

Technology Transfer Opportunities: Partnerships

Development of Corrosion-Resistant Hydrothermal Cells

About the Development

Researchers at the U.S. Geological Survey (USGS) have designed and constructed two laboratory test cells that provide a new level of experimental capability in terms of corrosion resistance. The cells have been used by a USGS laboratory tasked with conducting research on submarine hydrothermal and continental geothermal systems. Researchers have used the high temperature and high pressure testing cells to investigate the chemical and mineralogical changes that occur during rock/water interactions at elevated temperature. These tests are conducted in fixed and flexible volume reaction cells. The USGS has conducted considerable research and experimentation to design and build reaction cells that are inert and also have desirable mechanical properties. A new flexible and a new fixed reaction cell are the products of this research.

The Flexible and Fixed Cells

One of the new USGS cells is an all gold flexible cell with iridium gaskets. The gold top on this cell replaces the current design which uses titanium, a source of corrosion in reducing environments. The iridium seal prevents self-alloying problems.

The other USGS cell is a fixed-volume Rene autoclave with a Pt-Rh liner. This cell is designed for use with extremely corrosive fluids and temperatures up to 500° C.

Partnership Opportunity

Before the two new reaction cells can be transferred to the private sector for commercial use, USGS researchers need to refine and test them. The USGS is seeking an industrial partner to work with it through a Cooperative Research and Development Agreement (CRADA). The industrial partner would assist the USGS in testing the cells and in developmental work.

For More Information

Additional information about the reaction cells and the partnership opportunity can be obtained by contacting:

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