

Sample: FULL- N2@77K- ADS/DES

Operator:

Submitter:

File: D:\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Szczecinie\Doktorat\B...\BinSi_FULLL.SMP

Started:	18.11.2022 14:39:39	Analysis adsorptive:	N2
Completed:	21.11.2022 18:42:54	Analysis bath temp.:	77,300 K
Report time:	22.11.2022 14:25:23	Thermal correction:	Yes
Sample mass:	1,0671 g	Ambient free space:	28,0000 cm ³ Entered
Analysis free space:	83,0000 cm ³	Equilibration interval:	30 s
Low pressure dose:	0,00157 mmol/g	Sample density:	1,000 g/cm ³
Automatic degas:	No		

Summary Report

Surface Area

BET Surface Area: 3,4291 m²/gt-Plot Micropore Area: 16,6386 m²/gt-Plot external surface area: -13,2096 m²/g

DFT Pore Size

Volume in Pores	<	5,22 Å	0,00009 cm ³ /g
Total Volume in Pores	<=	30,24 Å	0,00091 cm ³ /g
Area in Pores	>	30,24 Å	0,000 m ² /g
Total Area in Pores	>=	5,22 Å	3,111 m ² /g

Horvath-Kawazoe

Maximum pore volume at p/p° = 0,009528975: 0,001244 cm³/g

Median pore width: 6,658 Å

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Automatic degas:	No		

Isotherm Tabular Report

Relative Pressure (p/p°)	Absolute Pressure (kPa)	Quantity Adsorbed (mmol/g)	Elapsed Time (h:min)	Saturation Pressure (kPa)
			04:55	101.6665162
0.000000197	0.0000200	0.00171	06:54	101.7410381
0.000000480	0.0000488	0.00345	08:59	101.7114832
0.000001365	0.0001388	0.00517	12:01	101.6815052
0.000003582	0.0003638	0.00687	14:24	101.5624394
0.000007580	0.0007683	0.00843	17:05	101.3584929
0.000014360	0.0014533	0.00990	19:41	101.2006283
0.000023788	0.0024049	0.01120	22:10	101.0996356
0.000039461	0.0040296	0.01243	23:32	102.1160154
0.000050205	0.0051108	0.01334	25:44	101.7994480
0.000066199	0.0067317	0.01424	26:58	101.6882266
0.000085811	0.0087201	0.01514	28:16	101.6204343
0.000111924	0.0113719	0.01609	29:37	101.6036226
0.000128319	0.0130289	0.01681	31:55	101.5349921
0.000157233	0.0159549	0.01758	33:21	101.4730750
0.000183353	0.0185900	0.01836	36:01	101.3891708
0.000211837	0.0214606	0.01901	37:32	101.3069509
0.000224817	0.0227621	0.01937	39:00	101.2471333
0.000243664	0.0246658	0.01972	39:55	101.2285068
0.000254700	0.0257755	0.01997	40:52	101.1996518
0.000285721	0.0289061	0.02040	41:41	101.1686973
0.000310692	0.0314256	0.02076	42:29	101.1472635
0.000349920	0.0353894	0.02121	43:14	101.1357736
0.000399275	0.0403695	0.02173	44:00	101.1070650
0.000453955	0.0458814	0.02223	44:47	101.0705039
0.000512359	0.0517688	0.02273	45:33	101.0401027
0.000574092	0.0579978	0.02319	46:18	101.0252602
0.000620055	0.0626240	0.02355	47:03	100.9973816
0.000701123	0.0707905	0.02405	47:49	100.9672653
0.000753336	0.0760326	0.02438	48:33	100.9279049
0.000792410	0.0799618	0.02465	49:19	100.9095551
0.000832224	0.0839651	0.02491	50:05	100.8923284
0.000865376	0.0872848	0.02513	50:50	100.8634733
0.000912996	0.0920851	0.02540	51:36	100.8603893
0.000992983	0.1001360	0.02575	52:20	100.8435775
0.001054908	0.1063655	0.02604	53:06	100.8291500
0.001260836	0.1271317	0.02669	53:47	100.8312575
0.001460076	0.1471963	0.02727	54:32	100.8141691
0.001662405	0.1675730	0.02780	55:14	100.8015562
0.001862588	0.1877163	0.02828	55:50	100.7825066
0.002123658	0.2139541	0.02881	56:25	100.7479066

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Automatic degas:	No		

Isotherm Tabular Report

Relative Pressure (p/p°)	Absolute Pressure (kPa)	Quantity Adsorbed (mmol/g)	Elapsed Time (h:min)	Saturation Pressure (kPa)
0.002380161	0.2397559	0.02928	56:57	100.7309646
0.002607477	0.2625978	0.02967	57:28	100.7095309
0.002831848	0.2851997	0.03002	57:56	100.7114920
0.003061967	0.3083362	0.03036	58:22	100.6987407
0.003285399	0.3307301	0.03066	58:49	100.6666633
0.003522431	0.3544454	0.03097	59:15	100.6252035
0.003806502	0.3829751	0.03129	59:40	100.6107759
0.004041907	0.4066356	0.03155	60:04	100.6048926
0.004372727	0.4399171	0.03187	60:27	100.6047543
0.004620994	0.4649270	0.03210	60:49	100.6118989
0.004869792	0.4898901	0.03233	61:12	100.5977480
0.005110738	0.5141066	0.03254	61:34	100.5934108
0.005354301	0.5385751	0.03275	61:56	100.5873810
0.005603323	0.5636196	0.03295	62:18	100.5866812
0.005857099	0.5892454	0.03314	62:40	100.6036313
0.006112778	0.6148872	0.03333	63:02	100.5904651
0.006452942	0.6490647	0.03355	63:25	100.5843051
0.006707630	0.6747105	0.03372	63:47	100.5885040
0.006968007	0.7008243	0.03389	64:09	100.5774372
0.007332217	0.7376497	0.03409	64:31	100.6039161
0.007598159	0.7644928	0.03424	64:53	100.6155363
0.007851161	0.7900093	0.03439	65:15	100.6232424
0.008128527	0.8180577	0.03454	65:37	100.6403308
0.008389488	0.8443808	0.03467	65:59	100.6474754
0.008648412	0.8703572	0.03481	66:21	100.6378082
0.008922768	0.8979603	0.03494	66:43	100.6369701
0.009257704	0.9316712	0.03509	67:06	100.6373932
0.009518539	0.9579769	0.03521	67:28	100.6432765
0.009528975	0.9690006	0.03588	67:50	101.6899111
0.009836581	1.0009741	0.03567	68:15	101.7603724
0.010134357	1.0312078	0.03562	68:38	101.7536428
0.069984831	7.1220742	0.02804	68:45	101.7659709
0.128407286	13.0671505	0.01458	68:50	101.7633100
0.181442213	18.4637792	0.00099	68:56	101.7612106
0.231311115	23.5395023	-0.01246	69:01	101.7655478
0.281431674	28.6347286	-0.02633	69:07	101.7466447
0.331361003	33.7161214	-0.04052	69:12	101.7504204
0.381335062	38.8018066	-0.05477	69:17	101.7525280
0.431209615	43.8783597	-0.06889	69:23	101.7564502
0.481167551	48.9515887	-0.08289	69:28	101.7350164
0.531060214	54.0268967	-0.09684	69:34	101.7340318

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Low pressure dose:	0,00157 mmol/g	Sample density:	1,000 g/cm ³
Automatic degas:	No		

Isotherm Tabular Report

Relative Pressure (p/p°)	Absolute Pressure (kPa)	Quantity Adsorbed (mmol/g)	Elapsed Time (h:min)	Saturation Pressure (kPa)
0.580593334	59.0402389	-0.10849	69:40	101.6894879
0.631416514	64.1342181	-0.12125	69:45	101.5719683
0.680924723	69.1292919	-0.13375	69:51	101.5226640
0.729716532	74.1169037	-0.14402	69:56	101.5694457
0.780010420	79.1980218	-0.15298	70:02	101.5345690
0.829583898	84.1850803	-0.15928	70:08	101.4786816
0.878439316	89.1220696	-0.16171	70:14	101.4550101
0.926789626	93.9988833	-0.15670	70:22	101.4241858
0.957381635	97.0907928	-0.14499	70:30	101.4128423
0.991391994	100.4954452	-0.07728	70:46	101.3680218
0.896295360	90.8396127	-0.15531	70:56	101.3500870
0.776598243	78.6999263	-0.14728	71:03	101.3393051
0.673623603	68.2441675	-0.12793	71:09	101.3090504
0.572357014	57.9831804	-0.10398	71:15	101.3059663
0.471823834	47.7903761	-0.07724	71:20	101.2886012
0.371559264	37.6340923	-0.04975	71:26	101.2869168
0.271201169	27.4706110	-0.02191	71:31	101.2923769
0.171355378	17.3541616	0.00496	71:37	101.2758500
0.128625868	13.0262074	0.01590	71:42	101.2720661

Sample: FULL- N2@77K- ADS/DES

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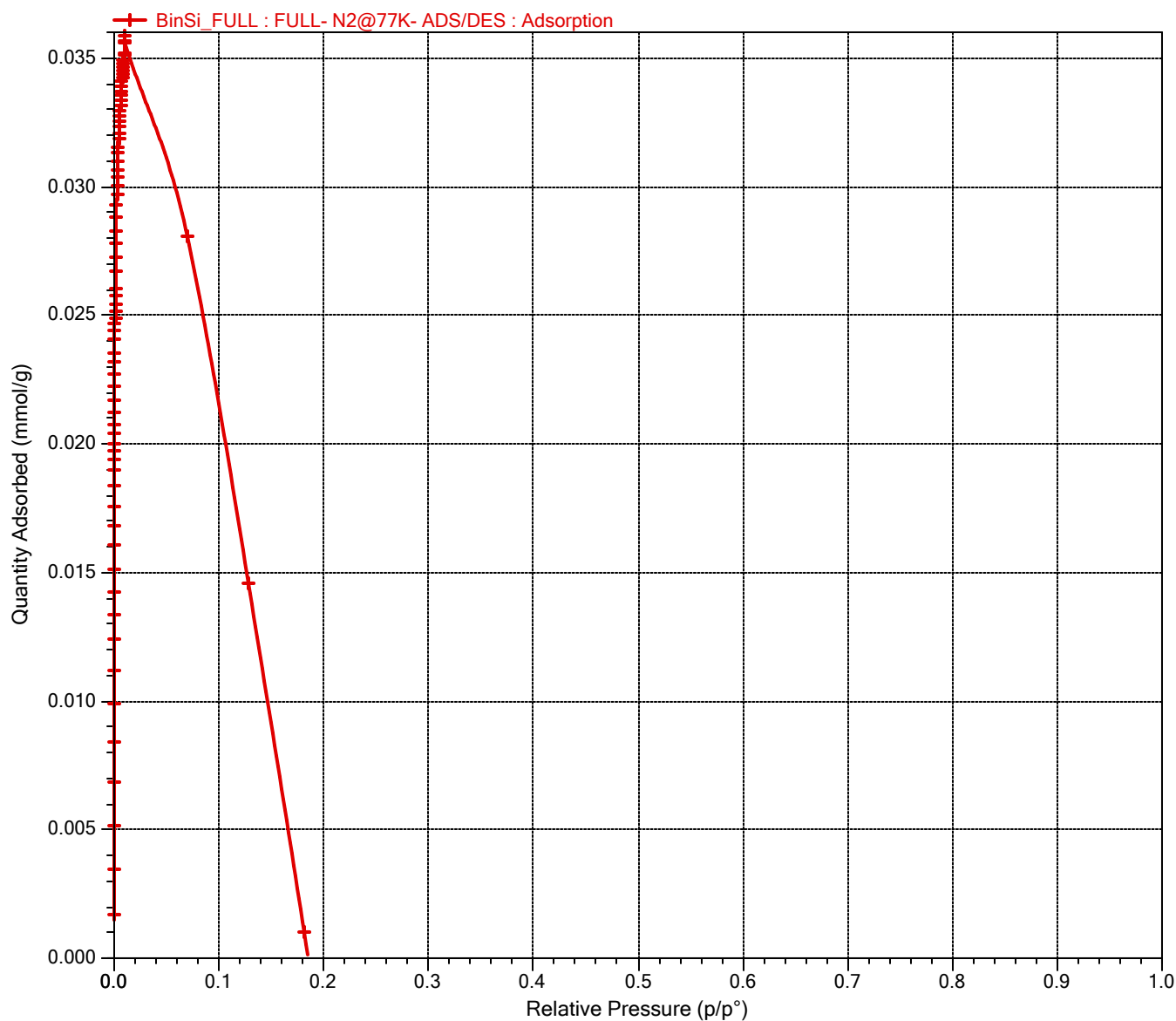
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Low pressure dose: 0,00157 mmol/g
Automatic degas: No

Analysis adsorptive: N2
Analysis bath temp.: 77,300 K
Thermal correction: Yes
Ambient free space: 28,0000 cm³ Entered
Equilibration interval: 30 s
Sample density: 1,000 g/cm³

Isotherm Linear Plot



Sample: FULL- N2@77K- ADS/DES

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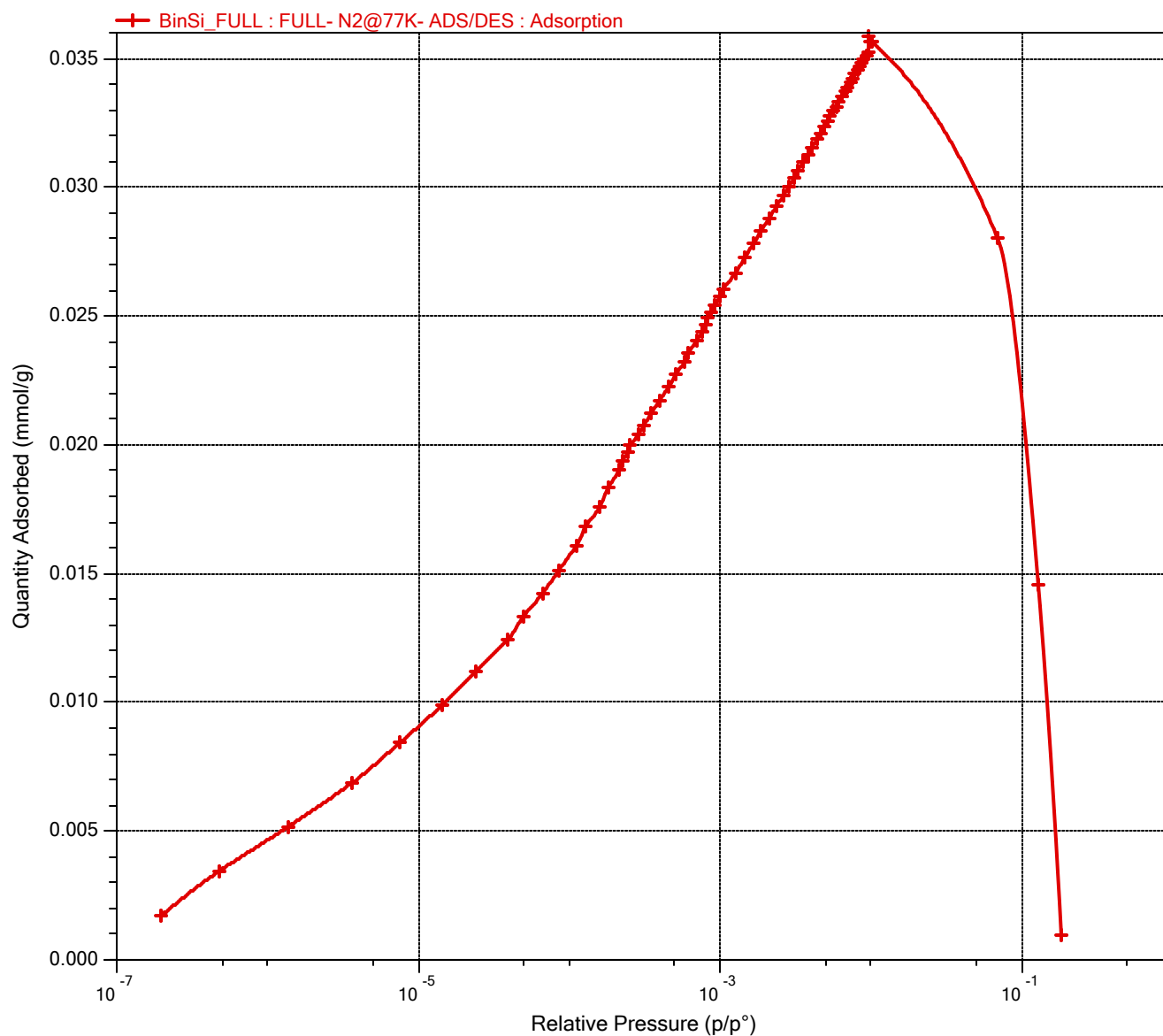
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Isotherm Log Plot



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Automatic degas:	No		

BET Report

BET surface area: 3,4291 ± 0,0207 m²/g
 Slope: 28,44327 ± 0,17196 g/mmol
 Y-intercept: 0,00750 ± 0,00076 g/mmol
 C: 3 795,712451
 Qm: 0,03515 mmol/g
 Correlation coefficient: 0,9987413
 Molecular cross-sectional area: 0,1620 nm²

Relative Pressure (p/p°)	Quantity Adsorbed (mmol/g)	1/[Q(p°/p - 1)]
0.000000197	0.00171	0.00011
0.000000480	0.00345	0.00014
0.000001365	0.00517	0.00026
0.000003582	0.00687	0.00052
0.000007580	0.00843	0.00090
0.000014360	0.00990	0.00145
0.000023788	0.01120	0.00212
0.000039461	0.01243	0.00318
0.000050205	0.01334	0.00376
0.000066199	0.01424	0.00465
0.000085811	0.01514	0.00567
0.000111924	0.01609	0.00696
0.000128319	0.01681	0.00764
0.000157233	0.01758	0.00895
0.000183353	0.01836	0.00999
0.000211837	0.01901	0.01115
0.000224817	0.01937	0.01161
0.000243664	0.01972	0.01236
0.000254700	0.01997	0.01276
0.000285721	0.02040	0.01401
0.000310692	0.02076	0.01497
0.000349920	0.02121	0.01650
0.000399275	0.02173	0.01838
0.000453955	0.02223	0.02043
0.000512359	0.02273	0.02256
0.000574092	0.02319	0.02477
0.000620055	0.02355	0.02635
0.000701123	0.02405	0.02918
0.000753336	0.02438	0.03092
0.000792410	0.02465	0.03217
0.000832224	0.02491	0.03344
0.000865376	0.02513	0.03446
0.000912996	0.02540	0.03598

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Relative Pressure (p/p°)	Quantity Adsorbed (mmol/g)	1/[Q(p°/p - 1)]
0.000992983	0.02575	0.03860
0.001054908	0.02604	0.04055
0.001260836	0.02669	0.04731
0.001460076	0.02727	0.05362
0.001662405	0.02780	0.05989
0.001862588	0.02828	0.06599
0.002123658	0.02881	0.07386
0.002380161	0.02928	0.08148
0.002607477	0.02967	0.08811
0.002831848	0.03002	0.09459
0.003061967	0.03036	0.10118
0.003285399	0.03066	0.10749
0.003522431	0.03097	0.11415
0.003806502	0.03129	0.12212
0.004041907	0.03155	0.12863
0.004372727	0.03187	0.13783
0.004620994	0.03210	0.14462
0.004869792	0.03233	0.15137
0.005110738	0.03254	0.15786
0.005354301	0.03275	0.16438
0.005603323	0.03295	0.17101
0.005857099	0.03314	0.17775
0.006112778	0.03333	0.18451
0.006452942	0.03355	0.19360
0.006707630	0.03372	0.20026
0.006968007	0.03389	0.20704
0.007332217	0.03409	0.21670
0.007598159	0.03424	0.22358
0.007851161	0.03439	0.23010
0.008128527	0.03454	0.23728
0.008389488	0.03467	0.24400
0.008648412	0.03481	0.25062
0.008922768	0.03494	0.25765
0.009257704	0.03509	0.26632
0.009518539	0.03521	0.27291
0.009528975	0.03588	0.26814
0.009836581	0.03567	0.27847
0.010134357	0.03562	0.28739

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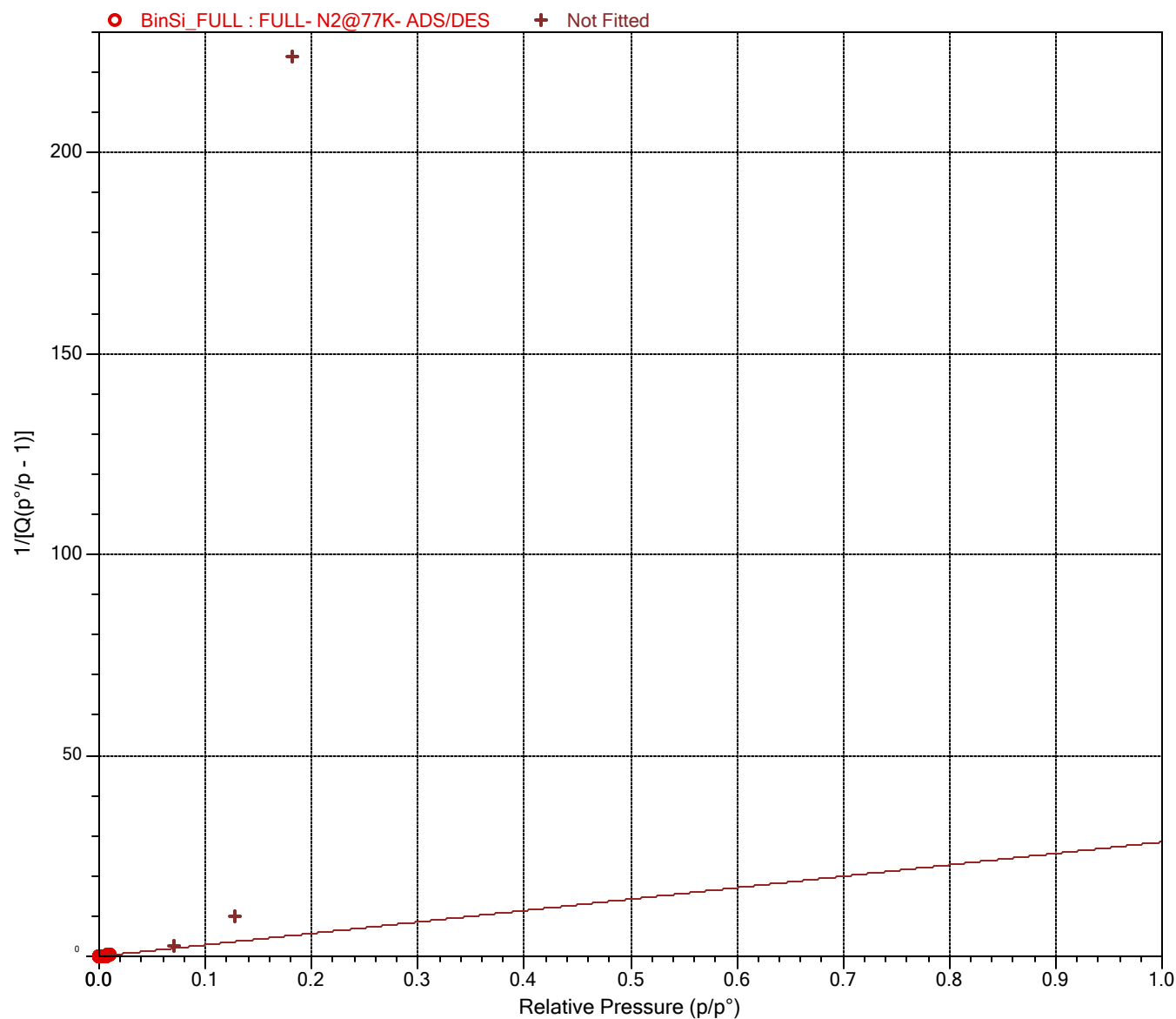
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Equilibration interval: 30 s
Sample density: 1,000 g/cm³

BET Surface Area Plot



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t-Plot Report

Micropore volume:	0,005555 cm ³ /g
Micropore area:	16,6386 m ² /g
External surface area:	-13,2096 m ² /g
Slope:	-0,038101 ± 0,000000 mmol/g·Å
Y-intercept:	0,160224 ± 0,000000 mmol/g
Correlation coefficient:	-1,000000
Surface area correction factor:	1,000
Density conversion factor:	0,0015468
Total surface area (BET):	3,4291 m ² /g
Thickness range:	3,5000 to 5,0000 Å
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 (Å)	Quantity Adsorbed (mmol/g)	Fitted
0.069984831	3.4357	0.02804	
0.128407286	3.8227	0.01458	
0.181442213	4.1793	0.00099	

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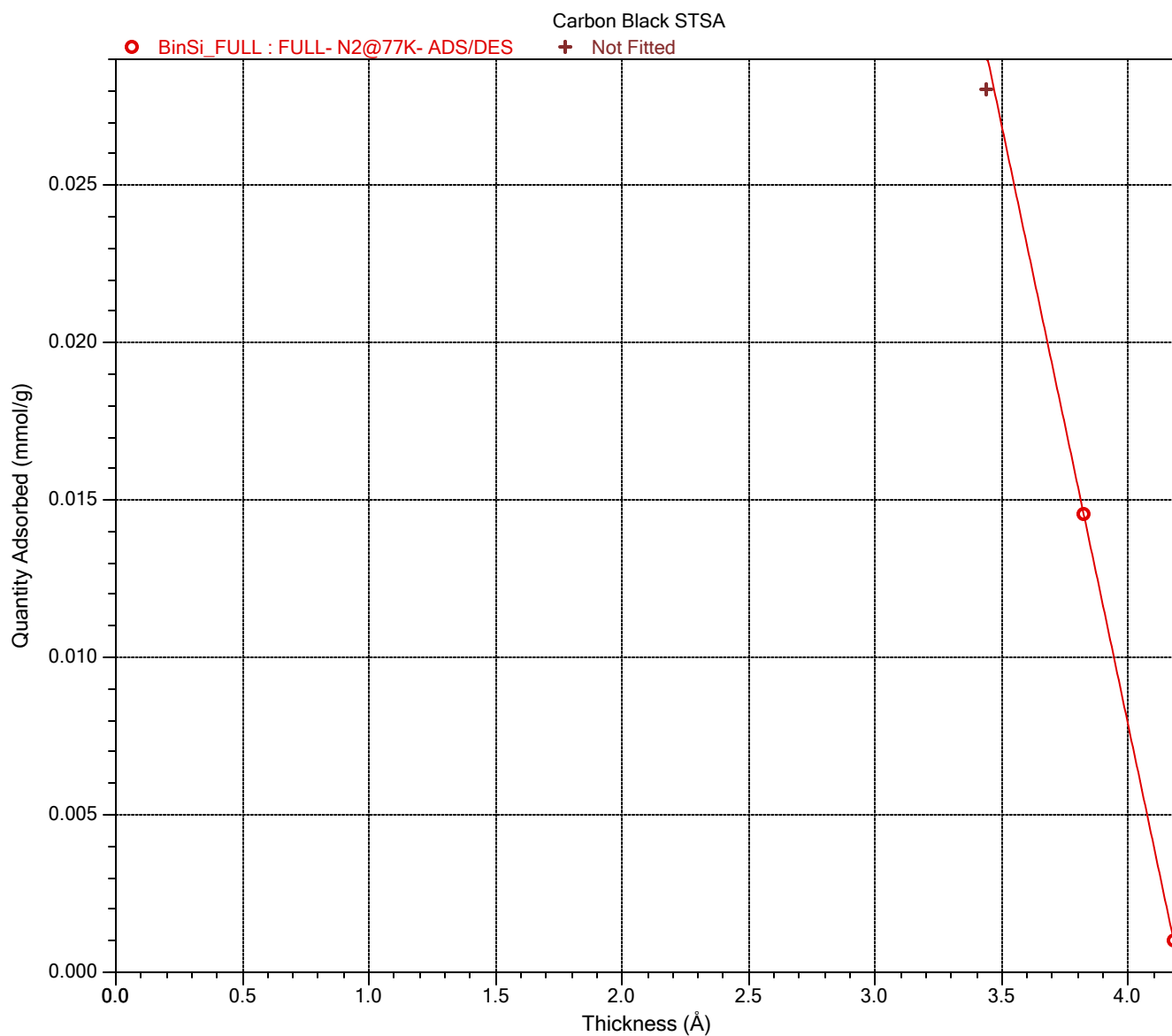
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t-Plot



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Horvath-Kawazoe Report

Cylinder Pore Geometry (Saito-Foley)

Maximum pore volume: 0,001244 cm³/g
 at Relative Pressure: 0,009528975
 Median pore width: 6,658 Å
 Relative pressure range: 1e-09 to 0.18

Diameter of adsorptive molecule: 3,000 Å
 Adsorptive density: 6.710e+14 molecules/cm²
 Adsorptive dispersion constant: 7.777e-59
 Diameter of sample atom: 3,400 Å
 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 (mmol/g)	Pore Width (Å)	Cumulative Pore Volume (cm ³ /g)	Smoothed Differential Pore Volume (cm ³ /g·Å)
0.00002	0.000000197	0.00171	5.658	0.0001	0.0003
0.00005	0.000000480	0.00345	5.908	0.0001	0.0002
0.00014	0.000001365	0.00517	6.233	0.0002	0.0002
0.00036	0.000003582	0.00687	6.573	0.0002	0.0002
0.00077	0.000007580	0.00843	6.870	0.0003	0.0002
0.00145	0.000014360	0.00990	7.149	0.0003	0.0002
0.00240	0.000023788	0.01120	7.391	0.0004	0.0002
0.00403	0.000039461	0.01243	7.653	0.0004	0.0002
0.00511	0.000050205	0.01334	7.786	0.0005	0.0002
0.00673	0.000066199	0.01424	7.948	0.0005	0.0002
0.00872	0.000085811	0.01514	8.105	0.0005	0.0002
0.01137	0.000111924	0.01609	8.276	0.0006	0.0002
0.01303	0.000128319	0.01681	8.368	0.0006	0.0002
0.01595	0.000157233	0.01758	8.508	0.0006	0.0002
0.01859	0.000183353	0.01836	8.617	0.0006	0.0002
0.02146	0.000211837	0.01901	8.724	0.0007	0.0002
0.02276	0.000224817	0.01937	8.769	0.0007	0.0002
0.02467	0.000243664	0.01972	8.831	0.0007	0.0002
0.02578	0.000254700	0.01997	8.866	0.0007	0.0002
0.02891	0.000285721	0.02040	8.958	0.0007	0.0002
0.03143	0.000310692	0.02076	9.025	0.0007	0.0002
0.03539	0.000349920	0.02121	9.124	0.0007	0.0002
0.04037	0.000399275	0.02173	9.236	0.0008	0.0002
0.04588	0.000453955	0.02223	9.349	0.0008	0.0002

Sample: FULL- N2@77K- ADS/DES

Operator:

Submitter:

File: D:\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Szczecinie\Doktorat\B...\BinSi_FULL.SMP

Started:	18.11.2022 14:39:39	Analysis adsorptive:	N2
Completed:	21.11.2022 18:42:54	Analysis bath temp.:	77,300 K
Report time:	22.11.2022 14:25:23	Thermal correction:	Yes
Sample mass:	1,0671 g	Ambient free space:	28,0000 cm ³ Entered
Analysis free space:	83,0000 cm ³	Equilibration interval:	30 s
Low pressure dose:	0,00157 mmol/g	Sample density:	1,000 g/cm ³
Automatic degas:	No		

Absolute Pressure (kPa)	Relative Pressure (p/p°)	Quantity Adsorbed (mmol/g)	Pore Width (Å)	Cumulative Pore Volume (cm ³ /g)	Smoothed Differential Pore Volume (cm ³ /g·Å)
0.05177	0.000512359	0.02273	9.458	0.0008	0.0002
0.05800	0.000574092	0.02319	9.565	0.0008	0.0002
0.06262	0.000620055	0.02355	9.638	0.0008	0.0002
0.07079	0.000701123	0.02405	9.759	0.0008	0.0002
0.07603	0.000753336	0.02438	9.830	0.0008	0.0002
0.07996	0.000792410	0.02465	9.882	0.0009	0.0002
0.08397	0.000832224	0.02491	9.933	0.0009	0.0002
0.08728	0.000865376	0.02513	9.973	0.0009	0.0002
0.09209	0.000912996	0.02540	10.030	0.0009	0.0002
0.10014	0.000992983	0.02575	10.121	0.0009	0.0001
0.10637	0.001054908	0.02604	10.187	0.0009	0.0001
0.12713	0.001260836	0.02669	10.390	0.0009	0.0001
0.14720	0.001460076	0.02727	10.563	0.0009	0.0001
0.16757	0.001662405	0.02780	10.724	0.0010	0.0001
0.18772	0.001862588	0.02828	10.869	0.0010	0.0001
0.21395	0.002123658	0.02881	11.044	0.0010	0.0001
0.23976	0.002380161	0.02928	11.201	0.0010	0.0001
0.26260	0.002607477	0.02967	11.331	0.0010	0.0001
0.28520	0.002831848	0.03002	11.452	0.0010	0.0001
0.30834	0.003061967	0.03036	11.569	0.0011	0.0001
0.33073	0.003285399	0.03066	11.677	0.0011	0.0001
0.35445	0.003522431	0.03097	11.787	0.0011	0.0001
0.38298	0.003806502	0.03129	11.911	0.0011	0.0001
0.40664	0.004041907	0.03155	12.011	0.0011	0.0001
0.43992	0.004372727	0.03187	12.144	0.0011	0.0001
0.46493	0.004620994	0.03210	12.237	0.0011	0.0001
0.48989	0.004869792	0.03233	12.331	0.0011	0.0001
0.51411	0.005110738	0.03254	12.419	0.0011	0.0001
0.53858	0.005354301	0.03275	12.504	0.0011	0.0001
0.56362	0.005603323	0.03295	12.588	0.0011	0.0001
0.58925	0.005857099	0.03314	12.672	0.0011	0.0001
0.61489	0.006112778	0.03333	12.752	0.0012	0.0001
0.64906	0.006452942	0.03355	12.860	0.0012	0.0001
0.67471	0.006707630	0.03372	12.937	0.0012	0.0001
0.70082	0.006968007	0.03389	13.013	0.0012	0.0001
0.73765	0.007332217	0.03409	13.118	0.0012	0.0001
0.76449	0.007598159	0.03424	13.193	0.0012	0.0001
0.79001	0.007851161	0.03439	13.259	0.0012	0.0001
0.81806	0.008128527	0.03454	13.336	0.0012	0.0001
0.84438	0.008389488	0.03467	13.403	0.0012	0.0001
0.87036	0.008648412	0.03481	13.470	0.0012	0.0001

Sample: FULL- N2@77K- ADS/DES

Operator:

Submitter:

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Szczecinie\Doktorat\B...\BinSi_FULL.SMP

Started:	18.11.2022 14:39:39	Analysis adsorptive:	N2
Completed:	21.11.2022 18:42:54	Analysis bath temp.:	77,300 K
Report time:	22.11.2022 14:25:23	Thermal correction:	Yes
Sample mass:	1,0671 g	Ambient free space:	28,0000 cm ³ Entered
Analysis free space:	83,0000 cm ³	Equilibration interval:	30 s
Low pressure dose:	0,00157 mmol/g	Sample density:	1,000 g/cm ³
Automatic degas:	No		

Absolute Pressure (kPa)	Relative Pressure (p/p°)	Quantity Adsorbed (mmol/g)	Pore Width (Å)	Cumulative Pore Volume (cm ³ /g)	Smoothed Differential Pore Volume (cm ³ /g·Å)
0.89796	0.008922768	0.03494	13.537	0.0012	0.0001
0.93167	0.009257704	0.03509	13.622	0.0012	0.0001
0.95798	0.009518539	0.03521	13.688	0.0012	0.0000
0.96900	0.009528975	0.03588	13.688	0.0012	0.0000
1.00097	0.009836581	0.03567	13.764	0.0012	0.0000
1.03121	0.010134357	0.03562	13.832	0.0012	0.0000
7.12207	0.069984831	0.02804	21.552	0.0010	-0.0001
13.06715	0.128407286	0.01458	26.867	0.0005	-0.0001

Sample: FULL- N2@77K- ADS/DES

Operator:

Submitter:

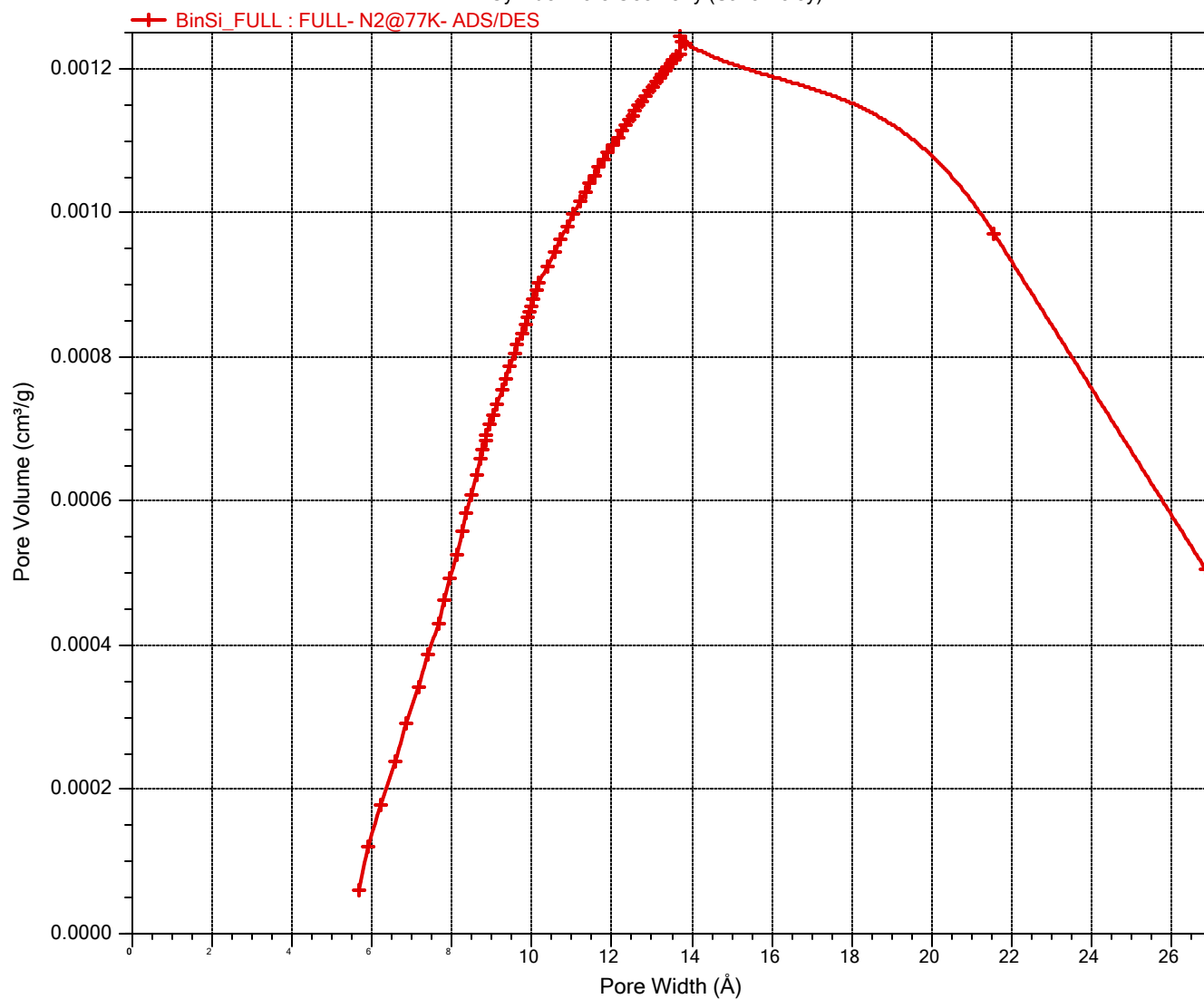
File: D:\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Szczecinie\Doktorat\B...\BinSi_FULL.SMP

Started: 18.11.2022 14:39:39
Completed: 21.11.2022 18:42:54
Report time: 22.11.2022 14:25:23
Sample mass: 1,0671 g
Analysis free space: 83,0000 cm³
Low pressure dose: 0,00157 mmol/g
Automatic degas: No

Analysis adsorptive: N2
Analysis bath temp.: 77,300 K
Thermal correction: Yes
Ambient free space: 28,0000 cm³ Entered
Equilibration interval: 30 s
Sample density: 1,000 g/cm³

Horvath-Kawazoe Cumulative Pore Volume Plot

Cylinder Pore Geometry (Saito-Foley)



Sample: FULL- N2@77K- ADS/DES

Operator:

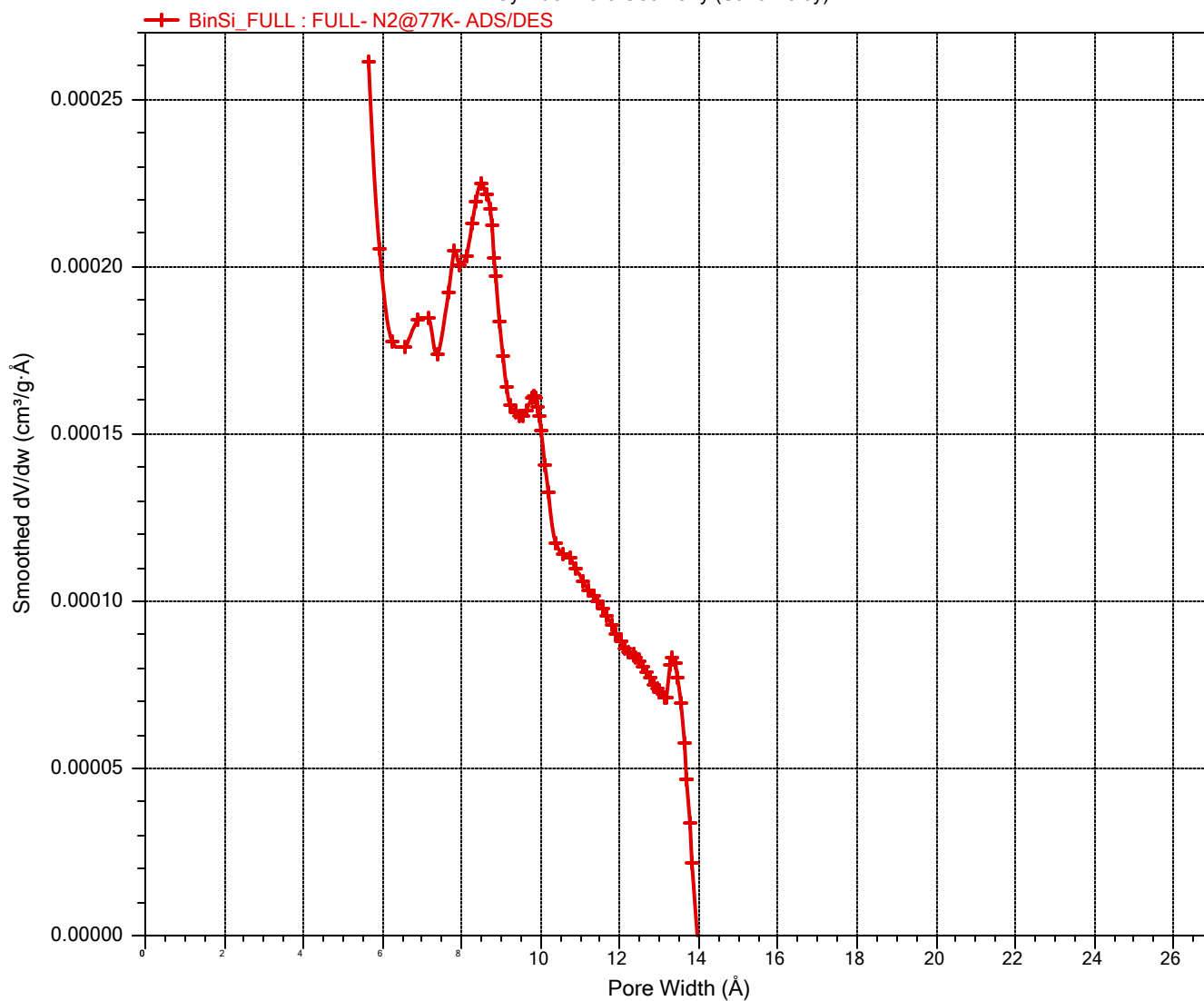
Submitter:

File: D:\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Szczecinie\Doktorat\B...\BinSi_FULL.SMP

Started:	18.11.2022 14:39:39	Analysis adsorptive:	N2
Completed:	21.11.2022 18:42:54	Analysis bath temp.:	77,300 K
Report time:	22.11.2022 14:25:23	Thermal correction:	Yes
Sample mass:	1,0671 g	Ambient free space:	28,0000 cm ³ Entered
Analysis free space:	83,0000 cm ³	Equilibration interval:	30 s
Low pressure dose:	0,00157 mmol/g	Sample density:	1,000 g/cm ³
Automatic degas:	No		

Horvath-Kawazoe Differential Pore Volume Plot

Cylinder Pore Geometry (Saito-Foley)



Sample: FULL- N2@77K- ADS/DES

Operator:

Submitter:

File: D:\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Szczecinie\Doktorat\B...\BinSi_FULL.SMP

Started:	18.11.2022 14:39:39	Analysis adsorptive:	N2
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Sample mass:	1,0671 g	Ambient free space:	28,0000 cm ³ Entered
Analysis free space:	83,0000 cm ³	Equilibration interval:	30 s
Low pressure dose:	0,00157 mmol/g	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: 0,006043 mmol/g

Volume in Pores	<	5,22 Å	0,00009 cm ³ /g
Total Volume in Pores	<=	30,24 Å	0,00091 cm ³ /g
Area in Pores	>	30,24 Å	0,000 m ² /g
Total Area in Pores	>=	5,22 Å	3,111 m ² /g

Pore Table				
Pore Width (Å)	Cumulative Pore Volume (cm ³ /g)	Incremental Pore Volume (cm ³ /g)	Cumulative Pore Area (m ² /g)	Incremental Pore Area (m ² /g)
5.22	0.00009	0.00000	0.000	0.000
5.58	0.00009	0.00000	0.000	0.000
5.93	0.00009	0.00000	0.000	0.000
6.29	0.00009	0.00000	0.000	0.000
6.65	0.00009	0.00000	0.000	0.000
7.01	0.00009	0.00000	0.000	0.000
7.36	0.00009	0.00000	0.000	0.000
7.72	0.00011	0.00001	0.054	0.054
8.08	0.00018	0.00008	0.435	0.381
8.44	0.00020	0.00002	0.512	0.077
8.79	0.00023	0.00003	0.641	0.129
9.15	0.00031	0.00008	1.001	0.360
9.51	0.00031	0.00000	1.001	0.000
9.87	0.00031	0.00000	1.001	0.000
10.22	0.00031	0.00000	1.001	0.000
10.58	0.00031	0.00000	1.001	0.000
10.94	0.00031	0.00000	1.001	0.000
11.30	0.00091	0.00060	3.111	2.110
11.65	0.00091	0.00000	3.111	0.000
12.01	0.00091	0.00000	3.111	0.000
12.37	0.00091	0.00000	3.111	0.000
12.73	0.00091	0.00000	3.111	0.000
13.08	0.00091	0.00000	3.111	0.000
13.44	0.00091	0.00000	3.111	0.000
13.80	0.00091	0.00000	3.111	0.000
14.16	0.00091	0.00000	3.111	0.000
14.51	0.00091	0.00000	3.111	0.000
14.87	0.00091	0.00000	3.111	0.000
15.23	0.00091	0.00000	3.111	0.000
15.59	0.00091	0.00000	3.111	0.000
15.94	0.00091	0.00000	3.111	0.000

Sample: FULL- N2@77K- ADS/DES

Operator:

Submitter:

File: D:\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Szczecinie\Doktorat\B...\BinSi_FULL.SMP

Started:	18.11.2022 14:39:39	Analysis adsorptive:	N2
Completed:	21.11.2022 18:42:54	Analysis bath temp.:	77,300 K
Report time:	22.11.2022 14:25:23	Thermal correction:	Yes
Sample mass:	1,0671 g	Ambient free space:	28,0000 cm ³ Entered
Analysis free space:	83,0000 cm ³	Equilibration interval:	30 s
Low pressure dose:	0,00157 mmol/g	Sample density:	1,000 g/cm ³
Automatic degas:	No		

Pore Width (Å)	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)
16.30	0.00091	0.00000	3.111	0.000
16.66	0.00091	0.00000	3.111	0.000
17.02	0.00091	0.00000	3.111	0.000
17.37	0.00091	0.00000	3.111	0.000
17.73	0.00091	0.00000	3.111	0.000
18.09	0.00091	0.00000	3.111	0.000
18.44	0.00091	0.00000	3.111	0.000
18.80	0.00091	0.00000	3.111	0.000
19.16	0.00091	0.00000	3.111	0.000
19.52	0.00091	0.00000	3.111	0.000
19.87	0.00091	0.00000	3.111	0.000
20.23	0.00091	0.00000	3.111	0.000
20.59	0.00091	0.00000	3.111	0.000
20.95	0.00091	0.00000	3.111	0.000
21.30	0.00091	0.00000	3.111	0.000
21.66	0.00091	0.00000	3.111	0.000
22.38	0.00091	0.00000	3.111	0.000
23.09	0.00091	0.00000	3.111	0.000
23.81	0.00091	0.00000	3.111	0.000
24.52	0.00091	0.00000	3.111	0.000
25.24	0.00091	0.00000	3.111	0.000
25.95	0.00091	0.00000	3.111	0.000
26.67	0.00091	0.00000	3.111	0.000
27.38	0.00091	0.00000	3.111	0.000
28.10	0.00091	0.00000	3.111	0.000
28.81	0.00091	0.00000	3.111	0.000
29.53	0.00091	0.00000	3.111	0.000
30.24	0.00091	0.00000	3.111	0.000

Sample: FULL- N2@77K- ADS/DES

Operator:

Submitter:

File: D:\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Szczecinie\Doktorat\B...\BinSi_FULL.SMP

Started:	18.11.2022 14:39:39	Analysis adsorptive:	N2
Completed:	21.11.2022 18:42:54	Analysis bath temp.:	77,300 K
Report time:	22.11.2022 14:25:23	Thermal correction:	Yes
Sample mass:	1,0671 g	Ambient free space:	28,0000 cm ³ Entered
Analysis free space:	83,0000 cm ³	Equilibration interval:	30 s
Low pressure dose:	0,00157 mmol/g	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: 0,006043 mmol/g

Isotherm Table				
Relative Pressure (p/p°)	Experimental Quantity Adsorbed (mmol/g)	Fitted Quantity Adsorbed (mmol/g)	Absolute Residual (mmol/g)	Relative Residual
0.000000200	0.00173	0.00327	-0.00154	-0.886563
0.000000251	0.00215	0.00336	-0.00121	-0.562250
0.000000316	0.00262	0.00344	-0.00081	-0.309766
0.000000398	0.00312	0.00352	-0.00040	-0.129568
0.000000501	0.00351	0.00362	-0.00011	-0.031876
0.000000631	0.00386	0.00378	0.00009	0.022608
0.000000794	0.00426	0.00396	0.00030	0.071135
0.000001000	0.00468	0.00427	0.00041	0.086875
0.000001259	0.00506	0.00502	0.00005	0.009155
0.000001585	0.00536	0.00532	0.00004	0.007863
0.000001995	0.00573	0.00575	-0.00003	-0.004437
0.000002512	0.00617	0.00610	0.00006	0.010290
0.000003162	0.00664	0.00675	-0.00010	-0.015461
0.000003981	0.00704	0.00722	-0.00018	-0.025158
0.000005012	0.00750	0.00823	-0.00073	-0.096778
0.000006310	0.00803	0.00895	-0.00091	-0.113790
0.000007943	0.00852	0.00943	-0.00091	-0.106980
0.000010000	0.00902	0.00987	-0.00085	-0.094262
0.000012589	0.00958	0.01028	-0.00070	-0.073322
0.000015849	0.01014	0.01070	-0.00056	-0.055565
0.000019953	0.01076	0.01111	-0.00035	-0.032548
0.000025119	0.01131	0.01153	-0.00022	-0.019633
0.000031623	0.01181	0.01195	-0.00014	-0.011655
0.000039811	0.01245	0.01238	0.00008	0.006220
0.000050119	0.01333	0.01281	0.00052	0.038946
0.000063096	0.01408	0.01326	0.00083	0.058719
0.000079433	0.01486	0.01429	0.00057	0.038435
0.000100000	0.01565	0.01610	-0.00045	-0.028683
0.000125892	0.01672	0.01706	-0.00034	-0.020373
0.000158490	0.01762	0.01779	-0.00017	-0.009680
0.000199526	0.01873	0.01842	0.00031	0.016682
0.000251188	0.01990	0.01905	0.00085	0.042685
0.000316228	0.02083	0.01984	0.00099	0.047686
0.000398107	0.02172	0.02177	-0.00005	-0.002399
0.000501187	0.02264	0.02302	-0.00039	-0.017045

Sample: FULL- N2@77K- ADS/DES

Operator:

Submitter:

File: D:\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
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Started:	18.11.2022 14:39:39	Analysis adsorptive:	N2
Completed:	21.11.2022 18:42:54	Analysis bath temp.:	77,300 K
Report time:	22.11.2022 14:25:23	Thermal correction:	Yes
Sample mass:	1,0671 g	Ambient free space:	28,0000 cm ³ Entered
Analysis free space:	83,0000 cm ³	Equilibration interval:	30 s
Low pressure dose:	0,00157 mmol/g	Sample density:	1,000 g/cm ³
Automatic degas:	No		

Isotherm Table

Relative Pressure (p/p°)	Experimental Quantity Adsorbed (mmol/g)	Fitted Quantity Adsorbed (mmol/g)	Absolute Residual (mmol/g)	Relative Residual
0.000630958	0.02362	0.02367	-0.00004	-0.001881
0.000794328	0.02466	0.02414	0.00052	0.021286
0.001000000	0.02579	0.02452	0.00126	0.049039
0.001258925	0.02668	0.02485	0.00183	0.068669
0.001584895	0.02760	0.02514	0.00247	0.089424
0.001995263	0.02856	0.02540	0.00316	0.110767
0.002511882	0.02951	0.02563	0.00388	0.131409
0.003162276	0.03050	0.02585	0.00465	0.152356
0.003981066	0.03149	0.02605	0.00544	0.172627
0.005011868	0.03245	0.02624	0.00621	0.191437
0.006309579	0.03346	0.02642	0.00704	0.210347
0.007943276	0.03444	0.02659	0.00785	0.227991
0.010000000	0.03565	0.02675	0.00890	0.249638
0.012355640	0.03533	0.02689	0.00845	0.239050
0.015186320	0.03498	0.02702	0.00796	0.227608
0.018485530	0.03459	0.02714	0.00745	0.215374
0.022294740	0.03415	0.02725	0.00691	0.202230
0.026653420	0.03368	0.02735	0.00633	0.187991
0.031598160	0.03316	0.02744	0.00571	0.172345
0.037162240	0.03257	0.02753	0.00504	0.154735
0.043374470	0.03189	0.02761	0.00428	0.134192
0.050259210	0.03107	0.02768	0.00339	0.109069
0.057835260	0.03006	0.02775	0.00230	0.076601
0.066115920	0.02874	0.02782	0.00092	0.032095
0.075109080	0.02703	0.02788	-0.00084	-0.031250
0.084815920	0.02502	0.02794	-0.00292	-0.116643
0.095232370	0.02270	0.02799	-0.00529	-0.232983
0.106348200	0.02008	0.02804	-0.00796	-0.396191
0.118147500	0.01718	0.02809	-0.01091	-0.635101
0.130609100	0.01401	0.02813	-0.01412	-1.007747
0.143706600	0.01066	0.02817	-0.01752	-1.643719
0.157410500	0.00715	0.02821	-0.02107	-2.947742
0.171685500	0.00349	0.02825	-0.02476	-7.094429

Sample: FULL- N2@77K- ADS/DES

Operator:

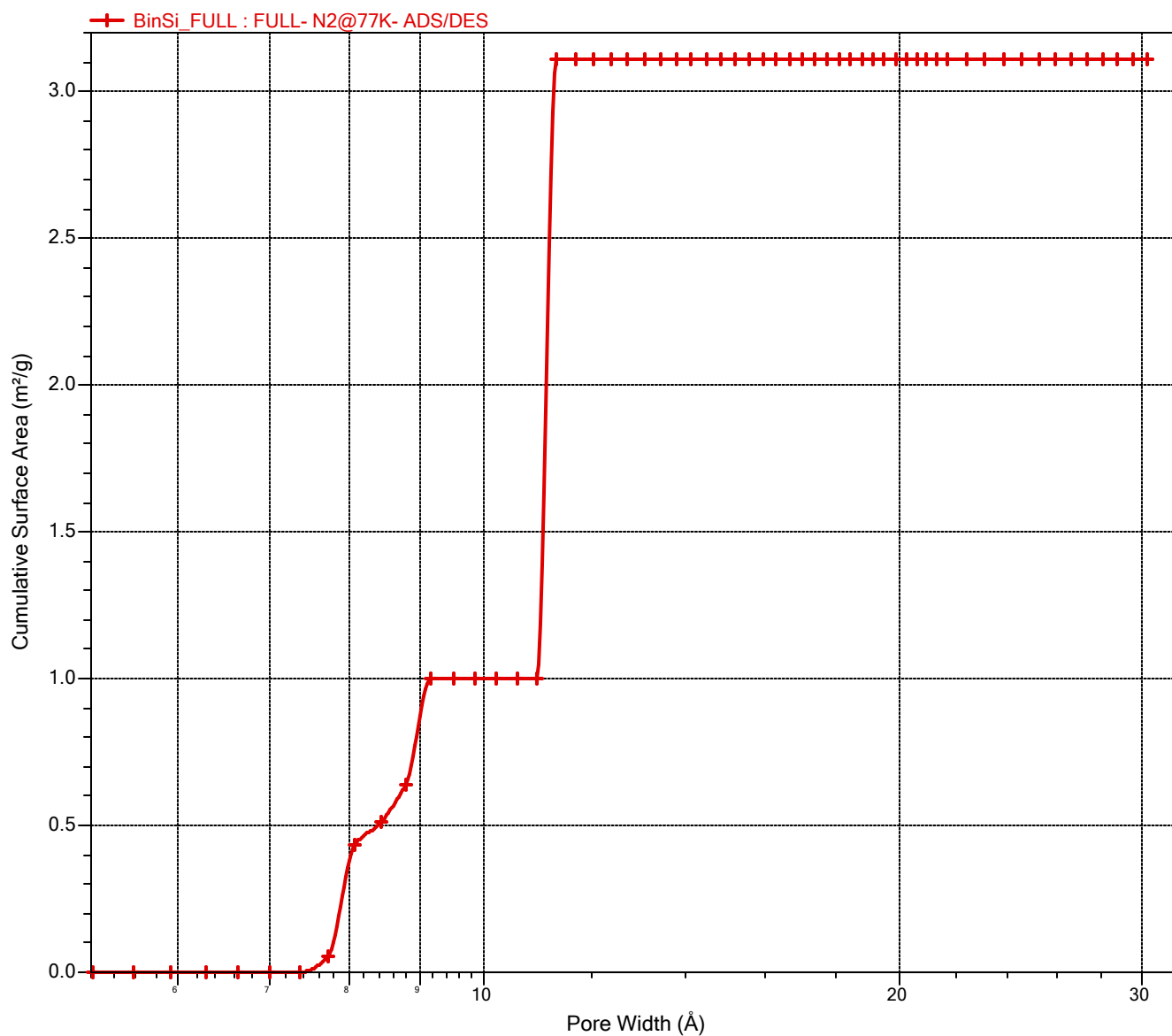
Submitter:

File: D:\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Szczecinie\Doktorat\B...\BinSi_FULL.SMP

Started: 18.11.2022 14:39:39
Completed: 21.11.2022 18:42:54
Report time: 22.11.2022 14:25:23
Sample mass: 1,0671 g
Analysis free space: 83,0000 cm³
Low pressure dose: 0,00157 mmol/g
Automatic degas: No

Analysis adsorptive: N2
Analysis bath temp.: 77,300 K
Thermal correction: Yes
Ambient free space: 28,0000 cm³ Entered
Equilibration interval: 30 s
Sample density: 1,000 g/cm³

Cumulative Surface Area vs. Pore Width



Sample: FULL- N2@77K- ADS/DES

Operator:

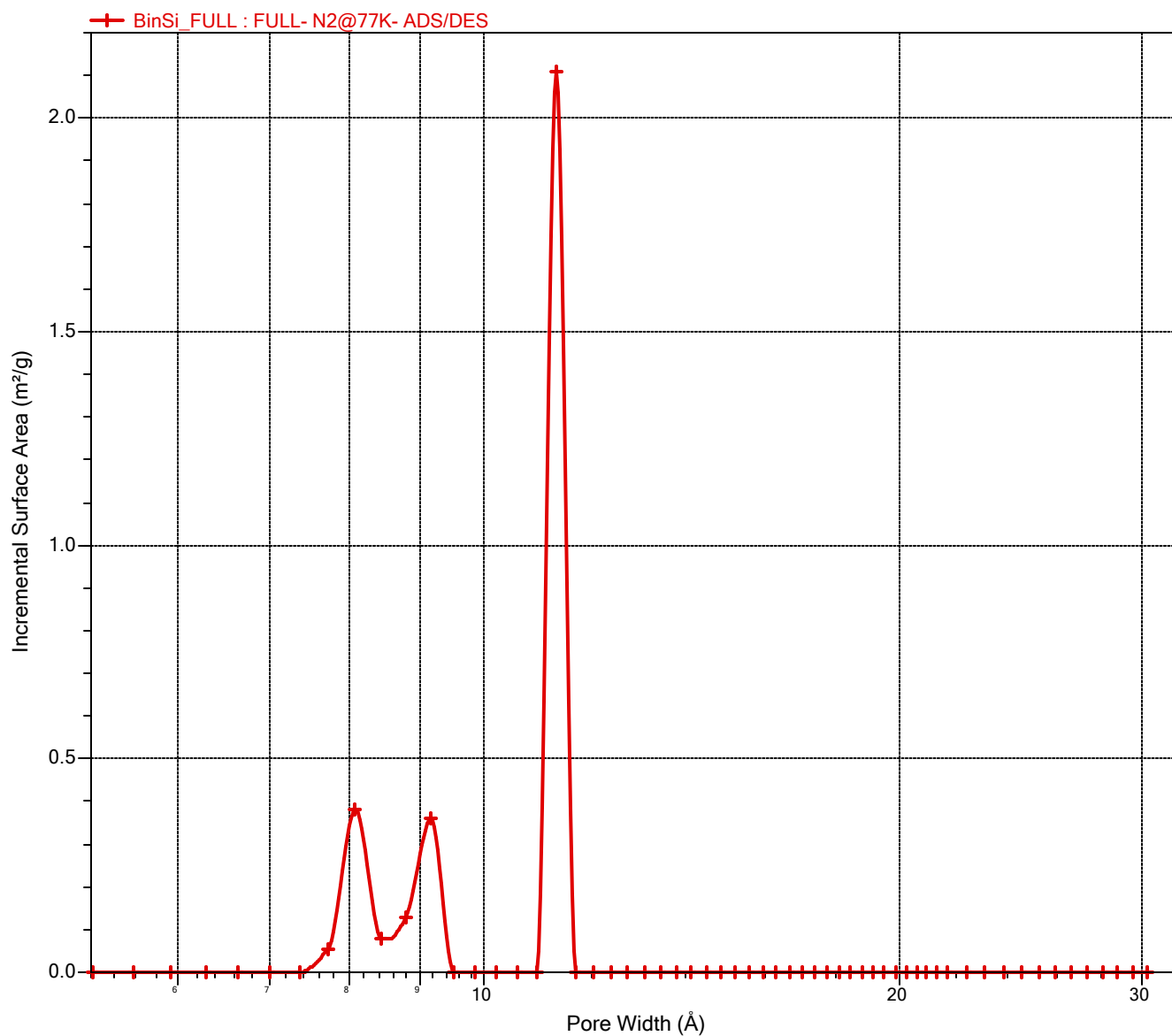
Submitter:

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Analysis bath temp.: 77,300 K
Thermal correction: Yes
Ambient free space: 28,0000 cm³ Entered
Equilibration interval: 30 s
Sample density: 1,000 g/cm³

Incremental Surface Area vs. Pore Width



Sample: FULL- N2@77K- ADS/DES

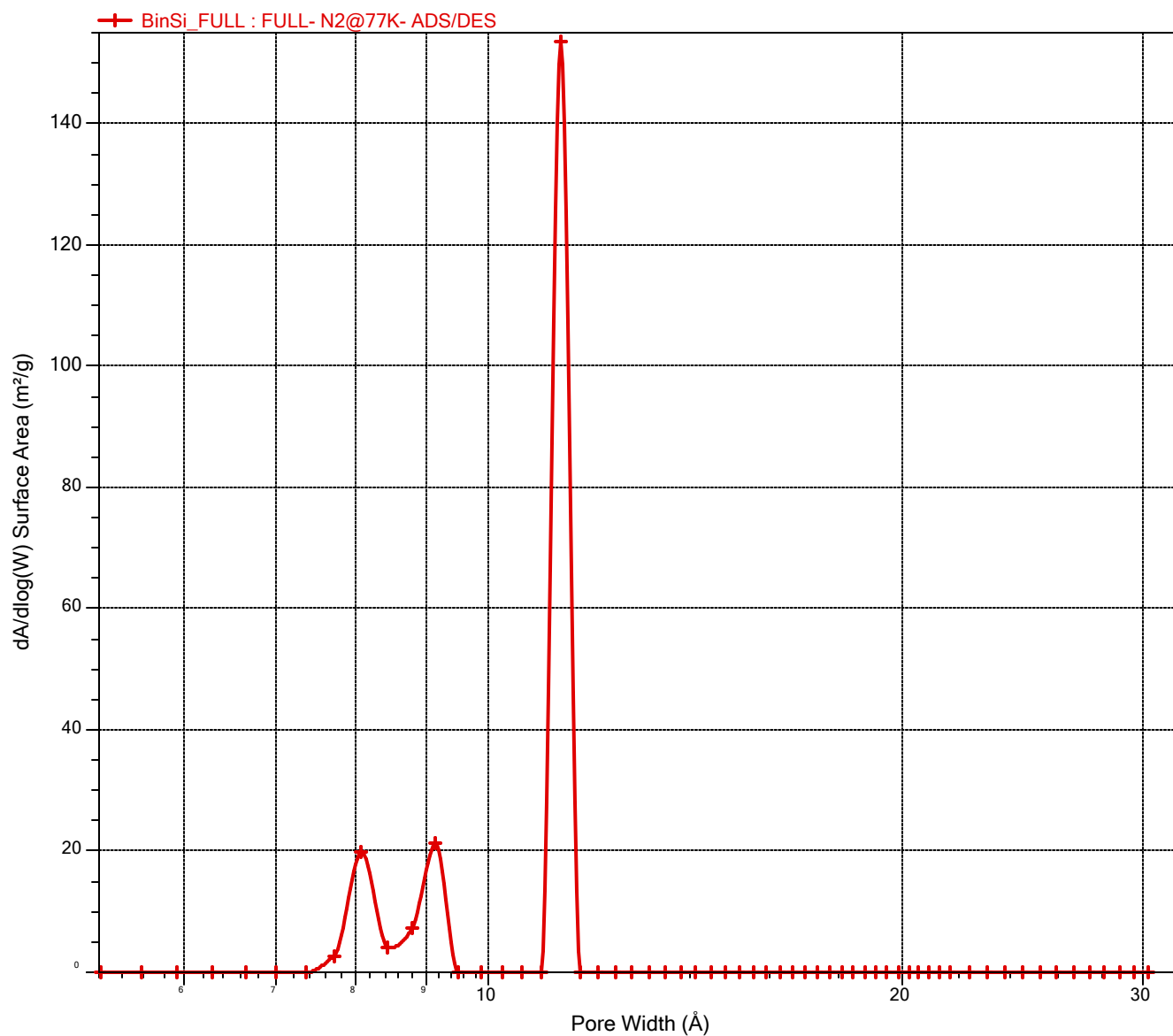
Operator:

Submitter:

File: D:\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Szczecinie\Doktorat\B...\BinSi_FULL.SMP

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Completed:	21.11.2022 18:42:54	Analysis bath temp.:	77,300 K
Report time:	22.11.2022 14:25:23	Thermal correction:	Yes
Sample mass:	1,0671 g	Ambient free space:	28,0000 cm ³ Entered
Analysis free space:	83,0000 cm ³	Equilibration interval:	30 s
Low pressure dose:	0,00157 mmol/g	Sample density:	1,000 g/cm ³
Automatic degas:	No		

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



Sample: FULL- N2@77K- ADS/DES

Operator:

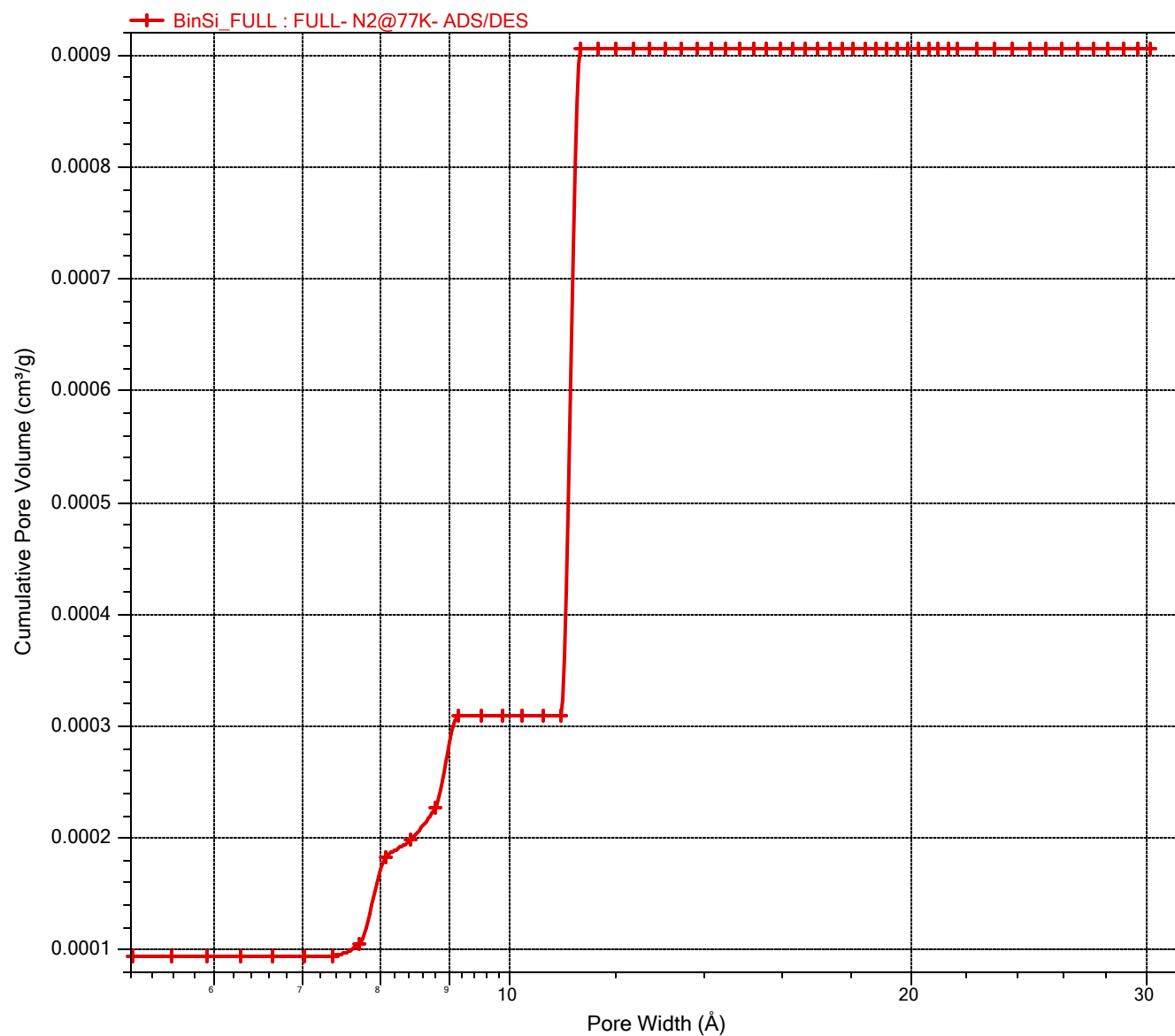
Submitter:

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Automatic degas: No

Analysis adsorptive: N2
Analysis bath temp.: 77,300 K
Thermal correction: Yes
Ambient free space: 28,0000 cm³ Entered
Equilibration interval: 30 s
Sample density: 1,000 g/cm³

Cumulative Pore Volume vs. Pore Width



Sample: FULL- N2@77K- ADS/DES

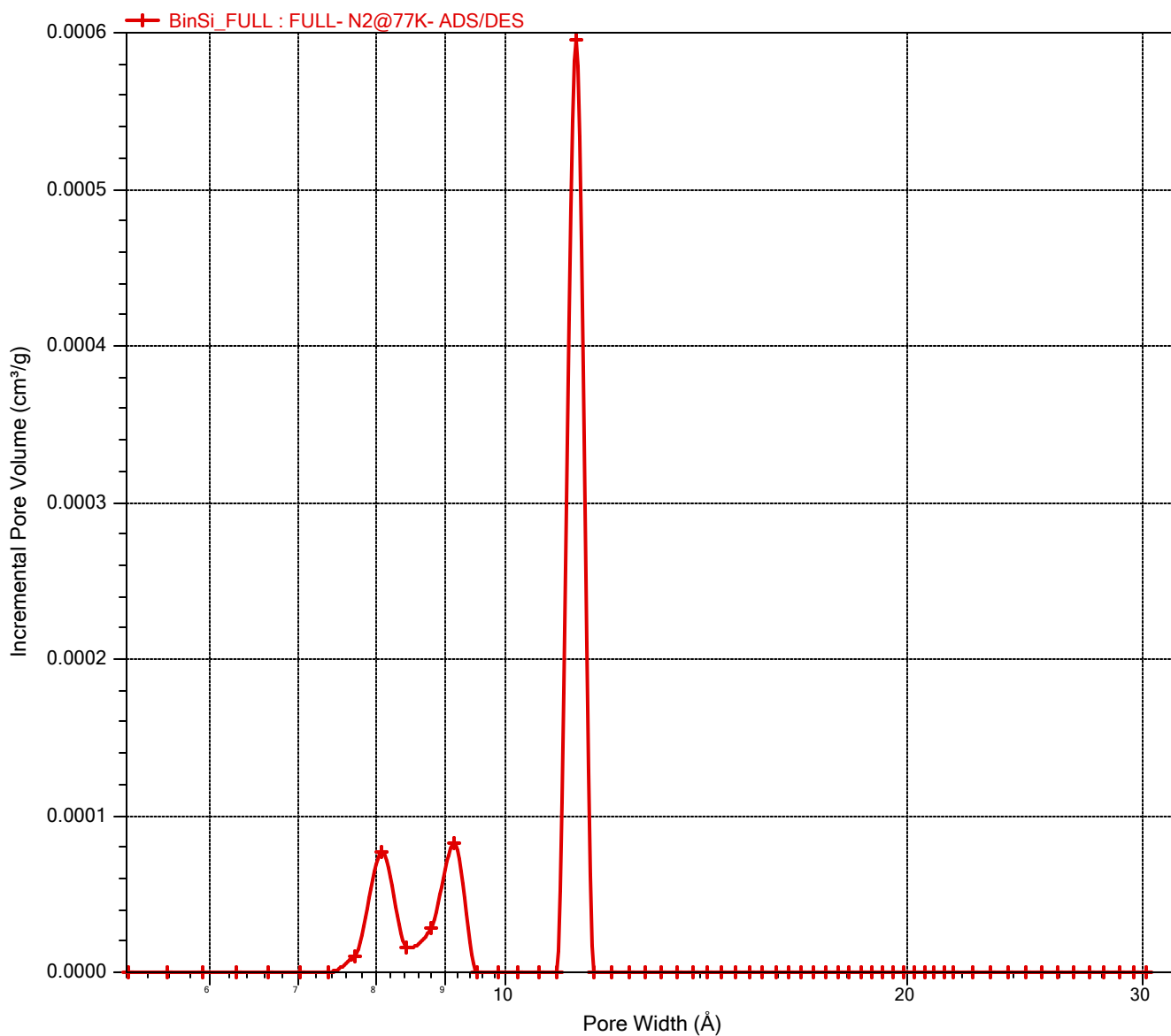
Operator:

Submitter:

File: D:\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Szczecinie\Doktorat\B...\BinSi_FULL.SMP

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Analysis free space:	83,0000 cm ³	Equilibration interval:	30 s
Low pressure dose:	0,00157 mmol/g	Sample density:	1,000 g/cm ³
Automatic degas:	No		

Incremental Pore Volume vs. Pore Width



Sample: FULL- N2@77K- ADS/DES

Operator:

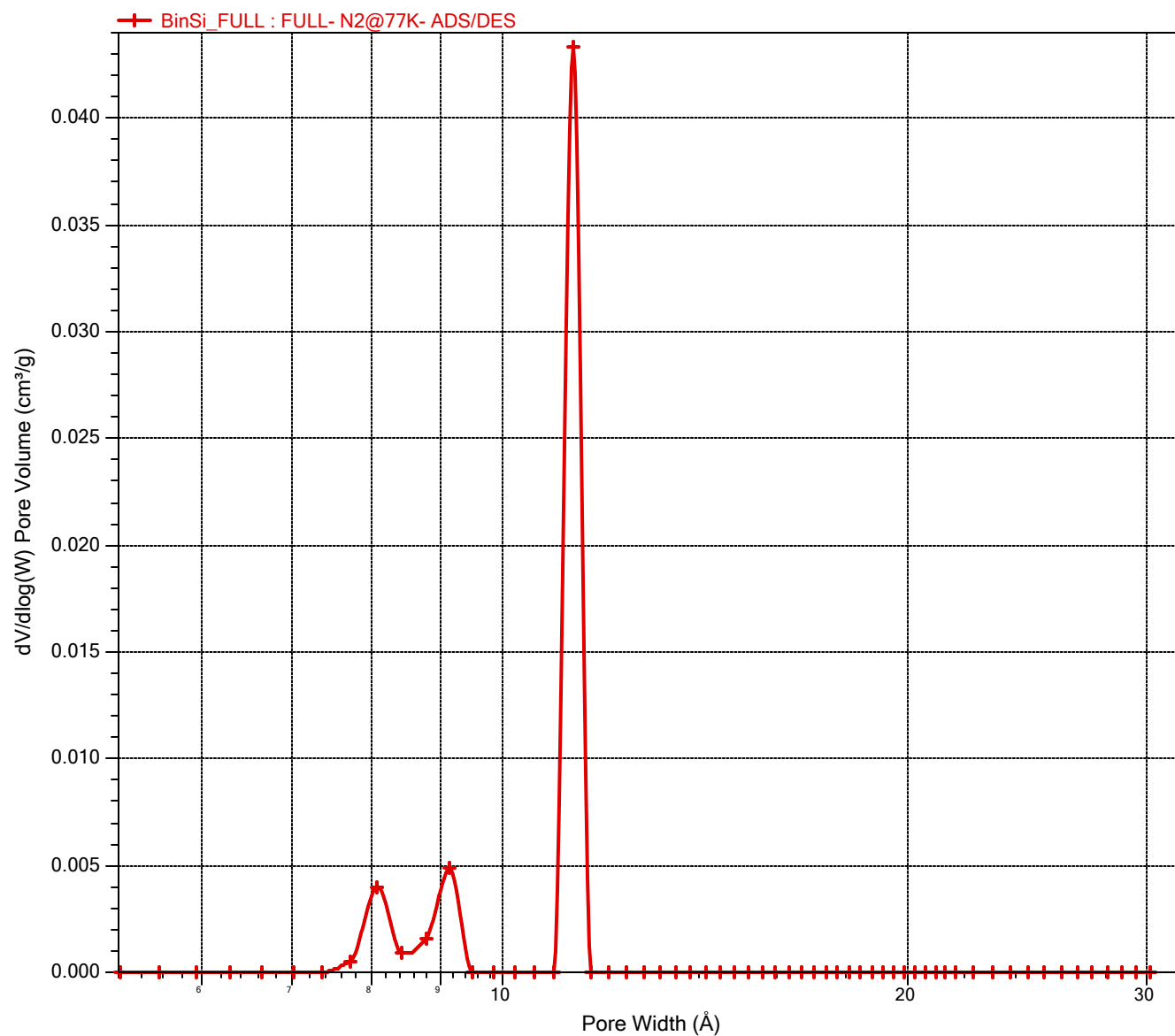
Submitter:

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Analysis adsorptive: N2
Analysis bath temp.: 77,300 K
Thermal correction: Yes
Ambient free space: 28,0000 cm³ Entered
Equilibration interval: 30 s
Sample density: 1,000 g/cm³

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



Sample: FULL- N2@77K- ADS/DES

Operator:

Submitter:

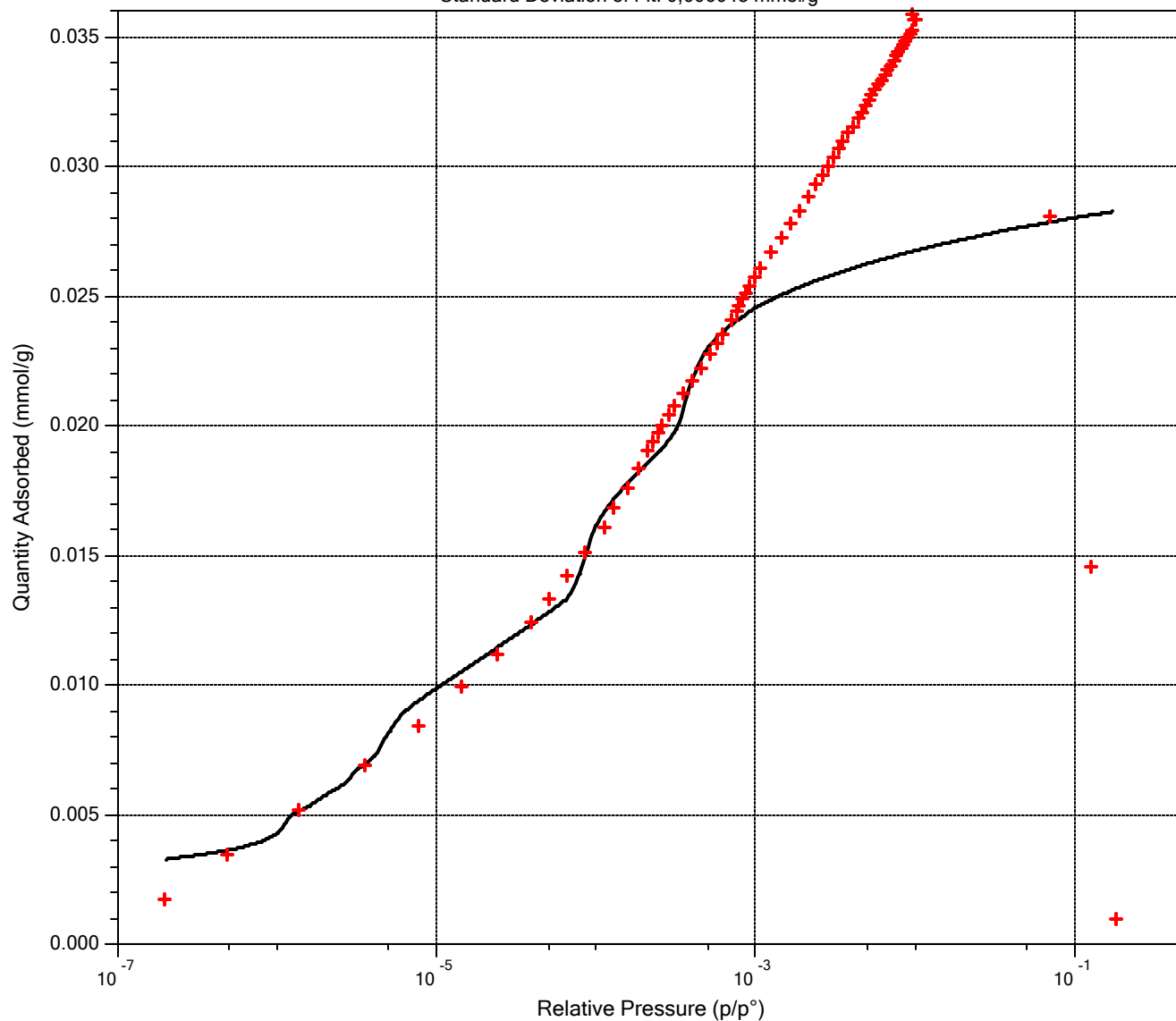
File: D:\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
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Ambient free space: 28,0000 cm³ Entered
Equilibration interval: 30 s
Sample density: 1,000 g/cm³

Goodness of Fit

Standard Deviation of Fit: 0,006043 mmol/g



Sample: FULL- N2@77K- ADS/DES

Operator:

Submitter:

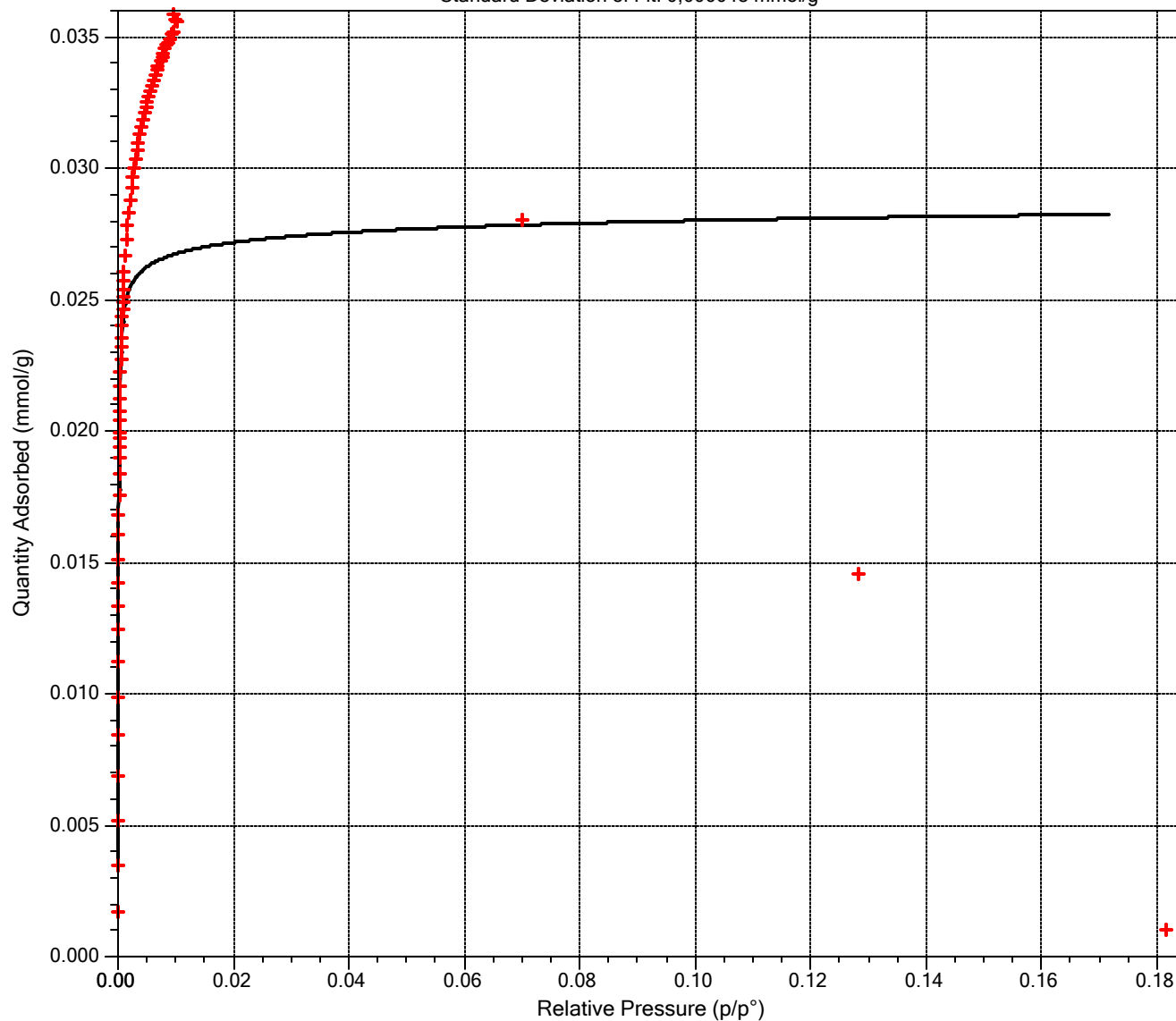
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Thermal correction: Yes
Ambient free space: 28,0000 cm³ Entered
Equilibration interval: 30 s
Sample density: 1,000 g/cm³

Goodness of Fit

Standard Deviation of Fit: 0,006043 mmol/g



Sample: FULL- N2@77K- ADS/DES

Operator:

Submitter:

File: D:\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Szczecinie\Doktorat\B...\BinSi_FULL.SMP

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Low pressure dose:	0,00157 mmol/g	Sample density:	1,000 g/cm ³
Automatic degas:	No		

Sample Information

Method: FULL- N2@77K- ADS/DES
 Sample: FULL- N2@77K- ADS/DES
 Operator:
 Submitter:
 Mass type: Entered
 Sample mass: 1,0671 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: FULL- N2@77K- ADS/DES

Operator:

Submitter:

File: D:\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Szczecinie\Doktorat\B...\BinSi_FULL.SMP

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Analysis free space:	83,0000 cm ³	Equilibration interval:	30 s
Low pressure dose:	0,00157 mmol/g	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: 28,0000 cm³
 Analysis free space: 83,0000 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: 0,00157 mmol/g
 Minimum equilibration delay: 0,50 h
 Maximum equilibration delay: 2,00 h
 Maximum number of decants: 6

Sample: FULL- N2@77K- ADS/DES

Operator:

Submitter:

File: D:\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Szczecinie\Doktorat\B...\BinSi_FULL.SMP

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Analysis free space:	83,0000 cm ³	Equilibration interval:	30 s
Low pressure dose:	0,00157 mmol/g	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:	3,8600 Å
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: FULL- N2@77K- ADS/DES

Operator:

Submitter:

File: D:\OneDrive - Zachodniopomorski Uniwersytet Technologiczny w
Szczecinie\Doktorat\B...\BinSi_FULL.SMP

Started:	18.11.2022 14:39:39	Analysis adsorptive:	N2
Completed:	21.11.2022 18:42:54	Analysis bath temp.:	77,300 K
Report time:	22.11.2022 14:25:23	Thermal correction:	Yes
Sample mass:	1,0671 g	Ambient free space:	28,0000 cm ³ Entered
Analysis free space:	83,0000 cm ³	Equilibration interval:	30 s
Low pressure dose:	0,00157 mmol/g	Sample density:	1,000 g/cm ³
Automatic degas:	No		

Sample Log

Date	Time	Log Message
18.11.2022	14:39:39	Starting a sample analysis for C:\ASAP 2460\data\2022\Kędzierski\Si...\BinSi_FULL.SMP on port 3.
18.11.2022	19:45:20	Low pressure data collection started
21.11.2022	11:17:39	Standard data collection started.
21.11.2022	18:19:28	Termination started.
21.11.2022	18:42:54	Finished a sample analysis for C:\ASAP 2460\data\2022\Kędzierski\Si...\BinSi_FULL.SMP on port 3.