

Sample: 000-063\_Pristini\_3  
Operator: Danilo Janes  
Submitter: Raphaella Ilum  
File: C:\2020\DATA\000-063.SMP

Started: 04/11/2024 12:02:33	Analysis Adsorptive: N2
Completed: 04/11/2024 14:19:03	Analysis Bath Temp.: -196.333 °C
Report Time: 04/11/2024 14:19:03	Thermal Correction: No
Sample Mass: 0.1463 g	Warm Free Space: 27.0045 cm <sup>3</sup> Measured
Cold Free Space: 85.6955 cm <sup>3</sup>	Equilibration Interval: 5 s
Low Pressure Dose: None	Automatic Degas: Yes

## Summary Report

### Surface Area

Single point surface area at P/Po = 0.199797486: 5.2826 m<sup>2</sup>/g

BET Surface Area: 5.1610 m<sup>2</sup>/g

Langmuir Surface Area: 6.8710 m<sup>2</sup>/g

t-Plot Micropore Area: 3.9625 m<sup>2</sup>/g

t-Plot External Surface Area: 1.1985 m<sup>2</sup>/g

BJH Adsorption cumulative surface area of pores  
between 17.000 Å and 3000.000 Å diameter: 3.030 m<sup>2</sup>/g

BJH Desorption cumulative surface area of pores  
between 17.000 Å and 3000.000 Å diameter: 3.8699 m<sup>2</sup>/g

### Pore Volume

Single point adsorption total pore volume of pores  
less than 1270.852 Å diameter at P/Po = 0.984529706: 0.022290 cm<sup>3</sup>/g

Single point desorption total pore volume of pores  
less than 613.854 Å diameter at P/Po = 0.967462453: 0.020493 cm<sup>3</sup>/g

t-Plot micropore volume: 0.001840 cm<sup>3</sup>/g

BJH Adsorption cumulative volume of pores  
between 17.000 Å and 3000.000 Å diameter: 0.024447 cm<sup>3</sup>/g

BJH Desorption cumulative volume of pores  
between 17.000 Å and 3000.000 Å diameter: 0.024464 cm<sup>3</sup>/g

### Pore Size

Adsorption average pore width (4V/A by BET): 172.7617 Å

Desorption average pore width (4V/A by BET): 158.8310 Å

BJH Adsorption average pore diameter (4V/A): 322.689 Å

BJH Desorption average pore diameter (4V/A): 252.871 Å

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### Isotherm Tabular Report

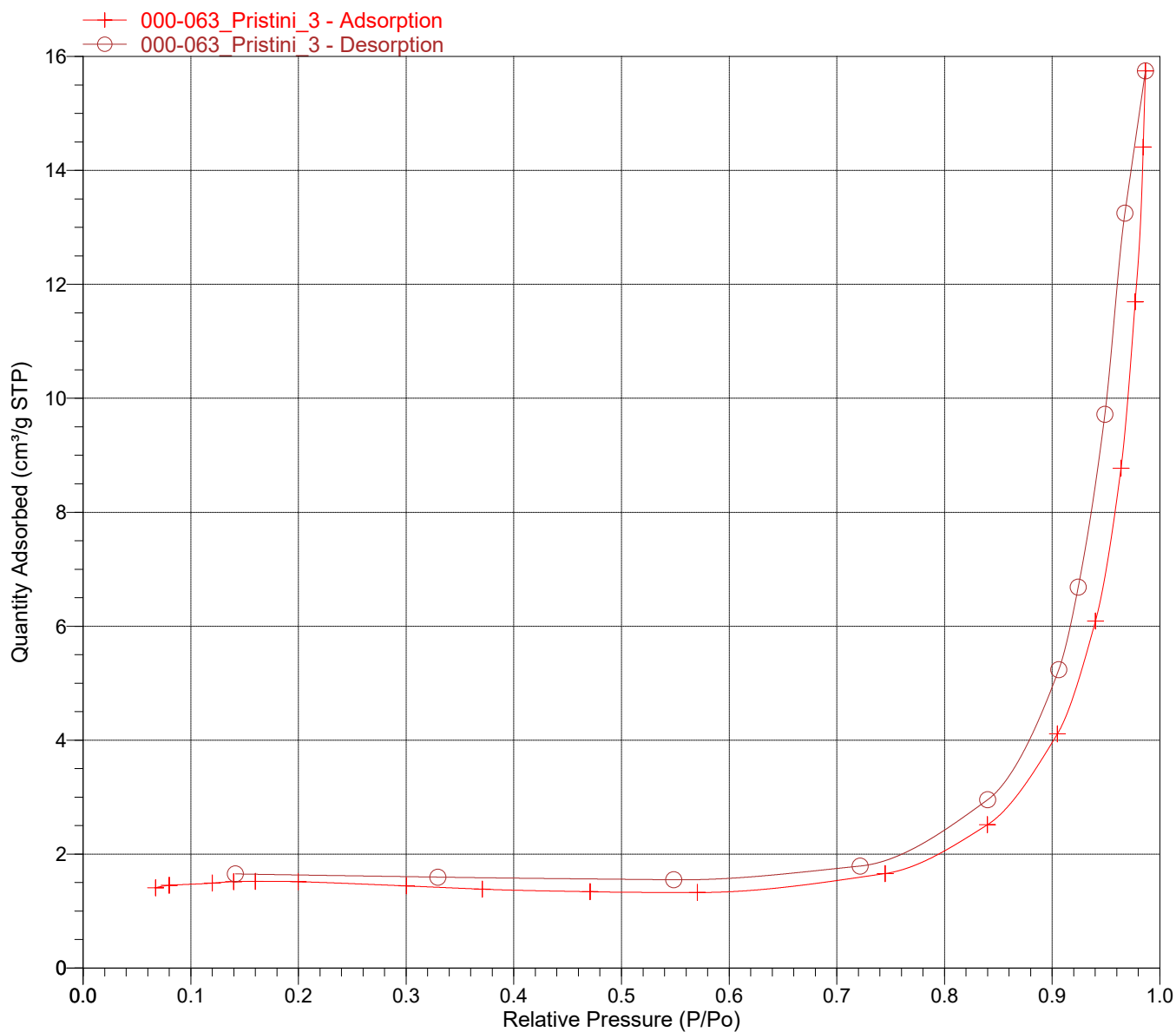
Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm <sup>3</sup> /g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:05	713.292908
0.067213998	47.943268	1.4108	01:14	
0.080002356	57.065113	1.4520	01:15	
0.119959982	85.566605	1.4901	01:17	
0.139959752	99.832298	1.5184	01:18	
0.159944761	114.087463	1.5200	01:20	
0.199797486	142.514130	1.5165	01:21	
0.300212547	214.139481	1.4418	01:23	
0.370774078	264.470520	1.3847	01:24	
0.470741810	335.776794	1.3397	01:25	
0.570447404	406.896088	1.3265	01:27	
0.744829010	531.281250	1.6588	01:29	
0.839665049	598.927124	2.5147	01:30	
0.904693850	645.311707	4.1091	01:32	
0.940114444	670.576965	6.0888	01:33	
0.963867821	687.520081	8.7743	01:35	
0.977062259	696.931580	11.6928	01:37	
0.984529706	702.258057	14.4107	01:39	
0.986478435	703.648071	15.7479	01:41	
0.967462453	690.084106	13.2487	01:43	
0.948879104	676.828735	9.7195	01:46	
0.924258922	659.267334	6.6851	01:48	
0.906119843	646.328857	5.2376	01:49	
0.839978228	599.150513	2.9544	01:51	
0.721551135	514.677307	1.7904	01:53	
0.548392598	391.164551	1.5493	01:54	
0.329432488	234.981857	1.5967	01:57	
0.141295845	100.785324	1.6527	02:00	

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 Thermal Correction: No  
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 Equilibration Interval: 5 s  
 Automatic Degas: Yes

Isotherm Linear Plot

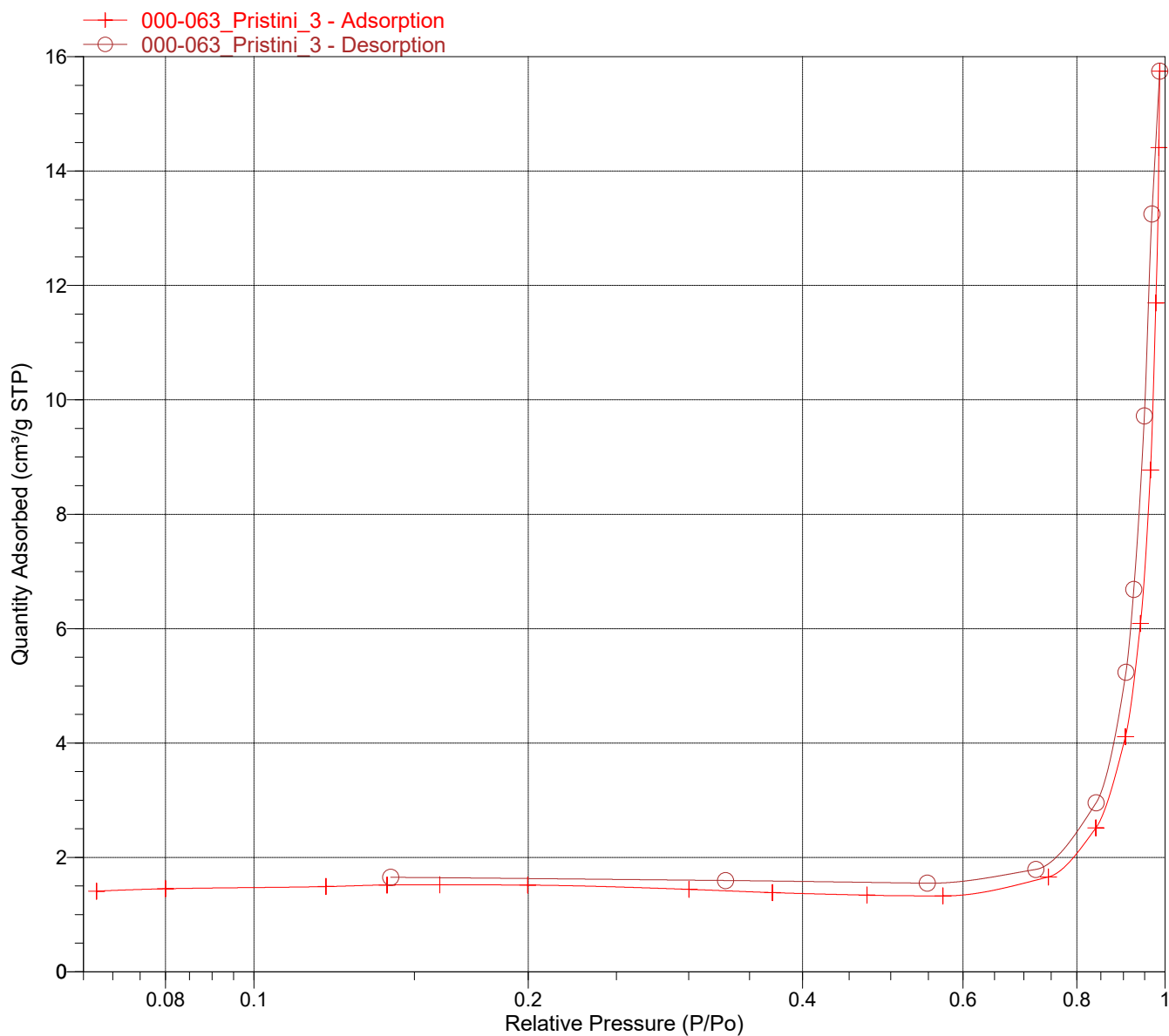


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### Isotherm Log Plot



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Analysis Bath Temp.: -196.333 °C  
Thermal Correction: No  
Warm Free Space: 27.0045 cm<sup>3</sup> Measured  
Equilibration Interval: 5 s  
Automatic Degas: Yes

### BET Surface Area Report

BET Surface Area: 5.1610 ± 0.1615 m<sup>2</sup>/g  
Slope: 0.851816 ± 0.026154 g/cm<sup>3</sup> STP  
Y-Intercept: -0.008333 ± 0.003525 g/cm<sup>3</sup> STP  
C: -101.226283  
Qm: 1.1856 cm<sup>3</sup>/g STP  
Correlation Coefficient: 0.9985889  
Molecular Cross-Sectional Area: 0.1620 nm<sup>2</sup>

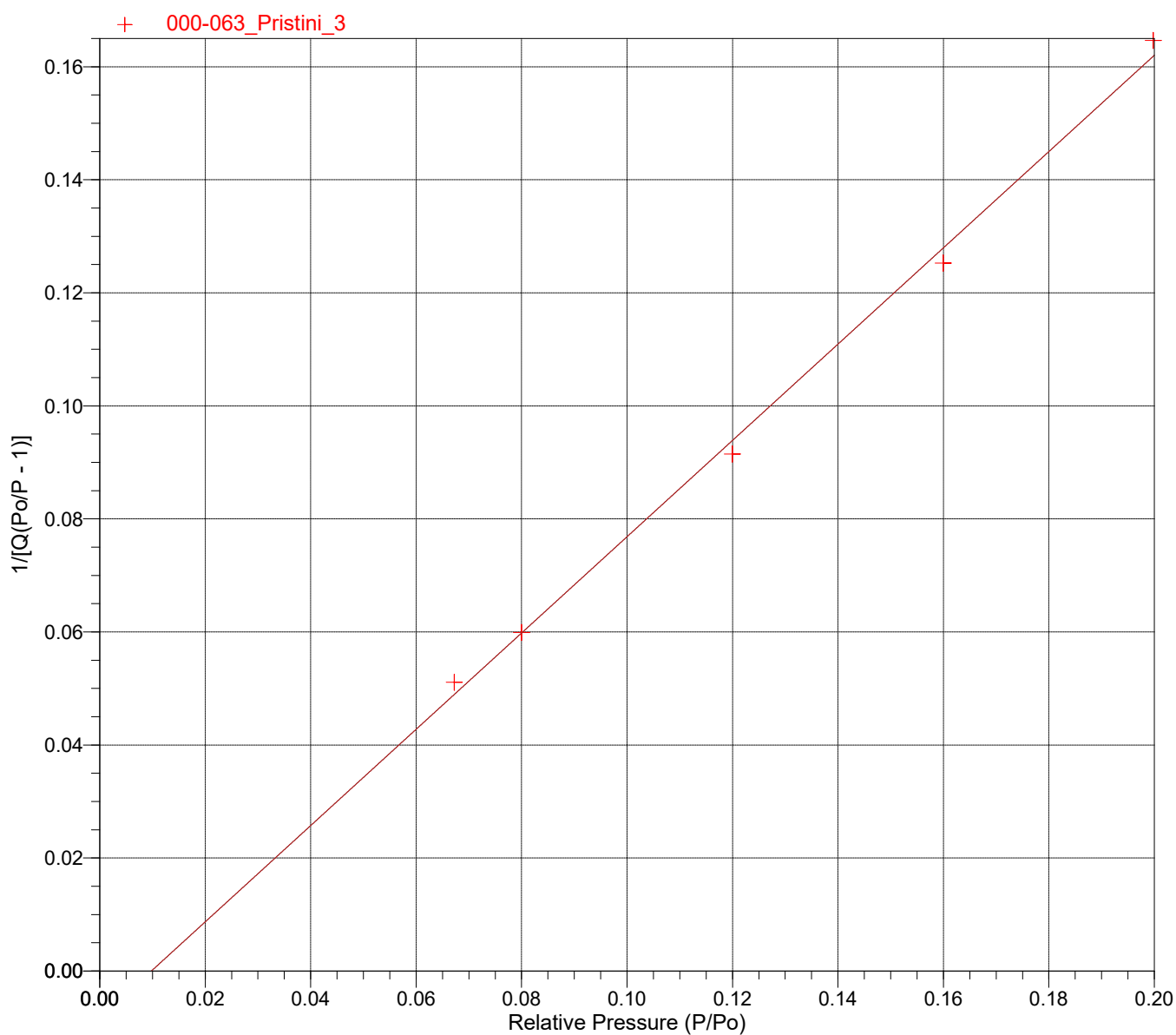
Relative Pressure (P/Po)	Quantity Adsorbed (cm <sup>3</sup> /g STP)	1/[Q(Po/P - 1)]
0.067213998	1.4108	0.051076
0.080002356	1.4520	0.059891
0.119959982	1.4901	0.091480
0.159944761	1.5200	0.125264
0.199797486	1.5165	0.164645

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 Low Pressure Dose: None

Analysis Adsorptive: N2  
 Analysis Bath Temp.: -196.333 °C  
 Thermal Correction: No  
 Warm Free Space: 27.0045 cm<sup>3</sup> Measured  
 Equilibration Interval: 5 s  
 Automatic Degas: Yes

**BET Surface Area Plot**



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Sample Mass: 0.1463 g  
Cold Free Space: 85.6955 cm<sup>3</sup>  
Low Pressure Dose: None

Analysis Adsorptive: N<sub>2</sub>  
Analysis Bath Temp.: -196.333 °C  
Thermal Correction: No  
Warm Free Space: 27.0045 cm<sup>3</sup> Measured  
Equilibration Interval: 5 s  
Automatic Degas: Yes

### Langmuir Surface Area Report

Langmuir Surface Area:  $6.8710 \pm 0.0587$  m<sup>2</sup>/g  
Slope:  $0.633562 \pm 0.005414$  g/cm<sup>3</sup> STP  
Y-Intercept:  $3.286128 \pm 0.520399$  mmHg·g/cm<sup>3</sup> STP  
b: 0.192799 1/mmHg  
Qm: 1.5784 cm<sup>3</sup>/g STP  
Correlation Coefficient: 0.999890  
Molecular Cross-Sectional Area: 0.1620 nm<sup>2</sup>

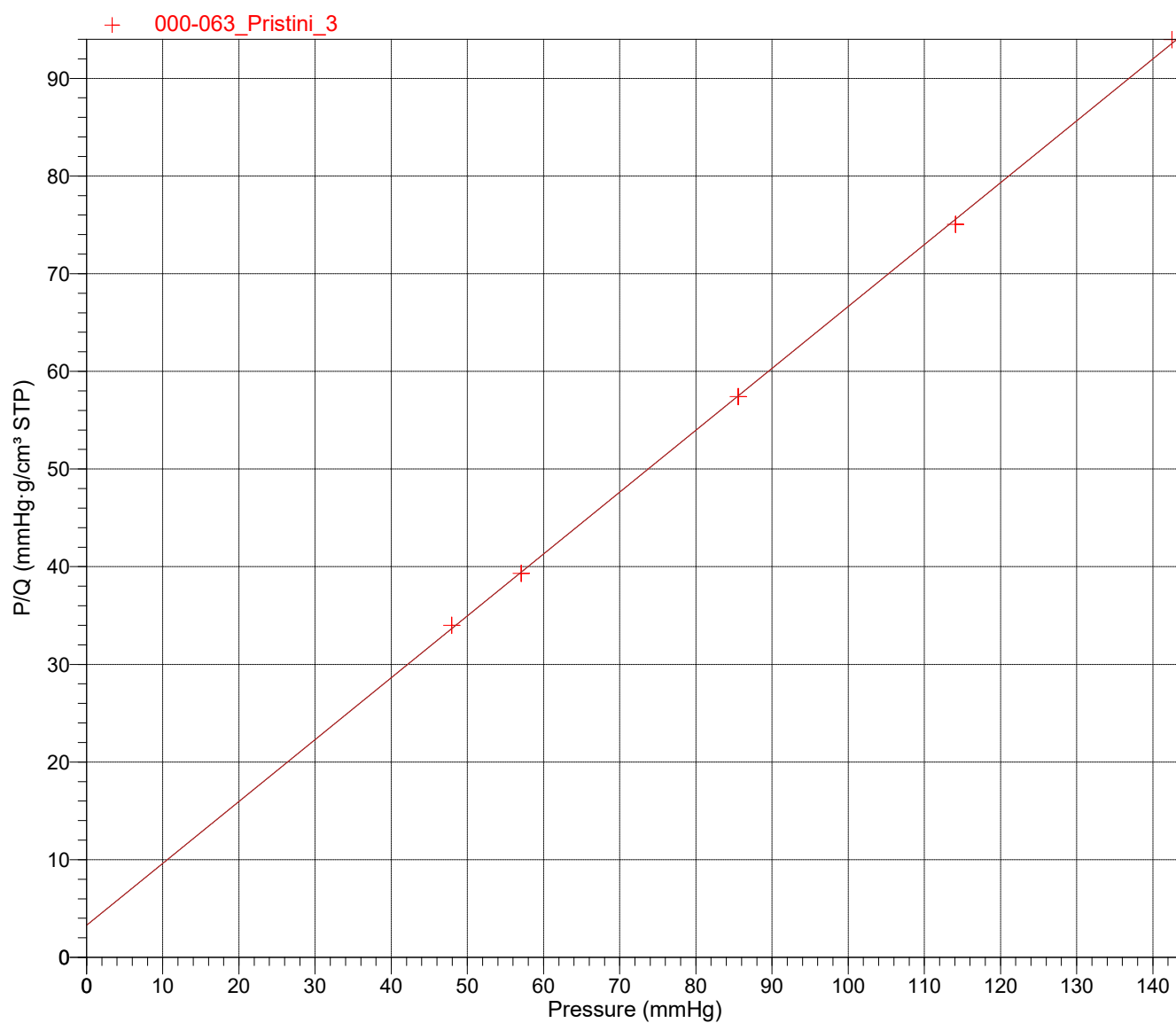
Pressure (mmHg)	Quantity Adsorbed (cm <sup>3</sup> /g STP)	P/Q (mmHg·g/cm <sup>3</sup> STP)
47.943268	1.4108	33.983
57.065113	1.4520	39.302
85.566605	1.4901	57.425
114.087463	1.5200	75.059
142.514130	1.5165	93.976

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 Low Pressure Dose: None

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 Analysis Bath Temp.: -196.333 °C  
 Thermal Correction: No  
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 Equilibration Interval: 5 s  
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Langmuir Surface Area Plot





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Report Time: 04/11/2024 14:19:03	Thermal Correction: No
Sample Mass: 0.1463 g	Warm Free Space: 27.0045 cm <sup>3</sup> Measured
Cold Free Space: 85.6955 cm <sup>3</sup>	Equilibration Interval: 5 s
Low Pressure Dose: None	Automatic Degas: Yes

### Freundlich Reports

Primary Data

4057- At least two data points are needed for Freundlich calculations.

Primary Data

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Sample Mass: 0.1463 g	Warm Free Space: 27.0045 cm <sup>3</sup> Measured
Cold Free Space: 85.6955 cm <sup>3</sup>	Equilibration Interval: 5 s
Low Pressure Dose: None	Automatic Degas: Yes

### Temkin Reports

Primary Data

4058- At least two data points are needed for Temkin calculations.

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 Low Pressure Dose: None

Analysis Adsorptive: N<sub>2</sub>  
 Analysis Bath Temp.: -196.333 °C  
 Thermal Correction: No  
 Warm Free Space: 27.0045 cm<sup>3</sup> Measured  
 Equilibration Interval: 5 s  
 Automatic Degas: Yes

### t-Plot Report

Micropore Volume: 0.001840 cm<sup>3</sup>/g  
 Micropore Area: 3.9625 m<sup>2</sup>/g  
 External Surface Area: 1.1985 m<sup>2</sup>/g  
 Slope: 0.077483 ± 0.043531 cm<sup>3</sup>/g·Å STP  
 Y-Intercept: 1.189443 ± 0.172668 cm<sup>3</sup>/g STP  
 Correlation Coefficient: 0.871832  
 Surface Area Correction Factor: 1.000  
 Density Conversion Factor: 0.0015468  
 Total Surface Area (BET): 5.1610 m<sup>2</sup>/g  
 Thickness Range: 3.5000 Å to 5.0000 Å  
 Thickness Equation: Harkins and Jura  

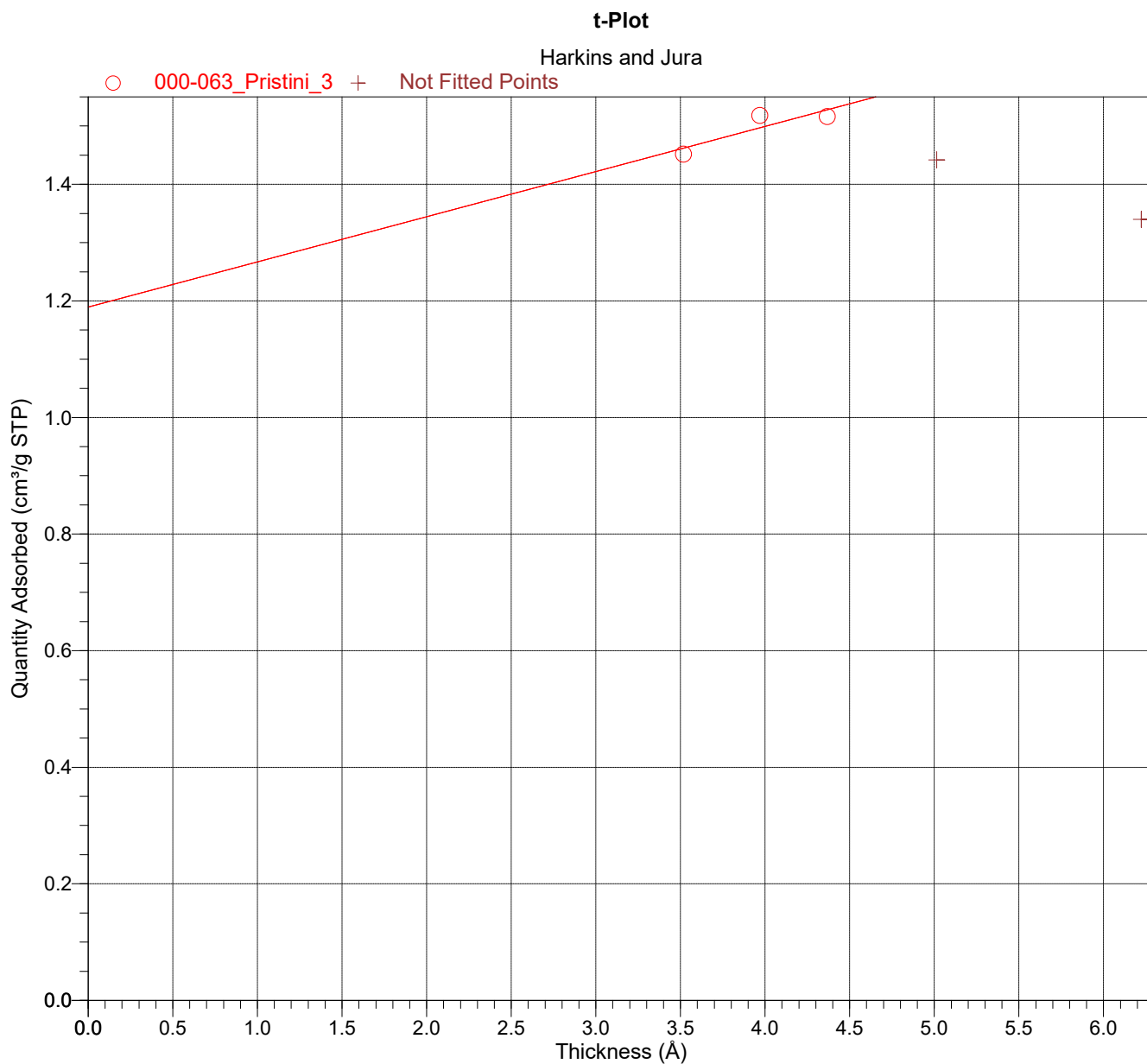
$$t = [ 13.99 / ( 0.034 - \log(P/P_o) ) ] ^{0.5}$$

Relative Pressure (P/P <sub>o</sub> )	Statistical Thickness (Å)	Quantity Adsorbed (cm <sup>3</sup> /g STP)
0.080002356	3.5172	1.4520
0.139959752	3.9692	1.5184
0.199797486	4.3675	1.5165
0.300212547	5.0136	1.4418
0.470741810	6.2234	1.3397

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 Low Pressure Dose: None

Analysis Adsorptive: N<sub>2</sub>  
 Analysis Bath Temp.: -196.333 °C  
 Thermal Correction: No  
 Warm Free Space: 27.0045 cm<sup>3</sup> Measured  
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 Automatic Degas: Yes



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### Alpha-S Method

#### Primary Data

4029- At least two fitted data points are needed for Alpha-S calculations.

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#### **f-Ratio Method**

Primary Data  
A reference file has not been chosen.