. coal and the electric power industry: *Baltimore, Md., Resources for the Future*, 213 p.
- Goren, A. I., Hellmann, S., and Glaser E.D., 1997. Use of outpatient clinics as a health indicator for communities around a coal-fired power plant – Institute for Environmental Research, Sackler School of Medicine, Tel-Aviv University, Tel-Aviv, Israel: *Environmental Health Perspectives*, v. 103, no. 12, p. 1110–1115 [English summary].
- Goren, A. I., Hellmann, S., and Glaser E.D., 1997, Use of outpatient clinics as a health indicator for communities around a coal-fired power plant – Institute for Environmental Research, Sackler School of Medicine, Tel-Aviv University, Tel-Aviv, Israel: *Environmental Pollution*, v. 97, no. 1-2, p. 193.

- Gorokhov, V.A., Ramezan, M., Ruth, L.A., and Kim, S.S., 1999, Worldwide supercritical power plants: status and future, *in* Sakkestad, Barbara A., ed., Proceedings of the International Technical Conference on Coal Utilization Systems, March 8–11, 1999, Clearwater, Fla., 24th Conference: Washington, D.C., Coal & Slurry Technology Association, p. 25–37.
- Goss, D., 2006, New mercury controls challenge reuse of utility ash: *Natural Gas and Electricity*, v. 22, no. 6, p. 8–12.
- Goss, D.C., 2007, Coal combustion products–recovered mineral resources that support sustainability [abs.]: Geological Society of America, Abstracts with Programs, v. 39, no. 6, p. 175–176.
- Göttlicher, G., and Pruschek, R., 1997, Comparison of CO₂ removal systems for fossil-fuelled power plant processes: *Energy Conversion and Management*, v. 38, supplement 1, p. S173–S178.
- Gough, L.P., and Erdman, J.A., 1976, Elements in lichen near the Dave Johnstone Power Plant: U.S. Geological Survey Open-File Report 76-729, p. 22–29.
- Gough, L.P., and Erdman, J.A., 1977, Influence of a coal-fired powerplant on the element content of *Parmelia chlorochroa*: *Bryologist*, v. 80, no. 3, p. 492–501.
- Gouveia, M.A., Freitas, M.C., and Prudêncio, M.I., 1994, Trace elements in the neighborhood of a coal-fired power station: *Mineralogical Magazine*, v. 58A, no. 1, p. 343–344.
- Gowen, M., and Mendis, M.S., 1996, Application of advanced technologies for addressing global warming and climate change emissions, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 693.
- Graham, F.D., and Buffington, C., 1983, Power plant engineers guide (3d ed.): Indianapolis, Ind., T. Audel, 952 p.
- Graney, J.R., and Landis, M.S., 2007, Refinements in source profiles from coal-fired utility boilers based on trace element solubility perspectives [abs.]: Geological Society of America, Abstracts with Programs, v. 39, no. 6, p. 174.
- Granite, E., and Pennline, H., 2002, Photochemical removal of mercury from flue gas: *Industrial and Engineering Chemistry Research*, v. 41, no. 22, p. 5470–5476.
- Gray, R.J., and Moore, G.F., 1974, Burning the sub-bituminous coals of Montana and Wyoming in large utility boilers: American Society Mechanical Engineers, Paper 74-WA/FU-1, p. 1–12.
- Greb, S.F., Eble, C.F., Peters, D.C., and Papp, A.C., 2006, Mining, production, reclamation, *in* Greb, S.F., ed., Coal and the Environment: Alexandria, Va., American Geological Institute [AGI], Environmental Awareness Series 10, 64 p.
- Green, J.A., and Robinson, S., 1971, Mercury emissions from the Four Corners Power Plant – preliminary Report to the United States Senate Interior and Insular Affairs Committee, 5 p.
- Green, M., Farber, R., Lien, N., Gebhart, K., Molenaar, J., Iyer, H., and Eatough, D., 2005, The effects of scrubber installation at the Navajo Generating Station on particulate sulfur and visibility levels in the Grand Canyon: *Journal of the Air and Waste Management Association*, v. 55, no. 11, p. 1675–1682.

- Greib, T.M., Porcella, D.B., Ginn, T.C., and Lorenzen, M.W., 1983, Assessment methodology for new cooling lakes: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. EA-2059, 118 p.
- Greque de Morais, M., and Vieira-Costa, J.A., 2007, Isolation and selection of microalgae from coal fired thermoelectric power plant for biofixation of carbon dioxide: *Energy Conversion and Management*, v. 48, no. 7, p. 2169–2173.
- Griest, W.H., and Guerin, M.R., 1979, Identification and qualification of POM on particulates from a coal-fired power plant – interim Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. EA-1092, 95 p.
- Griest, W.H., and Harris, L.A., 1985, Microscopic identification of carbonaceous particles in stack ash from pulverized coal combustion: *Fuel*, v. 64, p. 821–826.
- Griest, W.H., Yealts, L.B., and Caton, J.E., 1980, Recovery of polycyclic aromatic hydrocarbons sorbed on fly ash for quantitative determination: *Journal of Environmental and Analytical Chemistry*, v. 52, p. 201–203.
- Griest, W.H., Tompkins, B.A., and Caffrey, J.R., 1988, Improved ultrasonic extraction recovery of benzo[a]pyrene from stack ash using high power/mass ratios: *Analytical Chemistry*, v. 60, p. 2159.
- Griffis, L.C., Snipes, M.B., and Brooks, A.L., 1981, Clearance by the rat of inhaled fly ash from fluidized-bed coal combustion: *Journal of Toxicology and Environmental Health, Part A*, v. 7, no. 1, p. 117–124.
- Grisafe, D.A., Angino, E.E., and Smith, S.M., 1988, Leaching characteristics of a high-calcium fly ash as a function of pH: a potential source of selenium: *Applied Geochemistry*, v. 3, p. 601–608.
- Gronhovd, G.H., Kube, W.R., eds., 1974, Proceedings of the symposium on technology and use of lignite, Grand Forks, N. Dak., May 9–10, 1973: U.S. Bureau of Mines Information Circular 8650, 262 p.
- Gronhovd, G.H., Tufte, P.H., and Selle, S.J., 1974, Some studies on stack emissions from lignite-fired powerplants: U.S. Bureau of Mines Information Circular 8650, p. 83–102.
- Gronhovd, G.H., Wagner, R.J., and Wittmaier, A.J., 1967, A study of the ash fouling tendencies of a North Dakota lignite as related to its sodium content: *Transactions of the Society of Mining Engineers*, September 1967, p. 313.
- Gropp, J., and Robl, T., 2001, Ashes to energy—The Coleman Power Plant Project, in Robl, T., 2001, ed., *International Ash Utilization Symposium*, October 22–24, 2001, Lexington, Kentucky, 4th Symposium: Lexington, University of Kentucky Center for Applied Energy Research [CAER], Paper no. 104, [11] p., last accessed August 2011 at <http://www.flyash.info/2001/benef1/104gropp.pdf>.
- Grosheva, E.I., and Pavlov, B.K., 1993, Complex ecological assessment influence of pulp mills and power plants emissions on the environment, in Chow, W., and others, eds., *Managing Hazardous Air Pollutants: State of the Art*: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-101890, p. 235–236.
- Gross, P.M.K., and Finkelman, R.B., 1999, Annotated bibliography of recent papers on environmental and human health impacts of coal and coal use: U.S. Geological Survey Open-File Report 99-9, 40 p.
- Grossman, S.L., Nathan, Y., and Mathews, A., 1988, The mineralogy and chemistry of coal ash generated by the Hadera M.D. Power Station: *Journal of Coal Quality*, v. 7, no. 1, p. 22–26.

- Gruhl, J., 1973, Minimizing cost and environmental impact of electric power system operation: Cambridge, Massachusetts Institute of Technology [MIT], Electrical Engineering Department, Ph.D. thesis, 566 p.
- Gruhl, J., 1973, Quantification of aquatic environmental impact of electric power generation: Cambridge, Massachusetts Institute of Technology [MIT], Energy Laboratory Report MIT-EL 73-004, 176 p.
- Gruhl, J., 1976, Review of methods for assessing the carcinogenic hazards from coal-using energy technologies: Massachusetts Institute of Technology Energy Laboratory Report no. MIT-EL 76-015, last accessed 25 March 2010 at <http://www.dspace.mit.edu/bitstream/handle/1721.1/27841/MIT-EL-76-015-04122947.pdf?sequence=1>, 23 p.
- Guedes, A., Valentim, B., Prieto, A.C., Sanz, A., Flores, D., and Noronha, F., 2008, Characterization of fly ash from a power plant and surroundings by Micro-Raman Spectroscopy: *International Journal of Coal Geology*, v. 73, no. 3-4, p. 359–370.
- Guerra, C.R., 1978, Power plant waste heat utilization in aquaculture; 2nd semi-annual Report, 11/1/77–6/1/78: Washington, D.C., National Science Foundation Report no. NSF/RA-780270, 81 p.
- Guijian L., Haoyuan Z., Lianfen G., Liugen Z., and Zicheng P., 2004, Petrological and mineralogical characterizations and chemical composition of coal ashes from power plants in Yanzhou mining district, China: *Fuel Processing Technology*, v. 85, no. 15, p. 1635–1646.
- Güleç, N., Günal, B.Ç., and Erler, A., 2001, Assessment of soil and water contamination around an ash-disposal site – a case study from the Seyitömer coal-fired power plant in western Turkey: *Environmental Geology*, v. 40, no. 3, p. 331–344.
- Gullett, B.K., 1995, Proceedings SO₂ Control Symposium, 1993: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Air and Energy Engineering Research Laboratory, Report no. EPA/600/SR-95/015, 4 p.
- Gullett, B.K., Dunn, J.E., and Raghunathan, K., 2000, Effect of cofiring coal on formation of polychlorinated dibenzo-p-dioxins and dibenzofurans during waste combustion: *Environmental Science and Technology*, v. 34, p. 282–290.
- Gullett, B.K., Ghorishi, B., Jozewicz, W., and Ho, K., 2000, The advantage of Illinois coal for FGD removal of mercury: Illinois Clean Coal Institute, last accessed March 31, 2010 at <http://www.icci.org/01final/01gullett.pdf>, 24 p. plus summary.
- Gupta, R., Wall, T., and Baxter, L., 2002, Impact of mineral impurities in solid fuel combustion: New York, N.Y., Kluwer Academic, 788 p. e-book, last accessed 5 January 2011 at http://ebookey.org/The-Impact-of-Mineral-Impurities-in-Solid-Fuel-Combustion_158750.html.
- Gupta, R.P., Wall, T.F., Kajigaya, I., Miyamae, S., and Tsumita, Y., 1998, Computer-controlled Scanning Electron Microscopy of minerals in coal — implications for ash deposition: *Progress in Energy and Combustion Science*, v. 24, no. 6, p. 523–543.
- Gupta, S., Wall, T.F., Creeiman, R.A., and Gupta, R., 1996, Ash fusion temperatures and the transformations of coal ash particle to slag: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 41, no. 2, p. 647–651, last accessed May 2010 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/41_2_NEW%20ORLEANS_03-96_0647.pdf.
- Guirba, L., and van Schagen, F., 2005, Greenhouse gas reduction options for Australian coal-fired power plants—an integrated approach: *Greenhouse Gas Control Technologies*, v. 7, p. 1413–1419.

- Gustin, M.S., Kolker, A., and Gårfeldt, K., 2008, Transport and fate of mercury in the environment: *Applied Geochemistry*, v. 23, p. 343–344.
- Gutberlet, H., 1984, Measurement of heavy metal removal by a flue gas desulfurization plant working by the lime scrubbing method: Commission of the European Communities Research Report ENV-492-D (B), 112 p.
- Gutberlet, H., Speisberger, A., Kastner, F., and Tembrink, J., 1992, Zum verhalten des spurenelementes quecksilber in steinkohlefeuerungen mit rauchgasreinigungsanlagen [Behaviour of mercury as a trace element in furnaces burning anthracite at coal-fueled power plants equipped with flue-gas cleaning equipment]: *VGB Kraftwerkstechnik*, v. 72, no. 7, p. 636–641.
- Gutenmann, W.H., and Bache, C.A., 1976, Selenium in fly-ash: *Science*, v. 191, p. 966–967.
- Gutierrez, B., Pazos, C., and Coca, J., 1993, Characterization and leaching of coal fly ash: *Waste Management and Research*, v. 11, p. 279–286.
- Haas, J.C., Wilson, K.B., and Gupta, R.P., 1996, Development of the moving granular bed filter, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1290–1295.
- Habelt, W.W., and Selker, A.P., 1974, Operating procedures and prediction for NO_x control in steam power plants, *in* Combustion Institute, Central States Section, Spring technical meeting, March 26–27, 1974, Madison, Wisconsin: Pittsburgh, Pa., Combustion Institute, 17 p.
- Hackl, A., Aviam, A., van Oostveen, Ir.H.A., Waage, P., Lindau, L., Sinfield, A.C., and Schärer, B., 1982, Draft Report on modification of combustion processes for controlling sulphur emissions: Geneva, United Nations, 5 p.
- Hackley, K.C., and Anderson, T.F., 1986, Sulfur isotopic variations in low-sulfur coals from the Rocky Mountain Region: *Geochemica et Cosmochemica Acta*, v. 50, p. 1703–1713.
- Haefner, R., 2002, Environmental tracers of leachate derived from pressurized fluidized bed combustion by-products in an abandoned coal mine setting [abs.], *in* Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 7–8.
- Hageman, P.L., 2007, U.S. Geological Survey field leach test for accessing water reactivity and leaching potential of mine wastes, soils, and other geologic and environmental materials, *U.S. Geological Survey Techniques and Methods: U.S. Geological Survey, Techniques and Methods, Book 5, D-3*, 14 p.
- Haines, M.R., and Davison, J.E., 2009, Designing carbon capture power plants to assist in meeting peak power demand: *Energy Procedia*, v. 1, no. 1, p. 1457–1464.
- Haines, M.R., Skinner, G.F., and Maunder, A.D., 2005, Rapid assessment of novel CO₂ capturing power plants: *Greenhouse Gas Control Technologies*, v. 7, p. 33–41.
- Hall, B., Schager, P., and Lindqvist, O., 1991, Chemical Reactions of Hg in combustion flue gases: *Water, Air, and Soil Pollution*, v. 56, p. 3–14.

- Hall, M.L., and Livingston, W.R., 2002, Fly ash quality, past, present and future, and the effect of ash on the development of novel products: *Journal of Chemical Technology and Biotechnology*, v. 77, no. 3, p. 234–239.
- Hall, R.E., and Pershing, D.W., 1973, Proceedings, coal combustion seminar, June 19–20, 1973, Research Triangle Park, North Carolina: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-650/2-73-021, 75 p.
- Halmann, M., and Steinfeld, A., 2006, Thermoneutral tri-reforming of flue gases from coal- and gas-fired power stations: *Catalysis Today*, v. 115, no. 1–4, p. 170–178.
- Halmann, M., and Steinfeld, A., 2006, Fuel saving, carbon dioxide emission avoidance, and syngas production by tri-reforming of flue gases from coal- and gas-fired power stations, and by the carbothermic reduction of iron oxide: *Energy*, v. 31, no. 15, p. 3171–3185.
- Halstead, W.D., and Raask, E., 1969, The behavior of sulphur and chlorine compounds in pulverized-coal-fired boilers: *Journal of the Institute of Fuel*, v. 42, p. 344–349.
- Halstead, W.D., and Raask, E., 1972, The behaviour of sulphur and chlorine compounds in pulverized-coal-fired boilers: *Journal of the Institute of Fuel*, p. 42, 344.
- Hamilton, L.D., and Morris, S.C., 1974, Health effects of fossil-fuel power plants, *in* Hart, J.C., Ritchie, R.H., and Varnadore, B.S., eds., *Population Exposures, Proceedings of the Midyear Topical Symposium of the Health Physics Society*, October 21–24, 1974, Knoxville, Tennessee, 8th Symposium: Oak Ridge, Tenn., U.S. Atomic Energy Commission, p. 305–317.
- Hamilton, M.R., Herzog, H.J., and Parsons, J.E., 2009, Cost and U.S. public policy for new coal power plants with carbon capture and sequestration: *Energy Procedia*, v. 1, no. 1, p. 4487–4494.
- Hamilton, M.S., 1977, Power plant siting – with special emphasis on western United States: Monticello, Illinois, Council of Planning Libraries, 100 p.
- Hamilton, P.M., 1966, The use of lidar in air pollution studies: *International Journal of Air and Water Pollution*, v. 10, p. 427–434.
- Hamilton, P.M., 1967, Plume height measurements at Northfleet and Tilbury Power Stations: *Atmospheric Environment*, v. 1, p. 379–387.
- Hamilton, P.M., James, K.W., and Moore, D.J., 1966, Observations of power station plumes using a pulsed ruby laser rangefinder: *Nature*, v. 210, no. 5037, p. 723–724.
- Hamilton, P.M., and Moore, D.J., 1973, Gas turbine plume heights measured at Norwich Power Station—preliminary analysis: *Atmospheric Environment*, v. 7, p. 991–996.
- Hammons, T.J., 2006, Impact of electric power generation on green house gas emissions in Europe: Russia, Greece, Italy, and views of the EU power plant supply industry – a critical analysis: *International Journal of Electrical Power and Energy Systems*, v. 28, no. 8, p. 548–564.
- Hámor-Vidó, M., and Hámor, T., 2007, Sulphur and carbon isotopic composition of power supply coals in the Pannonian Basin, Hungary: *International Journal of Coal Geology*, v. 71, no. 4, p. 425–447.
- Han A., Long C., Wu J., Zhang J., and Wang Y., 2001, A high efficiency clean coal power system fitting the Chinese circumstances, *in* Sakkestad, B.A., ed., *Proceedings of the International Technical Conference on Coal Utilization Systems*, March 5–8, 2002, Clearwater, Fla., 26th Conference: Gaithersburg, Md., Coal Technology Association, p. 31–46.

- Han, M., 1992, Coal- and oil-fired power plant contributions to the atmosphere of Maryland: College Park, University of Maryland, Ph.D. dissertation, 255 p.
- Hancai Z., Feng J., and Jia G., 2004, Removal of elemental mercury from coal combustion flue gas by chloride-impregnated activated carbon: *Fuel*, v. 83, no. 1, p. 143–146.
- Handwerger, H.A., and Gilden, K.A., 1980, Guide to the National Power Plant Team's bibliographic data base: Ann Arbor, Michigan, U.S. Fish and Wildlife Service, Office of Biological Services, Power Plant Project Report no. FWS/OBS-80/06, 48 p.
- Hanna, S.R., 1976, Predicted and observed cooling tower plume rise and visible plume length at the John E. Amos power plant: *Atmospheric Environment*, v. 10, p. 1043–1052.
- Hansen, B.B., 2009, Crystallization of gypsum and prevention of foaming in wet flue gas desulphurization (FGD) plants: Lyngby, Denmark, Technical University of Denmark, Department of Chemical and Biochemical Engineering, CHEC Research Centre, Ph.D. thesis, 106 p.
- Hansen, H.A., Davine, F., Morgan, J., and Iverson, A., 1976, Particulate sampling strategies for large power plants including non-uniform flow: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-600/2-76-170, 349 p.
- Hansen, K.J., 1990, Review of NO_x control technologies for fossil fuel fired generating stations: Montreal, Quebec, Canadian Electrical Association, Research and Development, 2 vol.
- Hansen, L.A., Frandsen, F.J., Dam-Johansen, K., and Sørensen, H.S., 1999, Quantification of fusion in ashes from solid fuel combustion: *Thermochimica Acta*, v. 326, no. 1-2, p. 105–117.
- Hansen, L.D., Fisher, G.L., Chrisp, C.E., and Eatough, D.J., 1981, Chemical properties of bacterial mutagens in stack-collected coal fly ash, in Cooke, M., and Dennis, A.J., eds., *Chemical analysis and biological fate, International Symposium on Polynuclear Aromatic Hydrocarbons*, October 1980, Columbus, Ohio, 5th Symposium: p. 507–518.
- Hansen, L.D., Silberman, D., and Fisher, G.L., 1981, Crystalline components of stack-collected, size fractionated coal fly ash: *Environmental Science and Technology*, v. 15, no. 9, p. 1057–1062.
- Hansen, L.D., Silberman, D., Fisher, G., and Eatough, D.J., 1984, Chemical specification of elements in stack-collected, respirable-size, coal fly ash: *Environmental Science and Technology*, v. 18, p. 181–186.
- Hansen, L.D., Silberman, D., and Fisher, G.L., 1981, Crystalline components of stack-collected, size fractionated coal fly ash: *Environmental Science and Technology*, v. 15, no. 9, p. 1057–1062.
- Hansen, Y., Notten, P.J., and Petrie, G., 2002, A life cycle impact assessment indicator for ash management in coal-based power generation: *Journal of the South African Institute of Mining and Metallurgy*, v. 102, no. 5, p. 299-306, last accessed June 2010 at, <http://www.saimm.co.za/Journal/v102n05p299.pdf>
- Hansen, Y., Notten, P.J., and Petrie, J.G., 2002, The environmental impact of ash management in coal-based power generation: *Applied Geochemistry*, v. 17, no. 8, p. 1131–1141.
- Haraden, J., 1989, CO₂ production rates for geothermal energy and fossil fuels: *Energy*, v. 14, no. 12, p. 867–873.

- Harb, J.N., Slater, P.N., and Richards, G.H., 1994, A mathematical model for build-up of furnace wall deposit, *in* Williamson, J., and Wigley, F., eds., *The Impact of Ash Deposition on Coal Fired Plants*; Proceedings of the Engineering Foundation Conference, June 20–25, 1993, Solihull, United Kingdom: Washington, D.C., Taylor and Francis, p. 637–644.
- Hardie, R.W., and Brogli, R.H., 1982, Comparison of potential electrical generating costs from nuclear and coal plants in Germany and Switzerland: *Transactions of the American Nuclear Society*, v. 41, p. 132.
- Harding, N.S., and O'Connor, D.C., 2007, Ash deposition impacts in the power industry: *Fuel Processing Technology*, v. 88, no. 11-12, p. 1082–1093.
- Hardy, M.A., 1981, Effects of coal fly-ash disposal on water quality in and around the Indiana Dunes National Lakeshore, Indiana: U.S. Geological Survey Water Resources Investigation 81-16, 64 p.
- Hardy, N.C., 1936, Operating experience with pulverized Texas lignite in a large central station: *Transactions American Society Mechanical Engineers*, v. 58, p. 267–275.
- Harkin, T., Hoadley, A., and Hooper, B., 2009, Process integration analysis of a brown coal-fired power station with CO₂ capture and storage and lignite drying: *Energy Procedia*, v. 1, p. 3817–3825.
- Harper, A.D., 1980, 2.5-MWe coal-fired, atmospheric fluidized bed, recuperated closed gas turbine electrical power generating plant: *American Society of Mechanical Engineers*, Paper GT-132, 8 p.
- Harris, T., and Wheelock, T.D., 2008, Process conditions for the separation of carbon from fly ash by froth flotation: *International Journal of Coal Preparation and Utilization*, v. 28, no. 3, p. 133–152.
- Harrison, C.D., and Hervol, J.D., eds., 1987, *Proceedings: Reducing electricity generation costs by improving coal quality*, Indiana, Pennsylvania, November 5–6, 1986: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-5713, 1 vol., variously paged.
- Harrison, C.D., and Hervol, J.D., eds., 1988, *Proceedings—Reducing power plant emissions by controlling coal quality*, Bethesda, Maryland, October 27–28, 1987: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. GS-6281, 1 vol., variously paged.
- Harrison, F.L., Bishop, D.J., and Mallon, B.J., 1985, Comparison of organic combustion products in fly ash collected by a Venturi Wet Scrubber and an electrostatic precipitator at a coal-fired power station: *Environmental Science and Technology*, v. 19, p. 186–193.
- Hart, A.B., and Lawn, C.J., 1977, Combustion of coal and oil in power-station boilers: *CEGB Research*, no. 5, p. 4–17.
- Harter, P., 1982, Trace elements from coal combustion — atmospheric emissions — a bibliography: London, United Kingdom, International Energy Agency [IEA] Coal Research, 33 p.
- Hartman, J., 2001, Environment — fly ash used to filter drinking water: *Civil Engineering* [American Society of Civil Engineers (ASCE)], v. 71, no. 7, p. 26.
- Hartmann, P., Fleige, H., and Horn, R., 2009, Physical properties of forest soils along a fly-ash deposition gradient in northeast Germany: *Geoderma*, v. 150, p. 188–195.

- Harvey, R.D., Cahill, R.A., Chou, C.-L., and Steele, J.D., 1984, Project summary; mineral matter and trace elements in the Herrin and Springfield Coals, Illinois Basin Coal Field: United States: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-600/S7-84-036, 7 p.
- Hashim, Haslenda., Douglas, Peter, Croiset, Eric, and Elkamel, Ali, 2006, CO₂ mitigation for a network of power plants using mathematical programming, *in* Proceedings of the International Conference on Natural Resources Engineering and Technology, 24-25 July 2006, Putrajaya, Malaysia: 1st Conference: p. 549–561.
- Haskin, L.A., Frey, F.A., Schmitt, R.A., and Smith, R.H., 1966, Meteoric, solar and terrestrial rare-earth distributions, *in* Ahrens, L.H., ed., Physics and chemistry of the Earth, Progress Series, Vol. 7: Oxford, United Kingdom, Pergamon, p. 167–321.
- Hassett, D., 2002, Evaluating CCBs for environmental performance [abs.], *in* Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum: Golden, Colorado, U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, Alton, Illinois, and Coal Extraction and Utilization Research Center, Southern Illinois University at Carbondale, Carbondale, Illinois, p. 6.
- Hassett, D., 2002, Microbial release of mercury from CCBs [abs.], *in* Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 16–17.
- Hassett, D., Heebink, L.V., Gallagher, J.R., and Pflughoeft-Hassett, D.F., 2002, Microbial release of mercury from coal combustion by-products, *in* Vories, K.C. and Throgmorton, Dianne, eds., Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 227–230.
- Hassett, D.J., 1994, Scientifically valid leaching of coal conversion solid residues to predict environmental impact: Fuel Processing Technology, v. 39, p. 445–459.
- Hassett, D.J., and Eylands, K.E., 1999, Mercury capture on coal combustion fly ash: Fuel, v. 78, no. 2, p. 243–248.
- Hassett, D.J., Heebink, L.V., and Pflughoeft-Hassett, D.F., 2004, Potential for mercury vapor release from coal combustion by-products: Fuel Processing Technology, v. 85, no. 6-7, p. 613–620.
- Hastings, M., and Cawley, M.E., 1981, Community leaders' perspectives on socio-economic impacts of power-plant development: Energy, v. 6, no. 5, p. 447–455.
- Hatanpää, E., Hoffren, H., Hahkala, M., Laitinen, T., Larjava, K., and Tolvanen, M., 1995, Distribution of the trace elements in coal-fired power plant streams, *in* Electric Power Research Institute, eds., EPRI/DOE International Conference on Managing Hazardous Particulate Air Pollutants, August 15–17, 1995, Toronto, Ontario, Canada: Palo Alto, Calif., Electric Power Research Institute [EPRI], vol. 2, 14 p.
- Hatanpää, E., Kajander, K., Laitinen, T., Pierpponen, S., and Revitzer, H., 1997, A study of trace element behavior in two modern coal-fired power plants – I. Development and optimization of trace element analysis using reference materials: Fuel Processing Technology, v. 51, p. 205–217.

- Hatt, R., 2008, A little bit of trouble: mercury and arsenic in coal: Versailles, Kentucky, Coal Combustion Inc., last accessed 5 January 2011 at http://pulse.pharmacy.arizona.edu/resources/powerful_explorations/mercury_arsenic_coal.pdf.
- Hatt, R.M., 1990, Fireside deposits in coal-fired utility boilers: *Progress in Energy and Combustion Science*, v. 16, no. 4, p. 235–241.
- Hatt, R.M., and Rimmer, S.M., 1989, A classification of coal-fired boiler deposits: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 34, no. 2, p. 330–339, last accessed May 2010 at, http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/34_2_DALLAS_04-89_0330.pdf.
- Haverlah, D., 1976, Particulate control with electrostatic precipitators from lignite fired boilers in Texas, in Cooper, Hal B.H., *Proceedings of the Air Pollution and Industrial Hygiene Conference on Air Quality Management in the Electric Power Industry*, January 28–30, 1976, Austin, Texas 12th Conference: Austin, Tex., The Center, p. 13–24.
- Havlíček, D., Přibil, R., and Kratochvíl, B., 1989, Content of quartz and mullite in some selected power-plant fly ash in Czechoslovakia: *Atmospheric Environment*, 23, no. 3, p. 701–706.
- Havlíček, D., Přibil, R., and Školoud, O., 1993, The chemical and mineralogical composition of the water-soluble fraction of power-plant ash and its effect on the process of crystallization of water: *Atmospheric Environment. Part A. General Topics*, v. 27, no. 5, p. 655–660.
- Hawiczka, S. Fudaa, J., 2008, Assessment of atmospheric mercury emission reduction measures relevant for application in Poland: *Environmental Engineering Science*, v. 25, no. 2, p. 163–172.
- Hayes, T.L., Pawley, J.B., and Fisher, G.L., 1978, The effect of chemical variability of individual fly ash particles on cell exposure: *Scanning Electron Microscopy*, v. 1978–1, p. 239–244.
- Haynes, F.D., 1994, Operating manual for hybrid thermosyphons at the Gakona Power Plant, Alaska: Hanover, N.H., U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory, 22 p.
- Haythornwaite, S., Smith, J., Anderson, G., Hunt, T., Fox, M., Chang, R., and Brown, T., 1999, Pilot-scale carbon injection for mercury control at Comanche Station, in *Air and Waste Management Association [A&WMA], Proceedings Air and Waste Management Association Annual Meeting and Exhibition*, 20–24 June, 1999, St. Louis, Missouri, 92nd Annual Meeting: pagination not available.
- Haythornwaite, S.M., Sjoström, S., Ebner, T., Ruhl, J., Slye, R., Smith, J., Hunt, T., Chang, R., and Brown, T.D., 1997, Demonstration of dry carbon-based sorbent injection for mercury control in utility ESPs and baghouses, in Offen, G.R., Ruth, L., and Lachapelle, D.G., eds., *Proceedings of the Electric Power Research Institute [EPRI]–U.S. Department of Energy [U.S. DOE]–U.S. Environmental Protection Agency [U.S. EPA]–Combined Utility Air Pollutant Control Symposium, Particulates and Air Toxics, The Mega Symposium*, Washington, D.C., 25–29 August 1997: Palo Alto, Calif., Electric Power Research Institute [EPRI], v. 3, Report TR-108683-V3, pagination not available.
- Hayumbu, P., Zaman, M.B., and Munsanje, S.S., 1995, Natural radioactivity of Zambian coal and coal ash: *Journal of Radioanalytical and Nuclear Chemistry, Letters*, v. 201, no. 4, p. 333–346.

- Hayward, T.J., and Burgher, K.E., 1989, Coal quality market modeling with pooled data: an example that traces the spot market purchases of Dayton Power and Light: *Mining Science and Technology*, v. 8, no. 1, p. 73–84.
- Hazard, H.R., 1980, Influence of coal mineral matter on slagging of utility boilers: final report June 1980: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-1418, variously paged.
- Hazari, M.S., Haykal-Coates, N., Winsett, D.W., Costa, D.L., and Farraj, A.K., 2009, A single exposure to particulate or gaseous air pollution increases the risk of aconitine-induced cardiac arrhythmia in hypertensive rats: *Toxicological Sciences*, v. 112, no. 2, p. 532–542.
- He J.-Q., Shi Z.-M., Chen D.-L., Jiang X.-L., and Yan X.-Z., 2008, Slagging characteristics of molten coal ash on silicon-aluminum combustion liners of boiler: *Journal of Central South University of Technology*, v. 15, no. 6, p. 840–844.
- He J.-Q., Shi Z.-M., Chen D.-L., and Yan X.-Z., 2008, Slagging characteristics of molten ash on corundum during pulverized coal combustion: *Guocheng Gongcheng Xuebao [Chinese Journal of Process Engineering]*, v. 8, no. 4, p. 756–760.
- Heap, M.P., Lowes, T.M., Walmsley, R., and Bartelds, H., 1973, Burner design principles for minimum NO emissions, in Hall, R.E., and Pershing, D.W., eds., *Proceedings, Coal Combustion Seminar, June 19–20, 1973, Research Triangle Park, North Carolina, 10th Seminar: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Ecological Protection Technology Series Report no. EPA-650/2-73-021*, p. 141.
- Hedvall, R., and Erlandsson, B., 1996, Radioactivity concentrations in non-nuclear industries: *Journal of Environmental Radioactivity*, v. 32, p. 19–31.
- Heebink, L.V., and Hassett, D.J., 2002, Release of mercury vapor from coal combustion ash: *Journal of the Air and Waste Management Association*, v. 52, no. 8, p. 927–930.
- Heebink, L.V., Pflughoeft-Hassett, D.F., and Hassett, D.J., 2010, Effects of mercury emission control technologies using halogens on coal combustion product chemical properties: *Journal of Environmental Monitoring*, v. 12, no. 3, p. 608–613.
- Hegg, D., Hobbs, P.V., Radke, L.F., and Harrison, H., 1977, Reactions of ozone and nitrogen oxides in power plant plumes: *Atmospheric Environment*, v. 11, no. 6, p. 521–526.
- Hegg, D.A., and Hobbs, P.V., 1979, Some observations of particulate nitrate concentrations in coal-fired power plant plumes: *Atmospheric Environment*, v. 13, no. 12, p. 1715–1716.
- Hegg, D.A., and Hobbs, P.V., 1980, Measurements of gas-to-particle conversion in the plumes from five coal-fired electric power plants: *Atmospheric Environment*, v. 14, no. 1, p. 99–116.
- Hegg, D.A., and Hobbs, P.V., 1983, Particles and trace gases in the plume from a modern coal-fired power plant in the western United States and their effects on light extinction: *Atmospheric Environment*, v. 17, no. 2, p. 357–368.
- Hegg, D.A., and Hobbs, P.V., 1985, Authors' reply: *Atmospheric Environment*, v. 19, no. 1, p. 206.
- Hegg, D.A., Hobbs, P.V., and Harrison, H., 1979, Authors' reply: *Atmospheric Environment*, v. 13, no. 5, p. 745–747.

- Hegg, D.A., Hobbs, P.V., and Lyons, J.H., 1985, Field studies of a power plant plume in the arid southwestern United States: *Atmospheric Environment*, v. 19, no. 7, p. 1147–1167.
- Hegg, D.A., Hobbs, P.V., and Radke, L.F., 1976, Reactions of nitrogen oxides, ozone and sulfur in power plant plumes: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report EA-270, 139 p.
- Heiermann, G., Huseman, R.-U., Kather, A., Knizia, M., and Hougaard, P., 1996, Advanced steam parameters for pulverized coal fired boilers, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 161.
- Heil, P., Toporov, D., Stadler, H., Tschunko, S., Förster, M., and Kneer, R., 2009, Development of an oxycoal swirl burner operating at low O₂ concentrations: *Fuel*, v. 88, p. 1269–1274.
- Hein, K.R.G., and Spliethoff, H., 1996, Combustion modifications and advanced concepts for NO_x emission control, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 499.
- Heinbockel, I., and Fett, F.N., 1995, Simulation of a combined cycle power plant based on a pressurized circulating fluidized bed combustor: *Heat Recovery Systems and CHP*, v. 15, no. 2, p. 171–178.
- Heinrichs, H., 1982, Trace element discharge from a brown coal fired power plant: *Environmental Technology Letters*, v. 3, p. 127–136.
- Heischkamp, E., and Oeljeklaus, G., 2009, Study on a coal-fired power plant with CO₂ flue gas scrubbing: *Energy Procedia*, v. 1, no. 1, p. 1019.
- Heit, M., 1977, A review of current information on some ecological and health related aspects of the release of trace metals into the environment associated with the combustion of coal: U.S. Department of Energy, Energy Research and Development Administration Report HASL-320, June 1977, p. 1–51.
- Heit, M., 1985, The relationship of a coal fired power plant to the levels of polycyclic aromatic hydrocarbons (PAH) in the sediment of Cayuga Lake: *Water, Air, and Soil Pollution*, v. 24, p. 41–61.
- Heit, M., and Klusek, C.S., 1979, The release of trace substances by a coal-fired power station into an aquatic ecosystem – 1 – Environmental sampling in Cayuga Lake, N.Y.: U.S. Department of Energy Report EML-363, p. 3–30.
- Helble, J.J., 1994, Trace element behavior during coal combustion – results of a laboratory study: *Fuel Processing Technology*, v. 39, no. 1-3, p. 159–172.
- Helble, J.J., 2000, A model for the air emissions of trace metallic elements from coal combustors equipped with electrostatic precipitators: *Fuel Processing Technology*, v. 63, no. 2-3, p. 125–147.
- Helble, J.J., Srinivasachar, S., Wilemski, G., Kang, S.G., Sarofim, A.F., Peterson, T.W., Bool, L.E., Huffman, G.P., Huggins, F.E., and Shah, N., 1993, Fundamental study of ash formation and deposition – effect of reducing stoichiometry: U.S. Department of Energy, Pittsburgh Energy Technology Center, quarterly Report DOE PC 92190-T2; PSI-1178, 91 p.

- Helmke, P.A., Robarge, W.P., Schoenfield, M.B., Burger, P., Koons, R.D., and Thresher, J.E., 1984, Impacts of coal combustion on trace elements in the environment – Wisconsin Power Plant Impact Study: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-600/S3-84-070, 87 p.
- Hemmings, R.T., and Berry, E.E., 1987, On the glass in coal fly ashes, *in* McCarthy, Gregory J., ed., Fly ash and coal conversion by-products, characterization, utilization, and disposal, December 1–3, 1986, Boston, Massachusetts, 3rd Symposium: Pittsburgh, Pa., Materials Research Society [symposia proceedings v. 86], p. 3–38.
- Henderson, C., 2003, Improving efficiencies of coal-fired power plants in developing countries: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report CCC/70, 71 p.
- Henderson C., 2004, Understanding coal fired power plant cycles: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report CCC/91, 47 p.
- Henderson, C., 2005, Towards zero emission coal-fired power plant: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report CCC/101, 40 p.
- Hendrix, H.L., 1996, High temperature gas filtration at the power systems development facility, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 135.
- Henry, C.D., Kaiser, W.R., and Groat, C.G., 1976, Reclamation at Big Brown Steam Electric Station near Fairfield, Texas: Geologic and Hydrologic Setting: Austin, University of Texas, Bureau of Economic Geology, Research Notes 3, 10 p.
- Hering, S.V., Bowen, J.L., Wengert, J.G., and Richards, L.W., 1981, Characterization of the regional haze in the southwestern United States: Atmospheric Environment, v. 15, no. 10/11, p. 1999–2009.
- Herzog, H.J., and Drake, E.M., 1993, Long term advanced CO₂ capture options: Stoke Orchard, Gloucestershire, United Kingdom, International Energy Agency [IEA] Greenhouse Gas Research and Development Programme Report 93-6, 63 p.
- Hesbach, P., Burgers, C., Greiner, A., Hassett, D.J., Heebink, L.V., Beck, M., Eick, M., and Daniels, W.L., 2005, Inter-laboratory comparison of leaching methods [poster], *in* University of Kentucky Center for Applied Energy Research [CAER], Proceedings, World of Coal Ash Conference [WOCA], April 11-15, 2005, Lexington, Kentucky: Lexington, University of Kentucky Center for Applied Energy Research [CAER], 1 p., last accessed August 2011 at <http://www.flyash.info/2005/69hes.pdf>.
- Hesketh, H.H., 1981, Integrated environmental control for coal-fired power plants: New York, N.Y., American Society of Mechanical Engineers, 158 p.
- Hewitt, C.N., 2001, The atmospheric chemistry of sulphur and nitrogen in power station plumes: Atmospheric Environment, v. 35, no. 7, p. 1155–1170.
- Heyen, G., and Kalitventzeff, B., 1999, A comparison of advanced thermal cycles suitable for upgrading existing power plant: Applied Thermal Engineering, v. 19, no. 3, p. 227–237.
- Heystee, R.J., Lee, C.F., and Taylor, E.M., 1987, FGD waste disposal at Lambton GS, Nanticoke GS, and Lakeview GS sites; potential impacts on water resources and their mitigation: Toronto, Ontario, Ontario Hydro, Design and Development Division, Geo-technical and Hydraulic Engineering Department, no. 87365, 61 p.

- Hicks, J., and Yager, J., 2006, Airborne crystalline silica concentrations at coal-fired power plants associated with coal fly ash: *Journal of Occupational and Environmental Hygiene*, v. 3, no. 8, p. 448–455.
- Hicks, J.B., 1993, Toxic constituents of coal fly ash, in Chow, W., and others, eds., *Managing Hazardous Air Pollutants: State of the Art*: Electric Power Research Institute [EPRI] Report no. TR-101890, Boca Raton, Fla., Lewis Publishers, p. 262–275.
- Hicks, T.G., 1986, *Power plant evaluation and design reference guide*: New York, N.Y., McGraw-Hill, 1 vol., variously paged.
- Hiei, Y., and Shirai, H., 2006, Basic study on mineral removal from coal-the influence of mineral distribution and size of pulverized coal on characteristics of mineral removal: *Coal Preparation*, v. 26, no. 3, p. 137–148.
- Higginbotham, E.B., Waterland, L.R., Mason, H.B., and Hall, R.E., 1980, Emission control from stationary power sources (environmental assessment field testing – effects of NO_x controls applied to a tangential coal-fired utility boiler): *American Institute of Chemical Engineers, Symposium Series*, v. 76, no. 201, p. 67–79.
- Hilber, Th., Thorwarth, H., Stack-Lara, V., Schneider, M., Maier, J., and Scheffknecht, G., 2007, Fate of mercury and chlorine during SRF co-combustion: *Fuel*, v. 86, p. 1935–1946.
- Hildebrand, A.N., and Herzog, H.J., 2009, Optimization of carbon capture percentage for technical and economic impact of near-term CCS implementation at coal-fired power plants: *Energy Procedia*, v. 1, no. 1, p. 4135–4142.
- Hill, M.R., 2002, Russian power generation: between a rock and a hard place?: *Environment and Planning B*, v. 29, p. 819–839.
- Hill, R., 2002, QA/QC and variability of CCBs relating to mine applications [abs.], in *Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 8.
- Hill, R., 2002, QA/QC and variability of CCBs relating to mine applications, in Vories, K.C. and Throgmorton, Dianne, eds., *Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 97–101.
- Hill, R., Rathbone, R., and Hower, J.C., 1998, Investigation of fly ash carbon by thermal analysis and optical microscopy: *Cement and Concrete Research*, v. 28, no. 10, p. 1479–1488.
- Hill, R.L., Sarkar, S.L., Rathbone, R.F., and Hower, J.C., 1997, An examination of fly ash carbon and its interactions with air entraining agent: *Cement and Concrete Research*, v. 27, no. 2, p. 193–204.
- Hill, S.C., and Smoot, L.D., 1996, Application of comprehensive combustion modelling to practical combustion systems, in Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1315.

- Hill, T.A., Booth, M.-J., Dorren, C., Stiff, S.M., and Hull, W., 2009, Environmental impact study of a power plant with carbon capture and storage near the UK coast: *Energy Procedia*, v. 1, no. 1, p. 2463–2470.
- Hinckley, C.C., Smith, G.V., Twardowska, H., Saporoschenko, M., Shiley, R.H., and Griffen, R.A., 1980, Mössbauer studies of iron in Lurgi Gasification Ashes and power plant fly and bottom ash: *Fuel*, v. 59, no. 3, p. 161–165.
- Hinkley, J.T., 2005, The contribution of fine particulates of ash emitted from coal fired power stations, Newcastle, Australia: Newcastle, New South Wales, Australia, University of Newcastle, Ph.D. thesis, 203 p.
- Hinkley, J.T., Bridgman, H.A., Buhre, B.J.P., Gupta, R.P., Nelson, P.F., and Wall, T.F., 2003, Assessing the contribution of power station particulate emissions to atmospheric dust, in Clean Air Society of Australia and New Zealand, Linking air pollution science, policy and management, papers of the National Clean Air Conference, CASNO3, November 23-27, 2003, Newcastle, New South Wales, Australia: Newcastle, The Conference, 1 CD-ROM.
- Hinkley, J.T., Bridgman, H.A., Buhre, B.J.P., Gupta, R.P., Nelson, P.F., and Wall, T.F., 2008, Semi-quantitative characterisation of ambient ultrafine aerosols resulting from emissions of coal fired power stations: *The Science of The Total Environment*, v. 391, no. 1, p. 104–113.
- Hjalmarsson, A.-K., 1990, NOx control technologies for coal combustion: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/24, 102 p.
- Hjalmarsson, A.-K., 1992, Interactions in Emissions Control for Coal-Fired Plants: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/47, 47 p.
- Ho, M.T., Allinson, G.W., and Wiley, D.E., 2009, Factors affecting the cost of capture for Australian lignite coal fired power plants: *Energy Procedia*, v. 1, no. 1, p. 763–770.
- Ho, T.C., Ghebremeskel, A.N., and Hopper, J.R., 1996, Trace metal capture by various sorbents during fluidized bed coal combustion: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 41, no. 3, p. 801-805, last accessed May 2010 at, http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/41_3_ORLANDO_08-96_0801.pdf.
- Hobbs, C.H., and Carpenter, R.L., 1980, Fluidized bed combustion emissions toxicology program ; status Report: Albuquerque, N. Mex., Inhalation Toxicology Research Institute, Lovelace Biomedical and Environmental Research Institute Report LMF-83, 37 p.
- Hobbs, P.V., Eltgroth, M.W., Hegg, D.A., and Radke, L.F., 1983, Particle formation and growth in power plant plumes – v. 1 – Field observations and theoretical studies of the evolution of particles in the plumes from coal-fired electric power plants – v. 2 – Some coal-fired power plants in the western United States: Palo Alto, Calif., Electric Power Research Institute [EPRI], Report 3105, 2 v. [v. 1, 109 p.; v. 2, 108 p.], last accessed March 2010 at <http://carg.atmos.washington.edu/sys/Online-Reports.html>.
- Hobbs, P.V., and Hegg, D.A., 1982, Sulfate and nitrate mass distributions in the near fields of some coal-fired power plants: *Atmospheric Environment*, v. 16, no. 11, p. 2657–2662.
- Hobbs, P.V., Hegg, D.A., Eltgroth, M.W., and Radke, L.F., 1979, Evolution of particles in the plumes of coal-fired power plants – I. – Deductions from field measurements: *Atmospheric Environment*, v. 13, no. 7, p. 935–951.

- Hobbs, P.V., Stith, J.L., and Radke, L.F., 1980, Cloud active nuclei from coal-fired electric power plants and their interactions with clouds: *Journal of Applied Meteorology*, v. 19, no. 4, p. 439–451.
- Hock, J.L., and Lichtman, D., 1982, Studies of surface layers on single particles of in-stack coal fly ash: *Environmental Science and Technology*, v. 16, p. 423–427.
- Hocquel, M., 2004, The behavior and fate of mercury in coal-fired power plants with downstream air pollution control devices: Stuttgart, Germany, IVD Universität, Fortschritt-Berichte VDI-Verlag [Düsseldorf] Reihe 15, Umwelttechnik 251, Ph.D. thesis, 125 p.
- Hodges, N., and Marsh, M., 1990, The effect of salt minerals on deposit formation during fluidised bed combustion of coal: *Fuel Processing Technology*, v. 24, p. 367–374.
- Hodges, W.K., and Keating, R.W., 1999, Maryland power plant research program promotes the beneficial use of CCPs as a means to protect Maryland's natural resources, in *International Ash Utilization Symposium, 1999*: Lexington, University of Kentucky, Center for Applied Energy Research [CAER], [9] p.
- Hoff, R.M., Trivett, N.B.A., Millan, M.M., Fellin, P., Anlauf, K.G., Wiebe, H.A., and Bell, R., 1982, The Nanticoke Shoreline diffusion experiment, June 1978 – III. – Ground-based air quality measurements: *Atmospheric Environment*, v. 16, no. 3, p. 439–454.
- Hoffman, G.K., 2000, Uses of fly ash from New Mexico coals: *New Mexico Geology*, v. 22, no. 2, p. 25–36.
- Hoffman, G.K., 2002, Fly ash utilization in the western United States [abs.], in *Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 2.
- Hoffman, G.K., 2002, The uses of fly ash in New Mexico, in Brister, B.S., and Price, L.G., *New Mexico's Energy, Present and Future: Policy, Production, Economics, and the Environment*, Decision-Makers Field Conference 2002: Socorro, N. Mex., New Mexico Bureau of Geology and Mineral Resources, p. 85–88.
- Hoffman, G.K., 2002, Western region fly ash survey, in Vories, K.C. and Throgmorton, Dianne, eds., *Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 43–50.
- Holbrook, R., 2002, Disposal on tribal lands under federal regulations [abs], in *Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 11–12.
- Holbrook, R., 2002, OSM's perspective on CCB disposal on Native American lands, in Vories, K.C. and Throgmorton, Dianne, eds., *Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 143–147.

- Holcombe, L.J., Eynon, B.P., and Switzer, P., 1985, Variability of elemental concentrations in power plant ash: *Environmental Science and Technology*, v. 19, no. 7, p. 615–620.
- Holmes, M.J., Pavlish, J.H., Zhuang, Y., Benson, S.A., and Fritze, M.J., 2004, Pilot-scale evaluation of activated carbon-based mercury control options for utilities burning lignite coal: *Fuel*, v. 49, no. 1, p. 281–286.
- Holmquist, D., Thompson, D., and Simon, K., 2002, Mitigation of underground coal mines, in Vories, K.C. and Throgmorton, Dianne, eds., *Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 127–133.
- Holmquist, D.V., and Thomas, D.B., 2002, Mitigation of abandoned underground coal mines/high ground-water table case study [abs.], in *Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 10–11.
- Holt, N., Buchanon, T., Schoff, R., and White, J., 2002, Updated cost and performance estimates for fossil fuel power plants with CO₂ removal: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1004483, 1 vol., variously paged.
- Holve, D., and Self, S.A., 1980, Optical measurements of mean particle size in coal-fired MHD flows: *Combustion and Flame*, v. 37, p. 211–214.
- Homolya, J.B., and Cheney, J.L., 1979, A study of the primary sulfate emissions from a coal-fired boiler with FDG: *Journal of the Air Pollution Control Association*, v. 29, p. 1000–1004.
- Honaker, R.Q., Saracoglu, M., Thompson, E., Bratton, R., Luttrell, G.H., and Richardson, V., 2008, Upgrading coal using a pneumatic density-based separator: *International Journal of Coal Preparation and Utilization*, v. 28, no. 1, p. 51–67.
- Honea, F.I., 1983, Studies of ash-fouling potential and deposit strength in the GFTEC Pilot Plant test furnace, in Bryers, R.W., ed., *Fouling and slagging resulting from impurities in combustion gases*, *Proceedings of the Engineering Foundation Conference*, July 12–17, 1981, Henniker, New Hampshire: New York, N.Y., Engineering Foundation, p. 117–142.
- Honea, F.I., 1983, Survey of ash-related losses at low-rank coal-fired utility boilers, in Bryers, R.W., ed., *Fouling and slagging resulting from impurities in combustion gases*, *Proceedings of the Engineering Foundation Conference*, July 12–17, 1981, Henniker, New Hampshire: New York, N.Y., Engineering Foundation, p. 527–539.
- Hong, B.D., and Slatick, E.R., 1994, Carbon dioxide emission factors for coal: Energy Information Administration [EIA], *Quarterly Coal Report*, January–March 1994, DOE/EIA-0121(94/Q1), 8 p.
- Hong, L., and Dong, F., 2000, Comparative health risk assessment of coal power and nuclear power in China: *Progress in Nuclear Energy*, v. 37, p. 31–36.
- Hong Y., Guangqian L., Minghou X., Kameshima, T., and Naruse, I., 2006, Mercury emissions and species during combustion of coal and waste: *Energy and Fuels*, 2006, v. 20, no. 5, p. 1946–1950.

- Honghong Y., Jiming H., Lei D., Xiaolong T., Ping N., and Xinghua L., 2008, Fine particle and trace element emissions from an anthracite coal-fired power plant equipped with a bag-house in China: *Fuel*, v. 87, no. 10-11, p. 2050–2057.
- Hoover, D.Q., Somers, E.V., Tsu, T.C., Way, S., Young, W.E., Foster-Pegg, W.R., Koupal, J.R., and Spohn, H.C., 1966, Feasibility study of coal burning MHD generation: Pittsburgh, Pennsylvania, Westinghouse Electric Corporation Research Laboratories Report to the U.S. Department of Energy, no. PB-235462; OCR-13-F-(v. 3), 13 p.
- Horn, F.L., and Steinberg, M., 1982, Control of carbon dioxide emissions from a power plant (and use in enhanced oil recovery): *Fuel*, v. 61, no. 5, p. 415–422.
- Horton, J.H., Dorsett, R.S., and Cooper, R.E., 1977, Trace elements in the terrestrial environment of a coal-fired powerhouse: Aiken, South Carolina, E.I. du Pont de Nemours and Co., Savannah River National Laboratory Report DP-1475, 49 p.
- Horvat, D., Bauman, A., and Račić, J., 1980, Genetic effects of low doses of radiation in occupationally exposed workers in coal mines and in coal fired plants: *Radiation and Environmental Biophysics*, v. 18, p. 91–97.
- Hoshino, K., Otawara, Y., Tagishi, A., and Suzuki, S., 1997, Recent trends in thermal power generation technology: *Hitachi Review*, v. 46, no. 3, p. 115–120.
- Hov, O., and Isaksen, I.S.A., 1981, Generation of secondary pollutants in a power plant plume – a model study: *Atmospheric Environment*, v. 15, no. 10/11, p. 2367–2376.
- Hower, J.C., 2007, Petrology of feed coal and fly ash, in Ellis, Margaret, and Affolter, R.H., eds., *From Cradle to Grave; The Power of Coal; International Technical Conference on Coal Utilization and Fuel Systems*, June 10–15, 2007, Clearwater, Fla., 32nd Conference: U.S. Geological Survey Open-File Report 2007-1160, p. 38–51.
- Hower, J.C., 2008, Maceral/microlithotype partitioning with particle size of pulverized coal – examples from power plants burning central Appalachian and Illinois Basin coals: *International Journal of Coal Geology*, v. 73, no. 3-4, p. 213–218.
- Hower, J.C., Clifford, D.S., Eady, J.D., Thomas, G.A., and Wild, G.D., 1994, Petrography and chemistry of fly ash from the Shawnee Power Station, Kentucky, in Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 12–16, 1994, Pittsburgh, Pennsylvania, 11th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1160–1165.
- Hower, J.C., Finkelman, R.B., Rathbone, R.F., and Goodman, J., 2000, Intra- and inter-unit variation in fly ash petrography and mercury adsorption: Examples from a western Kentucky power station: *Energy and Fuels*, v. 14, p. 212–216.
- Hower, J.C., Graham, U.M., and Dozier, A., 2005, Transmission electron microscopy study of the sites of mercury and other trace elements in a Kentucky fly ash [abs.]: *Geological Society of America, Abstracts with Programs*, v. 37, no.7, p. 48.
- Hower, J.C., Graham, U.M., Dozier, A., Tseng, M.T., and Khatri, R., 2008, Association of sites of heavy metals and nanoscale carbon in a Kentucky electrostatic precipitator fly ash: *Environmental Science and Technology*, v. 42, no. 22, p. 8471–8477.
- Hower, J.C., Graham, U.M., Wong, A.S., Robertson, J.D., Haeberlin, B.O., Thomas, G.A., and Schram, W.H., 1997, Influence of flue-gas desulfurization systems on coal combustion by-product quality at Kentucky power stations burning high-sulfur coal: *Waste Management*, v. 17, no. 8, p. 523–533.
- Hower, J.C., Hiatt, J.K., Wild, G.D., and Eble, C.F., 1994, Coal resources, production, and quality in the Eastern Kentucky Coal Field: Perspectives on the Future of Steam Coal Production: *Natural Resources Research*, v. 3, no. 3, p. 216–236.

- Hower, J.C., Maroto-Valer, M.M., Taulbee, D.N., and Sakulpitakphon, T., 2000, Mercury capture by distinct fly ash carbon forms: *Energy and Fuels*, v. 14, no. 1, p. 224–226.
- Hower, J.C., and Mastalerz, M., 2001, An approach toward a combined scheme for the petrographic classification of fly ash: *Energy and Fuels*, v. 15, p. 1319–1321.
- Hower, J.C., Rathbone, R.F., Robertson, J.D., Peterson, G., and Trimble, A.S., 1999, Petrology, mineralogy, and chemistry of magnetically-separated sized fly ash: *Fuel*, v. 78, p. 197–203.
- Hower, J.C., Rathbone, R.F., Robl, T.L., Thomas, G.A., Haeberlin, B.O., and Trimble, A.S., 1997, Case study of the conversion of tangential- and wall-fired units to low-NO_x combustion – impact on fly ash quality: *Waste Management*, v. 17, no. 4, p. 219–229.
- Hower, J.C., and Robertson, J.D., 2004, Chemistry and petrology of fly ash derived from the co-combustion of western United States coal and tire-derived fuel: *Fuel Processing Technology*, v. 85, p. 359–377.
- Hower, J.C., Robertson, J.D., and Roberts, J.M., 2001, Petrology and minor element chemistry of combustion by-products from the co-combustion of coal, tire-derived fuel, and petroleum coke at a western Kentucky cyclone-fired unit: *Fuel Processing Technology*, v. 74, no. 2, p. 125–142.
- Hower, J.C., Robertson, J.D., Thomas, G.A., Wong, A.S., Schram, W.H., Graham, U.M., Rathbone, R.F., and Robl, T.L., 1996, Characterization of fly ash from Kentucky power plants: *Fuel*, v. 75 no. 4, p. 403–411.
- Hower, J.C., Robl, T.L., Anderson, C., Thomas, G.A., Sakulpitakphon, T., Mardon, S.M., and Clark, W.L., 2005, Characteristics of coal combustion products (CCPs) from Kentucky power plants, with emphasis on mercury content: *Fuel*, v. 84, p. 1338–1350.
- Hower, J.C., and Trimble, A.S., 1998, Petrographic analysis of sized fractions of fly ash – November 1994 samples, *in* Breit, G.N., and Finkelman, R.B., eds., *Characterization of coal and coal combustion products from a coal-burning power plant—preliminary report and results of analyses*: U.S. Geological Survey Open-File Report 98-342, p. 88–90.
- Hower, J.C., Robl, T.L., and Thomas, G.A., 1999, Changes in the quality of coal delivered to Kentucky power plants, 1978 to 1997: responses to Clean Air Act directives: *International Journal of Coal Geology*, v. 41, p. 125–155.
- Hower, J.C., Robl, T.L., and Thomas, G.A., 1999, Changes in the quality of coal combustion by-products produced by Kentucky power plants, 1978 to 1997: consequences of Clean Air Act directives: *Fuel*, v. 78, no. 6, p. 701–712.
- Hower, J.C., Robl, T.L., Thomas, G.A., Hopps, S.D., and Grider, M., 2009, Chemistry of coal and coal combustion products from Kentucky power plants – results from the 2007 sampling, with emphasis on selenium: *Combustion and Gasification Products*, v. 1, p. 50–62.
- Hower, J.C., Ruppert, L.F., and Williams, D.A., 2002, Controls on boron and germanium distribution in the low-sulfur Amos Coal Bed, Western Kentucky Coalfield, USA: *International Journal of Coal Geology*, v. 53, p. 27–42.
- Hower, J.C., Suárez-Ruiz, I., and Mastalerz, M., 2005, An approach toward a combined scheme for the petrographic classification of fly ash: Revision and clarification: *Energy and Fuels*, v. 19, p. 653–655.

- Hower, J.C., Sakulpitakphon, T., Trimble, A.S., Thomas, G.A., and Schram, W.H., 2006, Major and minor element distribution in fly ash from a coal-fired utility boiler in Kentucky: *Energy Sources, Part A*, v. 28, p. 79–95.
- Hower, J.C., Senior, C.L., Suuberg, E.M., Hurt, R.H., Wilcox, J.L., and Olson, E.S., 2010, Mercury capture by native fly ash carbons in coal-fired power plants: Progress in *Energy and Combustion Science*, v. 36, no. 4, p. 510–529.
- Hower, J.C., Thomas, G.A., Mardon, S.M., and Trimble, A.S., 2005, Impact of co-combustion of petroleum coke and coal on fly ash quality – case study of a western Kentucky power plant: *Applied Geochemistry*, v. 20, p. 1309–1319.
- Hower, J.C., Thomas, G.A., and Palmer, J., 1999, Impact of the conversion to low-NO_x combustion on ash characteristics in a utility boiler burning western US coal: *Fuel Processing Technology*, v. 61, p. 175–195.
- Hower, J.C., and Trimble, A.S., 1998, Petrographic analysis of sized fractions of fly ash – November 1994 samples, *in* Breit, G.N., and Finkelman, R.B., eds., *Characterization of coal and coal combustion products from a coal-burning power plant—preliminary report and results of analyses*: U.S. Geological Survey Open-File Report 98-342, p. 88–90.
- Hower, J.C., Trimble, A.S., and Eble, C.F., 2001, Temporal and spatial variations in fly ash quality: *Fuel Processing Technology*, v. 73, p. 37–58.
- Hower, J.C., Trimble, A.S., Eble, C.F., and Palmer, C.A., 1996, Petrography and chemistry of sized fly ash from low-sulfur and high-sulfur coal sources, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference*: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 786–791.
- Hower, J.C., Trimble, A.S., Eble, C.F., Palmer, C.A., and Kolker, A., 1999, Characterization of fly ash from low-sulfur and high-sulfur coal sources – partitioning of carbon and trace elements with particle size: *Energy Sources*, v. 21, p. 511–525.
- Hower, J.C., Valentim, B., Kostova, I.J., and Henke, K.R., 2008, Discussion on “Characteristics of fly ashes from full-scale coal-fired power plants and their relationship to mercury adsorption”: *Energy and Fuels*, v. 22, no. 2, p. 1055–1058.
- Hrdlička, F., and Slavík, P., 1999, Dynamic models of the lignite transport in dryer of power plant boiler, *in* Sakkestad, B.A., ed., *Proceedings of the International Technical Conference on Coal Utilization Systems, March 8–11, 1999, Clearwater, Fla., 24th*: p. 107–117.
- Hsi H.C., Chen, S., Rostam-Abadi, M., Rood, M.J., Richardson, C.F., Carey, T.R., and Chang, R., 1998, Preparation and evaluation of coal-derived activated carbons for removal of mercury vapor from simulated coal combustion flue gases: *Energy and Fuels*, v. 12, p. 1061–1070.
- Hsi H.C., Lee H.H., Hwang J.F., and Chen W., 2010, Mercury speciation and distribution in a 660-megawatt utility boiler in Taiwan firing bituminous coals: *Journal of the Air and Waste Management Association*, v. 60, no. 5, p. 514–522.
- Hsu, T.-C., 2008, Adsorption of an acid dye onto coal fly ash: *Fuel*, v. 87, p. 3040–3045.
- Huang, A.A., Farber, R.J., Mahoney, R.I., Eatough, D.J., Hansen, L.D., and Allard, D.W., 1982, Chemistry of invisible power plant plumes in southern California – the airborne perspective, *in* *Proceedings, Air Pollution Control Association Annual Meeting, June 20–25, 1982, New Orleans, Louisiana, 75th Annual Meeting*: Pittsburgh, Pa., Air Pollution Control Association, Paper no. 82-24.5, 21 p.

- Huang, C.P., and Hsu, M.-C., 1997, Recovery of EDTA from power plant boiler chemical cleaning wastewater: Maryland Department of Natural Resources Report CBWP-MANTA-TR-97-7, 100 p.
- Huang, H.S., 1981, Control of NO_x from coal-fired boilers: combustion-modification techniques: Argonne, Illinois, Argonne, National Laboratory Report ANL/ECT-13, 127 p.
- Huang, H.S., Livengood, C.D., and Zaromb, S., 1991, Emissions of airborne toxics from coal-fired boilers: Mercury: Argonne, Illinois, Argonne National Laboratory Report ANL/ESD/TM-35, 35 p.
- Huang, J., Xu, M., Yu, D., and Yu, Y., 2004, Fragmentation of coal particles by thermal stresses during combustion: Huazhong Keji Daxue Xuebao (Ziran Kexue Ban) [Journal of Huazhong University of Science and Technology (Natural Science Edition)], v. 32, no. 5, p. 78–80.
- Huang, L.Y., Norman, J.S., Pourkashanian, M., and Williams, A., 1996, Prediction of ash deposition on superheater tubes from pulverized coal combustion: Fuel, v. 75, no. 3, p. 271–279.
- Huang, Y., McMullan, J.T., and Williams, B.C., 2000, Influences of coal type on the performance of a pressurised fluidised bed combustion power plant: Fuel, v. 79, no. 13, p. 1595–1601.
- Huang, Y., Jin, B., Zhong, Z., Xiao, R., Tang, Z., and Ren, H., 2004, Trace elements (Mn, Cr, Pb, Se, Zn, Cd, and Hg) in emissions from a pulverized coal boiler: Fuel Processing Technology, v. 86, p. 23–32.
- Huang, Y., Rezvani, S., Mcilveen-Wright, D., Minchener, A., Hewitt, N., and Huang, Y., 2008, Techno-economic study of CO₂ capture and storage in coal fired oxygen fed entrained flow IGCC power plants: Fuel Processing Technology, v. 89, no. 9, p. 916–925.
- Huang, Z., Mohanty, M., Sevim, H., Mahajan, A., and Arnold, B., 2008, Techno-economic analysis of coal preparation plant design using Siu-Sim Simulator: International Journal of Coal Preparation and Utilization, v. 28, no. 1, p. 15–32.
- Hubbard, F.H., McGill, R.J., Dhir, R.K., and Ellis, M.S., 1984, Clay and pyrite transformations during ignition of pulverised coal: Mineralogical Magazine, v. 48, no. 347, p. 251–256.
- Huffman, G.P., Cprek, N., Shah, N., and Huggins, F.E., 2007, Distinguishing respirable quartz in coal fly ash using computer-controlled scanning electron microscopy, in University of Nottingham School of Chemical and Environmental Engineering, Programme and full papers, International Conference on Coal Science and Technology August 28–31, 2007, Nottingham, United Kingdom: University of Nottingham, School of Chemical and Environmental Engineering, [available as] International Energy Agency [IEA] Coal Research Library CD-ROM no. 400, p. 1–3.
- Huffman, G.P., and Huggins, F.E., 1984, Reactions and transformations of coal mineral matter at elevated temperatures: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 29, no. 4, p. 56–67, last accessed June 2010 at, http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/29_4_PHILADELPHIA_08-84_0056.pdf.
- Huggins, F., and Goodarzi, F., 2009, Environmental assessment of elements and polycyclic aromatic hydrocarbons emitted from a Canadian coal-fired power plant: International Journal of Coal Geology, v. 77, no. 3–4, p. 282–288.

- Huggins, F.E., Seidu, L.B.A., Shah, N., Huffman, G.P., Honaker, R.Q., Kyger, J.R., Higgins, B.L., Robertson, J.D., Pal, S., and Seehra, M.S., 2009, Elemental modes of occurrence in an Illinois #6 Coal and fractions prepared by physical separation techniques at a coal preparation plant: *International Journal of Coal Geology*, v. 78, no. 1, p. 65–76.
- Huggins, F.E., Senior, C.L., Chu, P., Ladwig, K., and Huffman, G.P., 2007, Selenium and arsenic speciation in fly ash from full-scale coal-burning utility plants: *Environmental Science and Technology*, v. 41, no. 9, p. 3284–3289.
- Huggins, F.E., Shah, N., Huffman, G.P., Kolker, A., Crowley, S.S., Palmer, C.A., and Finkelman, R.B., 2000, Mode of occurrence of chromium in four U.S. coals: *Fuel Processing Technology*, v. 63, no. 2, p. 79–92.
- Hughes, E., Battista, J., Stopek, D., and Akers, D., 1999, Upgraded coal interest group – a vision for coal-based power in 1999 and beyond, *in* Sakkestad, B.A., ed., *Proceedings of the International Technical Conference on Coal Utilization Systems*, March 8–11, 1999, Clearwater, Fla., 24th Conference: Washington, D.C., Coal & Slurry Technology Association, p. 133–137.
- Hui, K.S., and Chao, C.Y.H., 2008, Methane emissions abatement by multi-ion-exchanged Zeolite A prepared from both commercial-grade zeolite and coal fly ash: *Environmental Science and Technology*, v. 42, p. 7392–7397.
- Hulett, L.D., Carter, J.A., Cook, K.D., Emery, J.F., Klein, D.H., Lyon, W.S., Nyssen, G.A., Fulkerson, W., and Bolton, N.E., 1974, Trace element measurements at the coal-fired Allen Steam Plant—particle characterization, *in* Bituminous Coal Research, Inc., and National Coal Association, eds., *Coal Utilization Symposium—Focus on SO₂ Emission Control, Coal and the Environment Technical Conference*, October 22–24, 1974, Louisville, Kentucky: Washington, D.C., National Coal Association, p. 207–212.
- Hulett, L.D., and Weinberger, A.J., 1980, Some etching studies of the microstructure and composition of large aluminosilicate particles in fly ash from coal-burning power plants: *Environmental Science and Technology*, v. 14, no. 8, p. 1356–1358.
- Hulett, L.D., Weinberger, A.J., Ferguson, N.M., Northcutt, K.J., and Lyon, W.S., 1981, Trace element and phase relations in fly ash; final Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. EA-1822, 63 p.
- Hulett, L.D., Weinberger, A.J., Northcutt, K.J., and Ferguson, M., 1980, Chemical species in fly ash from coal-burning power plants: *Science*, v. 210, no. 4476, p. 1356–1358.
- Hull, A.P., 1971, Radiation in Perspective: Some comparisons of the environmental risks from nuclear and fossil-fueled power plants: *Nuclear Safety*, v. 12, no. 3, p. 185–196.
- Hull, A.P., 1974, Comparing effluent release from nuclear and fossil-fueled power plants: *Nuclear News*, v. 17, no. 5, p. 51–55.
- Humphrey, H., 2002, Are you using the appropriate coal combustion by-products (CCBs) and coal combustion products (CCPs) terminology in your coal mining reclamation applications?, *in* Vories, K.C. and Throgmorton, Dianne, eds., *Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 67–74.

- Humphrey, H., 2002, Coal Combustion Byproducts (CCBs) and Coal Combustion Products (CCPs) Terminology [abs.], *in* Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 5.
- Hurley, J.P., Erickson, T.A., Benson, S.A., and Brobjorg, J.N., 1991, Ash deposition at low temperatures in boilers firing western U.S. coals, *in* Warnock, A.S., ed., International Joint Power Conference, October 6–10, 1991, San Diego, California: New York, N.Y., American Society of Mechanical Engineers [ASME], PWR [Series], v. 13, p. 8.
- Hurley, J.P., Watne, T.M., O'Keefe, C.A., Akatrinak, K.A., Nowok, J.W., Roling, T.A., and Docktor, H.L., 1996, Chemical and physical analyses of Tidd Hot-Gas filter ash, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 129–134.
- Hurst, R.W., and Davis, T.E., 1981, Strontium isotopes as tracers of airborne fly ash from coal-fired power plants: *Environmental Geology*, v. 3, p. 363–367.
- Hurst, R.W., Davis, T.E., Elseewi, A.A., and Page, A.L., 1993, Strontium and lead isotopes as monitors of fossil fuel dispersion, *in* Keefer, R.F. and Sajwan, K.S., eds., Trace elements in coal and coal combustion residues: Boca Raton, Fla., Lewis Publishers, p. 99–118.
- Hurt, R., Davis, K., Yang, N., and Hardesty, D., 1995, The origin and properties of unburned carbon from pulverized-coal combustion: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-105743, variously paged.
- Hurt, R., Sun, J.-K., and Lunden, M.A., 1998, A kinematic model of carbon burnout in pulverized coal combustion: *Combustion and Flame*, v. 113, p. 181–197.
- Hurt, R.H., and Gibbins, J.R., 1995, Residual carbon from pulverized coal fired boilers – 1. – Size distribution and combustion reactivity: *Fuel*, v. 74, no. 4, p. 471–480.
- Husain, L., Webber, J.S., Dutkiewicz, V.A., and Canelli, E., 1985, Electron-microscopical identification of coal fly ash at a remote site in the northeastern United States: *American Chemical Society, Division of Fuel Chemistry; Preprints*, v. 30, no. 2, p. 225–233, last accessed May 2010 at, http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/30_2_MIAMI%20BEACH_04-85_0225.pdf.
- Husar, R.B., Patterson, D.E., Husar, J.D., Gillani, N.V., and Wilson, W.E.J., 1978, Sulfur budget of a power plant plume: *Atmospheric Environment*, v. 12, no. 1-3, p. 549–568.
- Hutcheson, M.R., and Hall, F.P., Jr., 1974, Sulfate washout from a coal fired power plant plume: *Atmospheric Environment*, v. 8, no. 1, p. 23–28.
- Hutson, N.D., Ryan, S.P., and Touati, A., 2009, Assessment of PCDD/F and PBDD/F emissions from coal-fired power plants during injection of brominated activated carbon for mercury control: *Atmospheric Environment*, v. 43, no. 26, p. 3973–3980.
- Hutton, F.R., 1902, The mechanical engineering of power plants: New York, N.Y., Wiley, 725 p.
- Hutton, M., 1982, The environmental significance of trace elements from coal combustion and conversion processes, *in* Chadwick, M.J., and Lindman, N., eds., Environmental Implications of Expanded Coal Utilisation: London, United Kingdom, Pergamon, p. 118–170.

- Huyen, D.T., 1997, Dispersion of lignite fly ash in the surrounding area of the Mae Moh Power Plant in Lampang Province: *Journal of the Science Faculty China Mechanical University*, v. 24, no. 2, p. 69–79.
- Iantovski, E., and Mathieu, Ph., 1997, Highly efficient zero emission CO₂-based power plant: *Energy Conversion and Management*, v. 38, supplement 1, p. S141–S146.
- Ijsselmuiden, A.J.A., 1981, Experience with coal-fired boilers in the Amer Power Station: *Resources and Conservation*, v. 7, p. 159–193.
- Ikeda, M., Tsuji, H., Kimoto, M., and Makino, H., 1996, Improvement of low load combustion stability on new low NO_x burner, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh*, v. 1, p. 377–382.
- Ilyin, L.A., Knizhnikov, V.A., and Barkhuderov, R.M., 1977, A relative estimation of excessive frequency of malignant tumors in populations due to discharges into the atmosphere from fossil fuel and nuclear power stations, *in* *International Radiation Protection Association, Proceedings International Congress of the IRPA, April 24–30, 1977, Paris, 4th Congress: Paris, Gauthier-Villars [publishers]*, p. 189–193.
- Imhoff, R.E., Luria, M., Valente, R.J., and Tanner, R.L., 2001, NO_y removal from the Cumberland Power Plant Plume: *Atmospheric Environment*, v. 35, no. 1, p. 179–183.
- Imhoff, R.E., Tanner, R.L., Valente, R.J., Luria, M., and Imhoff, R.E., 2000, The evolution of particles in the plume from a large coal-fired boiler with flue gas desulfurization: *Journal of the Air and Waste Management Association*, v. 50, no. 7, p. 1207–1214.
- Inculket, I.I., Bergougnou, M.A., and Brown, J.D., 1977, Electrostatic separation of particles below 40 micron in a dilute phase continuous loop: *Institute of Electrical and Electronic Engineers Transactions*, v. 1-13, A, p. 4.
- Inners, J.D., Edmunds, W.E., and LaRegina, J.A., 1996, Independent steam-electric power plants in the Anthracite Region, NE Pennsylvania: Site geology, Coal-refuse bank utilization, and environmental benefits, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh*, v. 2, p. 813–818.
- International Energy Agency [IEA], 1988, *Emission controls in electricity generation and industry*: Paris, France, OECD, 188 p.
- International Joint Commission and the Commission for Environmental Cooperation, 2005, *Consultation on emissions from coal-fired electrical utilities*: Montreal, Quebec, 96 p., last accessed June 2010 at, http://www.ijc.org/rel/pdf/IAQAB-emiss_coal-fired_uti.pdf.
- Iordanidis, A., Buckman, J., Triantafyllou, A.G., and Asvesta, A., 2008, Fly ash–airborne particles from Ptolemais–Kozani Area, northern Greece, as determined by ESEM-EDX: *International Journal of Coal Geology*, v. 73, no. 1, p. 63–73.
- Iordanidis, A., Georgakopoulos, A., Filippidis, A., and Kassoli-Fournaraki, A., 2001, A correlation study of trace elements in lignite and fly ash generated in a power station: *International Journal of Environmental Analytical Chemistry*, v. 79, no. 2, p. 133–141.
- Ireland, S.N., McGrellis, B., and Harper, N., 2004, On the technical and economic issues involved in the co-firing of coal and waste in a conventional pf-fired power station: *Fuel*, v. 83, no. 7-8, p. 905–915.

- Irgolic, K.J., Haas, G., Schlagenhaufen, C., and Goessler, W., 1998, Identification of arsenic species in coal ash particles: Graz, Austria, K-F University Institute for Analytical Chemistry, and Electric Power Research Institute [EPRI], Palo Alto, Calif., EPRI Report no: TR-109002, variously paged.
- Irlam, P., 2006, Upgrading boiler feed pumps in a UK coal-fired power station: *World Pumps*, v. 2006, no. 472, p. 28–33.
- Irwin, J.S., and Cope, A.M., 1979, Maximum surface concentration of SO₂ from a moderate-size steam-electric power plant as a function of power plant load: *Atmospheric Environment*, v. 13, no. 1, p. 195–197.
- Ishak, C.F., Seaman, J.C., Sumner, M.E., and Miller, W.P., 1999, Contaminant mobility in soil columns amended with fly ash and flue gas desulfurization gypsum, *in* Sajwan, K.S., Alva, A.K., and Keefer, R.F., eds., *Biogeochemistry of Trace Elements in Coal and Coal Combustion Byproducts*: New York, N.Y., Kluwer Academic/Plenum, p. 247–258.
- Ishibashi, M., 1996, Technology for removing carbon dioxide from power plant flue gas by the physical adsorption method [abs.]: *Fuel and Energy Abstracts*, v. 37, no. 3, p. 229.
- Ishibashi, M., Ota, H., Akutsu, N., Umeda, S., Tajika, M., Izumi, J., Yasutake, A., Kabata, T., and Kageyama, Y., 1996, Technology for removing carbon dioxide from power plant flue gas by the physical adsorption method: *Energy Conversion and Management*, v. 37, no. 6-8, p. 929–933.
- Ishida, M., and Jin, H., 1997, CO₂ recovery in a power plant with chemical looping combustion: *Energy Conversion and Management*, v. 38, supplement 1, p. S187–S192.
- Ishinomori, T., Watanabe, S., Kiga, T., Wall, T.F., Gupta, R.P., and Gupta, S.K., 1999, Prediction of the furnace heat absorption by utilizing thermomechanical analysis for various kinds of coal firing, *in* Sakkestad, B.A., ed., *Proceedings of the International Technical Conference on Coal Utilization Systems*, March 8–11, 1999, Clearwater, Fla., 24th Conference: Washington, D.C., Coal & Slurry Technology Association, p. 81–91.
- Islam, M.R., and Shinjo, R., 2009, Mining-induced fault reactivation associated with the main conveyor belt roadway and safety of the Barapukuria Coal Mine in Bangladesh: Constraints from BEM simulations: *International Journal of Coal Geology*, v. 79, no. 4, p. 115–130.
- Isreb, M., 1997, Integrated life synthesis for boiler sootblowers in fossil power plants: *Computers and Structures*, v. 63, no. 6, p. 1043–1051.
- Isreb, M., 1997, Superheater minimum stress unit start-up option of coal-fired power plant: *Computers and Structures*, v. 62, no. 5, p. 865–875.
- Isreb, Mustafa, ed., 1999, *Proceedings of the International Power and Energy Conference [INT-PEC '99]*, November 29–December 3, 1999, Churchill, Victoria, Australia, 1st Conference: Churchill, Vic., Monash University and Monash Engineering in Gippsland, 2 vol.
- Ito, S., Yokoyama, T., and Asakura, K., 2006, Emissions of mercury and other trace elements from coal-fired power plants in Japan: *The Science of The Total Environment*, v. 368, p. 397–402.
- Iyer, R., 2002, The surface chemistry of leaching coal fly ash: *Journal of Hazardous Materials*, v. 93, no. 3, p. 321–329.

- Iyer, R.S., and Scott, J.A., 2001, Power station fly ash—a review of value-added utilization outside of the construction industry resources: *Conservation and Recycling*, v. 31, p. 217–228.
- Izquierdo, M.T., and Rubio, B., 2008, Carbon-enriched coal fly ash as a precursor of activated carbons for SO₂ removal: *Journal of Hazardous Materials*, v. 155, p. 199–205.
- Izquierdo, M.T., and Rubio, B., 2009, Control of NO_x emissions from energy production, in Naylor, T.B., ed., *Flue Gases: Research, Technology and Economics*: New York, N.Y., Nova Science, p. 203–234.
- Izquierdo, M.T., Rubio, B., Mayoral, M.C., and Andrés, J.M., 2001, Modifications to the surface chemistry of low-rank coals based carbon catalyst to improve flue gas nitric oxide removal: *Applied Catalysis B. Environmental*, v. 33, p. 315–324.
- Izquierdo, M.T., Rubio, B., Mayoral, M.C., and Andrés, J.M., 2003, Low-cost carbon-based carbons for combined SO₂ and NO removal from exhaust gas: *Fuel*, v. 82, p. 147–151.
- Izquierdo, M.T., Rubio, B., Mayoral, M.C., Bona, M.T., and Andrés, J.M., 2007, Denitrification of stack gases in the presence of low-rank coal-based carbons activated with steam: *Energy and Fuels*, v. 21, p. 2033–2037.
- Jackson, B.P., Seaman, J.C., and Hopkins, W., 2003, Arsenic and selenium speciation in a fly ash settling basin system, in Sajwan, K.S., Alva, A.K., and Keefer, R.F., eds., *Chemistry of Trace Elements in Fly Ash*: New York, N.Y., Kluwer Academic/Plenum, p. 203–218.
- Jacobi, W., 1981, Umweltradioaktivität und strahlenexposition durch radioaktiv emissionen von kohlekraftwerken: Neuherberg, Gesellschaft für Strahlen- und Umweltforschung mbH München, Institut für Strahlenschutz; GSF-Bericht S-760, 61 p.
- Jacobi, W.H., Schmier, H., Schwibach, J., 1982, Comparison of radiation exposure from coal-fired and nuclear power plants in the Federal Republic of Germany, in World Health Organization, and others, *Health Impacts of Different Sources of Energy, Proceedings of an International Symposium on Health Impacts of Different Sources of Energy*, June 22–26, 1981, Nashville, Tennessee: Vienna, Austria, World Health Organization [WHO], United Nations Environment Programme, and International Atomic Energy Agency [IAEE], p. 215–227.
- Jacobs, L., 2002, Instrumentation for elemental analysis of coal ash products [abs.], in *Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 5.
- Jaffe, D., Prestbo, E., Swartzendruber, P., Weiss-Penzias, P., Kato, S., Takami, A., Hatakeyama, S., and Katjii, Y., 2005, Export of atmospheric mercury from Asia: *Atmospheric Environment*, v. 39, p. 3029–3038.
- Jaffe, D., Tamura, S., and Harris, J., 2005, Seasonal cycle and composition of background fine particles along the West Coast of the US: *Atmospheric Environment*, v. 39, p. 297–306.
- Jain, L.K., Calvin, E.L., and Looper, R.L., 1972, State of the art for controlling NO_x emission – Part 1. Utility boiler: Charlotte, N.C., Catalytic, Inc., Report to U.S. Environmental Protection Agency [EPA], 118 p.
- Jak, E., 2002, Prediction of coal ash fusion temperatures with the F*A*C*T Thermodynamic Computer Package: *Fuel*, v. 81, p. 1655–1668.

- Jambhulkar, H., and Juwarkar, A.A., 2009, Assessment of bioaccumulation of heavy metals by different plant species grown on fly ash dump: *Ecotoxicology and Environmental Safety*, v. 72, p. 1122–1128.
- James, K.W., and Foster, P.M., 1976, The application of an isotopic ratio technique to studies of the atmospheric oxidation of sulfur dioxide in the plumes from an oil-fired and a coal-fired power plant – I and II: *Atmospheric Environment*, v. 10, no. 8., p. 671.
- James, W.D., and Acevedo, L.E., 1993, Trace element partitioning in Texas lignite combustion: *Journal of Radioanalytical and Nuclear Chemistry, Articles*, v. 171, p. 287–302.
- Jamil, S., Abhilash, P.C., Singh, A., Singh, N., and Behl, H.M., 2009, Fly ash trapping and metal accumulating capacity of plants: implication for green belt around thermal power plants: *Landscape and Urban Planning*, v. 92, no. 2, p. 136–147.
- Jamil, S., Abhilash, P.C., Singh, N., and Sharma, P.N., 2009, *Jatropha curcas*: a potential crop for phytoremediation of coal fly ash: *Journal of Hazardous Materials*, v. 172, no. 1, p. 269–275.
- Jankowski, J., Ward, C.R., French, D., and Groves, S., 2004, Leachability of heavy metals from selected Australian fly ashes and its implications for groundwater contamination, in *International Pittsburgh Coal Conference*, eds., *Proceedings of the Annual International Pittsburgh Coal Conference*, September 13–17, 2004, Osaka, Japan, 21st Conference: p. 23.
- Jankowski, J., Ward, C.R., French, D., and Groves, S., 2006, Mobility of trace elements from selected Australian fly ashes and its potential impact on aquatic ecosystems: *Fuel*, v. 85, p. 243–256.
- Jansen, D., Oudhuis, A.B.J., and Ribberink, J.S., 1992, Different options for integrated coal gasification fuel cell power generation plants and their potential to reduce CO₂ emissions: *Petten, ECN*, 19 p.
- Jansen, D., Oudhuis, A.B.J., and van Veen, H.M., 1992, CO₂ reduction potential of future coal gasification based power generation technologies: *Energy Conversion and Management*, v. 33, no. 5–8, p. 365–372.
- Jansen, D., van der Laag, P.C., Oudhuis, A.B.J., and Ribberink, J.S., 1994, Prospects for advanced coal-fuelled fuel cell power plants: *Journal of Power Sources*, v. 49, no. 1–3, p. 151–165.
- Janssen, K.E., and Ericksen, R.L., 1979, Basin Electric's involvement with dry flue gas desulfurization: *Basin Electric Power Cooperative*, p. 1–8.
- Janssen, L.H.J.M., 1986, Mixing of ambient air in a plume and its effects on the oxidation of NO: *Atmospheric Environment*, v. 20, no. 12, p. 2347–2357.
- Janssen, L.H.J.M., 1988, *Reacties van stikstofoxiden in de rookpluimen van elektriciteitscentrales [Reactions of nitrogen oxides in power-plant plumes]: Models and Measurements*: Delft, The Netherlands, Arnhem, KEMA 3, 113 p.
- Janssen, L.H.J.M., and Elshout, A.J., 1987, Formation of NO₂ in power-plant plumes: *Measurements and Modelling*: Delft, The Netherlands, Arnhem, KEMA 5, p. 259–297.
- Janssen, L.H.J.M., Elshout, A.J., van Duuren, H., and van Haren, F., 1987, Modelling reactions of nitrogen oxides in power plant plumes, in *Perry, R., ed., Acid rain, scientific and technical advances, Presentations made at the International Acid Rain Conference*, September 1–3, 1987, Lisbon, Portugal: London, United Kingdom, Selper Ltd., p. 137–143.

- Janssen, L.H.J.M., Nieuwstadt, F.T.M., and Donze, M., 1990, Time scales of physical and chemical processes in chemically reactive plumes: *Atmospheric Environment*, v. 24, no. 11, p. 2861–2874.
- Janssen, L.H.J.M., van Haren, F., Bange, P., and van Duuren, H., 1991, Measurements and modelling of reactions of nitrogen oxides in power-plant plumes at night: *Atmospheric Environment*, v. 25, no. 5-6, p. 829–840.
- Janssen, L.H.J.M., van Wakeren, J.H.A., van Duuren, H., and Elshout, A.J., 1988, A classification of NO-oxidation rates in power plant plumes based on atmospheric conditions: *Atmospheric Environment*, v. 22, no. 1, p. 43–53.
- Janssen, M., 2002, Morella 2001 - workshop on novel products from combustion residues: *Journal of Chemical Technology and Biotechnology*, v. 77, no. 3, p. 227–228.
- Jaworowski, Z., Bilkiewicz, J., and Zyllicz, E., 1971, 226Ra in contemporary and fossil snow: *Health Physics*, v. 20, p. 449–450.
- Jayasekher, T., 2009, Aerosols near by a coal fired thermal power plant – chemical composition and toxic evaluation: *Chemosphere*, v. 75, no. 11, p. 1525–1530.
- Jegadeesan, G., Al-Abed, S.R., and Pinto, P., 2008, Influence of trace metal distribution on its leachability from coal fly ash: *Fuel*, v. 87, p. 1887–1893.
- Jenkins, S.D., and Mills, M.P., 1996, Plugging into clean coal – a utility’s response to climate change, in Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 694–699.
- Jenkins, S.H., 1982, Coal fired power stations and the environment: *Marine Pollution Bulletin*, v. 13, no. 12, p. 434–435.
- Jenkins, S.H., ed., *Solid wastes from coal fired power plants; Water pollution problems; Part of the Proceedings of the International Conference on Coal Fired Power Plants and the Aquatic Environment*, August 16–18, 1982, Copenhagen, Denmark: Oxford, U.K., Pergamon, Oxford : Pergamon, Water Science and Technology series, v. 15, no. 11, 250 p..
- Jeon, E.-C., Myeong, S., Sa, J.-W., Kim, J., and Jeong, J.-H., 2010, Greenhouse gas emission factor development for coal-fired power plants in Korea: *Applied Energy*, v. 87, no. 1, p. 205–210.
- Jewell, R.B., and Rathbone, R.F., 2009, Optical properties of coal combustion byproducts for particle-size analysis by laser diffraction: *Combustion and Gasification Products*, v. 1, p. 1–6.
- Jiang J.K., Hao J.M., Wu Y., Streets, D.G., Duan L., and Tian H.Z., 2005, Development of mercury emission inventory from coal combustion in China: *Huan Jing Ke Xue*, v. 26, no. 2, p. 34–39 [in Chinese with English abstract].
- Jiang, Y., Elswick, E., and Mastalerz, M., 2008, Progression in sulfur isotope compositions from coal to fly ash – examples from single-source combustion in Indiana: *International Journal of Coal Geology*, v. 73, no. 3-4, p. 271–284.
- Jiang, Z.-W., Luo, Z.-X., and Zhou, H.-C., 2009, A simple measurement method of temperature and emissivity of coal-fired flames from visible radiation image and its application in a CFB boiler furnace: *Fuel*, v. 88, p. 980–987.

- Jie X, Haibo Z., Chuguang Z., Zhaohui L., Lingda Z., Hao L., and Jianrong Q., 2009, An economic feasibility study of O₂/CO₂ recycle combustion technology based on existing coal-fired power plants in China: *Fuel*, v. 88, no. 6, 1135–1142.
- Jiming H., Litao W., Minjia S., Lin L., and Jingnan H., 2007, Air quality impacts of power plant emissions in Beijing: *Environmental Pollution*, v. 47, no. 2, p. 401–408.
- Jin, L., 2005, A fuzzy multi-criteria decision analysis for assessing technologies of air pollution abatement at coal-fired power plants: Regina, Saskatchewan, University of Regina, Engineering Master's thesis, 131 p., last accessed 5 January 2011 at <http://env.uregina.ca/publications/thesis/jinlei/ThesisM-JinLei.pdf>
- Jinsheng W., Ng, S.H., and Tsai, T.Y.R., 2009, Sorbents in Flue Gas Emission Control, *in* Naylor, T.B., ed., *Flue Gases: Research, Technology and Economics*: New York, N.Y., Nova Science, p. 287–306.
- Jobson, B.T., Frost, G.J., McKeen, S.A., Ryerson, T.B., Burh, M.P., Parrish, D.D., Trainer, M., and Fehsenfeld, F.C., 1998, Hydrogen peroxide dry deposition lifetime determined from observed loss rate in a power plant plume: *Journal of Geophysical Research*, v. 103, no. D17, p. 22,617–22,628.
- Johnson, J., 2001, Power plant to limit mercury: *Chemical Engineering News*, January 1, p. 18–19.
- Johnson, M.L., Lai, H.-Y., and Wortman, D., 2008, Preventing mercury emissions from coal-fired power plants using environmentally preferable coal purchasing practices: *Journal of Cleaner Production*, v. 16, no. 6, p. 716–721.
- Johnson, T.R., and Sotter, J.G., 1988, Application of pilot-scale coal testing to utility boilers: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-5946, 1 vol., variously paged.
- Johnson, W.B., 1969, Lidar observations of the diffusion and rise of stack plumes: *Journal of Applied Meteorology*, v. 8, p. 443–449.
- Johnson, W.B., and Uthe, E.E., 1971, Lidar study of the Keystone Stack Plume: *Atmospheric Environment*, v. 5, no. 8, p. 703–724.
- Jojo, P.J., Rawat, A., Kumar, A., and Prasad, R., 1993, Enhancement of trace uranium in fly ash: *Nuclear Geophysics*, v. 8, p. 55–59.
- Jojo, P.J., Rawat, A., Kumar, A., and Prasad, R., 1993, Trace uranium analysis in Indian coal samples: *Nuclear Geophysics*, v. 7, p. 445–448.
- Jones, A.P., Hoffmann, J.W., Smith, D.N., Feeley, T.J., and Murphy, J.T., 2007, DOE/NETLs phase II mercury control technology field testing program: preliminary economic analysis of activated carbon injection: *Environmental Science and Technology*, v. 41, p. 1365–1371.
- Jones, D.R., 1995, The leaching of major and trace elements from coal ash, *in* Swaine, D.J., and Goodarzi, F., eds., *Environmental Aspects of Trace Elements in Coal*: Dordrecht, The Netherlands, Kluwer, p. 221–262.
- Jones, M.L., Pavlish, B.M., and Jensen, M.D., 2007, JV Task 106 – Feasibility of CO₂ capture technologies for existing North Dakota lignite-fired pulverized coal boilers: University of North Dakota Energy and Environmental Research Center [EERC] Report 2007-EERC-04-10, 69 p.
- Jones, T., 1992, Environmental impact assessment for coal: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/46, 79 p.

- Joos, E., and Maffiolo, G., 1989, Airborne measurements of ozone concentrations in background air and power plant plumes: *Atmospheric Environment*, v. 23, no. 10, p. 2249–2257.
- Joos, E., Mendonca, A., and Seigneur, C., 1987, Evaluation of a reactive plume model with power plant plume data – application to the sensitivity analysis of sulfate and nitrate formation: *Atmospheric Environment*, v. 21, no. 6, p. 1331–1343.
- Joos, E., Millancourt, B., van Duuren, H., and Römer, F.G., 1990, Physico-chemical study by two aircraft of a plume from a coal-fired power plant: *Atmospheric Environment, Part A: General Topics*, v. 24, no. 3, p. 703–710.
- Jorjani, E., Hower, J.C., Chelgani, S.C., Shirazi, M., and Mesroghli, S., 2008, Studies of relationship between petrography and elemental analysis with grindability for Kentucky Coals: *Fuel*, v. 87, p. 707–713.
- Joutsensaari, J., Kauppinen, E.I., Jokiniemi, J.K., and Helble, J.J., 1994, Studies on ash vaporization in power plant scale coal combustion, *in* Williamson, J., and Wigley, F., eds., *The Impact of Ash Deposition on Coal Fired Plants; Proceedings of the Engineering Foundation Conference, June 20–25, 1993, Solihull, United Kingdom*: Washington, D.C., Taylor and Francis, p. 613–624.
- Juan, R., Hernández, S., Andrés, J.M., and Ruiz, C., 2007, Synthesis of granular zeolitic materials with high cation exchange capacity from agglomerated coal fly ash: *Fuel*, v. 86, p. 1811–1821.
- Juan, R., Hernández, S., Querol, X., Andrés, J.M., and Moreno, N., 2002, Zeolitic material synthesised from fly ash – use as cationic exchanger: *Journal of Chemical Technology and Biotechnology*, v. 77, no. 3, p. 299–304.
- Judkins, R.R., Fulkerson, W., Sanghvi, M.K., 1991, The dilemma of fossil fuel use and global climate change: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 36, no. 1, p. 331–343, last accessed May 2010 at, http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/36_1_ATLANTA_04-91_0331.pdf.
- Jun, X., Sun, X., Hu, S., and Yu, D., 2000, Experimental research on boiler combustion performance: *Fuel Processing Technology*, v. 68, no. 2, p. 139–151.
- Jung, B., 2007, Sintering characteristics of low-rank coal ashes: *Korean Journal of Chemical Engineering*, v. 13, no. 6, p. 633–639.
- Junying Z. and Yongchun Z., 2009, Emissions and control of trace elements and PM_{2.5} during coal combustion in China, *in* Naylor, T.B., ed., *Flue Gases: Research, Technology, and Economics*: New York, N.Y., Nova Science, p. 151–202.
- Junying Z., Yongchun Z., Chao W., Bin Y., and Chuguang Z., 2010, Mineralogy and microstructure of ash deposits from the Zhuzhou coal-fired power plant in China: *International Journal of Coal Geology*, v. 81, no. 4, p. 309–319.
- Jurewitz, J.L., 2001, Business strategies evolving in response to regulatory changes in the US Electric Power Industry, *in* Midttun, A., ed., *European Energy Industry Business Strategies*: Oxford, United Kingdom, Elsevier, p. 279–335.
- Jurewitz, J.L., 2002, California's electricity debacle: a guided tour: *The Electricity Journal*, v. 15, no. 4, p. 10–29.
- Jurinak, J.J., Grenney, W.J., Woldridge, G.L., Riley, J.P., and Wagenet, R.J., 1977, A model of environmental transport of heavy metals originating from stack derived particulate emission in semi-arid regions: Southern California Edison Company Research and Development Report 77-RD-27, 143 p.

- Jylhä, K., 1995, Deposition around a coal-fired power station during a wintertime precipitation event: *Water, Air, and Soil Pollution*, v. 85, p. 2125–2130.
- Kaakinen, J.W., Kaakinen, J.W., 1977, Estimating the potential for molybdenum enrichment in flora due to fallout from a nearby coal-fired power plant, *in* Chappell, W.R., and Petersen, K.K., eds., *Molybdenum in the Environment, Proceedings of the International Symposium on Molybdenum in the Environment*: New York, N.Y., Marcel Dekker, v. 2, p. 685–703.
- Kaakinen, J.W., and Jorden, R.M., 1974, Determination of a trace element mass balance for a coal-fired power plant, *in* Fulkerson, W., and others, eds., *Proceedings National Science Foundation Annual Trace Contaminants Conference, 1st Conference*: Oak Ridge, Tenn., U.S. Atomic Energy Commission [AEC] Report UC-11, p. 165–184.
- Kaakinen, J.W., Jorden, R.M., Lawasani, M.H., and West, R.E., 1975, Trace element behavior in coal-fired power plant: *Environmental Science and Technology*, v. 9, no. 9, p. 862–869.
- Kadam, K.L., 1997, Power plant flue gas as a source of CO₂ for microalgae cultivation – economic impact of different process options: *Energy Conversion and Management*, v. 38, supplement 1, p. S505–S510.
- Kagey, B.T., and Wixson, B.G., 1983, Health implications of coal development, *in* Thornton, I., ed., *Applied Environmental Geochemistry*: New York, N.Y., Academic, p. 463–480.
- Kahn, M.E., 2009, Regional growth and exposure to nearby coal fired power plant emissions: *Regional Science and Urban Economics*, v. 39, no. 1, p. 15–22.
- Kahraman, H., Reifenstein, A.P., and Coin, C.D.A., 1999, Correlation of ash behaviour in power stations using the improved ash fusion test: *Fuel*, v. 78, no. 12, p. 1463–1471.
- Kaiser, W.R., 1978, *Electric power generation from Texas lignite*: Austin, University of Texas, Bureau of Economic Geology, Geological Circular 78-3, 18 p.
- Kakaras, E., Ahladas, P., and Syrmopoulos, S., 2002, Computer simulation studies for the integration of an external dryer into a Greek lignite-fired power plant: *Fuel*, v. 81, no. 5, p. 583–593.
- Kakaras, E., Doukelis, A., Giannakopoulos, D., and Koumanakos, A., 2007, Economic implications of oxyfuel application in a lignite-fired power plant: *Fuel*, v. 86, no. 14, p. 2151–2158.
- Kakaras, E., Koumanakos, A., Doukelis, A., Giannakopoulos, D., and Vorrias, I., 2007, Oxyfuel boiler design in a lignite-fired power plant: *Fuel*, v. 86, no. 14, p. 2144–2150.
- Kaleta, P., and Tomza, U., 1988, Trace elements in size-fractionated coal ash from two Polish power plants: *Journal of Radioanalytical and Nuclear Chemistry Articles*, v. 121, no. 2, p. 237–244.
- Kalkwarf, D.R., Jackson, P.O., and Kutt, J.C., 1985, Emanation coefficients for Rn in sized coal fly ash: *Health Physics*, v. 48, no. 4, p. 429–436.
- Kallappa, P., Holmes, M.S., and Ray, A., 1997, Life-extending control of fossil fuel power plants: *Automatica*, v. 33, no. 6, p. 1101–1118.
- Kallithrakas-Kontos, N., Zoumi, K., Nikolakaki, S., and Kritidis, P., 1998, Trace elements and radioactivity in aerosol particles, produced in the area of Ptolemais (Greece): *Journal of Radioanalytical and Nuclear Chemistry*, v. 227, no. 1-2, p. 61–65.

- Kalyani, V.K., Gouri Charan, T., Haldar, D.D., Sinha, A., and Suresh, N., 2007, Coal-fine beneficiation studies of a bench-scale water-only cyclone using artificial neural network: *International Journal of Coal Preparation and Utilization*, v. 28, no. 2, p. 94–114.
- Kalyoncu, R., 2002, History of CCPs production, use, and application [abs.], in *Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 1.
- Kalyoncu, R., 2002, Coal combustion products, production and uses, in Vories, K.C. and Throgmorton, Dianne, eds., *Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 13–17, 20–24.
- Kamei, K., Kawamata, N., Ishikawa, K., Shindo, K., Syoji, T., Maeda, Y., Izumi, N., Funahashi, K., and Yanai, M., 1996, Recent development of a simultaneous sulfur and dust removal process for IGCC power generation system, in Chiang, S.-H., ed., *Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference*, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1284–1289.
- Kamon, M., and Katsumi, T., 1995, Utilization of coal fly ash from fluidized bed combustion systems, in Acar, Y.B., and Daniel, D.E., eds., *Geoenvironment 2000 – Characterization, Containment, Remediation, and Performance in Environmental Geotechnics*: New York, N.Y., American Society of Civil Engineers [ASCE], p. 1765–1779.
- Kane, R.L., 1996, Climate Challenge: Electric utility voluntary actions to reduce greenhouse gas emissions, in Chiang, S.-H., ed., *Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference*, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1322.
- Kaneko, G., Hasezaki, K., Nakashita, A., and Kakuda, H., 2008, Mechanical properties of high dense coal fly-ash bulk materials by plasma spark sintering (SPS): *Nippon Kinzoku Gakkai-Shi*, v. 72, no. 10, p. 795–799.
- Kang, B.S., Johnson, E.K., Mallela, R., and Barberio, J.F., 1996, Preliminary strength measurements of high temperature ash filter deposits, in Chiang, S.-H., ed., *Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference*, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 122–128.
- Kantarci, M.D., 2003, The effects of three thermo electric power plants on Yerkesik-Denizova Forests in Mugla Province (Turkey): *Water, Air, and Soil Pollution–Focus*, v. 3, p. 205–213.
- Kantiranis, N., Filippidis, A., and Georgakopoulos, A., 2005, Investigation of the uptake ability of fly ashes produced after lignite combustion: *Journal of Environmental Management*, v. 76, no. 2, p. 119–123.
- Kapička, A., Jordanova, N., Petrovský, E., and Ustjak, S., 2001, Effect of different soil conditions on magnetic parameters of power-plant fly ashes: *Journal of Applied Geophysics*, v. 48, no. 2, p. 93–102.

- Kapička, A., Petrovský, E., Ustjak, S., and Macháčková, K., 1999, Proxy mapping of fly-ash pollution of soils around a coal-burning power plant – a case study in the Czech Republic: *Journal of Geochemical Exploration*, v. 66, p. 291–297.
- Kaplan, L.J., 1982, Cost-saving process recovers CO from power-plant fluegas: *Chemical Engineering*, v. 89, no. 24, p. 30–31.
- Kaplan, N., 1985, Status of commercial utility FGD (flue gas desulfurization) technology: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Air and Energy Engineering Research Laboratory, Report no. EPA/600/D-85/155, 27 p.
- Karamanis, D., Ioannides, K., and Stamoulis, K., 2009, Environmental assessment of natural radionuclides and heavy metals in waters discharged from a lignite-fired power plant: *Fuel*, v. 88, no. 10, p. 2046–2052.
- Karamchandani, P., Santos, L., and Sykes, I., 1999, SCICHEM – a new generation plume-in-grid model: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-113097, variously paged.
- Karamchandani, P., and Seigneur, C., 1999, Simulation of sulfate and nitrate chemistry in power plant plumes: *Journal of the Air and Waste Management Association*, v. 49, no. 1 supplement, p. PM175–PM181.
- Karamchandani, P., Zhang, Y., and Seigneur, C., 1999, Simulation of sulfate formation in the Mojave Power Plant Plume: San Ramon, Calif., Atmospheric and Environmental Research, Inc., report prepared for Electric Power Research Institute [EPRI], last accessed July 2010 at http://www.energy.ca.gov/Reports/2002-01-10_600-00-015/APPENDICES/600-00-015-AD.pdf, [62 p.].
- Karamdoust, N.A., and Durrani, S.A., 1990, Determination of radon emanation power of fly ash produced in coal-combustion power stations: *International Journal of Radiation Applications and Instrumentation [United Kingdom]*, Part D, v. 19, no. 1–4, p. 339–342.
- Karangelos, D.J., Petropoulos, N.P., Anagnostakis, M.J., Hinis, E.P., and Simopoulos, S.E., 2004, Radiological characteristics and investigation of the radioactive equilibrium in the ashes produced in lignite-fired power plants: *Journal of Environmental Radioactivity*, v. 77, no. 3, p. 233–246.
- Karathanasis, A.D., and Barton, C.A., 1999, The revival of a failed constructed wetland treating a high Fe Load AMD, *in* Sajwan, K.S., Alva, A.K., and Keefer, R.F., eds., *Biogeochemistry of Trace Elements in Coal and Coal Combustion Byproducts*: New York, N.Y., Kluwer Academic/Plenum, p. 167–192.
- Karayığıt, Ali I., Bulut, Y., Karayığıt, G., Querol, X., Alastuey, A., Vassilev, S., and Vassileva, C., 2006, Mass balance of major and trace elements in a coal-fired power plant: *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, 1556–7230, v. 28, no. 14, p. 1311–1320.
- Karayığıt, Ali I., Bulut, Y., Querol, X., Alastuey, A., and Vassilev, S., 2005, Variations in fly ash composition from the Soma Power Plant, Turkey: *Energy Sources*, v. 27, no. 15, p. 1473–1481.
- Karayığıt, Ali I., and Gayer, Rod A., 2001, Characterisation of fly ash from the Kangal Power Plant, eastern Turkey, *in* *International Ash Utilization Symposium, 2001*: Lexington, University of Kentucky Center for Applied Energy Research [CAER], [8] p., last accessed August 2011 at <http://www.flyash.info/2001/chemin1/04karay.pdf>

- Karayığıt, A.I., Gayer, R.A., Querol, X., and Onacak, T., 2000, Contents of major and trace elements in feed coals from Turkish coal-fired power plants: *International Journal of Coal Geology*, v. 44, no. 2, p. 169–184.
- Karayığıt, A.I., Onacak, T., Gayer, R.A., and Goldsmith, S., 2001, Mineralogy and geochemistry of feed coals and their combustion residues from the Cayirhan Power Plant, Ankara, Turkey: *Applied Geochemistry*, v. 16, p. 911–919.
- Karmadoost, N.A., Durrani, S.A., and Fremlin, J.H., 1988, An investigation of radon exhalation from fly ash produced in the combustion of coal: *Nuclear Tracks and Radiation Measurements*, v. 15, p. 647–650.
- Kashiwakura, S., Kubo, H., Kumagai, Y., Kubo, H., Matsubae-Yokoyama, K., Nakajima, K., and Nagasaka, T., 2009, Removal of boron from coal fly ash by washing with HCl solution: *Fuel*, v. 88, no. 7, p. 1245–1250.
- Kather, A., Kessel, W., and Brueggemann, H., 1995, Development and operating experience from slag tap pulverized coal firing: *VGB Kraftwerkstechnik*, v. 75, no. 8, p. 707–714.
- Kato, T., Kon, Y., and Suzuoki, Y., 2005, Effective utilization of woody biomass for electricity production in Japan – comparative assessment of co-firing in coal fired power plant and fuel cell with gasification: *Greenhouse Gas Control Technologies*, v. 7, p. 2437–2440.
- Katrinak, K.A., DeWall, R.A., and Timpe, R.C., 1996, Trace element content of cleaned Illinois coal: *American Chemical Society, Division of Fuel Chemistry, Preprints*, v. 41, no. 3, p. 777–780, last accessed March 2010 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/41_3_ORLANDO_08-96_0777.pdf.
- Katrinak, K.A., and Zygarlicke, C.J., 1993, Size-related variations in coal fly ash composition as determined using automated Scanning Electron Microscopy: *American Chemical Society, Division of Fuel Chemistry, Preprints*, v. 38, no. 4, p. 1203–1209, last accessed March 2010 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/38_4_CHICAGO_08-93_1203.pdf.
- Katta, S., Shires, P.J., Campbell, W.M., and Henningsen, G., 1994, Studies of in-situ calcium based sorbants in advanced pressurized coal conversion systems; Final Report; June 1991–October 1994: U.S. Department of Energy; Office of Fossil Energy; Morgantown Energy Technology Center, Morgantown, W. Va., Report no. DOE/MC/27233-3919, 119 p.
- Katz, J., 1980, Factors affecting resistivity in electrostatic precipitation: *Journal of the Air Pollution Control Association*, v. 30, p. 195–202.
- Katz, J.L., 2002, A novel method for the removal of trace concentrations of elemental mercury from utility emissions: Baltimore, Md., Johns Hopkins University, 13 p., last accessed March 2010 at <http://www.osti.gov/energycitations/servlets/purl/823712-njCf6k/native/>.
- Kaufherr, N., Shenasa, M., and Lichtman, D., 1985, X-ray Photoelectron Spectroscopy studies of coal fly ashes with emphasis on depth profiling of submicrometer particle size fractions: *Environmental Science and Technology*, v. 19, no. 7, p. 609–614.
- Kauppinen, E.I., and Pakkanen, T.A., 1990, Coal combustion aerosols – a field study: *Environmental Science and Technology*, v. 24, no. 12, p. 1811–1818.
- Kautz, K., 1984, Mineralogical aspects of the combustion of hard coal in power plants – from coal to fly ash: *Fortschrift Mineralogie*, no. 62, p. 51–72.

- Kazonich, G., and Kim, A.G., 1996, Leaching coal combustion by-products with acidic, basic, and neutral liquids, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1037–1042.
- Keating, M.H., Mahaffey, K.R., Schoeny, R., Rice, G.E., Bullock, O.R., Ambrose, R.B.J., Swartout, J., and Nichols, J.W., 1998, Mercury study Report to Congress: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Office of Air Quality Planning and Standards and Office of Research and Development, Report no. EPA-452/R-97-003, v. 8.
- Keefer, R.F., 1993, Coal ashes—industrial wastes or beneficial by-products, *in* Keefer, R.F. and Sajwan, K.S., eds., Trace elements in coal and coal combustion residues: Boca Raton, Fla., Lewis Publishers, p. 3–9.
- Keefer, R.F., Bhumbra, D.K., and Singh, R.N., 1993, Accumulation of Mo in wheat and alfalfa grown on fly ash-amended acid mine spoils, *in* Keefer, R.F. and Sajwan, K.S., eds., Trace elements in coal and coal combustion residues: Boca Raton, Fla., Lewis Publishers, p. 239–258.
- Keefer, R.F., and Sajwan, K.S., eds., 1993, Trace elements in coal and coal combustion residues: Boca Raton, Fla., Lewis Publishers, 308 p.
- Keegan, T.J., Farago, M.E., Thornton, I., Bing Hong, Colvile, R.N., Pesch, B., Jakubis, P., and Nieuwenhuijsen, M.J., 2006, Dispersion of As and selected heavy metals around a coal-burning power station in central Slovakia: The Science of The Total Environment, v. 358, no. 1-3, p. 61–71.
- Keeth, R.J., 1991, Economic evaluation of flue gas desulfurization systems – final Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. GS-7193, 1 vol., variously paged.
- Kellie, S., Cao, Y., and Duan, Y., 2005, Factors affecting mercury speciation in a 100-MW coal-fired boiler with low-NO_x burners: Energy and Fuels, v. 19, p. 800–806.
- Kelly, J.M., 1984, Litterfall sulfur and nitrogen inputs as influenced by power plant proximity: Water, Air, and Soil Pollution, v. 22, p. 143–152.
- Kelso, J.R.M., and Milburn, G.S., 1979, Entrainment and impingement of fish by power plants in the Great Lakes which use the once-through cooling process: Journal of Great Lakes Research, v. 5, no. 2, p. 182–194.
- Kemfert, C., 2007, The European electricity and climate policy—complement or substitute?: Environment and Planning, C, v. 25, p. 115–130.
- Kennedy, F.M., Schroeder, A.C., and Veitch, J.D., 1981, Economics of ash disposal at coal-fired power plants: U.S. Environmental Protection Agency [EPA] and Tennessee Valley Authority [TVA], Report no. EPA-600/7-81-170; TVA/OP/EDT-81/34, 204 p.
- Kerminen, V.-M., and Wexler, A.S., 2002, The occurrence of sulfuric acid-water nucleation in plumes – urban environment: Tellus; Series B—Chemical and Physical Meteorology, v. 48, no. 1, p. 65–82.
- Kerr, R.A., 2009, How much coal remains?: Science, v. 323, p. 1420–1421.
- Kewley, D.J., 1978, Atmospheric dispersion of a chemically reacting plume: Atmospheric Environment, v. 12, no. 9, p. 1895–1900.
- Khalil, E.E., 1990, Power Plant Design: New York, N.Y., Abacus Press, 370 p.

- Khalil, M.A.K., and Rasmussen, R.A., 1992, Nitrous oxide from coal-fired power plants – experiments in the plumes: *Journal of Geophysical Research*, v. 97, p. 14,645–14,650.
- Khan, A.M., Pandey, V., Shukla, J., Singh, N., Yunus, M., Singh, S.N., and Ahmad, K.J., 1990, Effect of thermal power plant emissions on *Catharanthus roseus* L.: *Bulletin of Environmental Contamination and Toxicology*, v. 44, p. 865–870.
- Khandekar, M.P., Bhide, A.D., and Sajwan, K.S., 1999, Trace elements in Indian Coal and Coal Fly Ash, *in* Sajwan, K.S., Alva, A.K., and Keefer, R.F., eds., *Biogeochemistry of Trace Elements in Coal and Coal Combustion Byproducts*: New York, N.Y., Kluwer Academic/Plenum, p. 99–114.
- Khanra, S., Mallick, D., Dutta, S.N., and Chaudhuri, S.K., 1998, Studies on the phase mineralogy and leaching characteristics of coal fly ash: *Water, Air, and Soil Pollution*, v. 107, p. 251–275.
- Kharchenko, N.V., 1998, *Advanced energy systems*: Washington, D.C., Taylor and Francis, 285 p.
- Khatri, C., and Rani, A., 2008, Synthesis of a nano-crystalline solid acid catalyst from fly ash and its catalytic performance: *Fuel*, v. 87, p. 2886–2892.
- Khemani, L.T., Naik, M.S., Momini, G.A., Kachre, K.S.D., Selvam, A.M., and Murty, B.V.R., 1980, A study of the gaseous and particulate pollutants in the environment of a thermal power plant project area: *Water, Air, and Soil Pollution*, v. 13, p. 303–316.
- Kierdorf, H., and Kierdorf, U., 1999, Reduction of fluoride deposition in the vicinity of a brown coal-fired power plant as indicated by bone fluoride concentrations of Roe Deer (*Capreolus capreolus*): *Bulletin of Environmental Contamination and Toxicology*, v. 63, p. 473–477.
- Kikuchi, R., 2004, The possibility of combining solutions to air pollution with policies for social improvement through transformation of SO_x and NO_x into fertilizer – data obtained from the Szechwan Project: *Journal of Environment and Development*, v. 13, no. 3, p. 240–262.
- Kikuchi, R., 2006, Alternative by-products of coal combustion and simultaneous SO₂/SO₃/NO_x treatment of coal-fired flue gas – approach to environmentally friendly use of low-rank coal, *in* Sajwan, K.S., Twardowska, I., Punshon, T., and Alva, A.K., eds., *Coal Combustion Byproducts and Environmental Issues*: New York, N.Y., Springer, p. 21–32.
- Kilgroe, James D., 2001, Control of mercury emissions from coal-fired electric utility boilers – interim Report including errata dated 3-21-02: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Office of Research and Development, National Risk Management Research Laboratory, Air Pollution Prevention and Control Division, Report no. EPA-600/R-01-109, 6 microfiches.
- Kim, A., 2002, CCB leaching summary: Survey of methods and results [abs.], *in* Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 14.

- Kim, A., 2002, CCB leaching summary: Survey of methods and results, *in* Vories, K.C. and Throgmorton, Dianne, eds., *Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 179–197.
- Kim, A., 2002, Physical and chemical CCB characteristics of fly ash, *in* Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum [abs.]: *Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 1–2.
- Kim, A., 2002, Physical and chemical characteristics of CCB, *in* Vories, K.C. and Throgmorton, Dianne, eds., *Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 25–42.
- Kim, A.G., and Hesbach, P., 2009, Comparison of fly ash leaching methods: *Fuel*, v. 88, no. 5, p. 926–937.
- Kim, A.G., and Sharp, F.A., 1995, Leaching coal combustion by-products with acidic, basic and neutral liquids, *in* *International Ash Utilization Symposium*, October 23–25, 1995, Lexington, Kentucky: Lexington, University of Kentucky, Center for Applied Energy Research [CAER], [5] p.
- Kim, B.R., Chu, T.-Y.J., and Ruane, R.J., 1983, Settling of coal ashes: *Journal of Environmental Engineering* [American Society of Civil Engineers (ASCE)], v. 109, no. 1, p. 157–173.
- Kim, C., and Lior, N., 1998, A numerical analysis of NO_x formation and control in radiatively/conductively-stabilized pulverized coal combustors: *Chemical Engineering Journal*, v. 71, no. 3, p. 221–231.
- Kim, D.S., Hopke, P.K., Casuccio, G.S., and Lee, R., 1986, Particle class analysis for coal-fired power plant fly ash, *in* *Air Pollution Control Association [APCA], Annual Meeting of the Air Pollution Control Association*, June 22–27, 1986, Minneapolis, Minnesota, 79th Annual Meeting: Pittsburgh, Pa., Air Pollution Control Association, p. 53–56.
- Kim, D.S., Hopke, P.K., Casuccio, G.S., Lee, R.J., Miller, S.E., Sverdrup, G.M., and Garber, R. W., 1989, Comparison of particles taken from the ESP and plume of a coal fired power plant with background aerosol particles: *Atmospheric Environment*, v. 23, no. 1, p. 81–84.
- Kim, H.T., Kim, S.W., and Lee, C., 1996, An engineering model for the basic design of coal gasification system in IGCC powerplant, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, *Proceedings of the Annual International Pittsburgh Coal Conference*, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1431–1436.
- Kim, J.M., and Kim, H.S., 2004, Processing and properties of a glass-ceramic from coal fly ash from a thermal power plant through an economic process: *Journal of the European Ceramic Society*, v. 24, no. 9, p. 2825–2833.

- Kim, S.-T., Scaroni, A.W., and Fatemi-Badi, M., 1988, Effect of maceral composition and vitrinite reflectance on the combustion behavior of six hvA bituminous coals: *Fuel*, v. 33, no. 4, p. 842–896.
- Kimble, B.J., and Gross, M.L., 1980, TCDD quantification in stack-collected coal fly ash: *Science*, v. 207, p. 59–61.
- Kimmell, T.A., and Veil, J.A., 2009, Impact of drought on U.S. steam electric power plant cooling water intakes and related water resource management issues: Argonne National Laboratory [Univ. Chicago and U.S. Dept. Energy] U.S. Dept. of Energy [DOE] / National Energy Technology Laboratory [NETL] -2009/1364, 58 p. and appendices, last accessed 6 January 2011 at <http://www.netl.doe.gov/technologies/coalpower/ewr/water/pdfs/final-drought%20impacts.pdf>.
- Kimura, N., Omata, K., Kiga, T., Takano, S., and Shikisima, S., 1995, The characteristics of pulverized coal combustion in O_2/CO_2 mixtures for CO_2 recovery: *Energy Conversion and Management*, v. 36, no. 6-9, p. 805–808.
- King, M., and Yang, C.C.T., 1981, Future economy of electric power generated by nuclear and coal-fired power plants: *Energy*, v. 6, no. 3, p. 263–275.
- Kirchner, H., Merz, E., and Schiffrers, A., 1974, Radioaktive emissionen aus mit rheinischer braunkohle befeuerten kraftwerksanlagen: *Braunkohle*, v. 11, p. 340–345.
- Kirkham, R.M., and Ladwig, L.R., 1980, Energy resources of the Denver and Cheyenne Basins, Colorado; resource characteristics, development potential, and environmental problems: *Colorado Geological Survey Environmental Geology*, v. 12, p. 35-38, 93, 109–119, 205–207.
- Kirsch, H., Padberg, W., Scholz, A., and Zimmermeyer, G., 1982, Cadmium emissions from coal-fired power plants, *in* Cadmium Association and others, Edited proceedings, International Cadmium Conference, February 3–5, 1981, Miami, Florida, 3rd Conference: London, Cadmium Association, p. 64–68.
- Kjær, S., 1996, Status and future of advanced PF power plants: *Energy Conversion and Management*, v. 37, no. 6-8, p. 897–902.
- Klein, D.H., Andren, A.W., and Bolton, N.E., 1975, Trace element discharge from coal combustion for power production: *Water, Air, and Soil Pollution*, v. 5, p. 71–77.
- Klein, D.H., Andren, A.W., Carter, J.A., Emery, J.F., Feldman, C., Fulkerson, W., Lyon, W.S., Ogle, J.C., Talmi, Y., Van Hook, R.I., and Bolton, N., 1975, Pathways of thirty-seven trace elements through coal-fired power plant: *Environmental Science and Technology*, v. 9, no. 10, p. 973–979.
- Klein, D.H., and Russell, P., 1973, Heavy metals: Fallout around a power plant: *Environmental Science and Technology*, v. 7, no. 4, p. 357–358.
- Klett, M.G., Rutkowski, M.D., and Zaharchuk, R., 1996, Assessment of hot particulate removal systems for IGCC and PFBC advanced power systems, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 136.
- Klika, Z., Bartoová, L., and Spears, D.A., 2001, Effect of boiler output on trace element partitioning during coal combustion in two fluidised-bed power stations: *Fuel*, v. 80, no. 7, p. 907-917.
- Klingspor, J.S., and Cope, D.R., 1987, FGD handbook – flue gas desulphurization systems: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report ICEAS/B5, 271 p.

- Klita, Z., Bartonova, L., and Spears, D.A., 2001, Effect of boiler output on trace element partitioning during coal combustion in two fluidized-bed power stations: *Fuel*, v. 80, p. 907–917.
- Kljajić, R., Mašić, Z., Žunić, Z., Pavlović, S., Tošić, M., Mandić, M., Gordanić, V., and Polić, P., 1996, Natural radionuclide emission from a coal power plant and the population exposure to external radiation in its vicinity: *Environment International*, v. 22, supplement 1, p. 227–235.
- Klusek, C.S., Heit, M., and Hodgkiss, S., 1993, Trace element concentrations in the soft tissue of transplanted freshwater mussels near a coal-fired power plant, *in* Keefer, R.F. and Sajwan, K.S., eds., *Trace elements in coal and coal combustion residues*: Boca Raton, Fla., Lewis Publishers, p. 59–95.
- Klusek, C.S., Miller, K.M., and Heit, M., 1983, Trace element and radionuclide mass balances at a coal-fired electric generating station: *Environment International*, v. 9, no. 2, p. 139–144.
- Knott, A.C., 1984, Environmental aspects of energy coal utilization: Canberra, Australia, Department of Resources and Energy, end of grant Report no. 433, 3 microfiche – part 1, 88 p.; part 2, 51 p.; and part 3, 76 p.
- Knuutila, H., Svendsen, H.F., and Anttila, M., 2009, CO₂ capture from coal-fired power plants based on sodium carbonate slurry – a systems feasibility and sensitivity study: *International Journal of Greenhouse Gas Control*, v. 3, no. 2, p. 143–151.
- Kober, A.E., 1983, Simplified method of determining the T250 temperature of molten coal ash: *World Coal Technology*, v. 9, p. 52–55, 63.
- Koch, G.H., Kistler, C., and Mirisk, 1987, Evaluation of flue gas desulphurization materials in the mixing zone – R.D. Morrow Sr. Generating Station: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-5476, 1 vol., variously paged.
- Koehler, K., 2002, CCB placement and hydrology monitoring at Trapper Mine [abs.], *in* Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 10.
- Koehler, K., 2002, Hydrologic monitoring and CCB placement at Trapper Mine, *in* Vories, K.C. and Throgmorton, Dianne, eds., *Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 123–125.
- Kolb, W., 1978, Die emission radioaktiver stoffe mit der abluft aus kern- und steinkohlekraftwerken: e. vergleich d. strahlenbelastung [included English summary: Emission of radioactive material in the waste gas of nuclear and coal fired plants: a comparison of radiation burden]: *Physikalisch Technische Bundesanstalt Bericht, Radioaktivität Ra* 8, 13 p.
- Kolbenev, I.L., 1993, A non-traditional energy carrier: the efficiency of use in power plants with a hydrogen generator: *Renewable Energy*, v. 3, no. 2–3, p. 227–233.
- Kolker, A., Engle, M.A., Krabbenhoft, D.P., and Olson, M.L., 2007, Investigating atmospheric mercury with the USGS Mobile Mercury Laboratory: *USGS Fact Sheet FS 2007-3071*, 4 p. last accessed March 2010 at <http://pubs.usgs.gov/fs/2007/3071/>.

- Kolker, A., Engle, M.A., Orem, W.H., Bunnell, J.E., Lerch, H.E., Krabbenhoft, D.P., Olson, M.L., and McCord, J.D., 2008, Mercury, trace elements and organic constituents in atmospheric fine particulate matter, Shenandoah National Park, Virginia, USA – a combined approach to sampling and analysis: *Geostandards and Geoanalytical Research*, v. 32, no. 3, p. 279–293.
- Kolker, A., and Finkelman, R.B., 1998, Potentially hazardous elements in coal – modes of occurrence and summary of concentration data for components: *Coal Preparation*, v. 19, p. 133–157.
- Kolker, A., Finkelman, R.B., Affolter, R.H., and Brownfield, M.E., 2000, The composition of coal combustion by-products – examples from a Kentucky power plant, in Vories, K.C., and Throgmorton, D., eds., *Proceedings of the Use and Disposal of Coal Combustion By-Products at Coal Mines – A Technical Interactive Forum held at Morgantown, West Virginia, at U.S. Department of Energy's National Energy Technology Laboratory, April 10–13, 2000*: Alton, Illinois, U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement and Carbondale, Illinois, Coal Research Center, Southern Illinois University, p. 15–24.
- Kolker, A., Finkelman, R.B., Tewalt, S.J., and Olea, R., 2008, Applicability of USGS Databases for estimating global mercury input from coal use [abs.]: *Geological Society of America, Abstracts with Programs*, v. 40, no. 6, p. 495.
- Kolker, A., Hower, J.C., and Affolter, R.H., 2007, Mineralogy and geochemistry of fly ash – what's in it? [abs.]: *Geological Society of America, Abstracts with Programs*, v. 39, no. 6, p. 174.
- Kolker, A., Huggins, F.E., Palmer, C.A., Shah, N., Crowley, S.S., Huffman, G.P., and Finkelman, R.B., 2000, Mode of occurrence of arsenic in four US coals: *Fuel Processing Technology*, v. 63, no. 2, p. 167–178.
- Kolker, A., Mroczkowski, S.J., Palmer, C.A., Dennen, K.O., Finkelman, R.B., and Bullock, J.H. Jr., 2002, Toxic substances from coal combustion – a comprehensive assessment, Phase II – element modes of occurrence for the Ohio 5/6/7, Wyodak, and North Dakota coal samples: *U.S. Geological Survey Open File Report 02-224*, 79 p.
- Kolker, A., Palmer, C.A., Bragg, L.J., and Tewalt, S.J., 2005, Mercury in coal and its impact on utility mercury emissions: *Geochemica et Cosmochemica Acta*, v. 69, no. 10 [supplement 1], p. A699.
- Kolker, A., Senior, C.L., and Quick, J.C., 2006, Mercury in coal and the impact of coal quality on mercury emissions from combustion systems: *Applied Geochemistry*, v. 21, no. 11, p. 1821–1836.
- Kolton-Shapira, R., Lakritz, Y., and Luria, M., 1984, Rainwater pH in the vicinity of Hadera Power Plant, Israel during the winter season of 1981/82: *Atmospheric Environment*, v. 18, no. 6, p. 1245–1248.
- Koomey, J., Rosenfeld, A.H., and Gadgil, A., 1990, Conservation screening curves to compare efficiency investments to power plants: *Energy Policy*, v. 18, no. 8, p. 774–782.
- Koornneef, J., van Keulen, T., Faaij, A., and Turkenburg, W., 2008, Life cycle assessment of a pulverized coal power plant with post-combustion capture, transport and storage of CO₂: *International Journal of Greenhouse Gas Control*, v. 2, no. 4, p. 448–467.
- Koppius-Odink, J.M., 1989, The first De-NO_x installation in the Netherlands – a demonstration project at Epon-Nijmegen Power Station, in 1989 Symposium on Stationary Combustion Nitrogen Oxide Control: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. GS-6423, p. 6A-57–6A-83.

- Kopsick, D.A., and Angino, E.E., 1981, Effect of leachate solutions from fly and bottom ash on groundwater quality: *Journal of Hydrology*, v. 54, p. 341–356.
- Korcak, R.F., 1996, Coal combustion residues as soil amendments – surface coal mining, in Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., *Coal Combustion By-Products Associated with Coal Mining—Interactive Forum*, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 143–152.
- Korkmaz, Ö., Oeljeklaus, G., and Görner, K., 2009, Analysis of retrofitting coal-fired power plants with carbon dioxide capture: *Energy Procedia*, v. 1, no. 1, p. 1289–1295.
- Korytnyi, E., Saveliev, R., Perelman, M., Chudnovsky, B., and Bar-Ziv, E., 2009, Computational fluid dynamic simulations of coal-fired utility boilers – an engineering tool: *Fuel*, v. 88, p. 9–18.
- Kost, D.A., Bingham, J.M., Stehouwer, R.C., Beeghly, J.H., Fowler, R., Traina, S.J., Wolfe, W.E., and Dick, W.A., 2005, Chemical and physical properties of dry flue gas desulfurization products: *Journal of Environmental Quality*, v. 36, p. 676–686.
- Kostakis, G., 2009, Characterization of the fly ashes from the lignite burning power plants of northern Greece based on their quantitative mineralogical composition: *Journal of Hazardous Materials*, v. 166, no. 2-3, p. 972–977.
- Kostic, Z., Repic, B., Dakic, D., and Jovanovic, L., 1994, Influence of furnace combustion conditions on NO_x emission from lignite flames: *Journal of Hazardous Materials*, v. 37, no. 1, p. 225–232.
- Kotas, T.J., 1980, Exergy criteria of performance for thermal plant – second of two papers on exergy techniques in thermal plant analysis: *International Journal of Heat and Fluid Flow*, v. 2, no. 4, p. 147–163.
- Kotnik, J., Horvat, M., Fajon, V., and Logar, M., 2002, Mercury in small freshwater lakes – a case study – Lake Velenje, Slovenia: *Water, Air, and Soil Pollution*, v. 134, no. 1-4, p. 317–337.
- Kotnik, J., Horvat, M., Mandic, V., and Logar, M., 2000, Influence of the Šoštanj coal-fired thermal power plant on mercury and methyl mercury concentrations in Lake Velenje, Slovenia: *The Science of The Total Environment*, v. 259, no. 1-3, p. 85–95.
- Kotowicz, J., Chmielniak, T., and Janusz-Szymanska, K., 2010, The influence of membrane CO₂ separation on the efficiency of a coal-fired power plant: *Energy*, v. 35, no. 2, p. 841–850.
- Koukoulzas, N., Hämäläinen, J., Papanikolaou, D., Tourunen, A., and Jäntti, T., 2007, Mineralogical and elemental composition of fly ash from pilot scale fluidised bed combustion of lignite, bituminous coal, wood chips, and their blends: *Fuel*, v. 86, p. 2186–2193.
- Koukoulzas, N., Vasilatos, C., Itskos, G., Mitsis, I., and Moutsatsou, A., 2010, Removal of heavy metals from wastewater using CFB-coal fly ash zeolitic materials: *Journal of Hazardous Materials*, v. 15, nos. 1-3, p. 581–588.
- Koukoulzas, N.K., Zeng, R., Perdikatsis, V., Xu, W., and Kakaras, E.K., 2006, Mineralogy and geochemistry of Greek and Chinese coal fly ash: *Fuel*, v. 85, no. 16, p. 2301–2309.

- Kouprianov, V.I., and Bashkin, V.N., 2000, Environmental impact of heavy metals contained in fly ash emitted from the Thai lignite-fired power plant: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 45, no. 1, p. 83–87, last accessed May 2010 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/45_1_SAN%20FRANCISCO_03-00_0083.pdf.
- Kovács, F., and Mang, B., 2002, Solid and fly ash materials of brown coal power plants, their characteristics and utilisation: *Acta Montanistica Slovaca*, v. 3, p. 156–160.
- Kövé, L., and Tóth, J., 1984, XPS investigation of air pollution ejected by a coal-fired power plant: *Atmospheric Environment*, v. 18, p. 2135–2141.
- Kramlich, J.C., and Sliger, R.N., 2000, Reduction of inherent mercury emissions in PC combustion: University of Washington Report no. DE-FG22-95PC95216-09, to U.S. Department of Energy [DOE], 66 p.
- Kreiger, H., and Jacobs, B., 1978, Analysis of radioactive contaminants in by-products from coal-fired power plant operations: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA/600/4-78/039, 41 p.
- Krishnan, S.V., Gullett, B.K., and Jozewicz, W., 1997, Mercury control in municipal waste combustors and coal-fired utilities: *Environmental Progress*, v. 16, p. 47–53.
- Kruger, A.A., Brough, A.R., Katz, A., Bakharev, T., Sun, G.-K., Kirkpatrick, R.J., Struble, L.J., and Young, J.F., 1995, Microstructural aspects of zeolite formation in alkali activated cements containing high levels of fly ash, *in* Daimond, Sidney, ed., *Microstructure of cement-based systems/bonding and interfaces in cementitious materials*, symposia held November 28–December 1, 1994, Boston, Massachusetts: Pittsburgh, Pa., Materials Research Society, p. 199–208.
- Kube, W.R., and Gronhøvd, G.H., eds., 1977, Technology and use of lignite; Proceedings of a symposium, May 18–19, 1977, Grand Forks, North Dakota, 9th Symposium: Grand Forks, University of North Dakota, Energy and Environmental Research Center [EERC] and Oak Ridge, Tenn., U.S. Department of Energy, 390 p.
- Kubitschek, H.E., and Venta, L., 1979, Mutagenicity of coal fly ash from electric power plant precipitators: *Environmental Mutagenesis*, v. 1, p. 79–82.
- Kubitschek, H.E., and Williams, D.M., 1980, Mutagenicity of fly ash from a fluidized bed combustor during start-up and steady operating conditions: *Mutation Research*, v. 77, p. 287–291.
- Kuhn, J.K., and Smith, N.D., 1980, Abundance of trace and minor elements in organic and mineral fractions in coal: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-600/7-80-003, 68 p.
- Külaots, I., Hurt, R.H., and Suuberg, E.M., 2004, Size distribution of unburned carbon in coal fly ash and its implications: *Fuel*, v. 83, no. 2, p. 223–230.
- Kulich, J., 1979, Poisoning of the soil with arsenic in the area of an electrical plant: *Zbornik Vedeckych Prac Vysokej Skoly Technickej v Kosiciach, Prostredia 1*, p. 327–335.
- Kumar, R., Kumar, A., Sengupta, D., and Prasad, R., 2003, Study of radon and its daughters in thermal power plants: *Radiation Measurements*, v. 36, no. 1-6, p. 521–524.
- Kumar, R., Mahur, A.K., Sengupta, D., and Prasad, R., 2005, Radon activity and exhalation rates measurements in fly ash from a thermal power plant: *Radiation Measurements*, v. 40, p. 638–641.

- Kumar, S., and Stewart, J., 2003, Evaluation of Illinois pulverized coal combustion dry bottom ash for use in geotechnical engineering applications: *Journal of Energy Engineering*, v. 129, no. 2, p. 42–55.
- Kumar, S., and Stewart, J., 2003, Utilization of Illinois PCC dry bottom ash for compacted landfill barriers: *International Journal of Phytoremediation*, v. 12, no. 3, p. 401–415.
- Kumar, S., Stewart, J., and Mishra, S., 2004, Strength characteristics of Illinois coal combustion by-product – PCC dry bottom ash: *International Journal of Environmental Studies*, v. 61, no. 5, p. 551–562.
- Kumar, S., and Vaddu, P., 2004, Swell potential of pulverized coal combustion bottom ash amended with sodium bentonite: *Journal of Energy Engineering*, v. 130, no. 2, p. 54–65.
- Kuo, J.T., Smida, J., Hsiao, S.S., Wang, C.Y., and Chou, C.S., 1998, Stagnant zones in granular moving bed filters for flue gas cleanup: *Filtration and Separation*, v. 35, no. 6, p. 529–534.
- Kuprianov, V.I., Bashkin, V.N., Towprayoon, S., Milindalekha, J., and Wongyai, K., 2001, Emission of arsenic and gaseous pollutants from power generation in northern Thailand – impact on ecosystem and human health: *World Resource Review*, v. 14, no. 1, p. 98–115.
- Kuprianov, V.I., and Tanetsakunvatana, V., 2003, Optimization of excess air for the improvement of environmental performance of a 150 mw boiler fired with Thai lignite: *Applied Energy*, v. 74, no. 3-4, p. 445–453.
- Kuroda, H., Morita, I., Murata, T., Nakajima, F., Kato, Y., and Kato, A., 1989, Recent developments in the SCR system and its operational experience, in Eskinazi, D., and Linak, W.P., 1989 Symposium on Stationary Combustion Nitrogen Oxide Control, March 6–9, 1989, San Francisco, California: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. GS-6423, p. 6A-57–6A-83.
- Kurose, R., Ikeda, M., and Makino, H., 2001, Combustion characteristics of high ash coal in pulverized coal combustion: *Fuel*, v. 80, p. 1447–1455.
- Kurose, R., Watanabe, H., and Makino, H., 2009, Numerical simulations of pulverized coal combustion: *KONA Powder and Particle Journal*, v. 144, no. 27, p. 144–156.
- Kusano, Y., Leipold, F., Fateev, A., and Bindslev, H., 2009, NO reduction in flue gas by reaction with N₂ and ammonia-derived radicals, in Naylor, T.B., ed., *Flue Gases – Research, Technology, and Economics*: New York, N.Y., Nova Science, p. 329–346.
- Kutchko, B.G., and Kim, A.G., 2006, Fly ash characterization by SEM-EDS: *Fuel*, v. 85, p. 2537–2544.
- Kwon, S., Borguet, E., and Vidic, R.D., 2002, Impact of surface heterogeneity on mercury uptake by carbonaceous sorbents under UHV and atmospheric pressure: *Environmental Science and Technology*, v. 36, no. 19, p. 4162–4169.
- Laine, N.R., Vastola, F.J., and Walker, P.L.J., 1963, The importance of active surface area in the carbon-oxygen reaction: *Journal of Physical Chemistry*, v. 67, no. 10, p. 2030–2034.
- Lajeunesse, J.J.G., 1995, Developing a mass balance around an electrical generating plant burning Nova Scotia coal: *Atlantic Geology*, v. 31, no. 1, p. 50.
- Lakshmiraju, M., and Cui, J., 2007, Numerical investigation of pressure loss reduction in a power plant stack: *Applied Mathematical Modelling*, v. 31, no. 9, p. 1915–1933.

- Lalit, B.Y., Ramachandran, T.V., and Mishra, U.C., 1986, Natural radiation environment of the Nasik and Neyveli Thermal Power Stations, India: *The Science of The Total Environment*, v. 52, no. 3, p. 221–232.
- Lalit, B.Y., Ramachandran, T.V., and Mishra, U.C., 1986, Radiation exposures due to coal fired power stations in India: *Radiation Protection and Dosimetry*, v. 15, p. 197–202.
- Lam, P.-L., and Shiua, A., 2001, A data envelopment analysis of the efficiency of China's thermal power generation: *Utilities Policy*, v. 10, no. 2, p. 75–83.
- Lamar, T.W., and Morehead, H.T., 1996, Major enhancement to the competitiveness of Foster Wheeler's Topping PCFB, *in* Chiang, S.-H., ed., *Proceedings of the Annual International Pittsburgh Coal Conference*, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 273–278.
- La Marca, C., Cioni, M., Pintus, N., Rossi, N., Malloggi, S., and Barbieri, A., 2003, Macro and micro-pollutant emission reduction in coal-fired power plant, *in* IFT, Instituto Superior Técnico, Clean Air 2003, International Conference on Energy for a Clean Environment, July 7–10, 2003, Lisbon, Portugal, 7th Conference: Lisbon, IFT, Instituto Superior Técnico, [12] p. last accessed March 2010 at <http://tecnet.pt/enel.it/depositi/tecnet/congressi/295/883-macro%20la%20marca.pdf>.
- Lamarre, L., 1995, Assessing the risks of utility hazardous air pollutants: *Electric Power Research Institute [EPRI] Journal*, v. 20, no. 1, p. 7–15.
- Landman, A.A., 2006, Aspects of solid-state chemistry of fly ash and ultramarine pigments: Pretoria, South Africa, University of Pretoria, Ph.D. thesis, 153 p.
- Larkin, R.J., 1982, Combustion modification controls for stationary gas turbine: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-600/S7-81-122, 9 p.
- Larsen, O.H., Frandsen, F.J., Hansen, L.A., Vargas, S., Dam-Johansen, K., Laursen, K., Yamada, T., and Teramae, T., 1999, Advanced analytical characterization of coal ashes – an Idemitsu Kosan—Elsam Cooperation Project, *in* Gupta, R.P., Wall, T.F., and Baxter, L., eds., *Impact of Mineral Impurities in Solid Fuel Combustion*: New York, N.Y., Kluwer Academic/Plenum, p. 133–145.
- Latimer, D.A., 1980, Power plant impacts on visibility in the West: siting and emissions control implications: *Journal of the Air Pollution Control Association*, v. 30, p. 142–146.
- Latimer, D.A., and Samuelsen, G.S., 1975, Visual impact of plumes from power plants: Irvine, University of California, School of Engineering, Air Quality Laboratory Report UCI-ARTR-75-3, 79 [?] p.
- Latimer, D.A., and Samuelsen, G.S., 1978, Visual impact of plumes from power plants – a theoretical model: *Atmospheric Environment*, v. 12, p. 1455–1465.
- Lau, F., 1996, International potential of IGCC technology for use in reducing global warming and climate change emissions, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, *Proceedings of the Annual International Pittsburgh Coal Conference*, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 685–690.
- Laudal, D.L., 2000, JV Task 26—mercury and lead sampling at Minnesota Power's Boswell Energy Center: Grand Forks, University of North Dakota Energy and Environmental Research Center [EERC], 26 p.

- Laudal, D.L., 2000, Mercury speciation sampling at New Century Energy's Valmont Station: Grand Forks, University of North Dakota, Energy and Environmental Research Center [EERC], 2000-EERC-04-03, 51 p.
- Laudal, D.L., 2001, JV Task 10 – characterization and modeling of the forms of mercury from coal-fired power plants: Grand Forks, University of North Dakota, Energy and Environmental Research Center [EERC] final Report DE-FC26-98FT40321, 33 p.
- Laudal, D.L., 2002, Power plant evaluation of the effect of selective catalytic reduction on mercury: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1005400, variously paged.
- Laudal, D.L., Brown, T.D., and Nott, B.R., 2000, Effects of flue gas constituents on mercury speciation: *Fuel Processing Technology*, v. 65, p. 157–165.
- Laudal, D.L., Dunham, G.E., Prestbo, E.M., and Levin, L., 2004, Atmospheric mercury species transformation in a coal-fired power plant plume, *in* Air and Waste Management Association [A&WMA], Proceedings, Combined Power Plant Air Pollution Control Mega Symposium, August 30–September 2, 2004, Washington, D.C.: Pittsburgh, Pa., Air and Waste Management Association [A&WMA], unknown position on 1 CD-ROM.
- Laudal, D.L., and French, N.B., 2000, State-of-the-art of mercury continuous emission monitors for coal-fired systems, *in* Benson, Steven A., ed., Mercury, trace elements, and particulate matter, Proceedings of the Conference on Air Quality, September 19–21, 2000, McLean, Virginia, 2nd Conference: Amsterdam, The Netherlands, Elsevier, Paper A3-2 [pagination not found].
- Laudal, D.L., Miller, S.J., and Chang, R., 1993, Enhanced fine particulate control for reduced air-toxic emissions, *in* Chow, W., and others, eds., Managing Hazardous Air Pollutants: State of the Art: Electric Power Research Institute [EPRI] Report no. TR-101890, Boca Raton, Fla., Lewis Publishers, p. 414–422.
- Laudal, D.L., Nott, B.R., Brown, T.D., and Robertson, R., 1997, Mercury speciation methods for utility flue gas: *Fresenius' Journal of Analytical Chemistry*, v. 358, p. 397–400.
- Laudal, D.L., Pavlish, J.H., Graves, J., and Stockdill, D., 1999, Mercury mass balance – a case study of two North Dakota power plants, *in* Air and Waste Management Association [A&WMA], Mercury in the environment, specialty conference of the Air and Waste Management Association [A&WMA], September 15–17, 1999, Minneapolis, Minnesota: Sewickley, Pa., Air and Waste Management Association [A&WMA], p. 340–349.
- Laudal, D.L., Pavlish, J.H., Graves, J., and Stockdill, D., 2000, Mercury mass balances – a case study of two North Dakota power plants: *Journal of the Air and Waste Management Association [A&WMA]*, v. 50, no. 10, p. 1798–1804.
- Laudal, D.L., and Thompson, J.S., 2003, Mercury measurement results from Three Edison Mission Electric Power Plant: Grand Forks, University of North Dakota, Energy and Environmental Research Center [EERC] Publication 2003-EERC-04-03, 46 p., last accessed June 2010 at <http://www.netl.doe.gov/technologies/coalpower/ewr/mercury/control-tech/pubs/40321/40321%20final%20Report.pdf>.
- Laudal, D.L., Thompson, J.S., Pavlish, J.H., Brickett, L.A., and Chu, P., 2004, Use of continuous mercury monitors at coal-fired utilities: *Fuel Processing Technology*, v. 85, no. 6-7, p. 501–511.

- Laudal, D.L., Thompson, J.S., Pavlish, J.H., Brickett, L., Chu, P., Srivastava, R.K., Lee, C.W., and Kilgroe, James, 2003, Mercury speciation at power plants using SCR and SNCR control technologies: *Environmental Manager*, February 2003, p. 16–22.
- Lauf, R.J., 1992, Microstructures of coal fly ash particles: *Ceramic Bulletin*, v. 61, no. 4, p. 487–490.
- Lauf, R.J., Harris, L.A., and Rawlson, S.S., 1982, Pyrite framboids as the source of magnetite spheres in fly ash: *Environmental Science and Technology*, v. 16, p. 218–220.
- Laumb, J.D., Folkedahl, B.C., and Zygarlicke, C.J., 2008, Characteristics and behavior of inorganic constituents, *in* Miller, B.G., and Tillman, D.A., eds., *Combustion Engineering Issues for Solid Fuel Systems*: Amsterdam, Elsevier, p. 133–170.
- Lave, L.B., and Freeberg, L.C., 1973, Health effects of electricity generation from coal, oil, and nuclear fuel: *Nuclear Safety*, v. 14, no. 5, p. 409–428.
- Lawal, W., Wang, M., Stephenson, P., and Yeung, H., 2009, Dynamic modeling and simulation of CO₂ chemical absorption process for coal-fired power plants: *Computer Aided Chemical Engineering*, v. 27, p. 1725–1730.
- Lawal, W., Wang, M., Stephenson, P., and Yeung, H., 2009, Dynamic modelling of CO₂ absorption for post combustion capture in coal-fired power plants: *Fuel*, v. 88, p. 2455–2462.
- Lawasani, M.H., 1974, Model of fate of trace elements in coal-fired power plant: Boulder, Colo., University of Colorado, Master of Science thesis, 77 p.
- Lázaro, M.J., Gálvez, M.E., Suelves, I., Moliner, R., Vassilev, S.V., and Braekman-Danheux, C., 2004, Low cost catalytic sorbents for NO_x reduction – 3. – NO reduction tests using NH₃ as reducing agent: *Fuel*, v. 83, p. 875–884.
- Laznow, J., and Gerstle, 1992, New rules tighten control of hazardous air pollutants: *Hazmat World*, v. 5, no. 1, p. 36–37.
- Leavitt, C., Arledge, K., Shik, C., Orsini, R., and Saur, A., 1980, Environmental assessment of a coal-fired controlled utility boiler – final Report, June 1978–December 1979: TRW, Inc., Redondo Beach, Calif., Report no. PB-80-187735 to U.S. Department of Energy, 236 p.
- Le Bris, T., Cadavid, F., Caillat, S., Pietrzyk, S., Blondin, J., and Baudoin, B., 2007, Coal combustion modelling of large power plant, for NO_x abatement: *Fuel*, v. 86, no. 14, p. 2213–2220.
- Leci, C.L., 1996, Financial implications on power generation costs resulting from the parasitic effect of CO₂ using liquid scrubbing technology from power station flue gases: *Energy Conversion and Management*, v. 37, no. 6, p. 915–921.
- Leci, C.L., 1997, Development requirements for absorption processes for effective CO₂ capture from power plants: *Energy Conversion and Management*, v. 38, p. 45–50.
- Leci, C.L., and Goldthorpe, S.H., 1992, Assessment of CO₂ removal from power station flue gas: *Energy Conversion and Management*, v. 33, no. 5, p. 477–486.
- Lecuyer, I., Bicocchi, S., Ausset, P., and Lefevre, R., 1996, Physico-chemical characterization and leaching of desulphurization coal fly ash: *Waste Management and Research*, v. 14, no. 1, p. 15–28.

- Lee, C., Kim, Y.J., Lee, H., and Choi, B.C., 2008, MAX-DOAS measurements of ClO, SO₂ and NO₂ in the mid-latitude coastal boundary layer and a power plant plume, in Kim, Y.J., and Platt, U., eds., *Advanced Environmental Monitoring*: New York, N.Y., Springer, p. 37–49.
- Lee, C.L., Davis, K.A., Heap, M.P., Sarofim, A.F., and Eddings, E.G., 2000, Trends in predicting and controlling emissions from coal fired boilers: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 45, no. 1, p. 93–95, last accessed May 2010 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/45_1_SAN%20FRANCISCO_03-00_0093.pdf
- Lee, C.M., Davis, K.A., Heap, M.P., Eddings, E., and Sarofim, A.F., 2000, Modeling the vaporization of ash constituents in a coal-fired boiler, *in* Candel, S.M., Driscoll, J.F., Burgess, A.R., and Gored, J.P., eds., *International Symposium on Combustion*, July 30–August 4, 2000, Edinburgh, Scotland, 28th Symposium: Pittsburgh, Pa., Combustion Institute, v. 2, p. 2375–2382.
- Lee, C.W., Srivastava, R.K., Ghorishi, S.B., Karwowski, J., Hastings, T.W., and Hirschi, J.C., 2006, Pilot-scale study of the effect of selective catalytic reduction catalyst on mercury speciation in Illinois and Powder River Basin coal combustion flue gases: *Journal of the Air and Waste Management Association*, v. 56, p. 643–649.
- Lee, F., Ghobadian, A., and Riley, G.S., 1994, Prediction of ash deposition in a pulverised coal-fired axisymmetric furnace, *in* Williamson, J., and Wigley, F., eds., *The Impact of Ash Deposition on Coal Fired Plants; Proceedings of the Engineering Foundation Conference*, June 20–25, 1993, Solihull, United Kingdom: Washington, D.C., Taylor and Francis, p. 247–258.
- Lee, H., Kim, Y.J., and Lee, C., 2009, Estimation of the rate of increase in nitrogen dioxide concentrations from power plant stacks using an imaging-DOAS: *Environmental Monitoring and Assessment*, v. 152, p. 61–70.
- Lee, J.-Y., Ju, Y., Lee, S.-S., Keener, T.C., and Varma, R.S., 2008, Novel mercury oxidant and sorbent for mercury emissions control from coal-fired power plants: *Water, Air, and Soil Pollution*, v. 8, no. 3-4, p. 333–341.
- Lee, K.-T., Tan, K.-C., Dahlan, I., and Rahman-Mohamed, A., 2008, Development of kinetic model for the reaction between SO₂/NO and coal fly ash/CaO/CaSO₄ sorbent: *Fuel*, no. 87, p. 2223–2228.
- Lee, M., 2005, The shadow price of substitutable sulfur in the US electric power plant – a distance function approach: *Journal of Environmental Management*, v. 77, no. 2, p. 104–110.
- Lee, R.E., Crist, H.L., Riley, A.E., and MacLeod, K.E., 1975, Concentration and size of trace metal emissions from a power plant, a steel plant, and a cotton gin: *Environmental Science and Technology*, v. 9, no. 7, p. 643–647.
- Lee, S., and Spears, D.A., 1997, Natural weathering of pulverized fuel ash and porewater evolution: *Applied Geochemistry*, v. 12, p. 367–376.
- Lee, S.J., Seo, Y.-C., Jang, H.-N., Park, K.-S., Baek, J.-I., An, H.-S., and Song, K.-C., 2006, Speciation and mass distribution of mercury in a bituminous coal-fired power plant: *Atmospheric Environment*, v. 40, no. 12, p. 2215–2224.
- Lee, S.-S., Lee, J.-Y., and Keener, T.C., 2008, Novel sorbents for mercury emissions control from coal-fired power plants: *Journal of the Chinese Institute of Chemical Engineers*, v. 39, no. 2 [Festschrift Issue], p. 137–142.

- Lee, S.-S., Lee, J.-Y., and Keener, T.C., 2009, Bench-scale studies of in-duct mercury capture using cupric chloride-impregnated carbons: *Environmental Science and Technology*, v. 43, p. 2957–2962.
- Lee, S.W., 2010, Fine particulate matter measurement and international standardization for air quality and emissions from stationary sources: *Fuel*, v. 89, no. 4, p. 874–882.
- Lei D., and Jin B.-S., 2009, Numerical simulation and optimization of flue gas flow field and reagent concentration field in coal fired power station SCR system: Meitan Xuebao [Journal of the China Coal Society], v. 34, no. 3, p. 394–399.
- Leithner, R., Hermann, W., and Trautmann, G.N., 1979, Flue gas pressure vibrations in steam generators when firing systems break down: *EVT, Energie- und Verfahrenstechnik GmbH*, p. 11–21.
- Leiva, C., Vilches, L.F., Vale, J., Olivares, J., and Fernández-Pereira, C., 2008, Effect of carbonaceous matter contents on the fire resistance and mechanical properties of coal fly ash enriched mortars: *Fuel*, v. 87, p. 2977–2982.
- Léonard, A., Deknudt, Gh., Léonard, E.D., and Decat, G., 1984, Chromosome aberrations in employees from fossil-fueled and nuclear-power plants: *Mutation Research/Genetic Toxicology*, v. 138, no. 2-3, p. 205–212.
- Leseewi, A.A., and Page, A.L., 1984, Molybdenum enrichment of plants grown on fly ash-treated soils: *Journal of Environmental Quality*, v. 13, p. 394–398.
- Lesley, M.P., and Froelich, P.N., 2003, Arsenic, selenium, and antimony – from coal fired power plants to the Chattahoochee River, in Hatcher, K.J., ed., *Proceedings of the 2003 Georgia Water Resources Conference*, April 23–24, 2003, Athens, Georgia: Athens, University of Georgia, Institute of Ecology, [4] p.
- Levandowski, J., and Kalkreuth, W., 2009, Chemical and petrological characterization of feed coal, fly ash and bottom ash from the Figueira Power Plant, Paraná, Brazil: *International Journal of Coal Geology*, v. 77, no. 3-4, p. 269–281.
- Levin, L., Torrens, I., Chang, R., Chow, W., Chu, P., Nott, B., Donald, P., Silvers, A., Toole-O’Neil, B., and Yager, J., 1994, Electric utility trace substances synthesis Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-104614-V1 and TR-104614-V2, 2 vol.
- Levy, E., Sarunac, N., Bilirgen, H., and Zhang, W., 2005, Use of coal drying to reduce water consumed in Pulverized Coal Power Plants: Lehigh University, Energy Research Center, Report for period January 1, 2005–March 31, 2005, 21 p., last accessed January 2011 at http://www.osti.gov/bridge/product.biblio.jsp?osti_id=882433.
- Levy, E.K., Crim, H.G., Jr., Cogoli, J.G., and Wong, F., 1984, Analysis of the effects of coal fineness, excess air, and exit gas temperature on the heat transfer rate of a coal fired power plant: American Society of Mechanical Engineers [ASME] Paper 84-JPGC-Pwr-1, presented at the ASME Joint Power Generation Conference, October, 1984, Toronto, Canada.
- Levy, J.I., Spengler, J.D., Hlinka, D., Sullivan, D., and Moon, D., 2002, Using CALPUFF to evaluate the impacts of power plant emissions in Illinois – model sensitivity and implications: *Atmospheric Environment*, v. 36, no. 6, p. 1063–1075.
- Lewerissa, K.B., and Boman, J., 2007, Study of trace elements and soot in aerosols from a coal-fired power plant in northern Vietnam: *Environmental Monitoring and Assessment*, v. 130, p. 301–309.

- Lewis, B.-A.G., 1978, A biologist's manual for the evaluation of impacts of coal-fired power plants on fish, wildlife, and their habitats: U.S. Fish and Wildlife Service, Biological Services Program, FWS/OBS-78/75, 146 p.
- Lewis, R.A., Lefohn, A.S., and Glass, N.R., 1975, An investigation of the bioenvironmental effects of a coal-fired power plant, *in* Clark, W.F., ed., Proceedings of the Fort Union Coal Field Symposium, April 25–26, 1975, Billings, Montana, 1st Symposium: Billings, Montana Academy of Sciences, and Eastern Montana College, p. 531–536.
- Lewis, R.A., and Morton, M.L., 1975, The effects of coal-fired power plant emissions on vertebrate animals, *in* Clark, W.F., ed., Proceedings of the Fort Union Coal Field Symposium, April 25–26, 1975, Billings, Montana, 1st Symposium: Billings, Montana Academy of Sciences, and Eastern Montana College, p. 579–595.
- Li H., Zhang J., Zhao Y., Wu C.-Y., and Zheng C., 2009, Wettability of fly ash from coal-fired power plant: Industrial Engineering Chemistry Research, v. 50, no. 13, p. 7763–7771.
- Li, J., Gao, X., Goekner, B., Kollakowsky, D., and Ramme, B., 2005, A pilot study of mercury liberation and capture from coal-fired power plant fly ash: Journal of the Air and Waste Management Association, v. 55, p. 258–264.
- Li J.-Z., Zhou H., Wang C.-L., and Cen, K.-F., 2007, Employing support vector machine to predict the ash fusion temperature of coal blends: Mei T'an Hsueh Pao [Journal of China Coal Society], v. 32, no. 1, p. 81–84 [in Chinese with English abstract].
- Li, K.W., and Priddy, A.P., 1985, Power plant system design: New York, N.Y., Wiley, 641 p.
- Li, S., Cheng, C.-M., Chen, B., Cao, Y., Vervynckt, J., Adebambo, A., and Pan, W.-P., 2007, Investigation of the relationship between particulate-bound mercury and properties of fly ash in a full-scale 100 mwe pulverized coal combustion boiler: Energy and Fuels, v. 21, no. 6, p. 3292–3299.
- Li, Z., Clemens, A.H., Moore, T.A., Gong, D., Weaver, S.D., and Eby, N., 2005, Partitioning behaviour of trace elements in a stoker-fired combustion unit – an example using bituminous coals from the Greymouth coalfield (Cretaceous), New Zealand: International Journal of Coal Geology, v. 63, no. 1-2, p. 98–116.
- Li Z., Jing J., Ge Z., Liu G., Chen Z., and Ren F., 2009, Numerical simulation of low NO_x combustion technology in a 100 MWe bituminous coal-fired wall boiler: Numerical Heat Transfer Part A: Applications, v. 55, no. 6, p. 574–593.
- Liang F., Zhang G., Tan M., Yan C., Li X., Li Y., Li Y., Zhang Y., and Shan Z., 2010, Lead in children's blood is mainly caused by coal-fired ash after phasing out of leaded gasoline in Shanghai: Environmental Science and Technology, v. 44, no. 12, p. 4760–4765.
- Licata, A., Beittel, R., and Ake, T., 2003, Multi-pollutant emissions control and strategies – coal-fired power plant mercury control by injecting sodium tetrasulfide, *in* Institute of Clean Air Companies [ICAC], ICAC Forum '03, October 14-15, 2003, Nashville, Tennessee: Worcester, Mass., Babcock Power Environmental Inc., p. 1–10, last accessed August 2011 at <http://www.babcockpower.com/pdf/t-185.pdf>.

- Licata, A., and Fey, W., 2001, Advance technology to control mercury emissions, *in* U.S. Environmental Protection Agency [EPA] – U.S. Department of Energy [DOE] – Electric Power Research Institute [EPRI] Combined Power Plant Air Pollution Control Symposium—the Mega Symposium, and the Air and Waste Management Association [A&WMA] Specialty Conference on Mercury Emissions – Fate, Effects, and Control, August 20–24, 2001, Arlington Heights, Illinois: Pittsburgh, Pa., Air and Waste Management Association, 1 CD-ROM, 11 p., last accessed June 2010 at <http://www.babcockpower.com/pdf/rst-172.pdf>.
- LIFAC North America, 2004, LIFAC sorbent injection desulfurization demonstration project – Project performance summary, Clean Coal Technology Demonstration Project: 12 p.
- Lighty, J.S., Veranth, J.M., and Sarofim, A.F., 2000, Combustion aerosols – factors governing their size and composition and implications to human health: *Journal of the Air and Waste Management Association*, v. 50, p. 1565–1618.
- Lim, K.J., 1980, Environmental assessment of utility boiler combustion modification NO_x controls: U.S. Environmental Protection Agency Report EPA-600/7-80-075 a-b, 2 vol.
- Lim, K.J., 1982, Combustion modification NO_x controls for utility boilers: U.S. Environmental Protection Agency Report EPA-600/S 7-81-124, 10 p.
- Lim, M.Y., 1979, Trace elements from coal combustion: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report ICTIS/TR-05, 58 p.
- Lin, C.-Y., and Yang, D.-H., 2002, Removal of pollutants from wastewater by coal bottom ash: *Journal of Environmental Science and Health, Part A: Toxic/Hazardous Substances and Environmental Engineering*, v. A37, no. 8, p. 1509–1522.
- Lin, Z.C., Ondov, J.M., and Kelly, W.R., 1993, Tracing emissions from coal-fired power plants with enriched rare-earth isotopes: *Fuel*, v. 72, p. 697.
- Linak, W.P., Miller, C.A., and Wendt, J.O.L., 2000, Comparison of particle size distribution and elemental partitioning from the combustion of pulverized coal and residual fuel oil: *Journal of the Air and Waste Management Association*, v. 50, no. 8, p. 1532–1544.
- Linak, W.P., and Peterson, T.W., 1984, Effect of coal type and residence time on sub-micron aerosol distribution from pulverized coal combustion: *Aerosol Science and Technology*, v. 3, no. 1, p. 77–96.
- Linak, W.P., and Wendt, J.O.L., 1994, Trace metal transformation mechanisms during coal combustion: *Fuel Processing Technology*, v. 39, no. 1-3, p. 173–198.
- Linak, W.P., Yoo, J.-I., Wasson, S.J., Zhu, W., Wendt, J.O.L., Huggins, F.E., Chen, Y., Shah, N., Huffman, G.P., and Gilmour, M.I., 2007, Ultrafine ash aerosols from coal combustion – characterization and health effects: *Proceedings of the Combustion Institute*, v. 31, p. 1929.
- Lindberg, S.E., 1980, Mercury partitioning in a power plant plume and its influence on atmospheric removal mechanisms: *Atmospheric Environment*, v. 14, p. 227–231.
- Lindberg, S.E., Anderson, A.W., Raridon, R.J., and Fulkerson, W., 1975, Mass balance of trace elements in Walker Branch Watershed – relation to coal-fired steam plants: *Environmental Health Perspectives*, v. 12, p. 9–18.

- Lindqvist, O., Johansson, K., Aastrup, M., Andersson, A., Bringmark, L., Hovsenius, G., Håkanson, L., Iverfeldt, Å., Meili, M., and Timm, B., 1991, Mercury in the Swedish environment – recent research on causes, consequences and corrective methods: *Water, Air, and Soil Pollution*, v. 55, no. 1/2, p. xi-xv, 1–261.
- Lindsley, D., 2000, *Power-Plant Control and Instrumentation – the control of boilers and HRSG systems*: London, United Kingdom, Institution of Electrical Engineers [IEE], v. 58.
- Ling, S., 1964, *Economies of scale in the steam-electric power generating industry – an analytical approach*: Amsterdam, The Netherlands, North-Holland Publishing, 99 p.
- Linton, R.W., Williams, P., Evans, C.A.J., and Natusch, D.F.S., 1977, Determination of the surface predominance of toxic elements in airborne particles by ion microprobe mass spectrometry and auger electron spectrometry: *Analytical Chemistry*, v. 48, no. 11, p. 1514–1520.
- Lionarons, K.C., 1993, In-plume measurement of fugitive and point source emissions using airborne instrumentation, *in* Chow, W., and others, eds., *Managing Hazardous Air Pollutants: State of the Art*: Electric Power Research Institute [EPRI] Report no. TR-101890, Boca Raton, Fla., Lewis Publishers, p. 454–460.
- Lipfert, F., Moskowitz, P., Fthenakis, V., DePhillips, M., Viren, J., and Saroff, L., 1994, Assessment of mercury health risks to adults from coal combustion: Upton, N.Y., Brookhaven National Laboratory BNL-60435, 112 p., last accessed 7 January 2011 at <http://www.osti.gov/bridge/purl.cover.jsp?purl=/10160928-DzolQd/native/>
- Lipfert, F., Sullivan, T.M., and Renninger, S.A., 2004, Assessing the mercury health risks associated with coal-fired power plants: *Fuel*, v. 49, no. 1, p. 218–220.
- Lipsky, E., Stanier, C.O., Pandis, S.N., and Robinson, A.L., 2002, Effects of sampling conditions on the size distribution of fine particulate matter emitted from a pilot-scale pulverized-coal combustor: *Energy and Fuels*, v. 16, p. 302–310.
- Liu, H., and Okazaki, K., 2003, Simultaneous easy CO₂ recovery and drastic reduction of SO_x and NO_x in O₂/CO₂ coal combustion with heat recirculation: *Fuel*, v. 82, p. 1427–1436.
- Liu, K., Gao, Y., Riley, J.T., Pan, W.-P., Mehta, A.K., Ho, K.K., and Smith, S.R., 2001, An investigation of mercury emission from FBC systems fired with high-chlorine coals: *Energy and Fuels*, v. 15, p. 1173–1180.
- Liu, K.-Y., and Wey, M.-Y., 2007, Filtration of fly ash using fluidized bed at 300–500°C: *Fuel*, v. 86, p. 161–168.
- Liu, S.-H., Yan, N.-Q., Liu, Z.-R., Qu, Z., Wang, H.P., Chang, S.-G., and Miller, C., 2007, Using bromine gas to enhance mercury removal from flue gas of coal-fired power plants: *Environmental Science and Technology*, v. 41, no. 4, p. 1405–1412.
- Liu, T.H., 1986, *Seismic engineering for piping systems, tanks, and power plant equipment*: New York, N.Y., American Society of Mechanical Engineers [ASME] Pressure Vessels and Piping Division series, v. 108, 194 p.
- Liu, W.K., Tam, J.S.K., and Wong, M.H., 1988, Size dependent cytotoxicity of fly ash particles: *Environment International*, v. 14, p. 473–477.
- Liu, W.K., Tsao, S.W., and Wong, J.W.C., 1984, In Vitro effects of fly ash on alveolar macrophages: *Conservation and Recycling*, v. 7, no. 2-4, p. 361–366.

- Liu, W., Vidic, R.D., Brown, T.D., 2000, Impact of flue gas conditions on mercury uptake by sulphur-impregnated activated carbon: *Environmental Science and Technology*, v. 34, p. 154–159.
- Liu X., Xu M., Yao H., Yu D., Gao X., Cao Q., and Cai Y., 2007, Effect of combustion parameters on the emission and chemical composition of particulate matter during coal combustion: *Energy and Fuels*, v. 21, no. 1, p. 157–162.
- Liu X., Xu M., Yao H., Yu D., Lv D., and Zhou K., 2008, The formation and emission of particulate matter during the combustion of density separated coal fractions: *Energy and Fuels*, v. 22, no. 6, p. 3844–3851.
- Liu X., Xu M., Yu D., Gao X., Cao Q., and Hao W., 2007, Influence of mineral transformation on emission of particulate matters during coal combustion: *Frontiers of Energy and Power Engineering in China*, v. 1, no. 2, p. 213–217.
- Liu X., Yao H., Cai Y., Yu D., Zhou K., and Xu M., 2007, Effect of density fractionation on formation characteristics of particulate matter during coal combustion: *Huagong Xuebao [Journal of Chemical Industry and Engineering (China)]*, v. 58, no. 10, p. 2567–2572 [in Chinese].
- Liu X.W., Xu M.H., Yao H., Yu D.X., Zhang Z.H., and Lü D.Z., 2009, Characteristics and composition of particulate matter from coal-fired power plants: *Science in China Series E, Technological Sciences*, v. 52, no. 6, p. 1521–1526.
- Liu, Y., and Scaroni, A.W., 1996, The attrition behavior of sorbents in fluidized bed combustion – effect of grain structure and physical strength, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference*, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh: v. 1, p. 43–48.
- Livengood, C.D., Huang, H.S., Mendelsohn, M.H., and Wu, J.M., 1995, Development of mercury control technology for coal-fired systems: *American Chemical Society, Division of Fuel Chemistry, Preprints*, v. 40, no. 4, p. 848–852, last accessed June 2010 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/40_4_CHI-CAGO_08-95_0848.pdf.
- Livengood, C.D., and Mendelsohn, M.H., 1997, Investigation of modified speciation for enhanced control of mercury, *in* Federal Energy Technology Center, Proceedings, Advanced coal-based power and environmental Systems '97 Conference, July 22–24, Pittsburgh, Pennsylvania: Morgantown, W. Va., Federal Energy Technology Center, p. 1–10, last accessed 7 January 2010 at <http://www.osti.gov/bridge/purl.cover.jsp?purl=/290802-XDe3VM/webviewable/>.
- Livengood, C.D., Mendelsohn, M.H., Huang, H.S., and Wu, J.M., 1995, Development of mercury control techniques for utility boilers, *in* Air and Waste Management Association [A&WMA], eds., Proceedings, Annual Meeting and Exhibition of the Air and Waste Management Association, June 18–23, 1995, San Antonio, Texas, 88th Annual Meeting: Pittsburgh, Pa., Air and Waste Management Association, Paper MP21.07, 14 p.
- Livingston, W.R., and Gibb, W.H., 1994, Minimising the effect of high temperature coal ash deposition in pulverised coal-fired boilers – in-flame probing at Ratcliffe Power Station and Renfrew, *in* Williamson, J., and Wigley, F., eds., *The Impact of Ash Deposition on Coal Fired Plants*, Proceedings of the Engineering Foundation Conference, June 20–25, 1993, Solihull, United Kingdom: Washington, D.C., Taylor and Francis, p. 297–312.

- Llacuna, S., Gorriz, A., Sanpera, C., and Nadal, J., 1995, Metal accumulation in three species of Passerine Birds (*Emberiza cia*, *Parus major*, and *Turdus merula*) subjected to air pollution from a coal-fired power plant: *Archives of Environmental Contamination and Toxicology*, v. 28, p. 298–303.
- Llorens, J.F., Fernández-Turiel, J.L., and Querol, X., 2001, The fate of trace elements in a large coal-fired power plant: *Environmental Geology*, v. 40, no. 4-5, p. 409–416.
- Locke, G., and Bertine, K.K., 1986, Magnetite in sediments as an indicator of coal combustion: *Applied Geochemistry*, v. 1, p. 345–356.
- Locklin, D.W., Hazard, H.R., Bloom, S.G., and Nack, H., 1974, Power plant utilization of coal: Columbus, Ohio, Battelle Energy Program Report no. 3, 96 p.
- Lockwood, F.C., Costen, P.G., Siddiqi, M.M., and Harrison, P.J., 2000, Mineral ash transformation: London, United Kingdom, The Imperial College of Science, Technology and Medicine, Mechanical Engineering Department Report JOF3-CT95-0024, p. 123–170, last accessed August 2011 at <ftp://ftp.euro-cleancoal.net/pub/pdf/JOF3-CT95-0024-pdf-files/JOF3-CT95-0024-02%20Lockwood-ICSTM.pdf>
- Lockwood, F.C., and Salooja, A.P., 1983, The prediction of some pulverised bituminous coal flames in a furnace: *Combustion and Flame*, v. 56, p. 23–32.
- Lockwood, F.C., Salooja, A.P., and Syed, S.A., 1980, A prediction method for coal-fired furnaces: *Combustion and Flame*, v. 38, no. 1, p. 1–15.
- Lockwood, F.C., and Syed, S.A., 1977, Prediction of coal-fired furnaces: London, United Kingdom, Imperial College of Science, Technology and Medicine, Mechanical Engineering Department, Report to CEBG, Technical Note FS/78/1, [pagination not found].
- Loehden, D., Walsh, P.M., Sayre, A.N., Beér, J.M., and Sarofim, A.F., 1989, Generation and deposition of fly ash in the combustion of pulverised coal: *Journal of the Institute of Energy*, v. 62, no. 451, p. 119–127.
- Logan, R.G., Richards, G.A., Meyer, C.T., and Anderson, R.J., 1990, A study of techniques for reducing ash deposition in coal-fired gas turbines: *Progress in Energy and Combustion Science*, v. 16, no. 4, p. 221–233.
- Lohner, T.W., Reash, R.J., Willet, V.E., and Fletcher, J., 2001, Assessment of tolerant Sunfish populations (*Lepomis* sp.) inhabiting selenium-laden coal ash effluents. – 3. – Serum chemistry and fish health indicators: *Ecotoxicology and Environmental Safety*, v. 50, Environmental Research, Section B, p. 225–232.
- Lohner, T.W., Reash, R.J., and Williams, M., 2001, Assessment of tolerant Sunfish populations (*Lepomis* sp.) inhabiting selenium-laden coal ash effluents. – 2. – Tissue biochemistry evaluation: *Ecotoxicology and Environmental Safety*, v. 50, Environmental Research, Section B, p. 217–224.
- Lohner, T.W., Reash, R.J., Willet, V.E., and Rose, L.A., 2001, Assessment of tolerant Sunfish populations (*Lepomis* sp.) inhabiting selenium-laden coal ash effluents. – 1. – Hematological and population level assessments: *Ecotoxicology and Environmental Safety*, v. 50, Environmental Research, Section B, p. 203–216.
- Lokobauer, N., Franić, Z., Bauman, A., and Horvat, D., 1993, Radon in houses around the Plomin Coal-Fired Power Plant, in Dyess, T.M., ed., *Proceedings 1992 International Symposium on Radon and Radon Reduction Technology*: Research Triangle Park, N.C., U.S. Environmental Protection Agency Report EPA-600/R-93-083a – EPA-600/R-93-083c, p. 9–55.

- Lokobauer, N., Franić, Z., and Senčar, J., 1994, Radon in houses around the Plomin Coal-Fired Power Plant, in Franić, Z., and Kubelka, D., eds., *Zbornik radova drugoga simpozija Hrvatskoga Društva za Zastitu od Zracenja* [Proceedings, symposium of the Croatian Radiation Protection Association, November 23–25, 1994, Zagreb, Croatia, 2d symposium: Zagreb, Croatia, Croatian Radiation Protection Association, p. 295–298.
- Lokobauer, N., Franić, Z., Senčar, J., Bauman, A., Sokolovi, E., 1997, Radon concentrations in houses around the Plomin Coal-Fired Power Plant: *Journal of Environmental Radioactivity*, v. 34, no. 1, p. 37–44.
- Lookman, A.A., and Rubin, E.S., 1998, Barriers to adopting least-cost particulate control strategies for Indian Power Plants: *Energy Policy*, v. 26, no. 14, p. 1053–1063.
- Lopes, Helena D., Gulyurtlu, Ibrahim, and Cabria, Isabel, 1999, Characterisation of heavy metals in ashes from a FBC burning coal and industrial residues, in *University of Kentucky Center for Applied Energy Research [CAER], Proceedings, International Ash Utilization Symposium, October, 18-20, 1999, Lexington, Kentucky: Lexington, University of Kentucky, Center for Applied Energy Research [CAER], p. 176-187.*
- López, M.T., Zuk, M., Garibay, V., Tzintzun, G., Iniestra, R., and Fernández, A., 2005, Health impacts from power plant emissions in Mexico: *Atmospheric Environment*, v. 39, no. 7, p. 1199–1209.
- López-Antón, M.A., Abad-Valle, P., Díaz-Somoano, M., and Martínez-Tarazona, M.R., 2009, Evaluation of the variables that influence mercury capture in solid sorbents: *Coal Combustion and Gasification Products*, v. 1, p. 63–66.
- López-Antón, M.A., Abad-Valle, P., Díaz-Somoano, M., Suárez-Ruiz, I., and Martínez-Tarazona, M.R., 2009, The influence of carbon particle type in fly ashes on mercury adsorption: *Fuel*, v. 88, no. 7, p. 1194–1200.
- López-Antón, M.A., Díaz-Somoano, M., Abad-Valle, P., and Martínez-Tarazona, M.R., 2007, Mercury and selenium retention in fly ashes – influence of unburned particle content: *Fuel*, no. 86, p. 2064–2070.
- López-Antón, M.A., Díaz-Somoano, M., and Martínez-Tarazona, M.R., 2007, Oxidation of elemental mercury in fly ashes in a combustion atmosphere: *Energy and Fuels*, v. 21, p. 99–103.
- López-Antón, M.A., Díaz-Somoano, M., Spears, D.A., and Martínez-Tarazona, M.R., 2006, Arsenic and selenium capture by fly ashes at low temperature: *Environmental Science and Technology*, v. 40, p. 3947–3951.
- López-Antón, M.A., Díaz-Somoano, M., Spears, D.A., and Martínez-Tarazona, M.R., 2007, Mercury retention by fly ashes from coal combustion – influence of the unburned coal content: *Industrial and Engineering Chemistry Research*, v. 46, p. 927–931.
- López-Antón, M.A., Tascon, J.M.D., and Martínez-Tarazona, M.R., 2002, Retention of mercury in activated carbons in coal combustion and gasification flue gases: *Fuel Processing Technology*, v. 77-78, p. 353–358.
- Lopez-Vilarino, J.M., Fernandez-Martinez, G., Turnes-Carou, I., Muniategui-Lorenzo, S., Lopez-Mahia, P., and Prada-Rodriguez, D., 2003, Behavior of fluorine and chlorine in Spanish coal fired power plants with pulverized coal boilers and fluidized bed boiler: *Environmental Technology*, v. 24, no. 6, p. 687–692.

- Lowe, P.A., St. John, B., and Breed, W.S., 1993, Trace metals emissions from coal fired boilers, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 20–24, 1993, Pittsburgh, Pennsylvania, 10th Conference: Pittsburgh, Pa., University of Pittsburgh, p. 795–800.
- Lowrie, R.L., 1971, Economics of fossil fuels for electric power generation in the Rocky Mountain Region: Golden, Colo., Colorado School of Mines, Master of Science thesis, 159 p.
- Lu, Y., Rostram-Abadi, M., Chang, R., Richardson, C., and Paradis, J., 2007, Characteristics of fly ashes from full-scale coal-fired power plants and their relationship to mercury adsorption: *Energy and Fuels*, v. 21, no. 4, p. 2112–2120.
- Lu, Z., Maroto-Valer, M.M., and Schobert, H.H., 2008, Role of active sites in the steam activation of high unburned carbon fly ashes: *Fuel*, v. 87, p. 2598–2605.
- Lucquiaud, M., Chalmers, H., and Gibbins, J., 2009, Capture-ready supercritical coal-fired power plants and flexible post-combustion CO₂ capture: *Energy Procedia*, v. 1, no. 1, p. 1411–1418.
- Ludwick, J.D., Weber, D.B., Olsen, K.B., and Garcia, S.R., 1980, Air quality measurements in the coal fired power plant environment of Colstrip, Montana: *Atmospheric Environment*, v. 14, no. 5, p. 523–532.
- Lund, H., Hvelplund, F., and Nunthavorakarn, S., 2003, Feasibility of a 1400 mw coal-fired power-plant in Thailand: *Applied Energy*, v. 76, no. 1-3, p. 55–64.
- Luo, K., Fan, J., Li, W., and Cen, K., 2009, Transient, three-dimensional simulation of particle dispersion in flows around a circular cylinder ($Re = 140$ – 260): *Fuel*, v. 88, p. 1294–1301.
- Luo, X., Knudsen, J.N., de Montigny, D., Sanpasertparnich, T., Idem, R., Gelowitz, D., Notz, R., Hoch, S.H., H., Lemaire, E., Alix, P., Tobiesen, F.A., Juliussen, O., Köpcke, M., and Svendsen, H.F., 2009, Comparison and validation of simulation codes against sixteen sets of data from four different pilot plants: *Energy Procedia*, v. 1, no. 1, p. 1249–1256.
- Lurgi Canada Limited, Luscar Limited, TransAlta Utilities Corporation and Canada Centre for Mineral and Energy Technology, 1984, Utilization of coal washery tailings – fluidized bed combustion technology applied to the co-generation of coal drying and electrical power – final Report: Toronto, Ontario, Canada, Lurgi Canada Limited, 1 vol., variously paged.
- Luria, M., Imhoff, R.E., Valente, R.J., Parkhurst, W.J., and Tanner, R.L., 2001, Rates of conversion of sulfur dioxide to sulfate in a scrubbed power plant plume: *Journal of the Air and Waste Management Association*, v. 51, no. 10, p. 1408–1413.
- Luria, M., Imhoff, R.E., Valente, R.J., and Tanner, R.L., 2003, Ozone yields and production efficiencies in a large power plant plume: *Atmospheric Environment*, v. 37, no. 25, p. 3593–3603.
- Luria, M., Olszyna, J., and Meagher, J.F., 1983, The atmospheric oxidation of flue gases from a coal-fired power plant – a comparison between smog chamber and airborne plume sampling: *Journal of the Air Pollution Control Association*, v. 33, p. 483–487.
- Luria, M., Tanner, R.L., Imhoff, R.E., Valente, R.J., Bailey, E.M., and Mueller, S.F., 2000, Influence of natural hydrocarbons on ozone formation in an isolated power plant plume: *Journal of Geophysical Research-Atmospheres*, v. 105 (D7), p. 9177–9188.

- Luria, M., Valente, R.J., Tanner, R.L., Gillani, N.V., Imhoff, R.E., and Meagher, J.F., 1996, The evolution of photochemical smog in a power plant plume [abs.]: *Eos, Transactions, American Geophysical Union [AGU]*, v. 77, no. 46, p. F88.
- Luria, M., Valente, R.J., Tanner, R.L., Gillani, N.V., Imhoff, R.E., Mueller, S.F., Olszyna, K.J., and Meagher, J.F., 1999, The evolution of photochemical smog in a power plant plume: *Atmospheric Environment*, v. 33, no. 18, p. 3023–3036.
- Lusis, M.A., 1976, Mathematical modelling of chemical reactives in a plume, in U.S. Energy Research and Development Administration, Proceedings, International North Atlantic Treaty Organization Committee on Challenges of Modern Society [NATO/CCMS], Technical Meeting on Air Pollution Modeling and its Application, September 7–10, 1976, Arlie House, Virginia, 7th Meeting: Springfield, Virginia, North Atlantic Treaty Organization Committee on Challenges of Modern Society Report no. NATO-CCMS-51; PB-270799, p. 831–855.
- Lusis, M.A., Anlauf, K.G., Barrie, L.A., and Wiebe, H.A., 1978, Plume chemistry at a northern Alberta power plant: *Atmospheric Environment*, v. 12, no. 12, p. 2429–2437.
- Lusis, M.A., and Phillips, C.R., 1977, The oxidation of SO₂ to sulfates in dispersing plumes: *Atmospheric Environment*, v. 11, p. 239–241.
- Lutter, R.W., Mader, E., and Knuffman, N., 2001, Regulating mercury emissions – what do we know about costs and benefits?: Washington, D.C., American Enterprise Institute-Brookings Joint Center for Regulatory Studies, 17 p.
- Lyon, W.S., 1977, Trace element measurements at the coal-fired steam plant: Cleveland, Ohio, CRC Press, 136 p.
- Lyon, W.S., Bate, L.C., and Emery, J.F., 1972, Environmental pollution – use of neutron activation analysis to determine the fate of trace elements from fossil fuel combustion in the ecological cycle, nuclear activation techniques in the life sciences, in International Atomic Energy Agency, Proceedings of a Symposium on Nuclear Activation Techniques in the Life Sciences, April 10–14, 1972, Bled, Yugoslavia: Vienna, Austria, International Atomic Energy Agency, p. 664.
- Lyons, W.A., and Cole, H.S., 1973, Fumigation and plume trapping on the shores of Lake Michigan during stable onshore flow: *Journal of Applied Meteorology*, v. 12, no. 3, p. 494–510.
- Lyons, W.A., Dooley, J.C., Keen, C.S., Schuh, J.A., Rizzo, K.R., 1974, Detailed field measurements and numerical model of SO₂ from power plants in the Lake Michigan shoreline environment: Milwaukee, University of Wisconsin-Milwaukee, Air Pollution Analysis Laboratory, Contract Report to Wisconsin Electric Power Company, 218 p.
- Ma, Z., Iman, F., Lu, P., Sears, R., Kong, L., Rokanuzzaman, A.S., McCollor, D.P., and Benson, S.A., 2007, A comprehensive slagging and fouling prediction tool for coal-fired boilers and its validation/application: *Fuel Processing Technology*, v. 88, no. 11–12, p. 1035–1043.
- MacDonald, J.R., 1984, Control of solid fuel slagging: *Power Engineering*, August 1984, p. 48–50.
- Mačeka, A., 1979, Coal combustion in boilers – a mature technology facing new constraints, in Combustion Institute, Symposium (International) on Combustion, August 20–25, 1978, Leeds, United Kingdom, 17th Symposium: Pittsburgh, Pa., Combustion Institute, p. 65–75.

- Mackenzie, J.M., Benson, S.A., McCollor, D.P., and Holmes, M.J., 2005, Evaluation of mercury control technologies for subbituminous coal-fired combustion systems: *Fuel*, v. 50, no. 1, p. 287–289.
- Mafi, S., 1996, Use of wet FGD material for reclamation and AMD abatement in abandoned acidic coal refuse piles, *in* Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., *Coal Combustion By-Products Associated with Coal Mining—Interactive Forum*, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 227–233.
- Magee, E.M., Hall, H.J., and Varga, G.M.J., 1973, Potential pollutants in fossil fuels: Research Triangle Park, N.C., U.S. Environmental Protection Agency, National Environmental Research Center, Control Systems Laboratory, Report no. EPA-R2-73-249, 151 p.
- Mahieux, P.Y., Aubert, J.E., Cyr, M., Coutand, M., and Husson, B., 2010, Quantitative mineralogical composition of complex mineral wastes—contribution of the Rietveld method: *Waste Management*, v. 30, no. 3, p. 378–388.
- Mahr, D., 1981, Coal blending at power plants: *Power Engineering*, June 1981, p. 86–89, last accessed March 2010 at <http://www.energy-pc.com/mahrpubl.htm>.
- Mahr, D., 1991, Coal use expansion ahead for Pacific rim power plants (part 1): *Power Engineering*, July 1991, p. 30–32, last accessed March 2010 at <http://www.energy-pc.com/mahrpubl.htm>.
- Mahr, D., 1991, Pacific rim plants plan for coal use (part II): *Power Engineering*, September 1991, p. 43–46, last accessed March 2010 at <http://www.energy-pc.com/mahrpubl.htm>.
- Mahuli, S., Agnihotri, R., Chauk, S., Ghosh-Dastidar, A., and Fan, L.-S., 1997, Mechanism of arsenic sorption by hydrated lime: *Environmental Science and Technology*, v. 31, p. 3226–3231.
- Mahuli, S., Agnihotri, R., Wei, S., Chauk, S., Gosh-Dastidar, A., and Fan, L.-S., 1996, Pore structure optimization of calcium carbonate sorbents for enhanced SO₂ capture, *in* Chiang, S.-H., ed., *Proceedings of the Annual International Pittsburgh Coal Conference*, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1151–1156.
- Mahur, A.K., Kumar, R., Mishra, M., Sengupta, D., and Prasad, R., 2008, An investigation of radon exhalation rate and estimation of radiation doses in coal and fly ash samples: *Applied Radiation and Isotopes*, v. 66, no. 3, p. 401–406.
- Mahur, A.K., Kumar, R., Sengupta, D., and Prasada, R., 2008, Estimation of radon exhalation rate, natural radioactivity, and radiation doses in fly ash samples from Durgapur Thermal Power Plant, West Bengal, India: *Journal of Environmental Radioactivity*, v. 99, no. 8, p. 1289–1293.
- Maier, H., 1990, Emission of volatile and filter-penetrating heavy metals in lignite-fired plants: *VGB Kraftwerkstechnik*, v. 69, no. 8, p. 721–725.
- Maier, H., Dahl, P., Gutberlet, H., and Dieckmann, A., 1992, Schwermetalle in kohlebefeuernten Kraftwerken [Heavy metals in coal-fired power plants]: *VGB Kraftwerkstechnik*, v. 72, no. 5, p. 439–443.
- Maiti, S.K., and Jaiswal, S., 2008, Bioaccumulation and translocation of metals in the natural vegetation growing on fly ash lagoons – a field study from Santaldih Thermal Power Plant, West Bengal, India: *Environmental Monitoring and Assessment*, v. 136, no. 1–3, p. 355–370.

- Majidzadeh, K., El-Mitiny, R.N., and Bokowski, G., 1977, Power plant bottom ash in black base and bituminous surfacing – executive summary – final Report: Washington, D.C., Federal Highway Administration, Offices of Research and Development, Report no. FHWA-RD-79-72, 8 p.
- Majumder, A.K., Tiwari, V., and Barnwal, J.P., 2007, Separation characteristics of coal fines in a Knelson Concentrator – a hydrodynamic approach: *Coal Preparation*, v. 27, p. 126–137.
- Mak, C., Choung, J., Beauchamp, R., Kelly, D.J.A., and Xu, Z., 2008, Potential of air dense medium fluidized bed separation of mineral matter for mercury rejection from Alberta sub-bituminous coal: *International Journal of Coal Preparation and Utilization*, v. 28, no. 2, p. 115–132.
- Makansi, J., 1993, Special Report, reducing NOX emissions from power plants: *Power*, May 1993, p. 11–28.
- Malay, D., Ganguli, R., Dutta, S., and Bandopadhyay, S., 2008, Non-impact of particle size distribution on power generation at a pulverized coal power plant burning low rank Alaska coal: *Fuel Processing Technology*, v. 89, no. 5, p. 499–502.
- Malek, E., Bingham, G.E., McCurdy, G.D., and Hanks, R.J., 1992, Determination of evapotranspiration from an Alfalfa crop irrigated with saline waste water from an electrical power plant: *Irrigation Science*, v. 13, p. 73–80.
- Malik, S.R., and Gibbs, B.M., 1996, Oxygen levels in an atmospheric fluidized bed combustor at staged combustion, *in* Chiang, S.-H., ed., *Proceedings of the Annual International Pittsburgh Coal Conference*, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh v. 2, p. 1158.
- Malik, S.R., and Gibbs, B.M., 1996, The effect of bed temperature on oxygen partial pressures in an atmospheric fluidized bed combustor, *in* Chiang, S.-H., ed., *Proceedings of the Annual International Pittsburgh Coal Conference*, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1157.
- Mallin, M.A., 1984, The plankton community of an acid blackwater South Carolina power plant impoundment: *Hydrobiologia*, v. 12, p. 167–177.
- Malte, P.C., 1978, Inorganic pollutants from pulverized coal combustion (a review), *in* Combustion Institute, Fall meeting of the Western States Section of the Combustion Institute, October 17, 1977, Palo Alto, California: Pittsburgh, Pa., Combustion Institute, 26 p.
- Mamane, Y., Dzubay, T.G., and Miller, J.L., 1987, Authors' reply: *Atmospheric Environment*, v. 21, no. 12, p. 2738.
- Mamane, Y., Miller, J.L., and Dzubay, T.G., 1986, Characterization of individual fly ash particles emitted from coal- and oil-fired power plants: *Atmospheric Environment*, v. 20, no. 11, p. 2125–2135.
- Mamane, Y., and Pueschel, R.F., 1980, Formation of sulfate particles in the plume of the Four Corners Power Plant: *Journal of Applied Meteorology*, v. 19, no. 7, p. 779–790.
- Mandal, A., and Sengupta, D., 2001, Environmental impact of the coal based thermal power plant at Kolaghat, *in* *Proceedings of a national seminar on mineral based industries present state and future prospects*, December 5-7, 2001, Vishakhapatnam, India: Andhra University: p. 183–189.

- Mandal, A., and Sengupta, D., 2002, Characterization of fly ash from coal-based thermal power station at Kolaghat-possible environmental hazards: *Indian Journal of Environmental Protection*, v. 22, p. 885–981.
- Mandal, A., and Sengupta, D., 2003, Radioelemental study of Kolaghat, Thermal Power Plant, West Bengal, India – possible environmental hazards: *Environmental Geology*, v. 44, p. 180–186.
- Mandal, A., and Sengupta, D., 2005, Radionuclide and trace element contamination around Kolaghat Thermal Power Plant, West Bengal – environmental implications: *Current Science*, v. 88, no. 4, p. 617–624.
- Mandal, A., and Sengupta, D., 2006, An assessment of soil contamination due to heavy metals around a coal-fired thermal power plant in India: *Environmental Geology*, v. 51, no. 3, p. 409–420.
- Mandal, A., and Sengupta, D., 2007, Geochemical hazard by coal-ash from a coal-based thermal power plant in Kolaghat, West Bengal, India [abs.]: *Geochimica et Cosmochimica Acta*, v. 71, no. 15S, p. A617.
- Mandal, A., and Sengupta, D., 2007, Radionuclide and trace element contamination from coal combustion from Kolaghat thermal power plant, India [abs.]: *Geological Society of America Abstracts with Programs*, v. 39, no. 6, p. 175.
- Mann, R.M., Magee, R.A., Collins, R.V., Fuchs, M.R., and Mesich, F.G., 1978, Final Report trace elements of fly ash – emissions from coal-fired steam plants equipped with hot-side and cold-side electrostatic precipitators for particulate control: U.S. Environmental Protection Agency Report no. EPA 908/4-78-008, 149 p.
- Mannini, A., Daniel, M., Kirchner, A., and Soud, H., 1990, World coal-fired power stations: London, United Kingdom, International Energy Agency [IEA] Coal Research Report IEACR/28, 285 p.
- Manny, E.H., 1980, Guidelines for NO_x control by combustion modification for coal-fired utility boilers – procedures for reduction of NO_x emissions and maximization of boiler efficiency: U.S. Environmental Protection Agency Report EPA-6000/8/8-80-027, 91 p.
- Manny, E.H., and Crawford, A.R., 1981, Control of utility boiler and gas turbine pollutant emissions by combustion modification phase II: U.S. Environmental Protection Agency Report EPA-600/S7-81-039, 7 p.
- Manohar, G.K., Kandalgaonkar, S.S., and Sholapurkar, S.M., 1989, Effects of thermal power plant emissions on atmospheric electrical parameters: *Atmospheric Environment*, v. 23, no. 4, p. 843–850.
- Manolopoulou, M., and Papastefanou, C., 1992, Behavior of natural radionuclides in lignites and fly ashes: *Journal of Environmental Radioactivity*, v. 16, p. 261–271.
- Manzoori, A., Lindner, E., and Agarwal, P., 1991, Inorganic transformation during the circulating fluid bed combustion of low-rank coals with high content of sodium and sulphur, *in* Bensen, S., ed., *Inorganic transformations and ash deposition during combustion*, proceedings of the Engineering Foundation Conference on inorganic transformations and ash deposition during combustion, March 10–15, 1991, Palm Coast, Florida: New York, N.Y., American Society of Mechanical Engineers, p. 735–762.
- Mardon, S.M., and Hower, J.C., 2004, Impact of coal properties on coal combustion by-product quality – examples from a Kentucky power plant: *International Journal of Coal Geology*, v. 59, no. 3-4, p. 153–169.

- Mardon, S.M., Hower, J.C., O'Keefe, J.M.K., Marks, M.N., and Hedges, D.H., 2008, Coal combustion by-product quality at two stoker boilers – coal source vs. fly ash collection system design: *International Journal of Coal Geology*, v. 75, p. 248–254.
- Marians, E.S., and Trijonis, J., 1979, Empirical studies of the relationship between emissions and visibility in the Southwest: U.S. Environmental Protection Agency Report no. EPA-450/5-79-009, 80 p.
- Markewitz, P., Schreiber, A., Vögele, S., and Zappa, P., 2009, Environmental impacts of a German CCS strategy: *Energy Procedia*, v. 1, no. 1, p. 3763–3770.
- Markowski, G.R., Ensor, D.S., Hooper, R.G., and Carr, R.C., 1980, A submicron aerosol mode in the flue gas from a pulverized coal utility boiler: *Environmental Science and Technology*, v. 14, no. 11, p. 1400–1402.
- Markowski, G.R., and Filby, R., 1985, Trace element concentration as a function of particle size in fly ash from a pulverised coal utility boiler: *Environmental Science and Technology*, v. 19, no. 9, p. 796–804.
- Maroto-Valer, M.M., Taulbee, D.N., and Hower, J.C., 1999, Novel separation of the differing forms of unburned carbon present in fly ash using density gradient centrifugation: *Energy and Fuels*, v. 13, p. 947–953.
- Maroto-Valer, M.M., Taulbee, D.N., and Hower, J.C., 2001, Characterization of differing forms of unburned carbon present in fly ash separated by density gradient centrifugation: *Fuel*, v. 80, p. 795–800.
- Maroto-Valer, M.M., Zhang, Y., Granite, E.J., Tang, Z., and Pennline, H.W., 2005, Effect of porous structure and surface functionality on the mercury capacity of a fly ash carbon and its activated sample: *Fuel*, v. 84, no. 1, p. 105–108.
- Marović, G., 1985, Enhanced natural radioactivity around a coal-fired power plant [in Croatian]: Zagreb, Croatia, University of Zagreb, Technological Faculty, Master of Science thesis.
- Marović, G., and Senčar, J., 1999, Assessment of radioecological situation of a site contaminated by technologically enhanced natural radioactivity in Croatia: *Journal of Radioanalytical and Nuclear Chemistry*, v. 241, no. 3, p. 569–574.
- Marquis, B., 2007, A sensor system based on semi-conductor metal oxide technology for in situ detection of coal fired combustion gases: Sensor Research and Development Corporation, 24 p., last accessed March 2010 at http://www.osti.gov/bridge/product.biblio.jsp?osti_id=944414.
- Martel, C., and Rentz, O., 1998, Analysis of heavy metal mass flows in hard coal combustion systems – part 1 – coal classification – results of VGB Research Project 162: *VGB Kraftwerkstechnik*, v. 78, no. 9, p. 72–79.
- Martel, C., and Rentz, O., 1998, Analysis of heavy metal streams in hard coal combustion systems – part 2 – influence of coal type and load characteristics – results of VGB Research Project 162: *VGB Kraftwerkstechnik*, v. 78, no. 10, p. 134–140.
- Martin, A., 1974, The influence of a power station on climate – a study of local weather records: *Atmospheric Environment*, v. 8, p. 419–424.
- Martin, A., and Barber, F.R., 1967, Sulphur dioxide concentrations measured at various distances from a modern power station: *Atmospheric Environment*, v. 1, p. 655–677.
- Martin, A., and Barber, F.R., 1973, Further measurements around modern power stations I-III – I observed ground level concentrations of sulphur dioxide: *Atmospheric Environment*, v. 7, no. 1, p. 17–37.

- Martin, A., and Barber, F.R., 1974, Measurements of precipitation downwind of cooling towers: *Atmospheric Environment*, v. 8, no. 4, p. 373–381.
- Martin, A., and Barber, F.R., 1981, Sulphur dioxide, oxides of nitrogen and ozone measured continuously for 2 years at a rural site: *Atmospheric Environment*, v. 15, no. 4, p. 567–578.
- Martin, A., and Barber, F.R., 1988, Two long term air pollution surveys around power stations: *Clean Air*, v. 18, no. 2, p. 61–73.
- Martin, J.E., Harward, E.D., and Oakley, D.T., 1969, Comparison of radioactivity from fossil-fuel and nuclear power plants, *in* U.S. Congress Joint Committee on Atomic Energy, *Environmental Effects of Producing Nuclear Power, Part I, Appendix 14, Hearings before the Joint Committee on Atomic Energy: 91st Congress, November 1969*, p. 773–809.
- Martin, J.E., Harward, E.D., and Oakley, D.T., 1971, Radiation doses from fossil-fuel and nuclear power plants, Chapter 9, *in* Berkowitz, David A., and Squires, Arthur M., eds., *Power Generation and Environmental Change, Symposium of the Committee on Environmental Alteration, Annual Meeting of the American Association for the Advancement of Science, December 28, 1969, Boston Massachusetts 136th Annual Meeting: Cambridge, Mass., M.I.T. Press*, p. 107.
- Martin, J.E., Harward, E.D., Oakley, D.T., Smith, J.M., and Bedrosian, P.H., 1970, Radioactivity from fossil-fuel and nuclear power plants, *in* International Atomic Energy Agency [IAEA], eds., *Environmental Aspects of Nuclear Power Stations: Vienna, Austria, International Atomic Energy Agency*, p. 325–327.
- Martin, K., Gonzalez, E., Zhou, C.Q., Livengood, C.D., and Mendelsohn, M.H., 1999, Elemental mercury removal using a wet scrubber, *in* McBride, A.E., and Porter, R.W., eds., *Proceedings of the American Power Conference Annual Meeting, Chicago, Illinois, 61st Annual Meeting: Chicago, Ill., Illinois Institute of Technology*, v. 2, p. 180–185.
- Martinez-Frias, J., Aceves, S.M., Smith, J.R., Brandt, H., 2002, Thermodynamic analysis of zero-atmospheric emissions power plant, *in* American Society of Mechanical Engineers [ASME], *Proceedings of the ASME International Mechanical Engineering Congress and Exposition, November 17–22, New Orleans, Louisiana: New York, N.Y., American Society of Mechanical Engineers*, v. 42, p. 327–336.
- Martinez-Frias, J., Aceves, S.M., Smith, R.J., and Brant, H., 2003, A coal-fired power plant with zero atmospheric emissions – 2003: U.S. Department of Energy Reports, last accessed 20 March 2010 at http://www.fischer-tropsch.org/DOE/DOE_Reports/153441/153441_toc.htm, [16] p.
- Martinez-Frias, J., Aceves, S.M., Smith, R.J., and Brant, H., 2003, A coal-fired power plant with zero atmospheric emissions, *in* Boehm, R.F., Zaltash, A., and Rahman, M.M., eds., *Proceedings, Advanced Energy Systems Division of the American Society of Mechanical Engineers [ASME], International Mechanical Engineering Congress and Exposition November 15–21, Washington, D.C.: New York, N.Y., American Society of Mechanical Engineers [ASME]*, 16 p.
- Martinez-Frias, J., Aceves, S.M., Smith, R.J., and Brant, H., 2004, Thermodynamic analysis of zero-atmospheric emissions power plant: *Journal of Engineering for Gas Turbines and Power [ASME]*, v. 126, no. 1, p. 2–8.
- Martinez-Frias, J., Aceves, S.M., Smith, R.J., and Brant, H., 2008, A coal-fired power plant with zero-atmospheric emissions: *Journal of Engineering for Gas Turbines and Power [ASME]*, v. 130, no. 2, p. 023005.1-023005.7.

- Martinez-Tarazona, M.R., and Spears, D.A., 1996, The fate of trace elements and bulk minerals in pulverized coal combustion in a power station: *Fuel Processing Technology*, v. 47, no. 1, p. 79–92.
- Martinu, G.G., 1980, Natural radioactivity levels in releases from coal-fired power plants in Italy, *in* Commission of the European Communities, Health and Safety Directorate, and others, eds., *Seminar on the Radiological Burden of Man from Natural Radioactivity in the Countries of the European Communities*, December 4–6, 1979, Paris: CEC Report V/2408/80, pagination not found.
- Martunus, Othman, M.R., Zakaria, R., and Fernando, W.J.N., CO₂ emission and carbon capture for coal fired power plants in Malaysia and Indonesia: *International Conference on Environment 2008 (ICENV 2008)*, December 15–17, 2008, Penang, Malaysia, 10 p., last accessed January 2011 at http://eprints.usm.my/13184/1/Co2_emission.pdf.
- Marwitz, J.D., Veal, D.L., and Cooper, W.A., 1975, Possibilities of climate modification by large power plants, *in* Clark, W.F., ed., *Proceedings of the Fort Union Coal Field Symposium*, April 25–26, 1975, Billings, Montana, 1st Symposium: Billings, Montana Academy of Sciences, and Eastern Montana College, p. 630–634.
- Masclet, P., Bresson, M.A., and Mouvier, G., 1987, Polycyclic aromatic hydrocarbons emitted by power stations, and influence of combustion conditions: *Fuel*, v. 66, no. 4, p. 556–562.
- Massachusetts Department of Environmental Protection, 2002, Evaluation of the technological and economic feasibility of controlling and eliminating mercury emissions from the combustion of fossil fuel: pursuant to 310 CMR 7.29 – Emissions standards for power plants: Boston, Mass., Commonwealth of Massachusetts Executive Office of Environmental Affairs, 74 p.
- Massachusetts Institute of Technology [MIT], 2007, The future of coal – an interdisciplinary MIT study: Cambridge, Massachusetts Institute of Technology, 175 p.
- Mast, M.A., Turk, J.T., Ingersoll, G.P., Clow, D.W., and Kester, C.L., 2001, Use of stable sulfur isotopes to identify sources of sulfate in Rocky Mountain snowpacks: *Atmospheric Environment*, v. 35, no. 19, p. 3303–3313.
- Mastalerz, M., Drobnik, A., and Filippelli, G., 2004, Distribution of mercury in Indiana coals and implications for mining and combustion: *Indiana Geological Survey Open-File Study 04-04*, 1 CD-ROM.
- Mastalerz, M., Hower, J.C., Drobnik, A., Mardon, S.M., and Lis, G., 2004, From in-situ coal to fly ash – a study of coal mines and power plants from Indiana: *International Journal of Coal Geology*, v. 59, no. 3–4, p. 171–192.
- Masterson, T., and Barnet-Wiemer, H., 1987, Evaluation of mass balance investigations in coal-fired power plants: *Berichte der Kernforschungsanlage Jülich*, no. 2160, 56 p.
- Mastradone, P.J., 1979, Trace metal deposition on agricultural crops near the Chalk Point Generating Station: College Park, University of Maryland, Master of Science thesis, 158 p.
- Mastral, A.M., Callén, M., Murillo, R., and García, T., 1998, Assessment of PAH emissions as a function of coal combustion variables in fluidised bed – 2 – air excess percentage: *Fuel*, v. 77, no. 13, p. 1513–1516.
- Mastral, A.M., and Callén, M.S., 2000, A review on polycyclic aromatic hydrocarbon (PAH) emissions from energy generation: *Environmental Science and Technology*, v. 34, no. 15, p. 3051–3057.

- Mastral, A.M., Callén, M.S., and Garcia, T., 2000, Toxic organic emissions from coal combustion: *Fuel Processing Technology*, v. 67, no. 1, p. 1–10.
- Mastral, A.M., Callén, M.S., and Murillo, R., 1996, Procedure for the measurement of polyaromatic compounds emitted from coal FBC, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 55–60.
- Mathieu, Ph., Iantovski, E., and Kushnirov, V., 1998, Oil extraction by highly pressurized CO₂ produced in zero emission power plants: *Studies in Surface Science and Catalysis*, v. 114, p. 279–284.
- Mattigod, S.V., 1982, Characterization of fly ash particles: *Scanning Electron Microscopy*, v. 2, p. 611–617.
- Mattigod, S.V., Fryxell, G.E., Feng, X., Parker, K.E., and Piers, E.M., 2006, Removal of mercury from aqueous streams of fossil fuel power plants using novel functionalized nanoporous sorbents, *in* Sajwan, K.S., Twardowska, I., Punshon, T., and Alva, A.K., eds., *Coal Combustion Byproducts and Environmental Issues*: New York, N.Y., Springer, p. 99–104.
- Mattigod, S.V., Rai, D., and Amonette, J.E., 1999, Concentrations and distribution of major and selected trace elements in size-density fractionated fly ashes, *in* Sajwan, K.S., Alva, A.K., and Keefer, R.F., eds., *Biogeochemistry of Trace Elements in Coal and Coal Combustion Byproducts*: New York, N.Y., Kluwer Academic/Plenum, p. 115–132.
- Mattigod, S.V., Rai, D., Eary, L.E., and Ainsworth, C.C., 1990, Geochemical factors controlling the mobilization of inorganic constituents from fossil fuel combustion residues – I –review of major elements: *Journal of Environmental Quality*, v. 19, p. 188–201.
- Matyniak, Z., 1989, Contribution of SO₂ sorption on particulate surface to the air pollution level in the vicinity of coal-fired power plants: *The Science of The Total Environment*, v. 83, p. 173–179.
- Maude, C., Kirchner, A., Daniel, M., and Montfort, O., 1994, World coal-fired power stations—Africa, Asia and Australia: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/67, 147 p.
- Maude, C., Kirchner, A., Daniel, M., and Montfort, O., 1994, World coal-fired power stations—Europe and Russia: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/70, 203 p.
- Maude, C., Kirchner, A., Daniel, M., and Montfort, O., 1994, World coal-fired power stations—North and South America: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/66, 164 p.
- Mayland, B.J., and Heinze, R.C., 1973, Continuous catalytic absorption for NO_x emission control: *Chemical Engineering Progress*, v. 69, p. 75–76.
- McAlpin, W.H., and Tyus, B.B., 1974, Design considerations for 575-mw units at Big Brown Steam Electric Station: U.S. Bureau of Mines Information Circular 8650, p. 162–167.
- McBride, J.P., Moore, R.E., Witherspoon, J.P., and Blanco, R.E., 1977, Radiological impact of airborne effluents of coal-fired and nuclear power plants: Oak Ridge National Laboratory Report ORNL-5315, 43 p., last accessed 7 January 2011 at <http://www.ornl.gov/info/Reports/1977/3445605115087.pdf>.

- McBride, J.P., Moore, R.E., Witherspoon, J.P., and Blanco, R.E., 1978, Radioactive impact of airborne effluent of coal and nuclear plants: *Science*, v. 202, no. 4371, p. 1045–1050.
- McCain, J.D., Gooch, J.P., and Smith, W.B., 1975, Results of field measurements of industrial particulate sources and electrostatic precipitator performance: *Journal of the Air Pollution Control Association*, v. 25, p. 117–121.
- McCann, C., Demeter, J., Sneddon, R., and Bienstock, D., 1974, Combustion control of pollutants from multi-burner coal-fired systems: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Office of Research and Development, Report no. EPA-650/2-74-038, 35 p.
- McCann, C.R., Demeter, J.J., Orning, A.A., and Bienstock, D., 1970, NO_x emissions at low excess-air levels in pulverized coal combustion: American Society of Mechanical Engineers [ASME] Winter Annual Meeting, November 29–December 3, 1970, New York, New York: New York, N.Y., American Society of Mechanical Engineers [ASME], Air Pollution Controls Division, Preprint Paper 70-WA/APC-3, 8 p.
- McCarthy, G.J., 1988, X-ray powder diffraction for studying the mineralogy of fly ash, *in* McCarthy, G.J., Glasser, F.P., Roy, D.M., and Hemmings, R.T., eds., *Fly Ash and Coal Conversion By-Products: Characterization, Utilization and Disposal Symposium*, December 1–3, 1987, Boston, Massachusetts, 4th Symposium: Pittsburgh, Pa., Materials Research Society, Symposium Proceedings, v. 113, p. 75–86.
- McCarthy, G.J., Solem, J.K., Thedchanamoorthy, A., Manz, O.E., Hassett, D.J., Stevenson, R.J., Pflughoeft-Hassett, D.F., Beaver, F.W., Moretti, C.J., and Groenewold, G.H., 1989, Database of chemical, mineralogical, and physical properties of North American low-rank coal fly ash, *in* Hess, H.N., ed., *Biennial Low-Rank Fuels Symposium [Lignite Symposium]*, May 22–25, 1989, St. Paul, Minnesota, 15th Symposium: Morgantown, W. Va., U.S. Department of Energy, Office of Fossil Energy, Morgantown Energy Technology Center [METC], p. 555–563.
- McConville, A., 1996, New coal facilities—overcoming the obstacles: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEAPER/26, 40 p.
- McCord, J.D., 2007, Laboratory setup, how elements are analyzed, and quality assurance/quality control (QA/QC), *in* Ellis, M.S., and Affolter, R.H., eds., *The Power of Coal*, International Technical Conference on Coal Utilization and Fuel Systems, June 10–15, 2007, Clearwater, Florida, 32nd Conference: From Cradle to Grave, U.S. Geological Survey Open-File Report 2007-1160, p. 24–36.
- McCrea, P.R., 1986, An assessment of the effects on horticultural production of fugitive dust and ash from the proposed Waikato coal-fired power station activities: Lincoln, New Zealand, Lincoln College Agricultural Economics Research Unit Report no. 185, 86 p.
- McDonald, D.K., Madden, D.A., and Sivy, J.L., 1996, The worldwide applicability of B and W's advanced coal-fired low-emission boiler system, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 147–153.
- McElroy, M.W., Carr, R.C., Ensor, D.S., and Markowski, G.R., 1982, Size distribution of fine particles from coal combustion: *Science*, v. 215, no. 4528, p. 13–18.

- McEvoy, L.R., and Parker, K.R., 1983, The collection of fine particulate and the incidence of heavy metals in power plants E.S.P's, *in* Industrial Presentations Group, eds., Coal Technology Europe, European Coal Utilisation Conference, October 11–13, 1983, Amsterdam, The Netherlands, 3rd Conference: Rotterdam, The Netherlands, Industrial Presentations Group, v. 4, p. 121–136.
- McGee, J.J., 1998, Electron microprobe analysis of fly ash and bottom ash, *in* Breit, G.N., and Finkelman, R.B., eds., Characterization of coal and coal combustion products from a coal-burning power plant—preliminary report and results of analyses: U.S. Geological Survey Open-File Report 98-342, p. 82–84
- McGee, J.J., Finkelman, R.B., and Pontolillo, J., 1995, Microanalysis of hazardous air pollutants in fly and bottom ash from a coal-burning power plant [abs.]: Geological Society of America, Abstracts with Programs, v. 127, no. 6, p. 139.
- McKinsey, R.R., and Wheeldon, J.M., 1996, Preliminary results of an engineering and economic evaluation of Lurgi-Lentjes-Babcock's Circulating PFBC Power Plant Design, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 261–266.
- McKveen, J.V., 1981, Radiological assessment of a coal-fired power station: Transactions of the American Nuclear Society, v. 39, p. 81–83.
- McLarnon, C.R., Granite, E.J., Pennline, H.W., 2005, The PCO process for photochemical removal of mercury from flue gas: Fuel Processing Technology, v. 87, p. 85–89.
- McLarnon, C.R., and Horvath, M.L., 2000, Electro-catalytic oxidation technology applied to mercury and trace elements removal from flue gas, *in* Benson, Steven A., ed., Mercury, trace elements, and particulate matter [peer-reviewed papers from the Conference on Air Quality, December 1–4, 1998, McLean, Virginia]: Fuel Processing Technology, Special issue 65/66, p. A4–A6.
- McLaughlin, J.B., and Vidic, R.D., 1995, Adsorption technology for mercury control in flue gases, *in* Vidic, R.D., and Pohland, F.G., eds., Innovative Technologies for Site Remediation and Hazardous Waste Management: New York, N.Y., American Society of Civil Engineers [ASCE], p. 613–619.
- McLeod, A.R., and Baker, C.K., 1988, The use of open field systems to assess yield response to gaseous pollutants, *in* Heck, W.W., Taylor, O.C., and Tingey, D.T., eds., Assessment of crop loss from air pollutants; Proceedings of an international conference, October 25–29, 1987, Raleigh, North Carolina: London, United Kingdom, Elsevier Applied Science, p. 181–210.
- McMurry, P.H., Rader, D.J., and Stith, J.L., 1981, Studies of aerosol formation in power plant plumes—I. Growth laws for secondary aerosols in power plant plumes: Implications for chemical conversion mechanisms: Atmospheric Environment, v. 15, no. 10-11, p. 2315–2327.
- McNaughton, W.P., and Dooley, B., 1992, Optimized evaluation of aging fossil-fueled power plants: Utilities Policy, v. 2, no. 2, p. 120–134.
- Meagher, J.F., Bailey, E.M., and Stockburger, L.I., 1981, The production of sulfate aerosols in the plume of a coal-fired power plant under normal and reduced precipitator operation: Tennessee Valley Authority, Office of Natural Resources Report, TVA/ONR/ARP-82/6, 30 p.

- Meagher, J.F., and Luria, M., 1967, Model calculations of the chemical processes occurring in the plume of a coal-fired power plant: *Atmospheric Environment*, v. 16, no. 2, p. 183–195.
- Meagher, J.F., Stockburger, L.I., Bailey, E.M., and Huff, O., 1978, The oxidation of sulfur dioxide to sulfate aerosols in the plume of a coal-fired power plant: *Atmospheric Environment*, v. 12, no. 11, p. 2197–2203.
- Meagher, J.F., Stockburger, L.I., Bonanno, E.M., and Luria, M., 1981, Atmospheric oxidation of flue gases from coal-fired power plants – a comparison between conventional and scrubbed plumes: *Atmospheric Environment*, v. 15, no. 5, p. 749–762.
- Meagher, J.F., Stockburger, L.I., Bonanno, R.J., and Luria, M., 1981, Cross-sectional studies of plumes from a partially SO₂-scrubbed power plant: *Atmospheric Environment*, v. 15, no. 10-11, p. 2263–2272.
- Mehnert, E., and Hensel, B.R., 1996, Coal combustion by-products and contaminant transport in groundwater, *in* Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., *Coal Combustion By-Products Associated with Coal Mining—Interactive Forum*, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 161–168.
- Mehra, A., Farago, M.E., and Banerjee, D.K., 1998, Impact of fly ash from coal-fired power stations in Delhi, with particular reference to metal contamination: *Environmental Monitoring and Assessment*, v. 50, no. 1, p. 15–35.
- Mehta, R., and Dooley, R.B., eds., 1988, *Proceedings—Effects of coal quality on power plants*, October 13–15, 1987, Atlanta, Georgia, 1st Conference: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-5936-SR, 1 vol., variously paged.
- Mehta, R., and Harding, N.S., 1991, *Proceedings—effects of coal quality on power plants*, September 19–21, 1990, St. Louis, Missouri, 2nd Conference: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. GS-7361, 1 vol., variously paged.
- Meiers, R.J., 1996, Fluid placement of fixated scrubber sludge in abandoned underground coal mines to reduce surface subsidence and to abate acid mine drainage, *in* Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., *Coal Combustion By-Products Associated with Coal Mining—Interactive Forum*, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 211–220.
- Meij, R., 1989, The fate of trace elements at coal-fired power-plants: Arnhem, The Netherlands, KEMA Report 32561-Moc 92-3641, 29 p.
- Meij, R., 1989, Tracking trace elements at a coal-fired power plant equipped with a wet flue-gas desulfurization facility: Arnhem, The Netherlands, KEMA Scientific and Technical Reports, Special Issue 7, no. 5, p. 267–355.
- Meij, R., 1991, The fate of mercury in coal-fired power plants and the influence of wet flue-gas desulphurization: *Water, Air, and Soil Pollution*, v. 56, p. 21–33.
- Meij, R., 1992, A mass balance study of trace elements in a coal-fired power plant with a wet FGD facility, *in* Vourvopoulos, G., ed., *Elemental Analysis of Coal and Its By-Products*: Singapore, Malaysia, World Scientific, p. 299–318.
- Meij, R., 1994, Trace element behavior in coal-fired power plants: *Fuel Processing Technology*, v. 39, no. 1-3, p. 199–217.

- Meij, R., 1995, The distribution of trace elements during the combustion of coal, *in* Swaine, D.J., and Goodarzi, F., eds., *Environmental Aspects of Trace Elements in Coal*: Dordrecht, The Netherlands, Kluwer, p. 111–127.
- Meij, R., 1997, Behaviour, control, and emissions of trace species by coal-fired power plants in Europe: Arnhem, The Netherlands, KEMA Report 58087-KST/MAT 97-6546, 53 p.
- Meij, R., 1997, Prediction of environmental quality of by-products of coal-fired power plants; elemental composition and leaching, *in* Goumans, J.J.J.M., Senden, G.J., and van der Sloot, H.A., eds., *Waste Materials in Construction; Putting Theory into Practice*, Proceedings of the International Conference on the Environmental and Technical Implications of Construction with Alternative Materials, WASCON '97, June 4–6, 1997, Houthem St. Gerlach, The Netherlands: Amsterdam, The Netherlands, Elsevier, *Studies in Environmental Science* 71, p. 311–325.
- Meij, R., 2000, Composition and particle size of and exposure to coal fly ash: *Journal of Aerosol Science*, v. 31, supplement 1, p. S676–S677.
- Meij, R., 2001, Background concentrations of gaseous mercury in the Netherlands and the contribution of a coal-fired power station, *in* Air and Waste Management Association [A&WMA], eds., U.S. Environmental Protection Agency [EPA] – U.S. Department of Energy [DOE] – Electric Power Research Institute [EPRI] Combined Power Plant Air Pollution Control Symposium, the Mega Symposium and the Air and Waste Management Association [A&WMA] Specialty Conference on Mercury Emissions – Fate, Effects, and Control, August 20–24, 2001, Arlington Heights, Illinois: Pittsburgh, Pa., Air and Waste Management Association, 1 CD-ROM.
- Meij, R., 2003, Status Report on health issues associated with pulverized fuel ash and fly dust – introduction and summary revision (version 2.1): Arnhem, The Netherlands, KEMA Report 50131022-KPS/MEC 01-6032, pagination not known.
- Meij, R., 2005, Summary of health effects of coal fly ash: International Workshop on Environmental and Health Aspects of Coal Ash Utilization, November 23–24, 2005, Tel-Aviv, Israel, 5 p., last accessed June 2010 at http://www.coal-ash.co.il/sadna/Concluding%20Remarks_Meij.pdf.
- Meij, R., and Alderliesten, P.T., 1989, The emission of inorganic trace compounds at coal-fired power plants equipped with wet flue gas desulphurization plants, *in* Brasser, L.J., and Mulder, W.C., eds., *Man and his Ecosystem*, Proceedings, World Clean Air Congress, September 11–15, 1989, The Hague, The Netherlands, 8th Congress: Amsterdam, The Netherlands, Elsevier, p. 303–308.
- Meij, R., and Erbrink, J.J., 2001, Aerosol emissions from coal-fired power stations: *Journal of Aerosol Science*, v. 32, supplement 1, p. S367–S368.
- Meij, R., Janssen, L.H.J.M., and Van der Kooij, J., 1986, Air pollutants emissions from coal-fired power plants: Arnhem, The Netherlands, KEMA Scientific and Technical Reports, v. 4, no. 6, p. 51–69.
- Meij, R., Nagengast, S., and Te Winkel, B.H., 2000, The occurrence of quartz in coal fly ash: *Inhalation Toxicology*, v. 12, supplement 3, p. 109–116.
- Meij, R., Nagengast, S., and Te Winkel, B.H., 2004, The occupational hazard of quartz in coal fly ash particles: *Tijdschrift voor toegepaste Arbeidwetenschap* (2004-02), Supplement, article 36-9, p. 64.
- Meij, R., and Spoelstra, H., 1992, Characterisation of input/output streams of coal-fired power stations – part 16 – influence of low-NO_x burners: Arnhem, The Netherlands, KEMA Report 32561-MOC 92-3643, 50 p.

- Meij, R., Spoelstra, H., and De Waard, F.J., 1989, The determination of gaseous inorganic trace compounds in flue gases from coal-fired power plants, *in* Brasser, L.J., and Mulder, W.C., eds., *Man and his Ecosystem*, Proceedings, World Clean Air Congress, September 11–15, 1989, The Haag, The Netherlands, 8th Congress: Amsterdam, The Netherlands, Elsevier Science, v. III, p. 717–722.
- Meij, R., and Te Winkel, B., 2000, Seven years of experiences with lysimeter leaching of pulverized fuel ash, *in* Wooley, G.R., Goumans, J.J.J.M., and Wainwright, P.J., eds., *Waste Materials in Construction; Science and Engineering of Recycling for Environment Protection; Proceedings of the international conference WASCON 2000*, May 31–June 2, 2000, Harrogate, United Kingdom: Amsterdam, The Netherlands, Pergamon/Elsevier Science Ltd., Waste Management Series, v. 1, p. 645–655.
- Meij, R., and Te Winkel, B., 2003, Report on health issues associated with pulverized fuel ash and fly dust – part 3, environmental impact associated with stack emissions from a 600 mwe coal-fired unit [in Dutch]: Arnhem, The Netherlands, KEMA, Report 500300001-KPS/MEC 00-6043, pagination not known.
- Meij, R., and Te Winkel, B., 2004, The emissions and environmental impact of PM10 and trace elements from a modern coal-fired power plant equipped with ESP and wet FGD: *Fuel Processing Technology*, v. 85, no. 6-7, p. 641–656.
- Meij, R., and Te Winkel, B., and Scholten, R.D.A., 2001, Report on health issues associated with pulverized fuel ash and fly dust – part 2, environmental impact associated with airborne pulverized fuel ash [in Dutch]: Arnhem, The Netherlands, KEMA, Report 50030086-KPS/MEC 00-6042, [pagination not known].
- Meij, R., and Te Winkel, B.H., 2005, Stofemissies van de Nederlandse kolencentrales – de trend over de laatste 50 jaar [in Dutch: Particulate emissions of the Dutch Power Stations, a trend over the last fifty years]: *ArenA/Het Dossier*, v. 11, no. 5, p. 65–68.
- Meij, R., and Te Winkel, B.H., 2005, The emissions of heavy metals and POPs from modern coal-fired power stations, *in* United Nations, ECE Secretariat [UNECE], eds., Task Force on Emission Inventories and Projection [TFEIP] and the EU 6FP Research Project ESPREME Workshop on Heavy Metals and POPs, Emissions, Inventories and Projections, 18–19 October, 2005, Rovaniemi, Finland: 10 p., last accessed June 2010 at, http://espreme.ier.uni-stuttgart.de/homepage_old/workshop/papers/Meij_et_al_The%20Emissions%20of%20Heavy%20Metals%20and%20POPs%20from%20Modern%20Coal-fired%20Power%20Stations.pdf.
- Meij, R., and Te Winkel, B.H., 2009, Trace elements in world steam coal and their behavior in Dutch coal-fired power stations – a review: *International Journal of Coal Geology*, v. 77, no. 3-4, p. 289–293.
- Meij, R., Te Winkel, B.H., and Cuperus, M.A.T., 2004, Health aspects of coal fly ash: *Tijdschrift voor toegepaste Arbowetenschap* (2004-02) Supplement, article 15–22, p. 28.
- Meij, R., Te Winkel, B.H., and Cuperus-Jacobs, M.A.T., 2003, The influence of co-combustion in coal-fired power stations and the environmental and health properties of coal-fly ash, *in* Ortiz de Urbina, G., and Gourmans, J.J.J.M., eds., *Proceedings of the International Conference on the Environmental and Technical Implications of Construction with Alternative Materials*, WASCON 2003, June 4–6, 2003, San Sebastián, Spain, 5th Conference: San Sebastián, Spain, INASMET, 936 p.
- Meij, R., Te Winkel, B.H., and Overbeek, J.H.M., 2001, Particle size of suspended coal fly ash: *Journal of Aerosol Science*, v. 32, supplement 1, p. S595–S596.

- Meij, R., Te Winkel, B.H., Spoelstra, H., and Erbrink, J.J., 2007, Aerosol emissions from Dutch coal-fired power stations, *in* The Dutch Ministry of Housing, Spatial Planning and the Environment, eds., DustConf 2007, How to Improve Air Quality, International Conference, April 23–24, 2007, Maastricht, The Netherlands: The Hague, The Netherlands, DustConf 2007, 12 p., last accessed August 2011 at http://www.dustconf.com/CLIENT/DUSTCONF/UPLOAD/S8/MEIJ_NL_.PDF.
- Meij, R., and Te Winkel, H., 2006, Mercury emissions from coal-fired power stations – the current state of the art in the Netherlands: *The Science of The Total Environment*, v. 368, no. 1, p. 393–396.
- Meij, R., and Te Winkel, H., 2007, The emissions of heavy metals and persistent organic pollutants from modern coal-fired power stations: *Atmospheric Environment*, v. 41, no. 40, p. 9262–9272.
- Meij, R., van der Kooij, J., van der Sloot, H.A., Koppius-Odink, J.M., and Clement, L.J., 1986, Emissions and control of particulates of coal-fired power plants [Chapt. 429], *in* Lee, S.D., ed., *Aerosols – Research, Risk Assessment, and Control Strategies*, Proceedings of the U.S. Dutch International Symposium, May 19–25, 1985, Williamsburg, Virginia, 2nd Symposium: Chelsea, Mich., Lewis Publishers, p. 427–440.
- Meij, R., van der Kooij, J., van der Sluys, J.L.G., Siepmann, F.G.C., and van der Sloot, H.A., 1983, The emission of fly ash and trace species from pulverized coal-fired utility boilers, *in* International Union of Air Pollution Prevention Associations, eds., *World Congress on Air Quality*, Palais des Congres-Porte Maillot, Paris, 6th Congress: Paris, France, SEPIC, p. 317–324.
- Meij, R., van der Kooij, J., van der Sluys, J.L.G., Siepmann, F.G.C., and van der Sloot, H.A., 1984, Characteristics of emitted flyash and trace elements from utility boilers fired with pulverised coal: KEMA Scientific and Technical Reports, v. 2, no. 1, p. 1–8.
- Meij, R., Van der Sloot, H.A., and Te Winkel, B.H., 1990, Karakterisering van in-en uitgaande stromen van met kolen: Gestookte Elektriciteitscentrales Deelrapport 4, no. 98179/80104-MOC 90-3362 [pagination not known].
- Meij, R., Vredenburg, L.H.J., and Te Winkel, H., 2002, The fate and behavior of mercury in coal-fired power plants: *Journal of the Air and Waste Management Association*, v. 52, no. 8, p. 912–917.
- Meissner, D.L., Valachovic, T., and Hardman, R.R., 1996, Computer modeling of the coal combustion process to quantify the impacts of burner balancing on NO_x emissions and other boiler performance indicators, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 364–369.
- Mejstřík, V., and Švácha, J., 1988, Concentrations of ²³²Th, ²²⁶Ra, ¹³⁷Cs, and ⁴⁰K in soils, and radioactivity in areas of coal-fired power plants: *The Science of The Total Environment*, v. 71, no. 1, p. 69–79.
- Mejstřík, V., and Švácha, J., 1988, The fallout of particles in the vicinity of coal-fired power plants in Czechoslovakia: *The Science of The Total Environment*, v. 72, p. 43–55.
- Melo, O.T., 1976, Sulphate aerosols in Ontario: Toronto, Ontario Hydro Research Division Report no. 76-322-K, 43 p.
- Melo, O.T., Lusis, M.A., and Stevens, R.D.S., 1978, Mathematical modelling of dispersion and chemical reactions in a plume-oxidation of NO to NO₂ in the plume of a power plant: *Atmospheric Environment*, v. 12, no. 5, p. 1231–1234.

- Melo, O.T., and Stevens, R.D.S., 1981, The occurrence and nature of brown plumes in Ontario: *Atmospheric Environment*, v. 15, no. 12, p. 2521–2529.
- Mendelsohn, M.H., and Harkness, J.B.L., 1991, Enhanced flue-gas denitrification using ferrous-EDTA and a polyphenolic compound in an aqueous scrubber system: *Energy and Fuels*, v. 5, no. 2, p. 244–247.
- Mendelsohn, M.H., Huang, H.S., and Livengood, C.D., 1994, Emissions of air toxics from coal-fired boilers: Arsenic: Argonne, Ill., Argonne National Laboratory Report ANL/ESD/TM-71, 33 p., last accessed March 2010 at <http://www.osti.gov/bridge/purl.cover.jsp?jsessionid=7027c2534521930AB556F897DAFEDB67?puhl=10180709-i23STF/native/>.
- Mendelsohn, M.H., and Livengood, C.D., 1996, Reactions of gaseous, elemental mercury with dilute halogen solutions: American Chemical Society, Division of Fuel Chemistry, v. 41, no. 3, p. 825–829, last accessed May 2010 at http://www.anl.gov/PCS/acs-fuel/preprint%20archive/Files/41_3_ORLANDO_08-96_0825.pdf.
- Meng, R.Z., Karamchandani, P., Seigneur, C., and Meng, R.Z., 2000, Simulation of stack plume opacity: *Journal of the Air and Waste Management Association*, v. 50, no. 5, p. 869–874.
- Menguc, M.P., and Viskanta, R., 1987, A sensitivity analysis for radiative heat transfer in a pulverized coal-fired furnace: *Combustion Science and Technology*, v. 51, p. 51.
- Menon, M.P., Sajwan, K.S., Ghuman, G.S., James, J., and Chandra, K., 1993, Elements in coal and coal ash residues and their potential for agricultural crops, *in* Keefer, R.F. and Sajwan, K.S., eds., *Trace elements in coal and coal combustion residues*: Boca Raton, Fla., Lewis Publishers, p. 259–287.
- Menounou, N., and Presley, B.J., 2003, Mercury and other trace elements in sediment cores from central Texas lakes: *Journal Archives of Environmental Contamination and Toxicology*, v. 45, no. 1, p. 11–29.
- Merdes, A.C., Keener, T.C., and Khang, S.-J., 1996, Precombustion removal of mercury from coal by mild pyrolysis: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 41, no. 3, p. 820–824, last accessed May 2010 at, http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/41_3_ORLANDO_08-96_0820.pdf.
- Merkel, T.C., Lin, H., Wei, X., and Baker, R., 2010, Power plant post-combustion carbon dioxide capture – an opportunity for membranes: *Journal of Membrane Science*, v. 359, no. 1-2, p. 126–139.
- Mertes, S., and Wendisch, M., 1997, Microphysical and optical features of polluted cooling tower clouds: *Atmospheric Research*, v. 44, no. 3-4, p. 271–292.
- Merz, E., Kroth, K., Scholz, W., and Holzapfel, T., 1989, Measuring the radioactivity of gypsum from flue gas desulphurisation plants and drawing up a radioactivity balance for the flue gas desulphurisation process of a large-scale power station fired with Rhenish Lignite: *VGB Kraftwerkstechnik*, v. 69, no. 11, p. 976–980.
- Meserole, F.B., Chang, R., Carey, T., Machac, J., and Richardson, C.F., 1999, Modeling mercury removal by sorbent injection: *Journal of the Air and Waste Management Association*, v. 49, no. 6, p. 694–704.
- Meserole, F.B., and Chow, W., 1993, Controlling trace species in the utility industry, *in* Chow, W., and others, eds., *Managing Hazardous Air Pollutants: State of the Art*: Electric Power Research Institute [EPRI] Report no. TR-101890, Boca Raton, Fla., Lewis Publishers, p. 371–379.

- Meserole, F.B., Richardson, C.F., Machalek, T., Richardson, M., and Chang, R., 2001, Predicted costs of mercury control at electric utilities using sorbent injection, *in* Air and Waste Management Association [A&WMA], eds., U.S. Environmental Protection Agency [EPA]–U.S. Department of Energy [DOE]–Electric Power Research Institute [EPRI] Combined Power Plant Air Pollution Control Symposium, the Mega Symposium and the Air and Waste Management Association [A&WMA] Specialty Conference on Mercury Emissions–Fate, Effects, and Control, August 20–24, 2001, Arlington Heights, Illinois: Pittsburgh, Pa., Air and Waste Management Association, 1 CD-ROM, p. 11.
- Meserole, F.B., Schwitzgebel, K., Magee, R.A., and Mann, R.M., 1979, Trace element emissions from coal-fired power plants: *Journal of Engineering for Power*, v. 101, no. 4, p. 620–624.
- Metty, J.C., 2001, Mercury emissions from coal-fired power plants – B – an evaluation of reduction strategies using the analytic hierarchy process: East Lansing, Michigan, Michigan State University, Department of Resource Development, Master of Science thesis, 180 p.
- Metty, J., and Beckwith, J.O., 2002, A multicriteria evaluation of policy options for reducing mercury emissions from U.S. coal-fired power plants: East Lansing, Michigan State University Agricultural Experiment Station Research Report 580, 39 p., last accessed January 2011 at <http://www.maes.msu.edu/publications/researchReports/RR/RR580.pdf>.
- MHD Development Corporation, 1994, Conceptual design of a coal-fired MHD retrofit: MHD Development Corporation report to U.S. Department of Energy, Report no. DOE/PC/79669--T3, 51 p.
- Micheletti, W., 1988, Proceedings–fish protection at steam and hydroelectric power plants: San Francisco, California, October 28–30, 1987: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report CS/EA/AP-5663-SR, 1 vol., variously paged.
- Midwest Research Institute, and Electric Power Research Institute, 1988, Guidelines for cofiring refuse-derived fuel in electric utility boilers – final Report: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-5754, 3 vol., variously paged.
- Mijac, L., and Krizman, M., 1996, Radioactive contamination of surface waters from a fly ash depository at Velenje (Slovenia): *Environment International*, v. 22, p. 339–345.
- Milford, J.B., and Pienciak, A., 2009, After the clean air mercury rule – prospects for reducing mercury emissions from coal-fired power plants: *Environmental Science and Technology*, v. 43, no. 8, p. 2669–2673.
- Millán, M.M., and Gangoiti, G., 1988, Rain scavenging from tall stack plumes – the non-proportionality problem: *Environmental Technology Letters*, v. 9, p. 877–890.
- Miller, B.G., 2004, *Coal Energy Systems*: New York, N.Y., Academic Press, 526 p.
- Miller, B.G., and Tillman, D.A., 2008, Coal characteristics, *in* Miller, B.G., and Tillman, D.A., eds., *Combustion Engineering Issues for Solid Fuel systems*: Amsterdam, The Netherlands, Elsevier, p. 33–81.
- Miller, C.E., Feeley, T.J., III, Aljoe, W.W., Lani, B.W., Schroeder, K.T., Kairies, C., McNemar, A.T., Jones, A.P., and Murphy, J.T., 2006, Mercury Capture and Fate Using Wet FGD at Coal-Fired Power Plants: U.S. Department of Energy, National Energy Technology Laboratory, Mercury and Wet Flue Gas Desulfurization Research and Development, [37] p., last accessed March 2010 at http://www.netl.doe.gov/technologies/coalpower/ewr/coal_utilization_byproducts/pdf/mercury_%20FGD%20white%20paper%20Final.pdf.

- Miller, D.F., Alkezweeny, A.J., Hales, J.M., and Lee, R.N., 1978, Ozone formation related to power plant emissions: *Science*, v. 202, no. 4373, p. 1186–1188.
- Miller, M., 1993, Conference synthesis: summary of the conference on managing hazardous air Pollutants, *in* Chow, W., and others, eds., *Managing Hazardous Air Pollutants: State of the Art*: Electric Power Research Institute [EPRI] Report no. TR-101890, Boca Raton, Fla., Lewis Publishers, p. 550–555.
- Miller, P.J., and Van Atten, C., 2004, North American power plant emissions: Montreal, Quebec, Canada, Commission for Environmental Cooperation of North America, 87 p.
- Miller, S., 1976, A southwest power plant saga: *Environmental Science and Technology*, v. 10, p. 532–537.
- Miller, S.F., Dunham, G.E., Olson, E.S., and Brown, T.D., 1998, Mercury sorbent development for coal-fired boilers, air quality, *in* Benson, Steven A., ed., *Mercury, trace elements, and particulate matter* [peer-reviewed papers from the Conference on Air Quality, December 1–4, 1998, McLean, Virginia]: *Fuel Processing Technology*, Special issue 65/66, p. 22.
- Miller, S.F., Dunham, G.E., Olson, E.S., and Brown, T.D., 2000, Flue gas effects on a carbon-based mercury sorbent: *Fuel Processing Technology*, v. 65, p. 343–363.
- Miller, S.F., Wincek, R.T., Miller, B.G., and Scaroni, A.W., 1999, Evaluation of a hybrid sampling train for measuring trace elements and identifying mercury species in combustion flue gas, *in* Coal & Slurry Technology Association, eds., *International Technical Conference on Coal Utilization and Fuel Systems*, March 8–11, 1999, Clearwater, Florida, 24th Conference: Washington, D.C., Coal and Slurry Technology Association, p. 343–353.
- Miller, S.J., Dunham, G.E., and Olson, E.S., 1999, Controlling mechanisms that determine mercury sorbent effectiveness, *in* Air and Waste Management Association [A&WMA], eds, *Proceedings Air and Waste Management Association Annual Meeting and Exhibition*, 20–24 June, 1999, St. Louis, Missouri, 92nd Annual Meeting: p. 15.
- Miller, S.J., Ness, S.R., Weber, G.F., Erickson, T.A., Hassett, D.J., Hawthorne, S.B., Katrinak, K.A., and Louie, P.K.K., 1996, A comprehensive assessment of toxic emissions from coal-fired power plants: phase I results from the U.S. Department of Energy Study, final Report [Sept. 1996]: Grand Forks, University of North Dakota Energy and Environmental Research Center [EERC] Report no. DOE/MC/30097—5321, [179] p.
- Mills, S.J., 2008, Meeting the demand for new coal-fired power plants: London, United Kingdom, International Energy Agency [IEA] Coal Research Report IEACCC/141, 66 p.
- Mimura, T., and Satumi, S., 1998, Evaluation of power loss for CO₂ recovery from flue gas of a fossil fuel-fired power plant by a chemical absorption method: *Kagaku Kogaku Ronbunshu*, v. 24, no. 4, p. 546–551.
- Mimura, T., Simayoshi, H., Suda, T., Iijima, M., and Mituoka, S., 1997, Development of energy saving technology for flue gas carbon dioxide recovery in power plant by chemical absorption method and steam system: *Energy Conversion and Management*, v. 38, supplement 1, p. S57–S62.
- Minchener A., and McMullan, J., 2005, A strategy for sustainable power generation from fossil fuels in Europe: *Energy World*, May 2005, p. 18–21.

- Minkin, J.A., Finkelman, R.B., Thompson, C.L., Chao, E.C.T., Ruppert, L.F., Blandk, H., and Cecil, C.B., 1984, Microcharacterization of arsenic- and selenium-bearing pyrite in Upper Freeport Coal, Indiana County, Pennsylvania: Scanning Electron Microscopy, v. IV, p. 1515–1524.
- Mishra, L.C., and Shukla, K.N., 1986, Edaphic properties of fly ash from a coal-fired power plant at Kanpur, India: Environmental Pollution (Series B), v. 11, p. 55–66.
- Mishra, U.C., 2004, Environmental impact of coal industry and thermal power plants in India: Journal of Environmental Radioactivity, v. 72, no. 1-2, p. 35–40.
- Mishra, U.C., Lalit, B.Y., and Ramachandran, T.V., 1980, Radioactivity release to the environment by thermal power stations using coal as fuel: The Science of The Total Environment, v. 14, p. 77–83.
- Mishra, U.C., Lalit, B.Y., and Ramachandran, T.V., 1984, Relative radiation hazards of coal based and nuclear power plants in India, in Kaul, A., Neider, R., Pensko, J., Stieve, F.E., and Brunner, H., eds., Radiation-Risk-Protection, Proceedings of the International Congress of the International Radiation Protection Association [IRPA], May 7–12, 1984, West Berlin, Germany, 6th Congress: Koln, Verlag TUV Rheinland, v. 1, p. 537–540.
- Mishra, U.C., and Ramchandran, T.V., 1991, Environmental impact of coal utilization for electricity generation, in Sahoo, K.C., ed., Proceedings of the International Conference on Environmental Impact of Coal Utilization from Raw Materials to Waste Resources, Bombay, India: Indian Institute of Technology, p. 117–125.
- Mishra, V.K., Tripathi, B.D., and Kim, K.H., 2009, Removal and accumulation of mercury by aquatic macrophytes from an open cast coal mine effluent: Journal of Hazardous Materials, v. 172, no. 2-3, p. 749–754.
- Mitchell, E.R., 1974, Coal properties bearing on combustion, in Fryer, J.F., Campbell, J.D., and Speight, J.G., eds., Symposium on Coal Evaluation: Alberta [Canada] Research Council, Information Series 76, p. 134–151.
- Mitchell, E.R., Friedrich, F.D., and Lee, G.K., 1974, Guide for evaluating coal properties which affect combustion: Ottawa, Canada, Department of Energy, Mines, and Resources, Canada Mines Branch Information Circular IC 316, 60 p.
- Mitrović, M., Pavlović, P., Lakušić, D., Djurdjević, L., Stevanović, B., Kostić, O., and Gajić, G., 2008, The potential of Festuca rubra and Calamagrostis epigejos for the revegetation of fly ash deposits: The Science of The Total Environment, v. 402, p. 338–347.
- Mniszek, W., 1994, Emission factor of mercury from coal-fired power stations: Environmental Monitoring and Assessment, v. 33, no. 2, p. 161–170.
- Mniszek, W., and Zielonka, U., 1992, Emission of mercury from coal fired power plants: Ochrona Powietrza, v. 26, no. 3, p. 66–69.
- Moberg, P.-O., and Westermarck, M., 1982, Spårelmentens vandring vid rökgasavsväring [Migration of trace elements during flue gas desulfurization]: Vällingby, Sweden, Swedish State Power Board Technical Report KHM-TR-28, 1 vol., variously paged.
- Moghtaderi, B., 2004, Extinction of multi-species char clouds in pulverised fuel combustors: Fuel, v. 83, p. 1961–1972.
- Mohanty, M.K., Huang, Z., Wang, Z., and Hirschi, J., 2005, Steel belt filter – a suitable technology for dewatering fine clean coal and tailings: Coal Preparation, v. 25, no. 1, p. 1–14.

- Mohr, M., Ylatalo, S.I., Klippel, N., Kauppinen, E.I., Riccius, O., and Burtscher, H., 1996, Submicron fly ash penetration through electrostatic precipitators at two power plants: *Aerosol Science and Technology*, v. 24, p. 191–204.
- Moisio, M., Laitinen, A., and Hautanen, J., 1998, Fine particle size distributions of seven different combustion power plants: *Journal of Aerosol Science*, v. 29, no. S1, p. S459–S460.
- Mojtahedi, W., and Moroueh, U.-M., 1989, Trace elements removal from hot flue gases: Valtion teknillinen tutkimuskeskus VTT-TUTK-663, pagination unknown [in Finnish with English abstract].
- Mojtahedi, W., Nieminen, M., Hulkkonen, S., and Jahkola, A., 1990, Partitioning of trace elements in pressurised fluidized bed combustion: *Fuel Processing Technology*, v. 26, p. 83–97.
- Mojtahedi, W., and Salo, K., 1996, Fate of a few selected trace elements in pressurized fluidized-bed gassification and hot gas cleanup, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh*, v. 1, p. 61–67.
- Mokrzycki, E., and Olkusi, T., 2003, Losses of chemical energy in hard-coal energy-utilization exothermic processes: *Applied Energy*, v. 74, no. 3-4, p. 289–295.
- Molcan, P., Lu, G., Bris, T.L., Yan, Y., Taupin, B., and Caillat, S., 2009, Characterisation of biomass and coal co-firing on a 3MWth combustion test facility using flame imaging and gas/ash sampling techniques: *Fuel*, v. 88, no. 12, p. 2328–2334.
- Møller, J.T., and Christiansen, O.B., 1985, Dry scrubbing of MSW incinerator flue gas by spray dryer absorption: new developments in Europe, *in* Air Pollution Control Association, eds., *Annual Meeting of the Air Pollution Control Association, June 16–21, 1985, Detroit, Michigan, 78th Annual Meeting: Pittsburgh, Pa., Air Pollution Control Association*, p. 19.
- Mondal, T., Sengupta, D., and Mandal, A., 2006, Natural radioactivity of ash and coal in major thermal power plants of West Bengal, India: *Current Science*, v. 91, no. 10, p. 1387–1393.
- Montagnaro, F., Nobili, M., Telesca, A., Valenti, G.L., Anthony, E.J., and Salatino, P., 2009, Steam hydration-reactivation of FBC ashes for enhanced in situ desulphurization: *Fuel*, v. 88, p. 1092–1098.
- Montgomery, J.L., Whitworth, C.G., Battleson, D.M., Ray, I., Buckley, W., Reynolds, J., and Altman, R., 2005, Developments of the plasma-enhanced electrostatic precipitator for mercury removal in offgas: *Environmental Engineering Science*, v. 22, no. 2, p. 264–271.
- Montgomery, T.L., Norris, W.B., Thomas, F.W., and Carpenter, S.B., 1973, A simplified technique used to evaluate atmospheric dispersion of emissions from large power plants: *Journal of the Air Pollution Control Association*, v. 23, p. 388–394.
- Moon, M.N., 1979, Overview of the Chalk Point Cooling Tower Project: 1972–1979: Laurel, Md., The Johns Hopkins University Applied Physics Laboratory, [157] p.
- Moore, G.T., 1978, Emissions from a coal-fired power plant – a material balance study of selected volatile trace elements: Cincinnati, University of Cincinnati, 113 p.
- Moore, T., 1994, Hazardous Air Pollutants – measuring in micrograms: Electric Power Research Institute [EPRI] Journal, January/February 1994, p. 7–15.

- Moorman, R.J., 1973, Design, development and testing of a swirl type gas burner with flue gas recirculation for NO_x control: Virginia Polytechnic Institute and State University, Master of Science thesis, 74 p.
- Mora, J.C., Corbacho, J.A., Robles, B., Baeza, A., Cancio, D., and Suañez, A.M., 2008, Methodology used in the radiological assessment of a coal-fired power plant: American Institute of Physics [AIP], Proceedings, v. 1034, no. 1, p. 311–314.
- Moreea-Taha, R., 2001, Operation of coal-fired plant – reducing costs: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACCC/54, 50 p.
- Moreea-Taha, R., 2002, Materials development for coal, biomass and waste fuel plants: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report CCC/61, 60 p.
- Morency, J.R., Panagiotou, T., and Lobo, R.F., 1999, Control of mercury emissions in utility power plants, *in* Schmidt, C.E., Offen, G.R., and Srivastava, R.K., eds., the Electric Power Research Institute [EPRI] – U.S. Department of Energy [DOE] – U.S. Environmental Protection Agency [EPA] Combined Utility Air Pollution Control Symposium, the Mega Symposium, August, 16–20, 1999, Atlanta, Georgia: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-113187-V3 [v. 3], 14 p., last accessed June 2010 at <http://www.psicorp.com/pdf/library/sr-0987.pdf>.
- Morency, J.R., Panagiotou, T., and Senior, C.L., 2002, Zeolite sorbent that effectively removes mercury from flue gases: *Filtration and Separation*, v. 39, no. 7, p. 24–26.
- Moreno, N., Querol, X., Andrés, J.M., Nugteren, H., Janssen-Jurkovicova, M., and Jones, M., 2005, Physico-chemical characteristics of European pulverized coal combustion fly ashes: *Fuel*, v. 84, p. 1351–1363.
- Moreno, N., Querol, X., Andrés, J.M., Stanton, K., Towler, M., Nugteren, H., Janssen-Jurkovicová, M., and Jones, R., 2005, Physico-chemical characteristics of European pulverized coal combustion fly ashes: *Fuel*, v. 84, no. 11, p. 1351–1363.
- Moreno, N., Querol, X., Plana, F., Andres, J.M., Janssen, M., and Nugteren, H., 2002, Pure zeolite synthesis from silica extracted from coal fly ashes: *Journal of Chemical Technology and Biotechnology*, v. 77, no. 3, p. 274–279.
- Moreno, T., Alastuey, A., Querol, X., Font, O., and Gibbons, W., 2007, The identification of metallic elements in airborne particulate matter derived from fossil fuels at Puertollano, Spain: *International Journal of Coal Geology*, v. 71, no. 2-3, p. 122–128.
- Morgan, B.A., and Scaroni, A.W., 1983, The effects of cations on pulverized coal combustion: *Fuel*, v. 28, no. 4, p. 164–167.
- Morgan, M.G., 2006, Don't grandfather coal plants: *Science*, v. 314, no. 5802 (17 Nov 2006), p. 1049.
- Mori, T., and Shimizu, N., 1989, Operating experience of SCR systems at EPDC's Coal-Fired Power Station, *in* Eskinazi, D., and Linak, W.P., eds., 1989 Symposium on Stationary Combustion Nitrogen Oxide Control, March 6-9, 1989, San Francisco, California: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. GS-6423, p. 6A-85–6A-104.
- Morita, M., and Edmonds, 1992, Determination of arsenic species in environmental and biological samples: *Pure and Applied Chemistry*, v. 64, no. 4, p. 575–590.
- Moriyama, R., Takeda, S., Onozaki, M., and Katayama, Y., 2005, Upgrading of low rank coal as coal water slurry and its utilization: *Coal Preparation*, v. 25, no. 4, p. 193–210.

- Morris, Clyde, 1987, A case study of the effects of public safety regulation on the construction costs of coal-fired and nuclear power plants: Cleveland, Ohio, Case Western Reserve Department of Economics, Ph.D. thesis, 137 p.
- Morris, J.S., and Bobrowski, G., 1979, The Determination of ^{226}Ra , ^{214}Pb , and ^{214}Bi in fly ash samples from eighteen (18) coal-fired power plants in the U.S., *in* Spencer, J.D., and Whieldon, C.E. Jr, eds., Proceedings, International Ash Utilization Symposium, February 25–27, 1979, Atlanta, Georgia, 5th Symposium: Morgantown, W. Va., U.S. Department of Energy, Morgantown Energy Technology Center, Report METC/SP-79/10 (pt.1), p. 460–470.
- Morris, S.C., 1977, Comparative effects of coal and nuclear fuel on mortality: Upton, N.Y., Brookhaven National Laboratory Report BNL-23579, pagination not available.
- Moskowitz, P.D., Lipfert, F.W., and Saroff, L., 1996, Global environmental security implications of advanced coal combustion options, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 691.
- Motooka, J.M., Anderson, T., Meier, A.L., and Leventhal, J.S., 1998, Coal ash environmental leaching: Elemental, *in* Breit, G.N., and Finkelman, R.B., eds., Characterization of coal and coal combustion products from a coal-burning power plant—preliminary report and results of analyses: U.S. Geological Survey Open-File Report 98-342, p. 76–78.
- Moulton, L.K., Seals, R.K., and Anderson, D.A., 1973, Utilization of ash from coal burning power plants in highway construction: Transportation Research Board Record No. 430, 1 vol.
- Muehlenkamp, R., and Derus, R.J., 2008, Bottom ash treatment program saves midwest coal burning utility more than US \$50,000 annually: Power Plant Chemistry, v. 10, no. 7, p. 423–425.
- Mueller, B.T., Golan, L.P., Toma, M., and Mansour, M., 1996, Pulse enhanced fluidized bed combustion, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 37–42.
- Mueller, S.F., and Imhoff, R.E., 1992, Particle formation and growth in coal-fired boiler exhaust, *in* Air and Waste Management Association, eds., Proceedings, Annual Meeting of the Air and Waste Management Association, Vol. 2A, Air Monitoring, June 21–26, 1992, Kansas City, Missouri, 85th Annual Meeting: Pittsburgh, Pa., Air and Waste Management Association, p. 21–22.
- Mueller, S.F., and Imhoff, R.E., 1994, Estimates of particle formation and growth in coal-fired boiler exhaust – I. – observations: Atmospheric Environment, v. 28, p. 595–602.
- Mueller, S.F., and Imhoff, R.E., 1994, Estimates of particle formation and growth in coal-fired boiler exhaust – II. – theory and model simulations: Atmospheric Environment, v. 28, p. 603–610.
- Muhlbaier, J.L., 1978, The chemistry of precipitation near the Chalk Point Power Plant: College Park, University of Maryland, Ph.D. thesis, 321 p.
- Mukherjee, A.B., and Kikuchi, R., 1999, Coal ash from thermal power plants in Finland: A review, *in* Sajwan, K.S., Alva, A.K., and Keefer, R.F., eds., Biogeochemistry of Trace Elements in Coal and Coal Combustion Byproducts: New York, N.Y., Kluwer Academic/Plenum, p. 59–76.

- Mukherjee, A.B., and Zevenhoven, R., 2006, Mercury in coal ash and its fate in the Indian Subcontinent – a synoptic review: *The Science of The Total Environment*, v. 368, p. 384–392.
- Mukherjee, A.K., 2002, Coal combustion ash (CCA) disposal in a Pennsylvania surface mine site and its non-beneficial impacts on groundwater flow regime – a degradation experience [poster session], *in* Vories, K.C. and Throgmorton, Dianne, eds., *Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 329–333.
- Mukhopadhyay, P.K., 1995, Elemental geochemistry (major, minor, and trace elements) and mineralogical speciation of selected elements in the feed coal and their combustion residues from the Lingan Power Plant, Nova Scotia: Halifax, Nova Scotia, Canada, Nova Scotia Power Incorporated, Research Report, p. 29.
- Mukhopadhyay, P.K., Lajeunesse, G., and Crandlemire, A.L., 1996, Mineralogical speciation of elements in an eastern Canadian feed coal and their combustion residues from a Canadian power plant: *International Journal of Coal Geology*, v. 32, no. 1–4, p. 279–312.
- Mukhopadhyay, P.K., Lajeunesse, G., Crandlemire, A.L., and Finkelman, R.B., 1999, Mineralogy and geochemistry of selected coal seams and their combustion residues from the Sydney area, Nova Scotia, Canada: *International Journal of Coal Geology*, v. 40, p. 253–254.
- Mulchi, C.L., Wolf, D.C., and Armbruster, J.A., 1979, Chalk Point Cooling Tower Project – FY '79 final Report – cooling tower effects on crop and soils – post operational Report no. 4: College Park, University of Maryland, Water Resources Research Center, 215 p.
- Mumford, J.L., Tejada, S.B., Jackson, M., and Lewtas, J., 1986, Bioavailability of 1-nitropyrene from model coal fly ash and its uptake by alveolar macrophages: *Environmental Research*, v. 40, p. 427–436.
- Munjack, J.M., and Hogg, R., 2004, The effects of added fines on the flow and storage of coal: *Coal Preparation*, v. 24, p. 159–177.
- Muramatsu, E., and Iijima, M., 2003, Life cycle assessment for CO₂ capture technology from exhaust gas of coal power plant, *in* Gale, J., and Kaya, Y., *Greenhouse Gas Control Technologies, Proceedings of the International Conference on Greenhouse Gas Control Technologies*, October 1–4, 2002, Kyoto, Japan, 6th Conference: Amsterdam, The Netherlands, Pergamon, p. 57–62.
- Murarka, I., 2002, Environmental performance of CCPs, *in* Vories, K.C. and Throgmorton, Dianne, eds., *Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 231–234.
- Murarka, I., 2002, Ground water quality at the universal mine site [abs.], *in* *Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 17–18.

- Murarka, I., 2002, Water quality at a coal ash filled surface coal mine pit in Indiana, *in* Vories, K.C. and Throgmorton, Dianne, eds., *Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 197–221.
- Murarka, I., and Erickson, J., 2002, Indiana ground water quality at a mine site [abs.], *in* *Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 15.
- Murarka, I.P., Hassett, D.J., Pflughoeft-Hassett, D.F., and Heebink, L.V., 2003, Leaching of selected constituents from ammoniated fly ash from a coal-fired power plant, *in* Robl, Thomas L., ed., *International Ash Utilization Symposium*, October 20–22, 2003, Lexington, Kentucky: Lexington, University of Kentucky Center for Applied Energy Research [CAER], [10] p.
- Murarka, I.P., Mattigod, S.V., and Keefer, R.F., 1993, An overview of Electric Power Research Institute (EPRI) research related to effective management of coal combustion residues, *in* Keefer, R.F. and Sajwan, K.S., eds., *Trace elements in coal and coal combustion residues*: Boca Raton, Fla., Lewis Publishers, p. 11–24.
- Murayama, N., Yamamoto, H., and Shibata, J., 2002, Zeolite synthesis from coal fly ash by hydrothermal reaction using various alkali sources: *Journal of Chemical Technology and Biotechnology*, v. 77, no. 3, p. 280–286.
- Murray, F., 1984, The accumulation by plants of emissions from a coal-fired power plant: *Atmospheric Environment*, v. 18, no. 8, p. 1705–1709.
- Murrell, F.J., and Ashworth, R.A., 1996, Developments in staged combustor technology, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, *Proceedings of the Annual International Pittsburgh Coal Conference*, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 210–215.
- Nace, Ted, 2008, Meet the Boomers – what’s the best way to phase out the huge fleet of aging coal plants?: *Gristmill*, November 11, 2008, last accessed 9 Mar 2010, at <http://www.grist.org/article/meet-the-boomers/>, unpaginated.
- Nadar, P.A., and Parvathy, B., 1982, Adsorption of Cr(VI) from aqueous solution by bottom ash from thermal station: *Indian Association for Water Pollution Control, Technical Annual*, v. 9, p. 176–181.
- Nader, J.S., 1978, Field measurements and characterization of emissions from coal-fired combustion sources: *Proceedings of the Air Pollution Control Association*, v. 3, p. 1–22.
- Nag, P.K., 2008, *Power plant engineering*, 3rd ed.: New Delhi, Tata McGraw-Hill, 975 p.
- Naganuma, H., Ikeda, N., Kawai, T., Takuwa, T., Ito, T., Igarashi, Y., Yoshiie, R., and Naruse, I., 2009, Control of ash deposition in pulverized coal fired boiler: *Proceedings of the Combustion Institute*, v. 32, no. 2, p. 2709–2716.
- Nagurney, A., Liu, Z., and Woolley, T., 2006, Optimal endogenous carbon taxes for electric power supply chains with power plants: *Mathematical and Computer Modelling*, v. 44, no. 9–10, p. 899–916.
- Naik, C.V., Krishnakumar, B., and Niksa, S., 2010, Predicting Hg emissions rates from utility gas cleaning systems: *Fuel*, v. 89, no. 4, p. 859–867.

- Nakaoka, A., Fukushima, M., and Takagi, S., 1984, Environmental effects of natural radionuclides from coal-fired power plants: *Health Physics*, v. 47, no. 3, p. 407–416.
- Nakaoka, A., Takagi, S., Fukushima, M., 1985, Evaluation of radiation dose from a coal-fired power plant: *Health Physics*, v. 48, p. 215–220.
- Nakayama, S., Noguchi, Y., Kiga, T., Miyamae, S., Maeda, U., Kawai, M., Tanaka, T., Koyata, K., and Makino, H., 1992, Pulverized coal combustion in O₂/CO₂ mixtures on a power plant for CO₂ recovery: *Energy Conversion and Management*, v. 33, no. 5-8, p. 379–386.
- Nalbandian, H., 2001, Instrumentation and control in coal-fired power plants: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report CCC/56, 74 p.
- Nalbandian, H., 2002, Prospects for integrated air pollution control in pulverised coal fired power plant: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACCC/68, 64 p.
- Nalbandian, H., and Carpenter, A., 2000, Prospects for upgrading coal-fired power plants: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report CCC/41, 92 p.
- Nandi, B.N., Brown, T.D., and Lee, G.K., 1977, Inert coal macerals in combustion: *Fuel*, v. 56, p. 125–130.
- Narasiah, M.L., and Satyanarayana, T., 1984, Design of lignite versus coal handling systems for thermal power stations: *Bulk Solids Handling*, v. 4, no. 3, p. 553–561.
- Narasimha, M., Brennan, M.S., and Holtham, P.N., 2006, A review of flow modeling for dense medium cyclones: *Coal Preparation*, v. 26, no. 2, p. 55–89.
- Narukawa, T., Takatsu, A., Chiba, K., Riley, K.W., and French, D.H., 2005, Investigation on chemical species of arsenic, selenium, and antimony in fly ash from coal fuel thermal power stations: *Journal of Environmental Monitoring*, v. 7, p. 1342–1348.
- Nascimento, M., Soars, P.S.M., and de Souza, V.P., 2009, Adsorption of heavy metal cations using coal fly ash modified by hydrothermal method: *Fuel*, v. 88, p. 1714–1719.
- Nash, T.H., III, and Sommerfeld, M.R., 1981, Elemental concentrations in lichens in the area of the Four Corners Power Plant, New Mexico: *Environmental and Experimental Botany*, v. 21, no. 2, p. 153–162.
- Nathan, Y., Dvorachek, M., Pelly, I., and Mimran, U., 1999, Characterization of coal fly ash from Israel: *Fuel*, v. 78, p. 205–213.
- Nathan, Y., Pelly, I., and Mimran, U., 1997, Coal fly ash in Israel – characterization and potential contamination resulting from its use or disposal, *in* University of Kentucky, Center for Applied Energy Research [CAER], eds., *Pushing the Envelope, Proceedings, International Ash Utilization Symposium, October 20–22, 1997*, Lexington, Kentucky: Lexington, University of Kentucky, Center for Applied Energy Research [CAER], p. 221–228.
- National Academy of Sciences, 1978, *An assessment of mercury in the environment*: Washington, D.C., National Academies Press, 185 p.
- National Ash Association, 1977, *Technology and utilization of power plant ash – short course, papers and programme*, [not paged].

- National Thermal Power Corporation, Research and Development Centre, 1994, Slagging and fouling problems in thermal power stations: New Delhi, Research Scheme on Power, Central Board of Irrigation and Power, Technical Report no. 97, 26 p.
- Natusch, D.F.S., 1978, Potentially carcinogenic species emitted to the atmosphere by fossil-fueled power plants: *Environmental Health Perspectives*, v. 22, p. 79–90.
- Natusch, D.F.S., Wallace, J.R., and Evans, C.A.J., 1974, Toxic trace elements – preferential concentration in respirable particles: *Science*, v. 183, no. 4121, p. 202–204.
- Nayak, R.V., Bauer, F.W., and Tonden, T.P., 1987, Mineral matter in coal – origin, identification, high-temperature transformation, and boiler erosion: *Journal of Coal Quality*, v. 6, p. 37–43.
- Neal, S.B.H.C., Northover, E.W., and Hitchcock, J.A., 1982, Some new devices for the measurement of heat flux in power station boiler furnaces: *Journal of the Institute of Energy*, March 1982, p. 8–14.
- Nechvatal, T., ed., 1989, Ash handling, disposal, and utilization from coal fired fluidized bed boilers: *Fact*, v. 6, 37 p.
- Nehrozoglu, A., Knowlton, T.M., and Findlay, J.G., 1996, Pyrolyzer system development for a high-performance power system, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 154–159.
- Nelson, J.G., Day, J.C., and Jessen, S., 1981, Regulation for environmental protection – the Nanticoke Industrial Complex, Ontario, Canada: *Environmental Management*, v. 5, no. 5, p. 385–395.
- Nelson, P.F., 1992, Reduction of NO_x emissions from stationary combustion sources: *Transactions of the Institution of Engineers, Australia - Mechanical Engineering*, v. ME-17, p. 59–65.
- Nelson, P.F., 2007, Atmospheric emissions of mercury from Australian point sources: *Atmospheric Environment*, v. 41, p. 1717–1734.
- Nelson, P.F., 2007, Trace metal emissions in fine particles from coal combustion: *Energy and Fuels*, v. 21, p. 477–484.
- Nelson, P.F., Petersen, C., and Morrison, A.L., 2004, Atmospheric emissions of mercury — sources and chemistry: *Clean Air and Environmental Quality*, v. 38, p. 48–55.
- Nelson, P.F., Shah, P., Strezov, V., Halliburton, B., and Carras, J.N., 2010, Environmental impacts of coal combustion – a risk approach to assessment of emissions: *Fuel*, v. 89, no. 4, p. 810–816.
- Nelson, S., Jr., 1996, Fluesorbent dry scrubbing at Ohio Edison's Burger Station, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1462–1467.
- Nelson, S., Jr., Landreth, R., Zhou, Q., and Miller, J., 2004, Accumulated power-plant mercury-removal experience with brominated PAC injection, *in* Air and Waste Management Association [A&WMA], eds., *Combined Power Plant Air Pollution Control Mega Symposium*, August 30–September 2, 2004, Washington, D.C.: Pittsburgh, Pa., Air and Waste Management Association [A&WMA], 1 CD-ROM, p. 1–12, last accessed March 2010 at http://www.seedcoalition.org/pdf/mercury_removal_with_pac_injection.pdf, p. 1–12.

- Neme, C., 1991, Electric utilities and long-range transport of mercury and other toxic air pollutants: Center for Clean Air Policy, 121 p.
- National Energy Technology Laboratory [NETL], 2001, The JEA Atmospheric Fluidized Bed Combustor Clean Coal Project; repowering Northside Units 1 and 2L: [6] p.
- National Energy Technology Laboratory [NETL], 2005, Clean coal technology; selective catalytic reduction (SCR) technology for the control of nitrogen oxide emissions from coal-fired boilers – an update of Topical Report no. 9: 10 p.
- National Energy Technology Laboratory [NETL], 2005, Current industry perspective – gasification, robust growth forecast – 24440 World Survey results: 24 p.
- National Energy Technology Laboratory [NETL], 2005, Hydrogen from Coal Program – research, development, and demonstration plan, for the period 2005 through 2015 – external draft for review: 58 p.
- National Energy Technology Laboratory [NETL], 2008, Hydrogen Coal Program – research, development, and demonstration plan, for the period 2008 through 2016 – external draft: 71 p.
- Nester, S., Wohadlo, S., Rabovitser, J., Bryan, B., Tumanovsky, A.G., Lisauskas, R., and Ake, T., 2003, Current status of development and testing of a novel coal preheating technology for NO_x reduction from pulverized coal-fired boilers, *in* American Society of Mechanical Engineers [ASME], Fuels and Combustion Technologies Division, and others, eds., Proceedings, International Technical Conference on Coal Utilization and Fuel Systems, March 9–13, 2003, Clearwater, Florida, 28th Conference: Gaithersburg, Md., Coal Technology Association, Paper no. 170, 12 p., last accessed June 2010 at <http://www.netl.doe.gov/technologies/coalpower/ewr/nox/pubs/40752%20GTI%20methane%20Mega%202003.pdf>.
- Netschert, B.C., Gerber, A., and Stelzer, I.M., 1970, Competition in the energy markets; an economic analysis: National Economic Research Associates [N/E/R/A], Inc., p. 1–85, and appendices A and B.
- Nettleton, M.A., 1979, Particulate formation in power station boiler furnaces: Progress in Energy and Combustion Science, v. 5, no. 3, p. 223–243.
- Neville, M., Quann, R.J., Haynes, B.S., and Sarofim, A.F., 1981, Vaporization and condensation of mineral matter during pulverized coal combustion, *in* Combustion Institute, eds., Symposium (International) on Combustion, August 17–22, 1980, Waterloo, Canada, 18th Symposium: Pittsburgh, Pa., Combustion Institute, p. 1267–1274.
- New York State Electric and Gas Corporation, 2002, Milliken Clean Coal Technology Demonstration Project – project performance summary: 12 p.
- New Zealand Electricity Division, 1981, Waikato coal-fired power station – preliminary power station parameters: Wellington, New Zealand Electricity, Report no. PD 4, 53 p.
- Newcomer, A., and Apt, J., 2009, Near-term Implications of a ban on new coal-fired power plants in the United States: Environmental Science and Technology, v. 43, no. 11, p. 3995–4001.
- Newman, L., 1981, Atmospheric oxidation of sulfur dioxide – a review as viewed from power plant and smelter plume studies: Atmospheric Environment, v. 15, no. 10/11, p. 2231–2239.
- Newman, L., Forrest, J., and Manowitz, B., 1975, The application of an isotopic ratio technique to a study of the atmospheric oxidation of sulfur dioxide in the plume from a coal fired power plant: Atmospheric Environment, v. 9, no. 11, p. 969–977.

- Newman-Sutherland, E., 2001, Mercury and coal-fuelled power plants: Pullenvale, Queensland, Cooperative Research Centre for Coal in Sustainable Development, Technology Assessment Report 19, 40 p.
- Newton, T.U., Morton, D., and Clark, G.L., 1993, Boiler combustion optimization utilizing real-time analysis, *in* Henry, R.E., ed., Proceedings, EPRI Heat Rate Improvement Conference, November 17–19, 1992, Birmingham, Alabama, 7th Conference: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-102098, variously paged.
- Ngamcharussrivichai, C., Chatratananon, C., Nuntang, S., and Prasassarakich, P., 2008, Adsorptive removal of thiophene and benzothiophene over zeolites from Mae Moh Coal Fly Ash: *Fuel*, v. 87, p. 2347–2351.
- Nguyen, C.T., Harnby, N., and Burnet, G., 1980, Fluidization characteristics of power-plant fly ashes and fly ash-charcoal mixtures: *Resource Recovery and Conservation*, v. 5, no. 3, p. 255–265.
- Nguyen, N.D., Hall, W.B., and Loper, B.J., 1990, Upgrading of coal-fired generating units in Pennsylvania, a review of five year capital investment plans submitted by jurisdictional electric utilities: Harrisburg, Pennsylvania, Pennsylvania Public Utility Commission, Division of Engineering and Utility Review, 48 p.
- Ni W., and Sze N.D., 1998, Energy supply and development in China, *in* McElroy, M.P., Nielson, C.P., and Lydon, P., eds., *Energizing China*: Cambridge, Mass., Harvard University Press, p. 67–117.
- Niac, G., Popescu, Al., Viau-Bolocan, I., and Capotă, P., 2001, Grain size distribution of Ialnită power plant lignite ash and elemental composition of size classes: *Fuel*, v. 80, no. 5, p. 731–737.
- Niewiadomski, T., Jasińska, M., and Wąsiołek, P., 1986, Enhancement of population doses due to production of electricity from brown coal in Poland: *Journal of Environmental Radioactivity*, v. 3, no. 4, p. 273–292.
- Niksa, S., and Fujiwara, N., 2004, Predicting complete Hg speciation along coal-fired utility exhaust systems, *in* Air and Waste Management Association [A&WMA], eds., Combined Power Plant Air Pollution Control Mega Symposium, August 30–September 2, 2004, Washington, D.C.: Pittsburgh, Pa., Air and Waste Management Association [A &WMA], [paper located on] 1 CD-ROM.
- Niksa, S., and Fujiwara, N., 2004, The impact of Wet FGD Scrubbing on Hg emissions from coal-fired power stations, *in* Air and Waste Management Association [A&WMA], eds., Combined Power Plant Air Pollution Control Mega Symposium, August 30–September 2, 2004, Washington, D.C.: Pittsburgh, Pa., Air and Waste Management Association [A&WMA], [paper located on] 1 CD-ROM.
- Niksa, S., and Fujiwara, N., 2005, A predictive mechanism for mercury oxidation on selective catalytic reduction catalysts under coal-derived flue gas: *Journal of the Air and Waste Management Association*, v. 55, p. 1866–1875.
- Niksa, S., and Fujiwara, N., 2005, Predicting extents of mercury oxidation in coal-derived flue gases: *Journal of the Air and Waste Management Association*, v. 55, p. 930–939.
- Niksa, S., and Fujiwara, N., 2005, The impact of wet FGD scrubbing on Hg emissions from coal-fired power stations: *Journal of the Air and Waste Management Association*, v. 55, p. 970–977.

- Niksa, S., and Fujiwara, N., 2009, Estimating Hg emissions from coal-fired power stations in China: *Fuel*, v. 88, p. 214–217.
- Niksa, S., Fujiwara, N., Fujita, Y., Tomura, K., Moritomi, H., Tuji, T., and Takasu, S., 2002, A mechanism for mercury oxidation in coal-derived exhausts: *Journal of Air and Waste Management Association*, v. 52, no. 8, p. 894–901.
- Niksa, S., Helble, J.J., and Fujiwara, N., 2001, Kinetic modeling of homogeneous mercury oxidation – the importance of NO and H₂O in predicting oxidation in coal-derived systems: *Environmental Science and Technology*, v. 35, p. 3701–3706.
- Nilsson, N., and Clarke, N., 1994, PFBC residues – characteristics, disposal and utilisation: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR-73, 109 p.
- Ninomiya, Y., Zhang, L.A., Sato, A., and Dong, Z.B., 2004, Influence of coal particle size on particulate matter emission and its chemical species produced during coal combustion: *Fuel Processing Technology*, v. 85, no. 8-10, p. 1065–1088.
- Nishimura, I., and Tsuzaki, M., 2008, Health risk assessment of mercury emitted from thermal power plants—a case study with a newly developed multimedia exposure assessment model: *Toxicology Letters*, v. 180, supplement 1, p. 572–573.
- Niss, N.D., Schabron, J.F., and Brown, T.H., 1993, Determination of selenium species in coal fly ash extracts: *Environmental Science and Technology*, v. 27, p. 827–829.
- Noda, N., and Ito, S., 2008, The release and behavior of mercury, selenium, and boron in coal combustion: *Powder Technology*, v. 180, no. 1-2, p. 227–231.
- Nolan, P.S., Farthing, G.A., Yurchison, D.M., and Holmes, M.J., 1999, Development of mercury emissions control technologies for the power industry, *in* Schmidt, C.E., Offen, G.R., and Srivastava, R.K., eds., the Electric Power Research Institute [EPRI] – U.S. Department of Energy [DOE] – U.S. Environmental Protection Agency [EPA] Combined Utility Air Pollution Control Symposium, the Mega Symposium, August, 16–20, 1999, Atlanta, Georgia: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report nos. TR-113187-V1, TR-113187-V2, and TR-113187-V3, paper no. BR-1685, 7 p., last accessed January 2011 at <http://www.babcock.com/library/pdf/BR-1685.pdf>.
- Nord, G.L., Jr., 1998, Analytical transmission electron microscopy of fly ash from Unit 1, *in* Breit, G.N., and Finkelman, R.B., eds., Characterization of coal and coal combustion products from a coal-burning power plant—preliminary report and results of analyses: U.S. Geological Survey Open-File Report 98-342, p. 85–87.
- Norden, J.S., and Merriam, N.W., 1997, NO_x emissions produced with combustion of Powder River Basin Coal in a utility boiler: Laramie, Wyoming, Western Research Institute Report no. WRI-97-R033, 34 p., last accessed Jun 2010 at [http://www.adeq.state.ar.us/ftp/root/Pub/commission/p/Closed%20Permit%20Dockets%202006-2010/08-006-P%20AEP%20Service%20Corp.%20&%20SWEPCO-20&%20SWEPCO-Sierra%20Club%20&%20Audubon\(Consolidated\)/2009-04-24_SWEPCO-MU-EX.08.pdf](http://www.adeq.state.ar.us/ftp/root/Pub/commission/p/Closed%20Permit%20Dockets%202006-2010/08-006-P%20AEP%20Service%20Corp.%20&%20SWEPCO-20&%20SWEPCO-Sierra%20Club%20&%20Audubon(Consolidated)/2009-04-24_SWEPCO-MU-EX.08.pdf).
- Norris, P.R.H., 2009, Arsenic and selenium distribution in coal-fired plant samples: Bowling Green, Western Kentucky University, Department of Chemistry, Master of Science thesis, 68 p., last accessed June 2010 at <http://digitalcommons.wku.edu/cgi/viewcontent.cgi?article=1052&context=theses>.
- North Central Power Study Coordinating Committee, 1971, North Central Power Study; Report of phase I – volume 2 – study of mine-mouth thermal powerplants with extra-high-voltage transmission for delivery of power to load centers, variously paged.

- North Dakota, Division of Environmental Engineering, 1974, Potential animal and human effects of trace elements resulting from coal development: Bismark, North Dakota, Division of Environmental Engineering, Environmental Control Section, North Dakota Department of Health, 32 p.
- Northeast States for Coordinated Air Use Management [NESCAUM], 2003, Mercury emissions from coal-fired power plants; the case for regulatory action: Northeast States for Coordinated Air Use Management [NESCAUM], 1 vol., variously paged.
- Norton, G.A., Yang, H., Brown, R.C., Laudal, D.L., Dunham, G.E., and Erjavec, J., 2002, Heterogeneous oxidation of mercury in simulated post combustion conditions: *Fuel*, v. 82, no. 2, p. 107–116.
- Noskievic, P., Kolat, P., and Cech, B., 1987, Operational tests of burners for ignition and stabilization of pulverized coal: *Energetika*, v. 37, no. 5, p. 233–236.
- Noskievič, P., and Ochodek, T., 1996, Quality of combustion processes – an assessment, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1113–1118.
- Notten, P.J., 2002, Life cycle inventory uncertainty in resource-based industries – a focus on coal-based power generation: Cape Town, South Africa, University of Cape Town, Ph.D. thesis, 181 p.
- Notten, P.J., Hansen, Y., and Petrie, J.G., 1999, The role of life cycle assessment in achieving effective environmental management in coal-fired power generation in South Africa [abs.], *in* Society of Environmental Toxicology and Chemistry [SETAC], eds., *Sustaining Global Environmental Integrity*, Abstract Book, Annual Meeting of the Society of Environmental Toxicology and Chemistry [SETAC], November 14–18, 1999, Philadelphia, Pennsylvania, 20th Annual Meeting: Pensacola, Fla., Society of Environmental Toxicology and Chemistry, 342 p.
- Notten, P.J., and Petrie, J.G., 2005, Inventory and impact assessment uncertainty in coal-based power generation, *in* Dubreuil, A., ed., *Life Cycle Assessment and Metals - Issues and Research Directions*, Proceedings of the International Workshop on Life-Cycle Assessment and Metals, Society of Environmental Toxicology and Chemistry [SETAC], April 15–17, 2002, Montréal, Canada: Pensacola, Fla., Society of Environmental Toxicology and Chemistry, p. 138–142.
- Novak, M., and Rych, H.G., 1989, Design and operation of the SCR-Type NO_x reduction plants at the Dürnröhr Power Station in Austria, *in* Eskinazi, D., and Linak, W.P., eds., 1989 Symposium on Stationary Combustion Nitrogen Oxide Control, March 6–9, 1989, San Francisco, California: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. GS-6423, p. 7A-1–7A-26.
- Nóvoa-Muñoz, J.C., Pontevedra-Pombal, X., Martínez-Cortizas, A., García-Rodeja Gayoso, E., 2008, Mercury accumulation in upland acid forest ecosystems nearby a coal-fired power-plant in Southwest Europe (Galicia, NW Spain): *Science of The Total Environment*, v. 394, no. 2-3, p. 303–312.
- Nowak, Z., 1974, Iron and alumina extraction from power plant fly ash in Poland: U.S. Bureau of Mines Information Circular IC-8640, p. 224–231.
- Nucleonics Week, 1979, Radiation doses from coal lignite burning exceeds nuclear: *Nucleonics Week*, v. 20, no. 10, p. 1.
- Nugteren, H.W., Janssen-Jurkovićová, M., and Scarlett, B., 2002, Removal of heavy metals from fly ash and the impact on its quality: *Journal of Chemical Technology and Biotechnology*, v. 77, no. 3, p. 389–395.

- Nunnermacker, L.J., Kleinman, L.I., Imre, D., Daum, P.H., Lee, Y.-N., Lee, J.H., Springston, S.R., Newman, L., and Gillani, N., 2000, NO_y lifetimes and O₃ production efficiencies in urban and power plant plumes: analysis of field data: *Journal of Geophysical Research*, v. 105, no. D7, p. 9165–9176.
- Nurik, W., 1988, An engineering approach to prediction of fuel impacts on utility boiler systems: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-5713, p. 7.1–7.60.
- Oak Ridge National Laboratory, 1971, Trace element measurements at the coal-fired Allen Steam plant, progress Report: Oak Ridge, Tenn., Oak Ridge National Laboratory Report ORNL-NSF-EP 43, 1 vol.
- Öberg, T., Bergbäck, B., and Öberg, E., 2007, Different catalytic effects of copper and chromium on the formation and degradation of chlorinated aromatic compounds in fly ash: *Environmental Science and Technology*, v. 41, no. 10, p. 3741–3746.
- Obermiller, E.L., Conrad, V.B., and Lengyel, J., 1993, Trace element contents of commercial coals, in Chow, W., and others, eds., *Managing Hazardous Air Pollutants – State of the Art*: Electric Power Research Institute [EPRI] Report no. TR-101890, Boca Raton, Fla., Lewis Publishers, p. 73–92.
- Obrusnik, I., Starkova, B., and Blazek, J., 1989, Composition and morphology of stack emissions from coal and oil fueled boilers: *Journal of Radioanalytical and Nuclear Chemistry*, v. 133, p. 377–390.
- Ochoa, R., Díaz-Somoano, M., Font, O., Leiva, C., López-Antón, M.A., Izquierdo, M., Querol, X., Martínez-Tarazona, M.R., Fernandez, C., Tomás, A., Gómez, P., Giménez, A., Rico, S., and Alvarez, E., 2009, Differential partitioning and speciation of Hg in wet FGD facilities of PCC power plants, in *University of Kentucky Center for Applied Energy Research [CAER], eds., World of Coal Ash [WOCA] Conference, Proceedings, May 4–7, 2009, Lexington, Kentucky: Lexington, University of Kentucky Center for Applied Energy Research [CAER], [7] p., last accessed August 2011 at <http://www.flyash.info/2009/161-font2009.pdf>*.
- O'Connor, D., Shea, S.C., Stallard, S., and Wendling, J., 1993, Using on-line coal analysis to improve power plant performance, in Chiang, S.-H., ed., *Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 20–24, 1993, Pittsburgh, Pennsylvania, 10th Conference: Pittsburgh, Pa., University of Pittsburgh*, p. 463.
- O'Connor, J.R., and Citarella, J.F., 1970, An air pollution control cost study of the steam-electric power generating industry: *Journal of the Air Pollution Control Association*, v. 20, no. 5, p. 283–288.
- Odeh, N.A., and Cockerill, T.T., 2008, Life cycle analysis of UK coal fired power plants: *Energy Conversion and Management*, v. 49, no. 2, p. 212–220.
- Odeh, N.A., and Cockerill, T.T., 2008, Life cycle GHG assessment of fossil fuel power plants with carbon capture and storage: *Energy Policy*, v. 36, no. 1, p. 367–380.
- Odgaard, P.F., Lin, B., and Jorgensen, S.B., 2008, Observer and data-driven-model-based fault detection in power plant coal mills: *Institute of Electrical and Electronics Engineers [IEEE], Transactions on Energy Conversion*, v. 23, no. 2, p. 659–668.
- Odgaard, P.F., and Trangbaek, K., 2007, Comparison of methods for oscillation detection — case study on a coal-fired power plant: *Power Plants and Power Systems Control 2006*, p. 297–302.

- O'Dowd, W.J., Pennline, H.W., Freeman, M.C., Granite, E.J., Hargis, R.A., Lacher, C.J., and Karash, A., 2006, A technique to control mercury from flue gas: the Thief Process: *Fuel Processing Technology*, v. 87, no. 12, p. 1071–1084.
- Oexmann, J., and Kather, A., 2009, Post-combustion CO₂—abtrennung in kohlekraftwerken Rauchgaswäschen mit chemischen Lösungsmitteln [Post-combustion CO₂—capture from coal-fired power plants wet chemical absorption processes]: *VGB PowerTech*, v. 89, no. 1-2, p. 92.
- Oexmann, J., and Kather, A., 2009, Post-combustion CO₂ capture in coal-fired power plants – comparison of integrated chemical absorption processes with piperazine promoted potassium carbonate and MEA: *Energy Procedia*, v. 1, no. 1, p. 799–806.
- Ogawa, T., Ohashi, Y., Yamanakaa, S.U., and Miyaike, K., 2009, Development of carbon dioxide removal system from the flue gas of coal fired power plant: *Energy Procedia*, v. 1, no. 1, p. 721–724.
- Ogren, J.A., Anderson, J.A., and Blumenthal, D.L., 1979, Pollutant measurements in plumes from power plants and cities St. Louis Area, July 1976 – a Project MISTT Report: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-600/7-79-242, 47 p.
- Ogren, J.A., Blumenthal, D.L., and Vanderpol, A.H., 1977, Oxidant measurements in western power plant plumes: Electric Power Research Institute [EPRI] Report no. EA-421, 2 vol.
- Ogren, J.A., Blumenthal, D.L., White, W.H., Tesche, T.W., Yocke, M.A., and Liu, M.K., 1976, Determination of the feasibility of ozone formation in power plant plumes: Electric Power Research Institute [EPRI] Report no. EA-307, 5 vol.
- Oikawa, T., Tomizawa, M., and Degawa, S., 1997, New monitoring system for thermal power plants using digital image processing and sound analysis: *Control Engineering Practice*, v. 5, no. 1, p. 75–78.
- Oka, N., Murayama, T., Masuoka, H., Yamada, S., Yamada, T., Shinozaki, S., Shibaoka, M., and Thomas, C.G., 1987, The influence of rank and maceral composition on ignition and char burnout of pulverized coal: *Fuel Processing Technology*, v. 15, p. 213–224.
- Okamoto, K., 1980. Effect of the foodchain in radioactivities released from thermal power plants, *in* International Radioactive Protection Association [IRPA], eds., Proceedings, International Congress of International Radioactive Protection Association [IRPA], March 9–14, 1980, Jerusalem, Israel, 5th Congress: Yavne, Israel, Israel Health Physics Society, v. III, p. 157–160.
- Okawa, M., Kimura, N., Kiga, T., Takano, S., Arai, K., and Kato, M., 1997, Trial design for a CO₂ recovery power plant by burning pulverized coal in O₂/CO₂: *Energy Conversion and Management*, v. 38; supplement 1, p. S123–S127.
- Okazaki, K., and Ando, T., 1997, NO_x reduction mechanism in coal combustion with recycled CO₂: *Energy*, v. 22, p. 207–215.
- Oktay, Z., 2009, Investigation of coal-fired power plants in Turkey and a case study – Can plant: *Applied Thermal Engineering*, v. 29, no. 2-3, p. 550–557.
- O'Keefe, W., Hatt, R.M., Hopkins, B.W., McIntire, D.C., and Harrison, C.D., 1987, Do we need highly detailed coal specs?: *Power*, v. 131, no. 10, p. 121–123.
- Olatubi, W.O., and Dismukes, D.E., 2000, A data envelopment analysis of the levels and determinants of coal-fired electric power generation performance: *Utilities Policy*, v. 9, no. 2, 47–59.

- Oleschko, H., and Müller, M., 2007, Influence of coal composition and operating conditions on the release of alkali species during combustion of hard coal: *Energy and Fuels*, v. 21, no. 6, p. 3240–3248.
- Oleschko, H., Schimrosczyk, A., Lippert, H., and Müller, M., 2007, Influence of coal composition on the release of Na-, K-, Cl-, and S-species during the combustion of brown coal: *Fuel*, v. 86, no. 15, p. 2275–2282.
- Oleschko, H., Schimrosczyk, A., and Müller, M., 2006, Influence of coal composition on the release of Na-, K-, Cl- and S-Species during the combustion of brown coal, *in* University of Pittsburgh, School of Engineering, eds., *Proceedings, Annual International Pittsburgh Coal Conference*, September 25–28, 2006, Pittsburgh, Pennsylvania, 23rd Conference: Pittsburgh, Pa., University of Pittsburgh, p. 11.
- Olivier, J.G.J., Bouwman, A.F., van der Hoek, K.W., and Berdowski, J.J.M., 1998, Global air emission inventories for anthropogenic sources of NO_x, NH₃ and N₂O in 1990: *Environmental Pollution*, v. 102, no. 1, supplement 1, p. 135–148.
- Olmez, I., Gulovali, M.C., and Gordon, G.E., 1985, Trace element concentrations in lichens near a coal-fired power plant: *Atmospheric Environment*, v. 19, no. 10, p. 1663–1669.
- Olson, E., Sharma, R., and Pavlish, J., 2002, On the analysis of mercuric nitrate in flue gas by GC-MS: *Analytical and Bioanalytical Chemistry*, v. 374, no. 6, p. 1045–1049.
- Olson, E.S., Laumb, J.D., Benson, S.A., Dunham, G.E., Sharma, R.K., Mibeck, B.A., Miller, S.J., Holmes, M.J., and Pavlish, J.H., 2003, Chemical mechanisms in mercury emission control technologies: *Journal of Physique IV*, v. 107, no. 4, p. 979–982.
- Olson, E.S., Miller, S.J., Sharma, R.K., Dunham, G.E., Benson, S.A., 2000, Catalytic effects of carbon sorbents for mercury capture: *Journal of Hazardous Materials*, v. 74, no. 1-2, p. 61–79.
- Olszyna, K.L., Meagher, J.F., and Luria, M., 1983, The effect of unsaturated hydrocarbons on photochemical transformations of flue gas from a coal-fired power plant: *Journal of the Air Pollution Control Association*, v. 33, p. 980–981.
- Oman, J., Senegačnik, A., and Dejanovič, B., 2001, Influence of lignite composition on thermal power plant performance – part 1 – theoretical survey: *Energy Conversion and Management*, v. 42, no. 3, p. 251–263.
- Oman, J., Senegačnik, A., and Dejanovič, B., 2001, Influence of lignite composition on thermal power plant performance—part 2 – results of tests: *Energy Conversion and Management*, v. 42, no. 3, p. 265–277.
- Onacak, T., 1999, Environmental impacts of feed coals and solid wastes in Turkish thermal power plants: Ankara, Turkey, Hacettepe University, Ph.D. thesis, 189 p.
- Onacak, T., Karayigit, A.I., Gayer, R.A., and Goldsmith, J.R., 1999, Systematic investigation of mineralogy and geochemistry of feed coals and solid waste products from the Cayirhan Power Plant, *in* *Proceedings of the Geological Congress of Turkey*, May 10–12, 1999, Ankara, Turkey, 52nd Congress: p. 167–174.
- Ondov, J.M., and Biermann, A.H., 1980, Physical and chemical characterization of aerosol emissions from coal-fired power plants, *in* Singh, J.J., and Deepak, A., eds., *Environmental and Climate Impact of Coal Utilization*: New York, N.Y., Academic Press, p. 1–17.

- Ondov, J.M., Biermann, A.H., Heft, R.E., and Koszykowski, R.F., 1981, Elemental composition of atmospheric fine particles emitted from coal burned in a modern electric power plant equipped with a flue-gas desulfurization system, *in* Macias, E.S., and Hopke, P.K., eds., *Atmospheric Aerosol: Source/Air Quality Relationships*: Washington, D.C., American Chemical Society, p. 173–186.
- Ondov, J.M., Choquette, C.E., Zoller, W.H., Gordon, G.E., Biermann, A.H., and Hefta, R.E., 1989, Atmospheric behavior of trace elements on particles emitted from a coal-fired power plant: *Atmospheric Environment*, v. 23, no. 10, p. 2193–2204.
- Ondov, J.M., and Kelly, W.R., 1983, Enriched rare-earth isotopes as tracers of aerosol particulate emissions from coal-fired power plants: *Atmospheric Environment*, v. 17, no. 12, p. 1317–1319.
- Ondov, J.M., Kelly, W.R., Holland, J.Z., Lin, Z.C., and Wight, S.A., 1992, Tracing fly ash emitted from a coal-fired power plant with enriched rare-earth isotopes – an urban scale test: *Atmospheric Environment*, v. 26 B, no. 4, p. 453–462.
- Ondov, J.M., Ragaini, R.C., and Biermann, A.H., 1977, Characterization of trace element emissions from coal-fired power plants, *in* Vogt, J.R., ed., *International Conference on Nuclear Methods in Environmental and Energy Research*, October 10–13, 1977, Columbia, Missouri, 3d Conference: Columbia, University of Missouri, p. 338–357.
- Ondov, J.M., Ragaini, R.C., and Biermann, A.H., 1979, Elemental emissions from a coal-fired power plant: comparison of a Venturi Wet Scrubber System with a cold-sided electrostatic precipitator: *Environmental Science and Technology*, v. 13, no. 5, p. 598–606.
- Ondov, J.M., Ragaini, R.C., and Bierman, A.H., 1977, Elemental emission and particle-size distributions of minor and trace emissions at two western coal-fired power plants equipped with cold-side electrostatic precipitators: Livermore, California, Lawrence Livermore Laboratory Report UCRL-80254 [pagination not found].
- Ondov, J.M., Ragaini, R.C., and Biermann, A.H., 1979, Emissions and particle-size distributions of minor and trace elements at two western coal-fired power plants equipped with cold-sided electrostatic precipitators: *Environmental Science and Technology*, v. 13, no. 8, p. 946–953.
- Ondov, J.M., Ragaini, R.C., and Biermann, A.H., 1978, Elemental particle-size emissions from coal-fired power plants – use of an inertial cascade impactor: *Atmospheric Environment*, v. 12, p. 1175–1185.
- Ondov, J.M., Ragaini, R.C., Bierman, A.H., Choquette, E., Gordon, G.E., and Zoller, W.H., 1977, Elemental emissions from a western coal-fired power plant [Lawrence Livermore Laboratory preliminary Report on concurrent plume and in-stack sampling]: Livermore, Calif., Lawrence Livermore Laboratory, 25 p.
- Ordorica-Garcia, G., Douglas, P., Croiset, E., and Zheng, L., 2006, Technoeconomic evaluation of IGCC power plants for CO₂ avoidance: *Energy Conversion and Management*, v. 47, no. 15-16, p. 2250–2259.
- Orem, W., Tatu, C., Pavlovic, N., Bunnell, J., Lerch, H., Paunescu, V., Orodí, V., Flores, D., Corum, M., and Bates, A., 2007, Health effects of toxic organic substances from coal: toward “pandemic” nephropathy: *Ambio*, v. 36, no. 1, p. 98–102.
- Orem, W.H., and Lerch, H.E., 1998, Organic geochemical studies, *in* Breit, G.N., and Finkelman, R.B., eds., *Characterization of coal and coal combustion products from a coal-burning power plant—preliminary report and results of analyses*: U.S. Geological Survey Open-File Report 98-342, p. 93–94.

- Organo, C., Lee, E.M., Menezes, G., and Finch, E.C., 2005, Investigation of occupational radiation exposures to NORM at an Irish peat-fired power station and potential use of peat fly ash by the construction industry: *Journal of Radiological Protection*, v. 25, p. 461–474.
- Ormerod, W., 1994, The disposal of carbon dioxide from fossil fuel fired power stations: International Energy Agency [IEA] Greenhouse Gas Research and Development Programme, Cheltenham, United Kingdom, Report IEAGHG/SR3, 207 p.
- Oros, D.R., and Simoneit, B.R.T., 2000, Identification and emission rates of molecular tracers in coal smoke particulate matter: *Fuel*, v. 79, no. 5, p. 515–536.
- Osberg, T.R., Lewis, R.A., and Taylor, J.E., 1975, A remote sensing study to determine ecosystem effects from stack emissions from a power plant, Colstrip, Montana, *in* Clark, W.F., ed., *Proceedings of the Fort Union Coal Field Symposium*, April 25–26, 1975, Billings, Montana, 1st Symposium: Billings, Montana Academy of Sciences, Eastern Montana College, p. 552–558.
- Osborn, G.A., 1992, Review of sulphur and chlorine retention in coal-fired boiler deposits: *Fuel*, v. 71, no. 2, p. 131–142.
- Osinubi, K.J., 2000, Stabilisation of tropical black clay with cement and pulverised coal bottom ash admixture, *in* Shackleford, C.D., Houston, S.L., and Chang, N.-Y., eds., *Advances in Unsaturated Geotechnics: proceedings of sessions of Geo-Denver 2000*, August 5–8, 2000, Denver, Colorado: Reston, Va., American Society of Civil Engineers [ASCE], p. 289–302.
- Oskarsson, K., 1997, *A Planner's Guide for Selecting Clean-Coal Technologies for Power Plants*: Washington, D.C., World Bank, 160 p.
- Osório, E., de Lourdes Ilha Gomes, M., Vilela, A.C.F., Kalkreuth, W., de Almeida, M.A.A., Borrego, A.G., and Alvarez, D., 2006, Evaluation of petrology and reactivity of coal blends for use in pulverized coal injection (PCI): *International Journal of Coal Geology*, v. 68, no. 1–2, p. 14–29.
- Otero-Rey, J.R., López-Vilarino, J.M., Moreda-Piñeiro, J., Alonso-Rodríguez, E., Muniategui-Lorenzo, S., López-Mahía, P., and Prada-Rodríguez, D., 2003, As, Hg, and Se flue gas sampling in a coal-fired power plant and their fates during coal combustion: *Environmental Science and Technology*, v. 37, no. 22, p. 5262–5267.
- Othman, M.R., Martunus, Zakaria, R., and Fernando, W.J.N., 2009, Strategic planning on carbon capture from coal fired plants in Malaysia and Indonesia – a review: *Energy Policy*, v. 37, no. 5, p. 1718–1735.
- Owens, R., Gullett, B.K., and Drummond, C., eds, 1993, 1993 SO₂ Control Symposium: Palo Alto, Calif., Electric Power Research Institute [EPRI] SO₂ Control Program, Pittsburgh, Pa., U.S. Dept. of Energy [DOE], Pittsburgh Energy Technology Center, and Research Triangle Park, N.C., Environmental Protection Agency [EPA], Air and Energy Engineering Research Laboratory, 3 vol.
- Owens, W., Buchanan, T., and Wolk, R., 2000, Evaluation of innovative fossil fuel power plants with CO₂ removal: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1000316, variously paged.
- Özbayoğlu, G., and Özbayoğlu, M.E., 2006, A new approach for the prediction of ash fusion temperatures – a case study using Turkish lignites: *Fuel*, v. 85, p. 545–552.

- Ozdeniz, A.H., 2009, Investigation of coal stockpiles of Tuncbilek Thermal Power Plant with respect to time under atmospheric conditions: *Energy Sources Part A: Recovery, Utilization and Environmental Effects*, v. 31, no. 6, p. 473–479.
- Özdoğan, S., 1996, Correlations for CO₂ production from combustion of Turkish Coals, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 240.
- Öztürk, N., and Özdoğan, S., 2000, Preliminary analyses of radionuclides in Afşin-Elbistan lignite samples: *Journal of Radioanalytical and Nuclear Chemistry*, v. 245, no. 3, p. 653–657.
- Öztürk, N., and Özdoğan, S., 2004, Preliminary analyses of natural radionuclides in selected Turkish power plant lignites: *Journal of Radioanalytical and Nuclear Chemistry*, v. 259, no. 2, p. 233–237.
- Pacer, D.W., and Duzy, A.F., 1982, How coal quality affects boiler design. *Coal Mining and Processing*, v. 19, no. 5, p. 72–78.
- Pacer, Donald W., and Duzy, Alfred F., 1982, How coal quality affects boiler design. Part 2, Particulate emission control: *Coal Mining and Processing*, v. 19, no. 6, p. 62–63, 65.
- Pacer, Donald W., and Duzy, Alfred F., 1982, How coal quality affects boiler design. Part 3, Flue gas desulfurization: *Coal Mining and Processing*, v. 19, no. 8, p. 74–76.
- Pacer, D.W., and Duzy, A.F.S., 1978, Impact of fuel on furnace design for pulverized-coal fired boilers: *Power*, v. 122, no. 9, p. 82–83.
- Pacyna, E.G., and Pacyna, J.M., 2002, Global emission of mercury from anthropogenic sources in 1995: *Water, Air, and Soil Pollution*, v. 137, p. 149–165.
- Pacyna, J.M., 1980, Coal-fired power stations as a source of environmental contamination by trace materials and radionuclides: Wrocław, Poland, Wrocław University of Technology, Habilitation thesis, 169 p.
- Pacyna, J.M., 1980, Radionuclide behavior in coal-fired plants: *Ecotoxicology and Environmental Safety*, v. 4, p. 240–251.
- Padgett, P.L., and Hower, J.C., 1996, Hardgrove grindability study of Powder River Basin and Appalachian Coal components in the blend to a midwestern power station, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 792–796.
- Pagcatipunan, C., and Schick, R., 2005, Maximize the performance of your spray nozzle system: *Chemical Engineering Progress*, v. 101, no. 12, p. 38–44.
- Page, A.L., Elseewi, A.A., and Straughan, I.R., 1979, Physical and chemical properties of fly ash from coal-fired power plants with reference to environmental impacts: *Residue Reviews*, v. 71, p. 83–120.
- Pai, P., Niemi, D., and Powers, B., 2000, A North American inventory of anthropogenic mercury emissions: *Fuel Processing Technology*, v. 65–66, p. 101–115.
- Pak, H., Kobayashi, N., and Hasatan, M., 2007, Characteristics of flue gases and ash in oxygen-blown pulverized coal combustion: *Journal of Chemical Engineering of Japan*, v. 40, no. 7, p. 550–555.

- Pakrasi, A., and Davis, W.T., 2000, Combustion sources – coal, *in* Davis, W.T., ed., *Air Pollution Engineering Manual* (2nd ed.): New York, N.Y., Wiley, p. 191–221.
- Palau, J.L., Meliá, J., Segarra, D., Pérez-Landa, G., Santa-Crus, F., and Millán, M.M., 2009, Seasonal differences in SO₂ ground-level impacts from a power plant plume on complex terrain: *Environmental Monitoring and Assessment*, v. 149, p. 445–455.
- Pallarés, J., Arauzo, I., and Williams, A., 2007, Integration of CFD codes and advanced combustion models for quantitative burnout determination: *Fuel*, v. 86, no. 15, p. 2283–2290.
- Palmer, C.A., 1990, Determination of twenty-nine elements in eight Argonne Premium coal samples by instrumental neutron activation analysis: *Energy and Fuels*, v. 4, p. 436–439.
- Palmer, C.A., Finkelman, R.B., Krasnow, M.R., and Eble, C.F., 1995, Laboratory leaching behavior of environmentally sensitive trace elements from fly ash and bottom ash samples: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 40, no. 4, p. 803–804, last accessed May, 2010, at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/40_4_CHICAGO_08-95_0803.pdf.
- Palmer, C.A., Finkelman, R.B., Krasnow, M.R., and Eble, C.F., 1998, Laboratory leaching behavior of environmentally sensitive trace elements from fly ash and bottom ash samples, *in* Breit, G.N., and Finkelman, R.B., eds., *Characterization of coal and coal combustion products from a coal-burning power plant—preliminary report and results of analyses*: U.S. Geological Survey Open-File Report 98-342, p. 50–55.
- Palmer, C.A., Krasnow, M.R., Finkelman, R.B., and D'Angelo, W.M.J., 1993, An evaluation of leaching to determine modes of occurrence of selected toxic elements in coal: *Journal of Coal Quality*, v. 12, p. 135–141.
- Palumbo, A.V., Tarver, J.R., Fagan, L.A., McNeilly, M.S., Ruther, R., Fisher, L.S., and Amonette, J.E., 2007, Comparing metal leaching and toxicity from high pH, low pH, and high ammonia fly ash: *Fuel*, v. 86, p. 1623–1630.
- Pan, J., Cohn, M., Bamford, W.H., and Lidbury, D.P.G., 1999, Service experience in fossil and nuclear power plants: New York, N.Y., American Society of Mechanical Engineers [ASME], 392 p.
- Pan, W.-P., 2004, Measurement techniques, *in* Coal Technology Association, and others, eds., 44 on Mercury Evolution and Control, International Technical Conference on Coal Utilization and Fuel Systems, April 18–22, 2004, Clearwater, Florida, 29th Conference: Gaithersburg, Md., Coal Technology Association, 43rd section, 44 p.
- Pan, Z., Chen, Z., Zhu, B., Xiu, Z., Ma, Z., Hao, J., and He, H., 1999, Preliminary research of health and environmental impacts and greenhouse gas emission from coal-fired power and nuclear power chains in China: *International Journal of Global Energy Issues*, v. 12, p. 257–270.
- Pandey, S.N., 1983, Impact of thermal power plant emissions on vegetation and soil: *Water, Air, and Soil Pollution*, v. 19, p. 87–100.
- Pandey, V., Misra, J., Singh, N., Yunus, M., Singh, S.N., and Ahmad, K.J., 1994, Transfer experiment study on two winter annuals around a coal-fired power plant: *Bulletin of Environmental Contamination and Toxicology*, v. 53, p. 528–535.
- Pandian, N.S., 2004, Fly ash characterization with reference to geotechnical applications: *Journal Indian Institute of Science*, v. 84, p. 189–216.

- Papaefthymiou, H., 2008, Elemental deposition in the vicinity of a lignite power plant in southern Greece: *Journal of Radioanalytical and Nuclear Chemistry*, v. 275, no. 2, p. 433–439.
- Papaefthymiou, H., Symeopoulos, B.D., and Soupioni, M., 2007, Neutron activation analysis and natural radioactivity measurements of lignite and ashes from Megalopolis Basin, Greece: *Journal of Radioanalytical and Nuclear Chemistry*, v. 274, no. 1, p. 123–130.
- Papastefanou, C., 1996, Radiological impact from atmospheric releases of ^{226}Ra from coal-fired power plants: *Journal of Environmental Radioactivity*, v. 32, no. 1-2, p. 105–114.
- Papastefanou, C., 1996, Radiation impact from lignite burning due to ^{226}Ra in Greek coal-fired power plants: *Health Physics*, v. 70, no. 2, p. 187–191.
- Papastefanou, C., 2010, Escaping radioactivity from coal-fired power plants (CPPs) due to coal burning and the associated hazards: a review: *Journal of Environmental Radioactivity*, v. 101, no. 3, p. 191–200.
- Papastefanou, C., and Charalambous, S., 1979, On the radioactivity of fly ash from coal power plants: *Zeitschrift für Naturforschung A*, v. 3, p. 533–537.
- Papastefanou, C., and Charalambous, S., 1980, Hazards from radioactivity of fly ash of Greek coal power plants, in International Radioactive Protection Association [IRPA], eds., *Proceedings, International Congress of International Radioactive Protection Association [IRPA]*, March 9–14, 1980, Jerusalem, Israel, 5th Congress: Yavne, Israel, Israel Health Physics Society, v. II, p. 161–164.
- Papastefanou, C., and Charalambous, S., 1982, Radioactivity in the atmosphere by coal burning, in Society for Radiological Protection, eds., *International Symposium on Radiological Protection Advances in Theory and Practice*, June 6–11, 1982, Inverness, Scotland, 3d Symposium: Inverness, Scotland, Society for Radiological Protection, p. 287–292.
- Papastefanou, C., and Charalambous, S., 1984, On the escaping radioactivity from coal power plants: *Health Physics*, no. 46, p. 293–302.
- Papp, Z., Dezső, Z., and Daróczy, S., 2002, Significant radioactive contamination of soil around a coal-fired thermal power plant: *Journal of Environmental Radioactivity*, v. 59, no. 2, p. 191–205.
- Parekh, P.P., and Husain, L., 1987, Fe/Mg Ratio: a signature for local coal-fired power plants: *Atmospheric Environment*, v. 21, no. 8, p. 1707–1712.
- Paretsky, L.M., 1971, Panel bed filters for simultaneous removal of fly ash and sulfur dioxide-II: filtration of dilute aerosols by sand beds: *Journal of the Air Pollution Control Association*, v. 21, p. 204–209.
- Park, C.-S., Lee, S.-H., Choi, S.-I., and Yang, H.-S., 1997, Studies of the fusibility of coal ashes in oxidizing and reducing conditions: *Journal of Korean Industrial and Engineering Chemistry*, v. 8, no. 2, p. 179–190.
- Park, H., Lim, J., 2009, Valuation of marginal CO₂ abatement options for electric power plants in Korea: *Energy Policy*, v. 37, no. 5, p. 1834–1841.
- Park, H.M., and Lee, W.J., 2002, An inverse radiation problem of estimating heat-transfer coefficient in participating media: *Chemical Engineering Science*, v. 57, no. 11, p. 2007–2014.

- Park, J.S., Taniguchi, S., and Park, Y.J., 2009, Alkali borosilicate glass by fly ash from a coal-fired power plant: *Chemosphere*, v. 74, no. 2, p. 320–324.
- Park, K.S., Seo, Y.-C., Lee, S.J., and Lee, J.H., 2008, Emission and speciation of mercury from various combustion sources: *Powder Technology*, v. 180, no. 1-2, p. 151–156.
- Park, Y.C., Jo, S.-H., Ryu, C.K., and Yi, C.-K., 2009, Long-term operation of carbon dioxide capture system from a real coal-fired flue gas using dry regenerable potassium-based sorbents: *Energy Procedia*, v. 1, no. 1, p. 1235.
- Parker, K.R., 1997, *Applied electrostatic precipitation* (1st. ed.): London, United Kingdom, Blackie, 521 p.
- Parker, L., Folger, P., and Stine, D., 2008, Capturing CO₂ from coal-fired power plants: challenges for a comprehensive strategy: Washington, D.C., U.S. Congressional Research Service; Resources, Science, and Industry Division, 35 p.
- Parungo, F., Ackerman, E., Proulx, H., and Pueschel, R., 1978, Nucleation properties of fly ash in a coal-fired power plant plume: *Atmospheric Environment*, v. 12, no. 4, p. 929–935.
- Patel, C.B., and Pandey, G.S., 1986, Alkalinization of soil through thermal power plant fly ash fallout: *The Science of The Total Environment*, v. 57, no. 1, p. 67–72.
- Patil, D.P., Honaker, R., and Parekh, B.K., 2007, Paste thickening of fine coal refuse: *Coal Preparation*, v. 27, no. 4, p. 191–209.
- Patil, M.D., Eaton, H.C., and Tittlebaum, M.E., 1984, ⁵⁷Fe mossbauer spectroscopic studies of fly ash from coal-fired power plants and bottom ash from lignite-natural gas combustion: *Fuel*, v. 63, p. 788–792.
- Patiño-Echeverri, D., Fischbeck, P., and Friegler, E., 2009, Economic and environmental costs of regulatory uncertainty for coal-fired power plants: *Environmental Science and Technology*, v. 43, no. 3, p. 578–584.
- Patsios, S.I., Karabelas, A.J., and Sotiropoulos, D., 2007, Improved industrial water management through membrane processes — the case of a large thermo-electric power plant: *Desalination*, v. 213, no. 1-3, p. 81–89.
- Patterson, G.W., 1978, Chalk Point Tower Cooling Project, native vegetation study: final Report, FY '78: College Park, University of Maryland Water Resources Research Center, 231 p.
- Patwardhan, A., and Chugh, Y.P., 2005, Commercially viable strategies for enhancing coal quality: *Coal Preparation*, v. 25, no. 4, p. 175–192.
- Paul, B.C., and Chaturvedula, S., 1996, Use of coal combustion by-products for reclamation – environmental implications, in Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., *Coal Combustion By-Products Associated with Coal Mining—Interactive Forum*, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 137–142.
- Paulson, C.A.J., and Ramsden, A.R., 1970, Some microscopic features of fly-ash particles and their significance in relation to electrostatic precipitation: *Atmospheric Environment*, v. 4, p. 175–185.
- Pavageau, M.P., Pecheyran, C., Krupp, E.M., Morin, A., and Donard, O.F.X., 2002, Volatile metal species in coal combustion flue gas: *Environmental Science and Technology*, v. 36, p. 1561–1573.

- Pavlish, J.H., 2009, Preface to the AQVI special issue of fuel processing technologies titled: Air quality VI: Mercury, trace elements, SO₃, particulate matter, and greenhouse gases: *Fuel Processing Technology*, v. 90, no. 11, p. 1327–1332.
- Pavlish, J.H., Hamre, L.L., and Zhuang, Y., 2010, Mercury control technologies for coal combustion and gasification systems: *Fuel*, v. 89, no. 4, p. 838–847.
- Pavlish, J.H., Holmes, M.J., Benson, S.A., Crocker, C.R., and Galbreath, K.C., 2004, Application of sorbents for mercury control for utilities burning lignite coal: *Fuel Processing Technology*, v. 85, no. 6-7 [special Issue], p. 563–576.
- Pavlish, J.H., Holmes, M.J., Benson, S.A., Crocker, C.R., Olson, E.S., Galbreath, K.C., Zhuang, Y., and Pavlish, B.M., 2003, JV Task 45—Mercury control technologies for electric utilities burning lignite coal, Phase I bench- and pilot-scale testings: Grand Forks, University of North Dakota Energy and Environmental Research Center Report 03-EERC-10-03, 121 p.
- Pavlish, J.H., Holmes, M.J., Galbreath, K.C., Zhuang, Y., and Pavlish, B.M., 2003, Pilot-scale investigation of mercury control technologies for utilities burning lignite coal, in *Air and Waste Management Association [A&WMA], eds., U.S. Department of Energy [DOE] – Electric Power Research Institute [EPRI] – U.S. Environmental Protection Agency [EPA] – Air and Waste Management Association [A&WMA] Combined Power Plant Air Pollutant Control Symposium – the Mega Symposium*, May, 19–22, 2003, Washington, D.C.: Pittsburgh, Pa., Air and Waste Management Association [A&WMA], paper no. 65 [location not known on 1 proceedings CD-ROM].
- Pavlish, J.H., Sondreal, E.A., Mann, M.D., Olson, E.S., Galbreath, K.C., Laudal, D.L., and Benson, S.A., 2003, Status review of mercury control options for coal-fired power plants: *Fuel Processing Technology*, v. 82, no. 2-3, p. 89–165.
- Pavlish, J.H., Thompson, J.S., Martin, C.L., Musich, M.A., and Hamre, L.L., 2008, Field testing of activated carbon injection options for mercury control at TXU's Big Brown Station: Grand Forks, University of North Dakota Energy and Environmental Research Center Report 2008-EERC-01-05, 331 p.
- Pavlović, P., Mitrović, M., and Djurdjević, L., 2004, An ecophysiological study of plants growing on the fly ash deposits from the “Nikola Tesla-A” Thermal Power Station in Serbia: *Environmental Management*, v. 33, no. 5, p. 654–663.
- Payá, J., Monzó, J., Borrachero, M.V., Amahjour, F., and Peris-Mora, E., 2002, Loss on ignition and carbon content in pulverized fuel ashes (PFA): two crucial parameters for quality control: *Journal of Chemical Technology and Biotechnology*, v. 77, no. 3, p. 251–255.
- Pehnt, M., and Henkel, J., 2009, Life cycle assessment of carbon dioxide capture and storage from lignite power plants: *International Journal of Greenhouse Gas Control*, v. 3, no. 1, p. 49–66.
- Pei-mei, S., Guang-min, L., Jun-wu, T., Hong-yan, X., and Zhe, Z., 2007, Study on sintering process of raw materials in extracting alumina from fly ash of coal industry power plants: Mei T'an Hsueh Pao [*Journal of China Coal Society*], v. 32, no. 7, p. 744–747.
- Peled, R., Friger, M., Bolotin, A., Bibi, H., Epstein, L., Pilpel, D., and Scharf, S., 2005, Fine particles and meteorological conditions are associated with lung function in children with asthma living near two power plants: *Public Health*, v. 119, no. 5, p. 418–425.

- Peltier, G.L., Meyer, J.L., Jagoe, C.H., and Hopkins, W.A., 2008, Using trace element concentrations in *Corbicula fluminea* to identify potential sources of contamination in an urban river: *Environmental Pollution*, v. 154, p. 283–290.
- Peltier, G.L., Wright, M.S., Hopkins, W.A., and Meyer, J.L., 2009, Accumulation of trace elements and growth responses in *Corbicula fluminea* downstream of a coal-fired power plant: *Ecotoxicology and Environmental Safety*, v. 72, no. 5, p. 1384–1391.
- Peltier, R., 2008, J.K. Spruce Power Plant, Unit 1, San Antonio, Texas: *Power*, v. 152, no. 10, p. 46.
- Pengthamkeerati, P., Satapanajaru, T., and Chularuengsoarn, P., 2008, Chemical modification of coal fly ash for the removal of phosphate from aqueous solution: *Fuel*, v. 87, p. 2469–2476.
- Penner, S.S., Alpert, S.B., Beér, J.M., Bozzuto, C.R., Glassman, I., Knust, R.B., Markert, W., Jr., Oppenheim, A.K., Smoot, L.D., Sommerlad, R.E., Wagoner, C.L., Wender, I., Wolowodiuk, W., and Yeager, K.E., 1984, Developing coal-combustion technologies: *Progress in Energy and Combustion Science*, v. 10, no. 2, p. 87–144.
- Penninger, A., 1989, Effect of working parameters on flame stability for coal dust combustion, tagung über verbrennung und feuerung: 14. Deutscher flammentag [Meeting on Combustion and Furnaces: 14. German Flame Day]: Stuttgart, Federal Republic of Germany, Verein Deutscher Ingenieure (VDI), p. 669–679.
- Pensko, J. and Geisler, J., 1980, Assessment of biological effect resulting from large scale applications of coal power plant wastes in building technology in Poland, *in* International Radioactive Protection Association [IRPA], eds., Proceedings, International Congress of International Radioactive Protection Association [IRPA], March 9–14, 1980, Jerusalem, Israel, 5th Congress: Yavne, Israel, Israel Health Physics Society, v. II, p. 177–180.
- Perna, M.A., Fuller, T.A., Belin, F., Maryamchik, M., Maystrenko, A., and Reuther, J., 1996, CFB evaluation of high-ash Ukrainian anthracite coal, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 146.
- Pershing, D.W., Brown, J.W., and Berkau, E.E., 1973, Relationship of burner design to the control of NO_x emissions through combustion modification, *in* Hall, Robert E., and Pershing, David W., eds., Proceedings, Coal Combustion Seminar, June 19–20, 1973, Research Triangle Park, North Carolina: Research Triangle Park, N.C., Environmental Protection Agency [EPA], National Environmental Research Center, Control Systems Laboratory, Combustion Research Section Report no. EPA-650/2-73-021, p. 87–139.
- Pershing, D.W., and Wendt, J.O.L., 1977, Pulverized coal combustion – the influence of flame temperature and coal composition on thermal and fuel NO_x: Symposium (International) on Combustion, v. 16, no. 1, p. 389–399 [Proceedings, 16th Symposium held August 15–20, 1976, at M.I.T.].
- Peterson, J.R., Maller, G., Burnette, A., and Rhudy, R.G., 1993, Pilot-scale evaluation of sorbent injection to remove SO₃ and HCl, *in* Chow, W., and others, eds., Managing Hazardous Air Pollutants: State of the Art: Electric Power Research Institute [EPRI] Report no. TR-101890, Boca Raton, Fla., Lewis Publishers, p. 520–537.
- Peterson, T.W., and Seinfeld, J.H., 1977, Mathematical model for transport, interconversion, and removal of gaseous and particulate air pollutants—application to the urban plume: *Atmospheric Environment*, v. 11, no. 12, p. 1171–1184.

- Petrie, J., Basson, L., Notten, P., and Stewart, M., 2005, Multi-criteria decision analysis – the case of power generation in South Africa, *in* Azapagic, A., Perdan, S., and Clift, R., eds., *Sustainable Development in Practice*: Chichester, United Kingdom, Wiley, p. 367–396.
- Petzrick, P., 1996, An overview of the western Maryland coal combustion by-products/acid mine drainage initiative, *in* Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., *Coal Combustion By-Products Associated with Coal Mining—Interactive Forum*, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 259–263.
- Petzrick, P., 1996, A preliminary evaluation of the Winding Ridge Demonstration Project, *in* Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., *Coal Combustion By-Products Associated with Coal Mining—Interactive Forum*, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 265–268.
- Petzrick, P.A., 2001, The use of power plant combustion products in Maryland, *in* Robl, Thomas L., ed., *Proceedings, International Ash Utilization Symposium*, October 22–24, 2001, Lexington, Kentucky: Lexington, University of Kentucky Center for Applied Energy Research [CAER], [7] p.
- Pezzetta, J.M., and Iskandar, I.K., 1975, Sediment characteristics in the vicinity of the Pulliam Power Plant, Green Bay, Wisconsin: *Environmental Geology*, v. 1, p. 155–165.
- Pflughoeft-Hassett, D., 2002, ASTM standards to support mine application of CCBs [abs.], *in* *Coal Combustion By-Products and Western Coal Mines, A Technical Interactive Forum*, Golden, Colorado: Alton, Illinois, U.S. Department of the Interior Office of Surface Mining Reclamation and Enforcement, and Carbondale, Illinois, Southern Illinois University at Carbondale, Coal Extraction and Utilization Research Center, p. 3.
- Pflughoeft-Hassett, D., 2002, ASTM Standards to support mine application of CCBs, *in* Vories, K.C. and Throgmorton, Dianne, eds., *Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 51–55.
- Pflughoeft-Hassett, D.F., 2000, Practical working definition for materials from conversion of coal for power production: *Energieia*, v. 11, no. 4, p. 1–3.
- Pflughoeft-Hassett, D.F., Hassett, D.J., Docter, B.A., Eylands, K.E., Sondreal, E.A., and Steadman, E.N., 1996, Engineering and regulatory issues for coal combustion by-product characterization and utilization, *in* Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., *Coal Combustion By-Products Associated with Coal Mining—Interactive Forum*, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 21–35.
- Pflughoeft-Hassett, D.F., Hassett, D.J., Heebink, L.V., Buckley, T.D., 2006, The current state of the science related to the re-release of mercury from coal combustion products: *Ash at Work*, v. 1, p. 26–27.

- Pflughoeft-Hassett, D.F., Ladwig, K., Hassett, D.J., Dockter, B.A., Heebink, L.V., Eylands, K.E., and Hoffarth, J., 2009, Characteristics and performance of fly ash from sodium sorbent scrubbing of SO₃ emissions from coal-based power plants, *in* University of Kentucky, Center for Applied Energy Research [CAER], eds., World of Coal Ash Conference [WOCA], Proceedings, Science, applications and sustainability, May 4–7, 2009, 3rd Conference: Lexington, Ky., University of Kentucky, Center for Applied Energy Research [CAER], [17] p., last accessed August 2011 at <http://www.flyash.info/2009/123-pflughoeft2009.pdf>.
- Pflughoeft-Hassett, D.F., Sondreal, E.A., Steadman, E.N., Eylands, K.E., and Dockter, B.A., 1999, Barriers to the increased utilization of coal combustion/desulfurization by-products by government and commercial sectors - Update 1998: Grand Forks, N. Dak., University of North Dakota Energy and Environmental Research Center [EERC] Report no. DE-FC21-93MC30097-79, 238 p.
- Pharr, C., and Andrews, L.D., 1977, The use of fly ash in broiler diets: *Poultry Science*, v. 56, p. 1747.
- Phung, H.T., Lund, L.J., Page, A.L., and Bradford, G.R., 1979, Trace elements in fly ash and their release in water and treated soils: *Journal of Environmental Quality*, v. 8, no. 2, p. 171–175.
- Pike, Simon, 1990, Mineral matter in coal and its influence on ash behaviour during combustion: Sheffield, United Kingdom, University of Sheffield Geology Department, Ph.D. thesis [pagination not known].
- Piktel, Joseph L., 1999, Strategies to reduce nitrogen oxide formation and emissions from stationary combustion units: University Park, Pennsylvania State University, Bachelor of Science thesis, 1 vol. [pagination not known].
- Pilat, M.J., and Raemhild, G.A., 1978, University of Washington electrostatic scrubber tests at a coal-fired power plant: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Office of Research and Development, Industrial Environmental Research Laboratory, Report no. EPA-600/7-78-177b, 48 p.
- Pilat, M.J., Raemhild, G.A., Powell, E.B., Fiorehi, G.M., and Meyer, D.F., 1978, Development of Cascade Impactor System for sampling 0.02 micron diameter particles: Seattle, University of Washington, and Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. FP-844, v. 1, variously paged.
- Pinkney, A.E., Logan, D.T., and Wilson, H.T., 1997, Mercury concentrations in pond fish in relation to a coal-fired power plant: *Archives of Environmental Contamination and Toxicology*, v. 33, p. 222–229.
- Piperno, E., 1975, Trace element emissions: Aspects of environmental toxicology, Chapter 15, in Babu, Suresh P., ed., *Trace Elements in Fuel*: Chicago, Ill., American Chemical Society, *Advances in Chemistry*, v. 141, p. 192–209.
- Pires, M., and Querol, X., 2004, Characterization of Candiota (south Brazil) coal and combustion by-product: *International Journal of Coal Geology*, v. 60, p. 57–72.
- Pisupati, S.V., Sharifi, R., Liu, Y., and Scaroni, A.W., 1996, Measurements of temperature, particle size distribution and particle speed in an industrial boiler, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1297–1302.
- Pisupati, S.V., Wasco, R.S., and Scaroni, A.W., 2000, An investigation on polycyclic aromatic hydrocarbon emissions from pulverized coal combustion systems: *Journal of Hazardous Materials*, v. 74, no. 1-2, p. 91–107.

- Pitchford, M., Green, M., Kuhns, H., and Farber, R.J., 2000, Characterization of regional transport and dispersion using Project MOHAVE tracer data: *Journal of the Air and Waste Management Association*, v. 50, no. 5, p. 733–745.
- Pittsburgh Energy Technology Center, and Carnegie-Mellon University, 1984, A program of basic research on the utilization of coal-water mixture fuels: Pittsburgh, Pennsylvania, Carnegie-Mellon University Department of Chemical Engineering, 313 p.
- Platfoot, R., 1990, Erosion life of tube banks in coal fired boilers: *Transactions of the Institution of Engineers [Australia], Mechanical engineering*, v. ME 15, no. 4, p. 237–241.
- Pohl, J.S., 1990, Procedure for evaluating the performance of low-grade fuels, in Korhonen, M., ed., *Proceedings of the Symposium on Low-grade Fuels*, June 12–16, 1989, Helsinki, Finland: Espoo, Finland, Valtion teknillinen tutkimuskeskus, Symposium series 107, v. 1, pagination not known.
- Polat, M., Guler, E., Akar, G., Mordogan, H., Ipekoglu, U., and Cohen, H., 2002, Neutralization of acid mine drainage by Turkish lignitic fly ashes; role of organic additives in the fixation of toxic elements: *Journal of Chemical Technology and Biotechnology*, v. 77, no. 3, p. 372–376.
- Polat, M., Lederman, E., Pelly, I., and Cohen, H., 2002, Chemical neutralization of acidic wastes using fly ash in Israel: *Journal of Chemical Technology and Biotechnology*, v. 77, no. 3, p. 377–381.
- Pollmann, S., 1981, Slagging. Experience with large bituminous coal-fired steam-generators operating on South African coal – fuel and slag analyses: *Energy Developments*, June 1981, p. 14–22.
- Pollmann, S., and Albrecht, W., 1983, Investigations of the slagging behavior of bituminous coals in large dry-bottom steam generators, in Bryers, R.W., ed., *Fouling and slagging resulting from impurities in combustion gases*, *Proceedings of the Engineering Foundation Conference*, July 12–17, 1981, Henniker, New Hampshire: New York, N.Y., Engineering Foundation, p. 85.
- Pone, J.D.N., Hein, K.A.A., Stracher, G.B., Annegarn, H.J., Finkleman, R.B., Blake, D.R., McCormack, J.K., and Schroeder, P., 2007, The spontaneous combustion of coal and its by-products in the Witbank and Sasolburg coalfields of South Africa: *International Journal of Coal Geology*, v. 72, no. 2, p. 124–140.
- Pontolillo, J., 1998, Fly ash petrography, in Breit, G.N., and Finkelman, R.B., eds., *Characterization of coal and coal combustion products from a coal-burning power plant—preliminary report and results of analyses*: U.S. Geological Survey Open-File Report 98-342, p. 97–98.
- Pooler, F., 1965, Potential dispersion of plumes from large power plants: Cincinnati, Ohio, U.S. Department of Health, Education, and Welfare, Public Health Service, Division of Air Pollution, U.S. Public Health Service Publication no. 999-AP-16, 13 p.
- Porcella, D.B., Greib, T.M., Bowie, G.L., Ginn, T.C., and Lorenzen, M.W., 1983, Assessment methodology for new cooling lakes: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. EA-2059, 245 p.
- Porle, K., Samuelsson, I.-L., Srinivasachar, S., and Rini, M., 1996, Characterization and collection of ultra fine ash from pulverized coal combustion, in Chiang, S.-H., ed., *Coal- Energy and the Environment*, *Proceedings of the Annual International Pittsburgh Coal Conference*, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 145.

- Portelli, R.V., 1982, The Nanticoke shoreline diffusion experiment, June 1978 – I. – experimental design and program overview: *Atmospheric Environment*, v. 16, no. 3, p. 413–421.
- Porter, D., and Schmitz, J., 1995, Utility coal procurement: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEAPER/20, 31 p.
- Postgate, J.R., 1960, The economic activities of sulphate-reducing bacteria: *Progress in Industrial Microbiology*, v. 2, p. 47–69.
- Potgieter, J.H., 2003, Fly ash research at Technikon Pretoria, South Africa: *Energieia*, v. 14, no. 1, p. 1–3.
- Prada-Rodriguez, D., Lopez-Vilarino, J.M., Lopez-Mahia, P., Fernandez-Martinez, G., Fernandez-Fernandez, E., and Muniategui-Lorenzo, S., 2001, Determination of volatile organic compounds in emissions by coal-fired power stations from Spain: *Environmental Technology*, v. 22, no. 5, p. 567–575.
- Praharaj, T., Powell, M.A., Hart, B.R., and Tripathy, S., 2002, Leachability of elements from sub-bituminous coal fly ash from India: *Environment International*, v. 27, p. 609–615.
- Praharaj, T., Tripathy, S., Powell, M.A., and Hart, B.R., 2003, Geochemical studies to delineate topsoil contamination around an ash pond of a coal-based thermal power plant in India: *Environmental Geology*, v. 45, p. 86–97.
- Presbo, E.M., and Bloom, N.S., 1995, Mercury speciation adsorption (MESA) method for combustion flue gas: methodology, artifacts, intercomparisons, and atmospheric implications: *Water, Air, and Soil Pollution*, v. 80, no. 1-4, p. 145–158.
- Presto, A., and Granite, E.J., 2006, Critical review; survey of catalysts for oxidation of mercury in flue gas: *Environmental Science and Technology*, v. 40, no. 18, p. 5601–5609.
- Preston, E.M., and Lewis, E.M., 1978, The bioenvironmental impact of a coal-fired power plant – third interim Report, Colstrip, Montana, December, 1977: Research Triangle park, N.C., Environmental Protection Agency [EPA], Report no. EPA-600/3-78-021, 521 p.
- Preston, E.M., O’Guinn, D.W., and Wilson, R.A., 1980, The bioenvironmental impact of a coal-fired power plant – sixth interim Report, Colstrip, Montana, August, 1980: Research Triangle Park, N.C., Environmental Protection Agency [EPA], Report no. EPA-600/3-81-007, 331 p.
- Price, F.T., and Shieh, Y.N., 1979, The distribution and isotopic composition of sulfur in coals from the Illinois Basin: *Economic Geology*, v. 74, p. 1445–1461.
- Price, F.T., and Shieh, Y.N., 1986, Correlation between the $\delta^{34}\text{S}$ of pyritic and organic sulfur in coal and oil shale: *Chemical Geology (Isotope Geoscience Section)*, v. 58, p. 333–337.
- Pronobis, M., 1989, Further findings concerning the effect of ash deposits upon the exchange of heat in convection boiler surfaces: *VGB Kraftwerkstechnik (English issue)*, v. 69, no. 11, p. 931–938.
- Provis, J.L., Rose, V., Bernal, S.A., and van Deventer, J.S., 2009, High-resolution nano-probe X-ray fluorescence characterization of heterogeneous calcium and heavy metal distributions in alkali-activated fly ash: *Langmuir*, v. 25, no. 19, p. 11,897–11,904.

- Prybutok, V.R., 1995, The role of multiple regression and exploratory data analysis in the development of leukemia incidence risk models for comparison of radionuclide air stack emissions from nuclear and coal power industries: *Environmental Pollution*, v. 87, no. 1, p. 77–83.
- Prybutok, V.R., and Gold, L.M., 1987, Modeling for comparison of leukemia incidence risk between nuclear and coal power industries: *Nuclear Technology*, v. 78, no. 3, p. 303–311.
- Prybutok, V.R., and Gold, L.M., 1991, Sensitivity analysis for power industry radionuclide air stack emissions leukemia incidence risk comparison models: *Journal of Hazardous Materials*, v. 26, no. 3, p. 319–331.
- Pudasainee, D., Kim, J.-H., and Seo, Y.-C., 2009, Mercury emission trend influenced by stringent air pollutants regulation for coal-fired power plants in Korea: *Atmospheric Environment*, v. 43, no. 39, p. 6254–6259.
- Pudasainee, D., Lee, S.J., Lee, S.-H., Kim, J.-H., Jang, H.-N., Cho, S.-J., and Seo, Y.-C., 2010, Effect of selective catalytic reactor on oxidation and enhanced removal of mercury in coal-fired power plants: *Fuel*, v. 89, no. 4, p. 804–809.
- Pueschel, R.F., 1976, Aerosol formation during coal combustion: Condensation of sulfates and chlorides on fly ash: *Geophysical Research Letters*, v. 3, p. 651–653.
- Pueschel, R.F., Mamane, Y., Van Valin, C.C., and Cobb, W. E . 1981, Environmental effects of pollutants from coal combustion, 1. The Four Corners Power Plant, Farmington, NM. Boulder, Colo., U.S. Department of Commerce, National Oceanic and Atmospheric Administration [NOAA], Environmental Research Laboratories, Office of Weather Research and Modification, Atmospheric Chemistry Program, technical memorandum ERL OWRM-2, 1 vol., 78 p.
- Pueschel, R.F., and Van Valin, C.C., 1978, Cloud nucleus formation in a power plant plume: *Atmospheric Environment*, v. 12, no. 1-3, p. 307–312.
- Puig, R., Ávila, A., and Soler, A., 2008, Sulphur isotopes as tracers of the influence of a coal-fired power plant on a Scots Pine Forest in Catalonia (NE Spain): *Atmospheric Environment*, v. 42, no. 4, p. 733–745.
- Punshon, T., Knox, A.S., Adriano, D.C., Seaman, J.C., and Weber, J.T., 1999, Flue gas desulfurization (FGD) residue: Potential applications and environmental issues, *in* Sajwan, K.S., Alva, A.K., and Keefer, R.F., eds., *Biogeochemistry of Trace Elements in Coal and Coal Combustion Byproducts*: New York, N.Y., Kluwer Academic/Plenum, p. 7–28.
- Purchase, N.G., 1987, Major and trace element variations in Huntly Power Station Ash Streams, *in* Coal Research Association, eds., *Proceedings, Coal Research Conference, November 2–4, 1987, Wellington, New Zealand*: Wellington, Coal Research Association, v. 1, 12 p.
- Purushothama, S., Pan, W.P., Riley, J.T., and Lloyd, W.G., 1997, Analysis of polynuclear aromatic hydrocarbons from coal fly ash: *Fuel Processing Technology*, v. 53, p. 235–242.
- Pushan, S., Strezov, V., and Nelson, P.F., 2009, Speciation of mercury in coal-fired power station flue gas: *Energy and Fuels*, v. 24, no. 1, p. 205–212.
- Pushan, S., Strezov, V., Stevanov, C., and Nelson, P.F., 2007, Speciation of arsenic and selenium in coal combustion products: *Energy and Fuels*, v. 21, no. 2, p. 506–512.

- Putilov, V.Y., Putilov, I.V., and Lunkov, A.M., 2007, Some aspects of implementing ecologically sound ash removal technologies at reconstruction of coal-fired power plants in Russia, *in* University of Kentucky Center for Applied Energy Research [CAER], eds, World of Coal Ash [WOCA] Conference, May 7–10, 2007, Covington, Kentucky: Lexington, University of Kentucky Center for Applied Energy Research [CAER], [9] p., last accessed January 2011 at <http://www.flyash.info/2007/70putilov.pdf>.
- Que Hee, S.S., Finelli, V.N., Fricke, F.L., and Wolnik, K.A., 1982, Metal content of stack emissions – coal and fly ash from some eastern and western power plants in the U.S.A. as obtained by ICP-AES: *Journal of Environmental Analytical Chemistry*, v. 13, p. 1–18.
- Queralt, I., Querol, X., López-Soler, A., and Plana, F., 1997, Use of coal fly ash for ceramics – a case study for a large Spanish power station: *Fuel*, v. 76, no. 8, p. 787–791.
- Querol, X., Alastuey, A., Bezares, J.C., Juan, R., López-Soler, A., Mantilla, E., Plana, F., Puigercus, J.A., and Ruiz, C., 1996, Incidencia de las emisiones de una gran central térmica en la composición de material particulado atmosférico [Effect of emissions from a large thermal power station on atmospheric particulate material composition]: *Geogaceta*, v. 5, p. 1148–1151.
- Querol, X., Alastuey, A., Chaves, A., Spiro, B., Plana, F., and López-Soler, A., 2000, Sources of natural and anthropogenic sulphur around the Teruel Power Station, NE Spain – inferences from sulphur isotope geochemistry: *Atmospheric Environment*, v. 34, p. 333–345.
- Querol, X., Alastuey, A., López-Soler, A., Mantilla, E., and Plana, F., 1996, Mineral composition of atmospheric particulates around a large coal-fired power station: *Atmospheric Environment*, v. 30, no. 21, p. 3557–3572.
- Querol, X., Alastuey, A., López-Soler, A., Plana, F., Mantilla, E., Juan, R., Ruiz, C.R., and La Orden, A., 1999, Characterisation of atmospheric particulates around a coal-fired power station: *International Journal of Coal Geology*, v. 40, no. 2-3, p. 175–188.
- Querol, X., Alastuey, A., Puigercus, J.A., Mantilla, E., Miro, J.V., López-Soler, A., Plana, F., and Artiñano, B., 1998, Seasonal evolution of suspended particles around a large coal-fired power station: Particulate levels and sources: *Atmospheric Environment*, v. 32, no. 11, p. 1963–1978.
- Querol, X., Alastuey, A., Puigercus, J.A., Mantilla, E., Ruiz, C.R., López-Soler, A., Plana, F., and Juan, R., 1998, Seasonal evolution of suspended particles around a large coal-fired power station: Chemical characterization: *Atmospheric Environment*, v. 32, no. 4, p. 719–731.
- Querol, X., Fernández-Turiel, J.L., and López-Soler, A., 1995, Trace elements in coal and their behaviour during combustion in a large power station: *Fuel*, v. 74, no. 3, p. 331–343.
- Querol, X., Fernández-Turiel, J.L., López-Soler, A., and Duran, M.E., 1992, Trace elements in high-S subbituminous coals from Teruel Mining District, northeast Spain: *Applied Geochemistry*, v. 7, p. 547–561.
- Querol, X., Juan, R., López-Soler, A., Fernández-Turiel, J.L., and Ruiz, C.R., 1996, Mobility of trace elements from coal and combustion wastes: *Fuel*, v. 75, no. 7, p. 821–838.
- Querol, X., Moreno, N., Alastuey, A., Juan, R., Andrés, J.M., López-Soler, A., Ayora, C., Medinaceli, A., and Valero, A., 2007, Synthesis of high ion exchange zeolites from coal fly ash: *Geologica Acta*, v. 5, p. 49–57.

- Querol, X., Moreno, N., Umaña, J.C., Juan, R., Hernández, S., Fernandez-Pereira, C., Ayora, C., Janssen, M., García-Martínez, J., Linares-Solano, A., and Cazorla-Amoros, D., 2002, Application of zeolitic material synthesised from fly ash to the decontamination of waste water and flue gas: *Journal of Chemical Technology and Biotechnology*, v. 77, no. 3, p. 292–298.
- Querol, X., Pares, J.M., Fernández-Turiel, J.L., López-Soler, A., and Plana, F., 1993, Fly ash distribution in lake sediments around a large power station in NE Spain [abs.]: *Terra Abstracts*, v. 5, no. 1, p. 634.
- Querol, X., Parés, J.M., Plana, F., Fernández-Turiel, J.L., and López-Soler, A., 1993, Fly ash content and distribution in lake sediments around a large power station: Inferences from magnetic susceptibility analysis: *Environmental Geochemistry and Health*, v. 15, no. 4, p. 9–18.
- Querol, X., Umana, J.C., Alastuey, A., Ayora, C., López-Soler, A., and Plana, F., 2001, Extraction of soluble major and trace elements from fly ash in open and closed leaching systems: *Fuel*, v. 80, p. 801–813.
- Quick, J.C., 2003, Mercury in US coal: observations using the COALQUAL and ICR data, e-book, last accessed March 2010 at <http://openpdf.com/ebook/coalqual-pdf.html>.
- Quick, J.C., 2004, New rules limiting mercury emissions from coal-fired power plants: *Utah Geological Survey Notes*, v. 36, no. 3, p. 9, 12–13.
- Quick, J.C., and Brill, T., 2002, Provincial variation of carbon emissions from bituminous coal: influence of inertinite and other factors: *International Journal of Coal Geology*, v. 49, no. 4, p. 263–275.
- Quick, J.C., Brill, T.C., and Tabet, D.E., 2003, Mercury in US coal – observations using the COALQUAL and ICR Data: *Environmental Geology*, v. 43, no. 3, p. 247–259.
- Quick, W.J., and Irons, R., 2002, Trace element partitioning during the firing of washed and untreated power station coals: *Fuel*, v. 81, no. 5, p. 665–672.
- Raask, E., 1984, Creation, capture and coalescence of mineral species in coal flame: *Journal of the Institute of Energy*, v. 57, p. 231–239.
- Raask, E., 1985, Mineral Impurities in Coal Combustion—Behavior, Problems and Remedial Measures: London, United Kingdom, Hemisphere Publishing, 484 p.
- Radcenco, V., Vasilescu, E.E., Popescu, G., and Apostol, V., 2007, New approach to thermal power plants operation regimes maximum power versus maximum efficiency: *International Journal of Thermal Sciences*, v. 46, no. 12, p. 1259–1266.
- Radian Corporation, 1975, Coal fired power plant trace element study – volume I. – a three station comparison: Austin, Tex., Radian Corporation Report no. TS-1a, prepared for U.S. Environmental Protection Agency [EPA], Region VIII, Denver, Colo., 50 p. plus appendix.
- Radian Corporation, 1993, Fly ash exposure in coal-fired power plants: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-102576, variously paged.
- Radian International, 1999, Enhanced control of mercury by wet flue gas desulfurization systems: Department of Energy Report DE-AC22-95PC95260-09, 111 p.

- Rafalko, L., Mountain, D., Mallon, P., Petzrick, P., and Chugh, Y.P., 1996, Engineering design for the injection of alkaline CCBs into a Maryland coal mine to abate acid drainage, *in* Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., *Coal Combustion By-Products Associated with Coal Mining—Interactive Forum*, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 221–226.
- Rafay, T., 1982, Dry ash handling system for power plants: *Journal of the Energy Division (American Society of Civil Engineers [ASCE])*, v. 108, no. 3, p. 129–142.
- Ragaini, R.C., and Ondov, J.M., 1975, Trace contaminants from coal-fired power plants: Livermore, University of California, Lawrence Livermore Laboratory Report UCRL-76794, 18 p.
- Ragaini, R.C., and Ondov, J.M., 1977, Trace-element emissions from western U.S. coal-fired power plants: *Journal of Radioanalytical and Nuclear Chemistry*, v. 37, no. 2, p. 679–691.
- Rahman, M., and Nutmagul, W., 2004, A study of the health impact of air pollution from the Mae Moh thermal power plant in Thailand: Mahidol University, Environmental Management Master of Science thesis, 70 p.
- Rai, C., and Reyniers, J.P., 1985, Microbial desulfurization of coals by organisms of the genus *Pseudomonas*: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 30, no. 2, p. 1–8, last accessed March 2010 at <http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/Volumes/Vol30-2.pdf>.
- Rajan, M.P., Iyengar, M.A.R., and Ramachandran, T.V., 1995, Radioactivity aspects of Indian coals: *Current Science*, v. 69, no. 7, p. 592–596.
- Rallo, M., Lopez-Anton, M.A., Meij, R., Perry, R., and Maroto-Valer, M.M., 2010, Study of mercury in by-products from a Dutch co-combustion power station: *Journal of Hazardous Materials*, v. 174, no. 1-3, 28–33.
- Ram, L.C., ed., 2001, Proceedings of the national seminar on utilization of fly ash in agriculture and for value-added products, November 15–16, 1999, Dhanbad, India: Central Fuel Research Institute, Council of Science and Industrial Research (CSIR), Indian Ministry of Science and Technology, 250 p.
- Ramachandran, T.V., Lalit, B.Y., and Mishra, U.C., 1987, Relative population exposures from coal-fired and nuclear power plants: *Radiation Protection Dosimetry*, v. 18, no. 3, p. 169–173.
- Ramachandran, T.V., Lalit, B.Y., and Mishra, U.C., 1990, Modifications in natural radioactivity contents of soil samples around thermal power stations in India: *Indian Journal of Environmental Health*, v. 13, p. 13–19.
- Ramachandran, T.V., and Mishra, U.C., 1989, Radiological impact of airborne releases from coal-fired power plants in India: *Ecology*, v. 4, p. 23–35.
- Ramer, E.R., and Martello, D.V., 1994, Quantitative microstructural characterization of ash deposits from pulverized coal fired Boilers, *in* Williamson, J., and Wigley, F., eds., *The Impact of Ash Deposition on Coal Fired Plants; Proceedings of the Engineering Foundation Conference*, June 20–25, 1993, Solihull, United Kingdom: Washington, D.C., Taylor and Francis, p. 487–498.

- Ramme, B.W., Kohl, T.A., and Oakes, D., 1999, Use of Wisconsin Electric bottom ash sand and gravel as sub-base and base material for rigid and flexible pavements and floors, *in* American Society of Civil Engineers [ASCE], eds., Materials Engineering Congress, 5th Congress: Cincinnati, Oh., American Society of Civil Engineers [ASCE], p. 810–825.
- Ramsden, A.R., and Shibaoka, M., 1982, Characterization and analysis of individual fly-ash particles from coal-fired power stations by a combination of optical microscopy, electron microscopy and quantitative electron microprobe analysis: *Atmospheric Environment*, v. 16, no. 9, p. 2191–2206.
- Randall, A.J., Ives, B.C., and Eastman, C., 1974, Benefits of abating aesthetic environmental damage from the Four Corners Power Plant, Fuitland, New Mexico: New Mexico State University, Agricultural Experiment Station, 40 p.
- Ranz, J.P., and Pelet, I.A., 2008, Unburned carbon in ash prediction in pulverized coal utility boilers, *in* PennWell Books, eds., Power-Gen Europe Conference and Exhibition, June 3–5, 2008, Milan, Italy: Tulsa, Ok., PennWell Books, Session 1, Track 6, p. 1–20 [on CD-ROM].
- Rao, K.S., and Satterfield, L., 1983, A study of the portable environmental impact of fugitive coal dust emissions at the Ravenswood Power Plant, New York: Rockville, Md., U.S. Department of Commerce, National Oceanic and Atmospheric Administration [NOAA], Environmental Research Laboratories, 83 p.
- Rao, P.D., 1974, Distribution and significance of major, minor and trace elements in arctic Alaskan coals: Fairbanks, University of Alaska, Mineral Industry Research Laboratory, 38 p.
- Ratafia-Brown, J.A., 1994, Overview of trace element partitioning in flames and furnaces of utility coal-fired boilers: *Fuel Processing Technology*, v. 39, no. 1-3, p. 139–157.
- Ratafia-Brown, J.A., Briggs, D., Paur, H.-R., and Mätzing, 1995, Advanced electron beam dry scrubbing for high sulfur coal-fired power plant applications – process engineering study results for Phase 1 of the e-Scrub Project: New York, N.Y., American Institute of Chemical Engineers, 24 p.
- Ratajczak, T., and Shahidehpour, M., 2006, Emerging technologies for coal-fired generation, *in* Power Engineering Society, eds., Proceedings of the Institute of Electrical and Electronics Engineers [IEEE] General Meeting, June 8-22, 2006, Montreal, Canada: Piscataway, N.J., Institute of Electrical and Electronics Engineers [IEEE], 9 p.
- Rathnam, R.K., Wall, T.F., Yinghui L., and Elliott, L., 2008, Coal reactivity differences and impacts in oxy-fuel combustion: Newcastle, New South Wales, University of Newcastle, Cooperative Research Centre for Coal in Sustainable Development [CCSD] Research Report 84, 19 p., last accessed June 2010 at, http://www.ccsd.biz/publications/files/RR/RR%2084%20Coal%20Reactivity_web.pdf.
- Rawdon, A.H., and Johnson, S.A., 1973, Application of NO_x control technology to power boilers: *Proceedings of the American Power Conference*, v. 35, p. 828–837.
- Ray, I., 1997, The quest for a better submicron particle trap: *Environmental Technology*, May/June 1997, p. 22–26.
- Ray, S.S., and Parker, F.G., 1977, Characterization of ash from coal-fired power plants: Research Triangle Park, N.C., Environmental Protection Agency [EPA], Office of Research and Development, Industrial Environmental Research Laboratory, Report no. EPA-600/7-77-010, 130 p.

- Ray, S.S., and Parker, F.G., 1978, Characterization of ash from coal-fired power plants, *in* Torrey, S., ed., *Coal Ash Utilization—Fly Ash, Bottom Ash, and Slag*: Park Ridge, N.J., Noyes Data Corporation, p. 1–23.
- Raymond, L.J., and Ralston, N.V.C., 2004. Mercury – selenium interactions and health implications: *Seychelles Medical and Dental Journal*, v. 7, no. 1, p. 72–77.
- Reardon, E.J., Czank, C.A., Warren, C.J., Dayal, R., and Johnston, H.M., 1995, Determining controls on element concentrations in fly ash leachate: *Waste Management and Research*, v. 13, no. 5, p. 435–450.
- Reddy, K.J., 1999, Coal fly ash chemistry and carbon dioxide infusion process to enhance its utilization, *in* Sajwan, K.S., Alva, A.K., and Keefer, R.F., eds., *Biogeochemistry of Trace Elements in Coal and Coal Combustion Byproducts*: New York, N.Y., Kluwer Academic/Plenum, p. 133–144.
- Reddy, V.S., Kaushik, S.C., Tyagi, S.K., and Panwar, N., 2010, An approach to analyse energy and exergy analysis of thermal power plants – a review: *Smart Grid and Renewable Energy*, v. 1, no. 3, p. 143–152.
- Reed, R., Bock, J., Hocquel, M., Unterberger, S., and Hein, K.R.G., 2003, How effective are SCRs for mercury removal?: *Modern Power Systems*, v. 11, p. 21–24.
- Regan, J.W., Davidson, M.J., von Hein, R.J., Wesnor, J.D., and Bender, D.J., 1996, The ABB LEBS System design, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 137–144.
- Regulagadda, P., Dincer, I., and Naterer, G.F., 2010, Exergy analysis of a thermal power plant with measured boiler and turbine losses: *Applied Thermal Engineering*, v. 30, no. 8-9, p. 970–976.
- Reid, W.T., 1971, *External corrosion and deposits*: New York, N.Y., American Elsevier, 199 p.
- Reid, W.T., 1981, Coal ash – its effect on combustion systems, *in* Elliott, M.A., ed., *Chemistry of coal utilization*, second supplementary volume: New York, John Wiley and Sons, p. 1389–1445.
- Reid, W.T., and Cohen, P., 1944, The flow characteristics of coal ash slags in the solidification range: *Journal of Engineering Power; Transactions American Society of Mechanical Engineers, Series A*, v. 66, p. 83.
- Reinschmidt, K.F., 1991, Neural networks: Next step for simulation and control: *Power Engineering*, v. 95, no. 11, p. 41–45.
- Renu, K.R., Elliott, L., Moghtaderi, B., Gupta, R., and Wall, T., 2006, Differences in coal reactivity in air and oxy-fuel conditions and implications for coal burnout, *in* Sakkestad, E.B., ed., *Coal Technology – Whats Next?: Proceedings of the International Technical Conference on Coal Utilization and Fuel Systems*, May 21-26, 2006, Clearwater, Florida, 31st Conference: Gaithersburg, Md., Coal Technology Association, [pagination not known].
- Renner, R., 2004, Controversial results downplay power plant mercury emissions: *Environmental Science and Technology*, v. 38, no. 23, p. 450A.

- Repić, B., Radulović, P., Šikmanović, S., and Grubor, B., 1988, Boilers start-up with pulverized Coal [abs.], in XX Kraftwerkstechnisches Kolloquium [Power Plant Technical Colloquium], Einsatz schwieriger brennstoffe in dampferzeugern und industriellen feuerungen, October 11–12, 1988, Dresden, Deutsch Democratic Republic: Dresden, Technische Universität Dresden, p. 89.
- Reynolds, R.L., Gay, F.E., Rosenbaum, J.G., and Brownfield, M.E., 1998, Magnetic studies of fly ash and bottom ash, in Breit, G.N., and Finkelman, R.B., eds., Characterization of coal and coal combustion products from a coal-burning power plant—preliminary report and results of analyses: U.S. Geological Survey Open-File Report 98-342, p. 56–67.
- Rezek, J.P., and Campbella, R.C., 2007, Cost estimates for multiple pollutants – a maximum entropy approach: *Energy Economics*, v. 29, no. 3, p. 503–519.
- Ribeiro, J., 1995, Techno-economic analysis of the SCR plant for NO_x abatement – investigation into the optimisation potential of catalyst renewal strategies in SCR plants: Aachen, Shaker, 162 p.
- Rice, C.A., 1998, Preliminary geochemical model results of water leachates, in Breit, G.N., and Finkelman, R.B., eds., Characterization of coal and coal combustion products from a coal-burning power plant—preliminary report and results of analyses: U.S. Geological Survey Open-File Report 98-342, p. 79–81.
- Rice, C.A., 2007, Leaching studies by batch, sequential, toxicity characteristic leaching protocol (TCLP), and synthetic precipitation leaching protocol (SPLP), in Ellis, Margaret, and Affolter, R.H., eds., From Cradle to Grave, The Power of Coal, International Technical Conference on Coal Utilization and Fuel Systems, June 10–15, 2007, Clearwater, Florida, 32nd Conference: U.S. Geological Survey Open-File Report 2007-1160, p. 68–77.
- Richards, G.A., Logan, R.G., Meyer, C.T., and Anderson, R.J., 1992, Ash deposition at coal-fired gas turbine conditions: surface and combustion temperature effects: *Journal of Engineering for Gas Turbines and Power*, v. 114, no. 1, p. 132–138.
- Richards, L.W., 1985, Nitrogen dioxide from a coal-fired power plant: *Atmospheric Environment*, v. 19, no. 1, p. 205–206.
- Richards, L.W., Anderson, J.A., Blumenthal, D.L., Brandt, A.A., McDonald, J.A., Waters, N., Macias, E.S., and Bhardwaja, P.S., 1981, The chemistry, aerosol physics, and optical properties of a western coal-fired power plant plume: *Atmospheric Environment*, v. 15, no. 10/11, p. 2111–2134.
- Richards, L.W., Anderson, J.A., Blumenthal, D.L., and McDonald, J.A., 1990, Nitrogen and sulfur chemistry and aerosol formation in a western coal-fired power plant plume, in Mathai, C.V., ed., Transactions, Visibility and Fine Particles: Pittsburgh, Pennsylvania, Air and Waste Management Association, p. 242–260.
- Richards, L.W., Anderson, J.A., Blumenthal, D.L., McDonald, J.A., Macias, E.S., Hering, S.V., and Wilson, W.E.J., 1985, Chemical, aerosol and optical measurements in the plumes of three midwestern coal-fired power plants: *Atmospheric Environment*, v. 19, no. 10, p. 1685–1704.
- Richardson, C., Machalek, T., Miller, S., Dene, C., and Chang, R., 2002, Effect of NO_x control processes on mercury speciation in utility flue gas: *Journal of the Air and Waste Management Association*, v. 52, no. 8, p. 941–947.

- Richter, W., Payne, R., and Heap, M.P., 1984, Influence of thermal properties of wall deposits on performance of pulverized fuel fired boiler combustion chambers: American Chemical Society, Fuel Chemistry Division, Preprints, v. 29, no. 4, p. 250–261, last accessed June 2010 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/29_4_PHILADELPHIA_08-84_0249.pdf.
- Rickard, W.D.A., and van Riessen, A., 2010, Thermal character of geopolymers synthesized from Class F fly ash containing high concentrations of iron and α -quartz: International Journal of Applied Ceramic Technology, v. 7, no. 1, p. 81–88.
- Riga-Karandinos, A.N., and Karandinos, M.G., 1998, Assessment of air pollution from a lignite power plant in the Plain of Megalopolis (Greece) using as biomonitors three species of lichens – impacts on some biochemical parameters of lichens: The Science of The Total Environment, v. 215, no. 1-2, p. 167–183.
- Rigby, J., Ma, J., Webb, B.W., and Fletcher, T.H., 2001, Transformations of coal-derived soot at elevated temperature: Energy and Fuels, v. 15, no. 1, p. 52–59.
- Riggs, J.B., Curtner, K., and Foslien, W., 1995, Advanced model-based steam temperature control for coal fired boilers: Computers and Chemical Engineering, v. 19, no. 5, p. 541–550.
- Rio, S., Delebarre, A., Héquet, V., Le Cloirec, P., and Blondin, J., 2002, Metallic ion removal from aqueous solutions by fly ashes: multicomponent studies: Journal of Chemical Technology and Biotechnology, v. 77, no. 3, p. 382–388.
- Risser, H.E., 1970, Power and the environment—a potential crisis in energy supply: Illinois State Geological Survey, Geology Notes 40, 47 p.
- Rittenhouse, R.C., 1991, Fighting corrosion in air pollution control systems: Power Engineering, v. 95, no. 6, p. 23–29.
- Rittenhouse, R.C., 1992, New fuel choices change coal handling and storage rules: Power Engineering, v. 96, no. 1, p. 17–21.
- Rivas, M.-A., 2008, Improving power plant reliability with boiler feed pumps: World Pumps, v. 2008, no. 499, p. 36–37.
- Rizeq, R.G., Hansella, D.W., and Seeker, W.R., 2003, Predictions of metals emissions and partitioning in coal-fired combustion systems: Fuel Processing Technology, v. 39, no. 1-3, p. 219–236.
- Roberts, C.A., Gibbins, J., Panesar, R., and Kelsall, G., 2005, Potential for improvement in power generation with post-combustion capture of CO₂: Greenhouse Gas Control Technologies, v. 7, p. 155–163.
- Robertson, J.D., Blanchard, L.J., Srikantapura, S., Parekh, B.K., and Lafferty, C.J., 1996, Investigation of the behavior of potentially hazardous trace elements in Kentucky coals and combustion byproducts: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 41, no. 3, p. 761–763, last accessed March 2010 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/41_3_ORLANDO_08-96_0761.pdf.
- Robertus, R.J., Nielson, K.L., Crowe, C.T., and Pratt, D.T., 1975, An attempt to reduce NO_x emissions from pulverized coal furnaces: Environmental Science and Technology, v. 9, no. 9, p. 859–862.
- Robie, C.P., and Ireland, P.A., 1991, Technical feasibility and cost of selective catalytic reduction (SCR) \NO_x control: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report GS-7266, variously paged.

- Robinson, B., and Wilson, B.L., 2000, An investigation of trace elements in the aqueous environment near a coal-fired power generation plant: *Journal of Environmental Science and Health*, v. A35, p. 661–670.
- Robinson, B.F., 1991, An investigation of trace elements in the aqueous environment near a coal-fired power generation plant: Houston, Tex., Texas Southern University, Master of Science thesis, 74 p.
- Robinson, G.F., 1985, A three-dimensional analytical model of a large tangentially fired furnace: *Journal of the Institute of Energy*, v. 9, p. 116–150.
- Robson, F.L., Ruby, J., and Seery, D.J., 1996, Repowering with high performance power plant systems, in Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 162–167.
- Roeck, D.R., Reavey, T.C., and Hardin, J.M., 1997, Partitioning of natural radionuclides in the waste streams of coal-fired utilities: *Health Physics*, v. 52, no. 3, p. 311–323.
- Roewer, J., 2002, Federal legal and regulatory issues affecting the placement of coal combustion byproducts in mines [abs.], in *Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 20.
- Roewer, J., 2002, Federal legal and regulatory issues affecting placement of CCBs in mines, in Vories, K.C. and Throgmorton, Dianne, eds., *Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 247–250.
- Rogers Engineering Incorporated, 1977, Report on geothermal power plant cost and comparative cost of geothermal and coal fired steam power plants: Rogers Engineering, Incorporated Report S-74002-02, 114 p.
- Rogozen, M.B., 1978, Coal slurry pipelines; the water issues: Los Angeles, University of California, 284 p.
- Rohr, A., 2006, Toxicological evaluation of realistic emissions of source aerosols (TERESA) – application to power plant-derived PM_{2.5}: Palo Alto, Calif., Electric Power Research Institute [EPRI], Topical Report, Plant 0 (Upper Midwest), 33 p.
- Romano, M., 2009, Coal-fired power plant with calcium oxide carbonation for postcombustion CO₂ capture: *Energy Procedia*, v. 1, no. 1, p. 1099–1106.
- Romano, M.C., and Lozza, G.G., 2010, Long-term coal gasification-based power plants with near-zero emissions, Part A – Zecomix cycle: *International Journal of Greenhouse Gas Control*, v. 4, no. 3, p. 459–468.
- Romeo, L.M., Abanades, J.C., Escosa, J.M., Paño, J., Giménez, A., Sánchez-Biezma, A., and Ballesteros, J.C., 2008, Oxyfuel carbonation/calcination cycle for low cost CO₂ capture in existing power plants: *Energy Conversion and Management*, v. 49, no. 10, p. 2809–2814.
- Romeo, L.M., Lara, Y., Lisbona, P., and Martínez, A., 2009, Economical assessment of competitive enhanced limestones for CO₂ capture cycles in power plants: *Fuel Processing Technology*, v. 90, no. 6, p. 803–811.

- Romeo, L.M., Usón, S., Valero, A., and Escosa, J.M., 2010, Exergy analysis as a tool for the integration of very complex energy systems: the case of carbonation/calcination CO₂ systems in existing coal power plants: *International Journal of Greenhouse Gas Control*, v. 4, no. 4, p. 647–654.
- Romero, C.E., Bilirgen, Y.L., Sarunac, N., and Levy, E.K., 2005, Modification of boiler operating conditions for mercury emissions reductions in coal-fired utility boilers: *Fuel*, v. 85, p. 204–212.
- Rose, A., Torries, T., and Labys, W., 1991, Clean coal technologies and future prospects for coal: *Annual Review of Energy and the Environment*, v. 16, p. 59–90.
- Rosen, M.A., 1990, Relation between thermodynamic losses and capital costs for a modern coal-fired electrical generating station: *American Society of Mechanical Engineers, Advanced Energy Systems Division (Publication) AES*, v. 21, p. 69.
- Rosen, M.A., 2000, Thermodynamic comparison of coal-fired and nuclear electrical generating stations: *Transactions of the Canadian Society for Mechanical Engineering [Transactions de la Société canadienne de génie mécanique]*, v. 24, no. 1B, p. 273–284.
- Rosen M.A., 2001, Energy- and exergy-based comparison of coal-fired and nuclear steam power plants: *Exergy International Journal*, v. 1, no. 3, p. 180–192.
- Rosen, M.A., and Dincer, I., 2003, Thermo-economic analysis of power plants: An application to a coal fired electrical generating station: *Energy Conversion and Management*, v. 44, no. 17, p. 2743–2761.
- Rosner, D.E., and Nagarjan, B., 1987, Toward a mechanistic theory of net deposit growth from ash-laden flowing combustion gases: Self-regulated sticking of impacting particles and deposit erosion in the presence of vapor ‘glue’: *American Institute of Chemical Engineers [AIChE] Symposium Series*, v. 83, no. 257, p. 289–296.
- Ross, M.J., and Siniff, D.B., 1980, Spatial distribution and temperature selection of fish near the thermal outfall of a power plant during fall, winter, and spring: *Research Triangle Park, N.C., Environmental Protection Agency [EPA], Office of Research and Development; Environmental Research Laboratory, Report no. EPA-600/3-79-009*, 117 p.
- Rostam-Abadi, M., Chang, R., Chen, S., Lizzio, T., Richardson, C., and Sjoström, S., 2001, Demonstration of sorbent injection process for Illinois coal mercury control: *Illinois Clean Coal Institute [ICCI] Project Number: 00-1/2.2D-1*, November 1, 2000–October 31, 2001, 28 p.
- Rostam-Abadi, M., DeBarr, J.A., and Moran, D.L., 1988, Burning characteristics of partially devolatilized coals: *American Chemical Society, Division of Fuel Chemistry, Preprints*, v. 33, no. 4, p. 869–871, last accessed August 2011 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/33_4_LOS%20ANGELES_09-88.htm.
- Rostam-Abadi, M., DeBarr, J.A., and Harvey, R.D., 1992, Ash deposition behavior of a coal, a clean coal, and a char in a drop tube furnace: *American Chemical Society, Division of Fuel Chemistry, Preprints*, v. 37, no. 1, p. 395–402, last accessed June 2010 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/37_1_SAN%20FRANCISCO_04-92_0395.pdf.
- Rostam-Abadi, M., Hsi, H.C., Chen, S., Rood, M.J., Chang, R., Carey, T.R., Richardson, C.F., and Rosenhoover, B., 1998, Development of carbon-based adsorbents for removal of mercury emissions from coal combustion flue gas, *in* Dabrowski, A., ed., *Adsorption and Its Application in Industry and Environmental Protection*, v. 1 – Applications in Industry: Amsterdam, The Netherlands, Elsevier, p. 459–483.

- Roth, J.A., Debelak, K.A., and Feather, K.F., 1983, Removal rate of zinc from coal bottom ash in aqueous solutions: *Water Resources [Pergamon]*, v. 17, no. 9, p. 1139–1143.
- Rouni, P.K., Petropoulos, N.P., Anagnostakis, E.P., and Hingis Simopoulos, S.E., 2001, Radioenvironmental survey of the Megalopolis lignite field basin: *The Science of The Total Environment*, v. 272, p. 261–272.
- Rousaki, K., Bushell, A., and McConville, 2000, Liberalisation of electricity markets and coal use: *International Journal of Coal Geology*, v. 44, p. 339–340.
- Rousaki, K., and Couch, G., 2000, Advanced clean coal technologies and low value coals: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report CCC/39, 76 p.
- Rousseau, P.D.S., Przybylowicz, W.J., Scheepers, R., Prozesky, V.M., Pineda, C.A., Churms, C.L., and Ryan, C.G., 1997, Geochemical analysis of medium sized fly ash particles using the NAC Nuclear Microprobe: *Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms*, v. 130, no. 1-4, p. 582–586.
- Rowe, C.L., Hopkins, W.A., and Congdon, J.D., 2002, Ecotoxicological implications of aquatic disposal of coal combustion residues in the United States – a review: *Environmental Monitoring and Assessment*, v. 80, p. 207–276.
- Roy, J., Sarkar, P., Biswas, S., and Choudhury, A., 2009, Predictive equations for CO₂ emission factors for coal combustion, their applicability in a thermal power plant and subsequent assessment of uncertainty in CO₂ estimation: *Fuel*, v. 88, p. 792–798.
- Roy, W.R., and Griffin, R.A., 1982, A proposed classification system for coal fly ash in multidisciplinary research: *Journal of Environmental Quality*, v. 11, p. 563–568.
- Roy, W.R., Griffin, R.A., Dickerson, D.R., and Schuller, R.M., 1984, Illinois Basin coal fly ashes – 1. – chemical characterization and solubility: *Environmental Science and Technology*, v. 18, no. 10, p. 734–739.
- Roy, W.R., Thiery, R.G., Schuller, R.M., and Suloway, J.J., 1981, Coal fly ash – a review of the literature and proposed classification system with emphasis on environmental impacts: *Illinois State Geological Survey, Environmental Geology Notes* 96, 69 p.
- Rubel, A., Hower, J.C., Mardon, S.M., and Zimmer, M.J., 2006, Thermal stability of mercury captured by ash: *Fuel*, v. 85, p. 2509–2515.
- Rubin, E.S., 1999, Toxic releases from power plants: *Environmental Science and Technology*, v. 33, no. 18, p. 3062–3067.
- Rubin, E.S., and Bedillion, M.D., 1998, A comprehensive approach to power plant toxic release inventories: *Carnegie Institute of Technology, Department of Engineering and Public Policy, Paper 91*, 17 p., last accessed January 2011 at <http://repository.cmu.edu/epp/91>.
- Rubin, E.S., Bedillion, M.D., and Toole-O’Neil, B., 1997, Toxic release inventory estimates for coal-fired electric power plants, *in* International Conference on Managing Hazardous Air Pollutants, Washington, D.C., 4th Conference: Palo Alto, Calif., Electric Power Research Institute [EPRI], 17 p.
- Rubin, E.S., and Berkenpas, M.B., 1993, A probabilistic emissions model for managing hazardous air pollutants, *in* Chow, W., and others, eds., *Managing Hazardous Air Pollutants: State of the Art*: Electric Power Research Institute [EPRI] Report no. TR-101890, Boca Raton, Fla., Lewis Publishers, p. 329–348.

- Rubin, E.S., and Berkenpas, M.B., 1999, A national analysis of toxic releases from electric power plants: *Environmental Manager*, v. 5, p. 31–37.
- Rubin, E.S., and Berkenpas, M.B., 1999, A national analysis of toxic releases from electric power plants: presented at the Air and Waste Management Association [A&WMA] Annual Meeting, June 20–24, 1999, St. Louis, Missouri, Paper No. 99-714, 16 p., last accessed June 2010 at [http://www.cmu.edu/epp/iecm/rubin/PDF%20files/1999/1999a%20Rubin%20&%20%20Berkenpas,%20AWMA%20\(Jun\).pdf](http://www.cmu.edu/epp/iecm/rubin/PDF%20files/1999/1999a%20Rubin%20&%20%20Berkenpas,%20AWMA%20(Jun).pdf).
- Rubin, E.S., Chen, C., and Rao, A.B., 2007, Cost and performance of fossil fuel power plants with CO₂ capture and storage: *Energy Policy*, v. 35, no. 9, p. 4444–4454.
- Rubin, E.S., Kalagnanam, J.R., Frey, H.C., and Berkenpas, M.B., 1997, Integrated environmental control modeling of coal-fired power systems: *Journal of the Air and Waste Management Association*, v. 47, p. 1180–1188.
- Rubin, E.S., and Rao, A.B., 2002, A technical, economic, and environmental assessment of amine-based CO₂ capture technology for power plant greenhouse gas control – annual technical progress report for period October 2000–October 2001, submitted October, 2002, work performed under contract no. DE-FC26-00NT40935 for U.S. Department of Energy, National Energy Technology Laboratory [NETL], Morgantown, West Virginia, 66 p., last accessed August 2011 at http://www.osti.gov/bridge/product.biblio.jsp?query_id=5&page=0&osti_id=804932.
- Rubin, E.S., Rao, A.B., and Chen, C., 2005, Comparative assessments of fossil fuel power plants with CO₂ capture and storage: *Greenhouse Gas Control Technologies*, v. 7, p. 285–293.
- Rubin, E.S., Salmento, J.S., Barrett, J.G., Frey, H.C., and Bloyd, C.N., 1986, Modeling and assessment of advanced processes for integrated environmental control of coal-fired power plants: Pittsburgh, Pa., Department of Energy, Pittsburgh Energy Technology Center Report DE-FG22-83PC60271, 396 p.
- Rubin, E.S., Salmento, J.S., Frey, H.C., Abu-Baker, A., and Berkenpas, M., 1991, Modeling of integrated environmental control systems for coal-fired power plants: Pittsburgh, Pa., Department of Energy, Pittsburgh Energy Technology Center Report DE-AC22-87PC79864, 214 p.
- Rubio, B., and Izquierdo, M.T., 2010, Coal fly ash based carbons for SO₂ removal from flue gases: *Waste Management*, v. 20, p. 1341–1347.
- Rubio, B., Izquierdo, M.T., Mayoral, M.C., Bona, M.T., and Andrés, J.M., 2007, Carbon from coal fly ashes as a precursor of activated carbon for environmental application: *Journal of Hazardous Materials*, v. 143, p. 561–566.
- Rubio, B., Izquierdo, M.T., Mayoral, M.C., Bona, M.T., and Martinez-Tarazona, R.M., 2008, Preparation and characterization of carbon-enriched coal fly ash: *Journal of Environmental Management*, v. 88, p. 1562–1570.
- Ruby, M.G., Rood, M.J., Waggoner, A.P., Robinson, E., Blumenthal, D.L., and Watson, J.G., 1989, Method 503 – integrating nephelometer measurement of scattering coefficient and fine particle concentrations, in Lodge, J.P.J., ed., *Methods of Air Sampling and Analysis* (3rd ed.): Chelsea, Mich., Lewis Publishers, p. 450–457.
- Ruch, R.R., Cahill, R.A., Frost, J.K., Camp, L.R., and Gluskoter, H.J., 1977, Survey of trace elements in coals and coal-related materials by neutron activation analysis: *Journal of Radioanalytical Chemistry*, v. 38, p. 415–424.

- Ruch, R.R., Gluskoter, H.J., and Shimp, N.F., 1974, Occurrence and distribution of potentially volatile trace elements in coal – a final Report: Urbana, Illinois State Geological Survey, Environmental Geology Notes No. 72, 96 p.
- Ruch, R.R., Gluskoter, H.J., and Shimp, N.F., 1974, Occurrence and distribution of potentially volatile trace elements in coal: Research Triangle Park, N.C., Environmental Protection Agency [EPA], National Environmental Research Center, Control Systems Laboratory, Report no. EPA-650/2-74-054, 1 vol.
- Rückert, F., Sabel, T., Schnell, U., Hein, K.R.G., and Risio, B., 2003, Comparison of different global reaction mechanisms for coal-fired utility boilers: Progress in Computational Fluid Dynamics, v. 3, no. 2-4, p. 130–139.
- Ruddy, D., 2002, EPA regulatory direction concerning CCBs [abs.], in Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 19.
- Ruen-ngam, D., Rungsuk, D., Apiratikul, R., and Pavasant, P., 2009, Zeolite formation from coal fly ash and its adsorption potential: Journal of the Air and Waste Management Association, v. 59, no. 10, p. 1140–1147.
- Ruether, J., Schimmoller, B., and Killmeyer, R., 1996, Rehabilitation of an anthracite-burning power plant in Ukraine with introduction of coal preparation, in Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1175–1180.
- Ruhl, L., Vengosh, A., Dwyer, G.S., Hsu-Kim, H., Deonarine, A., Bergin, M., and Kravchenko, J., 2009, Survey of the potential environmental and health impacts in the immediate aftermath of the coal ash spill in Kingston, Tennessee: Environmental Science and Technology, v. 43, no. 16, p. 6326–6333.
- Rui X., Fugeng L., 2009, Environmental impacts of coal ash from a power plant, in Intelligent Information Technology Application Association, and others, eds., Proceedings of the International Conference on Environmental Science and Information Application Technology [ESIAT], July 4–5, 2009, Wuhan, China: Los Alamitos, California, Institute of Electrical and Electronics Engineers [IEEE] Computer Society, v. 1, p. 148–151.
- Ruiz, P., Gupta, T., Kang, C.-M., Lawrence, J., Ferguson, S., Wolfson, M., Rohr, A.C., and Koutrakis, P., 2007, Development of an exposure system for the toxicological evaluation of particles derived from coal-fired power plants: Inhalation Toxicology, v. 19, no. 8, p. 607–619.
- Ruiz, P., Lawrence, J., Wolfson, M., Ferguson, S., Gupta, T., Kang, C.-M., and Koutrakis, P., 1979, Development and evaluation of a photochemical chamber to examine the toxicity of coal-fired power plant emissions: Inhalation Toxicology, v. 19, no. 8, p. 597–606.
- Ruggeri, A., 1981, Coal fired power plants and pollution: Inquinamento, v. 23, no. 11, p. 59–61.
- Ruppel, T.C., and Sarkus, T.A., 1998, Unburned carbon on fly ash – a burning issue for coal-fired utilities: Energeia, v. 9, no. 1, p. 5–6.
- Ruppert, L.F., Hower, J.C., and Eble, C.F., 2005, Arsenic-bearing pyrite and marcasite in the Fire Clay Coal Bed, Middle Pennsylvanian Breathitt Formation, eastern Kentucky: International Journal of Coal Geology, v. 63, p. 27–35.

- Rutkowski, M.D., Klett, M.G., and Zaharchuk, R., 1996, Assessment of hot gas cleanup systems for IGCC and PFBC advanced power systems, *in* Chiang, S.-H., ed., Coal-Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1296.
- Ryerson, T.B., Buhr, M.P., Fehsenfeld, F.C., Goldan, P.D., Hübler, G., Jobson, B.T., Kuster, W.C., Parrish, D.D., Roberts, J.M., Sueper, D.T., Trainer, M., and Williams, J., 1996, Net ozone production in power plant plumes [abs.]: Eos, Transactions, American Geophysical Union [AGU], v. 77, no. 46, p. F88.
- Ryerson, T.B., Buhr, M.P., Frost, G.J., Goldan, P.D., Holloway, J.S., Hübler, G., Jobson, B.T., Kuster, W.C., McKeen, S.A., Parrish, D.D., Roberts, J.M., Sueper, D.T., Trainer, M., Williams, J., and Fehsenfeld, F.C., 1998, Emissions lifetimes and ozone formation in power plant plumes: Journal of Geophysical Research, v. 103, no. D17, p. 22,569–22,583.
- Saadaoui, M., Mahjoub Said, N., Mhiri, H., Le Palec, G., and Bournot, Ph., 2006, Modélisation of the coal pulverise combustion [abs.], *in* QIRT 2006 [Quantitative InfraRed Thermography], June 28–30, 2006, Padova, Italy: last accessed June 2010 at <http://qirt.gel.ulaval.ca/archives/qirt2006/papers/058.pdf>.
- Sabbioni, E., and Goetz, L., 1983, Mobilization of heavy metals from fossil-fuelled power plants, potential ecological and biochemical implications – IV. – Assessment study of the European situation: Commission of European Communities [CEC] EUR 6998/IV, 165 p.
- Sabbioni, E., Goetz, L., and Bignoli, G., 1984, Health and environmental implications of trace metals released from coal-fired power plants – an assessment study of the situation in the European Community: The Science of The Total Environment, v. 40, no. 1, p. 141–154.
- Sabbioni, E., Goetz, L., Springer, A., and Pietra, R., 1983, Trace metals from coal-fired power plants: derivation of an average data base for assessment studies of the situation in the European Communities: The Science of The Total Environment, v. 29, no. 3, p. 213–227.
- Sable, S.P., de Jong, W., Meij, R., and Spliethoff, H., 2007, Effect of air-staging on mercury speciation in pulverized fuel co-combustion – Part 2: Energy and Fuels, v. 21, no. 4, p. 1891–1894.
- Sable, S.P., de Jong, W., Meij, R., and Spliethoff, H., 2007, Effect of secondary fuels and combustor temperature on mercury speciation in pulverized fuel co-combustion: Part 1: Energy and Fuels, v. 21, no. 4, p. 1883–1890.
- Sackett, D.K., Aday, D.D., Rice, J.A., Cope, W.G., and Buchwalter, D., 2010, Does proximity to coal-fired power plants influence fish tissue mercury?: Ecotoxicology, v. 19, no. 8, p. 1601–1611.
- Sadasivan, S., and Negi, B.S., 1991, Chemical characterisation of fly ash from coal-fired thermal power plants in India: The Science of The Total Environment, v. 103, no. 2-3, p. 151–158.
- Sagan, L.A., 1974, Health costs associated with the mining, transport, and combustion of coal in the steam-electric industry: Nature, v. 250, p. 107–111.
- Sage, P., and Gemmill, R.J., 1993, Assessment of air pollutants from coal utilization plant, *in* Chow, W., and others, eds., Managing Hazardous Air Pollutants: State of the Art: Electric Power Research Institute [EPRI] Report no. TR-101890, Boca Raton, Fla., Lewis Publishers, p. 93–104.

- Sage, W.L., and McIlroy, J.B., 1959, Relationship of coal-ash viscosity to chemical composition: *Journal of Engineering for Power; Transactions American Society of Mechanical Engineers [ASME]*, p. G1-G9.
- Sage, W.L., and McIlroy, J.B., 1960, Relationship of coal ash viscosity to chemical composition: *Journal of Engineering for Power*, v. 82, no. 4, p. 145–155.
- Sage, W.L., and McIlroy, J.B., 1959, Relationship of coal ash viscosity to chemical composition: *Combustion*, v. 31, no. 5, p. 41–48.
- Sajwan, K.S., Punshon, T., and Seaman, J.C., 2006, Production of coal combustion products and their potential uses, *in* Sajwan, K.S., Twardowska, I., Punshon, T., and Alva, A.K., eds., *Coal Combustion Byproducts and Environmental Issues*: New York, N.Y., Springer, p. 3–9.
- Sakai, K., Morita, S., Yamamoto, T., and Tsumura, T., 1998, Design and operating experience of the latest 1,000-mw coal-fired boiler: *Hitachi Review*, v. 47, no. 5, p. 183–187.
- Sakata, M., 1987, Movement and neutralization of alkaline leachate at coal ash disposal sites: *Environmental Science and Technology*, v. 21, no. 8, p. 771–777.
- Sakorafa, V., Michailidis, K., and Burragato, F., 1996, Mineralogy, geochemistry, and physical properties of fly ash from the Megalopolis Lignite Fields, Peloponnese, southern Greece: *Fuel*, v. 75, no. 4, p. 419–423.
- Sakulpitakphon, T., Hower, J.C., Schram, W.H., and Ward, C.R., 2004, Tracking mercury from mine to the power plant – Geochemistry of the Manchester Coal Bed, Clay County, Kentucky: *International Journal of Coal Geology*, v. 57, p. 127–141.
- Sakulpitakphon, T., Hower, J.C., and Taulbee, D.N., 2003, Predicted CO₂ emissions from maceral concentrates of high volatile bituminous Kentucky and Illinois Coals: *International Journal of Coal Geology*, v. 54, p. 185–192.
- Sakulpitakphon, T., Hower, J.C., Trimble, A.S., Schram, W.H., and Thomas, G.A., 2000, Mercury capture by fly ash – study of the combustion of a high-mercury coal at a utility boiler: *Energy and Fuels*, v. 14, no. 3, p. 727–733.
- Sakulpitakphon, T., Hower, J.C., Trimble, A.S., Schram, W.H., and Thomas, G.A., 2003, Arsenic and mercury partitioning in fly ash at a Kentucky power plant: *Energy and Fuels*, v. 17, p. 1028–1033.
- Samanli, S., Cuhadaroglu, D., Ipek, H., and Ucbas, Y., 2010, The investigation of grinding kinetics of power plant solid fossil fuel in ball mill: *Fuel*, v. 89, no. 3, p. 703–707.
- Sandelin, K., and Backman, R., 2001, Trace elements in two pulverized coal-fired power stations: *Environmental Science and Technology*, v. 35, no. 5, p. 826–834.
- Sandhu, S.S., Mills, G.L., and Sajwqan, K.S., 1993, Leachability of Ni, Cd, Cr, and As from coal ash impoundments of different ages on the Savannah River Site, *in* Keefer, R.F. and Sajwan, K.S., eds., *Trace elements in coal and coal combustion residues*: Boca Raton, Fla., Lewis Publishers, p. 165–182.
- Sanei, H., Goodarzi, F., and Outridge, P.M., 2010, Spatial distribution of mercury and other trace elements in recent lake sediments from central Alberta, Canada: an assessment of the regional impact of coal-fired power plants: *International Journal of Coal Geology*, v. 82, no. 1-2, p. 105–115.
- Sanghvi, A.P., 1982, Economic costs of electricity supply interruptions – US and foreign experience: *Energy Economics*, v. 4, no. 3, p. 180–198.

- Sanpasertparnich, T., and Aroonwilas, A., 2009, Simulation and optimization of coal-fired power plants: *Energy Procedia*, v. 1, no. 1, p. 3851–3858.
- Santana, E.A., and Seabra, F., 1996, The role of coal-electric generation in the expansion of electricity systems in Brazil – a multicriteria analysis, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 391–396.
- Santhanam, C.J., Balasco, A.A., Bodek, I., Cooper, C.B., Humphrey, J.T., and Thacker, B., 1985, Full-scale field evaluation of waste disposal from coal-fired electric generating plants: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA 600/7-85/028, v. I–VI.
- Santhanam, C.J., Balasco, A.A., Bodek, I., Cooper, C.B., Humphrey, J.T., and Thacker, B., 1985, Project summary – full-scale field evaluation of waste disposal from coal-fired electric generating plants: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Air and Energy Engineering Research Laboratory, Report no. EPA/600/S7-85/028, 12 p.
- Santucci, M., Scavuzzo, J., and Hoffman, J., 2008, Some computer applications for combustion engineering with solid fuels, *in* Miller, B.G., and Tillman, D.A., eds., *Combustion Engineering Issues for Solid Fuel Systems*: Amsterdam, The Netherlands, Elsevier, p. 393–421.
- Sanyal, A., Livingston, W.R., Marsh, H., Skorupska, N.M., Field, D.J., and Edwards, I.A.S., 1991, Petrography of lignitic and bituminous coals – application to assess coal combustibility for power generation: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. GS-7361, p. 5.1–5.20.
- Saporoschenko, M., Hinckley, C.C., Smith, G.V., Twardowska, H., Shiley, R.H., Griffin, R.A., and Russell, S.J., 1980, Mössbauer spectroscopic studies of the mineralogical changes in coal as a function of cleaning, pyrolysis, combustion and coal conversion processes: *Fuel*, v. 59, no. 8, p. 567–574.
- Sappal, K.K., 2006, Macerals and trace elements of the selected Permian coal of India: Melbourne, Australian Earth Science Convention, p. 1–2.
- Sappey, A.D., Wilson, K.G., and Schlager, R.J., 1995, A continuous emissions monitor for total, elemental, and total speciated mercury: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 40, no. 4, p. 813–822, last accessed June 2010 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/40_4_CHI-CAGO_08-95_0818.pdf.
- Sapra, P.K., Singh, S., Prakash, S., and Arivazhagan, N., 2009, Performance of Al₂O₃-3%TiO₂ detonation gun coated ferritic steels in coal fired boiler: *International Journal of Surface Science and Engineering*, v. 3, no. 1-2, p. 145.
- Sarica, K., and Or, I., 2007, Efficiency assessment of Turkish power plants using data envelopment analysis: *Energy*, v. 32, no. 8, p. 1484–1499.
- Sathonsaowaphak, A., Chindaprasirt, P., and Pimraksa, K., 2009, Workability and strength of lignite bottom ash geopolymer mortar: *Journal of Hazardous Materials*, v. 168, no. 1, p. 44–50.
- Sato, K., and Sada, K., 1992, Effects of emissions from a coal-fired power plant on surface soil trace element concentrations: *Atmospheric Environment, Part A. – General topics*, v. 26, no. 2, p. 325–331.

- Satyanarayana Raju, M.V., Pollution status of soils near ash pond of a thermal power station: *Indian Journal of Environmental Health*, v. 35, no. 1, p. 9–14.
- Saxena, S.C., 1990, Devolatilization and combustion characteristics of coal particles: *Progress in Energy and Combustion Science*, v. 16, no. 1, p. 55–94.
- Say, N.P., 2006, Lignite-fired thermal power plants and SO₂ pollution in Turkey: *Energy Policy*, v. 34, no. 17, p. 2690–2701.
- Sayyaadi, H., and Sabzaligol, T., 2010, Comprehensive exergetic and economic comparison of PWR and hybrid fossil fuel-PWR power plants: *Energy*, v. 35, no. 7, p. 2953–2964.
- Scala, F., Chirone, R., and Lancia, A., 2008, In-duct removal of mercury from coal-fired power plant flue gas by activated carbon – assessment of entrained flow versus wall surface contributions: *Environmental Engineering Science*, v. 25, no. 10, p. 1423–1428.
- Schaefer, J.L., Ban, H., Saito, K., and Stencel, J.M., 1996, Pulverizer induced charge – comparison of separate utility pulverizer configurations, *in* Chiang, S.-H., ed., *Coal-Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh*, v. 2, p. 867–872.
- Schaeffer, J.J., 1988, Review of coal quality characteristics of potential utility fuel supply sources: *Journal of Coal Quality*, v. 7, no. 1, p. 19–22.
- Schager, P., Hall, B., and Lindqvist, O., 1994, The retention of gaseous mercury on flyashes, *in* Watras, C.J., and Huckabee, J.W., eds., *Mercury Pollution; Integration and Synthesis*: Boca Raton, Fla., U.S.A., Lewis Publishers, p. 621–628.
- Schiermeier, F.A., and Niemeyer, L.E., 1968, Large power plant effluent study (LAPPES), — v. 1. – Instrumentation, procedures, and data tabulations: National Air Pollution Control Administration Publication no. APTD 70-2, 410 p.
- Schild, V., and Stalcup, T., 1991. Western coal-fired boiler retrofit for emissions control and efficiency improvement, *in* American Society of Mechanical Engineers [ASME], eds., *International Power Generation Conference, October 6–10, 1991, San Diego, California, 7th Conference*: New York, N.Y., American Society of Mechanical Engineers [ASME] Paper 91-JPGC-FACT-7.
- Schmidt, E.W., Gieseke, J.A., and Allen, J.M., 1976, Size distribution of fine particulate emissions from a coal-fired power plant: *Atmospheric Environment*, v. 10, p. 1065–1069.
- Schmitz, J., 1994, Control of coal cost in transit and in stockpiles: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEAPER/15, 31 p.
- Schneider, C.G., 2004, Up in smoke – regulatory immortality for ‘Grandfathered’ power plants under the NSR Rule Changes: *EM*, p. 30–32.
- Schnell, R.C., Van Valin, C.C., and Pueschel, R.F., 1976, Atmospheric ice nuclei – no detectable effects from a coal-fired power plant plume: *Geophysical Research Letters*, v. 3, p. 657–660.
- Schönbucher, B., 1989, Reduction of nitrogen oxides from coal-fired power plants by using the SCR process – experiences in the Federal Republic of Germany with pilot and commercial scale deNO_x plants, *in* Eskinazi, D., and Linak, W.P., eds., *Symposium on Stationary Combustion Nitrogen Oxide Control, March 6–9, 1989, San Francisco, California, 5th Symposium*: Palo Alto, Calif., Electric Power Research Institute [EPRI], Report no. GS-6423, v. 2, p. 6A-1–6A-17.

- Schroeder, W.H., Dobson, M., Kane, D.M., and Johnson, N.D., 1987, Toxic trace elements associated with airborne particulate matter: a review: *Journal of the Air Pollution Control Association*, v. 37, no. 11, p. 1267–1285.
- Schubel, J.R., and Marcy, B.C., 1978, Power plant entrainment – A biological assessment: New York, N.Y., Academic, 271 p.
- Schulte, W., 1996, Flue gas cleaning with ammonia reduces SO_x and NO_x emissions, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1474–1479.
- Schulz, E.J., Engdahl, R.B., and Frankenberg, T.T., 1975, Submicron particles from a pulverized coal fired boiler: *Atmospheric Environment*, v. 9, no. 1, p. 111–119.
- Schumacher, B., 1988, Bisherige erfahrungen mit SCR-deNO_x-anlagen zur stickoxidminderung [Previous experience with SCR-deNO_x plants for nitrogen oxide reduction]: *EVT-Register*, v. 47, p. 27–38.
- Schure, M.R., Soltys, P.A., Natusch, D.F.S., and Mauney, T., 1985, Surface area and porosity of coal fly ash: *Environmental Science and Technology*, v. 19, no. 1, p. 82–86.
- Schwab, A.P., 1993, Extractable and plant concentrations of metals in amended coal ash, *in* Keefer, R.F., and Sajwan, K.S., eds., Trace elements in coal and coal combustion residues: Boca Raton, Fla., Lewis Publishers, p. 185–211.
- Schwitzgebel, K., Magee, R.A., Meserole, F.B., Oldham, R.G., Mann, R.M., Wilkin, G.E., and Thompson, C.M., 1975, Coal fired power plant trace element study; Station I; Station II; Station III: Denver, Colo., Environmental Protection Agency [EPA], Rocky Mountain-Prairie Region [Region VIII], 4 v. [v. II-IV under single cover].
- Schwitzgebel, K., Meserole, F.B., Oldham, R.G., Magee, R.A., Mesich, F.G., and Thoen, T., 1975, Trace element discharge from coal fired power plants, *in* International Conference on Heavy Metals in the Environment, Toronto, Ontario, 1st Conference: p. 533–551.
- Scientific Committee on Problems of the Environment (SCOPE) of the International Council of Scientific Unions (ICSU) in Collaboration with the United Nations Environment Programme, 1991, Sulphur isotope measurements relevant to power plant emissions in the northeastern United States, *in* Krouse, H.R., and Grinenko, V.A., eds., SCOPE 43, Stable Isotopes – Natural and Anthropogenic Sulphur in the Environment: Chichester, Sussex, England, Wiley, p. 331–343.
- Scientific Committee on Problems of the Environment (SCOPE) of the International Council of Scientific Unions (ICSU) in Collaboration with the United Nations Environment Programme, 1991, The isotopic composition and content of sulphur in soils of Kansk-Achinsk Fuel Power Generation Complex, *in* Krouse, H.R., and Grinenko, V.A., eds., SCOPE 43, Stable Isotopes – Natural and Anthropogenic Sulphur in the Environment: Chichester, Sussex, England, Wiley, p. 327–331.
- Scientific Committee on Problems of the Environment (SCOPE) of the International Council of Scientific Unions (ICSU) in Collaboration with the United Nations Environment Programme, 1991, 4.5 sulphur isotope compositions of fossil fuels, 4.5.1 – peat and lignite, *in* Krouse, H.R., and Grinenko, V.A., eds., SCOPE 43, Stable Isotopes – Natural and Anthropogenic Sulphur in the Environment: Chichester, Sussex, England, Wiley, p. 95–96.

- Scientific Committee on Problems of the Environment (SCOPE) of the International Council of Scientific Unions (ICSU) in Collaboration with the United Nations Environment Programme, 1991, 4.5 sulphur isotope compositions of fossil fuels, 4.5.2 – coal, *in* Krouse, H.R., and Grinenko, V.A., eds., SCOPE 43, Stable Isotopes – Natural and Anthropogenic Sulphur in the Environment: Chichester, Sussex, England, Wiley, p. 97–100.
- Scieszka, S.F., 1985, New concept for determining pulverizing properties of coal: *Fuel*, v. 64, no. 8, p. 1132–1142.
- Scott, D., 1995, Coal pulverisers – performance and safety: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/79, 83 p.
- Scott, D., 1999, Ash behaviour during combustion and gasification: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report CCC/24, 38 p.
- Scott, D., 2001, Improving the competitiveness of next generation coal-fired plants: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report CCC/52, 48 p.
- Scott, D., and Carpenter, A., 1996, Advanced power systems and coal quality: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/47, 99 p.
- Scott, D.H., 1991, Power station refurbishment – opportunities for coal: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/42, 58 p.
- Seames, W.S., 1983, An initial study of the fine fragmentation fly ash particle mode generated during pulverized coal combustion: *Fuel Processing Technology*, v. 81, no. 2, p. 109–125.
- Seames, W.S., Sooroshian, J., and Wendt, J.O.L., 2002, Assessing the solubility of inorganic compounds from size-segregated coal fly ash aerosol impactor samples: *Journal of Aerosol Science*, v. 33, p. 77–90.
- Seames, W.S., and Wendt, J.O.L., 2000, Partitioning of arsenic, selenium, and cadmium during the combustion of Pittsburgh and Illinois #6 coals in a self-sustained combustor: *Fuel Processing Technology*, v. 63, p. 179–196.
- Seames, W.S., and Wendt, J.O.L., 2000, The partitioning of arsenic during pulverised coal combustion: *Proceedings of the Combustion Institute*, v. 28, no. 2, p. 2305–2312.
- Seames, W.S., and Wendt, J.O.L., 2007, Regimes of association of arsenic and selenium during pulverized coal combustion: *Proceedings of the Combustion Institute*, v. 31, p. 2839–2846.
- Sear, L.K.A., 2009, Coal fired power station ash products and EU regulation: *Combustion and Gasification Products*, v. 1, p. 63–66.
- Seggiani, M., 1999, Empirical correlations of the ash fusion temperatures and temperatures of critical viscosity for coal and biomass ashes: *Fuel*, v. 78, p. 1121–1125.
- Seggiani, M., Bardi, A., and Vitolo, S., 2000, Prediction of fly-ash size distribution: A correlation between the char transition radius and coal properties: *Fuel*, v. 79, p. 999–1002.
- Seigneur, C., Behrens, G., and Roberson, R., 2000, Assessment of mercury emissions, transport, fate and cycling for the continental United States – model structure and evaluation: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1000522, variously paged.

- Seigneur, C., Constantinou, E., and Levin, L., 1996, Multipathway health risk assessment of power plant water discharges: *Water, Air, and Soil Pollution*, v. 90, p. 55–64.
- Seigneur, C., Karamchandani, P., Lohman, K., and Vijayaraghavan, K., 2001, Multiscale modeling of the atmospheric fate and transport of mercury: *Journal of Geophysical Research*, v. 106, no. D21, p. 27,795–27,809.
- Seigneur, C., Lohman, K., Pai, K., Mitchell, D., and Levin, L., 1999, Uncertainty analysis of regional mercury exposure: *Water, Air, and Soil Pollution*, v. 112, p. 151–162.
- Seigneur, C., Pai, P., Tombach, I., McDade, C., Saxena, P., and Mueller, P., 2000, Modeling of potential power plant plume impacts on Dallas-Fort Worth visibility: *Journal of the Air and Waste Management Association*, v. 50, no. 5, p. 835–848.
- Seigneur, C., Saxena, P., and Hudischewskyj, A.B., 1982, Formation and evolution of sulfate and nitrate aerosols in plumes: *The Science of the Environment*, v. 23, p. 283–292.
- Seigneur, C., Vijayaraghavan, K., Lohman, K., Karamchandani, P., and Scott, C., 2004, Global source attribution for mercury deposition in the United States: *Environmental Science and Technology*, v. 38, p. 555–569.
- Sekar, R.C., Parsons, J.E., Herzog, H.J., and Jacoby, H.D., 2007, Future carbon regulations and current investments in alternative coal-fired power plant technologies: *Energy Policy*, v. 35, no. 2, p. 1064–1074.
- Semenescu, A., Prisecaru, T., Prisecaru, M., and Ciobanu, C., 2009, Low cost NO_x reduction possibilities for coal fired big steam boilers: *Metallurgia International*, v. 14, special issue 7, p. 77.
- Sengupta, I., 2007, Regulation of suspended particulate matter (SPM) in Indian coal-based thermal power plants: a static approach: *Energy Economics*, v. 29, no. 3, p. 479–502.
- Senior, C., Bool, L., III., Huffman, G., Huggins, F., Shah, N., Sarofim, A., Olmez, I., and Zeng, T.A., 1997, A fundamental study of mercury partitioning in coal-fired power plant flue gas, *in* Air and Waste Management Association [A&WMA], eds., Air and Waste Management Association Annual Meeting and Exhibition, June 8–13, 1997, Toronto, Canada, 90th Annual Meeting: Pittsburgh, Pa., Air and Waste Management Association, Paper 97-WP72B.08, 16 p.
- Senior, C., Bustard, J., Durham, M., and Baldrey, K., 2002, Characterization of fly ash from full-scale demonstration of sorbent injection for mercury control on coal-fired power plants, *in* Erickson, T.A., ed., Mercury, trace elements and particulate matter, Proceedings of the Conference on Air Quality, September 9–12, 2002, Arlington, Virginia, 3rd Conference: Grand Forks, University of North Dakota, Energy and Environmental Research Center, p. 19–22 on CD-ROM.
- Senior, C.L., 2000, Development of a mechanistic model for prediction of emission of trace elements from coal-fired power plants: *Fuel Processing Technology*, v. 63, p. 75–77.
- Senior, C.L., 2004, Mercury transformation, *in* Tutorial on Mercury Evolution and Control, International Technical Conference on Coal Utilization and Fuel Systems, April 18–22, 2004, Clearwater, Florida, 29th Conference: Gaithersburg, Md., Coal Technology Association, 21st section, 20 p.

- Senior, C.L., 2004, Oxidation of mercury across SCR catalysts in coal-fired power plants burning low rank fuels: final report to U.S. Dept. Energy [DOE] for Cooperative Agreement no. DE-FC26-03NT41728, for period February 19, 2003–September 30, 2004, Salt Lake City, Ut., Reaction Engineering International, 14 p.
- Senior, C.L., 2005, Oxidation of mercury across selective catalyst reduction catalysts in coal-fired power plant: *Journal of the Air and Waste Management Association*, v. 56, p. 23–31.
- Senior, C.L. and Afonso, R.F., 2001, Validation of fundamentally based model for mercury emissions from coal-fired power plants using ICR data, *in* Air and Waste Management Association [A&WMA], eds., Air and Waste Management Association Annual Meeting and Exhibition, June 24–28, 2001, Orlando, Florida, 94th Annual Meeting: Pittsburgh, Pa., Air and Waste Management Association, Paper no. 259.
- Senior, C.L., Boni, A.A., Moniz, G.A., Srinivasachar, S., Johnson, S.A., Hurley, J., and Strobel, T., 1994, Ash corrosion studies of ceramic materials for advanced coal-fired power generation cycles, *in* Williamson, J., and Wigley, F., eds., *The Impact of Ash Deposition on Coal Fired Plants*, Proceedings of the Engineering Foundation Conference, June 20–25, 1993, Solihull, England: Washington, D.C., Taylor and Francis, p. 767–778.
- Senior, C.L., Bool, L.E., Huffman, G.P., and Huggins, F.E., 1996, A fundamental investigation of toxic substances from coal combustion: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 41, no. 3, p. 786–790, last accessed March 2010 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/41_3_ORLANDO_08-96_0786.pdf.
- Senior, C.L., Bool, L.E.I., Srinivasachar, S., Pease, B.R., and Porle, K., 2000, Pilot scale study of trace element vaporization and condensation during combustion of a pulverized sub-bituminous coal: *Fuel Processing Technology*, v. 63, no. 2, p. 149–165.
- Senior, C.L., Bustard, C.J., Durham, H., Baldrey, K., and Michaud, D., 2004, Characterization of fly ash from full-scale demonstration of sorbent injection for mercury control on coal-fired power plants: *Fuel Processing Technology*, v. 85, p. 601–612.
- Senior, C.L., Helble, J.J., and Sarofim, A.F., 2000, Emissions of mercury, trace elements, and fine particles from stationary combustion sources: *Fuel Processing Technology*, v. 65, p. 263–288.
- Senior, C.L., Huggins, F., Huffman, G.P., Shah, N., Yap, N., Wendt, J.O.L., Seames, W., Ames, M.R., Sarofim, A.F., Swenson, S., Lighty, J.S., Kolker, A., Finkleman, R.B., Palmer, C.A., Mroczkowski, S.J., Helble, J.J., Mamani-Paco, R., Sterling, R., Dunham, G., and Miller, S., 2001, Toxic substances from coal combustion – a comprehensive assessment, final Report: U.S. Department of Energy, Federal Energy Technology Center Report, PSI-1283/ TR-1745, variously paged.
- Senior, C.L., and Johnson, S.A., 2005, Impact of carbon-in-ash on mercury removal across particulate control devices in coal-fired power plants: *Energy and Fuels*, v. 19, no. 3, p. 859–863.
- Senior, C.L., Lignell, D.O., Sarofim, A.F., and Mehta, A., 2006, Modeling arsenic partitioning in coal-fired power plants: *Combustion and Flame*, v. 147, p. 209–221.
- Senior, C.L., Morency, J.R., Huffman, G.P., Huggins, F.E., Shah, N., Peterson, T., Shadman, F., and Wu, B., 1999, Prediction of mercury speciation in coal-fired power plant flue gas – a fundamental study, *in* Chu, P., and Levin, L., eds., *Proceedings International Conference on Managing Hazardous Air Pollutants*, November 12–14, 1997, Washington, D.C., 4th Conference: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-111024, p. 3-13–13-30.

- Senior, C.L., Panagiotou, T., Sarofim, A.F., and Helble, J.J., 2000, Formation of ultra-fine particulate matter from pulverized coal combustion: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 45, no. 1, p. 19–23, last accessed March 2010 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/45_1_SAN%20FRAN-CISCO_03-00_0019.pdf.
- Senior, C.L., Sarofim, A.F., Zeng, T., Helble, J.J., and Mamani-Paco, R., 2000, Gas-phase transformations of mercury in coal-fired power plants: Fuel Processing Technology, v. 63, no. 2-3, p. 197–213.
- Senior, C.L., and Srinivasachar, S., 1995, Viscosity of ash particles in combustion systems for prediction of particle sticking: Energy and Fuels, v. 9, no. 2, p. 277–283.
- Sentorun, C., Dürüs, B., and Küçükbayrak, S., 1996, Influence of the mineral matter content on the rate of heat release from Turkish lignites: Journal of Thermal Analysis, v. 47, no. 3, p. 821–831.
- SENES Consultants Ltd., 2002, Evaluation of technologies for reducing mercury emissions from the electric power generations sector: Winnipeg, Manitoba, SENES Consultants Ltd. and Canadian Council of Ministers of the Environment, 1 vol., variously paged.
- SENES Consultants Limited, and Canadian Council of Ministers of the Environment, 2003, The Canadian Uniform Data Collection Program (UDCP) for mercury from coal-fired electric power generation – a guidance document: Winnipeg, Manitoba, Canadian Council of Ministers of the Environment, 1 vol., variously paged.
- Serre, S., and Silcox, G., 2000, Adsorption of elemental mercury on the residual carbon in coal fly ash: Industrial and Engineering Chemistry Research, v. 39, no. 6, p. 1723–1730.
- Serre, S.D., Gullett, B.K., and Ghorishi, B., 2001, Entrained-flow adsorption of mercury using activated carbon: Journal of the Air and Waste Management Association, v. 51, p. 733–741.
- Services, D.E.C., 1983, Feasibility of recirculating bottom ash transport water in coal-fuelled power generating stations: Canadian Environmental Protection Service Report EPS 3-WP-83-1, (09B DEA), 167 p.
- Setzler-Hamilton, E.M., 1979, Chalk Point Steam Electric Station studies – ichthyoplankton population studies, 1978 data Report: Solomon, University of Maryland Center for Environmental and Estuarine Studies, Chesapeake Biological Lab., 120 p.
- Shah, P., Strezov, V., and Nelson, P., 2007, Speciation and modelling of toxic trace elements in Australian coal fired power stations [abs.], in Engineers Australia, eds., Chemeca 2007, Academia and industry, Strengthening the profession, Australasian Chemical Engineering Conference, September 23–26, 2007, Melbourne, Victoria, 35th Conference: Canberra, Engineers Australia, last accessed March 2010 at <http://hdl.handle.net/1959.14/26174>.
- Shah, P., Strezov, V., and Nelson, P.F., 2009, X-ray absorption near edge structure spectrometry study of nickel and lead speciation in coals and coal combustion products: Energy and Fuels, v. 23, no. 3, p. 1518–1525.
- Shah, P., Strezov, V., Prince, K., and Nelson, P.F., 2008, Speciation of As, Cr, Se, and Hg under coal fired power station conditions: Fuel, v. 87, no. 10-11, p. 1859–1869.
- Shah, P., Strezov, V., Stevanov, C., and Nelson, P.F., 2007, Speciation of arsenic and selenium in coal combustion products: Energy and Fuels, v. 21, no. 2, p. 506–512.

- Shampine, R.W., Cohen, R.D., Bayazitoglu, Y., and Anderson, C.F., 1995, Effect of agglomeration on pulverized-coal combustion: *Combustion and Flame*, v. 101, no. 1-2, p. 185–191.
- Shang, Q., and Zhang, J., 2009, Simulation of gas-particle turbulent combustion in a pulverized coal-fired swirl combustor: *Fuel*, v. 88, p. 31–39.
- Shannon, R.H., 1982, *Handbook of coal-based electric power generation, the technology, utilization, application, and economics of coal for generating electric power*: Park Ridge, N.J., Noyes Publications, 372 p.
- Shaobin W., 2009, Microporous and mesoporous materials for CO₂ capture from flue gases, *in* Naylor, T.B., ed., *Flue Gases: Research, Technology and Economics*: New York, N.Y., Nova Science, p. 235–262.
- Sharifi, R., Pisupati, S.V., and Scaroni, A.W., 1996, The changing particle size distribution in micronized coal and micronized coal water mixture flames – its influence on heat transfer, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference*: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1303–1308.
- Sharma, A.P., and Tripathi, B.D., 2008, Biochemical responses in tree foliage exposed to coal-fired power plant emission in seasonally dry tropical environment: *Environmental Monitoring and Assessment*, v. 158, no. 1-4, p. 197–212.
- Sharma, A.P., and Tripathy, B.D., 2008, Magnetic mapping of fly-ash pollution and heavy metals from soil samples around a point source in a dry tropical environment: *Environmental Monitoring and Assessment*, v. 138, p. 31–39.
- Sharma, A.P., and Tripathi, B.D., 2009, Assessment of atmospheric PAHs profile through *Calotropis gigantea* R.Br. leaves in the vicinity of an Indian coal-fired power plant: *Environmental Monitoring and Assessment*, v. 149, no. 1-4, p. 477–482.
- Sharma, A.P., and Tripathy, B.D., 2009, Assessment of total suspended particulate matter—bound polychlorinated biphenyls in ambient air of a seasonally dry tropical urban—industrial area: *Ambio*, v. 38, no. 3, p. 174–175.
- Sharma, R., and Pervez, S., 2004, A case study of spatial variation and enrichment of selected elements in ambient particulate matter around a large coal-fired power station in central India: *Environmental Geochemistry and Health*, v. 26, no. 3-4, p. 373–381.
- Sharma, R., Pervez, Y., and Pervez, S., 2005, Seasonal evaluation and spatial variability of suspended particulate matter in the vicinity of a large coal-fired power station in India – a case study: *Environmental Monitoring and Assessment*, v. 102, no. 1-3, p. 1–13.
- Sharonova, O.M., Anshits, N.N., Yumashev, V.V., and Anshits, A.G., 2008, Composition and morphology of char particles of fly ashes from industrial burning of high-ash coals with different reactivity: *Fuel*, v. 87, p. 1989–1997.
- Sheetz, B.E., 2004, Chemistry and mineralogy of coal fly ash – basis for beneficial use, *in* Vories, Kimery C., ed., *Proceedings, State Regulation of Coal Combustion By-Product Placement at Mine Sites: A Technical Interactive Forum, May 4–6, 2004, Harrisburg, Pennsylvania*: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, Mid-Continent Region, and Alton, Ill., and Carbondale, Southern Illinois University, Coal Research Center, p. 35–42.

- Shekar, R.M., and Venkataraman, C., 2002, Inventory of aerosol and sulphur dioxide emissions from India: I-Fossil fuel combustion: *Atmospheric Environment*, v. 36, no. 4, p. 677–697.
- Shell, K.J., and Anderson-Carnahan, L., 1995, A multi-media approach to permitting mercury releases from coal-fired power plants: *Water, Air, and Soil Pollution*, v. 80, no. 1-4, p. 1161–1170.
- Shendrikar, A.D. and Ensor, D.S., 1986, Critical review: Measurement of mercury combustion aerosols in emissions from stationary sources: *Waste Management and Research*, v. 4, no. 1, p. 75–93.
- Shendrikar, A.D., Ensor, D.S., Cowen, S.J., Woffinden, G.J., and McElroy, M.W., 1983, Size-dependent penetration of trace elements through a utility baghouse: *Atmospheric Environment*, v. 17, no. 8, p. 1411–1421.
- Sheng, C., and Li, Y., 2008, Experimental study of ash formation during pulverized coal combustion in O₂/CO₂ mixtures: *Fuel*, v. 87, no. 7, p. 1297–1305.
- Sheng, C., Moghtaderi, B., Gupta, R., and Wall, T.F., 2004, A computational fluid dynamics (CFD) based study of the combustion characteristics of coal blends in pulverised coal-fired furnaces: *Fuel*, v. 83, p. 1543–1552.
- Sheng, C., Xu, M., Zhang, J., and Xu, Y., 1999, Comparison of sulphur retention by coal ash in different types of coal combustors: *Fuel Processing Technology*, v. 64, p. 1–12.
- Sheng, J., 2001, Vitrification of borate waste from nuclear power plant using coal fly ash – I. – glass formulation development: *Fuel*, v. 80, p. 1365–1369.
- Sheridan, R.P., 1979, Impact of emissions from coal-fired electricity generating facilities on N₂-fixing lichens: *Bryologist*, v. 82, p. 54–58.
- Shi, B., Sengupta, A., 1995, Leaching behavior of fly ash piles: the phenomenon of delayed rise in toxic concentrations: *Journal of Environmental Systems*, v. 24, p. 87–93.
- Shibaoka, M., Thomas, C.G., and Gawronski, E., 1989, Microscopic investigations of combustion residues of inertinite rich coals from laboratory and power station samples, *in* Thomas, Christopher G., and Strachan, Michael G., eds., *Proceedings, Macerals '89 Symposium, the affect of macerals on the utilisation of coal and the signifance in petroleum exploration*, May 10–11, 1989, North Ryde, New South Wales: North Ryde, N.S.W., Commonwealth Scientific and Industrial Research Organisation [CSIRO], p. 3-1–3-18.
- Shida, H., Adacchi, T., Karagasaki, M., Kuminoto, T., Hisatome, M., and Kobayashi, Y., 1984, Development of three-dimensional numerical analysis method of boiler furnace characteristics: *Technical Review*, p. 18–23.
- Shifeng D., Lei Z., Suping P., Chen-Lin C., Xibo W., Yong Z., Dan L., and Yingying S., 2010, Abundances and distribution of minerals and elements in high-alumina coal fly ash from the Jungar Power Plant, Inner Mongolia, China: *International Journal of Coal Geology*, v. 81, no. 4, p. 320–332.
- Shigeta, J.-I., Hamao, Y., Aoki, H., and Kajigaya, I., 1987, Development of a coal ash corrosivity index for high temperature corrosion: *Journal of Engineering Materials and Technology*, v. 109, no. 4, p. 299–305.
- Showman, R.E., 1975, Lichens as indicators of air quality around a coal-fired power generating plant: *The Bryologist*, v. 78, no. 1, p. 1–6.

- Shuckerow, J.I., Steciak, J.A., Wise, D.L., Levendis, Y.A., Simons, G.A., Gresser, J.D. Gutoff, E.B., and Livengood, C.D., 1996, Control of air toxin particulate and vapor emissions after coal combustion utilizing calcium magnesium acetate: *Resources, Conservation, and Recycling*, v. 16, no. 1-4, p. 15–69.
- Shum, Y.-S., 1974, Atmospheric trace elements and their application in tracing air pollution: Oregon State University, Ph.D. thesis, 189 p.
- Si, F., Romero, C.E., Yao, Z., Schuster, E., Xu, Z., Morey, R.L., and Liebowitz, B.N., 2009, Optimization of coal-fired boiler SCRs based on modified support vector machine models and genetic algorithms: *Fuel*, v. 88, no. 5, p. 806–816.
- Sievering, H., Cooke, J., and Pueschel, R., 1981, Importance of deposition velocity for sulfur gas to sulfate particle transformation rates at the Four Corners Power Plant: *Atmospheric Environment*, v. 15, no. 12, p. 2593–2596.
- Sikka, R., and Kansal, B.D., 1995, Effect of fly-ash application on yield and nutrient composition of rice, wheat, and on pH and available nutrient status of soils: *Biore-source Technology*, v. 51, nos. 2-3, p. 199–203.
- Sillman, S., 2000, Ozone production efficiency and loss of NO_x in power plant plumes – photochemical model and interpretation of measurements in Tennessee: *Journal of Geophysical Research*, v. 105, p. 9189–9202.
- Sillman, S., Logan, J.A., and Wofsy, S.C., 1990, A regional scale model for ozone in the United States with subgrid representation of urban and power plant plumes: *Journal of Geophysical Research*, v. 95, no. D5, p. 5731–5748.
- Silue, M., 1999, Numerical modeling of non-linear chemical reactions in power plant plumes: Brunel University, Ph.D. thesis, 1 vol.
- Silvertsen, B., and Irwin, J.S., 1985, Data summary of 1985 SF₆ tracer experiments at Andorra (Teruel) Power Plant: Norks Institut for Luftforskning [NILU], 73 p.
- Simic, R.D., Kecojevic, V., and Kristic, V.R., 1996, Possibility of securing uniform coal grade for thermal power generating plants by mining and storage process control, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 820–825.
- Simon, E., Lasthous, D., and Schuster, H., 1995, Reduction of NO_x emissions in the combustion of problematic bituminous coals: *VGB Kraftwerkstechnik*, v. 75 [English Issue], no. 8, p. 646–650.
- Simons, G.A., Oehr, K.H., Zhou, J., Pisupati, S.V., Wójtowicz, M.A., and Basilakis, R., 1996, Simultaneous NO_x/SO_x control using BiolimeTM in PCC and CFBC, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1400–1405.
- Simons, G.A., Place, W.J., Oehr, K.H., Zhou, J., Pisupati, S.V., Wójtowicz, M.A., and Basilakis, R., 1997, Simultaneous NO_x/SO_x control in coal fired systems using BiolimeTM, *in* Sakkestad, B.A., ed., *Proceedings of the International Technical Conference on Coal Utilization and Fuel Systems*, March 16–19, 1997, Clearwater, Fla., 22nd Conference: Washington, D.C., Coal and Slurry Technology Association, 1 vol.
- Simopoulos, S.E., and Angelopoulos, M.G., 1987, Natural radioactivity releases from lignite power plants in Greece: *Journal of Environmental Radioactivity*, v. 5, p. 379–389.

- Simsiman, G.V., Chesters, G., and Andren, A.W., 1987, Effect of ash disposal ponds on groundwater quality at a coal-fired power plant: *Water Research*, v. 21, no. 4, p. 417–426.
- Sinclair, P.C., 1984, Power plant plume NO_x reactions and the reaction zone concept: *Archives for Meteorology, Geophysics, and Bioclimatology, Series B*, v. 33, p. 301–329.
- Singer, J.G., ed., 1981, *Combustion, Fossil Power Systems – A Reference Book on Fuel Burning and Steam Generation* (3rd ed.): Windsor, Conn., Combustion Engineering, 1 v., variously paged.
- Singer, J.G., 1989, Pulverizers, *Standard Handbook of Power-Plant Engineering*: New York, N.Y., McGraw Hill, p. 1.157–151.182.
- Singer, J.G., 1989, Steam Fundamentals, *Standard Handbook of Power-Plant Engineering*: New York, N.Y., McGraw Hill, p. 1.3–1.9.
- Singer, J.G., ed., 1991, *Combustion, Fossil Power - A Reference Book on Fuel Burning and Steam Generation* (4th ed.): Windsor, Connecticut, Combustion Engineering, 1 v., variously paged.
- Singh, D., Croiset, E., Douglas, P.L., and Douglas, M.A., 2003, Economics of CO₂ capture from a coal-fired power plant — a sensitivity analysis: *Greenhouse Gas Control Technologies - 6th International Conference*, 2003, p. 1735–1738.
- Singh, G., Gupta, S.K., Kumar, R., and Sunderarajan, M., 2007, Dispersion modeling of leachates from thermal power plants: *Journal of Environmental Engineering (American Society of Civil Engineers [ASCE])*, v. 133, no. 12, p. 1088–1097.
- Singh, G., Gupta, S.K., Kumar, R., and Sunderarajan, M., 2007, Mathematical modeling of leachates from ash ponds of thermal power plants: *Environmental Monitoring and Assessment*, v. 130, p. 173–185.
- Singh, G., Kumar, R., and Kumar, P., 2007, Assessment of tract elements leaching of coal combustion residues from Bokaro Thermal Power Station: *Journal of Environmental Science and Engineering*, v. 49, no. 1, p. 77–86.
- Singh, J., Agrawal, M., and Narayan, D., 1994, Effect of power plant emissions on plant community structure: *Ecotoxicology*, v. 3, p. 110–122.
- Singh, J., Agrawal, M., and Narayan, D., 1995, Changes in soil characteristics around coal-fired power plants: *Environment International*, v. 21, no. 1, p. 93–102.
- Singh, S., and Singh, J., 2005, Radon monitoring in a thermal power plant: *Radiation Measurements*, v. 40, p. 654–656.
- Sjostrom, S., 2008, Evaluation of sorbent injection for mercury control: ADA-ES, Inc. 42307R27, 68 p.
- Sjostrom, S., Bustard, J., Durham, M., and Chang, R., 2002, Mercury removal trends and options for coal-fired power plants with full-scale ESPs and fabric filters, *in Proceedings of the Annual International Pittsburgh Coal Conference*, September 23–27, 2002, Pittsburgh, Pennsylvania, 19th Conference: Pittsburgh, Pa., Pittsburgh Coal Conference, 1 CD-ROM.
- Sjostrom, S., Ebner, T., Ley, T., Slye, R., Richardson, C., Machalek, T., Richardson, M., and Chang, R., 2002, Assessing sorbents for mercury control in coal-combustion flue gas: *Journal of the Air and Waste Management Association*, v. 52, no. 8, p. 902–911.

- Sjostrom, S., Ebner, T., Slye, R., Chang, R., Strohfus, M., Pelerine, J., and Smokey, S., 2002, Full-scale evaluation of mercury control at Great River Energy's Stanton Generating Station using injected sorbents and a spray dryer/baghouse, *in* Erickson, T.A., ed., Mercury, Trace elements, and Particulate matter, Proceedings, Conference on Air Quality, September 9–12, 2002, Arlington, Virginia, 3rd Conference: Grand Forks, University of North Dakota, Energy and Environmental Research Center, 1 CD-ROM, variously paged.
- Skea, J.F., and Rubin E.S., Optimization model of coal beneficiation plants for SO₂ emissions control: *Journal of the Air Pollution Control Association*, v. 38, no. 10., p. 1281–1288.
- Skhonde, M.P., Matjie, R.H., Bunt, J.R., Strydom, A.C., and Schobert, H., 2009, Sulfur behavior in the Sasol-Lurgi fixed-bed dry-bottom gasification process: *Energy and Fuels*, v. 23, p. 229–235.
- Skodras, G., Grammelis, P., Prokopidou, M., Kakaras, E., and Sakellariopoulos, G., 2009, Chemical, leaching and toxicity characteristics of CFB combustion residues: *Fuel*, v. 88, p. 1201–1209.
- Skorupska, N.M., 1993, Coal specifications – impact on power station performance: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/52, 120 p.
- Skorupska, N.M., and Marsh, H., 1989, The importance of petrographic characterization of coal for combustion processes, *in* Institute of Energy, eds., *Applied energy research*, Proceedings of the Institute of Energy Conference, September 5–7, 1989, Swansea, United Kingdom: Bristol, U.K., A. Hilger, p. 161–181.
- Skrifvars, B.-J., Backman, R., and Hupa, M., 1996, Ash chemistry and sintering: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 41, no. 2, p. 640–646, last accessed June 2010 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/41_2_NEW%20ORLEANS_03-96_0640.pdf.
- Slack, A.V., Falkenberry, H.L., and Harrington, R.E., 1972, Sulfur oxide removal from waste gases: lime-limestone scrubbing technology: *Journal of the Air Pollution Control Association*, v. 22, no. 3, p. 159–166.
- Sligar, J., 1985, Coal pulverizing mill section, an intensive course on the characterization of steaming coals; May 20–22, 1985, Newcastle, New South Wales: Newcastle, University of Newcastle, Institute of Coal Research, p. 10.11–10.23.
- Sliger, R.N., 2001, Development of a chemical kinetic model for the homogeneous oxidation of mercury by chlorine species: a tool for mercury emissions control: University of Washington, Ph.D. thesis, 123 p.
- Sloss, L., 1995, Mercury emissions and effects – the role of coal: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEAPER/19, 39 p.
- Sloss, L., 1996, Trends in NO_x emissions from coal utilization: London, United Kingdom, International Energy Agency [IEA] Coal Research, 49 p.
- Sloss, L., 1998, Sampling and analysis of PM₁₀/PM_{2.5}: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACCC/09, 38 p.
- Sloss, L., 1999, Trends in the use of coal ash: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEA-CCC--22, 64 p.

- Sloss, L., 2002, Mercury – emissions and control: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report CCC/58, 43 p.
- Sloss, L., 2002, Non-CO₂ greenhouse gases – emissions and control from coal: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report CCC/62, 51 p.
- Sloss, L., and Davidson, R., 2001, Rapid analysis of trace elements in coal utilisation: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report CCC/46, 48 p.
- Sloss, L., and Gardner, C., 1995, Sampling and analysis of trace emissions from coal-fired power stations: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/77, 74 p.
- Sloss, L., and Smith, I., 2000, Trace element emissions: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report CCC/34, 83 p.
- Sloss, L.L., 1992, Nitrogen oxides control technology fact book: Park Ridge, N.J., Noyes Data Corporation, 635 p.
- Sloss, L.L., 1995, Trace emissions from coal combustion: measurement and control: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 40, no. 4, p. 793–797, last accessed June 2010 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/40_4_CHICAGO_08-95_0793.pdf.
- Sloss, L.L., 1996, Residues from advanced coal-use technologies: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEAPER/30, 40 p.
- Sloss, L.L., 1997, Continuous emissions monitoring for coal-fired power stations: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/97, 44 p.
- Sloss, L.L., 2002, Trace elements - controlling emissions from coal combustion: International Journal of Environment and Pollution, v. 17, no. 1-2, p. 110–125.
- Sloss, L.L., 2009, Impact of emissions legislation on coal-fired power plants: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACCC/145, 51 p.
- Sloss, L.L., and Gardner, C.A., 1995, Sampling and analysis of trace emissions from coal-fired power stations: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/77, 74 p.
- Sloss, L.L., and Smith, I.M., 1993, Organic compounds from coal utilization: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/63, 69 p.
- Sloss, L.L., Smith, I.M., and Adams, D.M.B., 1996, Pulverised coal ash – requirements for utilisation: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/88, 88 p.
- Small, J.A., 1976, An elemental and morphological characterization of the emission from the Dickerson and Chalk Point coal-fired power plants: College Park, University of Maryland, Ph.D. thesis, 2 vol.
- Small, J.A., and Zoller, W.H., 1977, Single-particle analysis of the ash from the Dickerson coal-fired power plant: [based on Materials Research Symposium, September 20, 1976, Gaithersburg, Maryland.], U.S. Department of Commerce, National Bureau of Standards, p. 651–658.

- Small, R.D., 1980, The trace element chemistry of coal during combustion and the emissions from coal-fired power plants: *Progress in Energy Combustion Science*, v. 6, no. 1, p. 53–119.
- Small, R.D., Campbell, J.A., and Nielson, K.K., 1979, Characterization and formation of submicron particles in coal-fired power plants: *Atmospheric Environment*, v. 13, no. 5, p. 607–617.
- Smalley, J., and Bloomer, R.N., 1974, Small mass spectrometers applied to large power plants: *Vacuum*, v. 24, no. 7, p. 295–299.
- Smirniotis, P.G., 2005, Development of superior sorbents for separation of CO₂ from flue gas at a wide temperature range during coal combustion: Cincinnati, University of Cincinnati Chemical and Materials Engineering Department, p. 1–29, last accessed September 2009 at <http://www.osti.gov/servlets/purl/841008-v4kzF5/native/>.
- Smith, B.W., 1973, Analysis of the location of coal-fired power plants in the eastern United States: *Economic Geography*, v. 49, no. 3, p. 243–250.
- Smith, D.H., Grimm, U., Haddad, G.J., VanOsdol, J., and Ferer, M.V., 1996, Progress in pressurized fluidized bed combustion (PFBC) filter cakes and filter cleaning, in Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1150.
- Smith, D.J., 1991, Integrated control systems: the next step: *Power Engineering*, v. 95, no. 9, p. 17–21.
- Smith, I.M., 1987, Trace elements from coal combustion: emissions: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEAR/01, 87 p.
- Smith, I.M., 1988, CO₂ and climatic change: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/07, 52 p.
- Smith, I.M., and Rousaki, K., 2002, Prospects for co-utilisation of coal with other fuels - GHG emissions reduction: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report CCC/60, 63 p.
- Smith, I.M., and Thambimuthu, K., 1991, Greenhouse gases, abatement and control – the role of coal: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/39, 88 p.
- Smith, I.W., 1982, The combustion rates of coal chars, in Combustion Institute, eds., *Symposium (International) on Combustion*, August 8–13, Haifa, Israel, 19th Symposium: Pittsburgh, Pa., Combustion Institute, p. 1045–1065.
- Smith, J.D., Spence, T.T., Smith, P.J., Blackham, A.U., and Smoot, L.D., 1988, Effects of coal quality on utility furnace performance: *Fuel*, v. 67, p. 27–35.
- Smith, J.W., and Bates, B.D., 1974, The distribution and isotopic composition of sulfur in coal: *Geochemica et Cosmochemica Acta*, v. 38, p. 121–133.
- Smith, J.W., Gould, K.W., and Rigby, D., 1982, The stable isotope geochemistry of Australian Coals: *Organic Geochemistry*, v. 3, p. 111–131.
- Smith, K.Q., 1984, The disposal and utilization of coal ash wastes: ash pond modification project, James River Power Plant, Springfield Missouri: Rolla, University of Missouri, Master of Science thesis, 63 p.

- Smith, K.R., Veranth, J.M., Lightly, J.S., and Aust, A.E., 1998, Mobilization of iron from coal fly ash was dependent upon the particle size and the source of coal: *Chemical Research in Toxicology*, v. 11, no. 12, p. 1494–1500.
- Smith, P.J., Davies, P.R., and Jamaluddin, A.S., 1991, Coupling fireside deposition with computational combustion predictions: Palo Alto, Calif., Electric Power Research Institute [EPRI], Report no. GS-7361, p. 112.119–112.140.
- Smith, P.J., and Smoot, L.D., 1987, Detailed model for practical pulverized coal furnaces and gasifiers: U.S. Department of Energy, Morgantown Energy Technology Center, DOE/METC-88/6084-vol 1, p. 62–71.
- Smith, R.D., 1980, The trace element chemistry of coal during combustion and the emissions from coal-fired plants: *Progress in Energy and Combustion Science*, v. 6, p. 53–119.
- Smith, R.D., Campbell, J.A., and Nielson, K.K., 1978, Mechanisms for trace element enrichment in fly ash during coal combustion: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 23, no. 1, p. 196–205, last accessed April 2010 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/23_1_ANAHEIM_03-78_0196.pdf.
- Smith, R.D., Campbell, J.C., and Nielson, K.K., 1979, Characterization and formation of submicron particles in coal-fired plants: *Atmospheric Environment*, v. 13, p. 607–617.
- Smith, R.D., Campbell, J.A., and Nielson, K.K., 1979, Concentration dependence upon particle size of volatilized elements in fly ash: *Environmental Science and Technology*, v. 13, no. 5, p. 553–558.
- Smith, S.R., 1988, Tennessee Valley Authority's experience with switching to improved quality coal: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-5713, p. 3.1–3.23.
- Smith, T.B., Blumenthal, D.L., Anderson, J.A., and Vanderpol, A.H., 1978, Transport of SO₂ in power plant plumes: *Atmospheric Environment*, v. 12, no. 1-3, p. 605–611.
- Smolik, J., Schwarz, J., Vesely, V., Sikorova, I., Kucera, J., and Havranek, V., 2000, Influence of calcareous sorbents on particulate emissions from fluidized bed combustion of lignite: *Aerosol Science and Technology*, v. 33, no. 6, p. 544–556.
- Smoot, L.D., 1984, Modeling of coal-combustion processes: *Progress in Energy and Combustion Science*, v. 10, no. 2, p. 229–272.
- Snyder, T.R., and Pontius, D.H., 1996, Particle characteristics and high-temperature filtration, in Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 116–121.
- Soares, A.O., Gonçalves, A., Silva, R.N., and Lemos, J.M., 1997, A methodology for impact evaluation of alternative control strategies in a large-scale power plant: *Control Engineering Practice*, v. 5, no. 3, p. 325–335.
- Sočo, E., and Kalembkiewicz, J., 2009, Investigations on Cr mobility from coal fly ash: *Fuel*, v. 88, p. 1513–1519.
- Soholt, L.F., 1981, Coal combustion waste manual – evaluating impacts to fish and wildlife: Kearneysville, West Virginia, U.S. Fish and Wildlife Service, Office of Biological Services, Eastern Energy and Land Use Team, Report FWS/OBS-81/05, 151 p.

- Sokol, E.V., Kalugin, V.M., Nigmatulina, E.N., Volkova, N.I., Frenkel, A.E., and Maksimova, N.V., 2002, Ferrospheres from fly ashes of Chelyabinsk coals: chemical composition, morphology and formation conditions: *Fuel*, v. 81, p. 867–876.
- Solari, J.A., Fiedler, H., and Schneider, C.L., 1989, Modelling of the distribution of trace elements in coal, *Fuel*, v. 68, no. 4, p. 536–539.
- Sommerer, D., 1977, Magnesia FGD process testing on a coal-fired power plant: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Office of Energy, Minerals and Industry, Industrial Environmental Research Laboratory, Report no. EPA-600/7-77-165, 257 p.
- Sondreal, E.A., Jones, M.L., and Groenewold, G.H., 2001, Tides and trends in the world's electric power industry: *The Electricity Journal*, v. 14, no. 1, p. 61–79.
- Sondreal, E.A., Kube, W.R., and Elder, J.L., 1968, Analysis of the northern Great Plains Province lignites and their ash: a study of variability: U.S. Department of the Interior, Bureau of Mines Report of Investigations RI 7158, 94 p.
- Sondreal, E.A., Selle, S.J., Tufte, P.H., Menze, V., and Laning, V.R., 1977, Correlation of fireside boiler fouling with North Dakota lignite ash characteristics and power plant operating conditions, in Illinois Institute of Technology and Iowa State University, eds., *Proceedings, American Power Conference Annual Meeting, April 18–20, 1977, Chicago, Illinois, 39th Annual Meeting*: Chicago, Illinois Institute of Technology, 1 v., p. 448–461.
- Song, Y.-H., 1987, Fate of fuel nitrogen during pulverized coal combustion: Cambridge, Massachusetts Institute of Technology, Department of Chemical Engineering, Sci.D. thesis, 316 p.
- Sorge, J.N., 1996, GNOCIS - A tool for continuous combustion optimization of utility boilers, in Chiang, S.-H., ed., *Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference*: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1337.
- Sorini, S.S., 1996, Leaching tests: Commonly used methods, examples of applications to coal combustion by-products, and needs for the next generation, in Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., *Coal Combustion By-Products Associated with Coal Mining—Interactive Forum*, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 3–11.
- Soud, H., 1994, FGD installations on coal-fired plants (2nd ed.): London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/71, 166 p.
- Soud, H., 1997, Particulate control handbook for coal-fired plants: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/93, 201 p.
- Soud, H.N., 1997, Southeast Asia – air pollution control and coal-fired power generation: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEAPER/39, 48 p.
- Soud, H.N., and Wu, Z., 1998, East Asia – air pollution control and coal-fired power generation: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report CCC/06, 45 p.
- Sousa, J.A., Houck, J.E., Cooper, J.A., and Daisey, J.M., 1987, The mutagenic activity of particulate organic matter collected with a dilution sampler at coal-fired power plants: *Journal of the Air Pollution Control Association*, v. 37, p. 1439–1444.

- Southern Research Institute, 1977, Environmental control implications of generating electric power from coal, technology status Report, appendix E: a review of technology for control of fly ash emissions from coal in electric power generation: Argonne, Illinois, Argonne National Laboratory Report, ANL/ECT-3, Appendix E.
- Spears, D.A., Borrego, A.G., Cox, A., Martinez-Tarazona, M.R., 2007, Use of laser ablation ICP-MS to determine trace element distributions in coals, with special reference to V, Ge and Al: *International Journal of Coal Geology*, v. 72, p. 165–176.
- Spears, D.A., and Martinez-Tarazona, M.R., 1993, Geochemical and mineralogical characteristics of a power station feed-coal, Eggborough, England: *International Journal of Coal Geology*, v. 22, no. 1, p. 1–20.
- Spears, D.A., and Martinez-Tarazona, M.R., 2007, Trace elements in combustion residues from UK power station: *Fuel*, v. 83, p. 2265–2270.
- Speight, J.G., 1983, *The Chemistry and Technology of Coal*: New York, N.Y., Marcel Dekker, 528 p.
- Spena, A., and Chiricozzi, E., 1983, Consequences of size increases and thermodynamic constraints on steam-powerplant availability: comparison between nuclear and fossil-fueled units: *Energy*, v. 8, no. 7, p. 553–559.
- Spiegel, M., Zahs, A., and Grabke, H.J., 2003, Fundamental aspects of chlorine-induced corrosion in power plants: *Mater High Temp* 2003, v. 20, no. 2, p. 153–159.
- Spiker, E.C., and Bates, A.L., 1998, Initial Report on the sulfur isotope geochemistry of solid waste products from a coal-burning power plant, in Breit, G.N., and Finkelman, R.B., eds., *Characterization of coal and coal combustion products from a coal-burning power plant—preliminary report and results of analyses*: U.S. Geological Survey Open-File Report 98-342, p. 91–92.
- Spiro, B.F., Gorringe, M., Large, D.J., and Somerfield, C., 2006, The distribution of trace elements and Sr isotopes across the coal and its partings in the Wyodak Sea, Powder River Basin, Wyoming USA: *Chinese Journal of Geochemistry*, v. 25, supplement 1, p. 48.
- Sponsler, M., 1996, Regulation of coal ash placement on surface coal mines in Indiana, in Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., *Coal Combustion By-Products Associated with Coal Mining—Interactive Forum*, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 69–78.
- Springston, S.R., Kleinman, L.I., Brechtel, F., Lee, Y.-N., Nunnermacker, L.J., and Wang, J., 2005, Chemical evolution of an isolated power plant plume during the TexAQS 2000 study: *Atmospheric Environment*, v. 39, no. 19, p. 3431–3443.
- Squires, A.M., and Graff, R.A., 1971, Panel bed filters for simultaneous removal of fly ash and sulfur dioxide – 3. – reaction of sulfur dioxide with half-calcined dolomite: *Journal of the Air Pollution Control Association*, v. 21, no. 5, p. 272–276.
- Squires, A.M., and Pfeffer, R., 1970, Panel bed filters for simultaneous removal of fly ash and sulfur dioxide – 1. – introduction: *Journal of the Air Pollution Control Association*, v. 20, p. 534–538.
- Srinivasachar, S., Helble, J.J., and Boni, A.A., 1990, Mineral behaviour during coal combustion – 1. – pyrite transformations: *Progress in Energy and Combustion Science*, v. 16, p. 281–291.

- Srinivasachar, S., Helble, J.J., Boni, A.A., Shah, N., Huffman, G.P., and Huggins, F.E., 1990, Mineral behaviour during coal combustion – 1. – illite transformations: *Progress in Energy and Combustion Science*, v. 16, p. 293–302.
- Srinivasachar, S., Helble, J.J., Katz, C.B., and Boni, A.A., 1990, Transformations and stickiness of minerals during pulverized coal combustion, *in* Bryers, R.W., and Vorres, K.S., eds., *Proceedings of the Engineering Foundation Conference on Mineral Matter and Ash Deposition from Coal*, February 22–26, 1988, Santa Barbara, California: New York, N.Y., Engineering Foundation, p. 201–213.
- Srivastava, R.K., Hall, R.E., Khan, S., Culligan, K., and Lani, B.W., 2005, Nitrogen oxides emission control options for coal-fired electric utility boilers: *Journal of the Air and Waste Management Association*, v. 55, p. 1367–1388.
- Srivastava, R.K., Hutson, N., Martin, B., Princiotta, F., and Staudt, J., 2006, Control of mercury emissions from coal-fired electric utility boilers: *Environmental Science and Technology*, v. 40, no. 5, p. 1385–1393.
- Srivastava, R.K., Staudt, J.E., and Jozewicz, W., 2005, Preliminary estimates of performance and cost of mercury emission control technology applications on electric utility boilers – an update: *Environmental Progress*, v. 24, no. 2, p. 198–213.
- Stäbler, K., Schönbucher, B., and Bilger, H., 1988, NO_x-minderung durch sekundär-massnahmen: Erfahrungen aus versuchs- und grossanlagen = Réduction des teneurs en NO_x par mesures secondaires. Expérience acquise dans des installations d'essais et dans des installations industrielles [NO_x reduction by means of secondary measures. Experience from experimental and large scale plants]: *VGB Kraftwerkstechnik*, v. 68, no. 7, p. 735–743.
- St. Baker, T.C., 1979, Technology of coal utilisation for electric power generation: State Electricity Commission of Queensland, Resources Branch Report 0293-79, p. 111–157 p.
- St. Baker, T.C., 1983, Technology of coal utilisation for electric power generation, coal technology and coal utilisation: Brisbane, Queensland, Australian Mineral Foundation, Inc., p. 1–42.
- Stallard, G.S., Galluzzo, N.G., Brown, R.E., and Pavlish, J.H., 1988, Implementing EPRI's state-of-the-art coal quality impact model into fuel procurement practices, *in* Mehta, A., and Dooley, R.B., eds., *Effect of Coal Quality on Power Plants*, October 13, 1987, Atlanta, Georgia: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-5936-SR, p. 6.77–6.93.
- Stallard, G.S., Galluzzo, N.G., and Mehta, A.K., 1989, Demonstration – coal quality impact model: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. GS-6281, p. 9.1–9.19.
- Stallard, G.S., and Mehta, A., 1991, Using EPRI CQIM to evaluate acid rain strategies: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. GS-7361, p. 2.57–2.75.
- Stanmore, B.R., 1990, Ash hopper explosions in coal-fired boilers: *Transactions of the Institution of Engineers, Australia. Mechanical engineering*, v. ME 15, no. 4, p. 274–276.
- Stanmore, B.R., and Budd, S., 1996, Measuring the viscous flow of molten coal ash: *Fuel*, v. 75, no. 12, p. 1476–1479.
- Stanmore, B.R., and Visona, S.P., 1999, Prediction of NO emissions from a number of coal-fired power station boilers: *Fuel Processing Technology*, v. 64, p. 25–46.

- Stanton, K.T., Towler, M.R., Mooney, P., Hill, R.G., and Querol, X., 2002, Thermal analysis of fly ashes sourced from European non-blended coals: *Journal of Chemical Technology and Biotechnology*, v. 77, no. 3, p. 246–250.
- Stark, N.B., and Harris, P.F., 1972, Studies of trace elements in soils and plants from the Four Corners Area of New Mexico: Reno, Nev., Desert Research Institute, Center for Water Research Report to U.S. Environmental Protection Agency [EPA], Report no. EPA-R4-72-007, 91 p.
- Starkey, Robert L., 1960, Sulfate-reducing bacteria – physiology and practical significance: 1960/61 Lectures on theoretical and applied aspects of modern microbiology [College Park, University of Maryland], 1, 32 p.
- Starns, T., Bustard, C.J., Durham, M.D., Lindsey, C., Martin, C., Schlager, R., Donnelly, B., Sjostrom, S., Harrington, P., Haythornthwaite, S., Johnson, R., Morris, E., Chang, R., and Renninger, S., 2002, Full-scale test of mercury control with sorbent injection and an ESP at Wisconsin Electric's Pleasant Prairie Power Plant, *in* Air and Waste Management Association [A&WMA], eds., Proceedings, Air and Waste Management Association Annual Meeting, June 23–27, 2002, Baltimore, Maryland, 95th Annual Meeting: Reno, Nev., Desert Research Institute, Session AE-1 on CD-ROM.
- Staudt, J.E., and Englemeyer, A.J., 2003, SCR catalyst management strategies – modeling and experience, *in* PennWell Corporation and Power Engineering Magazine, eds., Keep On Rockin' Me Baby, Proceedings, Coal-Gen 2003, August 6–8, 2003, Columbus, Ohio: Tulsa, Ok., PennWell Corporation, p. 18.
- Steig, T.W., and Pilat, M.J., 1983, Comparison of opacities measured by portable and cross-stack transmissometers at a coal-fired power plant: *Atmospheric Environment*, v. 17, no. 1, p. 1–9.
- Steinberg, M., 1996, The Carnol Process for CO₂ mitigation from power plants and the transportation sector: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], National Risk Management Research Laboratory, Report no. EPA/600/SR-96/003, p. 1–3.
- Stephens, N.T., and McCaldin, R.O., 1971, Attenuation of power station plumes as determined by instrumented aircraft: *Environmental Science and Technology*, v. 5, no. 7, p. 615–621.
- Sterling, R.O., and Helble, J.J., 2003, Reaction of arsenic vapor species with fly ash compounds: Kinetics and speciation of the reaction with calcium silicates: *Chemosphere*, v. 51, p. 1111–1119.
- Stevens, T.H., and Ives, B.C., 1976, Distribution and concentration of air pollution from the Four Corners Power Plant at Fruitland: New Mexico State University, Agricultural Experiment Station, 16 p.
- Stewart, A.W., 2002, Evaluation of physical properties and engineering performance of CCBs in the laboratory and the field, *in* Vories, K.C. and Throgmorton, Dianne, eds., Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 6–7.
- Stewart, B., and Tyson, S.S., 1996, Potential use of coal combustion by-product (CCB) in the Eastern Coal Region – site characterization, *in* Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., Coal Combustion By-Products Associated with Coal Mining—Interactive Forum, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 53–65.

- Stewart, B.R., 1999, Coal combustion product (CCP) production and use: survey results, *in* Sajwan, K.S., Alva, A.K., and Keefer, R.F., eds., *Biogeochemistry of Trace Elements in Coal and Coal Combustion Byproducts*: New York, N.Y., Kluwer Academic/Plenum, p. 1–6.
- Stewart, B.R., and Daniels, W.L., 1996, Leachate quality from coarse coal refuse mixed with coal fly ash: effects of ash blending rates, *in* Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., *Coal Combustion By-Products Associated with Coal Mining—Interactive Forum*, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 247–256.
- Stewart, R., and Walker, D., 1997, Emissions to atmosphere from fossil fuel power generation in the UK: Abingdon, United Kingdom, AEA Technology plc, National Environmental Technology Centre, 89 p.
- Stockdill, D., and Jorgenson, R., 2002, Monitoring and environmental performance of CCB disposal activities at Great River Energy's Coal Creek Station [abs.], *in* Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 11.
- Stockdill, D., and Jorgenson, R.R., 2002, Monitoring and environmental performance of CCB disposal activities at Great River Energy's Coal Creek Station, *in* Vories, K.C. and Throgmorton, Dianne, eds., *Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 135–141.
- Stocks, P., 1966, Recent epidemiological studies of lung cancer mortality, cigarette smoking, and air pollution with discussion of a new hypothesis of causation: *British Journal of Cancer*, v. 20, p. 595–623.
- Stoessner, R.D., Chedgy, D.G., and Zawadzki, E.A., 1988, Heavy medium cyclone cleaning 28 x 100 mesh raw coal, *in* Klimpel, R.R., and Luckie, P.T., eds., *Industrial Practice of Fine Coal Processing*: American Institute of Mining Engineers [AIME], Littleton, Colo., 381 p.
- Stoisser, C.M., and Audebert, S., 2008, A comprehensive theoretical, numerical, and experimental approach for crack detection in power plant rotating machinery: *Mechanical Systems and Signal Processing*, v. 22, no. 4, p. 818–844.
- Stong, T.J., Jorgenson, R.R., Nelson, R., and Stroh, T., 2003, Modeling of constantly evolving CCP management options at a coal-fired power plant, *in* Robl, Thomas L., ed., *International Ash Utilization Symposium*, October 20–22, 2003, Lexington, Kentucky: Lexington, University of Kentucky Center for Applied Energy Research [CAER], Paper no. 31, [13] p., last accessed August 2011 at <http://www.flyash.info/2003/31sto.pdf>.
- Stranden, E., 1983, Assessment of the radiological impact of using fly ash in cement: *Health Physics*, v. 44, p. 145–153.
- Straughan, I.R., Elseewi, A.A., Page, A.L., Kaplan, I.R., Hurst, R.W., and Davis, T.E., 1981, Fly ash-derived strontium as an index to monitor deposition from coal-fired power plants: *Science*, v. 212, no. 4500, p. 1267–1269.

- Strauss, K., 1986, Betriebliche Konsequenzen bei primärseitiger NO_x-minderung in Kohlenstaub-fuerungen [Operational consequences of combustion measures on pulverized coal combustion]: VGB Kraftwerkstechnik, v. 66, no. 9, p. 843–848.
- Strauss, K., and Thelen, F., 1989, Brennstoffaufbereitung als Beitrag zur NO_x-minderung [Fuel preparation as a contribution to the lowering of NO_x levels]: VGB Kraftwerkstechnik, v. 69, no. 2, p. 207–211.
- Streeter, R.C., Diehl, E.K., and Schobert, H.H., 1983, Measurement and prediction of low-rank coal slag viscosity: Fuel, v. 28, no. 4, p. 174–195.
- Streets, D.G., Hao, J., Wu, Y., Jiang, J., Chan, M., Tian, H., and Feng, X., 2005, Anthropogenic mercury emissions in China: Atmospheric Environment, v. 39, no. 49, p. 7789–7806.
- Strein, D.L., 1989, Effects of changing coal quality on precipitator performance, in Harrison, C.D., and Hervol, J.D., eds., Proceedings, Reducing Power Plant Emissions by Controlling Coal Quality, October 27–28, 1987, Bethesda, Maryland: Palo Alto, Calif., Electric Power Research Institute [EPRI], Report no. GS-6281, p. 4.1–4.17.
- Strock, N., 1996, Pennsylvania's regulatory requirements for use of coal combustion ash at coal mining operations, in Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., Coal Combustion By-Products Associated with Coal Mining—Interactive Forum, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 83–86.
- Ströhle, J., Rückert, F., Risio, B., Schnell, U., 2003, A vectorised lagrangian particle model for the numerical simulation of coal-fired furnaces, in Krause, E., and Jäger, W., eds., The Fourth Result-Workshop of the HLRS (Supercomputing Centre of Stuttgart University), 2002: Berlin, Germany, Springer, p. 451–461.
- Strojan, C.L., and Turner, F.B., 1978, Trace elements and sulfur in soils and plants near the Mojave Generating Station in southern Nevada, in American Chemical Society, eds., Proceedings, Joint Conference on Sensing of Environmental Pollutants, November 6–11, 1977, New Orleans, Louisiana, 4th Conference: Washington, D.C., American Chemical Society, p. 537–540.
- Stropnik, Boris, Smoldis, Borut, Jacimovic, Radojko, and Stegnar, Peter, 1992, A study of the impact of Šoštanj coal fired thermal power plant on aerosols using INAA: Vienna, Austria, International Atomic Energy Agency [Co-ordinated research programme on the use of nuclear and nuclear-related techniques in the study of environmental pollution associated with solid wastes], p. 301–315.
- Strum, M., Cook, R., Thurman, J., Ensley, D., Pope, A., Palma, T., Mason, R., Michaels, H., and Shedd, S., 2006, Projection of hazardous air pollutant emissions to future years: The Science of The Total Environment, v. 366, p. 590–601.
- Styron, C.E., 1978, Preliminary assessment of the radiological impact of radionuclides in western coal on health and environment, in Information Transfer, Incorporated, eds., Technology for energy conservation, National Conference and Exhibition on Technology for Energy Conservation, January 23–27, 1978, Albuquerque, New Mexico, 2nd Conference: Rockville, Md., Information Transfer, Incorporated, p. 369–374.
- Styron, C.E., 1980, An assessment of natural radionuclides in the coal fuel cycle, in Gesell, Thomas G., and Lowder, Wayne M., eds., Proceedings, Natural radiation environment III, April 23–28, 1978, Houston, Texas: Oak Ridge, Tenn., U.S. Dept. of Energy, v. 2, p. 1511–1520.

- Stryon, C.E., Bishop, C.T., Casella, V.R., Jenkins, P.H., and Yanko, W.H., 1981, Assessment of the radiological impact of coal utilization II – radionuclides in western coal ash: U.S. Monsanto Research Corporation Report MLM-2810, 177 p.
- Stryon, C.E., Casella, V.R., Farmer, B.M., Hopkins, L.C., Jenkins, P.H., Phillips, C.A., and Robinson, B., 1979, Assessment of the radiological impact of coal utilization I – preliminary studies on western coal: Monsanto Research Corporation Report MLM-2514, 99 p.
- Styron, C.E., and Robinson, B., 1977, Preliminary assessment of the radiological impact of western coal utilization, *in* American Chemical Society, eds., Proceedings, Joint Conference on Sensing of Environmental Pollutants, November 6–11, 1977, New Orleans, Louisiana, 4th Conference: Washington, D.C., American Chemical Society, p. 336–338
- Stultz, C.R., and Kitto, J.B., eds., 1992, Steam—Its generation and use (40th ed.): Barberton, Ohio, Babcock and Wilcox, 1 vol., variously paged.
- Styles, G., Vimalchand, P., Hendrix, H., Pinkston, T., and Wheeldon, J.M., 1996, Changes in fossil energy R and D and the role of the power systems development facility in the evolving deregulated electric power industry, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 288–291.
- Suárez-Fernández, Geima P., Querol, Xavier., Fernández-Turiel, Jose L., Fuertes, A. Benito., and Martinez-Tarazona, M. Rosa, 1996, The behavior of trace elements in fluidized bed combustion: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 41, no. 3, p. 796–800, last accessed March 2010 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/41_3_ORLANDO_08-96_0796.pdf.
- Suárez-Ruiz, I., Hower, J.C., and Thomas, G.A., 2007, Hg and Se capture and fly ash carbons from combustion of complex pulverized feed blends mainly of anthracitic coal rank in Spanish power plants: *Energy and Fuels*, v. 21, no. 1, p. 59–70.
- Suárez-Ruiz, I., and Parra, J.B., 2007, Relationship between textural properties, fly ash carbons, and Hg capture in fly ashes derived from the combustion of anthracitic pulverized feed blends: *Energy and Fuels*, v. 21, p. 1915–1923.
- Suda, T., Takafuji, M., Hirata, T., Yoshino, M., and Sato, J., 2002, A study of combustion behavior of pulverized coal in high-temperature air: *Proceedings of the Combustion Institute*, v. 29, no. 1, p. 503–509.
- Sugimoto, M., Maruta, K., Takeda, K., Solonenko, O.P., Sakashita, M., and Nakamura, M., 2002, Stabilization of pulverized coal combustion by plasma assist: *Thin Solid Films*, v. 407, no. 1-2, p. 186–191.
- Sullivan, K.M., 1988, The effect of CO₂ emissions from coal fired power plants – a review in perspective: London, United Kingdom, World Coal Institute, 18 p.
- Sullivan, K.M., 1989, The effect of CO₂ emissions from coal fired power plants: a review in perspective (rev. ed.): London, United Kingdom, World Coal Institute, 16 p.
- Sullivan, T.M., Adams, J., Milian, L., Subramanian, S., Feagin, L., Williams, J., and Boyd, A., 2006, Local impacts of mercury emissions from the Monticello coal fired power plant: Upton, N.Y., Brookhaven National Laboratory, and Fairfield, Ala., Miles College, Brookhaven National Laboratory Report BNL-77475-2007-IR, 26 p.

- Sullivan, T.M., Bowerman, B.S., Adams, J.W., Lipfert, F.D., Morris, S.M., Bando, A., Pena, R., and Blake, R., 2005, Mercury emissions from coal fired power plants – local impacts on human health risk: Upton, N.Y., Brookhaven National Laboratory; Environmental Sciences Department/ Environmental Research and Technology Division Report BNL-75594-2006, 90 p.
- Sullivan, T.M., Bowerman, B.S., Adams, J.W., Ogeka, C., Lipfert, F., and Renninger, S.A., 2004, Assessing the impacts of local deposition of mercury associated with coal-fired power plants fuel: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 49, no. 1, p. 216–217, last accessed February 2010 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/49_1_Anaheim_03-04_0988.pdf.
- Sullivan, T.M., Lipfert, F.D., and Morris, S.M., 2003, The local impacts of mercury emissions from coal fired power plants on human health risk; Progress Report for the period of March 2002–March 2003: Upton, N.Y., Brookhaven National Laboratory Report BNL-71554-2003, 62 p.
- Sulovsky, P., 2000, Trace element speciation in fluidized bed coal combustion by-products, *in* Rammimair, D., Mederer, J., Oberthuer, T., Heimann, R.B., and Pentinghaus, H.J., eds., Applied Mineralogy in Research, Economy, Technology, Ecology and Culture; Proceedings of the International Congress on Applied Mineralogy in Research, Economy, Technology, Ecology, and Culture, July 17–19, 2000, Gottingen, Federal Republic of Germany, 6th Congress: Rotterdam, The Netherlands, A.A. Balkema, p. 687–690.
- Sumner, M.E., and Dudka, S., 1999, Fly ash-borne arsenic in the soil-plant system, *in* Sajwan, K.S., Alva, A.K., and Keefer, R.F., eds., Biogeochemistry of Trace Elements in Coal and Coal Combustion Byproducts: New York, N.Y., Kluwer Academic/Plenum, p. 269–278.
- Sun, J., and Hoffman, R., 1996, Evaluation of microwave digestion as the preparation for mercury-in-coal measurement: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 41, no. 3, p. 815–819, last accessed February 2010 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/41_3_ORLANDO_08-96_0815.pdf.
- Sun, W., Hyde, T.H., and Brett, S.J., 2008, Application of impression creep data in life assessment of power plant materials at high temperatures: Proceedings of the Institution of Mechanical Engineers, Part L, Journal of Materials – Design and Applications, v. 222, no. 3, p. 175–182.
- Suresh, M.V.J.J., Reddy, K.S., and Kolar, A.K., 2009, 3-E analysis of advanced power plants based on high ash coal: International Journal of Energy Research, v. 34, p. 716–735.
- Suresh, M.V.J.J., Reddy, K.S., and Kolar, A.K., 2010, 4-E (energy, exergy, environment, and economic) analysis of solar thermal aided coal-fired power plants: Energy for Sustainable Development, v. 14, p. 267–279.
- Surprenant, N., Hall, R., and Seale, L.M., 1976, Preliminary emission assessment of conventional stationary combustion systems: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-600/2-76-046a, v. 1.
- Surrey, J., 1987, Electric power plant in India a strategy of self-reliance: Energy Policy, v. 15, no. 6, p. 503–521.
- Sushil, S., and Batra, V.S., 2006, Analysis of fly ash metal content and disposal in three thermal power plants in India: Fuel, v. 85, p. 2676–2679.
- Sutcu, H., 2004, Coal desulfurization using natural Ca-based sorbents: Coal Preparation, v. 24, p. 249–259.

- Suuberg, E.M., Otake, Y., Yongseung, Y., and Deevi, S.C., 1993, Role of moisture in coal structure and the effects of drying upon the accessibility of coal structure: *Energy and Fuels*, v. 7, no. 3, p. 384–392.
- Suydam, C.D.J., and Duzy, A.F., 1977, Economic evaluation of washed coal for the Four Corners Generating Station: American Society of Mechanical Engineers [ASME] prepared paper 77-WA/CD-2, paging not available.
- Suydam, C.D.J., and Duzy, A.F., 1978, Economic evaluation of washed coal for the Four Corners Generating Station: *Combustion*, v. 49, no. 10, p. 38–42.
- Sverdrup, G., Chuang, J.C., Slivon, L., McFarland, A.R., Cooper, J.A., Garber, R.W., and Smith, B.S., 1993, Comparison of chemical composition of fly ash particles collected in the plume and stack of a coal-fired power plant, *in* Chow, W., and others, eds., *Managing Hazardous Air Pollutants: State of the Art*: Electric Power Research Institute [EPRI] Report no. TR-101890, Boca Raton, Fla., Lewis Publishers, p. 204–217.
- Sverdrup, G.M., 1978, Determination of submicrometer particle size distributions across a power plant plume: *Atmospheric Environment*, v. 12, no. 10, p. 2005–2010.
- Swain, E.B., 1992, Increasing rates of atmospheric mercury deposition in midcontinental North America: *Science*, v. 257, August 7, p. 784–787.
- Swaine, D.J., 1978, The fate of trace elements in coal after combustion, *in* White, E.B., Hetherington, P., and Thiele, B.R., eds., *Clean air, the continuing challenge*, Proceedings, International Clean Air Conference, May 15–19, Brisbane, Australia: Ann Arbor, Mich., Ann Arbor Science, p. 519–525.
- Swaine, D.J., 1990, *Trace elements in coal*: London, United Kingdom, Butterworths, 278 p.
- Swaine, D.J., 1994, Trace elements in coal and their dispersal during combustion: *Fuel Processing Technology*, v. 39, no. 1-3, p. 121–137.
- Swaine, D.J., Godbeer, W.C., and Morgan, N.C., 1983, Use of moss to measure the accession of trace elements to an area around a power station, *in* Hutchinson, T.C., ed., *Proceedings, International conference on heavy metals in the environment*, October 27–31, 1975, Toronto, Canada: Toronto, the Conference, v. 2, part 1, p. 1053–1056.
- Swaine, D.J., and Goodarzi, F., eds., 1995, *Environmental Aspects of Trace Elements in Coal*: Dordrecht, The Netherlands, Kluwer Academic, 312 p.
- Swanepoel, J.C., and Strydom, C.A., 2002, Utilisation of fly ash in a geopolymeric material: *Applied Geochemistry*, v. 17, no. 8, p. 1143–1148.
- Swanson, A.R., Taggart, I.J., and Wood, D.L., 1982, The economic value of coal for coal fired power stations, *in* Al Taweel, A.M., ed., *Coal, phoenix of the '80s*, Proceedings, Chemical Institute of Canada [CIC] Coal Symposium, May 31–June 3, 1981, Halifax, Nova Scotia, Canada, Sympositum: Ottawa, Canadian Society for Chemical Engineering, p. 324–329.
- Swanson, S.M., Polyak, D., Ruppert, L.F., Kolker, A., Belkin, H.E., and Affolter, R.H., 2008, Characterization of coal and coal combustion products from a power plant utilizing high-sulfur coal from the northern Appalachian Basin [abs.], *in* Suárez-Ruiz, Isabel, and García-Ramos, Jose C., eds., *Program and Abstracts, International Conference on Coal and Organic Petrology*, September 21–27, 2008, Oviedo, Spain, International Committee for Coal and Organic Petrology [ICCP], 60th Meeting, and Society for Organic Petrology [TSOP], 25th Meeting: Oviedo, Spain, SEVITEC, 1 CD-ROM, p. 142.

- Swanson, S.M., Ruppert, L.F., Affolter, R.H., Kolker, A., and Belkin, H.E., 2008, Chemical characterization of feed coal, fly ash, and bottom ash from a power plant utilizing northern Appalachian Basin Coal, USA [abs.]: Geological Society of America Abstracts with Programs, v. 40, no. 6, p. 495.
- Swanson, S.M., Ruppert, L.F., Kolker, A., Palmer, C.A., Belkin, H.E., and Affolter, R.H., 2009, Characterization of feed coal and coal combustion products from a power plant utilizing northern Appalachian Basin coal: a mass balance approach, *in* University of Kentucky, Center for Applied Energy Research [CAER], eds., World of Coal Ash - Sessions and Abstracts, May 4–7, 2009, Lexington, Kentucky: Lexington, University of Kentucky, Center for Applied Energy Research [CAER]: CD-ROM, 1 p., last accessed June 2009 at <http://www.worldofcoalash.org/2009/ashpdf/a069-swanson2009.pdf>.
- Swanson, V.E., 1972, Composition and trace-element content of coal and power plant ash, *in* Southwest Energy Study Study Management Team and Southwest Energy Study Federal Task Force, eds., Southwest energy study, an evaluation of coal-fired electric power generation in the Southwest, Report of the Coal Resources Work Group, Appendix J, Part II: Washington, D.C., U.S. Dept. of the Interior, 34 p., tables.
- Swanson, V.E., Medlin, J.H., Hatch, J.R., Coleman, S.L., Wood, G.H.J., Woodruff, S.D., and Hildebrand, R.T., 1976, Collection, chemical analysis, and evaluation of coal samples in 1975: U.S. Geological Survey Open-File Report 76-468, 503 p.
- Swithenbank, J., Garbett, E.S., Boysan, F., and Ayers, W.H., 1988, Advance on research on coal combustion system modeling, *in* Junkai Feng, ed., Coal combustion, science and technology of industrial and utility applications, papers of the International Symposium on Coal Combustion, September 7–10, 1987, Beijing, China: New York, N.Y., Hemisphere Publishing Corporation, p. 39–63.
- Switzer, P., Enger, L., Hoffer, T.E., Koracin, D., and White, W.H., 1996, Ambient sulfate concentrations near Grand Canyon as a function of fluctuating loads at the Mojave Power Project – an exploratory analysis of an atmospheric experiment: *Atmospheric Environment*, v. 30, no. 14, p. 2551–2564.
- Tadmor, J., 1986, Atmospheric release of volatilized species of radioelements from coal-fired plants: *Health Physics*, v. 50, p. 270–273.
- Tadmor, J., 1986, Radioactivity from coal-fired power plants – a review: *Journal of Environmental Radioactivity*, v. 4, p. 177–204.
- Tadmor, J., 1986, Sensitivity analysis of the influence of source-term and environmental parameters on the radiological risk of coal-fired plants: *Health Physics*, v. 51, no. 1, p. 61–80.
- Takeshita, M., 1994, Environmental performance of coal-fired FBC: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/75, 90 p.
- Takeshita, M., 1995, Air pollution control costs for coal-fired power stations: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEAPER/17, 38 p.
- Takeshita, M., Sloss, L., and Smith, I., 1993, N₂O emissions from coal use: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEAPER/06, 28 p.
- Takeshita, M., and Soud, H.N., 1993, FGD performance and experience on coal-fired plants: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/58, 138 p.

- Tams, D.E., 1990, Atmospheric fluidized beds—problems and solutions in practice, *in* Mechanical Engineering Publications Limited, eds., *Steam plant for the 1990s*, Proceedings of the Institution of Mechanical Engineers [IMEchE]: London, United Kingdom, Bury St. Edmunds, IMechE conference publication 1990-4, p. 117–124.
- Tandon, P.N., Ramalingam, P., and Malik, A.Q., 2003, Dispersion of flue gases from power plants in Brunei Darussalam: *Pure and Applied Geophysics*, v. 160, p. 405–418.
- Taneja, S.P., 2004, Mössbauer studies of thermal power plant coal and fly ash: *Hyperfine Interactions*, v. 153, no. 1-4, p. 83–90.
- Tang S., Feng X., Qiu J., Yin G., and Yang Z., 2007, Mercury speciation and emissions from coal combustion in Guiyang, southwest China: *Environmental Research*, v. 105, no. 2, p. 175–182.
- Tanner, J.M., 1996, Coal combustion by-products – the western U.S. perspective, *in* Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., *Coal Combustion By-Products Associated with Coal Mining—Interactive Forum*, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 43–48.
- Tao, D., Yu, S., Zhou, X., Honaker, R.Q., and Parekh, B.K., 2008, Picobubble column flotation of fine coal: *International Journal of Coal Preparation and Utilization*, v. 28, no. 1, p. 1–14.
- Tao, X., Chen, Q., Yang, Y., and Chen, Z., 1996, Research on acting mechanism and behavior of a gas bubble in the air dense medium fluidized bed, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1159.
- Tape, G.F., 1968, Environmental aspects of operation of central power plants: U.S. Atomic Energy Commission Release No. S-54-68, 8 p.
- Tasai, C.-Y., and Scaroni, A.W., 1987, Reactivity of bituminous coal chars during the initial stage of pulverized coal chars: *Fuel*, v. 66, no. 10, p. 1400–1406.
- Taşdemiroğlu, E., 1994, Environmental damage due to thermal power generation in Türkiye: *Energy*, v. 19, no. 12, p. 1235–1244.
- Täubert, U., 1991, New developments in the waste disposal of coal-fired power plants: *VGB Kraftwerkstechnik - English Issue*, v. 2, no. 91, p. 86–91.
- Tavoulareas, E.S., 1991, Fluidized-bed combustion technology: *Annual Review of Energy and the Environment*, v. 16, p. 25–57.
- Ten Brink, H.M., Alderliesten, P.T., van der Sloot, H.A., and Meij, R., 1987, Volatile inorganic trace emissions from coal-fired boilers, *in* Moulijn, Jacob A., Nater, K.A., and Chermin, H.A.G., eds., *Proceedings, International Conference on Coal Science*, October 26–30, 1987, Maastricht, The Netherlands: Amsterdam, The Netherlands, Elsevier Science, *Coal science and technology [series]*, v. 11. p. 865–869.
- Terman, G.L., 1978, Solid wastes from coal-fired power plants – use or disposal on agricultural lands: Tennessee Valley Authority, National Fertilizer Development Center, 16 p.
- Termuehlen, H., and Emsperger, W., 2003, Clean and efficient coal-fired power plants – development toward advanced technologies: New York, N.Y., American Society of Mechanical Engineers [ASME] Press, 143 p.

- Terrill, J.G., Jr., Harward, E.D., and Leggett, I.P., Jr., 1967, Environmental aspects of nuclear and conventional power plants: *Journal of Industrial Medicine and Surgery*, v. 36, no. 6, p. 412–419.
- Tetra Tech Incorporated, 1980, Methodology for evaluation of multiple power plant cooling system effects, Volume I: General Description and Screening: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. EA-1111, 116 p.
- Tetra Tech Incorporated, 1980, Methodology for evaluation of multiple power plant cooling system effects, Volume II: Technical Basis for Computations: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. EA-1111, 147 p.
- Tetra Tech Incorporated, 1980, Methodology for evaluation of multiple power plant cooling system effects, Volume III: Data Requirements: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. EA-1111, 198 p.
- Tetra Tech Incorporated, 1980, Methodology for evaluation of multiple power plant cooling system effects, Volume IV: User's Guide to Model Operation: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. EA-1111, 275 p.
- Tetra Tech Incorporated, 1980, Methodology for evaluation of multiple power plant cooling system effects, Volume V: Methodology Applicable to Prototype: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. EA-1111, 117 p.
- Tetra Tech Incorporated, 1981, Assessment methodology for new cooling lakes: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. EA-2059, 338 p.
- Tewalt, S.J., and Finkelman, R.B., 1990, Analytical data for bituminous coals and associated rocks from Arkansas, Iowa, Kansas, Missouri, Nebraska, and Oklahoma: U.S. Geological Survey Open-File Report 90-669, 1 vol., unpagged.
- Thambimuthu, K.V., 1993, Gas cleaning for advanced coal-based power generation: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report no. IEACR/53, 163 p.
- Thanh, B.D., and Lefevre, T., 2001, Environmental auditing; assessing health benefits of controlling air pollution from power generation: The case of a lignite-fired power plant in Thailand: *Environmental Management*, v. 27, no. 2, p. 303–317.
- Theis, T.L., and Richter, R.O., 1979, Chemical speciation of heavy metals in power plant ash pond leachate: *Environmental Science and Technology*, v. 13, no. 2, p. 219–224.
- Theis, T.L., Westrick, J.D., Hsu, C.L., and Marley, J.J., 1978, Field investigations of trace metals in ground water from fly ash disposal: *Journal of the Water Pollution Control Federation*, v. 50, p. 2457–2469.
- Theis, T.L., and Wirth, J.L., 1977, Sorptive behavior of trace metals on fly ash in aqueous systems: *Environmental Science and Technology*, v. 11, no. 12, p. 1096–1100.
- Thielen, W., Odenthal, H.P., and Richter, W., 1987, Investigation of the influence of furnace geometry and coal properties on furnace performance with the help of radiation transfer model, fundamentals of the physical-chemistry of pulverised coal combustion, July 28–August 1, 1986, Les Arcs, France: Dordrecht, The Netherlands, Martinus Nijhoff Publishers, p. 424–436.
- Thitakamol, B., Veawab, A., and Aroonwilas, A., 2007, Environmental impacts of absorption-based CO₂ capture unit for post-combustion treatment of flue gas from coal-fired power plant: *International Journal of Greenhouse Gas Control*, v. 1, no. 3, p. 318–342.

- Thode, H.G., 1991, Sulphur Isotopes in nature and the environment, Chapter 1, *in* Krouse, H.R., and Grinenko, V.A., eds., *Stable Isotopes in the Assessment of Natural and Anthropogenic Sulphur in the Environment*: Chichester, West Sussex, United Kingdom, Wiley, p. 1–26.
- Thomas, C.G., 2002, *Coal Geology*: Chichester, West Sussex, United Kingdom, Wiley, 384 p.
- Thomas, C.G., Shibaoka, M., Gawronski, E., Gosnell, M.E., and Brunckhorst, L.F., 1989, Macerals' fusion behaviour in thermal coals, *in* Thomas, Christopher G., and Strachan, Michael G., eds., *Proceedings, Macerals '89 Symposium, the affect of macerals on the utilisation of coal and the signifance in petroleum exploration*, May 10–11, 1989, North Ryde, New South Wales: North Ryde, N.S.W., Commonwealth Scientific and Industrial Research Organisation [CSIRO], p. 4-1–4-35.
- Thomas, F.W., Carpenter, S.B., and Colbaugh, W.C., 1969, Plume rise estimates for electric generating stations: *Philosophical Transactions Royal Society of London*, v. A265, p. 221–243.
- Thomas, F.W., Carpenter, S.B., and Gartrell, F.E., 1963, Stacks—how high?: *Journal of the Air Pollution Control Association*, v. 13, p. 198–204.
- Thomas, F.W., Carpenter, S.B., Leavitt, J.M., Montgomery, T.L., and Colbaugh, W.C., 1970, Report on full-scale study of inversion breakup at large power plants: Muscle Shoals, Ala., Tennessee Valley Authority, Division of Environmental Research and Development, 177 p.
- Thomas, J.F., Gregory, R.W., and Takayasu, M., 1986, *Atmospheric fluidized bed boilers for industry*: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report ICTIS/TR35, 69 p.
- Thompson, A.W., and Gibb, W.H., 1988, Coal ash viscosity measurements on selected British coals as an aid to slagging propensity assessment: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-5936-SR, p. 3.15–13.51.
- Thompson, C.M., 1982, Chemical and physical characterization of western low-rank coal-waste materials –part 1–byproducts from sodium-based dry-scrubbing systems–final Report: Radian Corporation report to U.S. Dept. of Energy Report no. DOE/FC/10200-T2, 186 p.
- Thompson, D., and Argent, B.B., 1999, Coal ash composition as a function of feedstock composition: *Fuel*, v. 78, p. 539–548.
- Thompson, J.S., and Laudal, D.L., 2002, Use of continuous emission monitors for mercury at coal-fired utilities, *in* *Proceedings of the Annual International Pittsburgh Coal Conference*, September 23–27, 2002, Pittsburgh, Pennsylvania, 19th Conference: Pittsburgh, Pennsylvania, Pittsburgh Coal Conference, 1 CD-ROM.
- Thompson, J.S., and Pavlish, J.H., 2000, Cryogenic trapping of oxidized mercury species from combustion flue gas: *Fuel Processing Technology*, v. 65–66, Special Issue Air Quality: Mercury, Trace Elements, and Particulate Matter, p. 167–175.
- Thompson, R.E., and Sonnichsen, T.W., 1978, Assessment of current and advanced NO_x control technology for coal-fired utility boilers: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 23, no. 1, p. 188–195, last accessed March 2010 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/32_1_ANA-HEIM_03-78__0188.pdf.

- Thorneloe, S., 2002, Potential effects of mercury controls on CCBs [abs.], *in* Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 3–4.
- Thorneloe, S., 2002, Coal combustion residues and mercury control, *in* Vories, K.C. and Throgmorton, Dianne, eds., *Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 57–63.
- Thornock, D.E., Patel, R., Borio, R.W., Miller, B.G., and Scaroni, A.W., 1996, Firing microfine coal with a low NO_x RSFC burner in an industrial boiler designed for Oil and Gas, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, *Proceedings of the Annual International Pittsburgh Coal Conference*, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 389.
- Thornton, I., Farago, M.E., Keegan, T., Nieuwenhuijsen, M.J., Colvile, R.N., Pesch, B., Ranft, U., Miskovic, P., Jacubis, P., and EXPASCAN study group, 2003, Environmental impacts, exposure assessment and health effects related to arsenic emissions from a coal-fired power plant in Central Slovakia; the EXPASCAN Study: Arsenic Exposure and Health Effects V, p. 39–49.
- Tian H.Z., and Qu Y.P., 2009, Inventories of atmospheric arsenic emissions from coal combustion in China, 2005: *Huan Jing Ke Xue*, v. 30, no. 4, p. 956–962 [in Chinese with English abstract].
- Tian H.Z., Wang Y., Xue Z.G., Cheng K., Qu Y.P., Chai F.H., and Hao M., 2010, Trend and characteristics of atmospheric emissions of Hg, As, and Se from coal combustion in China, 1980–2007: *Atmospheric Chemistry and Physics*, v. 10, no. 23, p. 11905–11919.
- Tian, L., Li, C., Li, Q., Zeng, G., Gao, Z., Li, S., and Fan, X., 2009, Removal of elemental mercury by activated carbon impregnated with CeO₂: *Fuel*, v. 88, p. 1687–1691.
- Tigges, K.-D., Klauke, F., Bergins, C., Busekrus, K., Niesbach, J., Ehmann, M., Kuhr, C., Hoffmeister, F., Vollmer, B., Buddenberg, T., Wu, S., and Kukoski, A., 2009, Conversion of existing coal-fired power plants to oxyfuel combustion: Case study with experimental results and CFD-simulations: *Energy Procedia*, v. 1, no. 1, p. 549–556.
- Tillman, D.A., 1991, *The Combustion of Solid Fuels and Wastes*: London, United Kingdom, Academic Press, 378 p.
- Tillotson, S., 2002, North Dakota regulatory perspective [abs.], *in* Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 20.
- Tillotson, S., 2002, North Dakota regulatory perspective, *in* Vories, K.C. and Throgmorton, Dianne, eds., *Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 257–268.
- Tisch, C., Mancini, R., Sutton, J., and Rini, M., 1990, Optimize p-c combustion to reduce carbon in fly ash: *Power*, v. 134, no. 12, p. 31–33.

- Tishmack, J.K., 1996, Bulk chemical and mineralogical characteristics of coal combustion by-products (CCB), in Yoginder, P.C., Sangunett, B.M., and Vories, K.C., eds., Coal Combustion By-Products Associated with Coal Mining—Interactive Forum, Southern Illinois University at Carbondale, October 29–31, 1996, forum proceedings: Alton, Ill., U.S. Dept. of the Interior, Office of Surface Mining, p. 13–19.
- Tokonami, S., and Ishikawa, T., 2007, Radiological aspects of using coal ash (slag) in the building industry: *Hoken Butsuri*, v. 42, no. 3, p. 227–233.
- Tokuda, K., Kokkinos, A., and Donais, R.E., 1987, Evaluation of the PM burner; a low-NO_x pulverized-coal-firing system for tangentially fired utility boilers: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-5034, variously paged.
- Tollefson, J., 2007, Air permit blocks Kansas coal plants: *Nature*, v. 449, no. 24, p. 953.
- Tooker, C.P. 1981, Predicting the economic and ecological effects of coal-fired power plant emissions on vegetation – staff technical Report: Sacramento[?], Calif., California Energy Resources Conservation and Development Commission, P700-81-009, 155 p.
- Tolvanen, M., 2004, Mass balance determination for trace elements at coal-, peat- and bark-fired power plants, Department of Physical Sciences, Faculty of Science, University of Finland: Helsinki, Finland, VTT Technical Research Centre of Finland, Espoo, Finland, VTT Publication no. 524, 139 p., 190 p. appendix.
- Tolvanen, M., Laitinen, T., Aunela, L., Rasila, P., Hatanpää, E., Hoffren, H., Larjava, K., and Hahkala, M., 1995, Experimental trace element balance studies in two modern coal-fired power plants, in World Clean Air Congress, Espoo, Finland, 10th Congress: Espoo, Finnish Air Pollution Prevention Society paper no. 49, 44 p.
- Tomczynska, J., Blanton-Albicka, K., Pensko, J., and Fugiel, D., 1980, The results of measurements of the natural radionuclides in coal power plants wastes and light concrete samples: Swierk, Poland, Institute of Nuclear Research, Radiation Protection Department, Report TB-APF 80, 9 p.
- Tomeczek, J., Palugniok, H., and Ochman, J., 2004, Modelling of deposits formation on heating tubes in pulverized coal boilers: *Fuel*, v. 83, no. 2, p. 213–221.
- Tominaga, H., and Sato, M., 1989, Development of a simulation for pulverized coal-fired boiler operation (part 4): evaluation of the FLUENT model: Idemitsu Sekiyu Gijutsu, v. 32, no. 1, p. 29–37.
- Toole-O’Neil, B., ed., 1999, Dry scrubbing technologies for flue gas desulfurization: Boston, Mass., Kluwer, 904 p.
- Toole-O’Neil, B., Tewalt, S.J., Finkelman, R.B., and Akers, D.J., 1999, Mercury concentrations in coal—unraveling the puzzle: *Fuel*, v. 78, p. 47–54.
- Topper, J.M., Cross, P.J.I., Davison, J.E., and Goldthorpe, S.H., 1993, CO₂ abatement from coal-fired power plants – an insurance policy: *Fuel*, v. 72, no. 5, p. 724–725.
- Tourunen, A., Saastamoinen, J., and Nevalainen, H., 2009, Experimental trends of NO in circulating fluidized bed combustion: *Fuel*, v. 88, p. 1333–1341.
- Towler, M.R., Stanton, K.T., Mooney, P., Hill, R.G., Moreno, N., and Querol, X., 2002, Modelling of the glass phase in fly ashes using network connectivity theory: *Journal of Chemical Technology and Biotechnology*, v. 77, no. 3, p. 240–245.

- Townsend, T., Jang, Y.-C., and Tolaymat, T., 2002, Leaching tests for evaluating risk in solid waste management decision making: Department of Environmental Engineering Sciences, University of Fla., Center for Solid and Hazardous Waste Management Report no. 04-0332007, p. 10–134.
- Tracy, B.L., and Prantl, F.A., 1981, Radiological implications of thermal power production, *in* World Health Organization, and others, Health Impacts of Different Sources of Energy, Proceedings of an International Symposium on Health Impacts of Different Sources of Energy, June 22–26, 1981, Nashville, Tennessee: Vienna, Austria, World Health Organization [WHO], United Nations Environment Programme, and International Atomic Energy Agency [IAEE], p. 185–193.
- Tracy, B.L., and Prantl, F.A., 1985, Radiological impact of coal-fired power generation: Journal of Environmental Radioactivity, v. 2, p. 145–160.
- Tran, Loan T.K., 1996, Performance and cost modeling of NO_x combustion control technologies in pulverized-coal power plants: Raleigh, North Carolina State University, Master of Science thesis, 350 p.
- Triantafyllou, A.G., 2003, Levels and trend of suspended particles around large lignite power stations: Environmental Monitoring and Assessment, v. 89, no. 1, p. 15–34.
- Tripathy, S., Veeresh, H., Chaudhuri, D., Powell, M.A., and Hart, B.R., 2006, Heavy metals adsorption and their distribution in three soil types of India – effect of coal fly ash and sewage sludge amendment *in* Sajwan, K.S., Twardowska, I., Punshon, T., and Alva, A.K., eds., Coal Combustion Byproducts and Environmental Issues: New York, N.Y., Springer, p. 66–83.
- Tripathy, S.S., Kar, R.N., Kumar, S., Twardowska, I., and Sukla, L.B., 1998, Effect of chemical pretreatment on bacterial desulphurisation of Assam Coal: Fuel, v. 77, no. 8, p. 859–864.
- Trlica, M.J., Child, R.D., and Bauerle, B.A., 1985, Leaf injury and elemental concentrations in vegetation near a coal-fired power plant: Water, Air, and Soil Pollution, v. 24, p. 375–396.
- Troy, A.A., French, T.M., and Ales, J.F., 1993, Coal and lignite in Louisiana: Louisiana Department of Natural Resources, Technology Assessment Division, 14 p.
- Truelove, J., 1985, Burners and flame stability, an intensive course on the characterization of steaming coals, May 20–22, 1985, Newcastle: Newcastle, New South Wales, Australia, University of Newcastle, Institute of Coal Research, p. 4.1–4.19.
- Tsai, L.-Y., Chen, C.-F., and Finkelman, R.B., 2005, Composition and trace element content of coal in Taiwan: Tao, v. 16, no. 3, p. 641–651.
- Tsai, W., and Cohen, Y., 1993, Rain scavenging of toxic air pollutants: the rain scavenging ratio and research needs, *in* Chow, W., and others, eds., Managing Hazardous Air Pollutants: State of the Art: Electric Power Research Institute [EPRI] Report no. TR-101890, Boca Raton, Fla., Lewis Publishers, p. 494–501.
- Tseng, S., and Babu, M., 1996, Combined SO₂/NO_x removal in the ThioNO_x Process, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1419–1423.
- Tseng, S., Berisko, D., and Babu, M., 1996, An economic method to remove air toxins, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1369–1374.

- Tso, M.-y.W., and Leung, J.K.C., 1995, Radiological impact of coal ash from the power plants in Hong Kong: *Journal of Environmental Radioactivity*, v. 30, no. 1, p. 1–14.
- Tsuchiai, H., Ishizuka, T., Ueno, T., Hattori, H., and Kita, H., 1995, Highly active absorbent for SO₂ removal prepared from coal fly ash: *Industrial and Engineering Chemistry Research*, v. 34, no. 4, p. 1404–1411.
- Tsuji, H., Kotsuji, T., Ikeda, M., and Sirai, H., 2006, Development of total evaluation system of coal for pulverized coal combustion and flue gas treatment (part 1): CRIEPI Report no. M05006, 29 p.
- Tsuji, K., and Shiraishi, I., 1991, Mitsui-BF Dry desulfurization and denitrification process using activated coke, *in* Electric Power Research Institute [EPRI], eds., *Proceedings, SO₂ Control Symposium*, December 3-6, 1991, Washington, D.C., 13th Symposium: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. TR-101054, p. 307.
- Tsuo, Y., 2000, Engineering development of coal-fired high-performance power systems; Technical Progress Report no. 19, January through March 2000: Foster Wheeler Development Corp. DE-AC22-95PC95143–19, 11 p.
- Tsuo, Y., 2000, Engineering development of coal-fired high performance power systems; Technical Progress Report no. 21, July through September 2000: Foster Wheeler Development Corp. DE-AC22-95PC95143, 12 p.
- Tu, W., Zand, B., Butalia, T.S., Ajlouni, M.A., and Wolfe, W.E., 2009, Constant rate of strain consolidation of resedimented Class F fly ash: *Fuel*, v. 88, no. 7, p. 1154–1159.
- Tumati, P.R., and DeVito, M.S., 1993, Retention of condensed/solid phase trace elements in an electrostatic precipitator, *in* Chow, W., and others, eds., *Managing Hazardous Air Pollutants: State of the Art*: Electric Power Research Institute [EPRI] Report no. TR-101890, Boca Raton, Fla., Lewis Publishers, p. 423–435.
- Tümüklü, A., Çiflikli, M., and Özgür, F.Z., 2008, Determination of heavy metals in soils around Af in–Elbistan Thermal Power Plant (Kahramanmara - Turkey): *Asian Journal of Chemistry*, v. 20, no. 8, p. 6376–6384.
- Turner, F.B., and others, 1975, Preliminary analyses of soils and vegetation in the vicinity of the Mojave Generating Station in southern Nevada: Los Angeles, University of California, Laboratory of Nuclear Medicine and Radiation Biology, UCLA Report no. 12-990, 102 p.
- Turner, R.R., 1981, Oxidation state of arsenic in coal-ash leachate: *Environmental Science and Technology*, v. 15, p. 1062–1066.
- Twardowska, I., 1999, Environmental aspects of power plants fly ash utilization in deep coal mine workings, *in* Sajwan, K.S., Alva, A.K., and Keefer, R.F., eds., *Biogeochemistry of Trace Elements in Coal and Coal Combustion Byproducts*: New York, N.Y., Kluwer Academic/Plenum, p. 29–58.
- Twardowska, I., 1999, Environmental behavior of power plants fly ash containing FGD solids utilized in deep coal mines, *in* Sajwan, K.S., Alva, A.K., and Keefer, R.F., eds., *Biogeochemistry of Trace Elements in Coal and Coal Combustion Byproducts*: New York, N.Y., Kluwer Academic/Plenum, p. 77–98.
- Twardowska, I., and Stefaniak, S., 2006, Coal and coal combustion products – prospects for future and environmental issues, *in* Sajwan, K.S., Twardowska, I., Punshon, T., and Alva, A.K., eds., *Coal Combustion Byproducts and Environmental Issues*: New York, N.Y., Springer, p. 13–20.

- Twardowska, I., and Stefaniak, S., 2006, Occurrence and sorption of radionuclides onto coal-fired power plant combustion waste, *in* Sajwan, K.S., Twardowska, I., Punshon, T., and Alva, A.K., eds., *Coal Combustion Byproducts and Environmental Issues*: New York, N.Y., Springer, p. 61–65.
- Twardowska, I., and Szczepanska, J., 2002, Solid Waste: Terminological and long-term environmental risk assessment problems exemplified in a power plant fly ash study: *The Science of The Total Environment*, v. 285, p. 29–51.
- Twardowska, I., and Szczepanska, J., 2004, Coal combustion waste, *in* Twardowska, I., Allen, H.E., Kettrup, A.A.F., and Lacy, W.J., eds., *Solid Waste: Assessment, Monitoring and Remediation*: Amsterdam, The Netherlands, Elsevier, p. 387–449.
- Twardowska, I., Szczepanska, J., and Stefaniak, B., 2003, Occurrence and mobilization potential of trace elements from disposed coal combustion Fly Ash, *in* Sajwan, K.S., Alva, A.K., and Keefer, R.F., eds., *Chemistry of Trace Elements in Fly Ash*: New York, N.Y., Kluwer Academic/Plenum, p. 13–24.
- Twardowska, I., Tripathi, P.S.M., Singh, G., and Kyziol, J., 2003, Trace elements and their mobility in coal ash/fly ash from Indian power plants in view of its disposal and bulk use in agriculture, *in* Sajwan, K.S., Alva, A.K., and Keefer, R.F., eds., *Chemistry of Trace Elements in Fly Ash*: New York, N.Y., Kluwer Academic/Plenum, p. 25–44.
- Tzimas, E., Mercier, A., Cormos, C.-C., and Peteves, S.D., 2007, Trade-off in emissions of acid gas pollutants and of carbon dioxide in fossil fuel power plants with carbon capture: *Energy Policy*, v. 35, no. 8, p. 3991–3998.
- Uğur, A., Özden, B., Yener, G., Saç, M.M., Kurucu, Y., Altınbaş, Ü., and Bolca, M., 2009, Distributions of ²¹⁰Pb around a uraniferous coal-fired power plant in western Turkey: *Environmental Monitoring and Assessment*, v. 149, p. 195–200.
- Ugursal, V.I., and Al Taweel, A.M., 1990, A method for calculating the area requirement for power plant ash and FGD sludge disposal: *Journal of Coal Quality*, v. 9, no. 3, p. 87–90.
- Ugursal, V.I., Al Taweel, A.M., and Mackay, G.D.M., 1990, Impact of coal quality on the cost of electrical power generation: A Technoeconomic Model: *International Journal of Energy Research*, v. 14, no. 6, p. 683–699.
- Ujiie, S., and Yagasaki, E., 1999, Characterization of EP-ash, collected at fossil fuel power plants, as electrode material: *Journal of Power Sources*, v. 79, no. 1, p. 97–104.
- Ukeiley, R., and Ukeiley, R., 2009, EPA raising barriers to coal-fired power: *Solar Today*, v. 23, no. 2, p. 14.
- Uliasz-Bocheńczyk, A., and Mokrzycki, E., 2006, Fly ashes from Polish power plants and combined heat and power plants and conditions of their application for carbon dioxide utilization: *Chemical Engineering Research and Design*, v. 84, no. 9, p. 837–842.
- Uliasz-Bocheńczyk, A., Mokrzycka, E., Piotrowski, Z., and Pomykała, R., 2009, Estimation of CO₂ sequestration potential via mineral carbonation in fly ash from lignite combustion in Poland: *Energy Procedia*, v. 1, no. 1, p. 4873–4879.
- U.S. Delegation Tour to Soviet Union, 1963, Recent electric power developments in the U.S.S.R.: U.S. Department of the Interior, 63 p.

- U.S. Congress. House of Representatives. Committee on Science and Technology, Subcommittee on Energy Research, Development, and Demonstration (Fossil Fuels), 1975, Oversight hearing, coal combustion R.D. and D. for utility powerplants and industrial uses – hearings before the Subcommittee on Energy Research, Development, and Demonstration (Fossil Fuels) of the Committee on Science and Technology, U.S. House of Representatives, Ninety-fourth Congress, first session: Washington, D.C., U.S. Government Printing Office, 738 p.
- U.S. Congress, Office of Technology Assessment, 1992, Managing industrial solid wastes from manufacturing, mining, oil and gas production, and utility coal combustion – background paper: U.S. Congress, Office of Technology Assessment Report OTA-BP-O-82, 130 p.
- U.S. Department of Commerce, 1978, National Bureau of Standards, Certificate of Analysis, Standard Reference Material 1632a, Trace Elements in Coal (Bituminous): Washington D.C., U.S. Dept. Commerce, [2] p.
- U.S. Department of Commerce, 1978, National Bureau of Standards, Certificate of Analysis, Standard Reference Material 1635, Trace Elements in Coal (Subbituminous): Washington D.C., U.S. Dept. Commerce, [2] p.
- U.S. Department of Energy, 1981, Update Report on the performance of 400 megawatt and larger nuclear and coal-fired generating units: Washington, D.C., U.S. Dept. of Energy, Division of Power Supply and Reliability, DOE/RG-0052, 123 p.
- U.S. Department of Energy, 1981, Coal-fired power plant (western coal) : environmental characterization information Report: Washington, D.C., U.S. Dept. of Energy, Assistant Secretary for Environmental Protection, Safety and Emergency Preparedness, Office of Environmental Assessments, DOE/EP-0019, 63 p.
- U.S. Department of Energy, and U.S. Environmental Protection Agency, eds., 1979, Symposium on high temperature high pressure particulate control, September 20–21, 1977, Washington, D.C.: Washington, D.C., U.S. Dept. Energy, 617 p.
- U.S. Department of Energy, Office of Epidemiologic Studies, 2003, Environmental assessment for Toxecon retrofit for mercury and multi-pollutant control, Presque Isle Power Plant, Marquette, Michigan: Washington, D.C., U.S. Department of Energy Report DOE/EA-1476, 1 computer file [e-book], variously paged.
- U.S. Department of the Interior, Bureau of Reclamation, Upper Colorado Region, 1975, Proposed modification of Four Corners Powerplant and Navajo Mine, San Juan County, New Mexico, Draft Environmental Statement: U.S. Bureau of Reclamation, Upper Colorado Region Report no. INT DES 75-40, variously paged.
- U.S. Department of the Interior, Bureau of Reclamation, Upper Colorado Region, 1976, Proposed modification of Four Corners Powerplant and Navajo Mine, San Juan County, New Mexico, Final Environmental Statement: U.S. Bureau of Reclamation, Upper Colorado Region Report no. INT FES 76 -36, 2 v., variously paged.
- U.S. Energy Information Administration, 1982, Capacity utilization and fuel consumption in the electric power industry, 1970–1981: U.S. Department of Energy, U.S. Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternative Fuels, DOE/EIA-0343, 178 p.
- U.S. Energy Information Administration, 1983, Cost and quality of fuels for electric utility plants; 1982 Annual: U.S. Department of Energy, U.S. Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternative Fuels, DOE/EIA-0191(82), 195 p.

- U.S. Energy Information Administration, 1984, Electric power annual 1983: U.S. Department of Energy, U.S. Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternative Fuels, DOE/EIA-0348(83), 144 p.
- U.S. Energy Information Administration, 1988, Cost and quality of fuels for electric utility plants 1987: U.S. Department of Energy, U.S. Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternative Fuels, DOE/EIA-0191(87), 225 p.
- U.S. Energy Information Administration, 1988, Electric power quarterly: U.S. Department of Energy, U.S. Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternative Fuels, DOE/EIA-0397(88/2Q), 313 p.
- U.S. Energy Information Administration, 1989, Cost and quality of fuels for electric utility plants 1988: U.S. Department of Energy, U.S. Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternative Fuels, DOE/EIA-0191(88), 232 p.
- U.S. Energy Information Administration, 1989, Electric power monthly: U.S. Department of Energy, U.S. Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternative Fuels, DOE/EIA-0226(89/05), 176 p.
- U.S. Energy Information Administration, 1989, Electric power monthly: U.S. Department of Energy, U.S. Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternative Fuels, DOE/EIA-0226(89/12), pagination unknown.
- U.S. Energy Information Administration, 1991, Cost and quality of fuels for electric utility plants 1990: U.S. Department of Energy, U.S. Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternative Fuels, DOE/EIA-0191(90), 242 p.
- U.S. Energy Information Administration, 1992, Cost and quality of fuels for electric utility plants 1991: U.S. Department of Energy, U.S. Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternative Fuels, DOE/EIA-0191(91), 238 p.
- U.S. Energy Information Administration, 1993, Cost and quality of fuels for electric utility plants 1992: U.S. Department of Energy, U.S. Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternative Fuels, DOE/EIA-0191(92), 152 p.
- U.S. Energy Information Administration, 1994, Cost and quality of fuels for electric utility plants 1993: U.S. Department of Energy, U.S. Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternative Fuels, DOE/EIA-0191(93), pagination unknown.
- U.S. Energy Information Administration, 1995, Cost and quality of fuels for electric utility plants 1994: U.S. Department of Energy, U.S. Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternative Fuels, DOE/EIA-0191(94), 166 p.
- U.S. Energy Information Administration, 1995, Electric power monthly: U.S. Department of Energy, U.S. Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternate Fuels, DOE/EIA-0226(95/06), 196 p.
- U.S. Energy Information Administration, 1996, Cost and quality of fuels for electric utility plants 1995 tables: U.S. Department of Energy, U.S. Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternate Fuels, DOE/EIA-0191(95), 122 p.
- U.S. Energy Information Administration, 1999, Cost and quality of fuels for electric utility plants 1998: U.S. Department of Energy, U.S. Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternate Fuels, DOE/EIA-0191(98), 128 p.

- U.S. Energy Information Administration, 2000, Energy Policy Act transportation rate study – final Report on coal transportation: U.S. Department of Energy, U.S. Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternate Fuels, DOE/EIA-0597(2000), 90 p.
- U.S. Energy Information Administration, 2001, Analysis of strategies for reducing multiple emissions from electric power plants; sulfur dioxide, nitrogen oxides, carbon dioxide, and mercury and a renewable portfolio standard: U.S. Department of Energy, U.S. Energy Information Administration [EIA], EIA Service Report SR/OIAF/2001-03, 87 p.
- U.S. Energy Information Administration, 2001, Reducing emissions of carbon dioxide, nitrogen oxides, and mercury from electric power plants: U.S. Department of Energy, U.S. Energy Information Administration [EIA], Office of Integrated Analysis and Forecasting, EIA Service Report SR/OIAF/2001-04, 86 p.
- U.S. Energy Information Administration, 2002, Inventory of electric utility power plants in the United States 2000: U.S. Department of Energy, U.S. Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternate Fuels, DOE/EIA-0095(2000), 339 p.
- U.S. Energy Information Administration, 2009, Electric power annual (2007): U.S. Department of Energy, U.S. Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternate Fuels, variously paged.
- U.S. Energy Information Administration, 2010, Cost and quality of fuels for electric plants 2007 and 2008: U.S. Department of Energy, U.S. Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternate Fuels, DOE/EIA-0191(2008), 63 p.
- U.S. Energy Research and Development Administration, and Pennsylvania Department of Education, 1975a, Environmental impact of electric power generation – nuclear and fossil: Harrisburg, Pa., Pennsylvania Department of Education Report ERDA-69, 236 p.
- U.S. Energy Research and Development Administration, and Pennsylvania Department of Education, 1975b, Environmental impact of electric power generation – nuclear and fossil – teacher's guide: Harrisburg, Pa., Pennsylvania Department of Education Report ERDA-70, 27 p.
- U.S. Environmental Protection Agency [EPA], 1972, Water pollution aspects: U.S. Environmental Protection Agency [EPA], Office of Research and Monitoring, Office of Water Programs, Water Pollution Work Sub-group, p. 1–174.
- U.S. Environmental Protection Agency [EPA], 1976, Standards Support and Environmental Impact Statement Volume 1: Proposed Standards of Performance for Lignite-Fired Steam Generators: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Emissions Standards and Engineering Division, Report no. EPA-450/2-76-030a, 198 p.
- U.S. Environmental Protection Agency [EPA], 1979, Radiological impact caused by emissions of radionuclides into air in the United States: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], preliminary Report no. 520/7-79-006.
- U.S. Environmental Protection Agency [EPA], 1986, Nitrogen oxide control for stationary combustion sources: Cincinnati, Ohio, U.S. Environmental Protection Agency [EPA], Office of Research and Development, Report no. EPA/625/5-86/020, 49 p.

- U.S. Environmental Protection Agency [EPA], 1988, Report to Congress: Wastes from the combustion of coal by electric power plants: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-530-SW-88-002, 205 p.
- U.S. Environmental Protection Agency [EPA], 1994, Alternative control technologies document NO_x emissions from utility boilers: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Office of Air and Radiation, Office of Air Quality Planning and Standards, Emission Standards Division, Report no. EPA-453/R-94-023, [967] p.
- U.S. Environmental Protection Agency [EPA], 1995, Compilation of air pollutant emission factors (5th ed.): Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Office of Air Quality Planning and Standards, Report no. EPA-454/F-99-003, 1 v.
- U.S. Environmental Protection Agency [EPA], 1997, Mercury study report to Congress, Executive summary: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-452/R-97-004, v. 1, 95 p.
- U.S. Environmental Protection Agency [EPA], 1997, Mercury study report to Congress, An inventory of anthropogenic mercury emissions in the United States: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-452/R-97-004, v. 2, 181 p.
- U.S. Environmental Protection Agency [EPA], 1997, Mercury study report to Congress, Fate and transport of mercury in the environment: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-452/R-97-004, v. 3, 376 p.
- U.S. Environmental Protection Agency [EPA], 1997, Mercury study report to Congress, An assessment of exposure to mercury in the United States: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-452/R-97-004, v. 4, 293 p.
- U.S. Environmental Protection Agency [EPA], 1997, Mercury study report to Congress, Health effects of mercury and mercury compounds: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-452/R-97-004, v. 5, 349 p.
- U.S. Environmental Protection Agency [EPA], 1997, Mercury study report to Congress, An ecological assessment for anthropogenic mercury emissions in the United States: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-452/R-97-004, v. 6, 158 p.
- U.S. Environmental Protection Agency [EPA], 1997, Mercury study report to Congress, Characterization of Human health and wildlife risks from mercury exposure in the United States: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-452/R-97-004, v. 7, 152 p.
- U.S. Environmental Protection Agency [EPA], 1997, Mercury study report to Congress, An evaluation of mercury control technologies and Costs: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-452/R-97-004, v. 8, 207 p.
- U.S. Environmental Protection Agency [EPA], 2005, Using coal ash in highway construction: A guide to benefits and impacts: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-530-K-05-002, 41 p.

- U.S. Environmental Protection Agency [EPA], 2005, Multipollutant emission control technology options for coal-fired power plants: Washington, D.C., U.S. Environmental Protection Agency [EPA], Office of Research and Development and Office of Air and Radiation, EPA-600/R-05/034, 1 v., variously paged.
- U.S. Environmental Protection Agency [EPA], 2005, Control of mercury emissions from coal fired electric utility boilers – an update: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Air Pollution Prevention and Control Division, National Risk Management Research Laboratory, Office of Research and Development, 59 p.
- U.S. Environmental Protection Agency [EPA], 2006, Coal-fired power plant emissions: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Office of Radiation and Indoor Air, Report no. EPA 402-F-06-028, 1 p.
- U.S. Federal Power Commission, 1970, Steam-electric plant construction cost and annual production expenses, Twenty-third annual supplement - 1970: U.S. Federal Power Commission, Bureau of Power, 221 p.
- U.S. National Air Pollution Control Administration, 1968, Tall stacks, various atmospheric phenomena and related aspects: Arlington, Va., U.S. Dept. of Health, Education and Welfare, Public Health Service, Consumer Protection and Environmental Health Service, 120 p.
- U.S. National Research Council, Commission on Natural Resources, 1975, Air quality and stationary source emission control: a Report: Washington, D.C., National Academies Press, 909 p.
- U.S. National Research Council, and Committee on the Strategic Assessment of the U.S. Department of Energy's Coal Program, 1995, Coal; energy for the future: Washington, D.C., National Academies Press, 304 p.
- U.S. Office of Fossil Energy, 1975-1976, Coal power and combustion [quarterly periodical]: Washington, D.C., U.S. Office of Fossil Energy, variously paginated.
- U.S. Office of Fossil Energy, 1993, Coal combustion waste management study: Washington, D.C., ICF Resources Incorporated contract Report to U.S. Department of Energy no. DOE/FE/62017.H 1, variously paged.
- Unsworth, J.F., Barrett, D.J., and Roberts, P.T., 1991, Coal quality and combustion performance – an International Perspective: Amsterdam, The Netherlands, Elsevier, 638 p.
- Unterberger, S., and Hein, K.R.G., 2003, Air toxic emissions from coal-fired plants - regulation, applied technologies and recent research activities, in Proceedings of the International Symposium on Coal Combustion, November 2003, Nanjing, China, 5th Symposium: p. 377–381.
- Urgursal, V.I., and Al Taweel, A.M., 1985, Technoeconomic modelling of coal beneficiation: a literature review: Technical University of Nova Scotia, 32 p.
- Uri, N.D., 1981, Regional forecasting of the demand for fossil fuels by electric utilities in the United States: Regional Science and Urban Economics, v. 11, no. 1, p. 87–100.
- Utah Power and Light Company, and Utah State University Agricultural Experiment Station, 1987, Evaluation of health effects on animals and defining a cattle reproductive problem in the vicinity of a coal-fired power generation plant: Logan, Utah, Utah State University Agricultural Experiment Station, 145 p.

- Utsunomiya, S., Jensen, K.A., Keeler, G.J., and Ewing, R.C., 2002, Uraninite and fullerene in atmospheric particulates: *Environmental Science and Technology*, v. 36, no. 23, p. 4943–4947.
- Vadapalli, V.R.K., Klink, M.J., Etchebers, O., Petrik, L.F., Gitari, W., White, R.A., Key, D., and Iwuoha, E., 2008, Neutralization of acid mine drainage using fly ash, and strength development of the resulting solid residues: *South African Journal of Science*, v. 104, no. 7-8, p. 317–322.
- Vaessen, R.J., 1985, NO-oxidation in stack plumes of power stations. Descriptions of a classification of NO conversion based on O₃ background concentrations and wind speed: Arnhem, The Netherlands, KEMA Report 60652-MOL,86-3026 [in Dutch].
- Vaillant, J.-C., Vandenberghe, B., Hahn, B., Heuser, H., and Jochum, C., 2008, T/P23, 24, 911 and 92 – new grades for advanced coal-fired power plants – properties and experience: *International Journal of Pressure Vessels and Piping*, v. 85, no. 1/2, p. 38–46.
- Valentim, B., Guedes, A., Flores, D., Ward, C.R., Hower, J.C., 2009, Variations in fly ash composition with sampling location: case study from a Portuguese power plant: *Combustion and Gasification Products*, v. 1, p. 14–24.
- Valentim, B., Lemos de Sousa, M.J., Abelha, P., Boavida, D., and Gulyurtlu, I., 2006, The identification of unusual microscopic features in coal and their derived chars: influence on coal fluidized bed combustion: *International Journal of Coal Geology*, v. 67, p. 202–211.
- Valero, A., and Cortés, C., 1996, Ash fouling in coal-fired utility boilers. Monitoring and optimization of on-load cleaning: *Progress in Energy and Combustion Science*, v. 22, no. 2, p. 189–200.
- Valupadas, P., 2009, Alberta mercury regulation for coal-fired power plants: *Fuel Processing Technology*, v. 90, no. 11, p. 1339–1342.
- Van Alphen, C., 2005, Factors influencing fly ash formation and slag deposit formation (slagging) on combusting a South African pulverized fuel in a 200 MWe boiler: Johannesburg, South Africa, University of the Witwatersrand, Ph.D. thesis.
- van Bush, P., Snyder, T.R., and Chang, R.L., 1989, Determination of baghouse performance from coal and ash properties: Part II: *Journal of the Air Pollution Control Association*, v. 39, no. 3, p. 361–372.
- van der Hoek, E.E., Bonouvrie, P.A., and Comans, R.N.J., 1994, Sorption of As and Se on mineral components of fly ash: relevance for leaching processes: *Applied Geochemistry*, v. 9, p. 403–412.
- van der Hoek, E.E., and Comans, R.N.J., 1996, Modeling arsenic and selenium leaching from acidic fly ash by sorption on iron (hydr)oxide in the fly ash matrix: *Environmental Science and Technology*, v. 30, no. 2, p. 517–523.
- Van der Kooij, J., and Elshout, A.J., 1975, NO-messungen in den niederländischen kraftwerken: *Elektrotechnik*, v. 53, p. 314–319.
- van der Lans, R.P., Glarborg, P., and Dam-Johansen, K., 1997, Influence of process parameters on nitrogen oxide formation in pulverized coal burners: *Progress in Energy and Combustion Science*, v. 23, no. 4, p. 349–377.
- van der Lans, R.P., Glarborg, P., Dam-Johansen, K., Knudsen, P., Hesselmann, G., and Hepburn, P., 1998, Influence of coal quality on combustion performance: *Fuel*, v. 77, no. 12, p. 1317–1328.

- Van Hook, R.I., 1979, Potential health and environmental effects of trace elements and radionuclides from increased coal utilization: *Environmental Health Perspectives*, v. 33, p. 227–247.
- Van Hook, R.I. and Shults, W.D., eds., 1977, Effects of trace contaminants from coal combustion, *in* Proceedings of a workshop, August 2–6, 1976, Knoxville, Tennessee: U.S. Energy Research and Development Administration, Division of Biomedical and Environmental Research, Report ERDA 77-64, 79 p.
- Van Winkle, W., ed., 1977, Proceedings of the Conference on Assessing the Effects of Power-Plant-Induced Mortality on Fish Populations, May 3-6, 1977, Gatlinburg, Tennessee: New York, N.Y., Pergamon, 380 p.
- Vandenbergh, R.E., de Resende, V.G., and De Grave, E., 2009, Mössbauer effect study of fly and bottom ashes from an electric generating plant: *Hyperfine Interactions*, v. 191, no.1-3, p. 11–16.
- Vanderpol, A.H., and Humbert, M.E., 1981, Coloration of power plant plumes—NO₂ or aerosols?: *Atmospheric Environment*, v. 15, no. 10-11, p. 2105–2110.
- Vangronsveld, J., Ruttens, A., and Clijsters, H., 1999, The use of cyclonic ashes of fluidized bed burning of coal mine refuse for long-term immobilization of metals in soils, *in* Sajwan, K.S., Alva, A.K., and Keefer, R.F., eds., *Biogeochemistry of Trace Elements in Coal and Coal Combustion Byproducts*: New York, N.Y., Kluwer Academic/Plenum, p. 223–233.
- Vaninetti, G.E., 1987, The importance of coal quality in marketing: *Journal of Coal Quality*, v. 6, no. 1, p. 5–7.
- Vaninetti, G.E., Agoston, E.N., and Lloyd, T.W., 1981, Methodology for the prediction of run-of-mine coal quality, *in* Argall, George George O., ed., *Coal exploration 3, papers from the international coal exploration symposium, August 23–26, 1981, Calgary, Alberta, Canada, 3rd Symposium*: San Francisco, Calif., M. Freeman Publications, p. 86–99.
- Vaninetti, G.E., and Busch, C.F., 1981, A utility perspective on the significance of mineral analyses of ash data, *in* Coal Testing Conference, eds., *Proceedings, Coal Testing Conference, March 2–3, 1981, Lexington, Kentucky, 1st Conference*: Charleston, Kentucky, Coal Testing Conference, p. 48–58.
- Vaninetti, G.E., and Busch, C.F., 1982, Mineral analysis of ash data – a utility perspective: *Journal of Coal Quality*, v. 1, p. 22–31.
- Vardar, N., and Yumurtacia, Z., 2010, Emissions estimation for lignite-fired power plants in Turkey: *Energy Policy*, v. 38, no. 1, p. 243–252.
- Varey, R.H., Sutton, S., and March, A.R.W., 1984, A numerical model for the production of nitrogen dioxide in power station plumes: *Environmental Pollution*, v. B7, p. 107–127.
- Vassilev, S., 1992, Phase mineralogy studies of solid waste products from coal burning at some Bulgarian thermoelectric power plants: *Fuel*, v. 71, p. 625–633.
- Vassilev, S., 1994, Trace elements in solid waste products from coal burning at some Bulgarian thermoelectric power stations: *Fuel*, v. 73, p. 367–374.
- Vassilev, S., 1995, Stack emissions from coal-fired power stations: an environmental pollution with trace elements: *Comptes Rendus de l'Academie Bulgare des Sciences*, v. 48, no. 4, p. 45–47.

- Vassilev, S., Eskenazy, G., and Vassileva, C., 2001, Behaviour of elements and minerals during preparation and combustion of the Pernik Coal, Bulgaria: *Fuel Processing Technology*, v. 72, no. 3, p. 103–129.
- Vassilev, S., Menéndez, R., Diaz-Somoano, M., and Martínez-Tarazona, M.R., 2003, Phase-mineral and chemical composition of coal fly ashes as a basis for their multi-component utilization – 1. – characterization of feed coals and fly ashes: *Fuel*, v. 82, p. 1793–1811.
- Vassilev, S.V., Eskenazy, G.M., and Vassileva, C.G., 2000, Contents, modes of occurrence, and behavior of chlorine and bromine in combustion wastes from coal-fired power stations: *Fuel*, v. 79, p. 923–937.
- Vassilev, S.V., and Vassileva, C.G., 1996, Mineralogy of combustion wastes from coal-fired power stations: *Fuel Processing Technology*, v. 47, p. 261–280.
- Vassilev, S.V., and Vassileva, C.G., 1996, Occurrence, abundance, and origin of minerals in coals and coal ashes: *Fuel Processing Technology*, v. 48, p. 85–106.
- Vassilev, S.V., and Vassileva, C.G., 1997, Geochemistry of coals, coal ashes, and combustion wastes from coal-fired power stations: *Fuel Processing Technology*, v. 51, p. 19–45.
- Vassilev, S.V., and Vassileva, C.G., 2005, Methods for characterization of composition of fly ashes from coal-fired power stations: a critical overview: *Energy and Fuels*, v. 19, p. 1084–1098.
- Vassilev, S.V., and Vassileva, C.G., 2007, A new approach for the classification of coal fly ashes based on their origin, composition, properties, and behavior: *Fuel*, v. 86, p. 1490–1512.
- Vassilev, S.V., Vassileva, C.G., Karayığıt, A.I., Bulut, Y., Alastuey, A., and Querol, X., 2005, Phase-mineral and chemical composition of composite samples from feed coals, bottom ashes and fly ashes at the Soma Power Station, Turkey: *International Journal of Coal Geology*, v. 61, no. 1-2, p. 35–63.
- Vassilev, S.V., Vassileva, C.G., Karayığıt, A.I., Bulut, Y., Alastuey, A., and Querol, X., 2005, Phase-mineral and chemical composition of fractions separated from composite fly ashes at the Soma Power Station, Turkey: *International Journal of Coal Geology*, v. 61, no. 1-2, p. 65–85.
- Vassileva, B., Vassilev, S., and Vassileva, C., 1996, Effective use of mineral sorbents for purification of waste waters from thermo-electric power stations: *Comptes Rendus de l'Academie Bulgare des Sciences*, v. 49, no. 4, p. 59–62.
- Vathavooran, A., Batchelor, A., Miles, N.J., and Kingman, S.W., 2006, Applying froth imaging techniques to assess fine coal dewatering behavior: *Coal Preparation*, v. 26, no. 2, p. 103–121.
- Vatsky, J., 1987, Versatile low NO_x burner allows boilers to meet clean air regulations: *Heat Engineering*, v. 53, no. 2, p. 16–26.
- Vaughan, B.E., Abel, K.H., Cataldo, D.A., Hales, J.M., Hane, C.E., Rancitelli, L.A., Routson, R.C., Wildung, R.E., and Wolf, E.G., 1975, Review of the potential impact on health and environmental quality from metals entering the environment as a result of coal utilization: Seattle, Wash., Pacific Northwest Laboratories, Batelle Memorial Institute Report 11, 75 p.

- Vaughan, W.M., 1985, Transport of pollutants in plumes and PEPES [microform]: A study of transport of pollutants in power plant plumes, urban and industrial plumes, and persistent elevated pollution episodes [Project Summary]: Research Triangle Park, N.C., Environmental Protection Agency [EPA], Atmospheric Sciences Research Laboratory, Report no. EPA-600/S3-85/033, 3 p.
- Veawab, A., and Aroonwilas, A., 2005, Cost-saving opportunity for CO₂ capture by blended-alkanolamines: *Greenhouse Gas Control Technologies*, v. 7, p. 1845–1848.
- Vecci, S.J., Wagoner, C.L., and Olson, G.B., 1978, Fuel and ash characterization and its effect on the design of industrial boilers: *Proceedings of the American Power Conference*, v. 40, p. 850–864.
- Veneva, L., Hoffmann, V., Jordanova, D., Jordanova, N., and Fehr, Th., 2004, Rock magnetic, mineralogical, and microstructural characterization of fly ashes from Bulgarian power plants and the nearby anthropogenic soils: *Physics and Chemistry of the Earth, Parts A/B/C*, v. 29, no. 13-14, p. 1011–1023.
- Veranth, J.M., Smith, K.R., Huggins, F., Hu, A.A., Lighty, J.S., and Aust, A.E., 2000, Mössbauer spectroscopy indicates that iron in an aluminosilicate glass phase is the source of the bioavailable iron from coal fly ash: *Chemical Research in Toxicology*, v. 13, no. 3, p. 161–164.
- Vernon, J.L., 1989, Market impacts of sulphur control: The consequences for coal: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACR/18, 111 p.
- Vernon, J.L., and Soud, H.N., 1990, FGD installations on coal-fired plants (1st. ed.): London, United Kingdom, International Energy Agency [IEA], Coal Research, Report IEACR/22, 84 p.
- Vijayan, V., and Behera, S.N., 1999, Studies on natural radioactivity in coal ash, *in* Mishra, P.C., and Naik, A., eds., *Environmental Management in Coal Mining and Thermal Power Plants*: Jaipur, India, Technoscience, p. 453–456.
- Vijayaraghavan, K., Zhang, Y., Seigneur, C., Karamchandani, P., and Snell, H.E., 2009, Export of reactive nitrogen from coal-fired power plants in the U.S.: Estimates from a plume-in-grid modeling study: *Journal of Geophysical Research*, v. 114, no. D04308, doi:10.1029/2008JD010432, 11 p.
- Vilches, L.F., Fernández-Pereira, C., Olivares del Valle, J., Rodríguez-Piñero, M., and Vale, J., 2002, Development of new fire-proof products made from coal fly ash: the CEFYR project: *Journal of Chemical Technology and Biotechnology*, v. 77, no. 3, p. 361–366.
- Vincze, L., Somogyi, A., Osán, J., Vekemans, B., Török, S., Janssens, K., and Adams, F., 2002, Quantitative trace element analysis of individual fly ash particles by means of x-ray microfluorescence: *Analytical Chemistry*, v. 74, no. 5, p. 1128–1135.
- Vissar, M., Boysan, F., and Weber, R., 1987, Computations of isothermal swirling vortices in the near burner zone—Report on the MMF1-1 Investigation: International Flame Research Foundation Report IFRF-F—336/a/9, 179 p.
- Viswanathan, R., and Coleman, K., 2002, Boiler materials for ultrasupercritical coal power plants: *Energy Industries of Ohio, Incorporated*, p. 1–34.
- Vocke, R.W., Sears, K., O'Toole, J.J., and Wildman, R.B., 1980, Growth responses of selected freshwater algae to trace elements and scrubber ash slurry generated by coal-fired power plants: *Water Research*, v. 14, no. 2, p. 141–150.

- Vogt, R.A., and Laurendeau, N.M., 1978, Effect of devolatilization on nitric oxide formation from coal nitrogen: *Fuel*, v. 57, no. 4, p. 232–233.
- Vohra, K.G., ed., 1982, Natural Radiation environment, Proceedings of the special symposium on natural Radiation Environment, January 19–23, 1981, Bhabha Atomic Research Centre, Bombay, India, 2nd Symposium: New York, N.Y., Wiley, 691 p.
- vom Berg, W., and Puch, K.-H., 1996, Radioactivity of residues of coal-fired power stations: *VGB Kraftwerkstechnik*, v. 76, no. 8, p. 623–629.
- Vories, K., 2002, The Surface Mining Control and Reclamation Act: A response to concerns about placement of coal combustion by-products at coal mines [abs.], *in* Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 21–22.
- Vories, K.C., 2002, Coal mining and reclamation with coal combustion by-products: An overview, *in* Vories, K.C. and Throgmorton, Dianne, eds., Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 1–10.
- Vorres, K.S., ed., 1986, Mineral matter and ash in coal, developed from a symposium sponsored by the Division of Fuel Chemistry at the annual meeting of the American Chemical Society, August 26–31, 1984, Philadelphia, Pennsylvania, 188th Annual meeting: Washington, D.C., American Chemical Society, 537 p.
- Vuthaluru, H.B., 1999, Remediation of ash problems in pulverised coal-fired boilers: *Fuel*, v. 78, no. 15, p. 1789–1803.
- Wadge, A., and Hutton, M., 1987, The leachability and chemical speciation of selected trace elements in fly ash from coal combustion and refuse incineration: *Environmental Pollution*, v. 48, p. 85–99.
- Wadge, A., Hutton, M., and Peterson, P.J., 1986, The concentrations and particle size relationships of selected trace elements in fly ashes from U.K. coal-fired power plants and a refuse incinerator: *The Science of The Total Environment*, v. 54, p. 13–27.
- Wagoner, C.L., 1988, New opportunity to predict and verify effects of coal quality on the operation of heat exchangers through generic engineering: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-5713, p. 6.1–6.26.
- Wagoner, C.L., and Duzy, A.F., 1967, Burning profiles for solid fuels: Pittsburgh, Pa., American Society of Mechanical Engineers, Paper no. 67-WA/FU-4, no available pagination.
- Wain, S.E., Livingston, W.R., Sanyal, A., and Williamson, J., 1992, Thermal and mechanical properties of boiler slags of relevance to sootblowing, *in* Benson, Steven A., ed., Inorganic transformations and ash deposition during combustion, proceedings, Engineering Foundation conference on inorganic transformations and ash deposition during combustion, March 10–15, 1991, Palm Coast, Florida: New York, N.Y., American Society of Mechanical Engineers, p. 459–470.
- Walker, A., and Wheelock, T.D., 2006, Separation of carbon from fly ash using froth flotation: *Coal Preparation*, v. 26, no. 4, p. 235–250.

- Walker, A.B., 1974, Experience with hot electrostatic precipitators for fly ash collection in electric utilities, *in* Illinois Institute of Technology and Iowa State University, eds., Proceedings, American Power Conference Annual Meeting, April 29–30, May 1, 1974, Chicago, Illinois, 36th Annual Meeting: Chicago, Illinois Institute of Technology, p. 1180.
- Walker, J.R., 1995, Engineering properties of coal combustion by-products from a power plant in the midwestern United States: Carbondale, Illinois, University of Southern Illinois, Department of Mining Engineering, Master of Science thesis, 78 p.
- Walker, S., 1999, Uncontrolled fires in coal and coal wastes: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACCC/16, 72 p.
- Wall, T., Elliott, L., Sanders, D., and Conroy, Ashley, 2001, A review of the state-of-the-art in coal blending for power generation final Report – Project 3.16: Newcastle, New South Wales, University of Newcastle, Advanced Technology Centre, Technology Assessment Report 14, 97 p.
- Wall, T., Wibberley, L.J., and McCol Stewart, I., 1985, The characterisation of steaming coals – limitations of the standard laboratory and pilot scale tests, an intensive course on the characterization of steaming coals, May 20–22, 1985, Newcastle: Newcastle, New South Wales, Australia, University of Newcastle, Institute of Coal Research, p. 11.11–11.26.
- Wall, T.F., 1985, Coal characterisation for combustion, an intensive course on the characterization of steaming coals, May 20–22, 1985, Newcastle: Newcastle, New South Wales, Australia, University of Newcastle, Institute of Coal Research, p. 1.1–1.19.
- Wall, T.F., 1985, Combustion of coal chars, an intensive course on the characterization of steaming coals; May 20–22, 1985, Newcastle: Newcastle, New South Wales, Australia, University of Newcastle, Institute of Coal Research, p. 5.1–5.29.
- Wall, T.F., 1992, Mineral matter transformations and ash deposition in pulverised coal combustion: Symposium (International) on Combustion, v. 24, no. 1, p. 1119–1126.
- Wall, T.F., Bhattacharya, S.P., Baxter, L.L., Richards, G., and Harb, J.N., 1995, The character of ash deposits and the thermal performance of furnaces: Fuel Processing Technology, v. 44, p. 143–153.
- Wall, T.F., Bhattacharya, S.P., Zhang, D.K., Gupta, R.P., and He, X., 1994, The properties and thermal effects of ash depositions in coal fired furnaces – a review, *in* Williamson, J., and Wigley, F., eds., The Impact of Ash Deposition on Coal Fired Plants; Proceedings of the Engineering Foundation Conference, June 20–25, 1993, Solihull, England: Washington, D.C., Taylor and Francis, p. 463–478.
- Wall, T.F., Gui-su Liua, Hong-wei Wua, Roberts, D.G., Benfella, K.E., Gupta, S., Lucas, J.A., and Harris, D.J., 2002, The effects of pressure on coal reactions during pulverised coal combustion and gasification: Progress in Energy and Combustion Science, v. 28, no. 5, p. 405–433.
- Wall, T.F., Lowe, A., Wibberley, L.J., and Stewart, I.M., 1979, Mineral matter in coal and the thermal performance of large boilers: Progress in Energy and Combustion Science, v. 5, no. 1, p. 1–29.
- Wallace, A., and Romney, E.M., 1980, Retention of trace elements in leaves as a result of aerial deposition from fly ash: Journal of Plant Nutrition, v. 2, no. 1-2, p. 155–158.
- Walls, W.D., Rusco, F.W., and Ludwigson, J., 2007, Power plant investment in restructured markets: Energy, v. 32, no. 8, p. 1403–1413.

- Walsh, P.M., Beer, J.M., and Sarofim, A.F., 1988, Estimation of aerodynamic effects on erosion of a tube by ash: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-5936-SR, p. 2.19–12.34.
- Walsh, P.M., Chiu, K.S., Beer, J.M., and Biemann, K., 1983, Polycyclic aromatic compounds in fluidized bed combustion of coal: *Fuel*, v. 28, no. 4, p. 251–264.
- Walsh, P.M., Sarofim, A.F., and Beér, J.M., 1992, Fouling of convection heat exchangers by lignitic coal: *Energy and Fuels*, v. 6, no. 6, p. 709–715.
- Wan, S.L., and Wrixon, A.D., 1988, Radiation doses from coal-fired plants in Oxfordshire and Berkshire: National Radiological Protection Board [United Kingdom], Report no. 203, 17 p.
- Wang, D., and Sweigard, R.J., 1996, Characterisation of fly ash and bottom ash from a coal-fired power plant: *International Journal of Mining, Reclamation, and Environment*, v. 10, no. 4, p. 181–186.
- Wang, H., Ban, H., Golden, D., and Ladwig, K., 2002, Ammonia release characteristics from coal combustion fly ash: American Chemical Society, Fuel Chemistry Division Preprints, v. 47, no. 2, p. 836–838, last accessed June 2010 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/Merge/Vol-47_2-0002.pdf.
- Wang, I.T., 1977, On dispersion modeling of inversion breakup fumigation of power plant plumes: *Atmospheric Environment*, v. 11, p. 573–576.
- Wang, J., Teng, X., Wang, H., and Ban, H., 2004, Characterizing the metal adsorption capability of a Class F coal fly ash: *Environmental Science and Technology*, v. 38, p. 6710–6715.
- Wang, Q., Shen, W., and Ma, Z., 2000, Estimation of mercury emission from coal combustion in China: *Environmental Science and Technology*, v. 34, p. 2711–2713.
- Wang, S., Ma, Q., and Zhu, Z.H., 2008, Characteristics of coal fly ash and adsorption application: *Fuel*, v. 87, p. 3469–3473.
- Wang S.X., Liu M., Jiang J.K., Hao J.M., Wu Y., and Streets, D.G., 2006, Estimate the mercury emissions from non-coal sources in China: *Huan Jing Ke Xue*, v. 27, no. 12, p. 2401–2406 [in Chinese with English abstract].
- Wang S.X., Zhang L., Li G.H., Wu Y., Hao J.M., Pirrone, N., Sprovieri, F., and Ancora, M.P., 2010, Mercury emission and speciation of coal-fired power plants in China: *Atmospheric Chemistry and Physics*, v. 10, p. 1183–1192.
- Wang, T., Wang, J., and Burken, J., 2007, The leaching characteristics of selenium from coal fly ashes: *Journal of Environmental Quality*, v. 36, p. 1784–1792.
- Wang, W., Qin, Y., Song, D., and Wang, K., 2008, Column leaching of coal and its combustion residues, Shizuishan, China: *International Journal of Coal Geology*, v. 75, no. 2, p. 81–87.
- Wang, X., Mauzerall, D.L., Hu, Y., Russell, A.G., Larson, E.D., Woo, J.-H., Streets, D.G., and Guenther, A., 2005, A high-resolution emission inventory for eastern China in 2000 and three scenarios for 2020: *Atmospheric Environment*, v. 39, p. 5917–5933.
- Wang, Y., Duan, Y., Yang, L., Zhao, C., Shen, X., Zhang, M., Zhuo, Y., and Chen, C., 2009, Experimental study on mercury transformation and removal in coal-fired boiler flue gases: *Fuel Processing Technology*, v. 90, no. 5, p. 643–651.

- Wang, Y., Ren, D., and Zhao, F., 1999, Comparative leaching experiments for trace elements in raw coal, laboratory ash, fly ash, and bottom ash: *International Journal of Coal Geology*, v. 40, no. 2-3, p. 103–108.
- Wang Y.-J., Duan Y.-F., Yang L.-G., Jiang Y.-M., Wu C.-J., Wang Q., and Yang X.-H., 2008, Comparison of mercury removal characteristic between fabric filter and electrostatic precipitators of coal-fired power plants: *Journal of Fuel Chemistry and Technology*, v. 36, no. 1, p. 23–29.
- Wangen, L.E., 1981, Elemental composition of size-fractionated aerosols associated with a coal-fired power plant plume and background: *Environmental Science and Technology*, v. 15, p. 1080–1088.
- Wangen, L.E., and Turner, F.B., 1980, Trace elements in vegetation downwind of a coal-fired power plant: *Water, Air, and Soil Pollution*, v. 13, p. 99–108.
- Wangen, L.E., and Wienke, C.L., 1976, A review of trace element studies related to coal combustion in the Four Corners area of New Mexico: *Los Alamos Scientific Laboratory*, 53 p.
- Wangen, L.E., and Williams, M.D., 1978, Elemental deposition downwind of a coal-fired power plant: *Water, Air, and Soil Pollution*, v. 10, no. 1, p. 33–44.
- Ward, C.R., and French, D., 2006, Determination of glass content and estimation of glass composition in fly ash using quantitative x-ray diffractometry: *Fuel*, v. 85, p. 2268–2277.
- Ward, C.R., French, D., Jankowski, J., Dubikova, M., Li, Z., and Riley, K.W., 2009, Element mobility from fresh and long-stored acidic fly ashes associated with an Australian power station: *International Journal of Coal Geology*, v. 80, no. 3-4, p. 224–236.
- Warren, C.J., and Dudas, M.J., 1999, Leachability and partitioning of elements in ferromagnetic fly ash particles: *The Science of The Total Environment*, v. 84, p. 223–236.
- Warren, C.J., Evans, L.J., and Sheard, R.W., 1993, Release of some trace elements from sluiced fly ash on acidic soils with particular reference to boron: *Waste Management and Research*, v. 11, no. 1, p. 3–15.
- Waters, A.G., 1987, Implications of coal properties for thermal coal exports, in *Geological Society of Australia, Coal Geology Group and New South Wales Institute of Technology, eds., Geology and Coal Mining Conference proceedings, October 13–15, 1987, Sydney, New South Wales, Australia: Sydney, N.S.W., Geological Society of Australia*, p. AGW01–AGW08.
- Watson, D.E., 1970, The risk of carcinogenesis from long-term low dose exposure to pollution emitted by fossil fuel power plants: *Livermore, University of California, Lawrence Livermore Laboratory Report, UCRL-50937, TID-4500, UC-48* [pagination not known].
- Watson, J.G., Chow, J.C., and Houck, J.E., 2001, PM_{2.5} chemical source profiles for vehicle exhaust, vegetative burning, geological material, and coal burning in north-western Colorado during 1995: *Chemosphere*, v. 43, no. 8, p. 1141–1151.
- Watson, J.G., Chow, J.C., Lowenthal, D.H., Robinson, N.F., Cahill, C.F., and Blumenthal, D.L., 2002, Simulating changes in source profiles from coal-fired power stations: use in chemical mass balance of PM_{2.5} in the Mt. Zirkel Wilderness: *Energy and Fuels*, v. 16, p. 311–324.
- Watson, J.G., Chow, J.C., and Watson, J.G., 2001, Source characterization of major emission sources in the Imperial and Mexicali Valleys along the US/Mexico Border: *The Science of The Total Environment*, v. 276, no. 1-3, p. 33–47.

- Watson, J.G., Rogers, C.F., Ruby, M.G., Rood, M.J., Chow, J.C., and Egami, R.T., 1989, Method 501 – high volume measurement of size classified suspended particulate material, *in* Lodge, J.P.J., ed., *Methods of Air Sampling and Analysis* (3rd. ed.): Chelsea, Mich., Lewis Publishers, p. 427–439.
- Watt, J.D., and Thorne, D.J., 1965, Composition and pozzolantic properties of pulverised fuel ashes –I. – composition of fly ashes from some British power stations and properties of their component particles: *Journal of Applied Chemistry*, v. 15, p. 585–594.
- Wawrzynkiewicz, W., 2004, Determination of the handleability of power coals and factors generating its variability: *Coal Preparation*, v. 24, p. 123–137.
- Webber, J.S., Dutkiewicz, V.A., and Husain, L., 1985, Identification of submicrometer coal fly ash in a high-sulfate episode at Whiteface Mountain, New York: *Atmospheric Environment; Part A*, v. 19, no. 2, p. 285.
- Weijuan, Y., Zhijun, Z., Junhu, Z., Hongkun, L.V., Jianzhong, L., and Kefa, C., 2009, Application of hybrid coal reburning/SNCR processes for NO_x reduction in a coal-fired boiler: *Environmental Engineering Science*, v. 26, no. 2, p. 311–318.
- Weil, J.C., and Jepsen, A.F., 1977, Evaluation of the gaussian plume model at the Dickerson Power Plant: *Atmospheric Environment*, v. 11, no. 10, p. 901–910.
- Weimer, R.J., 1976, Stratigraphy and tectonics of western coals, *in* Murray, D. Keith, ed., *Proceedings of the symposium on the geology of Rocky Mountain coal*, April 26–27, 1976, Golden, Colorado, 1st Symposium: Denver, Colo., Colorado Geological Survey Resource Series, no. 1, p. 9–26.
- Weiner, J.G., 1979, Aerial inputs of cadmium, copper, lead, and manganese into a fresh-water pond in the vicinity of a coal-fired power plant: *Water, Air, and Soil Pollution*, v. 12, p. 343–353.
- Weinstein, L.H., Arthur, M.A., Schneider, R.E., Woodbury, P.B., Laurence, J.A., Beers, A.O., and Rubin, G., 1993, Uptake of chemical elements by terrestrial plants growing on a coal fly ash landfill, *in* Keefer, R.F., and Sajwan, K.S., eds., *Trace elements in coal and coal combustion residues*: Boca Raton, Fla., Lewis Publishers, p. 213–237.
- Weissman, S.H., Carpenter, R.L., and Newton, G.J., 1983, Respirable aerosols from fluidized bed coal Combustion – 3. – elemental composition of fly ash. *Environmental Science and Technology*, v. 17, p. 65–71.
- Weissman, W.R., and Cramer, T.M., 1995, Regulatory update on coal combustion byproducts – I. – the early history of coal combustion byproduct regulation, *in* University of Kentucky, Center for Applied Energy Research [CAER], eds., *International Ash Utilization Symposium*, October 23–25, 1995, Lexington, Kentucky: Lexington, University of Kentucky, Center for Applied Energy Research [CAER], [8] p.
- Welfonder, E., and Kurth, M., 2007, Limitation control procedures, required for power plants and power systems: possibility for reducing future blackouts: *Annual Reviews in Control*, v. 31, no. 1, p. 93–104.
- Wendt, J.O.L., 1980, Fundamental coal combustion mechanisms and pollutant formation in furnaces: *Progress in Energy and Combustion Science*, v. 6, no. 2, p. 201–222.
- Weng, Y.-H., and Chu, T.-C., 1992, Concentrations of radionuclides of size fractionated fly-ash emissions from a thermal power plant using Taiwan Coal: *Journal of Radiation Research*, v. 33, p. 131–150.
- Westgate, L.M., and Anderson, T.F., 1984, Isotopic evidence for the origin of sulfur in the Herrin (No. 6) Coal Member of Illinois: *International Journal of Coal Geology*, v. 4, p. 1–20.

- Westinghouse Environmental Systems Department, 1975, Four Corners Power Generating Plant and Coal Mine, environmental Report: Westinghouse Environmental Systems Department, p. 1.1-19–11.11-41.
- Westinghouse Electric Corporation, Research and Development Center, Westinghouse Sturdevant Division and Electric Power Research Institute [EPRI], 1988, Control of fan erosion in coal-fired power plants: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-6068, variously paged.
- Wetherold, R.G., Orr, D.A., Williams, K.J., and Chow, W., 1993, The PISCES database: structure and uses, *in* Chow, W., and others, eds., *Managing Hazardous Air Pollutants: State of the Art: Electric Power Research Institute [EPRI] Report no. TR-101890*, Boca Raton, Fla., Lewis Publishers, p. 473–482.
- Wheeldon, J.M., 1996, A review of PFBC power plant designs, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 247–260.*
- Wheeldon, J.M., Brown, R.A., McKinsey, R.R., and Dawes, S.G., 1996, An evaluation of the United Kingdom Clean Coal Power Generation Group's air-blown gasification cycle, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 279–287.*
- Whelan, J.F., Cobb, J.C., and Rye, R.O., 1988, Stable isotope geochemistry of sphalerite and other mineral matter in coal beds of the Illinois and Forrest City Basins: *Economic Geology*, v. 83, p. 990–1007.
- Wheland, B., Devire, G., Pohl, J.H., and Creelman, R.A., 2000, The effect of blending coals on electrostatic precipitator performance: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 45, no. 1, p. 24–27, last accessed April 2010 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/29_6_PHILADELPHIA_08-84_0130.pdf.
- Whitby, K.T., Cantrell, B.K., Husar, R.B., Gallani, N.V., Anderson, J.A., Blumenthal, D.L., and Wilson, W.E.J., 1976, Aerosol formation in a coal fired power plant plume: American Chemical Society [ACS], Division of Environmental Chemistry, v. 16, no. 1, p. 49–52.
- Whitby, K.T., Cantrell, B.K., and Kittelson, D.B., 1978, Nuclei formation rates in a coal-fired power plant plume: *Atmospheric Environment*, v. 12, no. 1-3, p. 313–321.
- White, D.H., King, K.A., Mitchell, C.A., and Mulhern, B.M., 1986, Trace elements in sediments, water, and American Coots (*Fulica americana*) at a coal-fired power plant in Texas, 1979–1982: *Bulletin of Environmental Contamination and Toxicology*, v. 36, p. 376–383.
- White, D.M., 1984, Correlation of coal properties with environmental control technology needs for sulfur and trace elements: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Report no. EPA-600/S7-84-066, 10 p.
- White, H.R., Powers, M.D., Shih, C.C., and Maddalone, R.F., 1984, Aqueous discharges from steam-electric power plants: data evaluation: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. CS-3741, 204 p.

- White, J.C., Lyon, W.S., Carter, J.A., Feldman, C., Bolton, N.E., Fulkerson, W., and Shults, W.D., 1973, Analytical techniques for determining levels and fates of trace elements in a fossil-fueled steam plant, *in* World Health Organization, and others, eds., Comparative studies of food and environmental contamination, Proceedings, Symposium on nuclear techniques in comparative studies of food and Environmental contamination, August 27–31, 1973, Otaniemi, Finland: Vienna, Austria, International Atomic Energy Agency [IAEA], p. 455–470.
- White, J.S., and Rogers, L., 1996, Dynamic modeling of advanced pressurized fluidized-bed combustion systems, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 68–73.
- White, W.H., 1977, NO_x-O₃ photochemistry in power plant plumes – comparison of theory with observation: *Environmental Science and Technology*, v. 11, no. 10, p. 995–1000.
- White, W.H., 1979, DISCUSSIONS: Reactions of ozone and nitrogen oxides in power plant plumes: *Atmospheric Environment*, v. 13, no. 5, p. 745.
- White, W.H., Heisler, S.L., Henry, R.C., Hidy, G.M., and Straughan, I., 1978, The same-day impact of power plant emissions on sulfate levels in the Los Angeles Air Basin: *Atmospheric Environment*, v. 12, no. 1-3, p. 779–784.
- White, W.H., and Patterson, D.E., 1981, On the relative contributions of NO₂ and particles to the color of smoke plumes: *Atmospheric Environment*, v. 15, no. 10-11, p. 2097–2104.
- White, W.H., Seigneur, C., Heinhold, D.W., Eltgroth, M.W., Richards, L.W., Roberts, P.T., Bhardwaja, P.S., Conner, W.D., and Wilson, W.E. Jr., 1985, Predicting the visibility of chimney plumes – an intercomparison of four models with observations at a well-controlled power plant: *Atmospheric Environment*, v. 19, no. 3, p. 515–528.
- Wibberley, A.G., 1985, Characterisation of coals for flyash and sulphur oxide emissions, an intensive course on the characterisation of steaming coals, May 20–22, 1985, Newcastle New South Wales, Australia: Newcastle, N.S.W., University of Newcastle, Institute of Coal Research, p. 7.1–7.15.
- Wibberley, A.G., 1985, Effect of coal composition on deposit formation in P.F. fired boilers, an intensive course on the characterisation of steaming coals, May 20–22, 1985, Newcastle: Newcastle, New South Wales, Australia, University of Newcastle, Institute of Coal Research, p. 9.1–9.18.
- Wiener, J.G., 1979, Aerial inputs of cadmium, copper, lead, and manganese into a fresh-water pond in the vicinity of a coal-fired power plant: *Water, Air, and Soil Pollution*, v. 12, no. 3, p. 343–353.
- Wiersma, G.B., and Crockett, A.B., 1978, Trace elements in soil around the Four Corners Power Plant: U.S. Environmental Protection Agency [EPA], Report no. EPA-600/3-78-079, 18 p.
- Wigley, F., and Williamson, J., Modelling fly ash generation for pulverized coal combustion: *Progress in Energy Combustion Science*, v. 24, p. 337–343.
- Wilde, M., 2008, Best available techniques (BAT) and coal-fired power stations – can the energy gap be plugged without increasing emissions?: *Journal of Environmental Law*, v. 20, no. 1, p. 87–114.

- Wilemski, G., Srinivasachar, S., and Sarofim, A.F., 1992, Modeling of mineral matter redistribution and ash formation in pulverized coal combustion, *in* Benson, S.A., ed., *Inorganic transformations and ash deposition during combustion: Engineering Foundation*, American Society of Mechanical Engineers [ASME], p. 542–564.
- Williams, Lawrence G., 1977, The demand for steam coal used for electric power generation in the four corners area of Arizona, Colorado, New Mexico and Utah: Las Cruces, New Mexico State University, Master of Science thesis, 64 p.
- Williams, M.D., Treiman, E., and Wecksung, M., 1980, Plume blight visibility modeling with a simulated photograph technique: *Journal of the Air Pollution Control Association*, v. 30, p. 131–134.
- Williams, P.T., 1990, Sampling and analysis of polycyclic aromatic compounds from combustions systems – a review: *Journal of the Institute of Energy*, v. 63, no. 454, p. 22–30.
- Williams, R.P., 2006, Characterisation of fly ash for production of geopolymers: Perth, Australia, Curtin University of Technology, Honors dissertation, Report 02/06, 77 p.
- Williams, R.P., and van Reissen, A., 2010, Determination of the reactive component of fly ashes for geopolymer production using XRF and XRD: *Fuel*, v. 89, p. 3683–3692.
- Williams, R.S.J., Clark, G.M., and Spahr, N.E., 1993, Climatologic, soil-water, ground-water, geologic, surface-water, and water-quality data for a surface coal mine in north-western Colorado: U.S Geological Survey Open-File Report 92-122, 218 p.
- Williams, S., Levy, E., Petrill, S., and Squires, R., 1993, Optimizing performance and NO_x emissions using improved practices and controls at Potomac River Unit 4, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, Proceedings of the Annual International Pittsburgh Coal Conference, September 20–24, 1993, Pittsburgh, Pennsylvania, 10th Conference: Pittsburgh, Pa., University of Pittsburgh, p. 457–462.
- Williamson, J., and Wigley, F., eds., 1994, The Impact of ash deposition on coal fired plants, proceedings of the Engineering Foundation Conference, June 20–25, 1993, Solihull, England: Washington, D.C., Taylor and Francis, 787 p.
- Will-Wolf, S., 1980, Effects of a “clean” coal-fired power generating station on four common Wisconsin lichen species: *The Bryologist*, v. 83, no. 3, p. 296–300.
- Wilson, B.L., and Mitchell, D.L., 1991, Trace metal study of sediment samples near a coal-fired electrical generating plant: *Journal of Environmental Science and Health, Part A: Toxic/Hazardous Substances and Environmental Engineering Science*, v. 26, no. 4, p. 493–509.
- Wilson, J.C., and McMurry, P.H., 1981, Studies of aerosol formation in power plant plumes II – secondary aerosol formation in the Navajo Generating Station plume: *Atmospheric Environment*, v. 15, no. 10-11, p. 2329–2339.
- Winegartner, E.C., 1974, Coal fouling and slagging parameters: New York, N.Y., American Society of Mechanical Engineers, [Book H-86], 34 p.
- Winegartner, E.C., and Ubbens, A.A., 1976, Understanding coal ash parameters: *Transactions, Society of Mining Engineers, American Institute of Mining Engineers*, v. 260, March 1976, p. 67-70.

- Winiwarter, W., Houtrouw, S., Lewis, L., Lewis, E.A., Hansen, L.D., Eatough, D.J., and Malm, W.C., 1990, Tracers of coal-fired power plants in the Lake Powell region, *in* Mathai, C.V., ed., *Visibility and Fine Particles*, transactions, Air & Waste Management Association [A&WMA] and U.S. Environmental Protection Agency [EPA] International specialty conference, October 1989, Estes Park, Colorado: Pittsburgh, Pa., Air and Waste Management Association [A&WMA], p. 885.
- Winklestein, W., and Kantor, S., 1969, Stomach cancer – positive association with suspended particulate air pollution: *Archives of Environmental Health*, v. 18, p. 544–547.
- Winter, J.V., and Conner, D.A., 1978, *Power plant siting*: New York, Van Nostrand Reinhold, 198 p.
- Wise, M.A., and Dooley, J.J., 2005, Baseload and peaking economics and the resulting adoption of a carbon dioxide capture-and-storage system for electric power plants: *Greenhouse Gas Control Technologies*, v. 7, p. 303–311.
- Withum, J.A., and Locke, J.E., 2006, Evaluation of mercury emissions from coal-fired facilities with SCR and FGD systems: CONSOL Energy Inc., Research and Development Topical Report no. 11 (Plant 3), 224 p.
- Withum, J.A., and Locke, J.E., 2006, Evaluation of mercury emissions from coal-fired facilities with SCR and FGD systems; Project Final Report for Period September 9, 2002–March 7, 2006: CONSOL Energy Inc., 39 p.
- Wittner, A., 2002, Mine placement using coal combustion products-data collection and risk assessment an interagency and international effort [abs.], *in* *Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 16.
- Wittner, A., 2002, Mine placement of CCPs data collection and risk assessment: MRAM – an international and interagency cooperative project, *in* Vories, K.C. and Throgmorton, Dianne, eds., *Proceedings of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 223–225.
- Wocken, C.A., 2004, Evaluation of enviroscrub's multipollutant PahlmanTM Process for mercury removal at a facility burning subbituminous coal: Grand Forks, University of North Dakota Energy and Environmental Research Center [EERC] Report no. 05-EERC-04-04, 15 p., plus appendices.
- Wolsky, A.M., Daniels, E.J., and Jody, B.J., 1994, CO₂ capture from the flue gas of conventional fossil-fuel-fired power plants: *Environmental Progress*, v. 13, no. 3, p. 214–219.
- Wong, A.S., Hower, J.C., Robertson, J.D., Haeberlin, B.O., Thomas, G.A., and Schram, W.H., 1994, Fluorine partitioning in flue-gas desulphurization: examples from coal-fired power plants in Kentucky: *Journal of Coal Quality*, v. 13, p. 81–87.
- Wong, C.S.C., Duzgoren-Ayden, N.S., Aydin, A., and Wong, M.H., 2006, Sources and trends of environmental mercury emissions in Asia: *The Science of The Total Environment*, v. 368, no. 2-3, p. 649–662.

- Wong, J.L., Shi, Z., and Liu, A., 1996, Chromium valence forms of coal fly ash in the solid state and leachates: American Chemical Society, Division of Fuel Chemistry, Preprints, v. 41, no. 3, p. 781–785, last accessed March 2010 at http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/41_3_ORLANDO_08-96_0781.pdf.
- Wong, J.W.C., and Lai, K.M., 1996, Effect of an artificial soil mix from coal fly ash and sewage sludge on soil microbial activity: *Biology and Fertility of Soils*, v. 23, p. 420–424.
- Woodbury, P.B., McCune, D.C., and Weinstein, L.H., 1999, A review of selenium uptake, transformation, and accumulation by plants with particular reference to coal fly ash landfills, *in* Sajwan, K.S., Alva, A.K., and Keefer, R.F., eds., *Biogeochemistry of Trace Elements in Coal and Coal Combustion Byproducts*: New York, N.Y., Kluwer Academic/Plenum, p. 309–338.
- Woodruff, E.B., Lammers, H.B., and Lammers, T.F., 2005, *Steam plant operation* (8th ed.): New York, N.Y., McGraw-Hill, 850 p.
- Woolard, C.D., Strong, J., and Erasmus, C.R., 2002, Evaluation of the use of modified coal ash as a potential sorbent for organic waste streams: *Applied Geochemistry*, v. 17, no. 8, p. 1159–1164.
- Wouterlood, H.J., and Bowling, K.M., 1979, Removal and recovery of arsenious-oxide from flue gas: *Environmental Science and Technology*, v. 13, no. 1, p. 93–97.
- Wright, Ian G., Williams, D.N., and Mehta, A.K., 1988, Techniques to reduce fireside corrosion and fly ash erosion, *in* Dooley, Barry, and Broske, Dave, eds., *Proceedings, Conference on boiler tube failures in fossil plants*, November 10–12, 1987, Atlanta, Georgia: Palo Alto, Calif., Electric Power Research Institute [EPRI], Coal Combustion Systems Division Report no. CS-5936-SR, p. 2.55–52.74.
- Wu, C.-Y., Lee, T.-G., Tyree, G., Arar, E., and Biswas, P., 1998, Capture of mercury in combustion systems by in situ-generated titania particles with UV irradiation: *Environmental Engineering Science*, v. 15, no. 2, p. 137–148.
- Wu, D., Sui, Y., Chen, X., He, S., Wang, X., and Kong, H., 2008, Changes of mineralogical-chemical composition, cation exchange capacity, and phosphate immobilization capacity during the hydrothermal conversion process of coal fly ash into zeolite: *Fuel*, v. 87, p. 2194–2200.
- Wu, E.J., and Chen, K.Y., 1987, Chemical form and leachability of inorganic trace elements in coal ash: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. EA-5115, 208 p.
- Wu, H., Wall, T.F., Liu, G., and Bryant, G., 1999, Ash liberation from included minerals during combustion of pulverized coal: the relationship with char structure and burnout: *Energy and Fuels*, v. 13, p. 1197–1202.
- Wu, K., Nagurney, A., Liu, Z., and Stranlund, J.K., 2006, Modeling generator power plant portfolios and pollution taxes in electric power supply chain networks – a transportation network equilibrium transformation: *Transportation Research Part D, Transport and Environment*, v. 11, no. 3, p. 171–190.
- Wu, X.-H., Zhu, X.-L., Chen, D., and Zhang, W.-C., 2008, Influence of plain ash field leakage from coal-fired power plant on groundwater environment: *Water Resources Protection*, v. 24, no. 5, p. 38–41.
- Wu, Y., Wang, S., Streets, D.G., Hao, J., Chan, M., and Jiang, J., 2006, Trends in anthropogenic mercury emissions in China from 1995 to 2003: *Environmental Science and Technology*, v. 40, no. 17, p. 5312–5318.

- Wu, Z., 2001, Air pollution control costs for coal-fired power stations: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACCC/53, 42 p.
- Wu, Z., 2002, NO_x control for pulverised coal fired power stations: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACCC/69, 64 p.
- Wu, Z., 2003, Understanding fluidised bed combustion: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACCC/76, 42 p.
- Wu, Z., 2006, Developments in fluidised bed combustion technology: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report CCC/110, 44 p.
- Wynder, E.L., and Hamond, E.C., 1967, A study of air pollution carcinogenesis: Cancer, v. 15, p. 79–92.
- Wyzga, R.G., and Yager, J.E., 1993, Carcinogenic risks of arsenic in fly ash, *in* Chow, W., and others, eds., Managing Hazardous Air Pollutants: State of the Art: Electric Power Research Institute [EPRI] Report no. TR-101890, Boca Raton, Fla., Lewis Publishers, p. 255–261.
- Xiang J., Sun X., and Hu S., and Dunxi Y., 2000, Experimental research on boiler combustion performance: Fuel Processing Technology, v. 68, no. 2, p. 139–151.
- Xianglin, S., Ying, C., and Haibin, L., 1999, Research on the melting points of some Chinese coal ashes, *in* Gupta, R.P., Wall, T.F., and Baxter, L., eds., Impact of Mineral Impurities in Solid Fuel Combustion: New York, N.Y., Kluwer Academic/Plenum, p. 433–440.
- Xiangyong H., Xiumin J., Xiangxin H., and Hui W., 2008, Combustion characteristics of fine- and micro-pulverized coal in the mixture of O₂/CO₂: Energy and Fuels, v. 22, no. 6, p. 3756–3762.
- Xiaoyu L., Wei W., Hongjie L., Chunmei G., Wenjie Z., Hongqi W., and Zhong L., 2010, Number size distribution of particles emitted from two kinds of typical boilers in a coal-fired power plant in China: Energy and Fuels, v. 24, no. 3, p. 1677–1681.
- Xin M., Gustin, M.S., Ladwig, K., Pflughoeft-Hassett, D.F., 2006, Air-substrate mercury exchange associated with landfill disposal of coal combustion products: Journal of the Air and Waste Management Association, v. 56, no. 8, p. 1167–1176.
- Xu F., Luo Z.-Y., Wang P., Hou Q.-H., Fang M.-X., and Cen K.-F., 2007, Experimental study on the characteristics of particulate matter emitted from a 440 t/h CFB coal-fired boiler: Zhongguo Dianji Gongcheng Xuebao (Proceedings of the Chinese Society of Electrical Engineering [CSEEE]), v. 27, no. 29, p. 7–11 [in Chinese with English abstract].
- Xu Y., and Zhai J., 1997, Distribution and enrichment of trace elements in particles of power fly ash with different size from Huaneng Nanjing Power Plant: Geochemica, v. 26, no. 3, p. 73–77.
- Yager, J., 2001, Arsenic health research synthesis: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. 1001154, 1 vol., variously paged.
- Yager, J.W., Clewell, H.J., III, Hicks, J.B., and Fabianova, E., 1999, Airborne exposure to arsenic occurring in coal fly ash, *in* Chappell, W.R., Abernathy, C.O., and Calderon, R.L., eds., Arsenic Exposure and Health Effects: Amsterdam, The Netherlands, Elsevier, p. 19–30.

- Yager, J.W., Hicks, J.B., and Fabianova, E., 1997, Airborne arsenic and urinary excretion of arsenic metabolites during boiler cleaning operations in a Slovak coal-fired power plant: *Environmental Health Perspectives*, v. 105, 836–842.
- Yamaguchi, A., Akiho, H., and Ito, S., 2007, Mercury oxidation by copper oxides in combustion flue gases: *Powder Technology*, v. 180, no. 1-2, p. 222–226.
- Yan N.Q., Qu Z., Chi Y., Qiao S.H., Dod, R.L., Chang, S.G., and Miller, C., 2009, Enhanced elemental mercury removal from coal-fired flue gas by sulfur-chlorine compounds: *Environmental Science and Technology*, v. 43, no. 14, p. 5410–5415.
- Yan, R., Gauthier, D., and Flamant, G., 2001, Partitioning of trace elements in the flue gas from coal combustion: *Combustion and Flame*, v. 125, p. 942–954.
- Yan, R., Gauthier, D., Flamant, G., Peraudeau, G., Lu, J., and Zheng, C., 2001, Fate of selenium in coal combustion: volatilization and speciation in the flue gas: *Environmental Science and Technology*, v. 35, no. 7, p. 1406–1410.
- Yan, R., Zhu, H., Zheng, C., and Xu, M., 2002, Emissions of organic hazardous air pollutants during Chinese coal combustion: *Energy and Fuels*, v. 27, p. 485–503.
- Yang H., and Pollitt, M., 2009, Incorporating both undesirable outputs and uncontrollable variables into DEA: the performance of Chinese coal-fired power plants: *European Journal of Operational Research*, v. 197, no. 3, p. 1095.
- Yang H., Xu Z., Fan M., Bland, A.E., and Judkins, R.R., 2007, Adsorbents for capturing mercury in coal-fired boiler flue gas: *Journal of Hazardous Materials*, v. 146, no. 1-2, p. 1–11.
- Yang, H.S., Lee, K.C., and Park, C.S., 1997, Studies on the fusibility of fly ash mixtures: *Journal of Korean Industrial and Engineering Chemistry*, v. 8, no. 6, p. 985–993.
- Yang, J., Xiao, B., and Boccaccini, A.R., 2009, Preparation of low melting temperature glass-ceramics from municipal waste incineration fly ash: *Fuel*, v. 88, no. 7, p. 1275–1280.
- Yang, S., and Qian, Q., 1983, The distribution of elements in ashes during coal combustion in power plants: *Environmental Chemistry*, v. 2, no. 2, p. 32–37.
- Yang X., and Wang L., 2008, Spatial analysis and hazard assessment of mercury in soil around the coal-fired power plant: A case study from the city of Baoji, China: *Environmental Geology*, v. 53, p. 1381–1388.
- Yang Y.P., Cui Y.H., Hou H.J., Guo X.Y., Yang, Z.P., and Wang, N.L., 2008, Research on solar aided coal-fired power generation system and performance analysis: *Science in China, Series E, Technological Sciences*, v. 51, no. 8, p. 1211–1221.
- Yantovski, E.I., 1996, Stack downward: zero emission fuel-fired power plants concept: *Energy Conversion and Management*, v. 37, no. 6-8, p. 867–877.
- Yao, J., Li, W.-B., Kong, Q.-N., Wu, Y.-Y., He, R., and Shen, D.-S., 2010, Content, mobility and transfer behavior of heavy metals in MSWI bottom ash in Zhejiang province, China: *Fuel*, v. 89, no. 3, p. 616–622.
- Yaofa, J., Elswick, E.R., and Mastalerz, M., 2008, Progression in sulfur isotopic compositions from coal to fly ash: examples from single-source combustion in Indiana: *International Journal of Coal Geology*, v. 73, no. 3-4, p. 273–284.
- Yaping, Y., Xiaoqiang, Z., Weilan, Q., and Mingwen, W., 2008, Synthesis of pure zeolites from supersaturated silicon and aluminum alkali extracts from fused coal fly ash: *Fuel*, v. 87, p. 1880–1886.

- Yarkin, E.V., and Novikova, I.V., 1988, Price as an incentive for improving quality of power fuel: *Eleckricheskie Stantsii*, no. 3, p. 8–11.
- Yavorskii, I.A., Alaev, G.P., Pugach, L.I., and Talankin, L.P., 1968, Influence of the petrographic composition of coals on the efficiency of a P. F. fired boiler furnace: *Teploenergetika [Thermal Engineering]*, v. 15, no. 9, p. 108–113.
- Yazdi, M., and Esmaeilnia, S.A., 2003, Dual-energy gamma-ray technique for quantitative measurement of coal ash in the Shahroud mine, Iran: *International Journal of Coal Geology*, v. 55, no. 2-4, p. 151–156.
- Yazıcı, H., Yiğiter, H., Karabulut, A.Ş., and Baradan, B., 2008, Utilization of fly ash and ground granulated blast furnace slag as an alternative silica source in reactive powder concrete: *Fuel*, v. 87, p. 2401–2407.
- Yener, G., and Uysal, I., 1996, Low energy scintillation spectrometry for direct determinations of ²³⁸U and ²¹⁰Pb in coal and ash samples: *Applied Radiation and Isotopes*, v. 47, no. 1, p. 93–96.
- Yi H.H., Hao J.M., Duan L., Li X.H., and Guo X.M., 2006, Influence of dust catchers on PM10 emission characteristics of power plants: *Huanjing Kexue [Environmental Science]*, v. 27, no. 10, p. 1921–1927 [in Chinese with English Abstract].
- Yin, C., Caillat, S., Harion, J.L., Baudoin, B., and Pérez, E., 2001, Investigation of the flow, combustion, heat-transfer, and emissions from a 609 mw utility tangentially fired pulverized-coal boiler, *Fuel*, v. 81, p. 997–1006.
- Yin C., Luo Z., Zhou J., and Cen K., 2000, A novel non-linear programming-based coal blending technology for power plants: *Chemical Engineering Research and Design*, v. 78, no. 1, p. 118–124.
- Ying Z., Levy, J.I., Hammitt, J.K., and Evans, J.S., Estimating population exposure to power plant emissions using CALPUFF: a case study in Beijing, China: *Atmospheric Environment*, v. 37, no. 6, p. 815–826.
- Ylätaalo, S.I., and Hautanen, J., 1998, Electrostatic precipitator penetration function for pulverized coal combustion: *Aerosol Science and Technology*, v. 29, p. 17–30.
- Yokoyama, T., Asakura, K., Matsuda, H., Ito, S., and Noda, N., 2000, Mercury emissions from a coal-fired power plant in Japan: *The Science of The Total Environment*, v. 259, no. 1-3, p. 97–103.
- Yokoyama, T., Asakura, K., and Seki, T., 1991, Field study of trace elements behavior in coal-fired power plants: *Komae Research Laboratory, Central Research Institute of Electric Power Industry Report ET 91002*, 53 p.
- Yongseung, Y., and Suuberg, E.M., 1992, Physical transitions in Pittsburgh No. 8 Coal as observed by differential scanning calorimetry and solvent swelling: *Energy and Fuels*, v. 6., no. 3, p. 328–330.
- Yossifova, M., Valceva, S., and Djourova, E., 2007, Mineralogy and environmental geochemistry of lagooned ashes resulted from combustion of Maritza East lignite, Bulgaria: *International Journal of Coal Geology*, v. 71, no. 2-3, p. 287–302.
- Young, A., 2002, Ashes to Ashes – returning CCBs to the ground at the Navajo Mine [abs.], in *Abstracts of the Coal Combustion By-Products and Western Coal Mines: A Technical Interactive Forum*, Golden, Colorado: Alton, Ill., U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, and Carbondale, Ill., Coal Extraction and Utilization Research Center, Southern Illinois University, p. 9.

- Young, R.P., DuBard, J.L., and Hovis, L.S., 1989, Resistivity of fly ash/sorbent mixtures, *in* Fields, S., compiler, Proceedings, Symposium on the Transfer and Utilization of Particulate Control Technology, March 22–25, 1988, Nashville, Tennessee, 7th Symposium: Palo Alto, Calif., Electric Power Research Institute [EPRI] Report no. GS-6208, v. 1, p. 1.1.
- Yu D., Xu M., Sui J., Liu X., Yu Y., and Cao Q., 2005, Effect of coal particle size on the proximate composition and combustion properties: *Thermochimica Acta*, v. 439, no. 1-2, p. 103–109.
- Yu D., Xu M., Yao H., and Liu X., 2009, Size distributions of major elements in residual ash particles from coal combustion: *Chinese Science Bulletin*, v. 54, no. 6, p. 958–964.
- Yu D., Xu M., Yao H., Liu X., and Zhou K., 2008, Effective identification of the three particle modes generated during pulverized coal combustion: *Chinese Science Bulletin*, v. 53, no. 10, p. 1593–1602.
- Yu D., Xu M., Yao H., Liu X., Zhou K., Li L., and Wen C., 2009, Mechanisms of the central mode particle formation during pulverized coal combustion: *Proceedings of the Combustion Institute*, v. 32 II, p. 2075–2082.
- Yu D., Xu M., Yao H., Liu X., Zhou K., Wen C., and Li L., 2009, Physicochemical properties and potential health effects of nanoparticles from pulverized coal combustion: *Chinese Science Bulletin*, v. 54, no. 7, p. 1243–1250.
- Yu D., Xu M.H., Liu X., Huang J., and Li G., 2005, Mechanisms of submicron and residual ash particle formation during pulverised coal combustion – a comprehensive review: *Developments in Chemical Engineering and Mineral Processing*, v. 13, no. 3-4, p. 467–482.
- Yu Y., Xu M., Yao H., Yu D., Qiao Y., Sui J., Liu X., and Cao Q., 2007, Char characteristics and particulate matter formation during Chinese bituminous coal combustion: *Proceedings of the Combustion Institute*, v. 31, p. 1947–1954.
- Yu Y., Xu M., Yu D., and Huang J., 2005, Fragmentation of coal particles by devolatilization during combustion: *Huazhong Keji Daxue Xuebao (Ziran Kexue Ban)* [Journal of Huazhong University of Science and Technology (Natural Science Edition)], v. 33, no. 8, p. 8–11.
- Yuan C.-G., 2009, Leaching characteristics of metals in fly ash from coal-fired power plant by sequential extraction procedure: *Microchimica Acta*, v. 165, no. 1-2, p. 91–96.
- Yudovich, Y., Ketris, M., and Mertz, A., 1985, Trace elements in coal: Nauka, Leningrad, Russia, 239 p. [in Russian].
- Yudovich, Y.E., and Ketris, M.P., 2005, Arsenic in coal – a review: *International Journal of Coal Geology*, v. 61, p. 141–196.
- Yudovich, Y.E., and Ketris, M.P., 2005, Mercury in coal: a review – part 1. – geochemistry: *International Journal of Coal Geology*, v. 62, no. 3, p. 107–134.
- Yudovich, Y.E., and Ketris, M.P., 2005, Mercury in coal: a review – part 2. – coal use and environmental problems: *International Journal of Coal Geology*, v. 62, no. 3, p. 135–165.
- Yudovich, Y.E., and Ketris, M.P., 2006, Selenium in coal – a review: *International Journal of Coal Geology*, v. 67, no. 1-2, p. 112–126.

- Yung, S.-C., Calvert, S., and Barbarika, H.F., 1978, Venturi Scrubber performance model: *Environmental Science and Technology*, v. 12, no. 4, p. 456–459.
- Zak, B.D., 1981, Lagrangian measurements of sulfur dioxide to sulfate conversion rates: *Atmospheric Environment*, v. 15, no. 12, p. 2583–2591.
- Zand, B., Tu, W., Amaya, P.J., Wolfe, W.E., and Butalia, T.S., 2009, An experimental investigation on liquefaction potential and post-liquefaction shear strength of impounded fly ash: *Fuel*, v. 88, no. 7, p. 1160–1166.
- Zankel, K.L., Brower, R.P., Gerritsen, J., and Campbell, S.A., 1993, Multipathway risk assessment at a Maryland utility, *in* Chow, W., and others, eds., *Managing Hazardous Air Pollutants: State of the Art: Electric Power Research Institute [EPRI] Report no. TR-101890*, Boca Raton, Fla., Lewis Publishers, p. 539–548.
- Zauderer, B., 2003, Nonequilibrium sulfur capture and retention in an air cooled slagging coal combustor: *Coal Tech Corp.*, final Report, 68 p.
- Zeeldijk, H., and Velds, C.A., 1973, The transport of sulfur dioxide over a long distance: *Atmospheric Environment*, v. 7, p. 849.
- Zeevaert, T., Sweeck, L., and Vanmarcke, H., 2006, The radiological impact from airborne routine discharges of a modern coal-fired power plant: *Journal of Environmental Radioactivity*, v. 85, no. 1, p. 1–22.
- Zehner, P., 1989, Erfahrungen mit NO_x-mindernden massnahmen an feuerungen grosser dampferzeuger [Experience with combustion measures for NO_x reduction at large steam generators], *in* VGB Konferenz Kraftwerk und Umwelt 1989 [VGB Conference on Power Plants and the Environment 1989], Essen, Federal Republic of Germany: VGB Kraftwerkstechnik GmbH, p. 121–136.
- Zeiler, K.G., Heacox, D.A., Toon, S.T., Kadam, K.L., and Brown, L.M., 1995, The use of microalgae for assimilation and utilization of carbon dioxide from fossil fuel-fired power plant flue gas: *Energy Conversion and Management*, v. 36, no. 6-9, p. 707–712.
- Zelkowski, J., and Riepe, W., 1987, Generation of ash by hard coal power stations and problems of its utilization in the Federal Republic of Germany, *in* South African Council for Scientific and Industrial Research [CSIR], and others, eds., *Ash, A valuable resource*, symposium proceedings, February 2-6, 1987, Pretoria, Republic of South Africa: Pretoria, South African Council for Scientific and Industrial Research [CSIR], p. B1–B5.
- Zeneli, L., Daci, N.M., Daci-Ajvazi, M.N., and Paçarizi, H., 2008, Effects of pollution on lead and cadmium concentration and correlation with biochemical parameters in blood of human population nearby Kosovo thermo power plants: *American Journal of Biochemistry and Biotechnology*, v. 4, no. 3, p. 273–276.
- Zeng, R., Umaña, J.C., Querol, X., López-Soler, A., Plana, F., and Zhuang, X., 2002, Zeolite synthesis from a high Si-Al fly ash from East China: *Journal of Chemical Technology and Biotechnology*, v. 77, no. 3, p. 267–273.
- Zeng, T., Sarofim, A.F., and Senior, C.L., 2001, Vaporization of arsenic, selenium and antimony during coal combustion: *Combustion and Flame*, v. 126, no. 3, p. 1714–1724.
- Zhai M., Totolo, O., Modisi, M.P., and Finkelman, R.B., 2006, Heavy metal and arsenic distribution in soils surrounding Palapye, Botswana – an evaluation of environmental impact of coal mining and combustion in a sub-arid region [abs.]: *Chinese Journal of Geochemistry*, v. 25 (supplement), p. 53.

- Zhai M., Totolo, O., Modisi, M.P., Finkelman, R.B., Kelesitse, S.M., and Menyatso, M., 2009, Heavy metal distribution in soils near Palapye, Botswana – an evaluation of the environmental impact of coal mining and combustion on soils in a semi-arid region: *Environmental Geochemistry and Health*, v. 31, no. 6, p. 759–777.
- Zhang C., Chen S., Zheng C., and Lou X., 2007, Thermoeconomic diagnosis of a coal fired power plant: *Energy Conversion and Management*, v. 48, no. 2, p. 405–419.
- Zhang, J., Xiao, P., Li, G., and Webley, P.A., 2009, Effect of flue gas impurities on CO₂ capture performance from flue gas at coal-fired power stations by vacuum swing adsorption: *Energy Procedia*, v. 1, no. 1, p. 1115–1122.
- Zhang L., Zhuo Y., Chen L., Xua X., and Chen C., 2008, Mercury emissions from six coal-fired power plants in China: *Fuel Processing Technology*, v. 89, no. 11, p. 1033–1040.
- Zhang M.Q., Zhu Y.C., and Deng R.W., 2002, Evaluation of mercury emissions to the atmosphere from coal combustion: *Ambio*, v. 31, no. 6, p. 482–484.
- Zhang Y.-Y., Pan W.-G., He P., Ren J.-X., Shen M.-Q., Jin Y., Du Y.-Y., Wang P., Chen J.-H., Lu P., Cao Y., and Pan W.-P., 2009, Experimental research on mercury emission and its speciation in the flue gas from coal-fired power station, *in* Institute of Electrical and Electronics Engineers, Incorporated [IEEE], eds., *Proceedings, International Conference on Energy and Environment Technology, ICEET '09*, October 16–18, 2009, Guilin, China: Los Alamitos, Calif., IEEE Computer Society, v. 3, p. 332–335.
- Zhang, Z., and Sun, X., 1996, The adaption of coal quality to furnace structure, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, *Proceedings of the Annual International Pittsburgh Coal Conference*, September 3-7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1137.
- Zhang, Z., Sun, X., Li, F., Qiu, J., and Chen, G., 1996, Strengthen flame stability during the furnace's load decrease, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, *Proceedings of the Annual International Pittsburgh Coal Conference*, September 3-7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 1138–1143.
- Zhao, H.F., Zhang, L.B., Ligasacchi, S., Trebbi, G., and DeMichele, G., 1996, Performance of low NO_x precombustor burner using multiple opposed jets and experience in industrial scale test, *in* Chiang, S.-H., ed., *Coal- Energy and the Environment*, *Proceedings of the Annual International Pittsburgh Coal Conference*, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 383–388.
- Zhao Y., Wang S., Duan L., Lei Y., and Cao P., 2008, Primary air pollutant emissions of coal-fired power plants in China – current status and future prediction: *Atmospheric Environment*, v. 42, no. 36, p. 8442–8452.
- Zhao Y., Ye J., Lu X., Liu M., Lin Y., Gong W., and Ning G., 2010, Preparation of sintered foam materials by alkali-activated coal fly ash: *Journal of Hazardous Materials*, v. 174, no. 1-3, p. 108–112.
- Zhao Z., Li W., Qiu J., Wang X., and Li B., 2006, Influence of Na and Ca on the emission of NO_x during coal combustion: *Fuel*, v. 85, no. 5-6, p. 601–606.
- Zheng L., Zhou H., Wang C., and Cen K., 2008, Combining support vector regression and ant colony optimization to reduce NO_x emissions in coal-fired utility boilers: *Energy and Fuels*, v. 22, no. 2, p. 1034–1040.

- Zhou H., 2006, Study on the distribution of PAHs in fly ash from coal and residual char combustion in a pressurized fluidized bed [abs.]: Chinese Journal of Geochemistry, v. 25 (supplement 1), p. 54–55.
- Zhou, Q., Huang, G.H., and Chan, C.W., 2004, Development of an intelligent decision support system for air pollution control at coal-fired power plants: Expert Systems with Applications, v. 26, no. 3, p. 335–356.
- Zhou Y., and Ren, Y., 1992, Distribution of arsenic in coals of Yunnan Province, China, and its controlling factors: International Journal of Coal Geology, v. 20, p. 85–98.
- Zhu, Q., 2003, Developments in particulate control: London, United Kingdom, International Energy Agency [IEA] Coal Research, Report IEACCC/73, 50 p.
- Zhu Y., Zhou J., He S., Cai X., Hu C., Zheng J., Zhang L., Luo Z., and Cen K., 2007, Mercury emission measurement in coal-fired boilers by continuous mercury monitor and Ontario Hydro Method, *in* Cai, X., Wu, Y., Huang, Z., Wang, S., and Wang, M., eds., American Institute of Physics [AIP] Conference Proceedings, Macau, China: American Institute of Physics, v. 914, p. 647–653.
- Zhu Z., Xu L., and Tan Y., 2002, Research on characteristics of mercury distribution in combustion products for a 300 MW pulverized coal fired boiler: Power Engineering, v. 22, no. 1, p. 1594–1597 [in Chinese with English abstract].
- Zhuang, Y., Chen C., Timpe, R., and Pavlish, J., 2009, Investigations on bromine corrosion associated with mercury control technologies in coal flue gas: Fuel, v. 88, p. 1692–1697.
- Zhuang, Y., and Miller, S.J., 2005, Mercury control with advanced hybrid particulate collector: Grand Forks, University of North Dakota Energy and Environmental Research Center [EERC] Report no: 2005-EERC-5-02, variously paged.
- Zhuang, Y., Thompson, J.S., Zygarlicke, C.J., and Pavlish, J.H., 2007, Impact of calcium chloride addition on mercury transformations and control in coal flue gas: Fuel, v. 86, p. 2351–2359.
- Ziaii, S., Cohen, S., Rochelle, G.T., Edgar, T.F., and Webber, M.E., 2009, Dynamic operation of amine scrubbing in response to electricity demand and pricing: Energy Procedia, v. 1, no. 1, p. 4047–4053.
- Ziegler, E.N., and Meyers, R.E., 1979, Control technology for coal-fired combustion in northeastern U.S.: Water, Air, and Soil Pollution, v. 12, p. 371–381.
- Zielinski, R.A., and Affolter, R.H., 1997, Uranium/thorium ratio in coal: an index of organic affinity of uranium and leachability of uranium from coal combustion products, *in* University of Kentucky Center for Applied Energy Research, eds., Pushing the Envelope, Proceedings, International Ash Utilization Symposium, October 20–22, 1997, Lexington, Kentucky: Lexington, University of Kentucky Center for Applied Energy Research [CAER], p. 836–842.
- Zielinski, R.A., Affolter, R.H., Budahn, J.R., O'Connor, J.T., and Rice, C.A., 1999, Uranium in coal and fly ash – abundance, forms, and environmental significance, *in* Sakkestad, Barbara A., ed., Proceedings of the International Technical Conference on Coal Utilization and Fuel Systems, March 8–11, Clearwater, Fla., 24th Conference: Washington, D.C., Coal & Slurry Technology Association, p. 913–924.

- Zielinski, R.A., and Budahn, J.R., 1996, New looks at radionuclides in fly ash – implications for disposal and utilization, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 2, p. 780–785.
- Zielinski, R.A., and Budahn, J.R., 1998, Radionuclides in coal and coal combustion waste products – characterization of coal and coal combustion products from a coal-fired power plant, *in* Breit, G.N., and Finkelman, R.B., eds., Characterization of coal and coal combustion products from a coal-burning power plant—preliminary report and results of analyses: U.S. Geological Survey Open-File Report 98-342, p. 68–70.
- Zielinski, R.A., and Budahn, J.R., 1998, Radionuclides in fly ash and bottom ash – improved characterization based on radiography and low energy gamma-ray spectrometry: *Fuel*, v. 77, no. 4, p. 259–267.
- Zielinski, R.A., and Finkelman, R.B., 1997, Radioactive elements in coal and fly ash – abundance, forms, and environmental significance: U.S. Geological Survey Fact Sheet FS-163-97, 4 p., last accessed August 2011 at <http://pubs.usgs.gov/fs/1997/fs163-97/FS-163-97.pdf>.
- Zielinski, R.A., Foster, A.L., Meeker, G.P., and Brownfield, I.K., 2007, Mode of occurrence of arsenic in feed coal and its derivative fly ash, Black Warrior Basin, Alabama: *Fuel*, v. 86, p. 560–572.
- Ziesmer, B.C., Barna, L.J., and Bull, D.L., 1990, A utility perspective on western coals – operating experience and methods for screening potential fuel supplies, *in* Mehta, A.K., and Harding, N.S., eds., Effects of coal quality on power plants, September 19–21, 1990, St. Louis, Missouri, 2nd Conference: Palo Alto, Calif., Electric Power Research Institute [EPRI], Technical Information Services, p. 5/59–5/74.
- Zimmermeyer, G., 1981, Cadmium emissions from coal-fired power plants: *Metall*, v. 35, no. 4, p. 347–348.
- Zoschak, R.J., and Wu, S.F., 1975, Studies of the direct input of solar energy to a fossil-fueled central station steam power plant: *Solar Energy*, v. 17, no. 5, p. 297–305.
- Zubair, S.M., and Habib, M.A., 1992, Second-law-based thermodynamic analysis of regenerative–reheat Rankine-Cycle power plants: *Energy*, v. 17, no. 3, p. 295–301.
- Zubovic, P., Stadnichenko, T., and Sheffey, N.B., 1961, Geochemistry of minor elements in coals of the Northern Great Plains Coal Province: U.S. Geological Survey Bulletin 1117-A, p. A-1–A-58.
- Zwicker, J.O., Macias, E.S., Anderson, J.A., Blumenthal, D.L., and Ouimette, J.R., 1984, Chemistry and visual impact of the plumes from the Four Corners Power Plant and San Miguel Copper Smelter [Project Summary]: Research Triangle Park, N.C., U.S. Environmental Protection Agency [EPA], Environmental Sciences Research Laboratory, Report no. EPA-600/S3-83-093, 4 p.
- Zwicker, J.O., Macias, E.S., Anderson, J.A., Hering, S.V., and Ouimette, J.R., 1983, Chemistry and visual impact of the plumes from the Four Corners Power Plant and San Manuel Copper Smelter: Washington University Interim Report PB-83-264457 [April 4, 1979–January 14, 1982], 67 p.
- Zygarlicke, C.J., McCollor, D.P., Kay, J.P., and Swanson, M.L., 1998, Task 3.0—Advanced power systems; Subtask 3.18 – ash behavior in power systems: University of North Dakota Environmental and Engineering Research Center [EERC] Final Topical Report 98-EERC-09-02 for period January 1, 1997–June 30, 1998 to National Energy Technology Center [NETL], 49 p. plus appendices.

- Zygarlicke, C.J., and Pavlish, J.H., 1996, The fate and control of mercury emissions from coal-fired systems, *in* Chiang, S.-H., ed., Coal- Energy and the Environment, Proceedings of the Annual International Pittsburgh Coal Conference, September 3–7, 1996, Pittsburgh, Pennsylvania, 13th Conference: Pittsburgh, Pa., University of Pittsburgh, v. 1, p. 241–246.
- Zygarlicke, C.J., Ramanathan, M., and Erickson, T., 1992, Fly ash particle-size distribution and composition – experimental and phenomenological approach, *in* Benson, S.A., ed., Inorganic Transformations and Ash Deposition during Combustion, Proceedings, Engineering Foundation Conference on Inorganic Transformations and Ash Deposition during Combustion, March 10–15, 1991, Palm Coast, Florida: New York, N.Y., American Society of Mechanical Engineers [ASME], p. 525–544.
- Zygarlicke, C.J., Steadman, E.N., and Benson, S.A., 1990, Studies of transformations of inorganic constituents in a Texas Lignite during combustion: Progress in Energy and Combustion Science, v. 16, no. 4, p. 195–204.
- Zygarlicke, C.J., Stomberg, A.L., Folkedahl, B.C., and Strege, J.R., 2006, Alkali Influences on sulfur capture for North Dakota Lignite combustion: Fuel Processing Technology, v. 87, no. 10, p. 855–861.