



Micromeritics Instrument Corporation

TriStar II 3020 3.02

TriStar II 3020 Version 3.02
Serial # 1647 Unit 1 Port 3

Page 1

Sample: 003
Operator:
Submitter:
File: D:\TriStar II 3020\data\FYH\WAILAI\3.SMP

Started: 9/26/2020 12:30:31 PM	Analysis Adsorptive: N2
Completed: 1/1/1970 8:00:00 AM	Analysis Bath Temp.: -195.850 °C
Report Time: 9/27/2020 11:50:51 AM	Thermal Correction: No
Sample Mass: 0.1389 g	Warm Free Space: 14.9818 cm ³ Measured
Cold Free Space: 48.0193 cm ³	Equilibration Interval: 10 s
Low Pressure Dose: None	Sample Density: 1.000 g/cm ³
Automatic Degas: No	

Summary Report

Surface Area

Single point surface area at P/Po = 0.294475879: 10.7435 m²/g

BET Surface Area: 11.0177 m²/g

Pore Volume

Single point adsorption total pore volume of pores
less than 259.8129 nm diameter at P/Po = 0.992513732: 0.028108 cm³/g

BJH Adsorption cumulative volume of pores
between 1.7000 nm and 300.0000 nm diameter: 0.027739 cm³/g

BJH Desorption cumulative volume of pores
between 1.7000 nm and 300.0000 nm diameter: 0.027529 cm³/g

Pore Size

Adsorption average pore diameter (4V/A by BET): 10.20465 nm

BJH Adsorption average pore diameter (4V/A): 10.3002 nm

BJH Desorption average pore diameter (4V/A): 7.8967 nm

Sample: 003
Operator:
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Automatic Degas: No	

Isotherm Tabular Report

Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm ³ /g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			00:54	763.173340
0.051347823	39.191380	2.3343	01:02	763.252991
0.084480001	64.481552	2.5785	01:04	763.275940
0.119687601	91.360825	2.7793	01:06	763.327393
0.154649241	118.059235	2.9428	01:09	763.400024
0.189603966	144.736359	3.0969	01:11	763.361450
0.224554123	171.417496	3.2376	01:13	763.368286
0.259512937	198.127594	3.3630	01:15	763.459412
0.294475879	224.836090	3.4985	01:17	763.512756
0.329353223	251.466171	3.6357	01:19	763.515137
0.364200878	278.039429	3.7787	01:21	763.423279
0.399024433	304.653961	3.9344	01:23	763.497009
0.433915779	331.350128	4.0993	01:25	763.627747
0.468876172	358.044708	4.2866	01:27	763.623169
0.503696530	384.688080	4.4978	01:29	763.729858
0.538716563	411.439941	4.7331	01:31	763.741028
0.573527560	438.023132	5.0483	01:34	763.735107
0.608737749	464.914093	5.3338	01:36	763.734619
0.643226962	491.317200	5.6427	01:38	763.831787
0.678286014	518.133057	5.9843	01:40	763.885803
0.713298772	544.881287	6.3309	01:42	763.889282

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Isotherm Tabular Report

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0.748059865	571.496643	6.7271	01:44	763.971802
0.783130643	598.350098	7.0869	01:46	764.048889
0.817782315	624.898743	7.4479	01:48	764.138245
0.852699967	651.597778	7.8861	01:50	764.158325
0.887416842	678.180969	8.4989	01:52	764.219177
0.921981125	704.623962	9.5105	01:55	764.249878
0.956347453	730.985962	11.2368	01:58	764.351868
0.992513732	758.754456	18.1716	02:05	764.477539
0.957938718	732.253174	12.3325	02:10	764.405029
0.914246310	698.883606	9.8695	02:13	764.436890
0.875198936	669.080933	8.8137	02:16	764.490112
0.838673906	641.223328	8.2212	02:18	764.568115
0.803374717	614.182129	7.7827	02:20	764.502686
0.785980164	600.922852	7.6409	02:22	764.552185
0.752111997	574.974243	7.3583	02:24	764.479553
0.716516262	547.795837	7.1206	02:26	764.526733
0.681659273	521.149109	6.9123	02:28	764.530212
0.646439006	494.207947	6.7419	02:31	764.508240
0.611355078	467.390472	6.6118	02:33	764.515564
0.576476267	440.700378	6.4741	02:35	764.472717
0.541121850	413.709717	6.3492	02:37	764.540771

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Analysis Adsorptive: N2
Analysis Bath Temp.: -195.850 °C
Thermal Correction: No
Warm Free Space: 14.9818 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

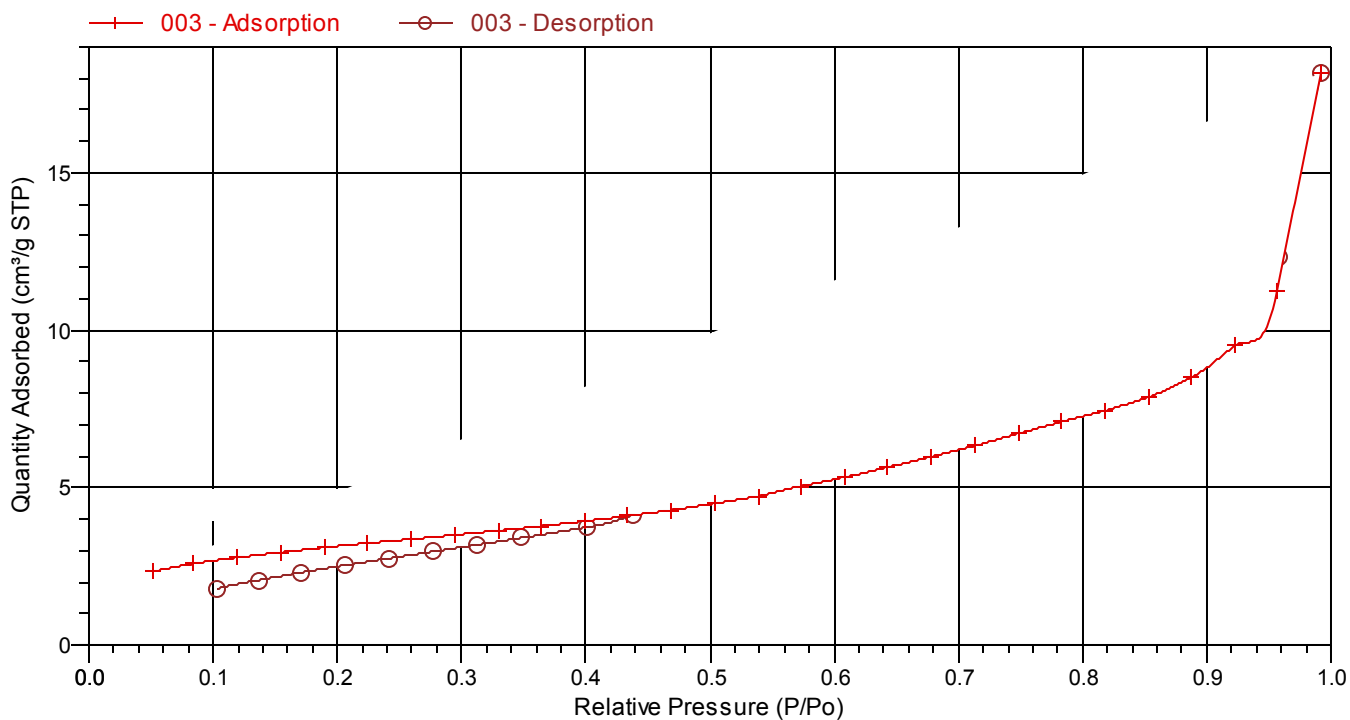
Isotherm Tabular Report

Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm ³ /g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
0.506106394	386.973694	6.2269	02:39	764.609375
0.472742088	361.401978	5.5178	02:42	764.480225
0.437233438	334.287781	4.1375	02:45	764.552185
0.401388761	306.887726	3.7475	02:47	764.564819
0.347434792	265.652069	3.4000	02:49	764.609863
0.311637391	238.289963	3.1807	02:52	764.638550
0.276548303	211.447678	2.9674	02:54	764.595825
0.241445605	184.636581	2.7521	02:56	764.712952
0.206391774	157.840225	2.5330	02:58	764.760254
0.171337956	131.024490	2.3045	03:00	764.713745
0.136271401	104.217247	2.0631	03:02	764.777100
0.102975160	78.747978	1.7951	03:05	764.727905

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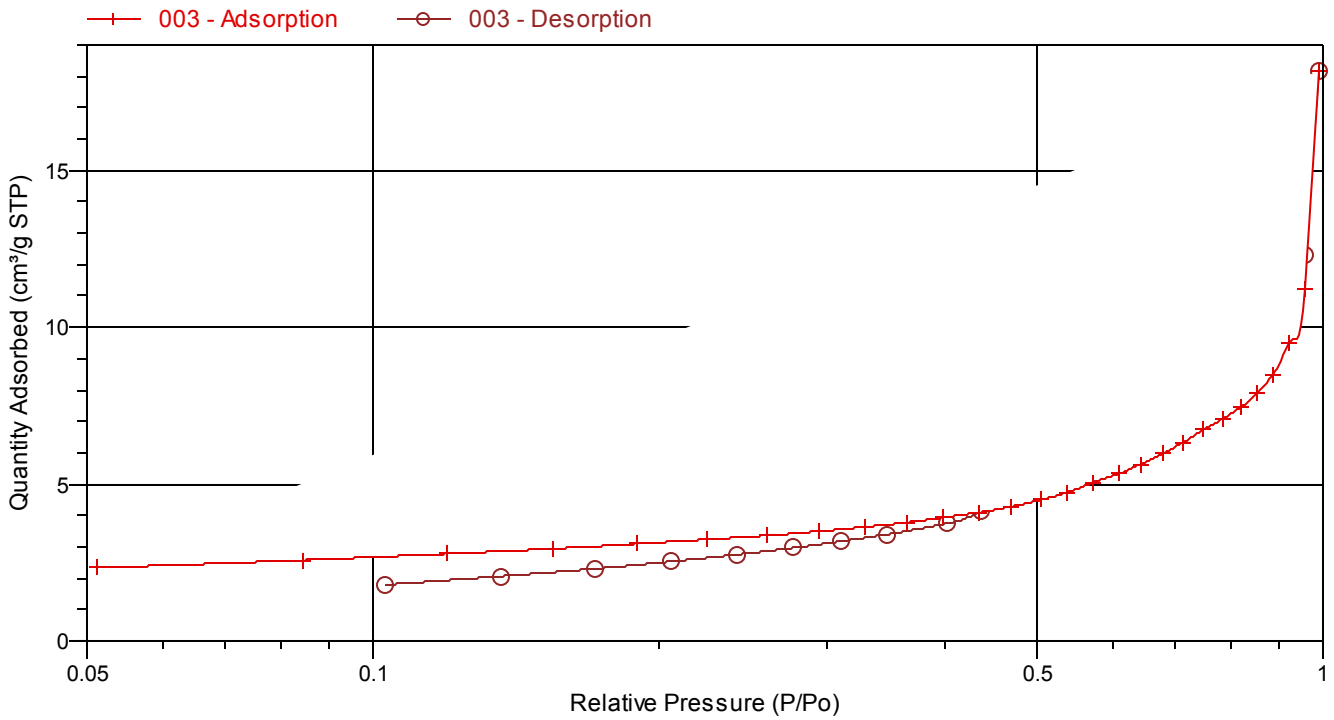
Isotherm Linear Plot



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Isotherm Log Plot



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Automatic Degas: No	

BET Report

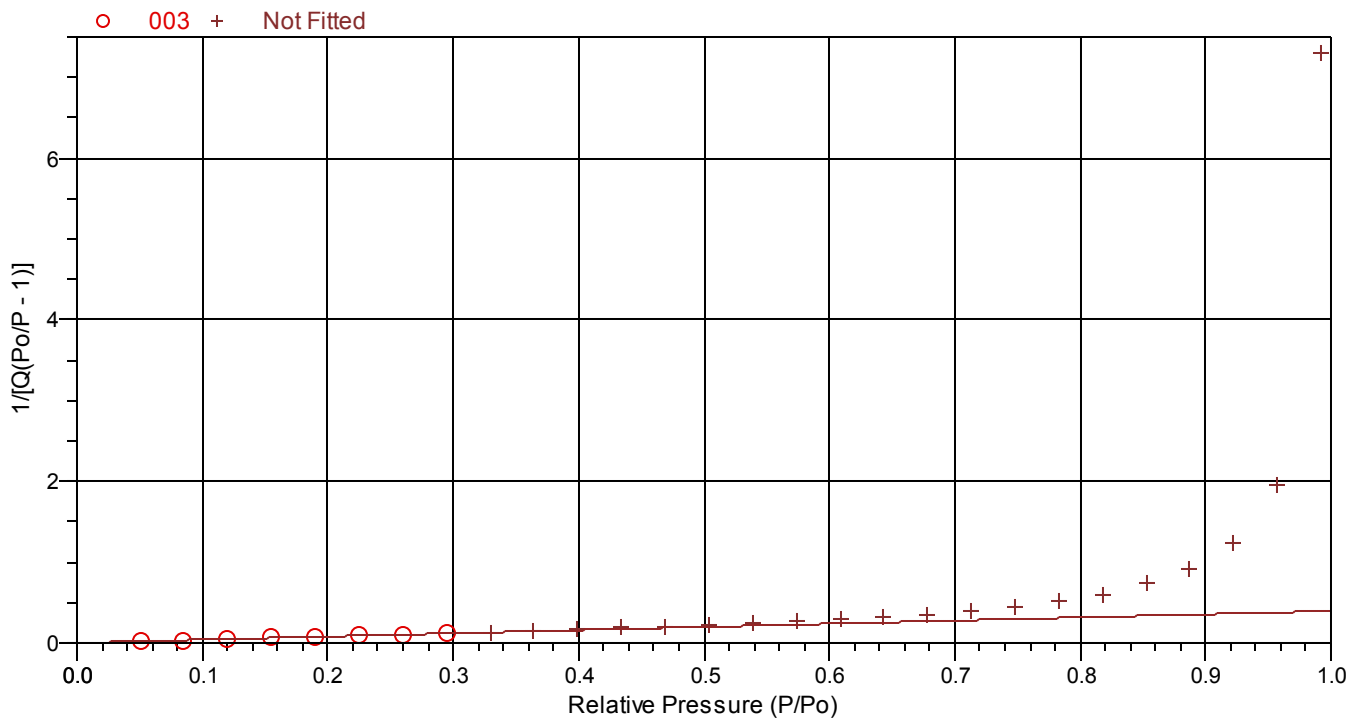
BET Surface Area: 11.0177 ± 0.1232 m²/g
Slope: 0.392932 ± 0.004341 g/cm³ STP
Y-Intercept: 0.002122 ± 0.000824 g/cm³ STP
C: 186.131477
Qm: 2.5313 cm³/g STP
Correlation Coefficient: 0.9996341
Molecular Cross-Sectional Area: 0.1620 nm²

Relative Pressure (P/Po)	Quantity Adsorbed (cm ³ /g STP)	1/[Q(Po/P - 1)]
0.051347823	2.3343	0.023188
0.084480001	2.5785	0.035786
0.119687601	2.7793	0.048920
0.154649241	2.9428	0.062165
0.189603966	3.0969	0.075548
0.224554123	3.2376	0.089442
0.259512937	3.3630	0.104211
0.294475879	3.4985	0.119303

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BET Surface Area Plot



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Automatic Degas: No	

BJH Adsorption Pore Distribution Report

Faas Correction

Halsey

$$t = 3.54 [-5 / \ln(P/P_0)]^{0.333}$$

Diameter Range: 1.7000 nm to 300.0000 nm

Adsorbate Property Factor: 0.95300 nm

Density Conversion Factor: 0.0015468

Fraction of Pores Open at Both Ends: 0.00

Pore Diameter Range (nm)	Average Diameter (nm)	Incremental Pore Volume (cm ³ /g)	Cumulative Pore Volume (cm ³ /g)	Incremental Pore Area (m ² /g)	Cumulative Pore Area (m ² /g)
259.7 - 46.0	51.9	0.012220	0.012220	0.941	0.941
46.0 - 26.1	30.8	0.002872	0.015092	0.374	1.315
26.1 - 18.3	20.8	0.001720	0.016812	0.331	1.646
18.3 - 14.1	15.6	0.001034	0.017846	0.265	1.911
14.1 - 11.4	12.4	0.000742	0.018588	0.239	2.150
11.4 - 9.6	10.3	0.000629	0.019218	0.244	2.394
9.6 - 8.3	8.8	0.000671	0.019889	0.304	2.698
8.3 - 7.2	7.7	0.000802	0.020691	0.418	3.116
7.2 - 6.4	6.8	0.000709	0.021400	0.418	3.534
6.4 - 5.8	6.1	0.000727	0.022126	0.479	4.013
5.8 - 5.2	5.5	0.000666	0.022793	0.487	4.500
5.2 - 4.8	5.0	0.000619	0.023412	0.498	4.997

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Low Pressure Dose: None	Sample Density: 1.000 g/cm ³
Automatic Degas: No	

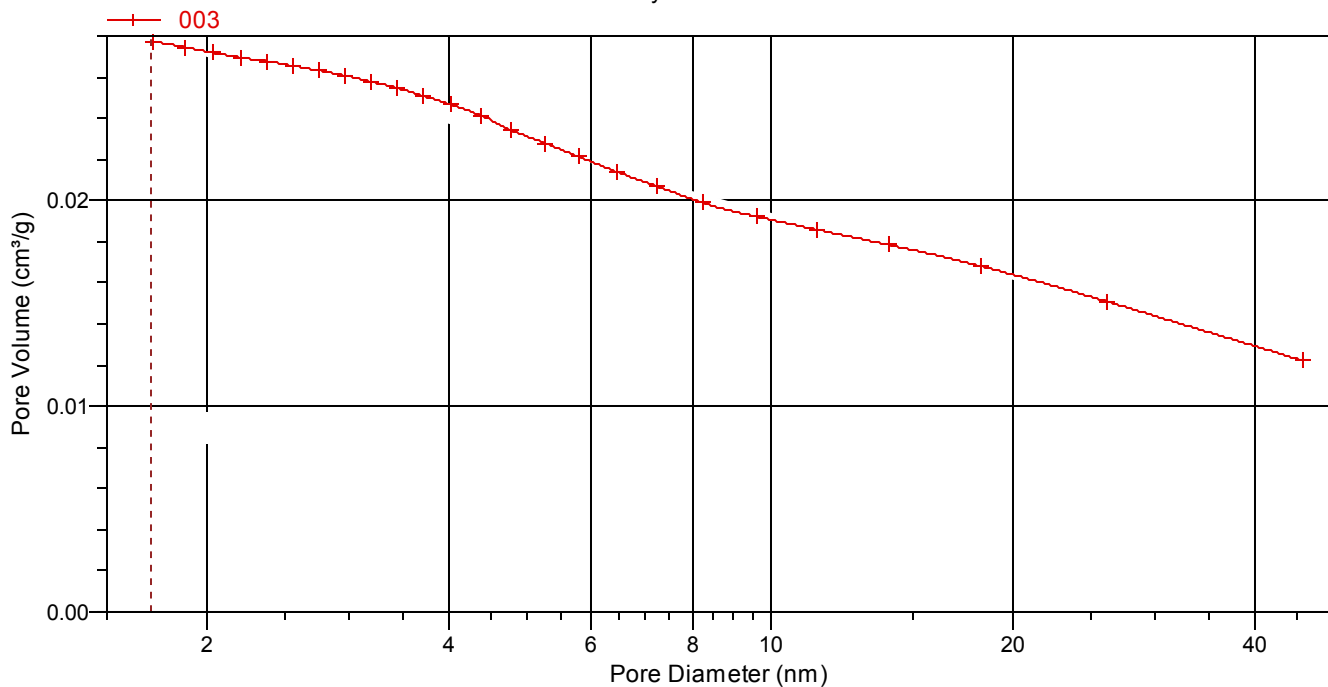
Pore Diameter Range (nm)	Average Diameter (nm)	Incremental Pore Volume (cm ³ /g)	Cumulative Pore Volume (cm ³ /g)	Incremental Pore Area (m ² /g)	Cumulative Pore Area (m ² /g)
4.8 - 4.4	4.5	0.000734	0.024146	0.645	5.643
4.4 - 4.0	4.2	0.000504	0.024650	0.482	6.125
4.0 - 3.7	3.9	0.000444	0.025094	0.461	6.586
3.7 - 3.4	3.6	0.000378	0.025472	0.424	7.011
3.4 - 3.2	3.3	0.000312	0.025784	0.378	7.389
3.2 - 3.0	3.1	0.000290	0.026073	0.378	7.767
3.0 - 2.8	2.8	0.000248	0.026321	0.348	8.115
2.8 - 2.6	2.6	0.000230	0.026551	0.347	8.463
2.6 - 2.4	2.5	0.000223	0.026774	0.362	8.825
2.4 - 2.2	2.3	0.000174	0.026948	0.305	9.130
2.2 - 2.0	2.1	0.000234	0.027182	0.444	9.574
2.0 - 1.9	1.9	0.000276	0.027458	0.568	10.142
1.9 - 1.7	1.8	0.000281	0.027739	0.631	10.772

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Automatic Degas: No	

BJH Adsorption Cumulative Pore Volume (Larger)

Halsey : Faas Correction

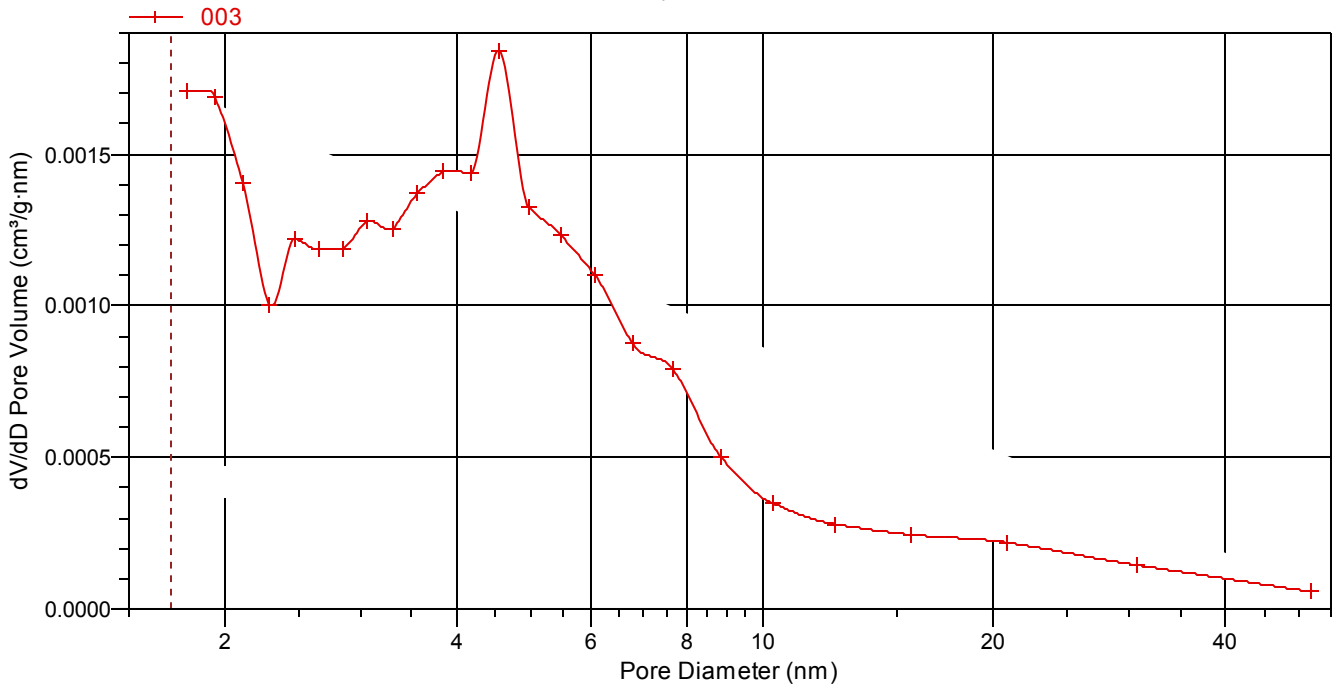


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Low Pressure Dose: None	Sample Density: 1.000 g/cm ³
Automatic Degas: No	

BJH Adsorption dV/dD Pore Volume

Halsey : Faas Correction

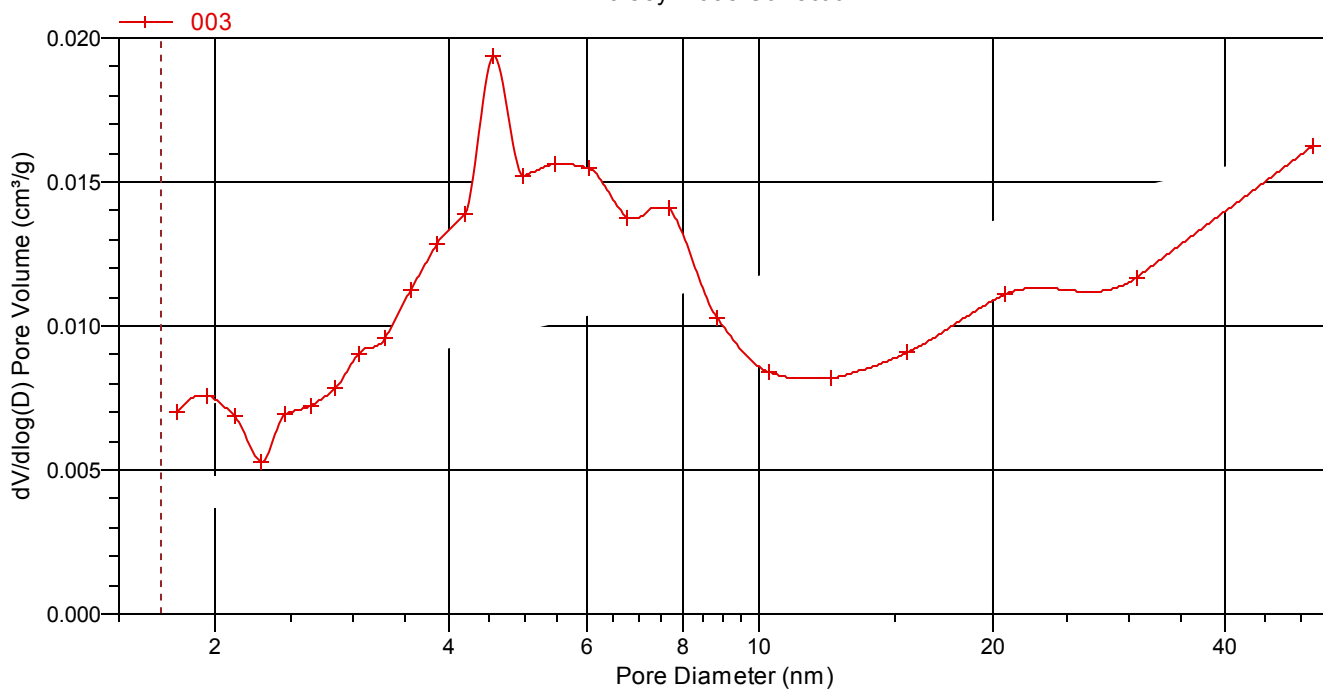


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Low Pressure Dose: None	Sample Density: 1.000 g/cm ³
Automatic Degas: No	

BJH Adsorption dV/dlog(D) Pore Volume

Halsey : Faas Correction



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Low Pressure Dose: None	Sample Density: 1.000 g/cm ³
Automatic Degas: No	

BJH Desorption Pore Distribution Report

Faas Correction

Halsey

$$t = 3.54 [-5 / \ln(P/P_0)]^{0.333}$$

Diameter Range: 1.7000 nm to 300.0000 nm

Adsorbate Property Factor: 0.95300 nm

Density Conversion Factor: 0.0015468

Fraction of Pores Open at Both Ends: 0.00

Pore Diameter Range (nm)	Average Diameter (nm)	Incremental Pore Volume (cm ³ /g)	Cumulative Pore Volume (cm ³ /g)	Incremental Pore Area (m ² /g)	Cumulative Pore Area (m ² /g)
259.3 - 47.3	53.6	0.010105	0.010105	0.753	0.753
47.3 - 23.4	27.9	0.004165	0.014270	0.597	1.350
23.4 - 16.1	18.4	0.001753	0.016023	0.381	1.731
16.1 - 12.5	13.8	0.000960	0.016983	0.278	2.009
12.5 - 10.2	11.1	0.000713	0.017696	0.257	2.266
10.2 - 9.3	9.7	0.000210	0.017906	0.086	2.352
9.3 - 8.0	8.6	0.000447	0.018353	0.209	2.561
8.0 - 6.9	7.4	0.000367	0.018720	0.199	2.760
6.9 - 6.1	6.5	0.000325	0.019045	0.201	2.961
6.1 - 5.4	5.7	0.000252	0.019297	0.176	3.137
5.4 - 4.9	5.1	0.000171	0.019468	0.133	3.270
4.9 - 4.4	4.6	0.000202	0.019670	0.175	3.445

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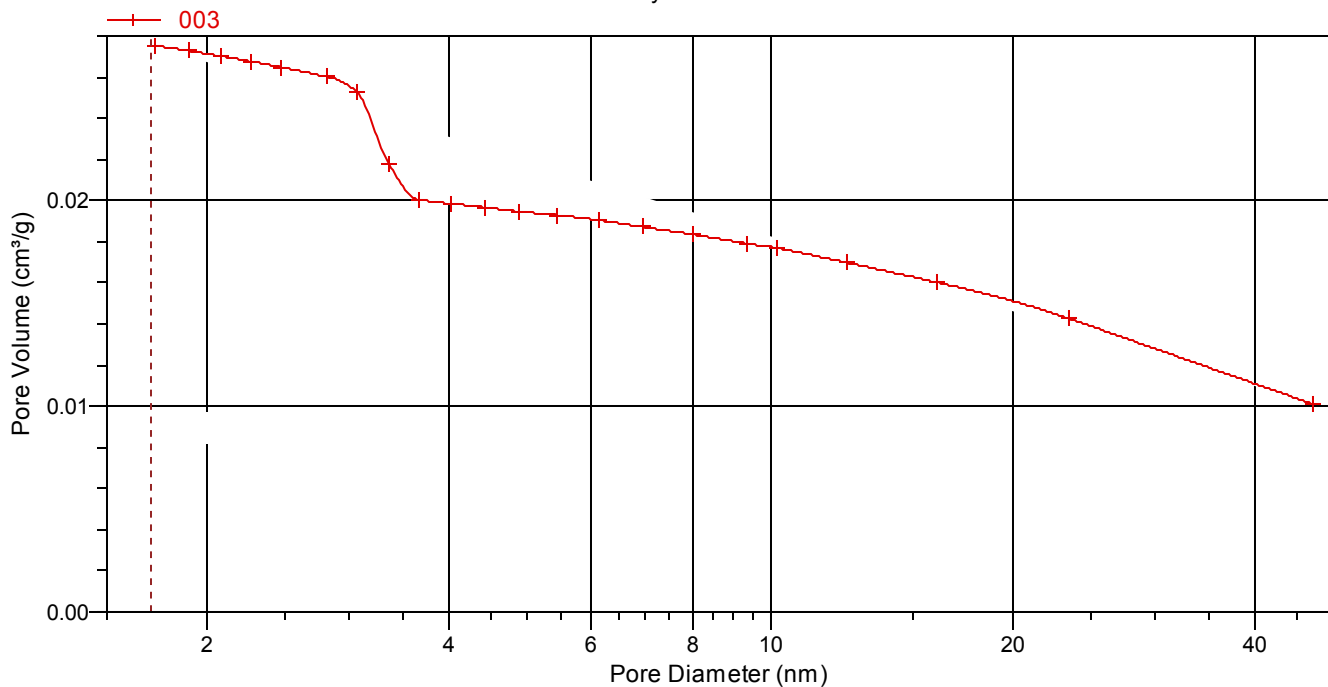
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4.4 - 4.0	4.2	0.000178	0.019849	0.170	3.615
4.0 - 3.7	3.8	0.000181	0.020029	0.190	3.805
3.7 - 3.4	3.5	0.001732	0.021761	1.986	5.791
3.4 - 3.1	3.2	0.003503	0.025264	4.382	10.173
3.1 - 2.8	2.9	0.000755	0.026019	1.031	11.204
2.8 - 2.5	2.6	0.000466	0.026486	0.713	11.917
2.5 - 2.3	2.4	0.000275	0.026761	0.468	12.385
2.3 - 2.1	2.2	0.000260	0.027022	0.483	12.867
2.1 - 1.9	2.0	0.000256	0.027278	0.519	13.386
1.9 - 1.7	1.8	0.000251	0.027529	0.558	13.945

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BJH Desorption Cumulative Pore Volume (Larger)

Halsey : Faas Correction

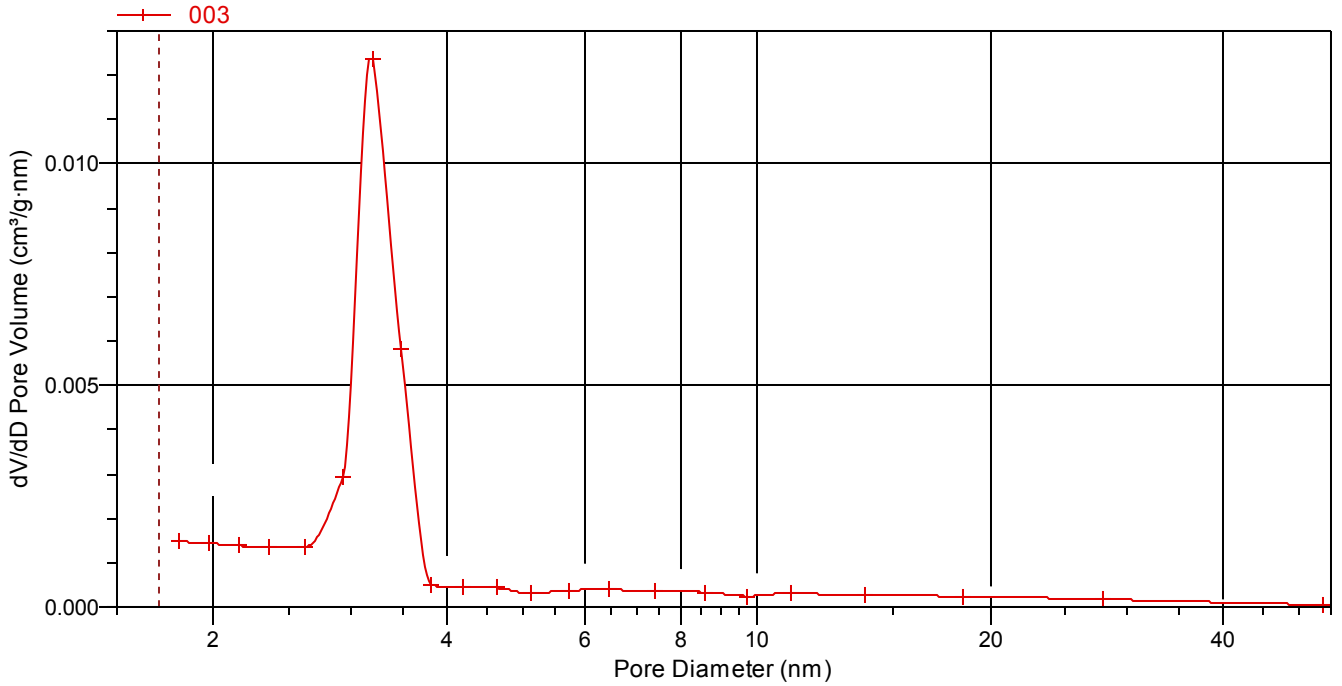


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File: D:\TriStar II 3020\data\FYH\WAILAI\3.SMP

Started: 9/26/2020 12:30:31 PM	Analysis Adsorptive: N2
Completed: 1/1/1970 8:00:00 AM	Analysis Bath Temp.: -195.850 °C
Report Time: 9/27/2020 11:50:51 AM	Thermal Correction: No
Sample Mass: 0.1389 g	Warm Free Space: 14.9818 cm ³ Measured
Cold Free Space: 48.0193 cm ³	Equilibration Interval: 10 s
Low Pressure Dose: None	Sample Density: 1.000 g/cm ³
Automatic Degas: No	

BJH Desorption dV/dD Pore Volume

Halsey : Faas Correction



Sample: 003
Operator:
Submitter:
File: D:\TriStar II 3020\data\FYH\WAILAI\3.SMP

Started: 9/26/2020 12:30:31 PM	Analysis Adsorptive: N2
Completed: 1/1/1970 8:00:00 AM	Analysis Bath Temp.: -195.850 °C
Report Time: 9/27/2020 11:50:51 AM	Thermal Correction: No
Sample Mass: 0.1389 g	Warm Free Space: 14.9818 cm ³ Measured
Cold Free Space: 48.0193 cm ³	Equilibration Interval: 10 s
Low Pressure Dose: None	Sample Density: 1.000 g/cm ³
Automatic Degas: No	

BJH Desorption dV/dlog(D) Pore Volume

Halsey : Faas Correction

