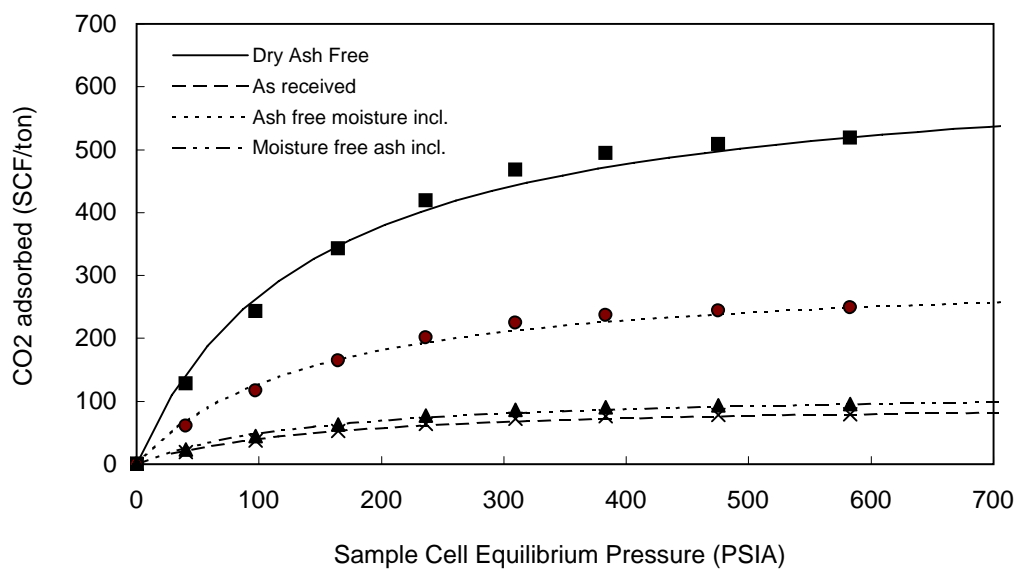


## 4-LA-8 Carbon Dioxide



Pressure (PSIA)	Adsorbed gas (ft <sup>3</sup> /ton)			
	As Received	moisture free ash incl.	ash free moisture incl.	Dry Ash Free
40	19.7	23.6	61.5	128.1
97	37.3	44.8	116.7	243.1
164	52.6	63.1	164.5	342.7
236	64.4	77.3	201.4	419.6
309	71.8	86.1	224.4	467.5
383	75.9	91.0	237.1	494.0
475	78.1	93.7	244.0	508.4
583	79.6	95.5	248.9	518.5
767	81.2	97.4	253.7	528.6

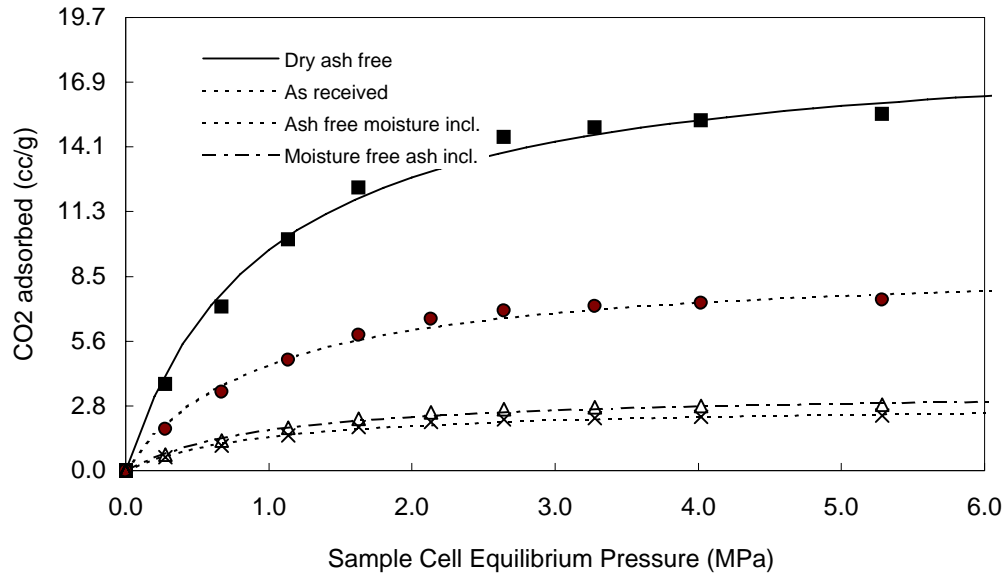
### Langmuir Parameters

	As Received	Moisture free ash incl	Ash free moisture incl	Dry Ash Free
Vol. (ft <sup>3</sup> /ton)	99.2	118.9	309.8	645.5
Pressure (PSIA)	141.3	141.3	141.3	141.3

### SUMMARY OF ADSORPTION ANALYSES IMP. UNITS

Isotherm Temperature: 107.8 °F  
 Goodness of fit of Langmuir regression: 0.99  
 % Ash= 68.00      % Moisture= 16.64      Density g/cc 2.107

### 4-LA-8 Carbon Dioxide



Pressure (MPa)	Adsorbed gas (cc/g)			
	As Received	Moisture free ash incl.	ash free moisture incl	Dry Ash Free
0.278	0.58	0.69	1.81	3.76
0.669	1.10	1.32	3.43	7.15
1.134	1.55	1.86	4.83	10.07
1.628	1.89	2.27	5.92	12.33
2.134	2.11	2.53	6.60	13.74
2.643	2.23	2.67	6.97	14.52
3.276	2.29	2.75	7.17	14.94
4.020	2.34	2.81	7.31	15.24
5.287	2.39	2.86	7.46	15.53

#### Langmuir Parameters

	As Received	Moisture free ash incl.	Ash free moisture incl	Dry Ash Free
Vol. (cc/g)	2.91	3.50	9.11	18.97
Pressure (MPa)	0.97	0.97	0.97	0.97

### SUMMARY OF ADSORPTION ANALYSES SI UNITS

Isotherm Temperature:

42.1 °C

Goodness of fit of Langmuir regression:

0.99

% Ash= 68.00

% Moisture =

16.64

Density (g/cc)

2.107

## 4-LA-8 Carbon Dioxide

### CO2 Adsorption (Imperial Units)

#### ***Summary of Analyses***

	As Received	DAF basis
Langmuir Volume (SCF)	99	646
Langmuir Pressure (PSIA)	141	141
Goodness of fit Langmuir		
Equation R-squared	0.99	0.99
Ash Content Wt.%	68.00	68.00
Equilibrium Moisture Wt.%	16.64	16.64

#### **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

**4-LA-8 Carbon Dioxide**  
**GAS ADSORPTION ISOTHERM IMPERIAL UNITS**

**AS RECEIVED BASIS**

Isotherm Temperature ° F:	107.8	Moisture Content % :	16.64
Gas used:	CO2	Ash Content, % :	68.00
		Helium Density g/cc	2.107

PRESSURE (PSI)	ADSORBED GAS (SCF/ton)	P / V
40	19.68	2.05
97	37.35	2.60
164	52.63	3.12
236	64.44	3.66
309	71.81	4.31
383	75.87	5.05
475	78.09	6.08
583	79.65	7.32
767	81.19	9.44

Saturated Monolayer Volume (SCF/ton):	99.2
Langmuir Pressure (PSIA):	141.3
Correlation Coefficient:	0.9931

**DRY ASH FREE BASIS**

40	128.11	0.31
97	243.14	0.40
164	342.65	0.48
236	419.56	0.56
309	467.54	0.66
383	493.98	0.78
475	508.40	0.93
583	518.53	1.12
767	528.59	1.45

Saturated Monolayer Volume (SCF/ton, daf):	646
Langmuir Pressure (PSIA):	141
Correlation Coefficient:	0.9931

**4-LA-8 Carbon Dioxide**  
**GAS ADSORPTION ISOTHERM IMPERIAL UNITS**

**MOISTURE FREE ASH INCLUDED**

Isotherm Temperature° F:	107.8	Moisture Content % :	16.64
Gas used:	CO2	Ash Content, % :	68.00
		Helium Density g/cc	2.107

PRESSURE (PSI)	ADSORBED GAS (SCF/ton)	P / V
40	24	1.71
97	45	2.17
164	63	2.60
236	77	3.05
309	86	3.59
383	91	4.21
475	94	5.07
583	96	6.10
767	97	7.87

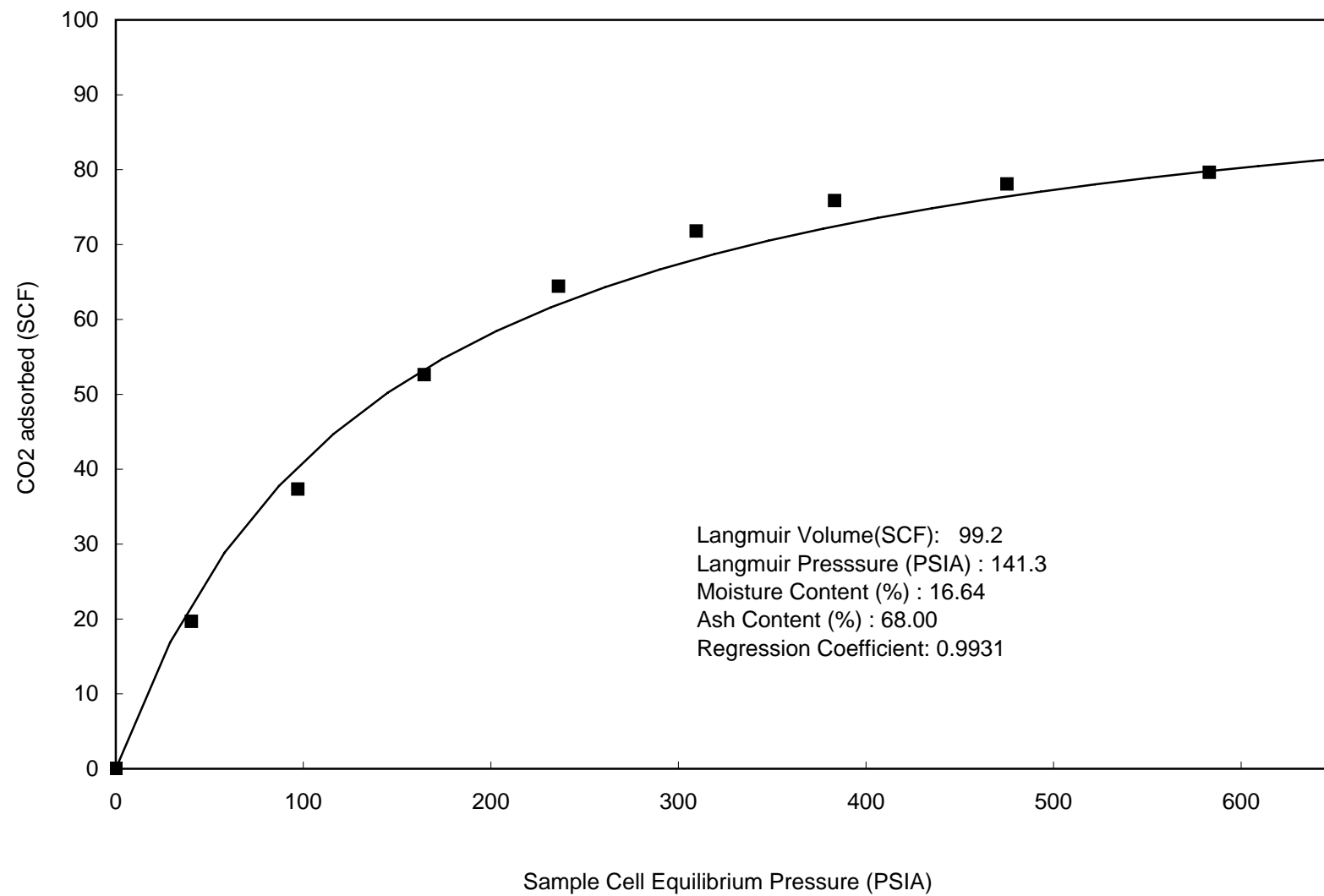
Saturated Monolayer Volume (SCF/ton):	119
Langmuir Pressure (PSIA):	141
Correlation Coefficient:	0.9931

**ASH FREE MOISTURE INCLUDED**

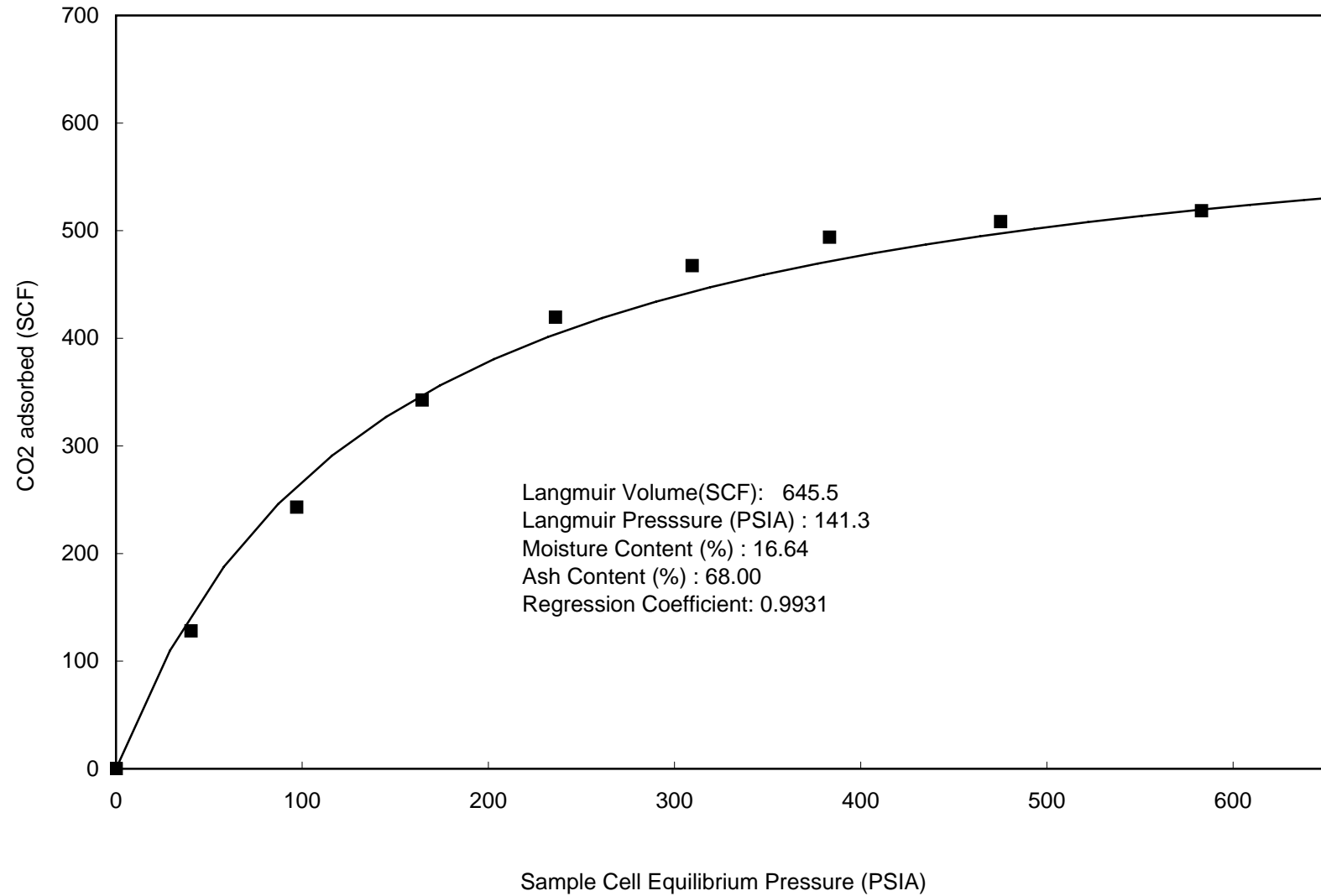
40	61	0.66
97	117	0.83
164	164	1.00
236	201	1.17
309	224	1.38
383	237	1.62
475	244	1.95
583	249	2.34
767	254	3.02

Saturated Monolayer Volume (SCF/ton):	310
Langmuir Pressure (PSIA):	141
Correlation Coefficient:	0.9931

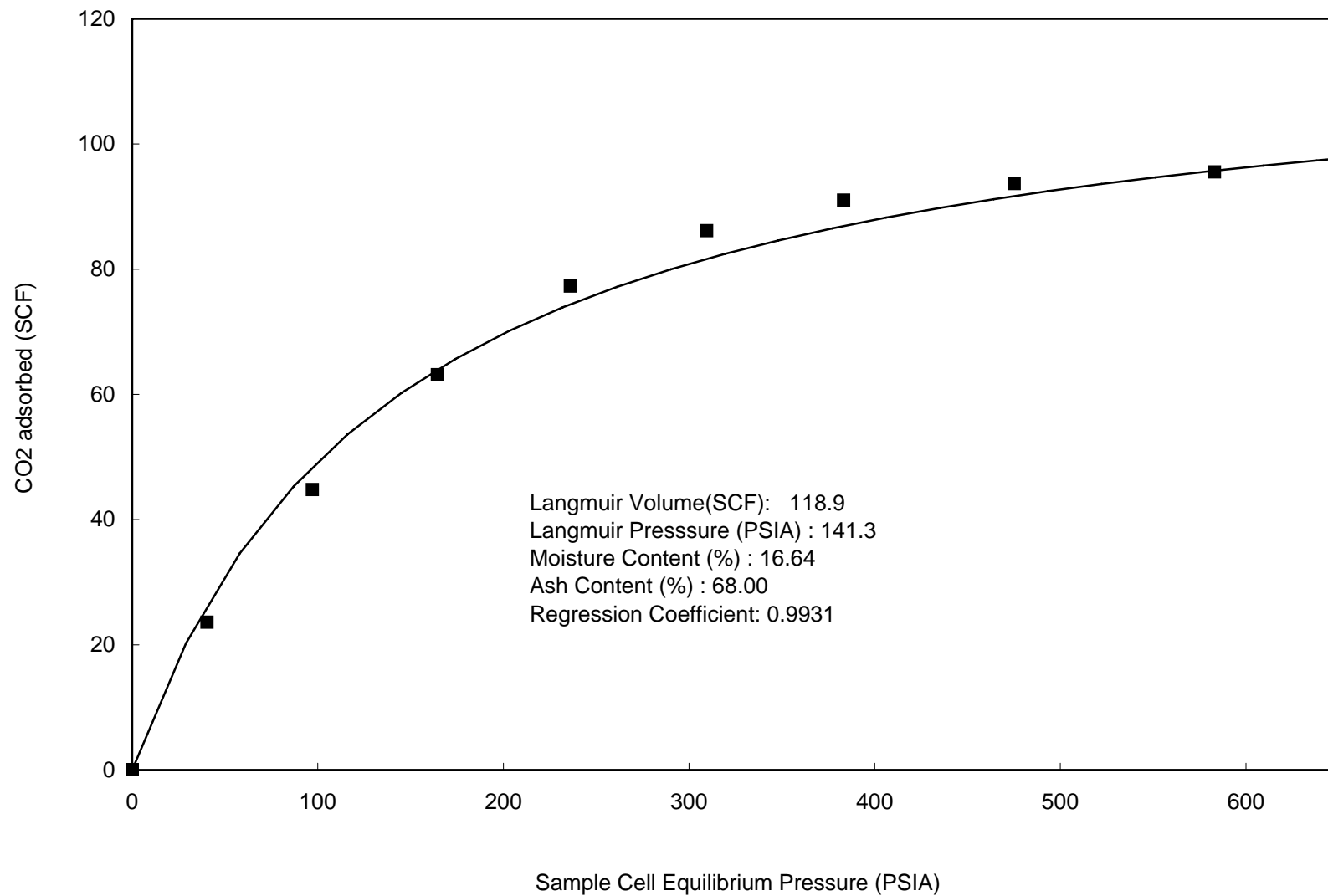
### 4-LA-8 Carbon Dioxide (as received basis)



### 4-LA-8 Carbon Dioxide (dry & ash free basis)

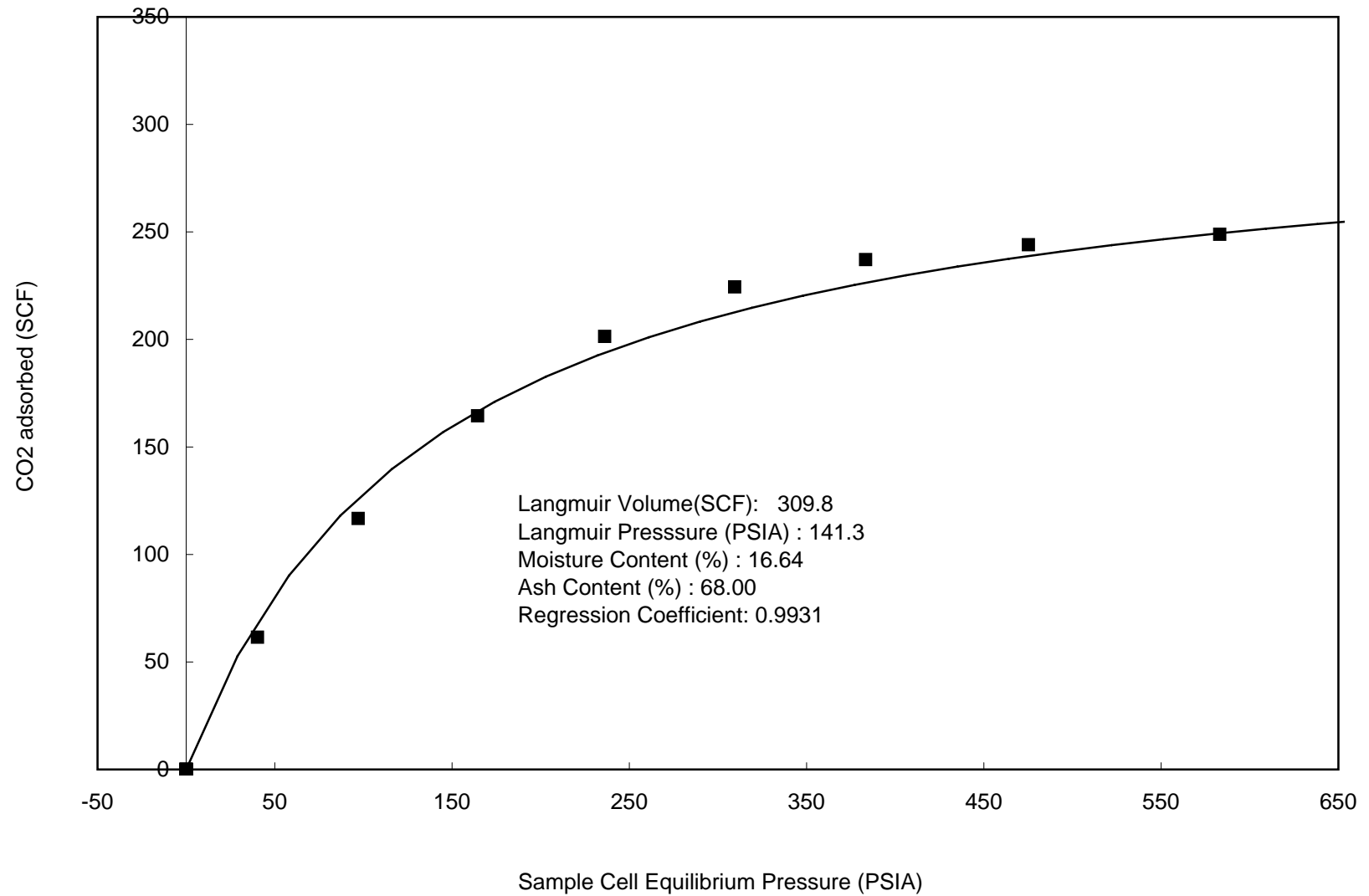


### 4-LA-8 Carbon Dioxide (moisture free, ash included basis)

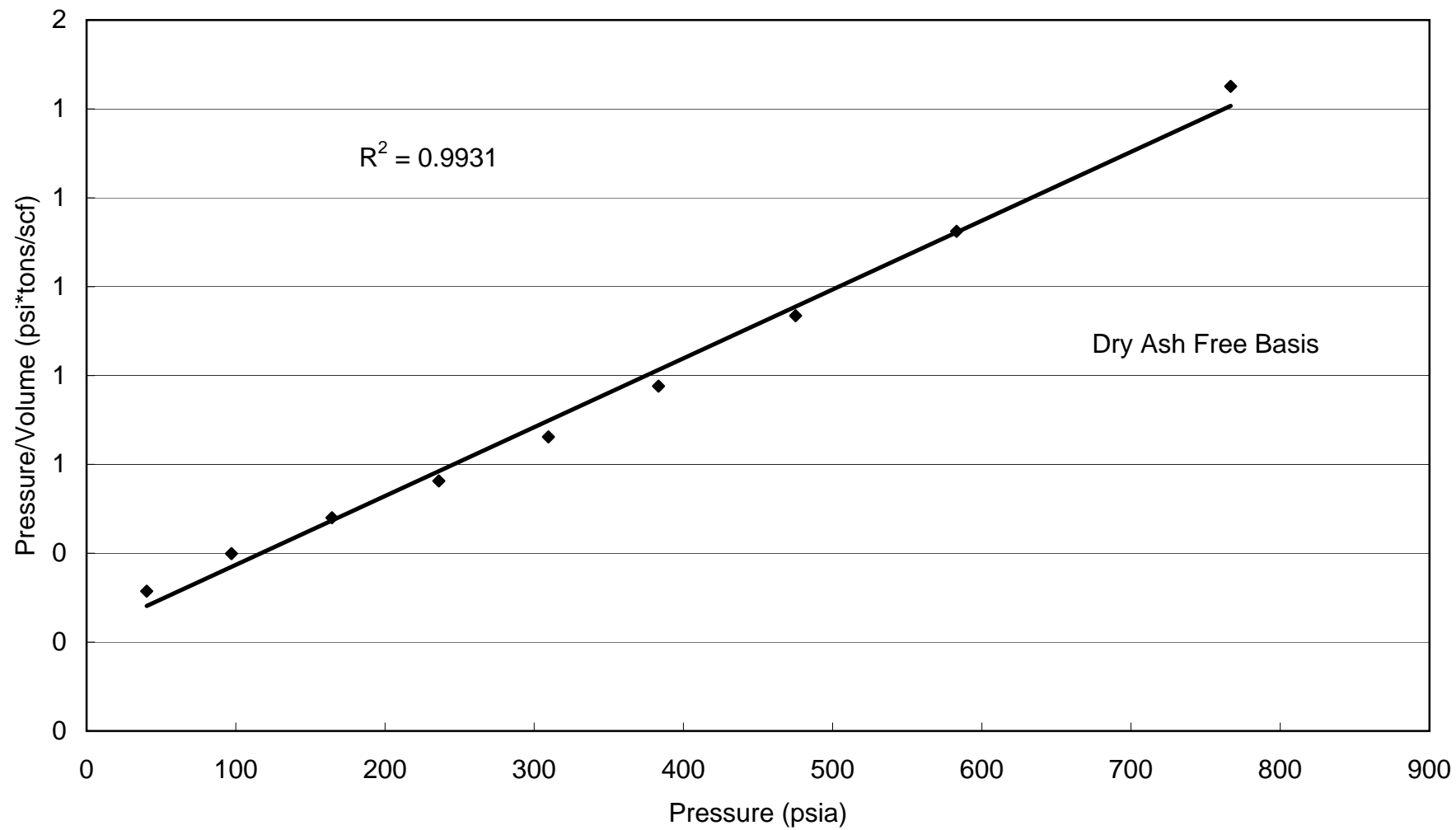




### 4-LA-8 Carbon Dioxide (ash free, moisture included basis)



## Adsorption Langmuir Plot



## 4-LA-8 Carbon Dioxide

### CO2 Adsorption (SI Units)

#### **Summary of Analyses**

	As Received	DAF basis
Langmuir Volume cc/g	2.91	18.97
Langmuir Pressure MPa	0.97	0.97
Goodness of fit Langmuir		
Equation R-squared	0.99	0.99
Ash Content Wt.%	68.00	68.00
Equilibrium Moisture Wt.%	16.64	16.64

#### **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

**4-LA-8 Carbon Dioxide**  
**GAS ADSORPTION ISOTHERM SI UNITS**

**AS RECEIVED BASIS**

Sample I.D. :	4-LA-8 Carbon Dioxide	Moisture Content (EQ) % :	16.64
Isotherm Temperature ° C:	42.1	Ash Content % :	68.00
Gas used:	CO2	Helium Density g/cc	2.107

PRESSURE (MPa)	ADSORBED GAS (cc/g @STP)	P / V
0.278	0.58	0.480
0.669	1.10	0.610
1.134	1.55	0.733
1.628	1.89	0.859
2.134	2.11	1.011
2.643	2.23	1.185
3.276	2.29	1.427
4.020	2.34	1.717
5.287	2.39	2.216

Saturated Monolayer Volume (cc/g @ STP):	2.91
Langmuir Pressure (MPa):	0.97

**DRY ASH FREE BASIS**

0.278	3.76	0.074
0.669	7.15	0.094
1.134	10.07	0.113
1.628	12.33	0.132
2.134	13.74	0.155
2.643	14.52	0.182
3.276	14.94	0.219
4.020	15.24	0.264
5.287	15.53	0.340

Saturated Monolayer Volume (cc/g @ STP, daf):	18.97
Langmuir Pressure (MPa):	0.97
Correlation Coefficient:	0.9931

## 4-LA-8 Carbon Dioxide

### GAS ADSORPTION ISOTHERM SI UNITS

#### MOISTURE FREE ASH INCLUDED

Isotherm Temperature ° C:	42.1	Moisture Content (EQ) % :	16.64
Gas used:	CO2	Ash Content % :	68.00
		Helium Density g/cc	2.107

PRESSURE (MPa)	ADSORBED GAS (cc/g@STP)	P / V
0.278	0.69	0.40
0.669	1.32	0.51
1.134	1.86	0.61
1.628	2.27	0.72
2.134	2.53	0.84
2.643	2.67	0.99
3.276	2.75	1.19
4.020	2.81	1.43
5.287	2.86	1.85

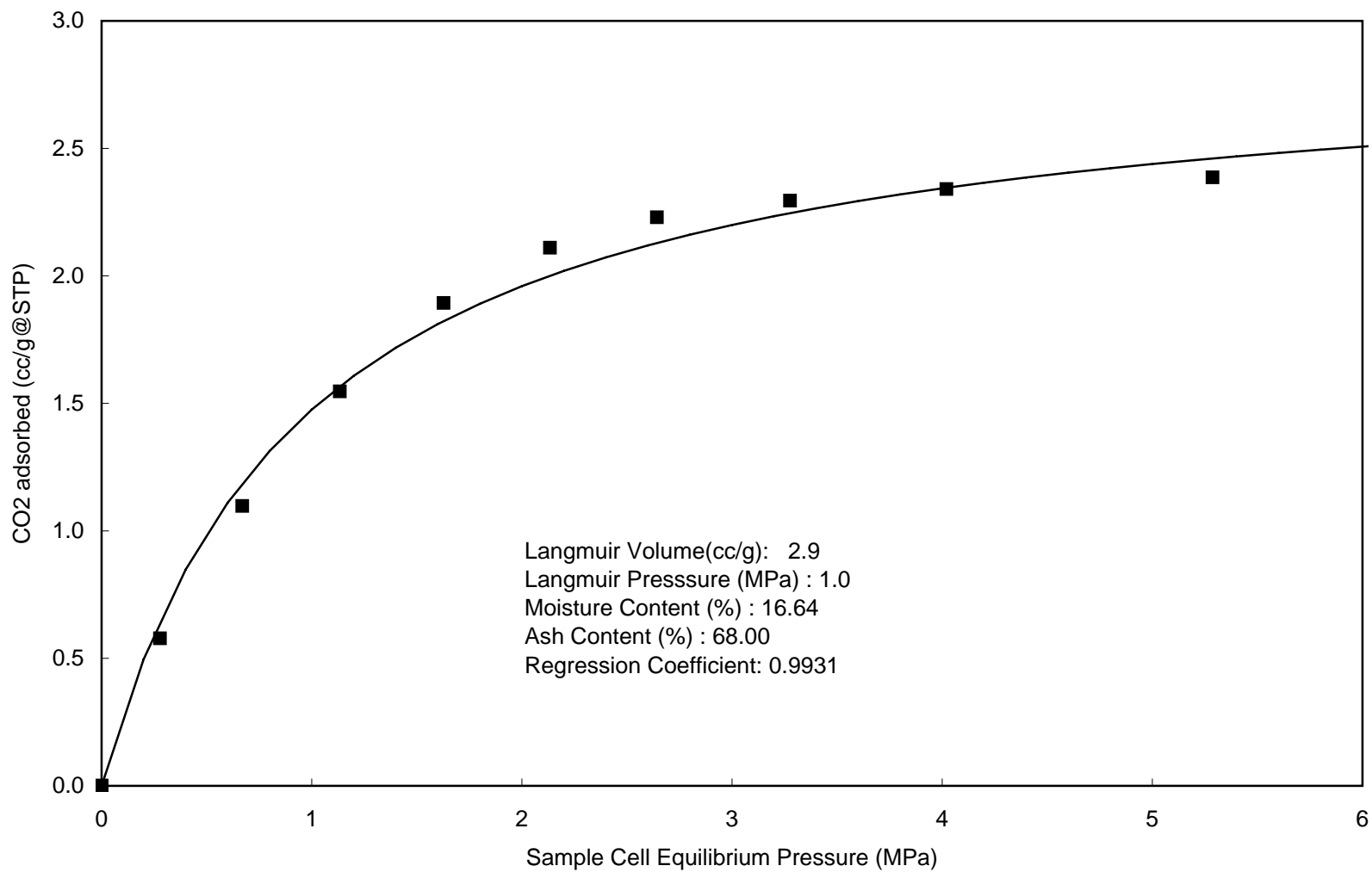
Saturated Monolayer Volume (cc/g):	3.50
Langmuir Pressure (MPa):	0.97

#### ASH FREE MOISTURE INCLUDED

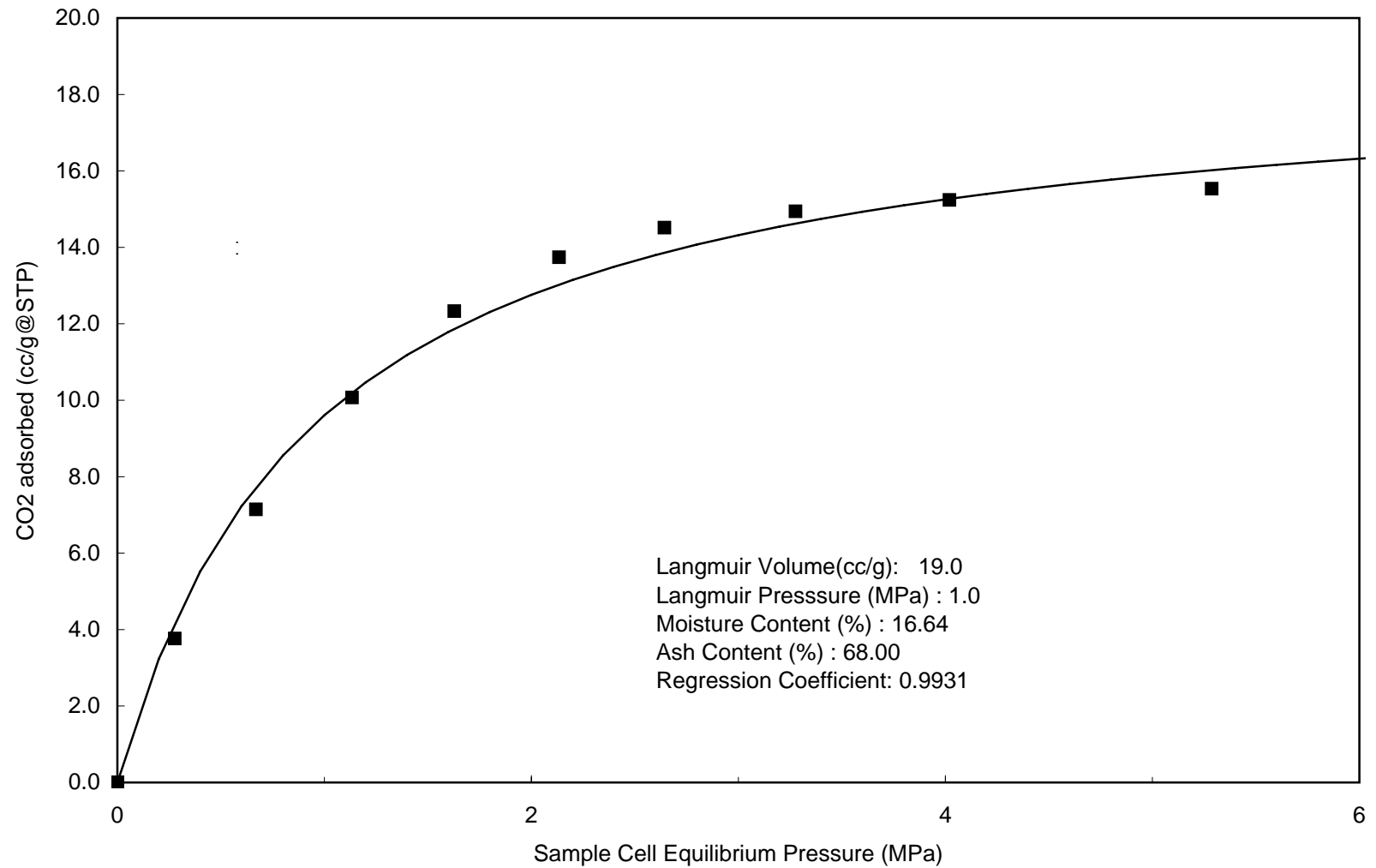
0.278	1.81	0.00
0.669	3.43	0.20
1.134	4.83	0.23
1.628	5.92	0.28
2.134	6.60	0.32
2.643	6.97	0.38
3.276	7.17	0.46
4.020	7.31	0.55
5.287	7.46	0.71

Saturated Monolayer Volume (cc/g, ash free):	9.11
Langmuir Pressure (MPa):	0.97
Correlation Coefficient:	0.9931

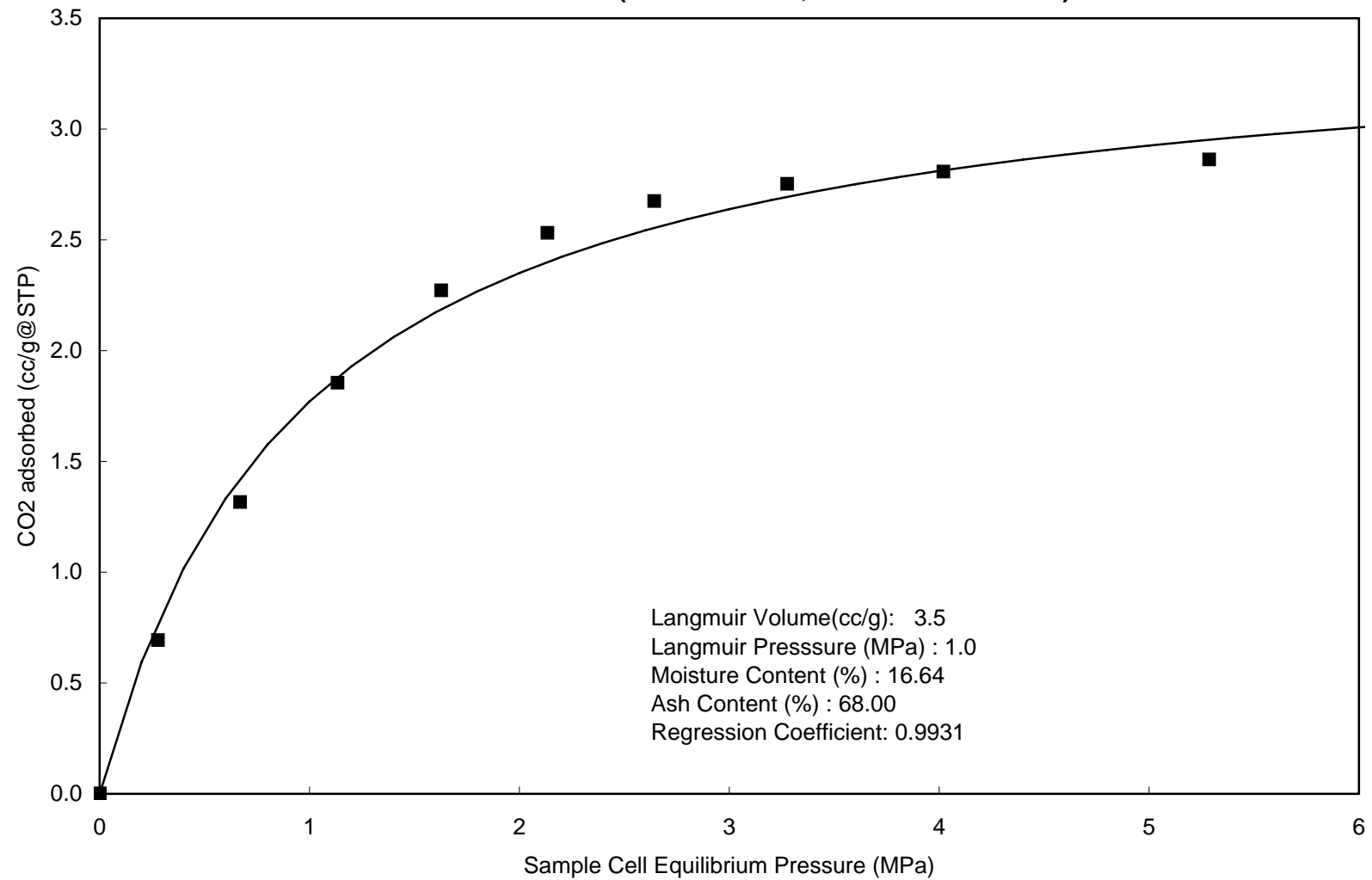
### 4-LA-8 Carbon Dioxide (as received basis)



### 4-LA-8 Carbon Dioxide (dry & ash free basis)

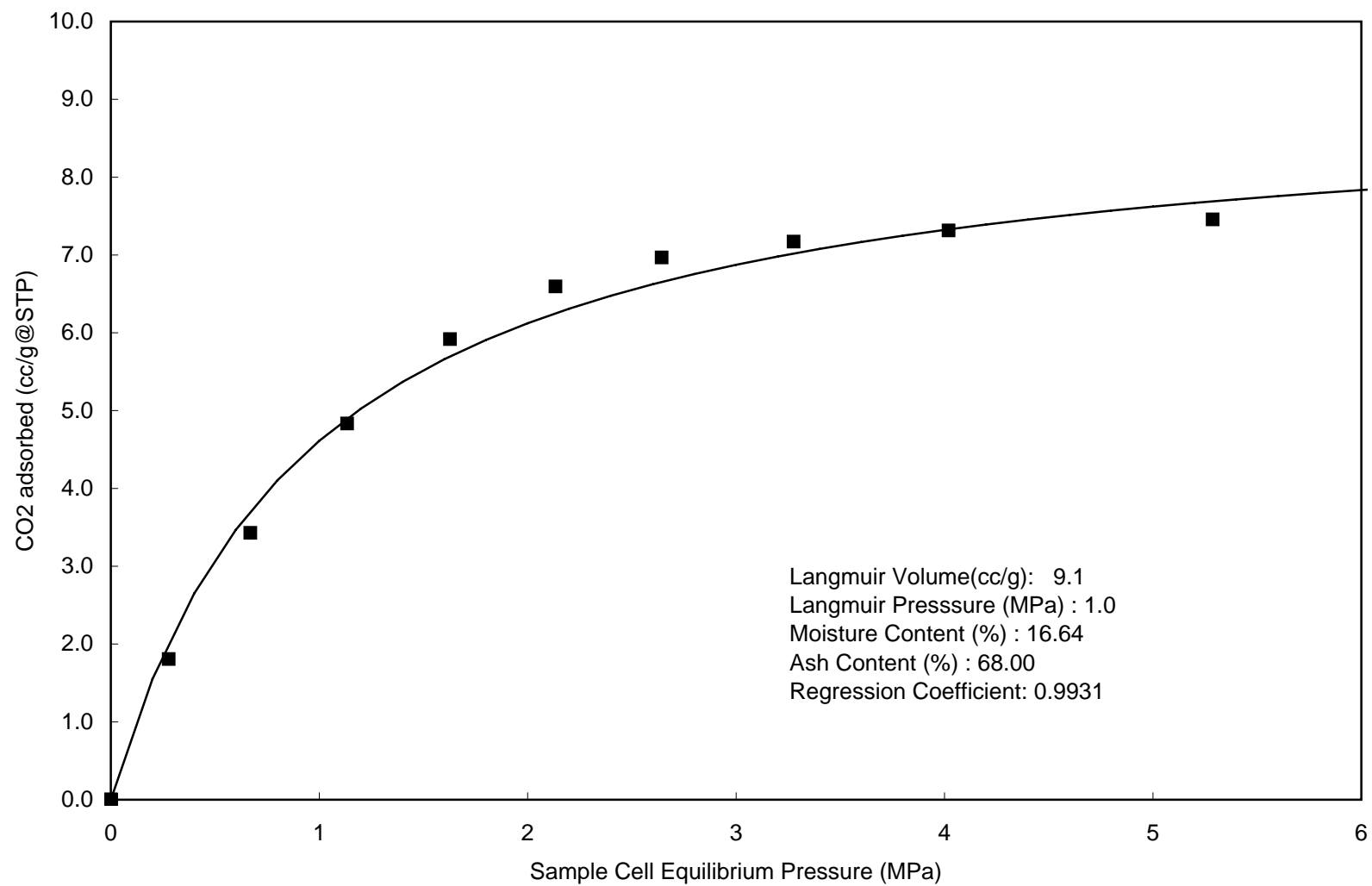


### 4-LA-8 Carbon Dioxide (moisture free, ash included basis)





### 4-LA-8 Carbon Dioxide (ash free, moisture included basis)



## Adsorption Langmuir Plot

