

Sample: 5full

Operator:

Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_4 full.SMP

Started:	14.03.2023 14:41:36	Analysis adsorptive:	N2
Completed:	15.03.2023 02:52:01	Analysis bath temp.:	77,300 K
Report time:	19.10.2023 09:01:21	Thermal correction:	Yes
Sample mass:	0,6018 g	Ambient free space:	28,5828 cm ³ Entered
Analysis free space:	85,1284 cm ³	Equilibration interval:	30 s
Low pressure dose:	1,0000 cm ³ /g STP	Sample density:	1,000 g/cm ³
Automatic degas:	No		

Summary Report

Surface Area

BET Surface Area: 5,8663 m²/gt-Plot Micropore Area: 1,4813 m²/gt-Plot external surface area: 4,3850 m²/g

DFT Pore Size

Volume in Pores	<	1,308 nm	0,00016 cm ³ /g
Total Volume in Pores	<=	17,573 nm	0,00390 cm ³ /g
Area in Pores	>	17,573 nm	1,565 m ² /g
Total Area in Pores	>=	1,308 nm	5,179 m ² /g

Horvath-Kawazoe

Maximum pore volume at $p/p^\circ = 0,160063845$: 0,002528 cm³/g

Median pore width: 1,1268 nm

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Automatic degas:	No		

Isotherm Tabular Report

Relative Pressure (p/p°)	Absolute Pressure (kPa)	Quantity Adsorbed (cm ³ /g STP)	Elapsed Time (h:min)	Saturation Pressure (kPa)
			05:02	100.4321610
0.001577404	0.1586920	0.7603	06:02	100.6032326
0.006654030	0.6697413	0.9754	06:34	100.6519835
0.011860184	1.1963334	1.0773	08:49	100.8697147
0.067815878	6.8416229	1.4051	08:55	100.8852651
0.109927349	11.0913746	1.5242	09:01	100.8973166
0.160063845	16.1507080	1.6341	09:06	100.9016619
0.210078805	21.1995656	1.7280	09:12	100.9124439
0.260021755	26.2440941	1.8133	09:17	100.9303786
0.310067889	31.2964427	1.9054	09:22	100.9341625
0.359863522	36.3244910	2.0043	09:28	100.9396308
0.409818686	41.3754440	2.1112	09:33	100.9603648
0.459820329	46.4263970	2.2259	09:39	100.9663864
0.509769222	51.4745548	2.3524	09:44	100.9761919
0.559748011	56.5214594	2.4948	09:49	100.9766151
0.609693748	61.5678026	2.6584	09:55	100.9815219
0.659626229	66.6179133	2.8439	10:00	100.9934268
0.709399549	71.6581128	3.0723	10:05	101.0123462
0.759534884	76.7207998	3.3585	10:11	101.0102386
0.809283657	81.7484312	3.7305	10:16	101.0133227
0.858870296	86.7669731	4.2589	10:22	101.0245359
0.907901487	91.7292289	5.1145	10:28	101.0343415
0.954756865	96.4754054	6.8679	10:36	101.0470927
0.991748490	100.2263592	12.2164	10:51	101.0602589
0.889323156	89.8888118	5.0056	11:01	101.0755327
0.782021865	79.0484247	3.7393	11:08	101.0821159
0.678546929	68.6036026	3.1386	11:13	101.1036961
0.577541016	58.3958174	2.7375	11:19	101.1111174
0.495796378	50.1374045	2.4605	11:25	101.1249916
0.395952766	40.0403850	2.0375	11:30	101.1241453
0.295249303	29.8588612	1.8339	11:36	101.1310132
0.176219076	17.8230908	1.6144	11:41	101.1416650
0.150137613	15.1862200	1.5636	11:47	101.1486713

Sample: 5full

Operator:

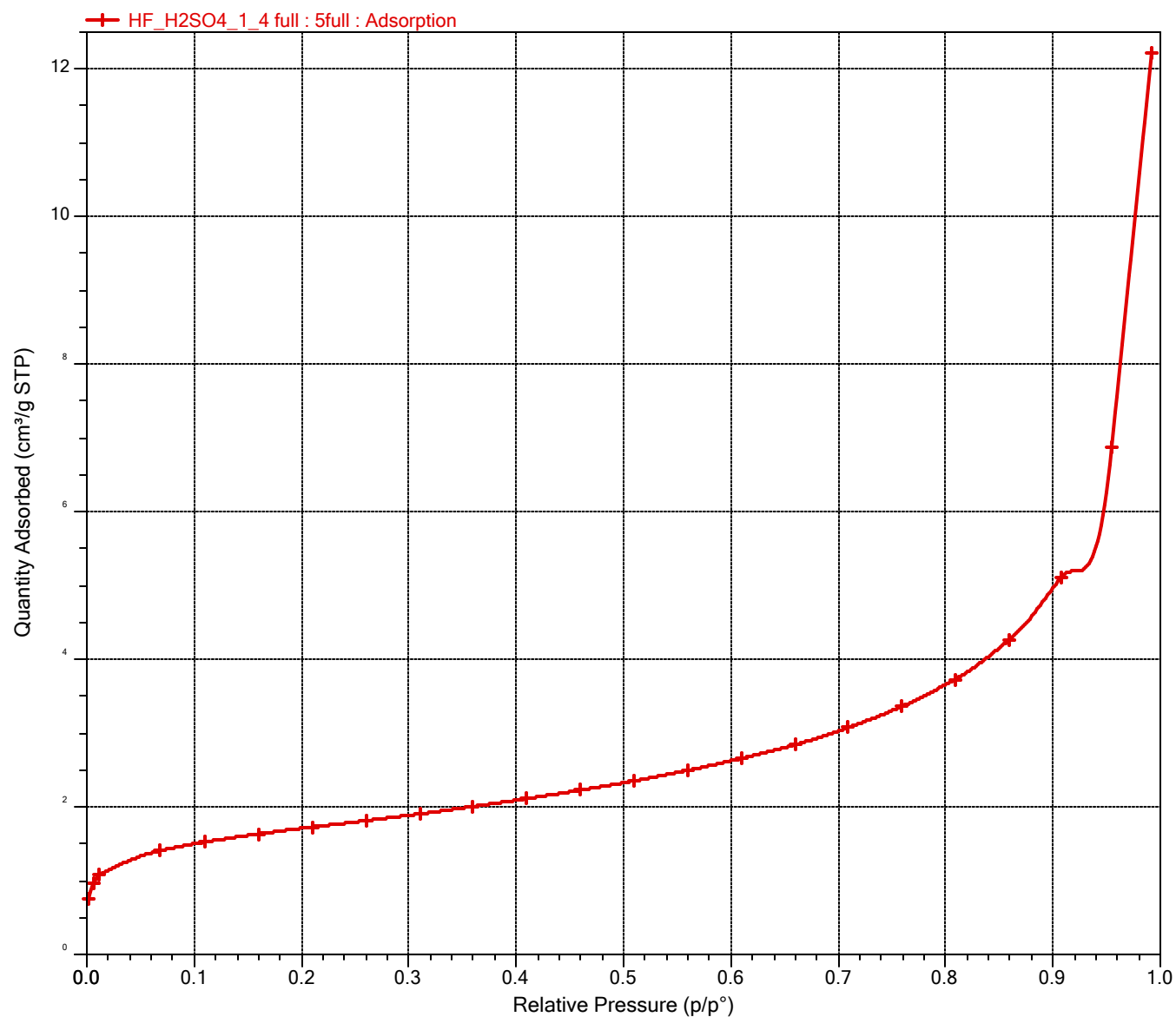
Submitter:

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Low pressure dose: 1,0000 cm³/g STP
Automatic degas: No

Analysis adsorptive: N2
Analysis bath temp.: 77,300 K
Thermal correction: Yes
Ambient free space: 28,5828 cm³ Entered
Equilibration interval: 30 s
Sample density: 1,000 g/cm³

Isotherm Linear Plot



Sample: 5full

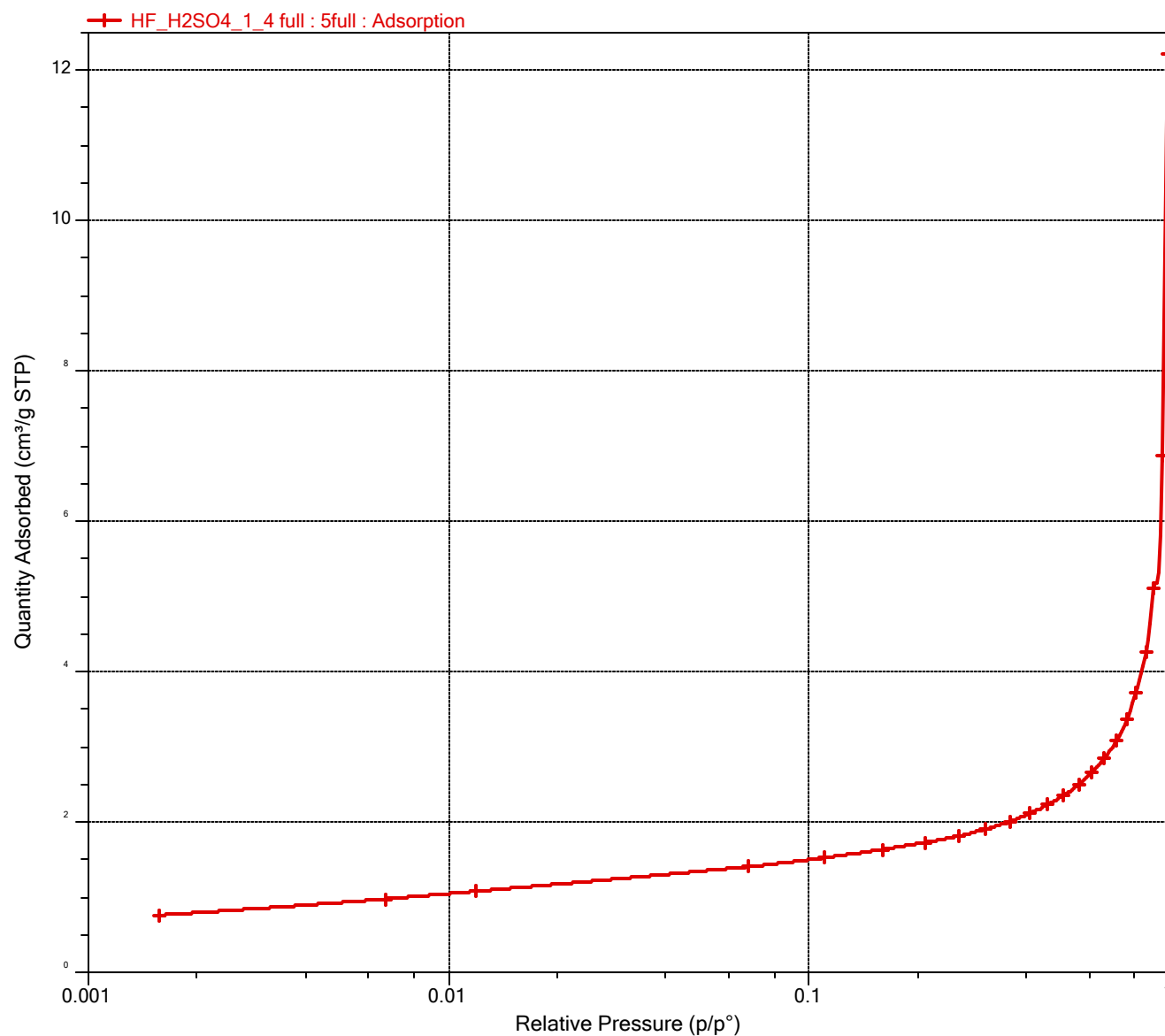
Operator:

Submitter:

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Automatic degas:	No		

Isotherm Log Plot



Sample: 5full

Operator:

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Low pressure dose:	1,0000 cm ³ /g STP	Sample density:	1,000 g/cm ³
Automatic degas:	No		

BET Report

BET surface area: 5,8663 ± 0,1116 m²/g
Slope: 0,740260 ± 0,014101 g/cm³ STP
Y-intercept: 0,001697 ± 0,000488 g/cm³ STP
C: 437,178520
Qm: 1,3478 cm³/g STP
Correlation coefficient: 0,9996374
Molecular cross-sectional area: 0,1620 nm²

Relative Pressure (p/p°)	Quantity Adsorbed (cm ³ /g STP)	1/[Q(p°/p - 1)]
0.001577404	0.7603	0.002078
0.006654030	0.9754	0.006867
0.011860184	1.0773	0.011141
0.067815878	1.4051	0.051777

Sample: 5full

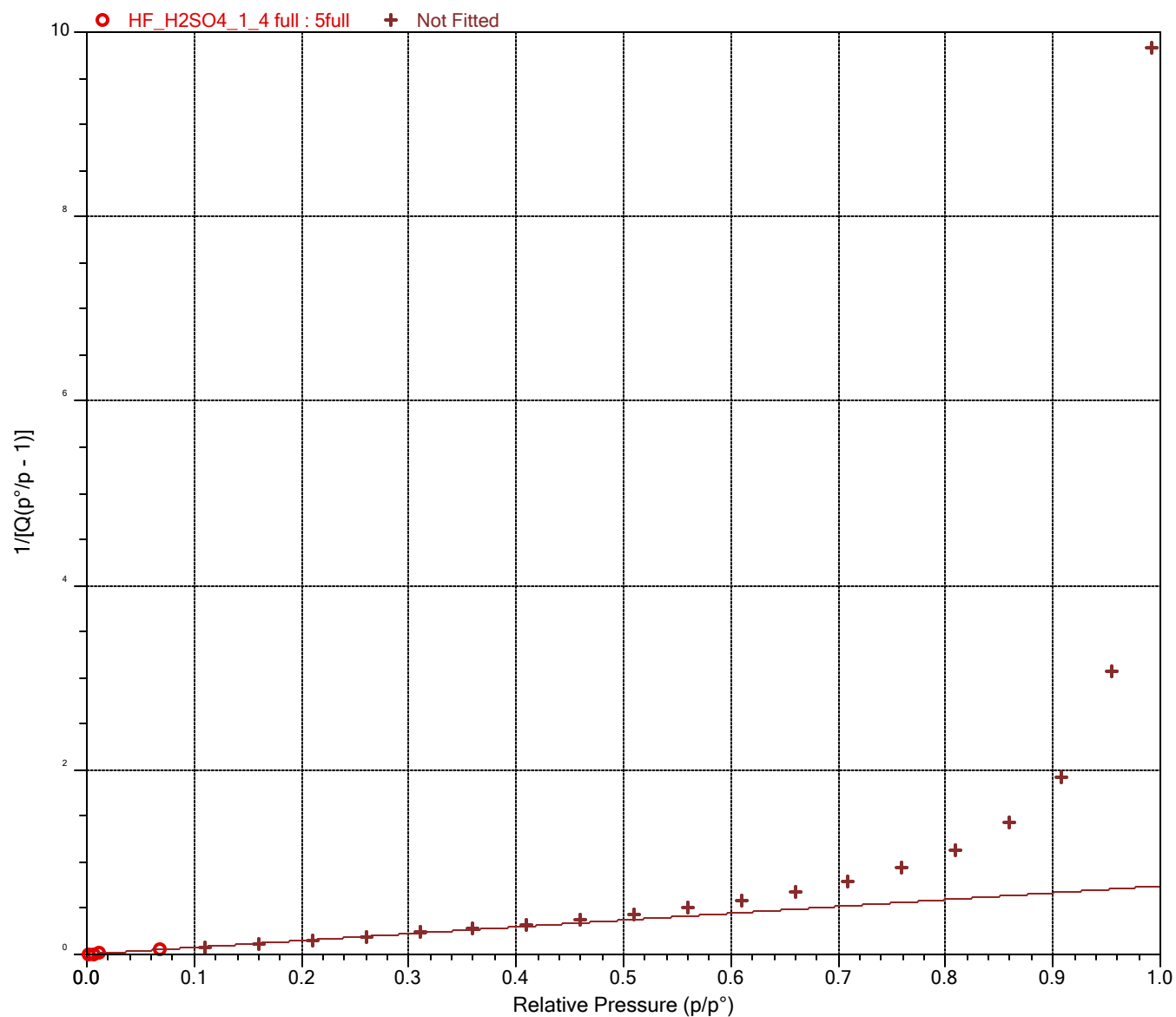
Operator:

Submitter:

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Low pressure dose:	1,0000 cm ³ /g STP	Sample density:	1,000 g/cm ³
Automatic degas:	No		

BET Surface Area Plot



Sample: 5full

Operator:

Submitter:

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Analysis free space:	85,1284 cm ³	Equilibration interval:	30 s
Low pressure dose:	1,0000 cm ³ /g STP	Sample density:	1,000 g/cm ³
Automatic degas:	No		

t-Plot Report

Micropore volume:	0,000746 cm ³ /g
Micropore area:	1,4813 m ² /g
External surface area:	4,3850 m ² /g
Slope:	2,834893 ± 0,125497 cm ³ /g·nm STP
Y-intercept:	0,482479 ± 0,053001 cm ³ /g STP
Correlation coefficient:	0,998046
Surface area correction factor:	1,000
Density conversion factor:	0,0015468
Total surface area (BET):	5,8663 m ² /g
Thickness range:	0,35000 to 0,50000 nm
Thickness equation:	Carbon Black STSA

Thickness Curve

$$t = 2.98 + 6.45 (p/p^\circ) + 0.88 (p/p^\circ)^2$$

t-Plot Report - Data

Relative Pressure (p/p°)	Statistical Thickness (nm)	Quantity Adsorbed (cm ³ /g STP)	Fitted
0.067815878	0.34215	1.4051	
0.109927349	0.36997	1.5242	
0.160063845	0.40350	1.6341	
0.210078805	0.43738	1.7280	
0.260021755	0.47166	1.8133	
0.310067889	0.50645	1.9054	
0.359863522	0.54151	2.0043	
0.409818686	0.57711	2.1112	
0.459820329	0.61319	2.2259	
0.509769222	0.64967	2.3524	
0.559748011	0.68661	2.4948	
0.609693748	0.72396	2.6584	
0.659626229	0.76175	2.8439	

Sample: 5full

Operator:

Submitter:

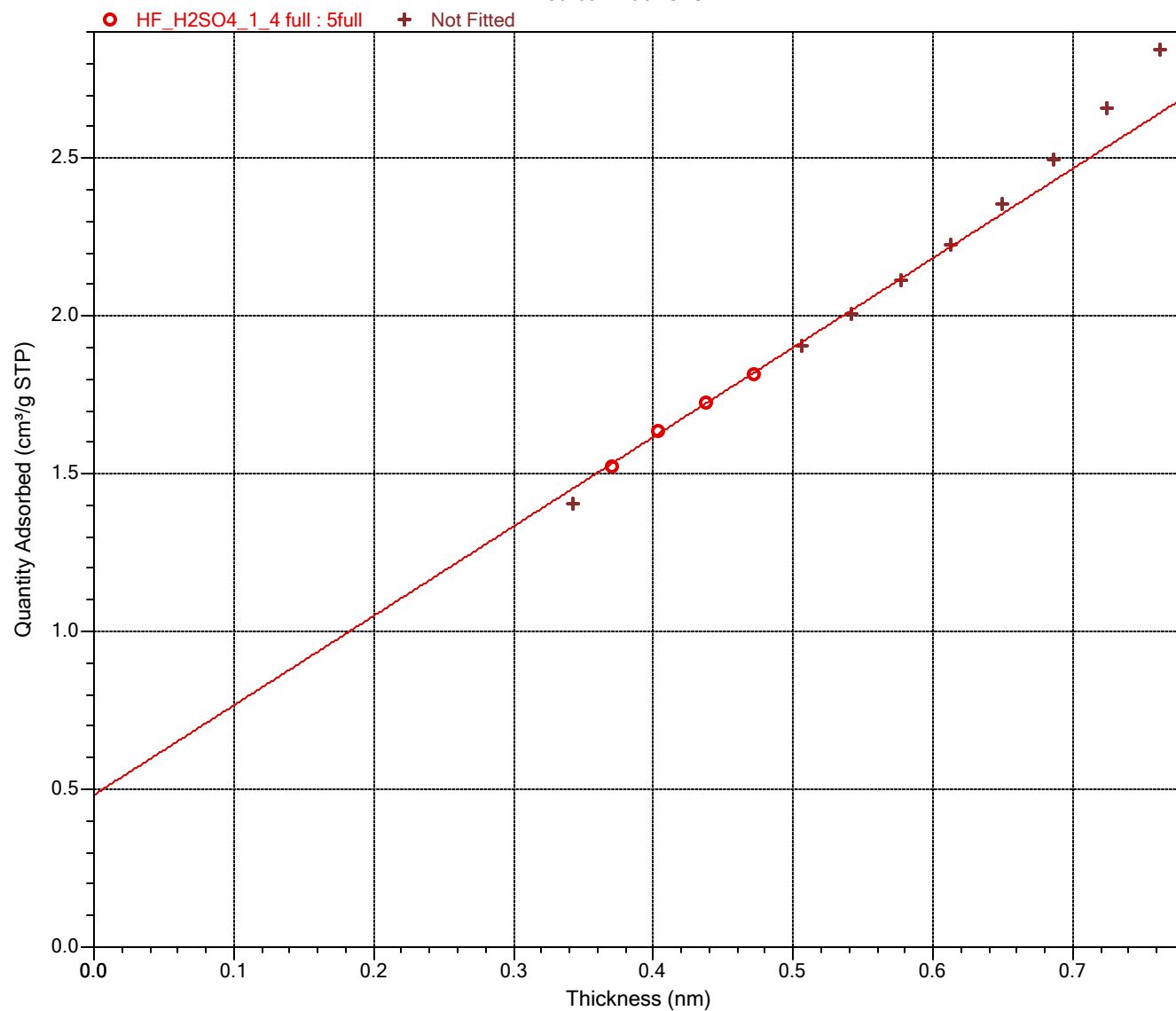
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Sz...HF_H2SO4_1_4 full.SMP

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Analysis free space: 85,1284 cm³
Low pressure dose: 1,0000 cm³/g STP
Automatic degas: No

Analysis adsorptive: N₂
Analysis bath temp.: 77,300 K
Thermal correction: Yes
Ambient free space: 28,5828 cm³ Entered
Equilibration interval: 30 s
Sample density: 1,000 g/cm³

t-Plot

Carbon Black STSA



Sample: 5full

Operator:

Submitter:

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Szczecinie\HF_H2SO4_1_4 full.SMP

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Analysis free space:	85,1284 cm ³	Equilibration interval:	30 s
Low pressure dose:	1,0000 cm ³ /g STP	Sample density:	1,000 g/cm ³
Automatic degas:	No		

Horvath-Kawazoe Report

Cylinder Pore Geometry (Saito-Foley)

Maximum pore volume: 0,002528 cm³/g
 at Relative Pressure: 0,160063845
 Median pore width: 1,1268 nm
 Relative pressure range: 1e-09 to 0.18

Diameter of adsorptive molecule: 0,3000 nm
 Adsorptive density: 6.710e+14 molecules/cm²
 Adsorptive dispersion constant: 7.777e-59
 Diameter of sample atom: 0,3400 nm
 Sample Density: 3.845e+15 molecules/cm²
 Sample dispersion constant: 6.036e-59

Density conversion factor: 0,0015468

Absolute Pressure (kPa)	Relative Pressure (p/p°)	Quantity Adsorbed (cm ³ /g STP)	Pore Width (nm)	Cumulative Pore Volume (cm ³ /g)	Smoothed Differential Pore Volume (cm ³ /g·nm)
0.15869	0.001577404	0.76032	1.066	0.0012	0.0017
0.66974	0.006654030	0.97543	1.292	0.0015	0.0013
1.19633	0.011860184	1.07733	1.422	0.0017	0.0011
6.84162	0.067815878	1.40506	2.134	0.0022	0.0005
11.09137	0.109927349	1.52421	2.524	0.0024	0.0004
16.15071	0.160063845	1.63412	2.968	0.0025	0.0004

Sample: 5full

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Sample mass: 0,6018 g

Analysis free space: 85,1284 cm³Low pressure dose: 1,0000 cm³/g STP

Automatic degas: No

Analysis adsorptive: N2

Analysis bath temp.: 77,300 K

Thermal correction: Yes

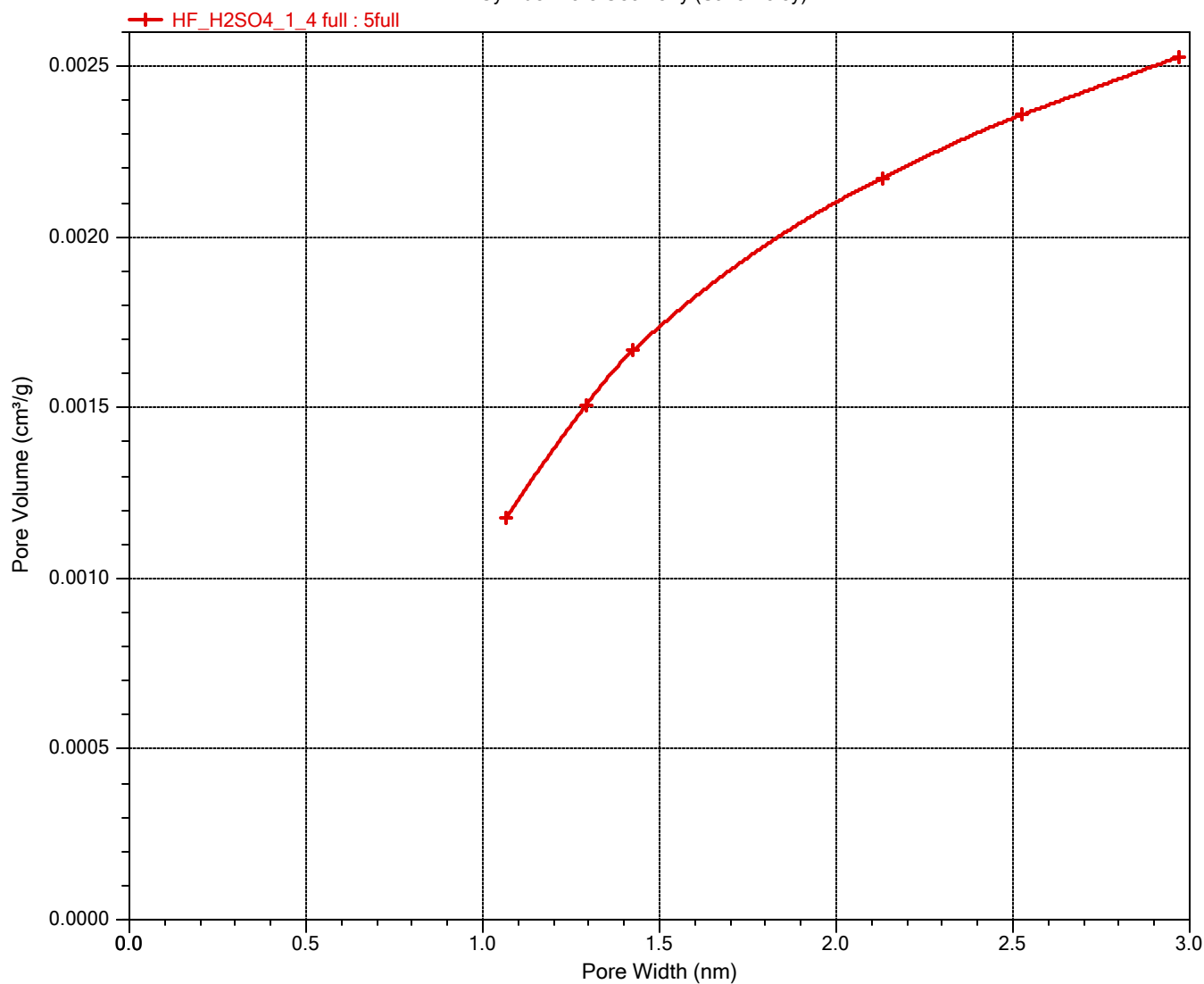
Ambient free space: 28,5828 cm³ Entered

Equilibration interval: 30 s

Sample density: 1,000 g/cm³

Horvath-Kawazoe Cumulative Pore Volume Plot

Cylinder Pore Geometry (Saito-Foley)



Sample: 5full

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Analysis free space: 85,1284 cm³Low pressure dose: 1,0000 cm³/g STP

Automatic degas: No

Analysis adsorptive: N2

Analysis bath temp.: 77,300 K

Thermal correction: Yes

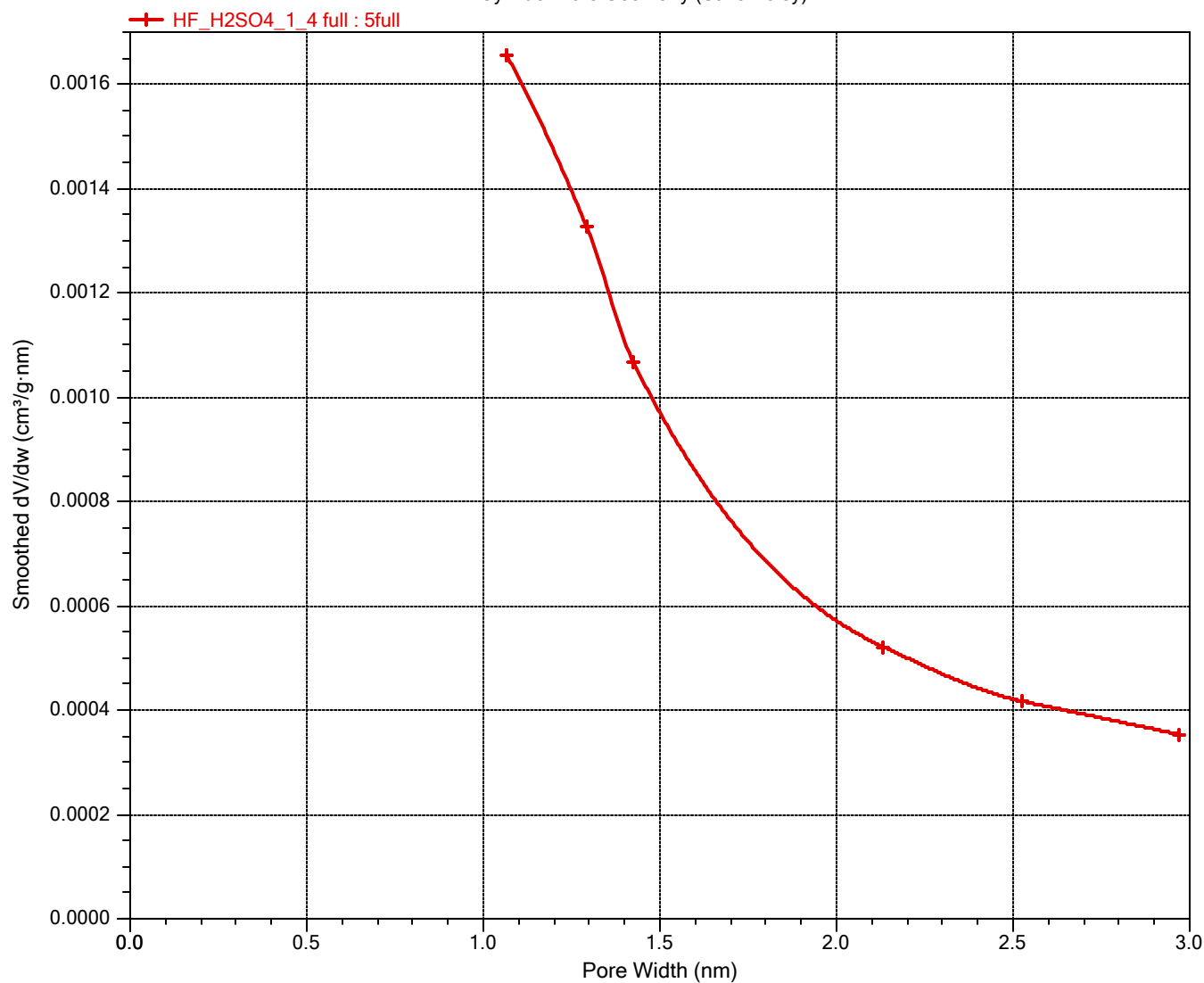
Ambient free space: 28,5828 cm³ Entered

Equilibration interval: 30 s

Sample density: 1,000 g/cm³

Horvath-Kawazoe Differential Pore Volume Plot

Cylinder Pore Geometry (Saito-Foley)



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Automatic degas:	No		

Porosity Distribution by
Model: N2 - Cylindrical Pores - Oxide Surface
Method: Non-negative Regularization: 0,01000
Standard Deviation of Fit: 0,00809 cm³/g STP

Volume in Pores	<	1,308 nm	0,00016 cm ³ /g
Total Volume in Pores	<=	17,573 nm	0,00390 cm ³ /g
Area in Pores	>	17,573 nm	1,565 m ² /g
Total Area in Pores	>=	1,308 nm	5,179 m ² /g

Pore Width (nm)	Cumulative Pore Volume (cm ³ /g)	Incremental Pore Volume (cm ³ /g)	Cumulative Pore Area (m ² /g)	Incremental Pore Area (m ² /g)
1.308	0.00027	0.00011	0.327	0.327
1.344	0.00046	0.00018	0.876	0.549
1.380	0.00062	0.00016	1.345	0.468
1.416	0.00070	0.00008	1.571	0.227
1.451	0.00070	0.00000	1.571	0.000
1.487	0.00070	0.00000	1.571	0.000
1.523	0.00070	0.00000	1.571	0.000
1.559	0.00070	0.00000	1.571	0.000
1.594	0.00070	0.00000	1.571	0.000
1.630	0.00070	0.00000	1.571	0.000
1.666	0.00070	0.00000	1.571	0.000
1.702	0.00070	0.00000	1.571	0.000
1.737	0.00070	0.00000	1.571	0.000
1.773	0.00070	0.00000	1.571	0.000
1.809	0.00070	0.00000	1.571	0.000
1.844	0.00074	0.00005	1.669	0.098
1.880	0.00083	0.00009	1.863	0.194
1.916	0.00092	0.00009	2.052	0.189
1.952	0.00098	0.00006	2.169	0.117
1.987	0.00100	0.00002	2.208	0.038
2.023	0.00100	0.00000	2.208	0.000
2.059	0.00100	0.00000	2.208	0.000
2.095	0.00100	0.00000	2.208	0.000
2.130	0.00100	0.00000	2.208	0.000
2.166	0.00102	0.00002	2.237	0.029
2.238	0.00104	0.00003	2.285	0.048
2.309	0.00104	0.00000	2.285	0.000
2.381	0.00104	0.00000	2.285	0.000
2.452	0.00104	0.00000	2.285	0.000
2.524	0.00104	0.00000	2.285	0.000
2.595	0.00104	0.00000	2.285	0.000

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Analysis free space:	85,1284 cm ³	Equilibration interval:	30 s
Low pressure dose:	1,0000 cm ³ /g STP	Sample density:	1,000 g/cm ³
Automatic degas:	No		

Pore Width (nm)	Cumulative Pore Volume (cm ³ /g)	Pore Table		
		Incremental Pore Volume (cm ³ /g)	Cumulative Pore Area (m ² /g)	Incremental Pore Area (m ² /g)
2.667	0.00104	0.00000	2.285	0.000
2.738	0.00104	0.00000	2.285	0.000
2.810	0.00104	0.00000	2.285	0.000
2.881	0.00104	0.00000	2.285	0.000
2.953	0.00104	0.00000	2.285	0.000
3.024	0.00104	0.00000	2.285	0.000
3.096	0.00104	0.00000	2.285	0.000
3.167	0.00104	0.00000	2.285	0.000
3.239	0.00104	0.00000	2.285	0.000
3.310	0.00104	0.00000	2.285	0.000
3.382	0.00104	0.00000	2.285	0.000
3.453	0.00104	0.00000	2.285	0.000
3.525	0.00104	0.00000	2.285	0.000
3.596	0.00104	0.00000	2.285	0.000
3.668	0.00104	0.00000	2.285	0.000
3.739	0.00104	0.00000	2.285	0.000
3.811	0.00105	0.00001	2.293	0.008
3.882	0.00105	0.00000	2.293	0.000
3.954	0.00108	0.00003	2.322	0.028
4.025	0.00109	0.00001	2.334	0.012
4.096	0.00111	0.00002	2.353	0.020
4.168	0.00111	0.00000	2.353	0.000
4.239	0.00115	0.00004	2.387	0.033
4.311	0.00116	0.00002	2.404	0.017
4.382	0.00118	0.00002	2.422	0.018
4.454	0.00118	0.00000	2.422	0.000
4.525	0.00122	0.00004	2.455	0.033
4.597	0.00124	0.00002	2.473	0.018
4.668	0.00126	0.00002	2.491	0.018
4.740	0.00126	0.00000	2.491	0.000
4.811	0.00127	0.00001	2.500	0.010
4.883	0.00130	0.00003	2.525	0.024
4.954	0.00130	0.00000	2.525	0.000
5.026	0.00135	0.00004	2.559	0.034
5.205	0.00142	0.00007	2.613	0.055
5.491	0.00149	0.00007	2.666	0.052
5.777	0.00154	0.00005	2.702	0.036
6.098	0.00162	0.00008	2.756	0.054
6.420	0.00171	0.00009	2.811	0.056
6.742	0.00181	0.00009	2.867	0.055
7.099	0.00190	0.00010	2.920	0.054

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Automatic degas:	No		

Pore Width (nm)	Cumulative Pore Volume (cm ³ /g)	Pore Table		
		Incremental Pore Volume (cm ³ /g)	Cumulative Pore Area (m ² /g)	Incremental Pore Area (m ² /g)
7.457	0.00197	0.00007	2.956	0.036
7.850	0.00207	0.00010	3.008	0.052
8.279	0.00219	0.00011	3.063	0.055
8.708	0.00227	0.00008	3.101	0.037
9.137	0.00235	0.00008	3.135	0.035
9.637	0.00247	0.00012	3.187	0.051
10.138	0.00260	0.00013	3.238	0.051
10.638	0.00269	0.00009	3.270	0.032
11.210	0.00277	0.00008	3.299	0.029
11.782	0.00288	0.00011	3.338	0.038
12.390	0.00301	0.00013	3.378	0.041
13.033	0.00311	0.00010	3.410	0.032
13.676	0.00323	0.00012	3.446	0.036
14.391	0.00336	0.00013	3.483	0.037
15.106	0.00349	0.00012	3.515	0.032
15.893	0.00365	0.00017	3.558	0.042
16.715	0.00381	0.00015	3.594	0.036
17.573	0.00390	0.00009	3.614	0.021

Sample: 5full

Operator:

Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_4 full.SMP

Started:	14.03.2023 14:41:36	Analysis adsorptive:	N2
Completed:	15.03.2023 02:52:01	Analysis bath temp.:	77,300 K
Report time:	19.10.2023 09:01:21	Thermal correction:	Yes
Sample mass:	0,6018 g	Ambient free space:	28,5828 cm ³ Entered
Analysis free space:	85,1284 cm ³	Equilibration interval:	30 s
Low pressure dose:	1,0000 cm ³ /g STP	Sample density:	1,000 g/cm ³
Automatic degas:	No		

Porosity Distribution by
Model: N2 - Cylindrical Pores - Oxide Surface
Method: Non-negative Regularization: 0,01000
Standard Deviation of Fit: 0,00809 cm³/g STP

Isotherm Table				
Relative Pressure (p/p°)	Experimental Quantity Adsorbed (cm ³ /g STP)	Fitted Quantity Adsorbed (cm ³ /g STP)	Absolute Residual (cm ³ /g STP)	Relative Residual
0.001584895	0.7607	0.7507	0.0100	0.013202
0.001995263	0.7825	0.7835	-0.0010	-0.001330
0.002511882	0.8090	0.8169	-0.0079	-0.009768
0.003162276	0.8409	0.8534	-0.0125	-0.014894
0.003981066	0.8783	0.8886	-0.0103	-0.011677
0.005011868	0.9206	0.9241	-0.0035	-0.003750
0.006309579	0.9653	0.9602	0.0052	0.005378
0.007943276	1.0098	0.9959	0.0139	0.013743
0.010000000	1.0539	1.0323	0.0216	0.020515
0.012355640	1.0810	1.0661	0.0149	0.013810
0.015186320	1.1021	1.0999	0.0022	0.002019
0.018485530	1.1264	1.1327	-0.0063	-0.005604
0.022294740	1.1541	1.1651	-0.0109	-0.009487
0.026653420	1.1852	1.1968	-0.0116	-0.009782
0.031598160	1.2193	1.2288	-0.0095	-0.007811
0.037162240	1.2559	1.2606	-0.0047	-0.003765
0.043374470	1.2940	1.2944	-0.0004	-0.000316
0.050259210	1.3322	1.3310	0.0012	0.000936
0.057835260	1.3685	1.3687	-0.0003	-0.000183
0.066115920	1.3998	1.3991	0.0007	0.000511
0.075109080	1.4270	1.4275	-0.0005	-0.000344
0.084815920	1.4563	1.4546	0.0017	0.001160
0.095232370	1.4867	1.4838	0.0029	0.001952
0.106348200	1.5158	1.5096	0.0063	0.004137
0.118147500	1.5429	1.5359	0.0069	0.004497
0.130609100	1.5712	1.5638	0.0074	0.004737
0.143706600	1.6003	1.5933	0.0070	0.004395
0.157410500	1.6289	1.6235	0.0054	0.003345
0.171685500	1.6566	1.6536	0.0030	0.001829
0.186492100	1.6849	1.6836	0.0012	0.000741
0.201792100	1.7132	1.7137	-0.0005	-0.000306
0.217539500	1.7409	1.7438	-0.0029	-0.001642
0.233689500	1.7683	1.7739	-0.0056	-0.003191
0.250196100	1.7962	1.8040	-0.0078	-0.004363
0.267011800	1.8258	1.8341	-0.0083	-0.004535

Sample: 5full

Operator:

Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_4 full.SMP

Started:	14.03.2023 14:41:36	Analysis adsorptive:	N2
Completed:	15.03.2023 02:52:01	Analysis bath temp.:	77,300 K
Report time:	19.10.2023 09:01:21	Thermal correction:	Yes
Sample mass:	0.6018 g	Ambient free space:	28,5828 cm ³ Entered
Analysis free space:	85,1284 cm ³	Equilibration interval:	30 s
Low pressure dose:	1,0000 cm ³ /g STP	Sample density:	1,000 g/cm ³
Automatic degas:	No		

Isotherm Table

Relative Pressure (p/p°)	Experimental Quantity Adsorbed (cm ³ /g STP)	Fitted Quantity Adsorbed (cm ³ /g STP)	Absolute Residual (cm ³ /g STP)	Relative Residual
0.284089500	1.8568	1.8642	-0.0074	-0.003978
0.301380300	1.8889	1.8943	-0.0053	-0.002831
0.318838200	1.9222	1.9244	-0.0021	-0.001106
0.336417100	1.9568	1.9560	0.0008	0.000394
0.354071100	1.9924	1.9917	0.0007	0.000351
0.371757900	2.0291	2.0285	0.0006	0.000279
0.389435500	2.0668	2.0662	0.0006	0.000279
0.407065800	2.1052	2.1048	0.0004	0.000179
0.424610500	2.1442	2.1437	0.0005	0.000222
0.442034200	2.1841	2.1837	0.0004	0.000193
0.459305300	2.2246	2.2243	0.0003	0.000155
0.476393400	2.2662	2.2659	0.0003	0.000149
0.493271100	2.3092	2.3152	-0.0061	-0.002623
0.509911800	2.3528	2.3462	0.0065	0.002783
0.526293400	2.3973	2.3969	0.0004	0.000168
0.542394700	2.4432	2.4431	0.0002	0.000074
0.558200000	2.4901	2.4984	-0.0083	-0.003319
0.573690800	2.5383	2.5296	0.0087	0.003412
0.588853900	2.5879	2.5877	0.0002	0.000071
0.603677600	2.6379	2.6475	-0.0096	-0.003633
0.618153900	2.6878	2.6780	0.0098	0.003658
0.632272400	2.7389	2.7387	0.0002	0.000074
0.646028900	2.7909	2.7908	0.0001	0.000021
0.659417100	2.8431	2.8553	-0.0121	-0.004269
0.672435500	2.8974	2.8850	0.0124	0.004269
0.685081600	2.9546	2.9545	0.0001	0.000036
0.697355300	3.0131	3.0130	0.0001	0.000022
0.709256600	3.0716	3.0715	0.0000	0.000014
0.720789500	3.1313	3.1475	-0.0162	-0.005161
0.731953900	3.1933	3.1770	0.0164	0.005121
0.742756600	3.2565	3.2564	0.0001	0.000018
0.753200000	3.3196	3.3195	0.0000	0.000009
0.763289500	3.3815	3.3815	0.0000	0.000007
0.773030300	3.4415	3.4573	-0.0158	-0.004586
0.782430300	3.5029	3.4869	0.0159	0.004545
0.791496100	3.5688	3.5687	0.0000	0.000009
0.800232900	3.6418	3.6418	0.0000	0.000001
0.808648700	3.7238	3.7237	0.0000	0.000003
0.816752600	3.8101	3.8101	0.0000	0.000006
0.824552600	3.8932	3.8932	-0.0000	-0.000001

Sample: 5full

Operator:

Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_4 full.SMP

Started:	14.03.2023 14:41:36	Analysis adsorptive:	N2
Completed:	15.03.2023 02:52:01	Analysis bath temp.:	77,300 K
Report time:	19.10.2023 09:01:21	Thermal correction:	Yes
Sample mass:	0,6018 g	Ambient free space:	28,5828 cm ³ Entered
Analysis free space:	85,1284 cm ³	Equilibration interval:	30 s
Low pressure dose:	1,0000 cm ³ /g STP	Sample density:	1,000 g/cm ³
Automatic degas:	No		

Isotherm Table				
Relative Pressure (p/p°)	Experimental Quantity Adsorbed (cm ³ /g STP)	Fitted Quantity Adsorbed (cm ³ /g STP)	Absolute Residual (cm ³ /g STP)	Relative Residual
0.832053900	3.9732	3.9972	-0.0240	-0.006052
0.839267100	4.0500	4.0259	0.0242	0.005964
0.846200000	4.1239	4.1238	0.0001	0.000018
0.852860500	4.1949	4.1949	-0.0000	-0.000012

Sample: 5full

Operator:

Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_4 full.SMP

Started: 14.03.2023 14:41:36

Completed: 15.03.2023 02:52:01

Report time: 19.10.2023 09:01:21

Sample mass: 0,6018 g

Analysis free space: 85,1284 cm³

Low pressure dose: 1,0000 cm³/g STP

Automatic degas: No

Analysis adsorptive: N₂

Analysis bath temp.: 77,300 K

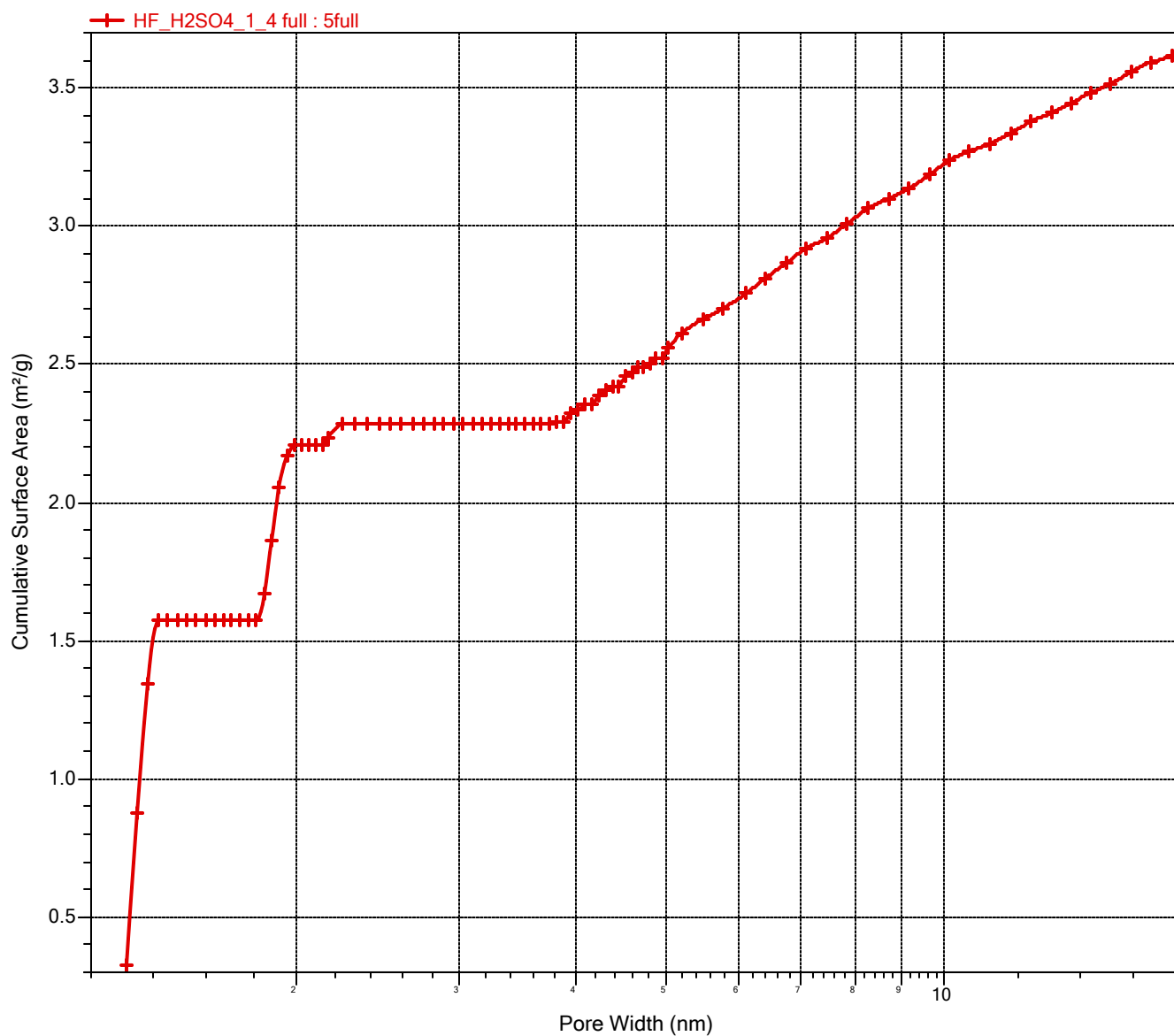
Thermal correction: Yes

Ambient free space: 28,5828 cm³ Entered

Equilibration interval: 30 s

Sample density: 1,000 g/cm³

Cumulative Surface Area vs. Pore Width



Sample: 5full

Operator:

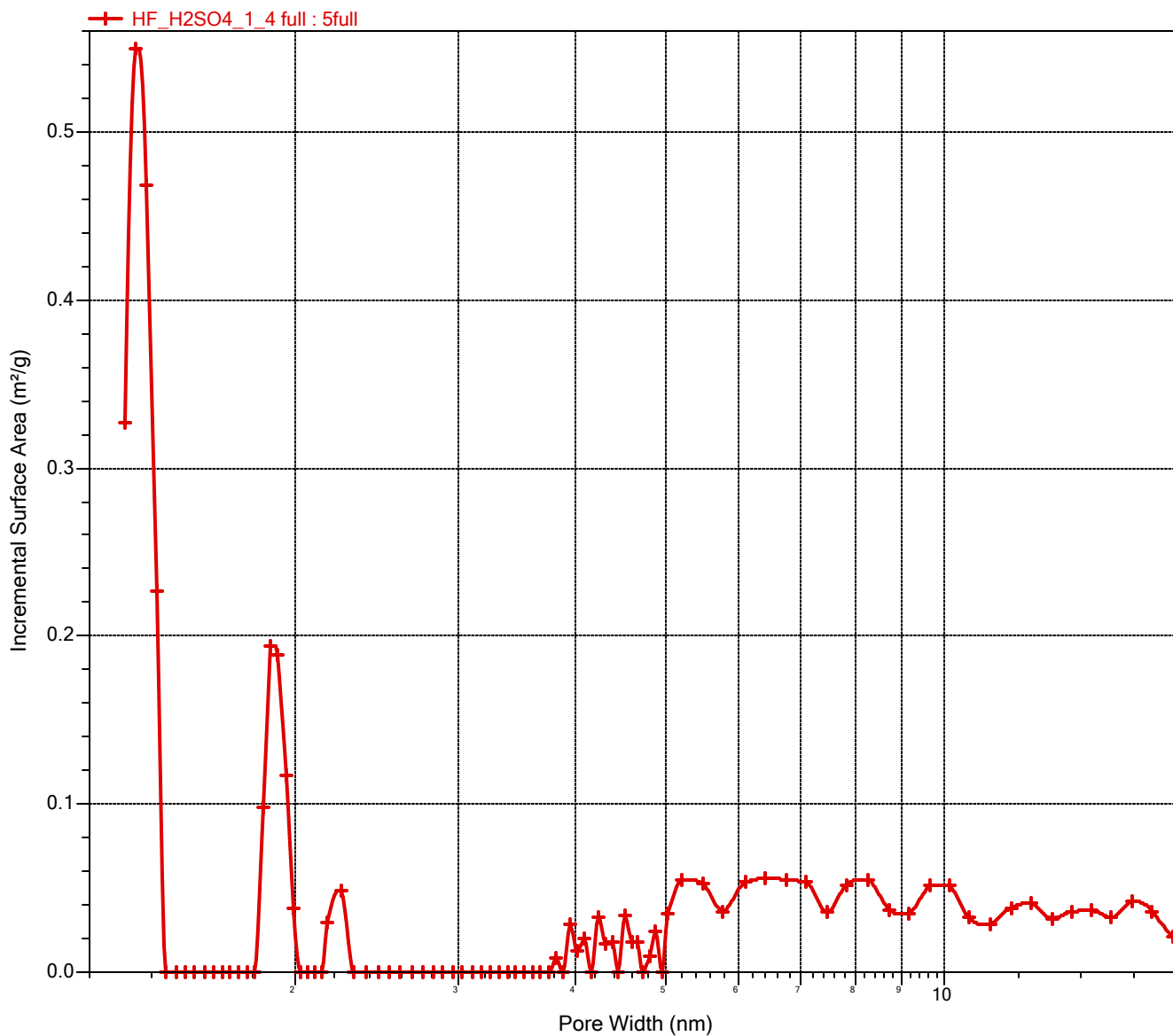
Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_4 full.SMP

Started: 14.03.2023 14:41:36
Completed: 15.03.2023 02:52:01
Report time: 19.10.2023 09:01:21
Sample mass: 0,6018 g
Analysis free space: 85,1284 cm³
Low pressure dose: 1,0000 cm³/g STP
Automatic degas: No

Analysis adsorptive: N2
Analysis bath temp.: 77,300 K
Thermal correction: Yes
Ambient free space: 28,5828 cm³ Entered
Equilibration interval: 30 s
Sample density: 1,000 g/cm³

Incremental Surface Area vs. Pore Width



Sample: 5full

Operator:

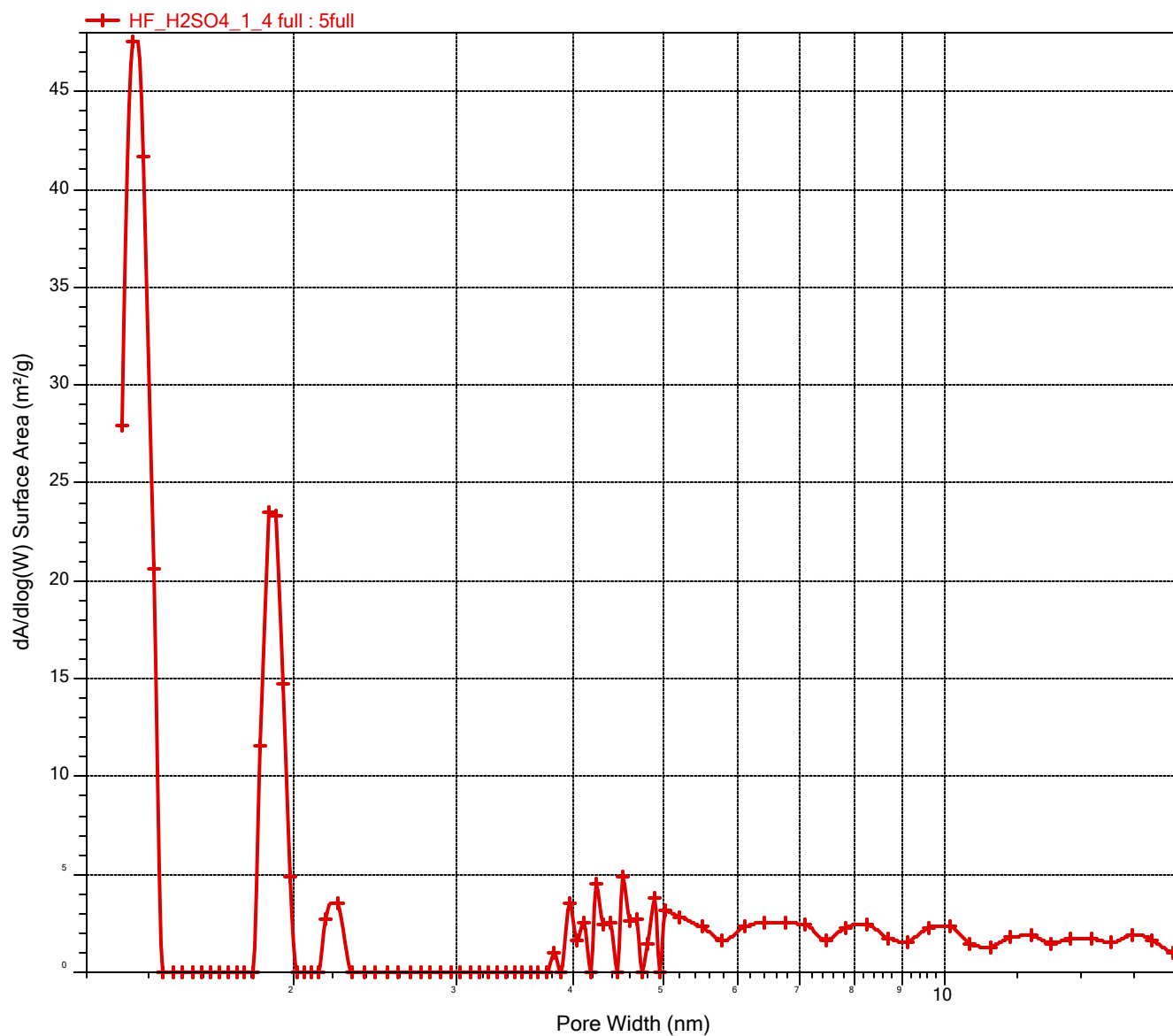
Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_4 full.SMP

Started: 14.03.2023 14:41:36
Completed: 15.03.2023 02:52:01
Report time: 19.10.2023 09:01:21
Sample mass: 0,6018 g
Analysis free space: 85,1284 cm³
Low pressure dose: 1,0000 cm³/g STP
Automatic degas: No

Analysis adsorptive: N₂
Analysis bath temp.: 77,300 K
Thermal correction: Yes
Ambient free space: 28,5828 cm³ Entered
Equilibration interval: 30 s
Sample density: 1,000 g/cm³

dA/dlog(W) Surface Area vs. Pore Width



Sample: 5full

Operator:

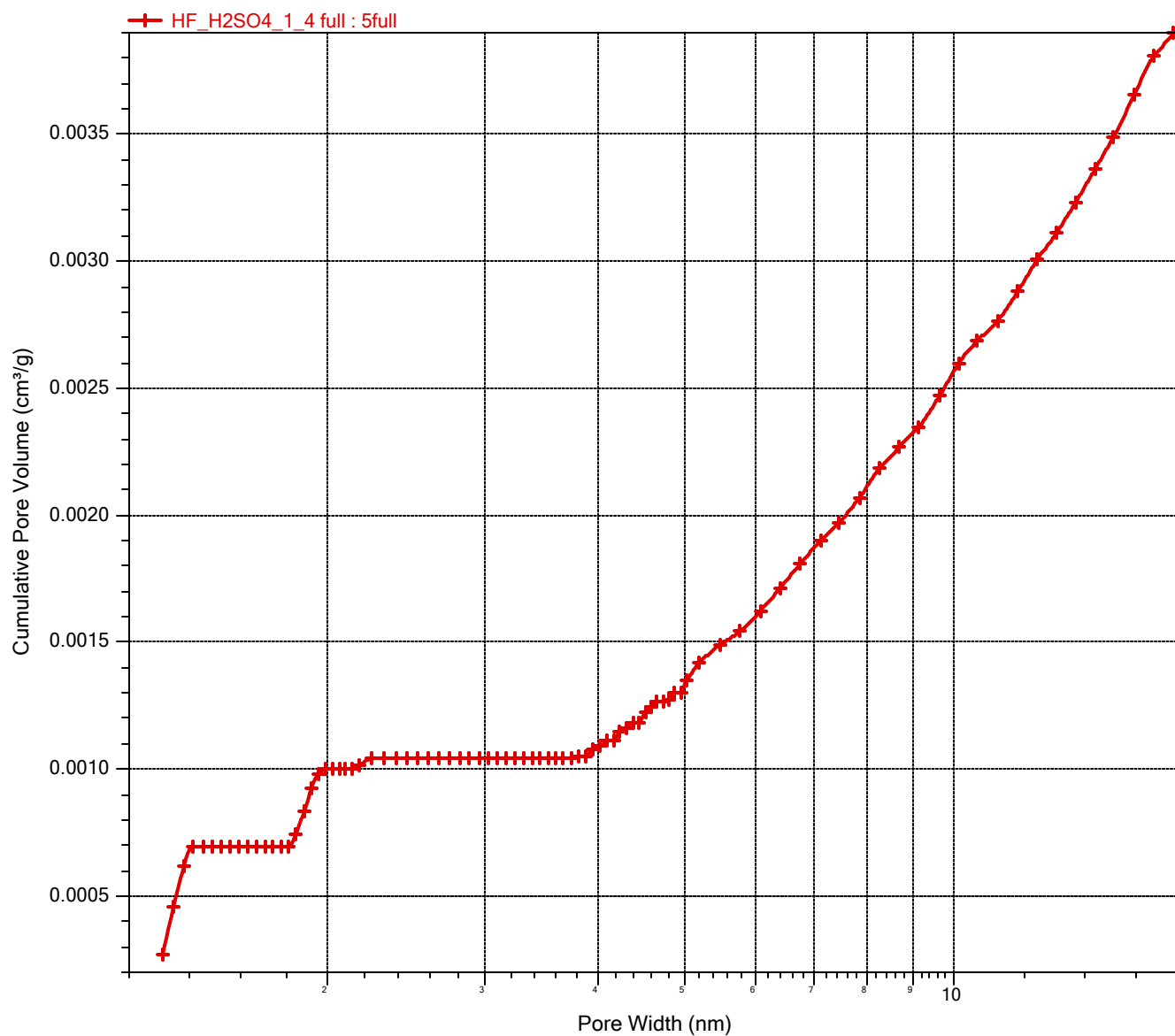
Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_4 full.SMP

Started: 14.03.2023 14:41:36
Completed: 15.03.2023 02:52:01
Report time: 19.10.2023 09:01:21
Sample mass: 0,6018 g
Analysis free space: 85,1284 cm³
Low pressure dose: 1,0000 cm³/g STP
Automatic degas: No

Analysis adsorptive: N₂
Analysis bath temp.: 77,300 K
Thermal correction: Yes
Ambient free space: 28,5828 cm³ Entered
Equilibration interval: 30 s
Sample density: 1,000 g/cm³

Cumulative Pore Volume vs. Pore Width



Sample: 5full

Operator:

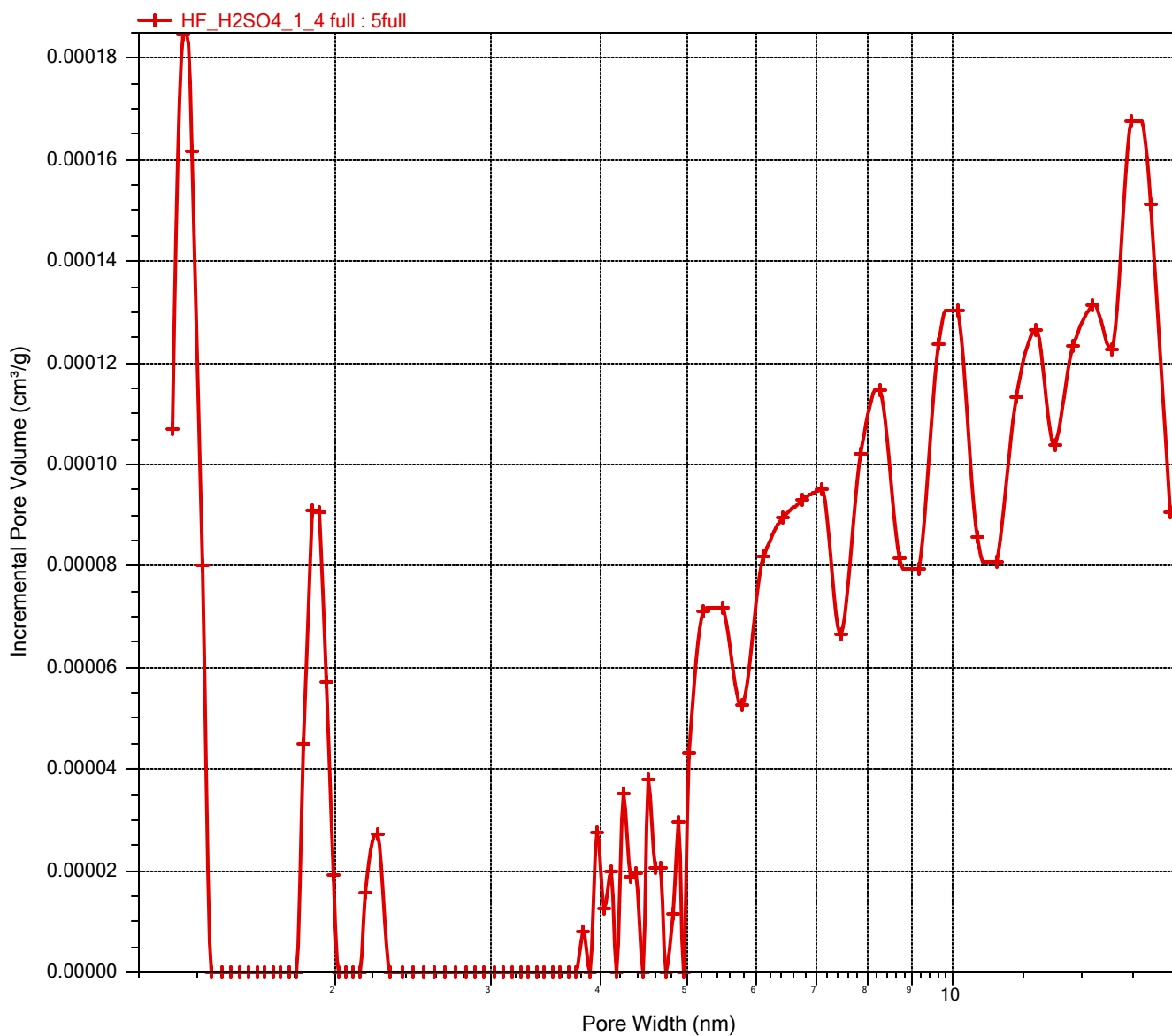
Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_4 full.SMP

Started: 14.03.2023 14:41:36
Completed: 15.03.2023 02:52:01
Report time: 19.10.2023 09:01:21
Sample mass: 0,6018 g
Analysis free space: 85,1284 cm³
Low pressure dose: 1,0000 cm³/g STP
Automatic degas: No

Analysis adsorptive: N2
Analysis bath temp.: 77,300 K
Thermal correction: Yes
Ambient free space: 28,5828 cm³ Entered
Equilibration interval: 30 s
Sample density: 1,000 g/cm³

Incremental Pore Volume vs. Pore Width



Sample: 5full

Operator:

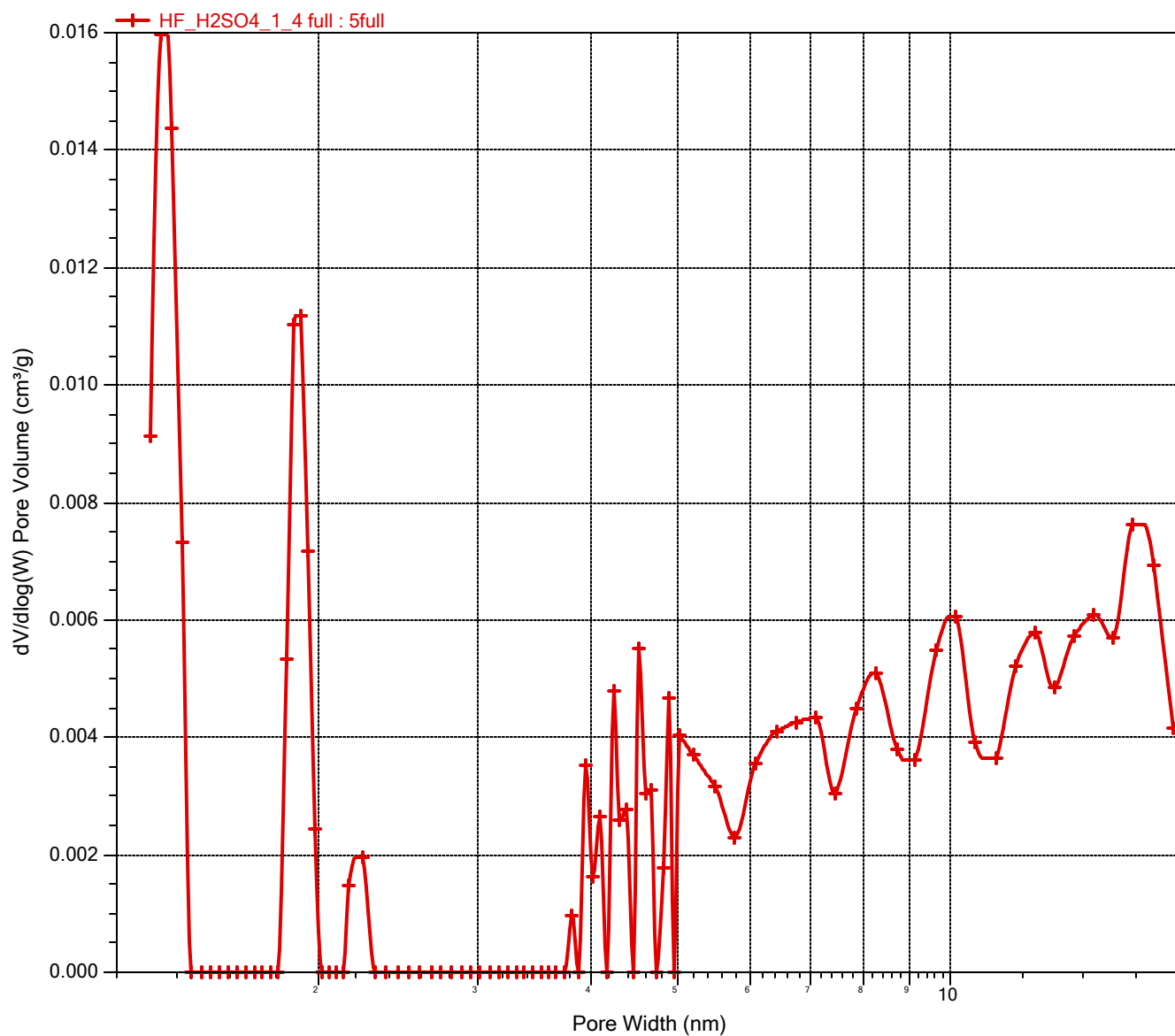
Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_4 full.SMP

Started: 14.03.2023 14:41:36
Completed: 15.03.2023 02:52:01
Report time: 19.10.2023 09:01:21
Sample mass: 0,6018 g
Analysis free space: 85,1284 cm³
Low pressure dose: 1,0000 cm³/g STP
Automatic degas: No

Analysis adsorptive: N₂
Analysis bath temp.: 77,300 K
Thermal correction: Yes
Ambient free space: 28,5828 cm³ Entered
Equilibration interval: 30 s
Sample density: 1,000 g/cm³

dV/dlog(W) Pore Volume vs. Pore Width



Sample: 5full

Operator:

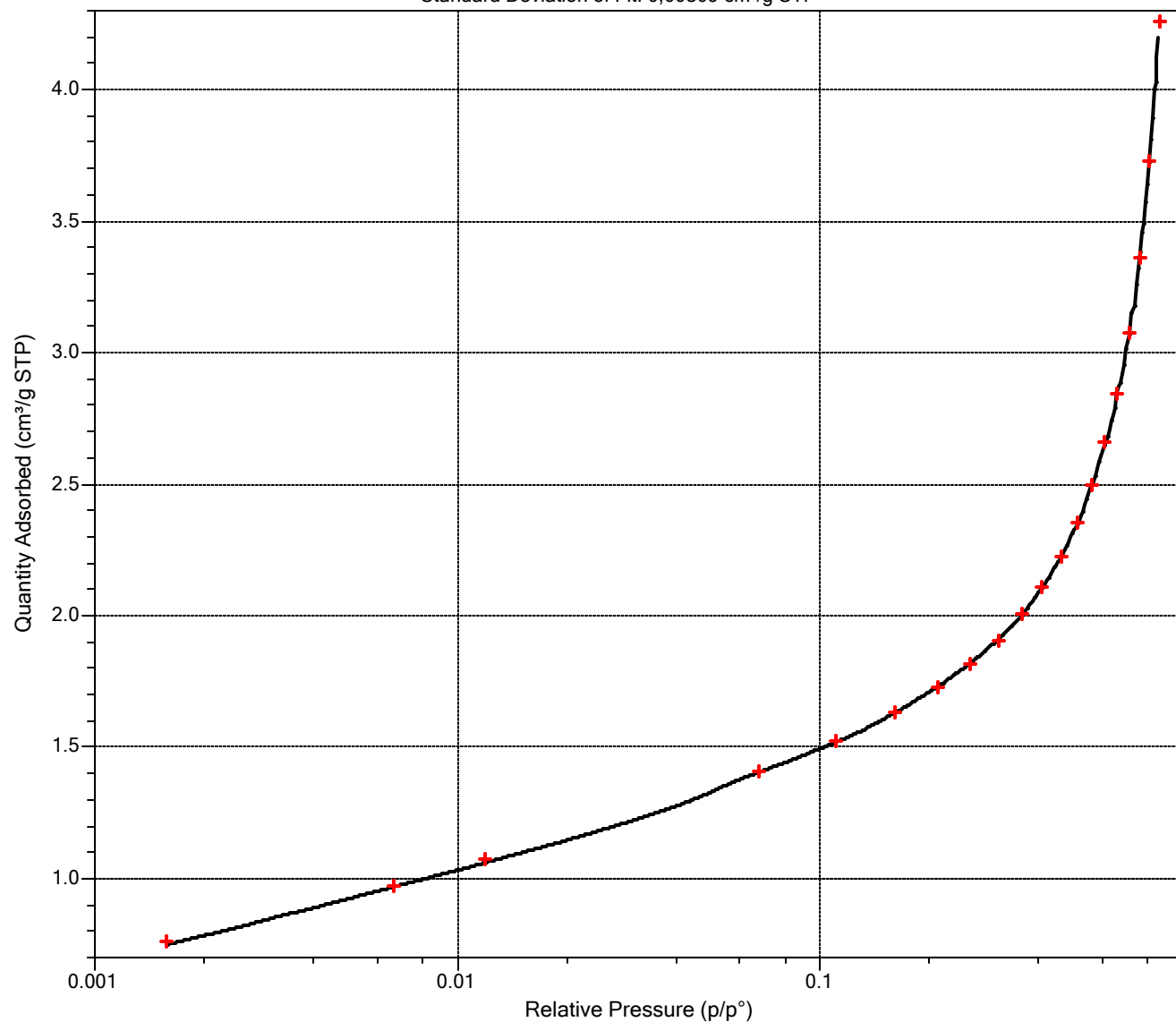
Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_4 full.SMP

Started: 14.03.2023 14:41:36
 Completed: 15.03.2023 02:52:01
 Report time: 19.10.2023 09:01:21
 Sample mass: 0,6018 g
 Analysis free space: 85,1284 cm³
 Low pressure dose: 1,0000 cm³/g STP
 Automatic degas: No

Analysis adsorptive: N2
 Analysis bath temp.: 77,300 K
 Thermal correction: Yes
 Ambient free space: 28,5828 cm³ Entered
 Equilibration interval: 30 s
 Sample density: 1,000 g/cm³

Goodness of Fit

Standard Deviation of Fit: 0,00809 cm³/g STP

Sample: 5full

Operator:

Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_4 full.SMP

Started: 14.03.2023 14:41:36

Completed: 15.03.2023 02:52:01

Report time: 19.10.2023 09:01:21

Sample mass: 0,6018 g

Analysis free space: 85,1284 cm³Low pressure dose: 1,0000 cm³/g STP

Automatic degas: No

Analysis adsorptive: N₂

Analysis bath temp.: 77,300 K

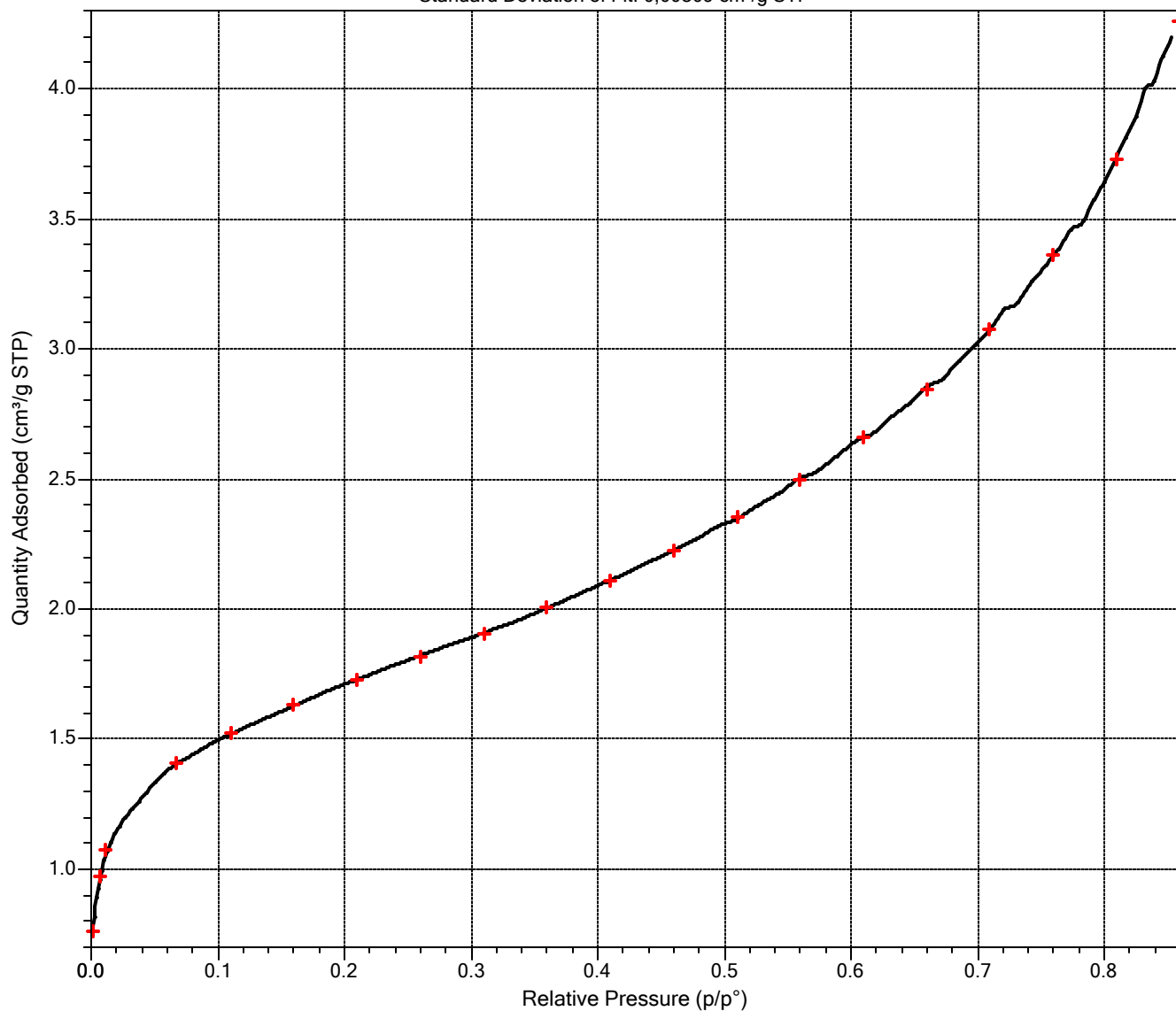
Thermal correction: Yes

Ambient free space: 28,5828 cm³ Entered

Equilibration interval: 30 s

Sample density: 1,000 g/cm³

Goodness of Fit

Standard Deviation of Fit: 0,00809 cm³/g STP

Sample: 5full
 Operator:
 Submitter:
 File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
 Sz...HF_H2SO4_1_4 full.SMP

Started:	14.03.2023 14:41:36	Analysis adsorptive:	N2
Completed:	15.03.2023 02:52:01	Analysis bath temp.:	77,300 K
Report time:	19.10.2023 09:01:21	Thermal correction:	Yes
Sample mass:	0,6018 g	Ambient free space:	28,5828 cm ³ Entered
Analysis free space:	85,1284 cm ³	Equilibration interval:	30 s
Low pressure dose:	1,0000 cm ³ /g STP	Sample density:	1,000 g/cm ³
Automatic degas:	No		

Sample Information

Method: FULL- N2@77K- ADS/DES
 Sample: 5full
 Operator:
 Submitter:
 Mass type: Entered
 Sample mass: 0,6018 g
 Density: 1,000 g/cm³
 Type of data: Automatically collected
 Instrument type: 2460
 Original instrument type: 2460
 Comments:

Sample Tube

Sample tube: W1
 Ambient free space: 1,0000 cm³
 Analysis free space: 1,0000 cm³
 Non-ideality factor: 0,0000620
 Use isothermal jacket: Yes
 Use filler rod: No
 Vacuum seal type: None

Degas Conditions

Degas conditions: FULL- N2@77K- ADS/DES

Smart VacPrep evacuation
 Backfill sample tube: Automatic
 Evacuation rate: 0,27 kPa/s
 Unrest. evacuation from: 0,27 kPa
 Vacuum level: 7e-02 kPa
 Evacuation time: 60 min
 Temperature ramp rate: 10,0 K/min
 Target temperature: 363 K
 Hold pressure: 13,3 kPa

Heating Phase

Sample prep: Stage	Temperature (K)	Ramp Rate (K/min)	Time (min)
1	523	10,0	720

Analysis Conditions

Sample: 5full

Operator:

Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_4 full.SMP

Started:	14.03.2023 14:41:36	Analysis adsorptive:	N2
Completed:	15.03.2023 02:52:01	Analysis bath temp.:	77,300 K
Report time:	19.10.2023 09:01:21	Thermal correction:	Yes
Sample mass:	0,6018 g	Ambient free space:	28,5828 cm ³ Entered
Analysis free space:	85,1284 cm ³	Equilibration interval:	30 s
Low pressure dose:	1,0000 cm ³ /g STP	Sample density:	1,000 g/cm ³
Automatic degas:	No		

Analysis conditions: FULL- N2@77K- ADS/DES
 Isotherm collection: Target Pressure
 Absolute pressure dosing: No

Pressure Table		
Starting Pressure (p/p°)	Pressure Increment (p/p°)	Ending Pressure (p/p°)
0,000000000		0,010000000
0,010000000	0,050000000	0,995000000
0,995000000	0,100000000	0,150000000

Preparation

Fast evacuation: No
 Evacuation rate: 0,27 kPa/s
 Unrestricted evacuation from: 0,27 kPa
 Vacuum setpoint: 1,3 Pa
 Evacuation time: 4,00 h

Leak test: No
 Use TranSeal: No

Free Space

Entered

Ambient free space: 28,5828 cm³
 Analysis free space: 85,1284 cm³

p° and Temperature

p° type: Measured in Psat tube for each point
 Temperature type: Entered
 Temperature: 77,300 K

Dosing

Use first pressure fixed dose: No
 Use maximum volume increment: No
 Target tolerance: 5.0% or 0,6666 kPa
 Low pressure dosing: Yes
 Dose amount: 1,0000 cm³/g STP
 Minimum equilibration delay: 0,50 h
 Maximum equilibration delay: 2,00 h
 Maximum number of decants: 6

Sample: 5full

Operator:

Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_4 full.SMP

Started:	14.03.2023 14:41:36	Analysis adsorptive:	N2
Completed:	15.03.2023 02:52:01	Analysis bath temp.:	77,300 K
Report time:	19.10.2023 09:01:21	Thermal correction:	Yes
Sample mass:	0,6018 g	Ambient free space:	28,5828 cm ³ Entered
Analysis free space:	85,1284 cm ³	Equilibration interval:	30 s
Low pressure dose:	1,0000 cm ³ /g STP	Sample density:	1,000 g/cm ³
Automatic degas:	No		

	Equilibration Relative Pressure (p/p°)	Equilibration Interval (s)
1	1,000000000	30

Minimum equilibration delay at p/p° >= 0.995: 600 s

Sample Backfill

Backfill at start of analysis: Yes

Backfill at end of analysis: Yes

Backfill gas: N2

Adsorptive Properties

Adsorptive:	Nitrogen @ 77.35 K (N2)
Non-condensing adsorptive:	No
Maximum manifold pressure:	123,323 kPa
Therm. tran. hard-sphere diameter:	0,38600 nm
Molecular cross-sectional area:	0,162 nm ²
Adsorbate molecular weight:	28,01
Thermal conductivity:	1,00
Non-ideality factor:	0,0000620
Density conversion factor:	0,0015468
Dosing method:	Normal

Psat vs. Temperature Table

	Saturation Pressure (kPa)	Temperature (K)
1	80,0192	75,40
2	84,5947	75,85
3	89,9104	76,35
4	96,0481	76,90
5	98,9411	77,15
6	101,3028	77,35
7	103,7071	77,55
8	107,3945	77,85
9	113,7597	78,35
10	120,4064	78,85

Report Options

Inside diameter of sample tube: 9,53 mm

Sample: 5full

Operator:

Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_4 full.SMP

Started:	14.03.2023 14:41:36	Analysis adsorptive:	N2
Completed:	15.03.2023 02:52:01	Analysis bath temp.:	77,300 K
Report time:	19.10.2023 09:01:21	Thermal correction:	Yes
Sample mass:	0,6018 g	Ambient free space:	28,5828 cm ³ Entered
Analysis free space:	85,1284 cm ³	Equilibration interval:	30 s
Low pressure dose:	1,0000 cm ³ /g STP	Sample density:	1,000 g/cm ³
Automatic degas:	No		

Sample Log

Date	Time	Log Message
14.03.2023	14:41:36	Starting a sample analysis for C:\ASAP 2460\data\2023\Bartek\5full.SMP on port 5.
14.03.2023	19:47:35	Low pressure data collection started
14.03.2023	23:24:42	Standard data collection started.
15.03.2023	02:28:45	Termination started.
15.03.2023	02:52:01	Finished a sample analysis for C:\ASAP 2460\data\2023\Bartek\5full.SMP on port 5.