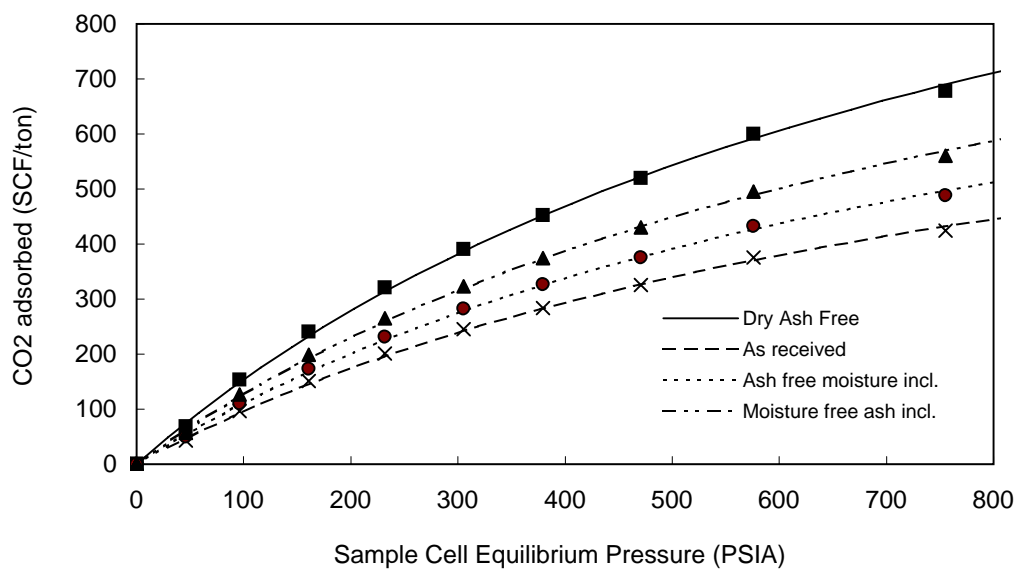


5-1B Carbon Dioxide



Pressure (PSIA)	Adsorbed gas (ft ³ /ton)			
	As Received	moisture free ash incl.	ash free moisture incl.	Dry Ash Free
46	43.3	57.2	49.9	69.1
96	96.3	127.1	110.8	153.6
161	151.0	199.3	173.8	240.9
232	201.2	265.4	231.5	320.9
306	245.3	323.6	282.2	391.2
380	283.8	374.5	326.6	452.7
471	326.0	430.2	375.2	520.1
576	375.8	495.9	432.5	599.5
755	424.8	560.4	488.8	677.5

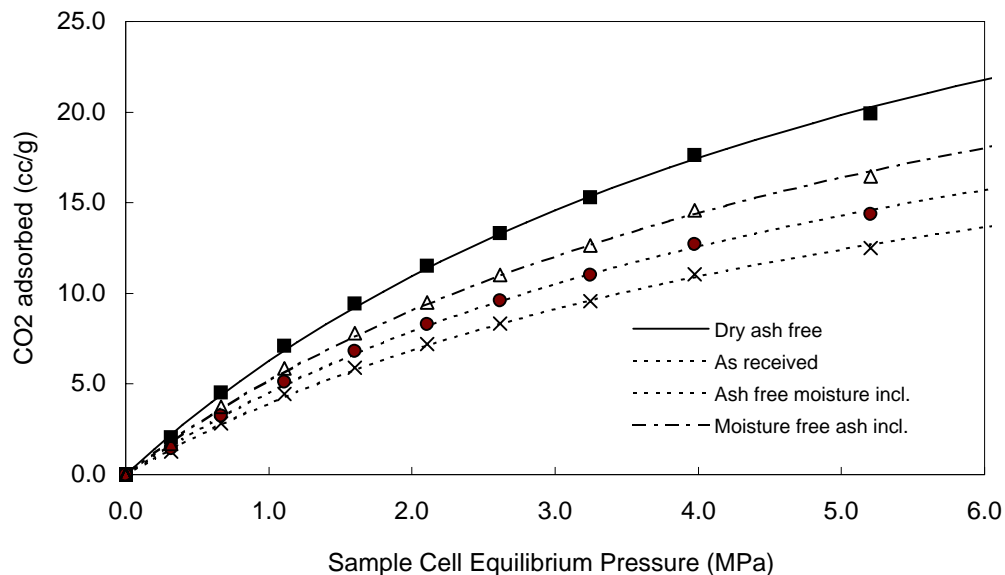
Langmuir Parameters

	As Received	Moisture free ash incl	Ash free moisture incl	Dry Ash Free
Vol. (ft ³ /ton)	921.2	1215.5	1060.1	1469.5
Pressure (PSIA)	853.9	853.9	853.9	853.9

SUMMARY OF ADSORPTION ANALYSES IMP. UNITS

Isotherm Temperature: 107.8 °F
 Goodness of fit of Langmuir regression: 0.98
 % Ash= 13.10 % Moisture= 24.21 Density g/cc 1.368

5-1B Carbon Dioxide



Pressure (MPa)	Adsorbed gas (cc/g)			
	As Received	Moisture free ash incl.	ash free moisture incl	Dry Ash Free
0.318	1.27	1.68	1.47	2.03
0.665	2.83	3.73	3.26	4.52
1.109	4.44	5.86	5.11	7.08
1.600	5.91	7.80	6.80	9.43
2.107	7.21	9.51	8.29	11.50
2.617	8.34	11.00	9.60	13.30
3.246	9.58	12.64	11.03	15.28
3.972	11.05	14.57	12.71	17.62
5.206	12.48	16.47	14.36	19.91

Langmuir Parameters

	As Received	Moisture free ash incl.	Ash free moisture incl	Dry Ash Free
Vol. (cc/g)	27.07	35.72	31.15	43.19
Pressure (MPa)	5.89	5.89	5.89	5.89

SUMMARY OF ADSORPTION ANALYSES SI UNITS

Isotherm Temperature:

42.1 °C

Goodness of fit of Langmuir regression:

0.98

% Ash= 13.10

% Moisture =

24.21

Density (g/cc)

1.368

5-1B Carbon Dioxide

CO₂ Adsorption (Imperial Units)

Summary of Analyses

	As Received	DAF basis
Langmuir Volume (SCF)	921	1469
Langmuir Pressure (PSIA)	854	854
Goodness of fit Langmuir		
Equation R-squared	0.98	0.98
Ash Content Wt.%	13.10	13.10
Equilibrium Moisture Wt.%	24.21	24.21

Contents of Appendix

data sheets

As Received
Dry Ash Free
Dry Ash Included
Moist Ash Free

Charts

As Received
Dry Ash Free
Dry Ash Included
Moist Ash Free

5-1B Carbon Dioxide
GAS ADSORPTION ISOTHERM IMPERIAL UNITS

AS RECEIVED BASIS

Isotherm Temperature ° F:	107.8	Moisture Content % :	24.21
Gas used:	CO2	Ash Content, % :	13.10
		Helium Density g/cc	1.368

PRESSURE (PSI)	ADSORBED GAS (SCF/ton)	P / V
46	43.33	1.07
96	96.32	1.00
161	151.03	1.06
232	201.17	1.15
306	245.27	1.25
380	283.80	1.34
471	326.05	1.44
576	375.83	1.53
755	424.75	1.78

Saturated Monolayer Volume (SCF/ton):	921.2
Langmuir Pressure (PSIA):	853.9
Correlation Coefficient:	0.9766

DRY ASH FREE BASIS

46	69.12	0.67
96	153.64	0.63
161	240.91	0.67
232	320.89	0.72
306	391.24	0.78
380	452.70	0.84
471	520.09	0.91
576	599.51	0.96
755	677.54	1.11

Saturated Monolayer Volume (SCF/ton, daf):	1469
Langmuir Pressure (PSIA):	854
Correlation Coefficient:	0.9766

5-1B Carbon Dioxide
GAS ADSORPTION ISOTHERM IMPERIAL UNITS

MOISTURE FREE ASH INCLUDED

Isotherm Temperature° F:	107.8	Moisture Content % :	24.21
Gas used:	CO2	Ash Content, % :	13.10
		Helium Density g/cc	1.368

PRESSURE (PSI)	ADSORBED GAS (SCF/ton)	P / V
46	57	0.81
96	127	0.76
161	199	0.81
232	265	0.87
306	324	0.94
380	374	1.01
471	430	1.09
576	496	1.16
755	560	1.35

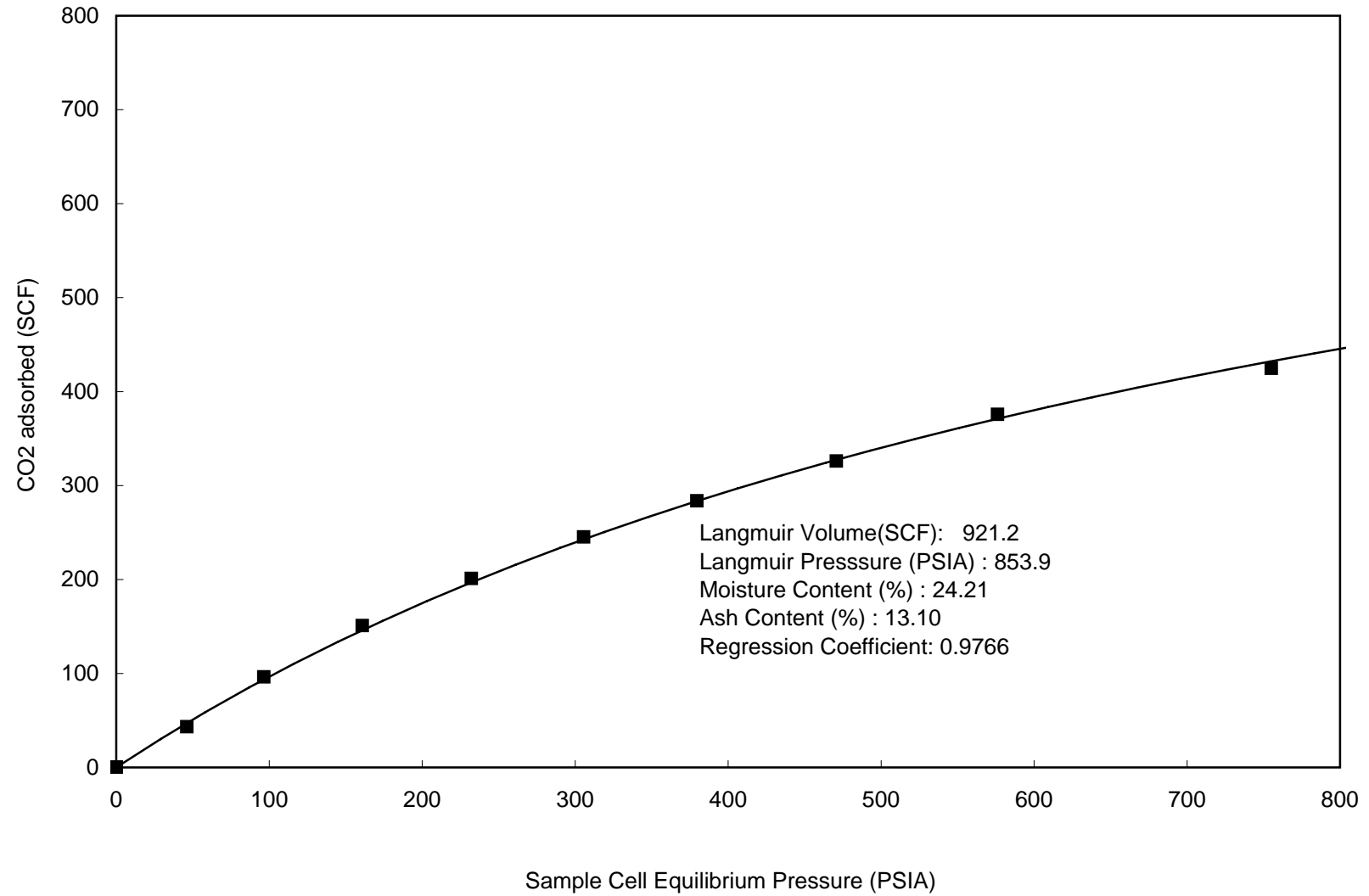
Saturated Monolayer Volume (SCF/ton):	1215
Langmuir Pressure (PSIA):	854
Correlation Coefficient:	0.9766

ASH FREE MOISTURE INCLUDED

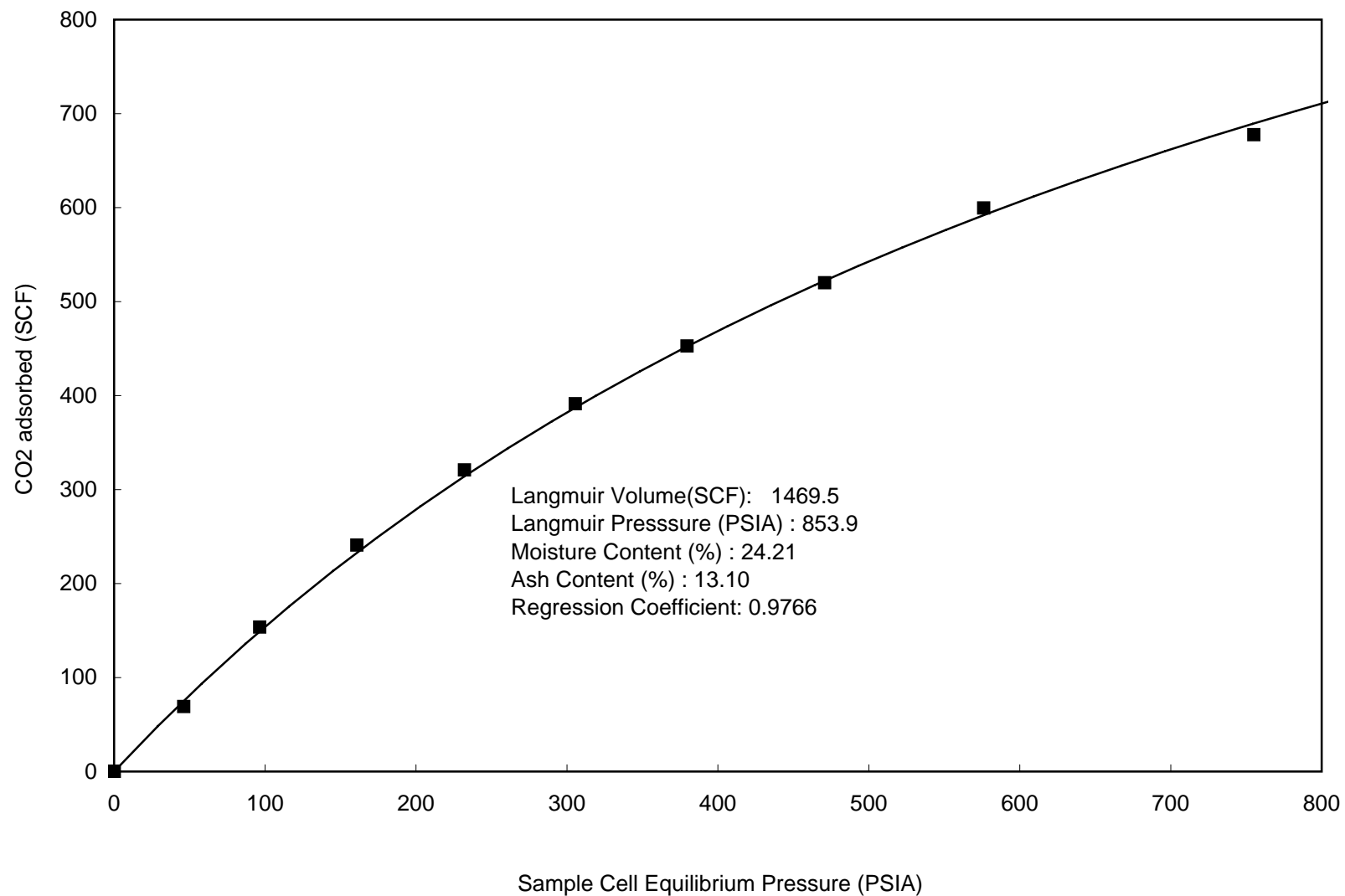
46	50	0.93
96	111	0.87
161	174	0.93
232	231	1.00
306	282	1.08
380	327	1.16
471	375	1.25
576	432	1.33
755	489	1.54

Saturated Monolayer Volume (SCF/ton):	1060
Langmuir Pressure (PSIA):	854
Correlation Coefficient:	0.9766

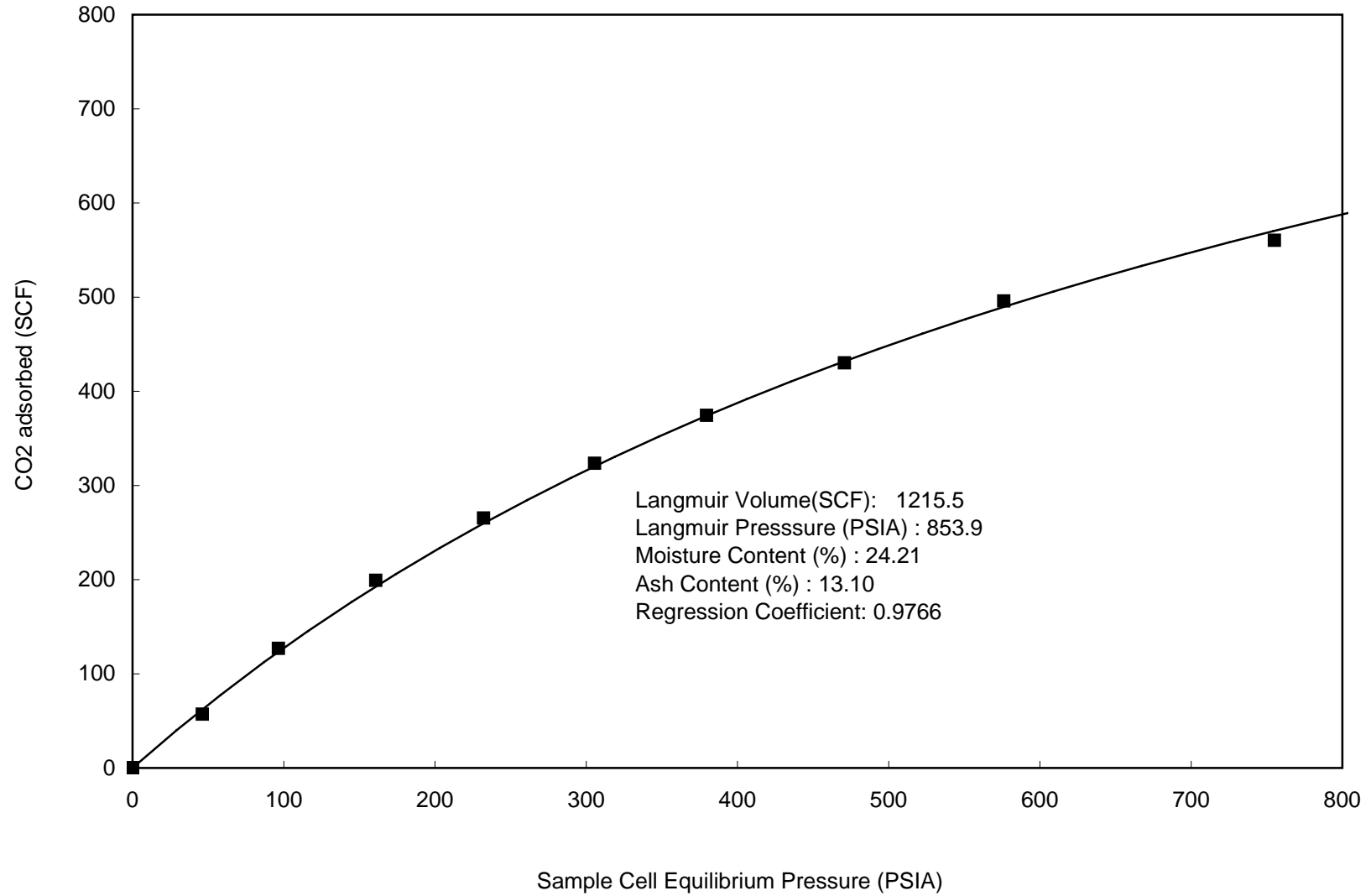
5-1B Carbon Dioxide (as received basis)



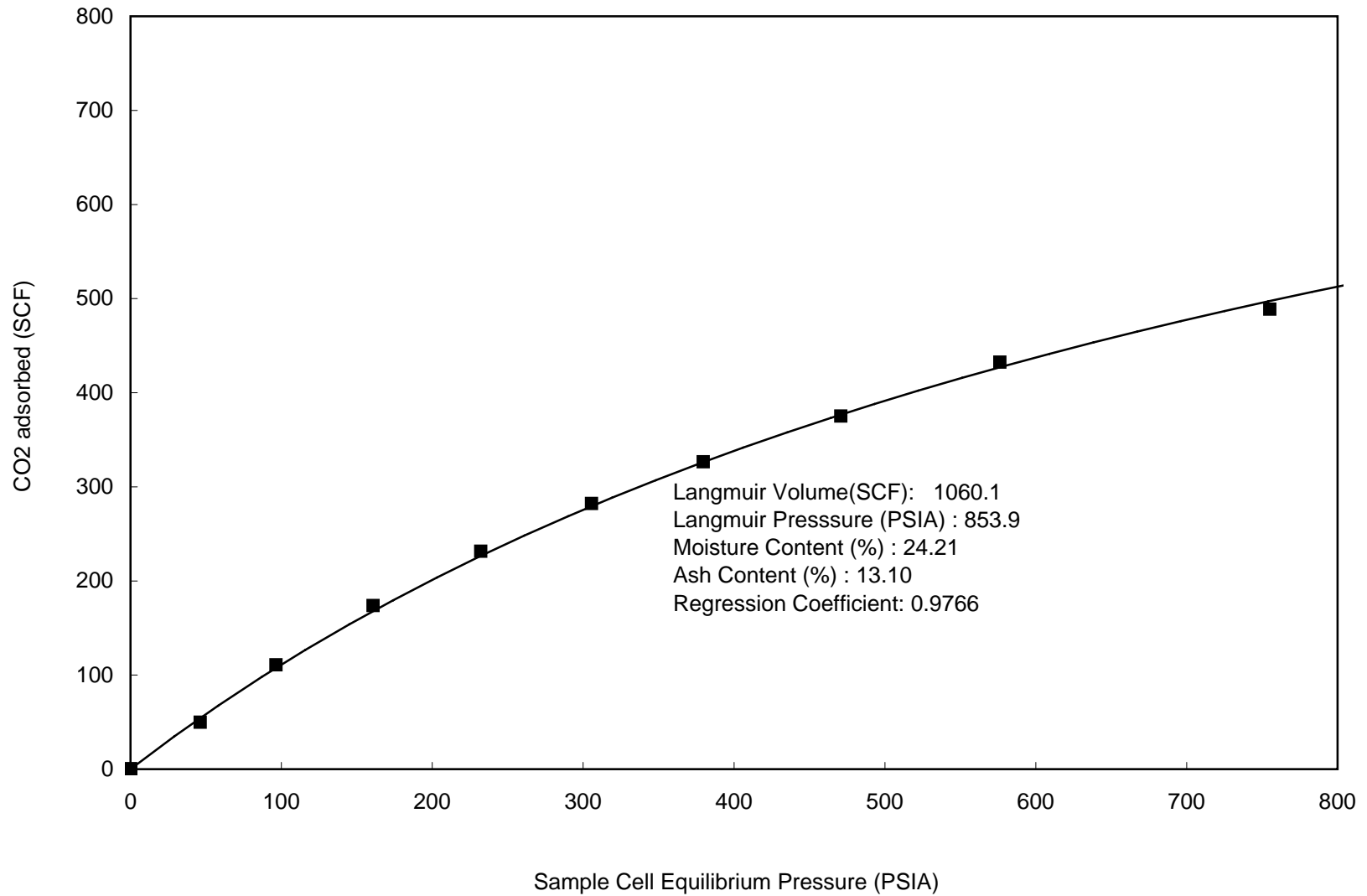
5-1B Carbon Dioxide (dry & ash free basis)



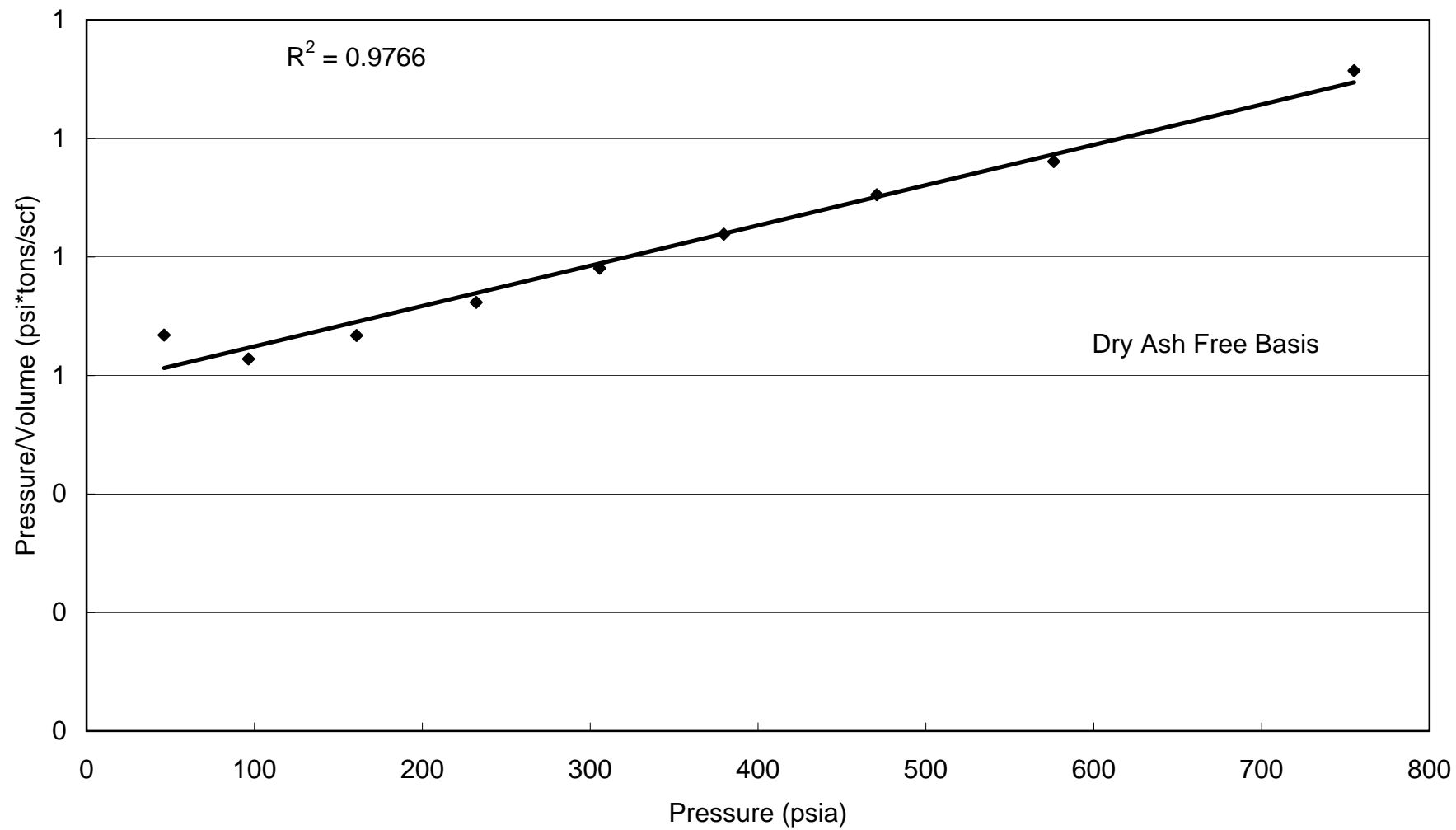
5-1B Carbon Dioxide (moisture free, ash included basis)



5-1B Carbon Dioxide (ash free, moisture included basis)



Adsorption Langmuir Plot



5-1B Carbon Dioxide

CO2 Adsorption (SI Units)

Summary of Analyses

	As Received	DAF basis
Langmuir Volume cc/g	27.07	43.19
Langmuir Pressure MPa	5.89	5.89
Goodness of fit Langmuir		
Equation R-squared	0.98	0.98
Ash Content Wt.%	13.10	13.10
Equilibrium Moisture Wt.%	24.21	24.21

Contents of Appendix

data sheets

As Received
Dry Ash Free
Dry Ash Included
Moist Ash Free

Charts

As Received
Dry Ash Free
Dry Ash Included
Moist Ash Free

5-1B Carbon Dioxide
GAS ADSORPTION ISOTHERM SI UNITS

AS RECEIVED BASIS

Sample I.D. : 5-1B Carbon Dioxide Moisture Content (EQ) % : 24.21

Isotherm Temperature ° C: 42.1 Ash Content % : 13.10

Gas used: CO₂ Helium Density g/cc 1.368

PRESSURE (MPa)	ADSORBED GAS (cc/g @STP)	P / V
0.318	1.27	0.250
0.665	2.83	0.235
1.109	4.44	0.250
1.600	5.91	0.271
2.107	7.21	0.292
2.617	8.34	0.314
3.246	9.58	0.339
3.972	11.05	0.360
5.206	12.48	0.417

Saturated Monolayer Volume (cc/g @ STP): 27.07

Langmuir Pressure (MPa): 5.89

DRY ASH FREE BASIS

0.318	2.03	0.157
0.665	4.52	0.147
1.109	7.08	0.157
1.600	9.43	0.170
2.107	11.50	0.183
2.617	13.30	0.197
3.246	15.28	0.212
3.972	17.62	0.225
5.206	19.91	0.261

Saturated Monolayer Volume (cc/g @ STP, daf): 43.19

Langmuir Pressure (MPa): 5.89

Correlation Coefficient: 0.9766

5-1B Carbon Dioxide

GAS ADSORPTION ISOTHERM SI UNITS

MOISTURE FREE ASH INCLUDED

Isotherm Temperature ° C:	42.1	Moisture Content (EQ) % :	24.21
Gas used:	CO2	Ash Content % :	13.10
		Helium Density g/cc	1.368

PRESSURE (MPa)	ADSORBED GAS (cc/g@STP)	P / V
0.318	1.68	0.19
0.665	3.73	0.18
1.109	5.86	0.19
1.600	7.80	0.21
2.107	9.51	0.22
2.617	11.00	0.24
3.246	12.64	0.26
3.972	14.57	0.27
5.206	16.47	0.32

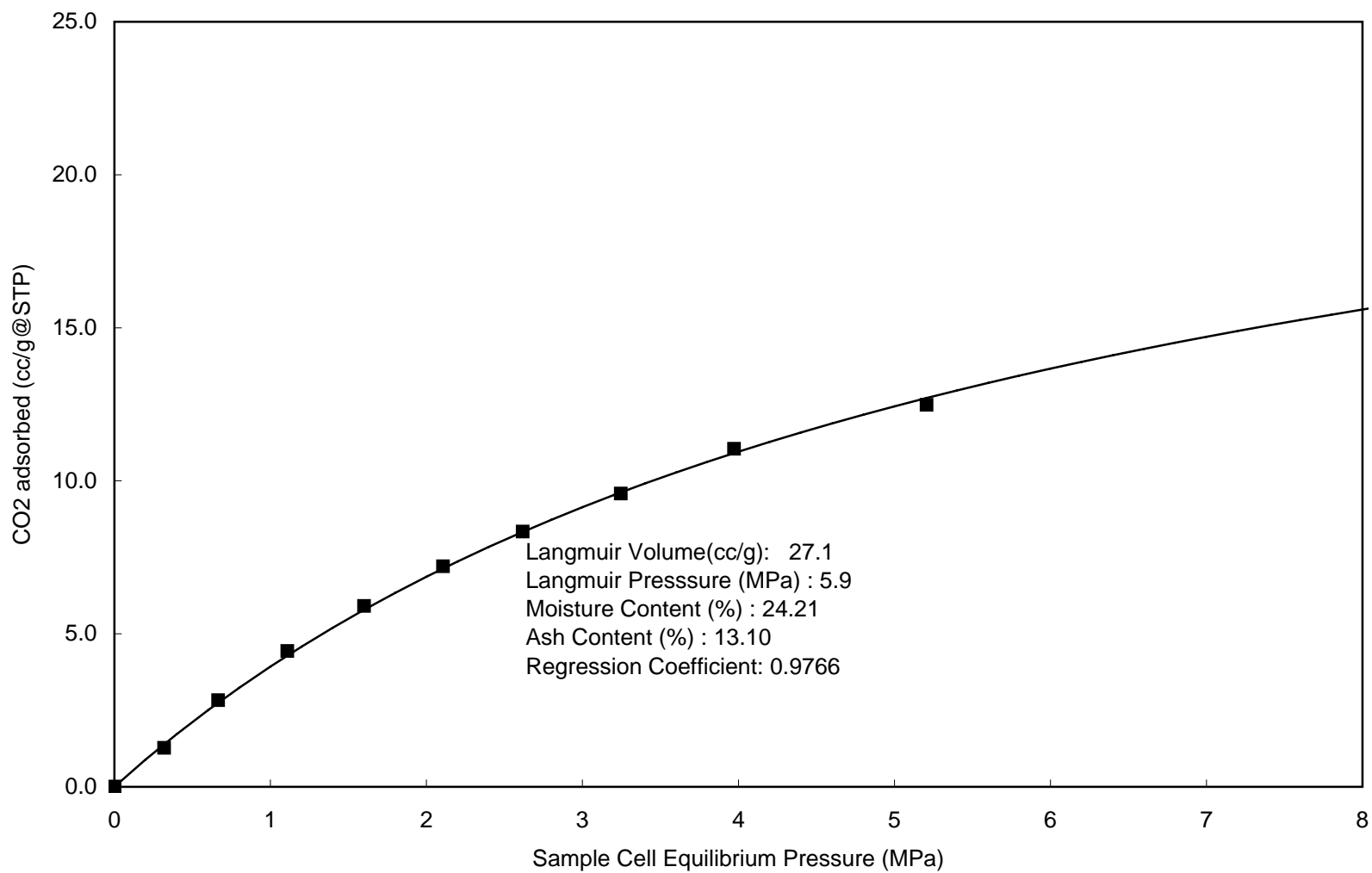
Saturated Monolayer Volume (cc/g):	35.72
Langmuir Pressure (MPa):	5.89

ASH FREE MOISTURE INCLUDED

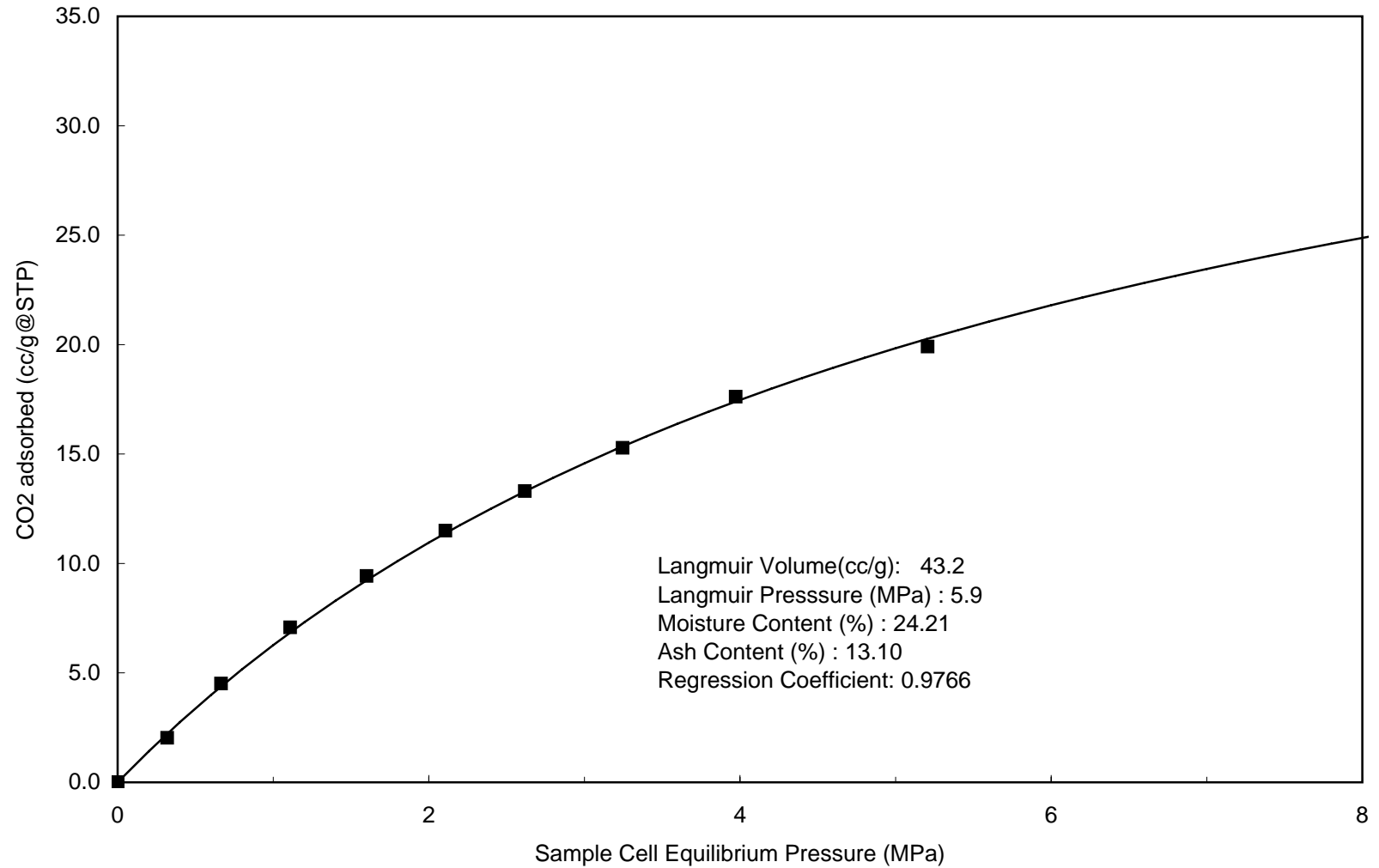
0.318	1.47	0.00
0.665	3.26	0.20
1.109	5.11	0.22
1.600	6.80	0.24
2.107	8.29	0.25
2.617	9.60	0.27
3.246	11.03	0.29
3.972	12.71	0.31
5.206	14.36	0.36

Saturated Monolayer Volume (cc/g, ash free):	31.15
Langmuir Pressure (MPa):	5.89
Correlation Coefficient:	0.9766

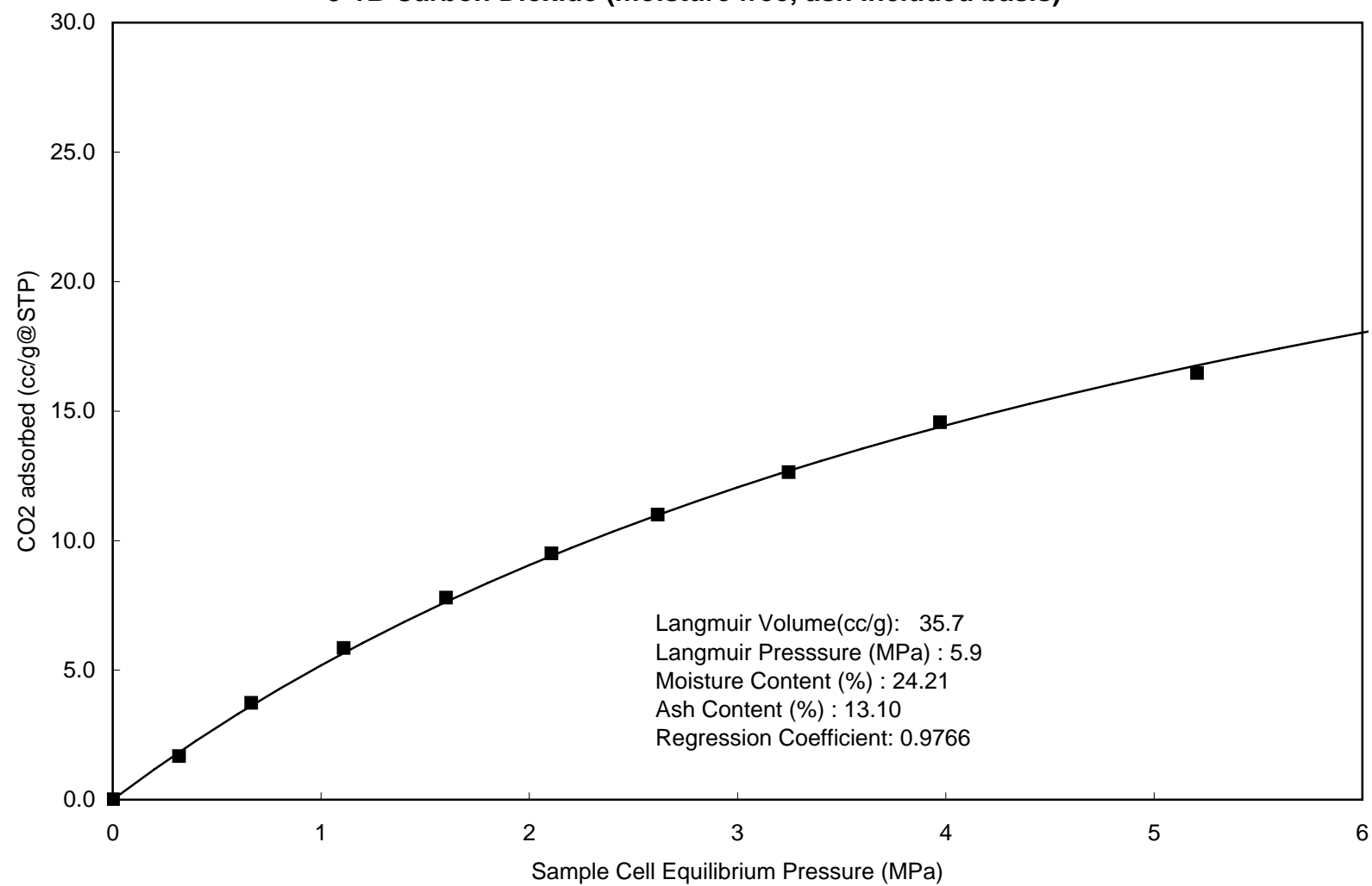
5-1B Carbon Dioxide (as received basis)



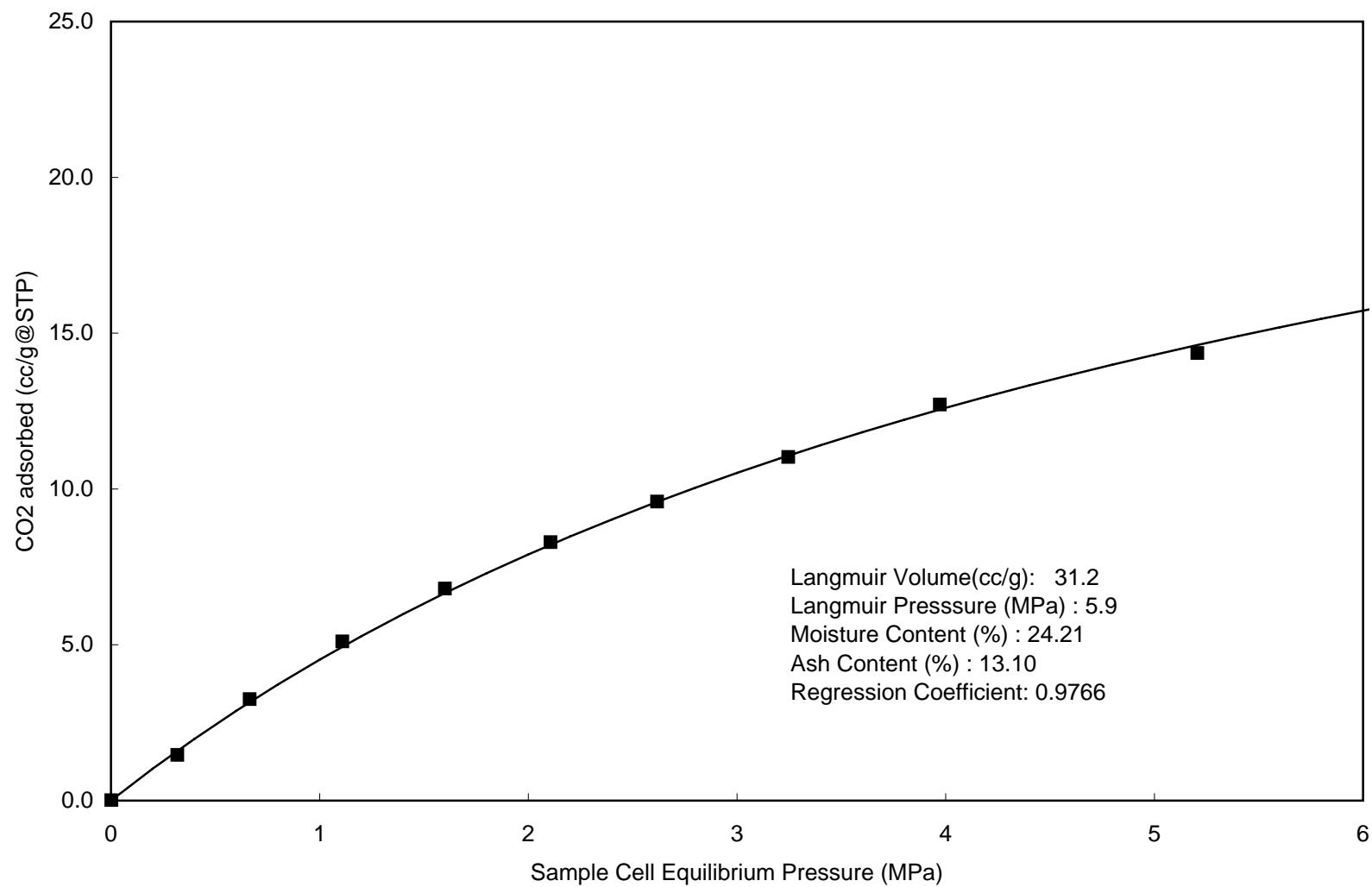
5-1B Carbon Dioxide (dry & ash free basis)



5-1B Carbon Dioxide (moisture free, ash included basis)



5-1B Carbon Dioxide (ash free, moisture included basis)



Adsorption Langmuir Plot

