

LAMPIRAN I

HASIL ANALISA DATA NOVA 1000

1. 1. Luas permukaan arang sebelum diaktivasi (ATA)

P/P ₀	Multi BET (Adsorption)	BET Transform (1/(W[P ₀ /P - 1]))
0.019402		175.056253
0.045040		294.564839
0.070867		378.623504
0.095240		436.455204
0.146266		532.529974
Slope	=	2738.962241
Intercept	=	157.029876
Correlation Coefficient	=	0.978492
BET C	=	18.442300
Surface Area	=	2.784518 sq m
Specific Surface Area	=	1.202530 sq m/g

1. 2. Distribusi ukuran pori ATA

Pore Radius (Ang)	DVR (Adsorption)	
	Pore Area (sq m/Å/g e-03)	Pore Volume (cc/Å/g e-03)
391.975138	0.043253	0.000848
148.146505	0.355588	0.002634
92.764448	1.101661	0.005110
66.362499	2.673599	0.008871
52.381882	5.187941	0.013588
44.148760	8.262188	0.018238
36.992949	13.778991	0.025486
32.203435	20.197616	0.032522
28.727579	29.591021	0.042504
25.525146	39.285811	0.050139
23.010704	54.645345	0.062871
20.869634	71.279552	0.074379
19.016148	93.944915	0.089324
17.389405	113.339024	0.098545
15.942794	148.316400	0.118229
14.641489	180.418729	0.132080
13.468691	271.389369	0.182763
12.406287	234.185820	0.145269
11.386510	268.998426	0.153148

Total Pore Volume is 2.537866 e-03 cc/g for all pores less than 573.374044 Angstrom.

Average pore radius is 42.208784 Angstrom.

1. 3. Luas permukaan ADA1

Multi BET (Adsorption)		BET Transform ($1/(W[P_0/P - 1])$)
P/P ₀		
0.066947		20.292667
0.091743		26.442518
0.149883		41.421063
Slope	=	255.269496
Intercept	=	3.128981
Correlation Coefficient	=	0.999963
BET C	=	82.582313
Surface Area	=	4.068396 sq m
Specific Surface Area	=	13.477311 sq m/g

1. 4. Distribusi ukuran pori ADA1

Pore Radius (Ang)	DVR (Adsorption)	
	Pore Area (sq m/Å/g e-03)	Pore Volume (cc/Å/g e-03)
792.922449	0.011499	0.000456
167.356949	0.523728	0.004382
110.562300	1.791290	0.009902
76.721937	4.930267	0.018913
63.876940	7.925340	0.025312
53.276713	13.557633	0.036115
44.667976	22.494491	0.050239
39.194021	177.162285	0.347185
35.013841	66.607511	0.116609
31.481470	96.013802	0.151133
28.352051	138.405695	0.196204
25.754853	163.583316	0.210653
23.316456	236.026564	0.275165
21.809736	308.577839	0.336500
20.100193	318.791909	0.320389
18.570525	554.802703	0.515149
17.294422	507.528302	0.438870
16.122948	831.559598	0.670360
15.147114	840.799863	0.636785

Total Pore Volume is 14.046195 e-03 cc/g for all pores less than 1355.808240 Angstrom.

Average pore radius is 20.844211 Angstrom.

1. 5. Luas permukaan ADA2

P/Po	Multi BET (Adsorption)	BET Transform (1/(W[Po/P - 1]))
0.050882		5.429251
0.091188		7.423355
0.141914		9.758075
Slope	=	47.487894
Intercept	=	3.041636
Correlation Coefficient	=	0.999788
BET C	=	16.612616
Surface Area	=	17.654655 sq m
Specific Surface Area	=	68.920423 sq m/g

Source: Data from the experiment.

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1. 6. Distribusi ukuran pori ADA2

Pore Radius (Ang)	DVR (Adsorption) Pore Area (sq m/Å/g e-03)	Pore Volume (cc/Å/g e-03)
477.709091	0.131947	0.003152
159.590540	2.797576	0.022323
101.147610	12.024993	0.060815
74.165638	70.684347	0.262117
58.530311	76.384573	0.223541
48.604672	116.383524	0.282839
41.449340	228.394972	0.473341
36.136063	374.612800	0.676852
31.795527	460.162409	0.731555
28.283660	1241.602808	1.755854
25.505203	872.378424	1.112509
23.202310	1408.169528	1.633639
21.243630	3068.891061	3.259719
19.488718	2390.438010	2.329329
18.009165	2916.908940	2.626555
16.636450	7503.452750	6.241541
15.414600	4661.285340	3.592592
14.288095	10934.406826	7.811592
13.230368	6562.247575	4.341047
12.274703	8056.607652	4.944623

Total Pore Volume is 78.133790 e-03 cc/g for all pores less than 728.873877 Angstrom.

Average pore radius is 22.673625 Angstrom.

1. 7. Luas permukaan ADA3

P/Po	Multi BET (Adsorption)	BET Transform (1/{W[Po/P - 1]})
0.016215		0.430811
0.041692		0.903951
0.065894		1.325301
0.090416		1.739848
0.141782		2.724746
Slope	=	18.155297
Intercept	=	0.132278
Correlation Coefficient	=	0.999716
BET C	=	138.250724
Surface Area	=	79.866655 sq m
Specific Surface Area	=	190.430747 sq m/g

Graph of BET plot showing the relationship between P/Po and the BET Transform (1/{W[Po/P - 1]}) for ADA3.

The linear fit parameters are: Slope = 18.155297, Intercept = 0.132278, Correlation Coefficient = 0.999716, and BET C = 138.250724.

1. 8. Distribusi ukuran pori ADA3

Table showing the pore size distribution (DVR) for ADA3, including Pore Radius (Ang), Pore Area (sq m/Å/g e-03), and Pore Volume (cc/Å/g e-03).

Pore Radius (Ang)	DVR (Adsorption) Pore Area (sq m/Å/g e-03)	Pore Volume (cc/Å/g e-03)
385.879519	0.234115	0.004517
142.396136	3.254534	0.023172
90.016682	12.670340	0.057027
66.258981	30.056837	0.099577
51.689710	60.641803	0.156728
42.973321	409.913894	0.880768
36.961538	181.364808	0.335176
31.891385	485.210616	0.773702
28.200744	499.526088	0.704350
25.270757	1219.959518	1.541465
22.722926	1663.354175	1.889814
20.598450	2316.880931	2.386208
18.763359	3005.899259	2.620038
17.174818	4180.365340	3.589851
15.765095	7713.866209	6.080492
14.470114	6112.721971	4.422589
13.298389	7661.327197	5.094165
12.232826	9342.408422	5.714203
11.204102	18614.505626	10.427941

Total Pore Volume is 121.754796 e-03 cc/g for all pores less than 568.161127 Angstrom.

Average pore radius is 12.787304 Angstrom.

1. 9. Luas permukaan ADA5

P/Po	Multi BET (Adsorption)	BET Transform (1/(W{Po/P - 1}))
0.016127		0.355690
0.041035		0.793541
0.065513		1.207912
0.091230		1.620852
0.140410		2.487819
Slope	=	17.066514
Intercept	=	0.083780
Correlation Coefficient	=	0.999889
BET C	=	204.706289
Surface Area	=	81.751437 sq m
Specific Surface Area	=	203.058712 sq m/g

1. 10. Distribusi ukuran pori ADA5

Pore Radius (Ang)	DVR (Adsorption) Pore Area (sq m/Å/g e-03)	Pore Volume (cc/Å/g e-03)
382.801405	0.247749	0.004742
149.301236	5.159917	0.038519
91.505714	11.735313	0.053692
66.833000	29.119566	0.097307
52.533660	60.303471	0.158398
43.520717	120.815131	0.262898
37.165100	177.923036	0.330626
32.123407	508.547225	0.816813
28.338289	762.208801	1.079985
25.220713	1115.964251	1.407271
22.705213	991.339324	1.125429
20.641618	3494.217902	3.606316
18.800844	3090.692893	2.905382
17.209351	3847.668212	3.310794
15.776752	4978.028406	3.926856
14.494529	6273.287736	4.546417
13.329527	7926.491130	5.282819
12.235446	14928.971714	9.133131
11.196016	12898.736697	7.220723

Total Pore Volume is 128.123766 e-03 cc/g for all pores less than 551.061999 Angstrom.

Average pore radius is 12.619384 Angstrom.

1. 11. Luas permukaan ADA7

P/Po	Multi BET (Adsorption)	BET Transform (1/(W[Po/P - 1]))
0.017012		0.095376
0.042643		0.227585
0.066287		0.348371
0.092192		0.482468
0.146808		0.780692
Slope	=	5.275286
Intercept	=	0.001864
Correlation Coefficient	=	0.999861
BET C	=	2831.375017
Surface Area	=	52.265963 sq m
Specific Surface Area	=	659.923776 sq m/g

1. 12. Distribusi ukuran pori ADA7

Pore Radius (Ang)	DVR (Adsorption) Pore Area (sq m/Å/g e-03)	Pore Volume (cc/Å/g e-03)
623.764550	0.129622	0.004043
159.800219	2.864984	0.022891
95.443241	11.512673	0.054940
66.822538	33.101197	0.110595
52.668185	73.809200	0.194370
45.032790	124.304585	0.279889
38.007660	210.694749	0.400401
32.353702	360.235995	0.582748
28.595111	659.135006	0.942402
25.997664	1009.826543	1.312657
23.369898	1728.709309	2.019988
21.096178	2521.649363	2.659858
19.114278	3184.291065	3.043271
17.344504	11993.171324	10.400780
15.822444	9582.128588	7.580635
14.595959	12961.685937	9.459412
13.511764	17204.184858	11.622944
12.371988	24460.519284	15.131262
11.246423	31031.634521	17.449744

Total Pore Volume is 343.014016 e-03 cc/g for all pores less than 1012.866372 Angstrom.

Average pore radius is 10.395565 Angstrom.

1. 13. Luas permukaan karbon aktif Merck (KAM)

P/P ₀	Multi BET (Adsorption)	BET Transform (1/(W[P ₀ /P - 1]))
0.051218		0.214708
0.081588		0.314443
0.194693		0.773518
Slope	-	3.939574
Intercept	-	0.004154
Correlation Coefficient	-	0.999419
BET C	-	949.409255
Surface Area	-	129.402442 sq m
Specific Surface Area	-	883.052015 sq m/g



IAMPIRAN II

PENENTUAN DAYA SERAP TERHADAP IODIUM

Sumber : Departemen Perindustrian

Konsep SII Arang Aktif Tgl. 25 Januari 1988

PRINSIP

Arang mempunyai daya serap terhadap larutan I_2 .

Berkurangnya kepekatan larutan I_2 0,1 N dihitung sehingga diperoleh daya serap terhadap I_2 .

2. 1. Larutan I_2 0,1 N

Sebanyak 30 gram KI dilarutkandengan 30 ml aquades ke dalam labu ukur 1000 ml, lalu ditambah 12,7 gram I_2 ke dalam larutan tadi, dikocok sampai larut. Volumnya dijadikan 1000 ml dengan aquades. Larutan disiapkan segar sebelum dipergunakan. Disimpan ditempat yang sejuk dan gelap. Larutan I_2 ini hanya boleh dipergunakan selama 10 hari.

Standarisasi :

Dipipet 25 ml dan dtitar dengan larutan $Na_2S_2O_3$ 0,1 N. Bila warna kuning dari larutan menjadi samar , ditambah 1 ml larutan kanji 1% sebagai indikator. Titar dengan teratur sampai warna biru dari larutan hilang.

1. 2. Larutan $\text{Na}_2\text{S}_2\text{O}_3$ 0,1 N

Sebanyak 26 gram $\text{Na}_2\text{S}_2\text{O}_3$ ditambah 0,2 gram Na_2CO_3 dilarutkan menjadi 1 liter dengan aquades yang bebas asam karbonat. Ditambahkan 10 ml isoamylalkohol dan larutan dikocok dengan baik. Botol ditutup dengan baik dan dibiarkan selama 2 hari.

Standarisasi:

KIO_3 dipanaskan pada 130°C selama 2 jam di dalam oven. Kemudian ditimbang 140-150 mg KIO_3 dan dilarutkan dengan 25 ml aquades yang telah dididihkan, kemudian ditambah 2 gram KI. Selanjutnya ke dalam larutan ditambahkan 10 ml HCl 2 N. Tutup dan kocok erlemeyer hati-hati. Didiamkan di ruangan gelap selama 5 menit. Tambahkan 100 ml aquades dan titrasi dengan larutan $\text{Na}_2\text{S}_2\text{O}_3$ 0,1%. Bila warna kuning dari larutan telah samar, tambahkan 1 ml larutan kanji 1% sebagai indikator dan titrasi dilanjutkan sampai warna biru hilang. Normalitas larutan $\text{Na}_2\text{S}_2\text{O}_3$ menurut rumus berikut:

$$N \text{ Na}_2\text{S}_2\text{O}_3 = \frac{\text{g KIO}_3}{0,03567 \times \text{ml Na}_2\text{S}_2\text{O}_3}$$

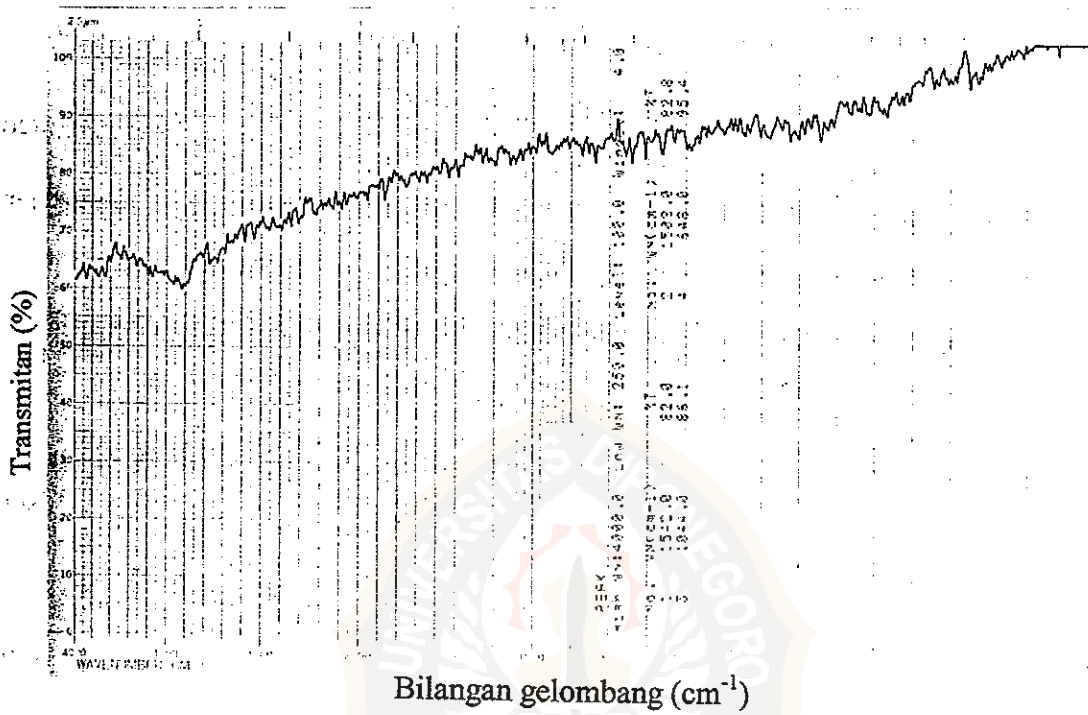
c. Larutan kanji 1%

Sebanyak 10 ml aquades ditambahkan ke dalam 1 gram kanji dan aduk hingga tercampur baik. Jadikan volumenya 100 ml dengan air panas, aduk dan didihkan larutan beberapa menit. Larutan disiapkan segar sebelum digunakan.

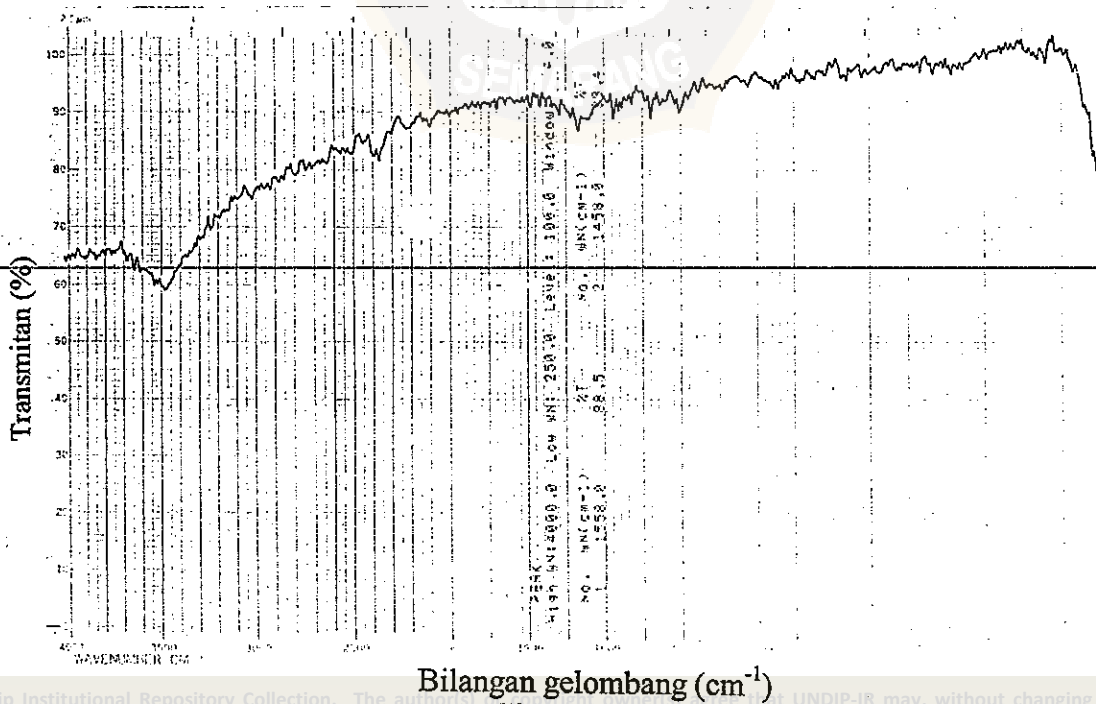
LAMPIRAN III

DATA SPEKTRUM INFRA MERAH

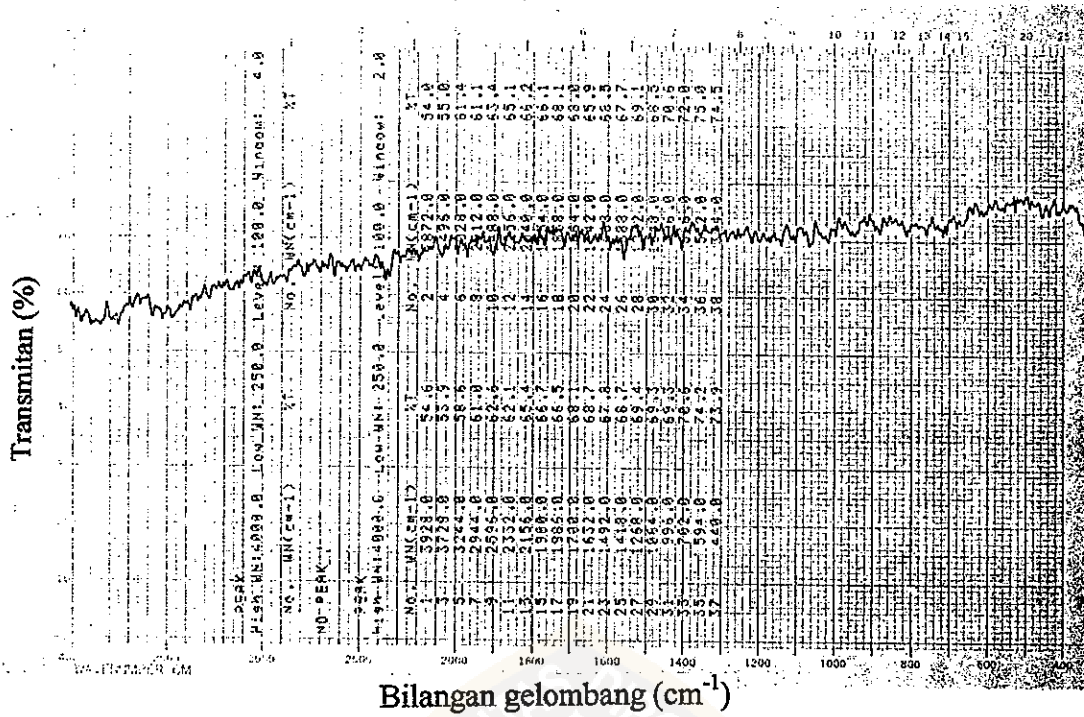
3. 1. Spektrum sampel ADA3



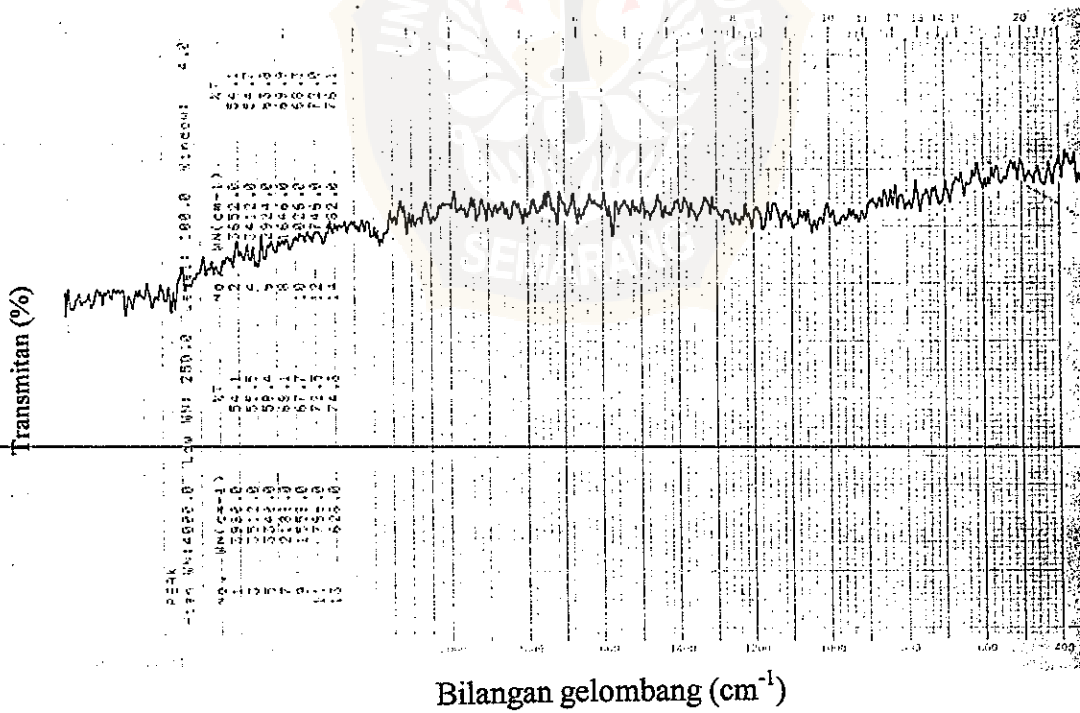
3. 2. Spektrum sampel ADA5



3. 3. Spektrum sampel ADA7



3. 4. Spektrum sampel ADA7 yang telah menyerap I₂



3. 5. Spektrum karbon aktif Merck

