

Sample: 6full

Operator:

Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_5 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 09:02:52	Thermal correction:	Yes
Sample mass:	0,1958 g	Ambient free space:	28,4230 cm ³ Entered
Analysis free space:	83,4622 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: 5,2291 m²/gt-Plot external surface area: 7,8200 m²/g

DFT Pore Size

Volume in Pores	<	1,094 nm	0,00000 cm ³ /g
Total Volume in Pores	<=	18,466 nm	0,00763 cm ³ /g
Area in Pores	>	18,466 nm	0,000 m ² /g
Total Area in Pores	>=	1,094 nm	5,057 m ² /g

Horvath-Kawazoe

Maximum pore volume at $p/p^\circ = 0,160037728$: 0,002546 cm³/g

Median pore width: 1,3108 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)
			05:05	100.2946886
0.000197588	0.0198639	0.3931	06:45	100.5318843
0.001740881	0.1750874	0.6280	07:10	100.5740114
0.003588239	0.3610438	0.7211	07:33	100.6186448
0.005507461	0.5544413	0.7810	07:56	100.6709272
0.007427597	0.7478907	0.8257	08:19	100.6908068
0.009368595	0.9436987	0.8623	08:41	100.7300126
0.011860869	1.1946779	0.9046	08:50	100.7243164
0.059801252	6.0244378	1.2390	08:55	100.7409980
0.109982511	11.0807726	1.4596	09:01	100.7503153
0.160037728	16.1253205	1.6460	09:06	100.7594942
0.210007807	21.1612733	1.8121	09:11	100.7642220
0.259934624	26.1968080	1.9750	09:17	100.7822951
0.309944491	31.2388567	2.1187	09:22	100.7885527
0.359892284	36.2746742	2.2859	09:27	100.7931422
0.409931154	41.3224088	2.4354	09:33	100.8032894
0.459816459	46.3591947	2.6034	09:38	100.8210858
0.509950922	51.4164988	2.7539	09:44	100.8263670
0.559828104	56.4430194	2.9557	09:49	100.8220542
0.609843697	61.4982445	3.1494	09:54	100.8426335
0.659747067	66.5364137	3.3662	10:00	100.8513975
0.709752430	71.5862356	3.6314	10:05	100.8608531
0.759755948	76.6321678	3.9549	10:10	100.8641894
0.809754135	81.6715901	4.3910	10:16	100.8597383
0.859545682	86.7092060	4.9812	10:21	100.8779497
0.909333539	91.7330941	5.9132	10:27	100.8794795
0.958046030	96.6613033	7.8690	10:32	100.8942162
0.989814284	99.8731411	12.2539	10:41	100.9008889
0.887000002	89.5046392	5.6451	10:47	100.9071465
0.777699989	78.4880296	4.2353	10:53	100.9232747
0.676715867	68.2982646	3.5231	10:59	100.9260577
0.576225059	58.1664580	3.0090	11:04	100.9439924
0.495367332	50.0040821	2.6524	11:09	100.9434391
0.395478908	39.9270480	2.1592	11:15	100.9587292
0.295299451	29.8161787	1.8359	11:20	100.9692996
0.195294854	19.7209841	1.5050	11:26	100.9805617
0.130653352	13.1935764	1.2726	11:31	100.9815382

Sample: 6full

Operator:

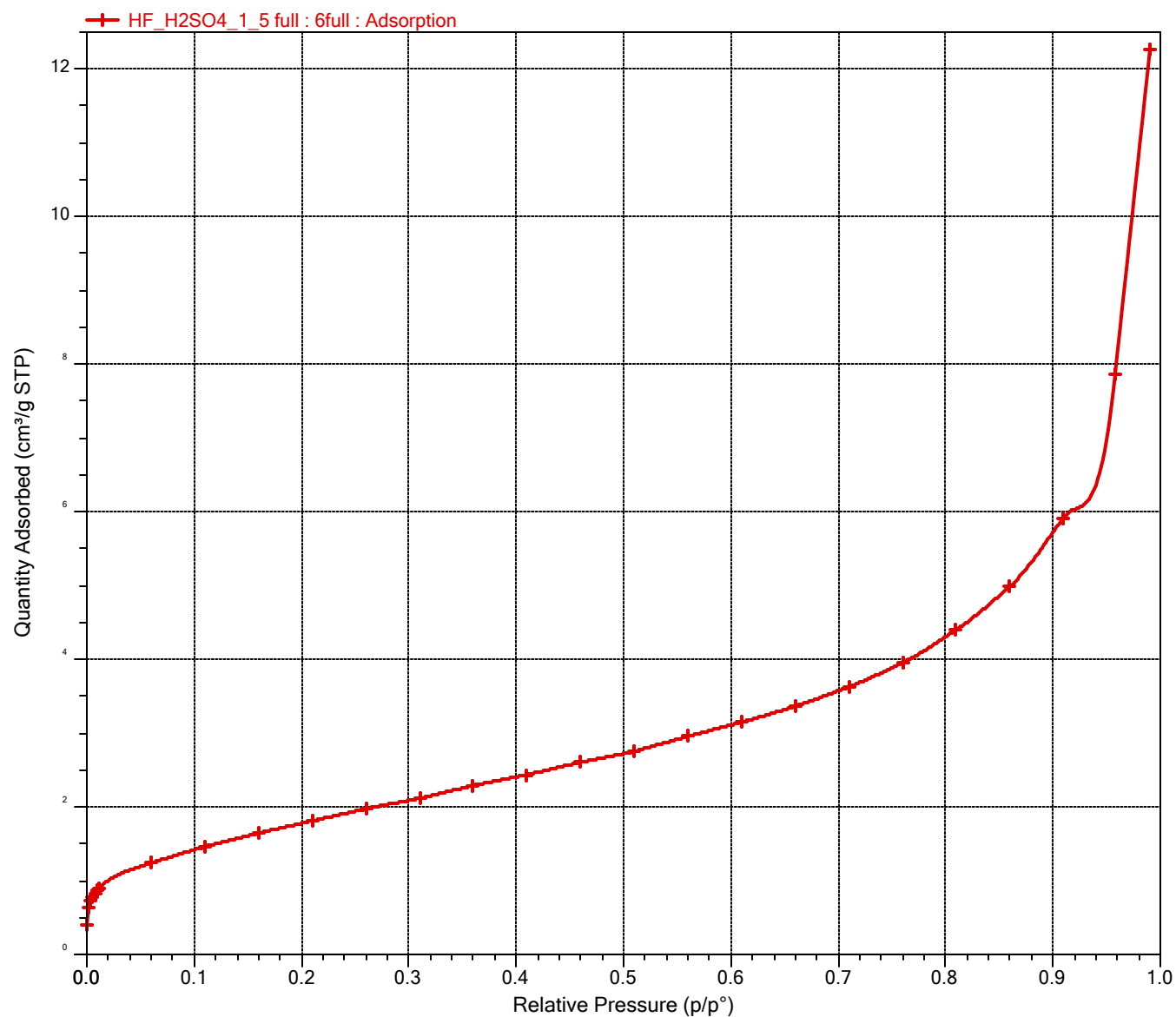
Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_5 full.SMP

Started: 14.03.2023 14:41:36
 Completed: 15.03.2023 02:52:01
 Report time: 19.10.2023 09:02:52
 Sample mass: 0,1958 g
 Analysis free space: 83,4622 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: 28,4230 cm³ Entered
 Equilibration interval: 30 s
 Sample density: 1,000 g/cm³

Isotherm Linear Plot



Sample: 6full

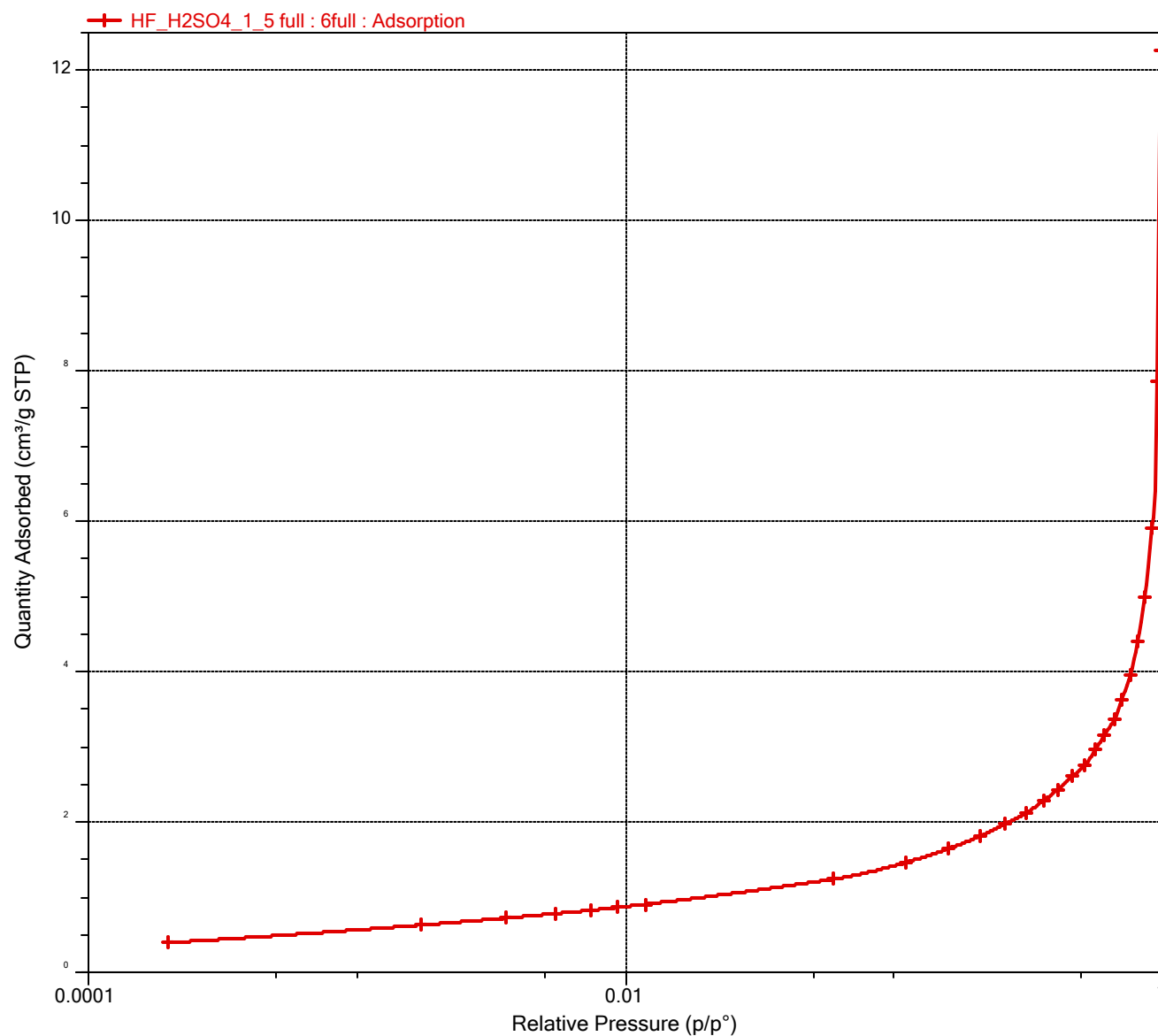
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Low pressure dose:	1,0000 cm ³ /g STP	Sample density:	1,000 g/cm ³
Automatic degas:	No		

Isotherm Log Plot



Sample: 6full

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 Report

BET surface area: 5,2291 ± 0,1366 m²/g
 Slope: 0,830207 ± 0,021738 g/cm³ STP
 Y-intercept: 0,002175 ± 0,000480 g/cm³ STP
 C: 382,735358
 Qm: 1,2014 cm³/g STP
 Correlation coefficient: 0,9979495
 Molecular cross-sectional area: 0,1620 nm²

Relative Pressure (p/p°)	Quantity Adsorbed (cm ³ /g STP)	1/[Q(p°/p - 1)]
0.000197588	0.3931	0.000503
0.001740881	0.6280	0.002777
0.003588239	0.7211	0.004994
0.005507461	0.7810	0.007091
0.007427597	0.8257	0.009062
0.009368595	0.8623	0.010967
0.011860869	0.9046	0.013269
0.059801252	1.2390	0.051335

Sample: 6full

Operator:

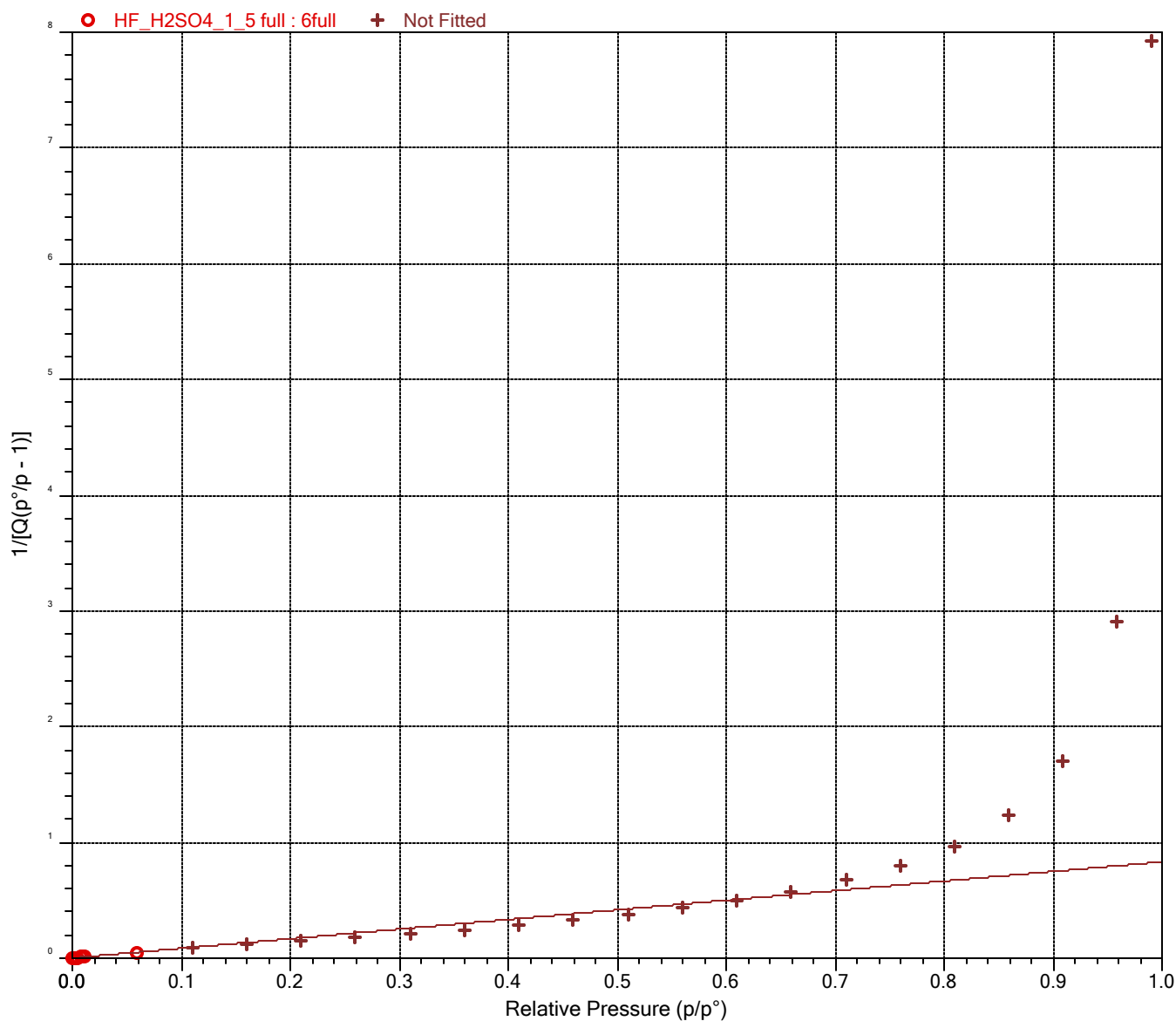
Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_5 full.SMP

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Analysis free space: 83,4622 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: 28,4230 cm³ Entered
Equilibration interval: 30 s
Sample density: 1,000 g/cm³

BET Surface Area Plot



Sample: 6full

Operator:

Submitter:

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Analysis free space:	83,4622 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:	-0,000624 cm ³ /g
Micropore area:	
External surface area:	7,8200 m ² /g
Slope:	5,055599 ± 0,132991 cm ³ /g·nm STP
Y-intercept:	-0,403228 ± 0,056163 cm ³ /g STP
Correlation coefficient:	0,999309
Surface area correction factor:	1,000
Density conversion factor:	0,0015468
Total surface area (BET):	5,2291 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
0.059801252	0.33689	1.2390	
0.109982511	0.37000	1.4596	
0.160037728	0.40348	1.6460	
0.210007807	0.43734	1.8121	
0.259934624	0.47160	1.9750	
0.309944491	0.50637	2.1187	
0.359892284	0.54153	2.2859	
0.409931154	0.57719	2.4354	
0.459816459	0.61319	2.6034	
0.509950922	0.64980	2.7539	
0.559828104	0.68667	2.9557	
0.609843697	0.72408	3.1494	
0.659747067	0.76184	3.3662	

* The micropore area is not reported because either the micropore volume is negative or the calculated external surface area is larger than the total surface area.

Sample: 6full

Operator:

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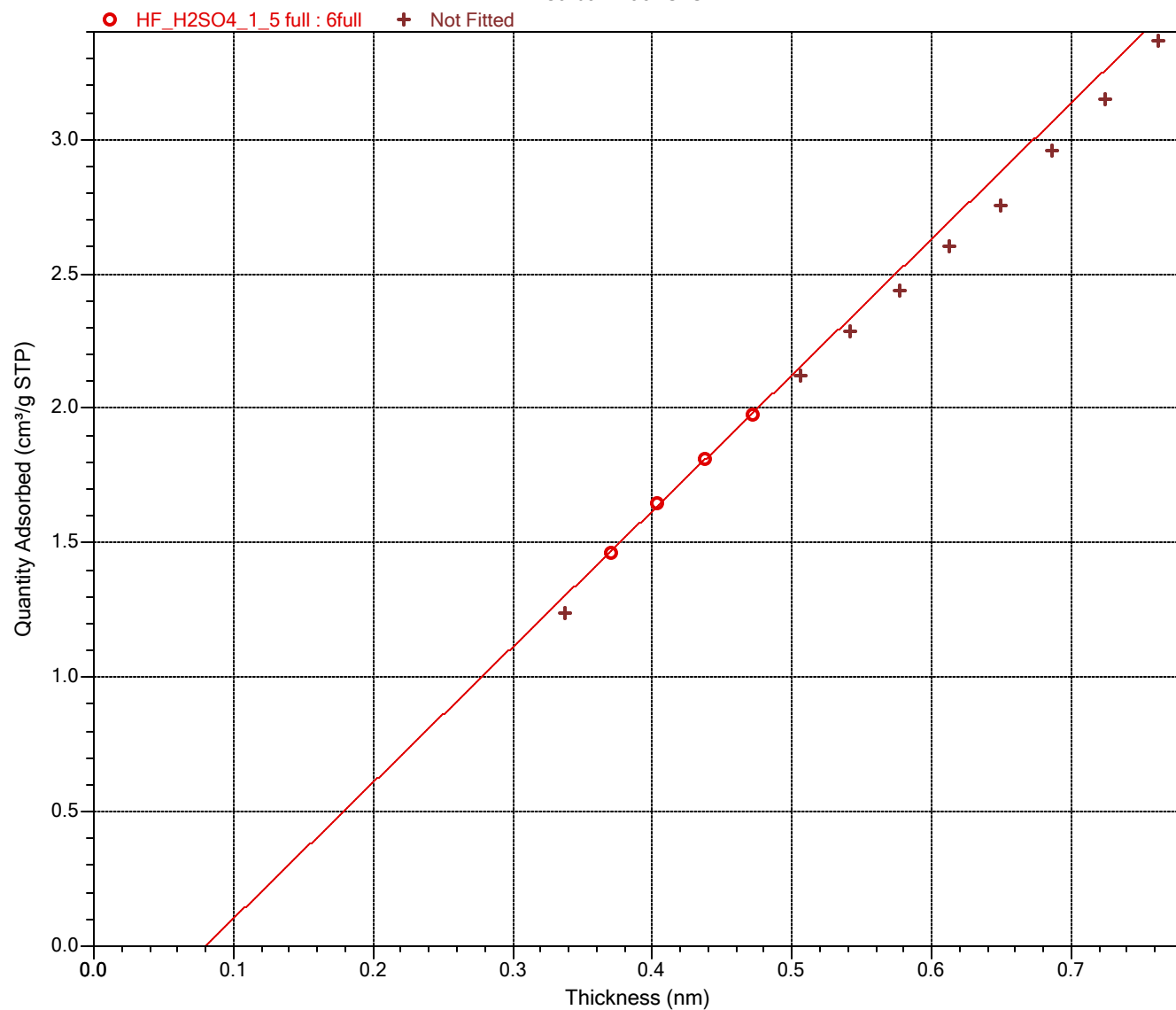
File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_5 full.SMP

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Report time: 19.10.2023 09:02:52
Sample mass: 0,1958 g
Analysis free space: 83,4622 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: 28,4230 cm³ Entered
Equilibration interval: 30 s
Sample density: 1,000 g/cm³

t-Plot

Carbon Black STSA



Sample: 6full

Operator:

Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Szczecinie\HF_H2SO4_1_5 full.SMP

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Analysis free space:	83,4622 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:	0,002546 cm ³ /g
at Relative Pressure:	0,160037728
Median pore width:	1,3108 nm
Relative pressure range:	1e-09 to 0.18

Diameter of adsorptive molecule:	0,3000 nm
Adsorptive density:	6.710e+14 molecules/cm ²
Adsorptive dispersion constant:	7.777e-59
Diameter of sample atom:	0,3400 nm
Sample Density:	3.845e+15 molecules/cm ²
Sample dispersion constant:	6.036e-59

Density conversion factor:	0,0015468
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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)
0.01986	0.000197588	0.39309	0.867	0.0006	0.0020
0.17509	0.001740881	0.62796	1.078	0.0010	0.0015
0.36104	0.003588239	0.72111	1.182	0.0011	0.0013
0.55444	0.005507461	0.78098	1.256	0.0012	0.0012
0.74789	0.007427597	0.82573	1.314	0.0013	0.0011
0.94370	0.009368595	0.86234	1.365	0.0013	0.0011
1.19468	0.011860869	0.90462	1.422	0.0014	0.0011
6.02444	0.059801252	1.23902	2.054	0.0019	0.0008
11.08077	0.109982511	1.45960	2.524	0.0023	0.0007
16.12532	0.160037728	1.64596	2.967	0.0025	0.0006

Sample: 6full

Operator:

Submitter:

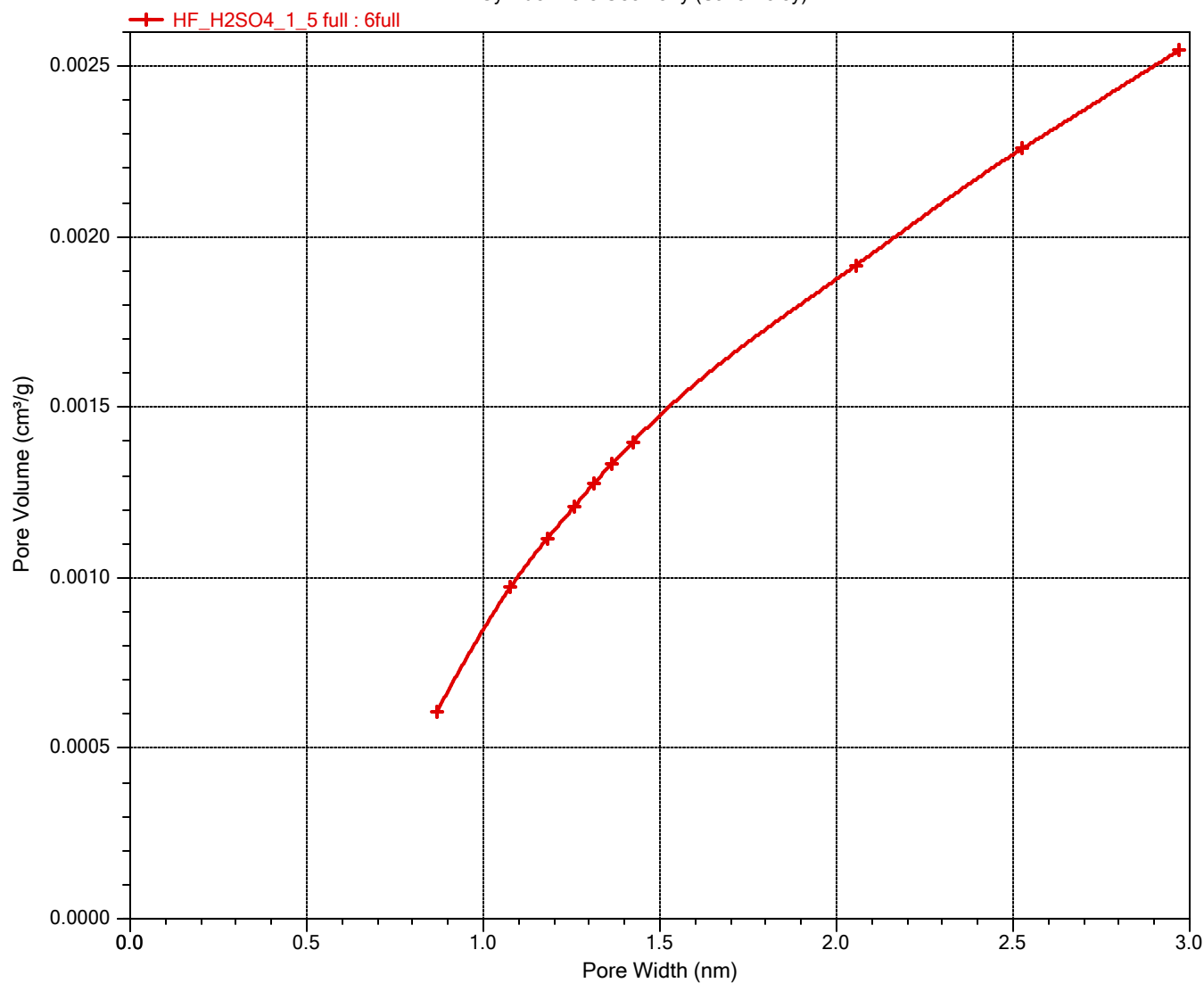
File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_5 full.SMP

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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: 28,4230 cm³ Entered
Equilibration interval: 30 s
Sample density: 1,000 g/cm³

Horvath-Kawazoe Cumulative Pore Volume Plot

Cylinder Pore Geometry (Saito-Foley)



Sample: 6full

Operator:

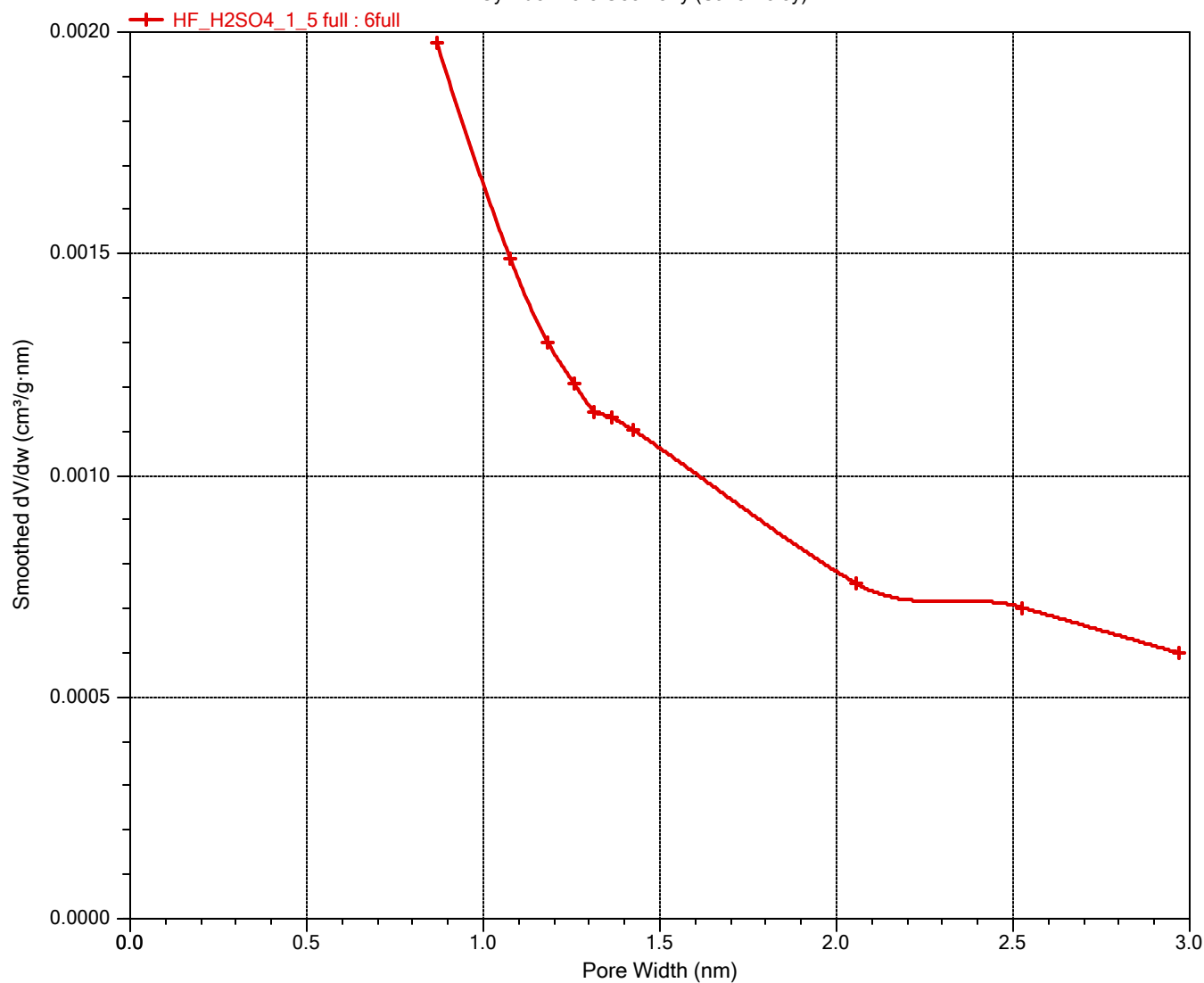
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Low pressure dose:	1,0000 cm ³ /g STP	Sample density:	1,000 g/cm ³
Automatic degas:	No		

Horvath-Kawazoe Differential Pore Volume Plot

Cylinder Pore Geometry (Saito-Foley)



Sample: 6full

Operator:

Submitter:

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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: 0,02560 cm³/g STP

Volume in Pores	<	1,094 nm	0,00000 cm ³ /g
Total Volume in Pores	<=	18,466 nm	0,00763 cm ³ /g
Area in Pores	>	18,466 nm	0,000 m ² /g
Total Area in Pores	>=	1,094 nm	5,057 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)
1.094	0.00000	0.00000	0.000	0.000
1.130	0.00000	0.00000	0.000	0.000
1.165	0.00000	0.00000	0.000	0.000
1.201	0.00000	0.00000	0.000	0.000
1.237	0.00000	0.00000	0.000	0.000
1.273	0.00000	0.00000	0.000	0.000
1.308	0.00000	0.00000	0.000	0.000
1.344	0.00000	0.00000	0.000	0.000
1.380	0.00000	0.00000	0.000	0.000
1.416	0.00000	0.00000	0.000	0.000
1.451	0.00000	0.00000	0.000	0.000
1.487	0.00000	0.00000	0.000	0.000
1.523	0.00000	0.00000	0.000	0.000
1.559	0.00000	0.00000	0.000	0.000
1.594	0.00000	0.00000	0.000	0.000
1.630	0.00000	0.00000	0.000	0.000
1.666	0.00000	0.00000	0.000	0.000
1.702	0.00000	0.00000	0.000	0.000
1.737	0.00000	0.00000	0.000	0.000
1.773	0.00000	0.00000	0.000	0.000
1.809	0.00000	0.00000	0.000	0.000
1.844	0.00000	0.00000	0.000	0.000
1.880	0.00000	0.00000	0.000	0.000
1.916	0.00000	0.00000	0.000	0.000
1.952	0.00000	0.00000	0.000	0.000
1.987	0.00000	0.00000	0.000	0.000
2.023	0.00000	0.00000	0.000	0.000
2.059	0.00000	0.00000	0.000	0.000
2.095	0.00000	0.00000	0.000	0.000
2.130	0.00000	0.00000	0.000	0.000
2.166	0.00000	0.00000	0.000	0.000

Sample: 6full

Operator:

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Analysis free space:	83,4622 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)
2.238	0.00000	0.00000	0.000	0.000
2.309	0.00000	0.00000	0.000	0.000
2.381	0.00000	0.00000	0.000	0.000
2.452	0.00000	0.00000	0.000	0.000
2.524	0.00005	0.00005	0.074	0.074
2.595	0.00005	0.00000	0.074	0.000
2.667	0.00005	0.00000	0.074	0.000
2.738	0.00025	0.00021	0.373	0.300
2.810	0.00032	0.00007	0.470	0.097
2.881	0.00032	0.00000	0.470	0.000
2.953	0.00056	0.00024	0.802	0.332
3.024	0.00072	0.00015	1.002	0.200
3.096	0.00075	0.00004	1.051	0.050
3.167	0.00075	0.00000	1.051	0.000
3.239	0.00096	0.00020	1.302	0.250
3.310	0.00106	0.00011	1.430	0.128
3.382	0.00106	0.00000	1.430	0.000
3.453	0.00115	0.00008	1.526	0.096
3.525	0.00115	0.00000	1.526	0.000
3.596	0.00128	0.00013	1.676	0.150
3.668	0.00139	0.00011	1.796	0.121
3.739	0.00139	0.00000	1.796	0.000
3.811	0.00154	0.00015	1.954	0.158
3.882	0.00154	0.00000	1.954	0.000
3.954	0.00170	0.00016	2.114	0.160
4.025	0.00170	0.00000	2.114	0.000
4.096	0.00183	0.00013	2.240	0.126
4.168	0.00183	0.00000	2.240	0.000
4.239	0.00194	0.00011	2.349	0.108
4.311	0.00194	0.00000	2.349	0.000
4.382	0.00206	0.00012	2.456	0.107
4.454	0.00206	0.00000	2.456	0.000
4.525	0.00220	0.00014	2.575	0.119
4.597	0.00220	0.00000	2.575	0.000
4.668	0.00234	0.00014	2.695	0.119
4.740	0.00234	0.00000	2.695	0.000
4.811	0.00234	0.00000	2.695	0.000
4.883	0.00248	0.00014	2.810	0.115
4.954	0.00248	0.00000	2.810	0.000
5.026	0.00258	0.00010	2.893	0.083
5.205	0.00273	0.00015	3.011	0.118

Sample: 6full

Operator:

Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_5 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 09:02:52	Thermal correction:	Yes
Sample mass:	0,1958 g	Ambient free space:	28,4230 cm ³ Entered
Analysis free space:	83,4622 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 Table				
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)
5.491	0.00294	0.00020	3.160	0.149
5.777	0.00310	0.00016	3.273	0.113
6.098	0.00332	0.00022	3.417	0.145
6.420	0.00351	0.00019	3.538	0.120
6.742	0.00371	0.00019	3.651	0.113
7.099	0.00390	0.00019	3.760	0.109
7.457	0.00403	0.00014	3.833	0.073
7.850	0.00424	0.00021	3.938	0.105
8.279	0.00446	0.00022	4.043	0.105
8.708	0.00461	0.00015	4.112	0.069
9.137	0.00476	0.00015	4.177	0.064
9.637	0.00498	0.00022	4.270	0.093
10.138	0.00521	0.00023	4.361	0.092
10.638	0.00537	0.00016	4.420	0.059
11.210	0.00552	0.00015	4.475	0.055
11.782	0.00575	0.00023	4.553	0.078
12.390	0.00600	0.00025	4.632	0.079
13.033	0.00618	0.00018	4.688	0.056
13.676	0.00638	0.00020	4.746	0.058
14.391	0.00658	0.00021	4.803	0.057
15.106	0.00678	0.00020	4.855	0.052
15.893	0.00706	0.00028	4.925	0.070
16.715	0.00732	0.00026	4.987	0.063
17.573	0.00748	0.00016	5.025	0.037
18.466	0.00763	0.00015	5.057	0.033

Sample: 6full

Operator:

Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_5 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 09:02:52	Thermal correction:	Yes
Sample mass:	0,1958 g	Ambient free space:	28,4230 cm ³ Entered
Analysis free space:	83,4622 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: 0,02560 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
0.000199526	0.3935	0.3930	0.0005	0.001250
0.000251188	0.4039	0.4177	-0.0137	-0.033946
0.000316228	0.4170	0.4432	-0.0261	-0.062703
0.000398107	0.4333	0.4693	-0.0360	-0.083118
0.000501187	0.4534	0.4961	-0.0428	-0.094331
0.000630958	0.4779	0.5236	-0.0456	-0.095480
0.000794328	0.5074	0.5517	-0.0443	-0.087319
0.001000000	0.5418	0.5805	-0.0388	-0.071592
0.001258925	0.5794	0.6101	-0.0307	-0.052989
0.001584895	0.6157	0.6403	-0.0246	-0.039913
0.001995263	0.6444	0.6713	-0.0269	-0.041766
0.002511882	0.6744	0.7030	-0.0286	-0.042414
0.003162276	0.7054	0.7355	-0.0302	-0.042775
0.003981066	0.7341	0.7688	-0.0347	-0.047282
0.005011868	0.7674	0.8030	-0.0356	-0.046372
0.006309579	0.8008	0.8382	-0.0374	-0.046758
0.007943276	0.8358	0.8747	-0.0390	-0.046605
0.010000000	0.8740	0.9126	-0.0386	-0.044159
0.012355640	0.9109	0.9484	-0.0376	-0.041252
0.015186320	0.9449	0.9846	-0.0397	-0.041978
0.018485530	0.9811	1.0200	-0.0390	-0.039737
0.022294740	1.0184	1.0552	-0.0367	-0.036071
0.026653420	1.0561	1.0898	-0.0337	-0.031878
0.031598160	1.0932	1.1250	-0.0319	-0.029155
0.037162240	1.1288	1.1602	-0.0314	-0.027786
0.043374470	1.1629	1.1957	-0.0328	-0.028227
0.050259210	1.1960	1.2314	-0.0354	-0.029577
0.057835260	1.2301	1.2665	-0.0363	-0.029537
0.066115920	1.2680	1.3009	-0.0330	-0.025992
0.075109080	1.3094	1.3346	-0.0252	-0.019252
0.084815920	1.3536	1.3674	-0.0137	-0.010130
0.095232370	1.3996	1.3992	0.0003	0.000241
0.106348200	1.4455	1.4311	0.0144	0.009954
0.118147500	1.4909	1.4642	0.0267	0.017919
0.130609100	1.5388	1.4998	0.0390	0.025359

Sample: 6full

Operator:

Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...\\HF_H2SO4_1_5 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 09:02:52	Thermal correction:	Yes
Sample mass:	0,1958 g	Ambient free space:	28,4230 cm ³ Entered
Analysis free space:	83,4622 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
0.143706600	1.5882	1.5429	0.0453	0.028523
0.157410500	1.6370	1.5821	0.0549	0.033561
0.171685500	1.6850	1.6457	0.0392	0.023294
0.186492100	1.7344	1.6925	0.0418	0.024113
0.201792100	1.7850	1.7646	0.0205	0.011462
0.217539500	1.8369	1.8228	0.0141	0.007689
0.233689500	1.8899	1.8641	0.0257	0.013624
0.250196100	1.9436	1.9316	0.0120	0.006185
0.267011800	1.9969	1.9827	0.0143	0.007138
0.284089500	2.0451	2.0301	0.0151	0.007359
0.301380300	2.0931	2.0870	0.0060	0.002888
0.318838200	2.1474	2.1389	0.0085	0.003941
0.336417100	2.2073	2.1985	0.0088	0.003965
0.354071100	2.2672	2.2600	0.0071	0.003145
0.371757900	2.3220	2.3158	0.0063	0.002699
0.389435500	2.3736	2.3685	0.0051	0.002137
0.407065800	2.4264	2.4221	0.0043	0.001779
0.424610500	2.4837	2.4797	0.0040	0.001605
0.442034200	2.5434	2.5385	0.0049	0.001925
0.459305300	2.6017	2.5985	0.0032	0.001238
0.476393400	2.6526	2.6492	0.0033	0.001257
0.493271100	2.6996	2.7130	-0.0135	-0.004988
0.509911800	2.7538	2.7363	0.0175	0.006350
0.526293400	2.8180	2.8144	0.0036	0.001271
0.542394700	2.8847	2.8821	0.0026	0.000912
0.558200000	2.9493	2.9679	-0.0186	-0.006302
0.573690800	3.0096	2.9881	0.0215	0.007138
0.588853900	3.0679	3.0659	0.0019	0.000635
0.603677600	3.1252	3.1441	-0.0189	-0.006034
0.618153900	3.1829	3.1620	0.0209	0.006561
0.632272400	3.2426	3.2409	0.0017	0.000522
0.646028900	3.3035	3.3022	0.0013	0.000385
0.659417100	3.3647	3.3879	-0.0233	-0.006914
0.672435500	3.4278	3.4030	0.0248	0.007241
0.685081600	3.4941	3.4930	0.0011	0.000320
0.697355300	3.5616	3.5607	0.0009	0.000254
0.709256600	3.6285	3.6277	0.0009	0.000235
0.720789500	3.6961	3.7246	-0.0285	-0.007714
0.731953900	3.7660	3.7365	0.0295	0.007840
0.742756600	3.8373	3.8366	0.0007	0.000176

Sample: 6full

Operator:

Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_5 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 09:02:52	Thermal correction:	Yes
Sample mass:	0,1958 g	Ambient free space:	28,4230 cm ³ Entered
Analysis free space:	83,4622 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
0.753200000	3.9089	3.9083	0.0006	0.000159
0.763289500	3.9800	3.9795	0.0005	0.000129
0.773030300	4.0509	4.0826	-0.0317	-0.007835
0.782430300	4.1240	4.0915	0.0325	0.007870
0.791496100	4.2018	4.2013	0.0005	0.000110
0.800232900	4.2860	4.2856	0.0004	0.000082
0.808648700	4.3780	4.3776	0.0004	0.000083
0.816752600	4.4739	4.4736	0.0003	0.000075
0.824552600	4.5664	4.5661	0.0003	0.000061
0.832053900	4.6553	4.6956	-0.0403	-0.008651
0.839267100	4.7408	4.7000	0.0408	0.008598
0.846200000	4.8230	4.8227	0.0003	0.000053
0.852860500	4.9019	4.9017	0.0002	0.000039
0.859257900	4.9778	4.9747	0.0031	0.000619

Sample: 6full

Operator:

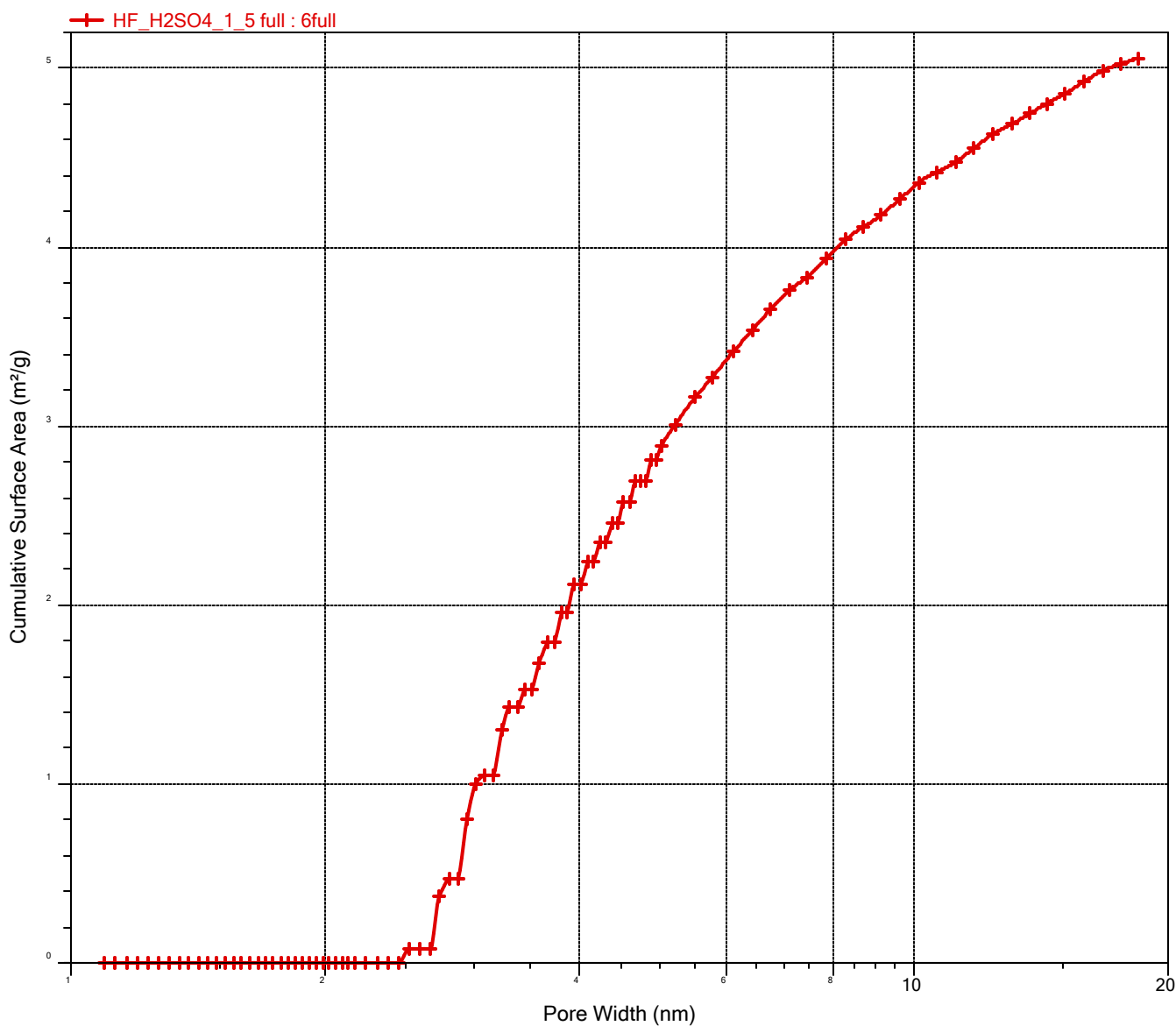
Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_5 full.SMP

Started: 14.03.2023 14:41:36
Completed: 15.03.2023 02:52:01
Report time: 19.10.2023 09:02:52
Sample mass: 0,1958 g
Analysis free space: 83,4622 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: 28,4230 cm³ Entered
Equilibration interval: 30 s
Sample density: 1,000 g/cm³

Cumulative Surface Area vs. Pore Width



Sample: 6full

Operator:

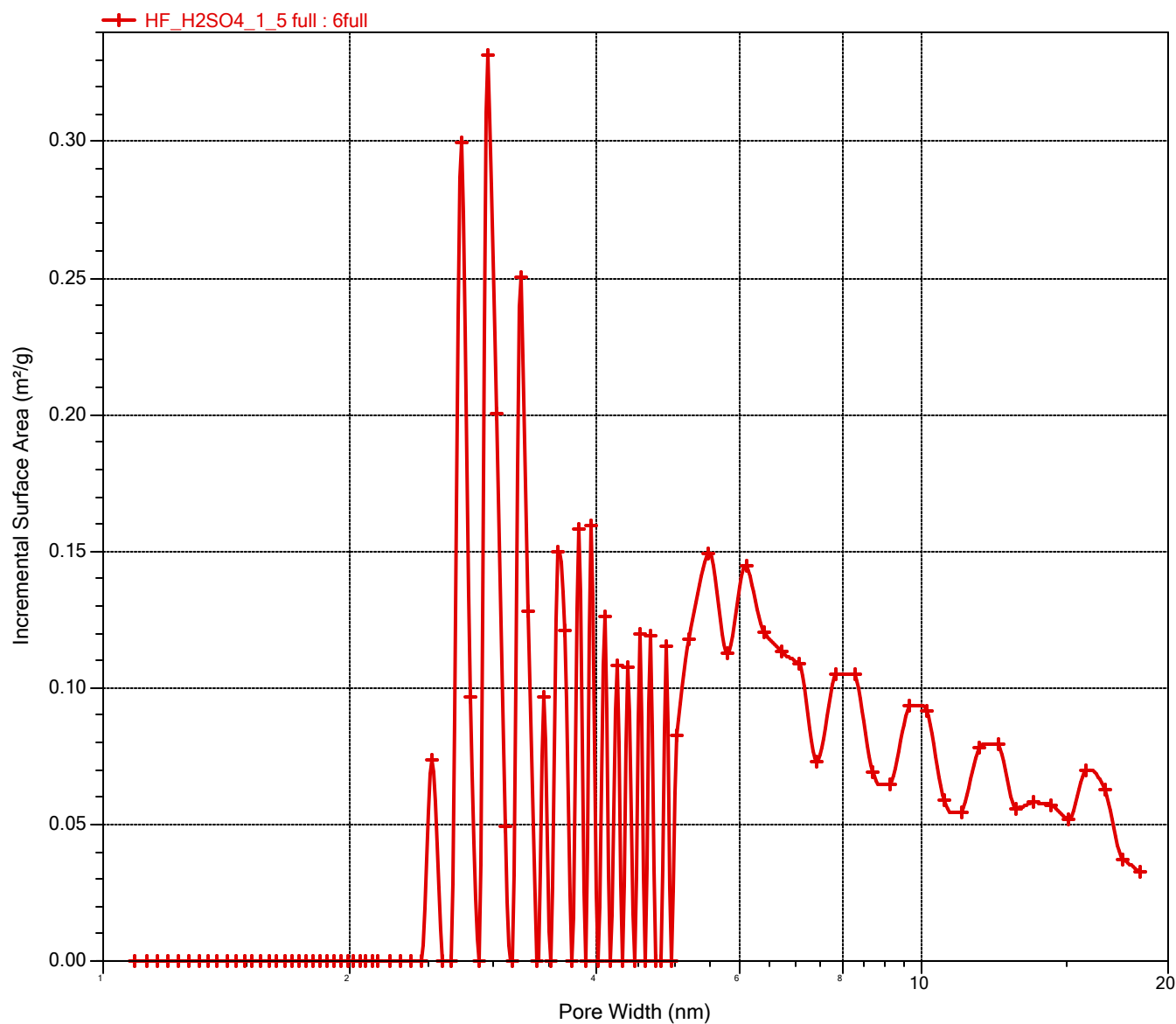
Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_5 full.SMP

Started: 14.03.2023 14:41:36
Completed: 15.03.2023 02:52:01
Report time: 19.10.2023 09:02:52
Sample mass: 0,1958 g
Analysis free space: 83,4622 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: 28,4230 cm³ Entered
Equilibration interval: 30 s
Sample density: 1,000 g/cm³

Incremental Surface Area vs. Pore Width



Sample: 6full

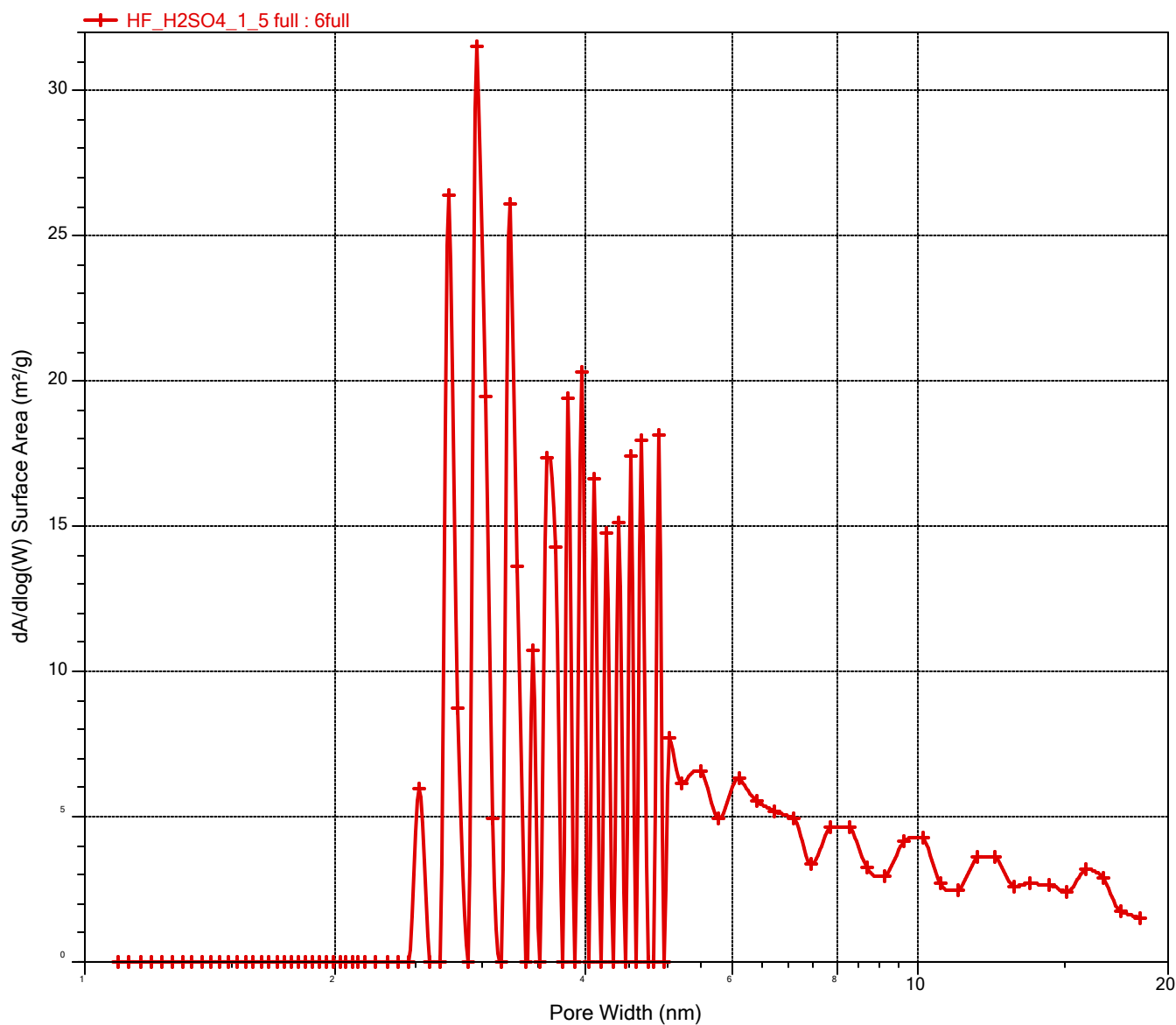
Operator:

Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_5 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 09:02:52	Thermal correction:	Yes
Sample mass:	0,1958 g	Ambient free space:	28,4230 cm ³ Entered
Analysis free space:	83,4622 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		

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



Sample: 6full

Operator:

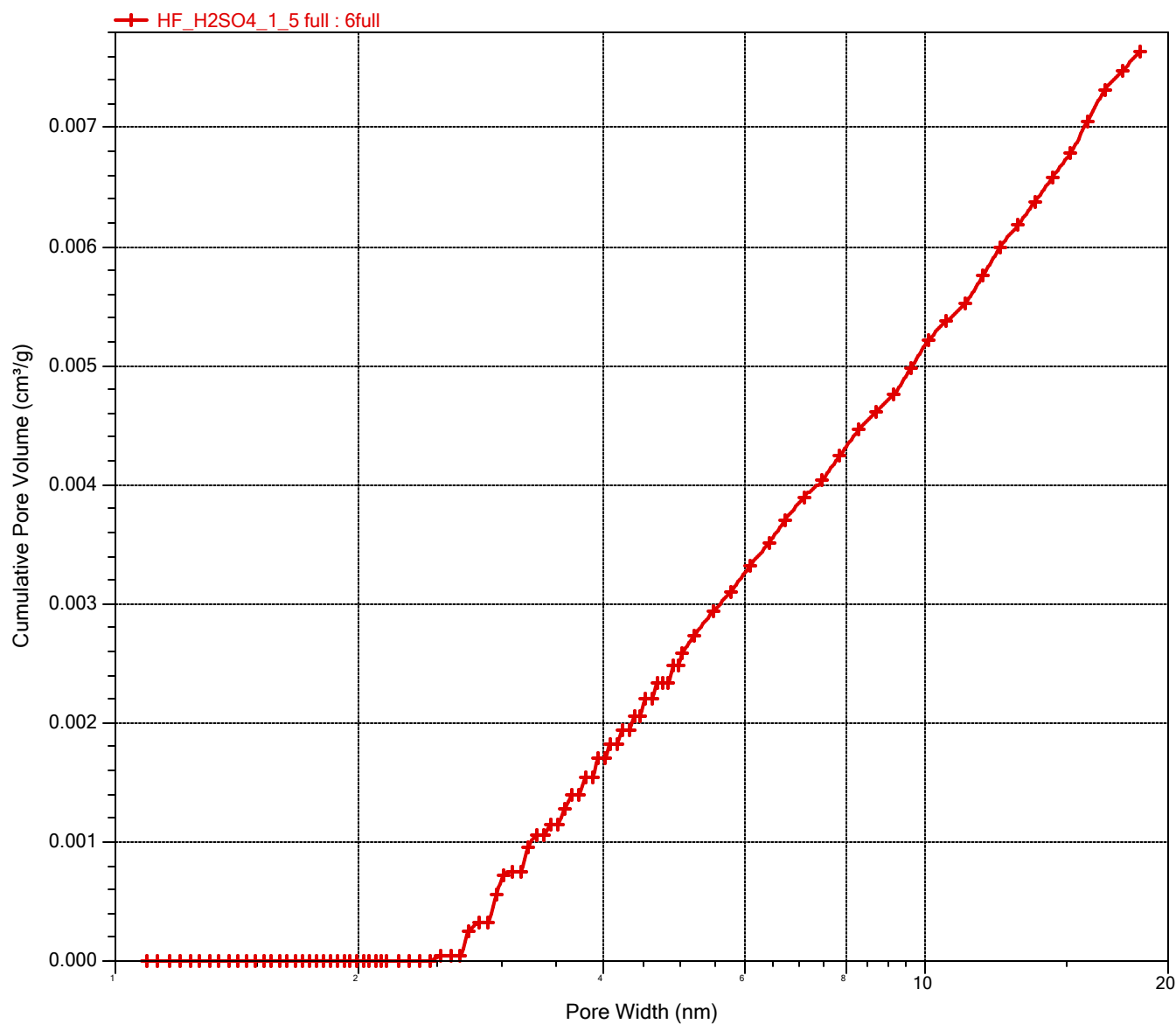
Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_5 full.SMP

Started: 14.03.2023 14:41:36
 Completed: 15.03.2023 02:52:01
 Report time: 19.10.2023 09:02:52
 Sample mass: 0,1958 g
 Analysis free space: 83,4622 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: 28,4230 cm³ Entered
 Equilibration interval: 30 s
 Sample density: 1,000 g/cm³

Cumulative Pore Volume vs. Pore Width



Sample: 6full

Operator:

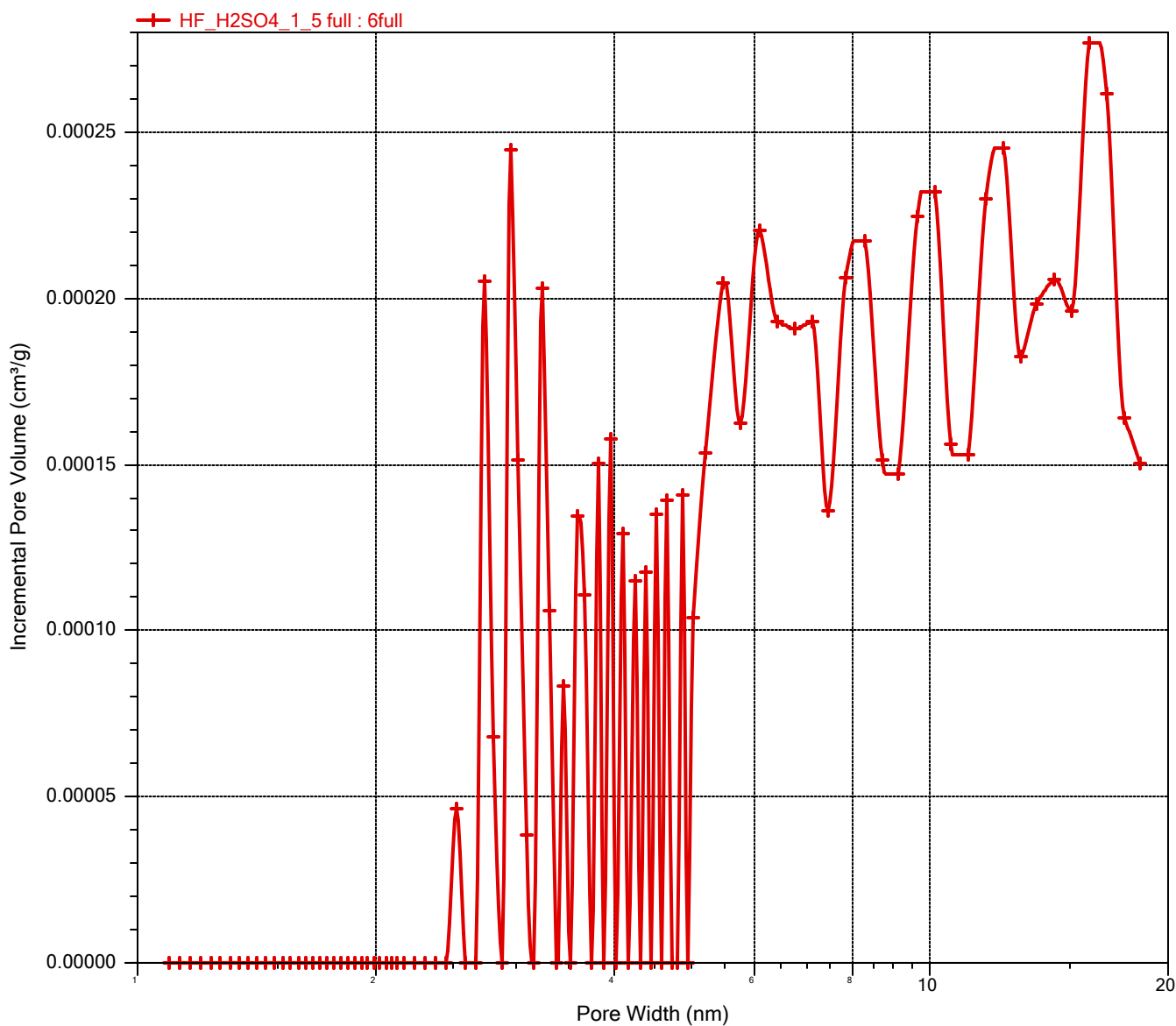
Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_5 full.SMP

Started: 14.03.2023 14:41:36
Completed: 15.03.2023 02:52:01
Report time: 19.10.2023 09:02:52
Sample mass: 0,1958 g
Analysis free space: 83,4622 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: 28,4230 cm³ Entered
Equilibration interval: 30 s
Sample density: 1,000 g/cm³

Incremental Pore Volume vs. Pore Width



Sample: 6full

Operator:

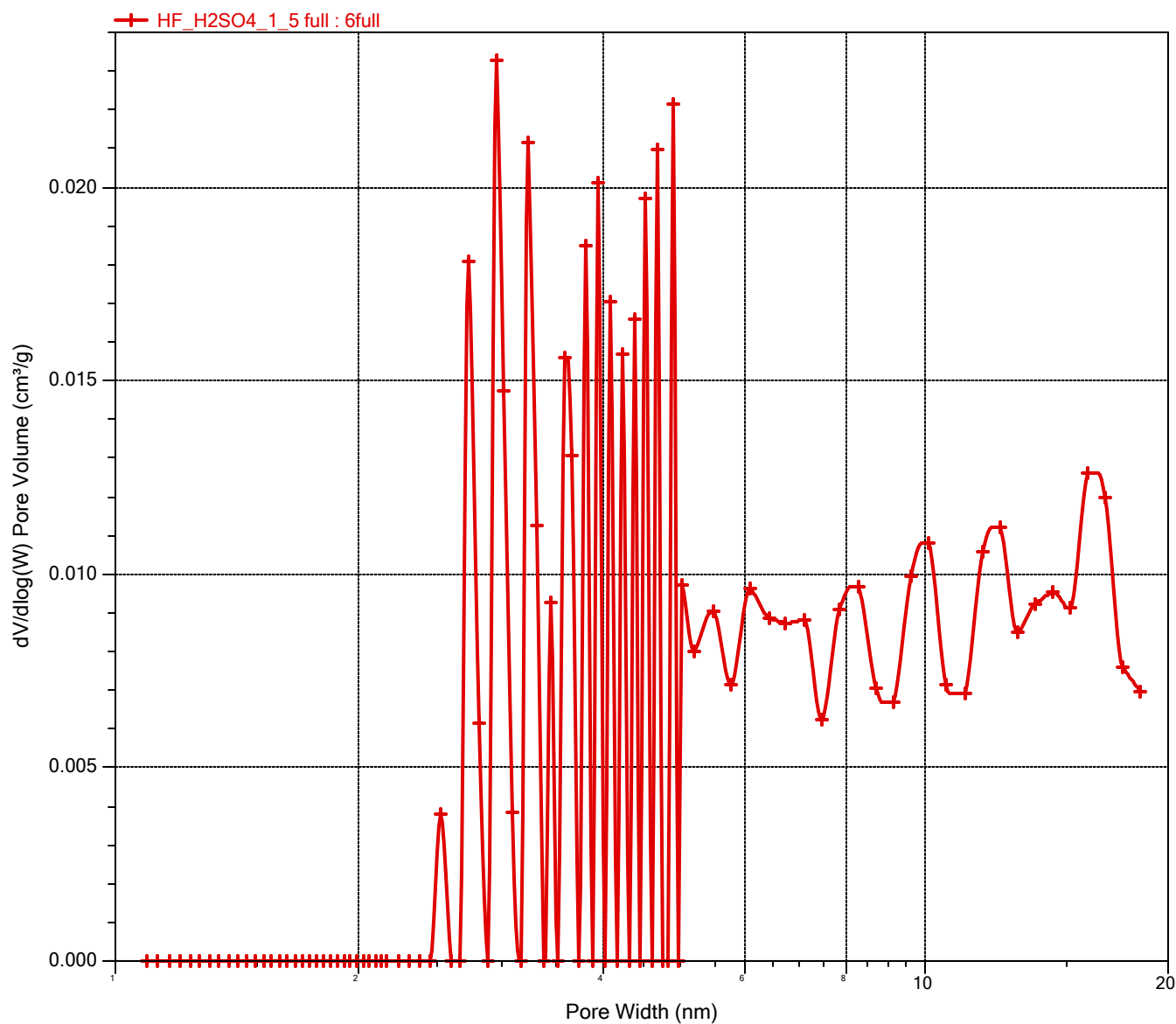
Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_5 full.SMP

Started: 14.03.2023 14:41:36
Completed: 15.03.2023 02:52:01
Report time: 19.10.2023 09:02:52
Sample mass: 0,1958 g
Analysis free space: 83,4622 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: 28,4230 cm³ Entered
Equilibration interval: 30 s
Sample density: 1,000 g/cm³

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



Sample: 6full

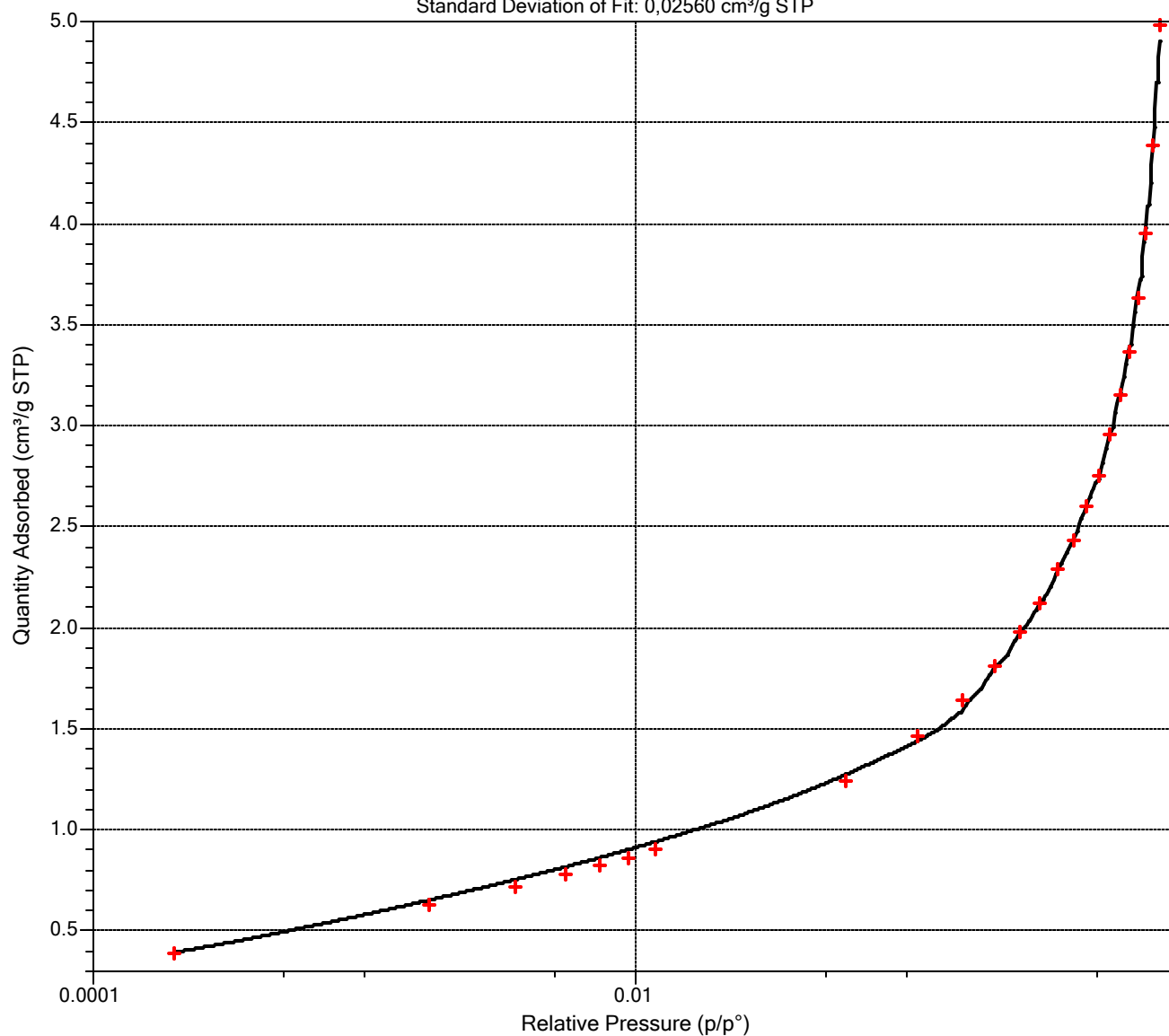
Operator:

Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_5 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 09:02:52	Thermal correction:	Yes
Sample mass:	0,1958 g	Ambient free space:	28,4230 cm ³ Entered
Analysis free space:	83,4622 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		

Goodness of Fit

Standard Deviation of Fit: 0,02560 cm³/g STP


Sample: 6full

Operator:

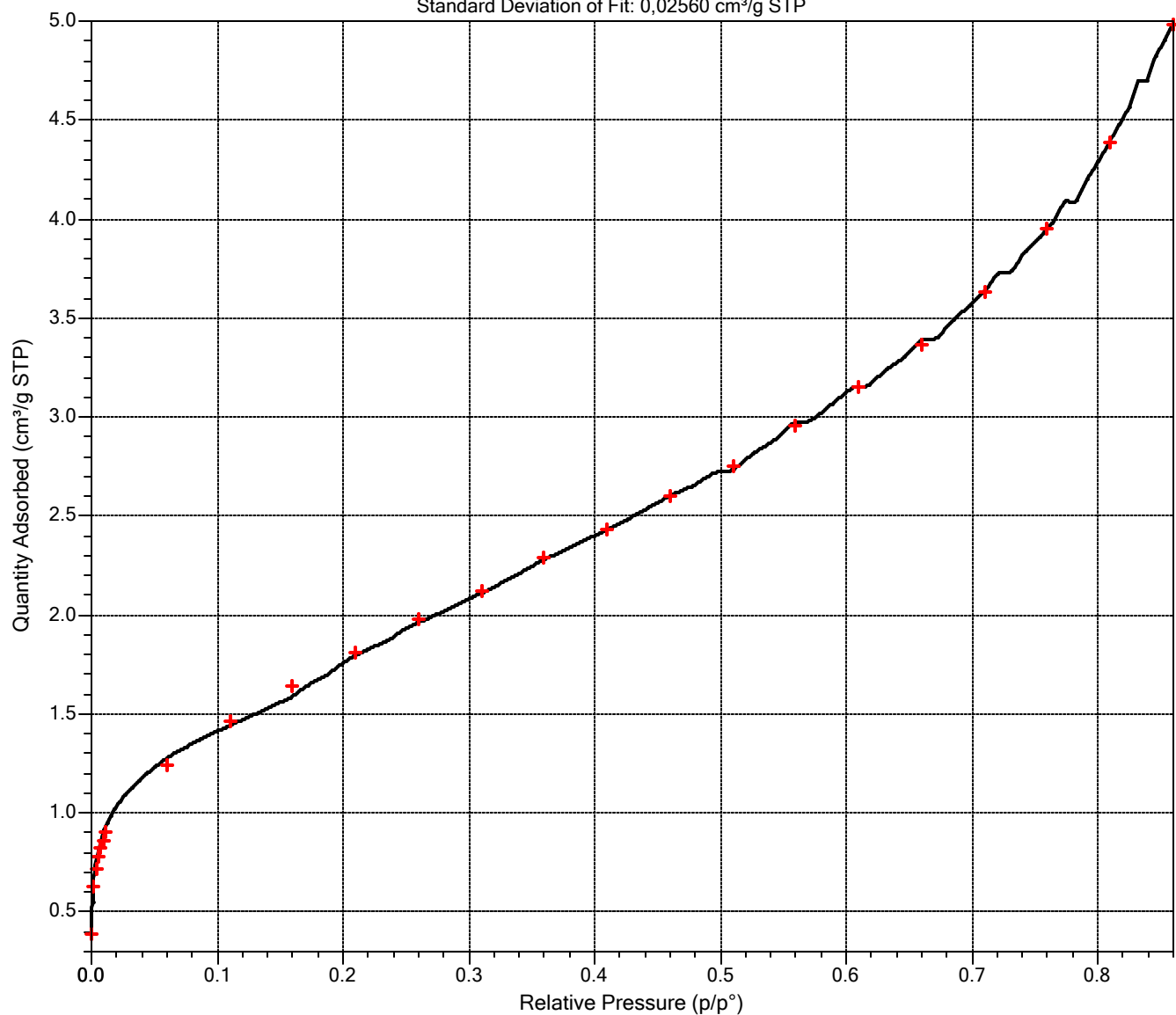
Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_5 full.SMP

Started: 14.03.2023 14:41:36
Completed: 15.03.2023 02:52:01
Report time: 19.10.2023 09:02:52
Sample mass: 0,1958 g
Analysis free space: 83,4622 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: 28,4230 cm³ Entered
Equilibration interval: 30 s
Sample density: 1,000 g/cm³

Goodness of Fit

Standard Deviation of Fit: 0,02560 cm³/g STP


Sample: 6full
 Operator:
 Submitter:
 File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
 Sz...HF_H2SO4_1_5 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 09:02:52	Thermal correction:	Yes
Sample mass:	0,1958 g	Ambient free space:	28,4230 cm ³ Entered
Analysis free space:	83,4622 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: 6full
 Operator:
 Submitter:
 Mass type: Entered
 Sample mass: 0,1958 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: 6full

Operator:

Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_5 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 09:02:52	Thermal correction:	Yes
Sample mass:	0,1958 g	Ambient free space:	28,4230 cm ³ Entered
Analysis free space:	83,4622 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: 28,4230 cm³
 Analysis free space: 83,4622 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: 6full

Operator:

Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_5 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 09:02:52	Thermal correction:	Yes
Sample mass:	0,1958 g	Ambient free space:	28,4230 cm ³ Entered
Analysis free space:	83,4622 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: 6full

Operator:

Submitter:

File: C:\Users\barto\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Sz...HF_H2SO4_1_5 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 09:02:52	Thermal correction:	Yes
Sample mass:	0,1958 g	Ambient free space:	28,4230 cm ³ Entered
Analysis free space:	83,4622 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\6full.SMP on port 6.
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\6full.SMP on port 6.