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LAMPIRAN

Lampiran 1.Diagram Alir Penelitian

1.1 Prosedur Umum

Tempurung Kemiri

- Dibersihkan kotoran yang menempel pada tempurung dan dilanjutkan dengan pengeringan di bawah sinar matahari
- Dikarbonisasi pada suhu 600 ^{o}C selama 1-2 jam
- Dihaluskan dan diayak dengan ukuran 100 mesh

Karbon Tempurung Kemiri

- Diaktivasi dengan larutan KOH 10% dengan perbandingan 10:1 (volume KOH : massa karbon)
- Dicuci dengan menggunakan HCl dan akuades hingga pH netral
- Dikeringkan selama 24 jam pada suhu 110 ^{o}C
- Dipanaskan pada suhu 800 ^{o}C selama 45 menit

Karbon Aktif Tempurung Kemiri

- Dicampur dengan lilin parafin dengan perbandingan 1:1 dan dicetak kedalam badan elektroda

Elektroda Pasta Karbon

Karakterisasi

- Analisis Kadar Air
- Analisis Kadar Abu
- Analisis Luas Permukaan dengan Metilen Biru – Spektrofotometer UV-Vis
- Analisis Gugus Fungsional dengan FTIR dan Titrasi Boehm
- Karakterisasi Permukaan Material dengan SEM
- Karakterisasi Kristalinitas dengan XRD
- Penentuan Kapasitansi Spesifik dengan Metode CV

Hasil

Lampiran 2.Perhitungan Pembuatan Larutan Pereaksi

a) Pembuatan Larutan Na_2CO_3 0,05 N

gram = L × N × BE

gram= 0,25 L × 0,05 N × 106 g/eq

gram = 1,3250 gram

b) Pembuatan Larutan $NaHCO_3$ 0,05 N

gram = L × N × BE

gram = 0,25 L × 0,05 N × 84 g/eq

gram = 1,0500 gram

c) Pembuatan Larutan NaOH 0,05 N

gram = L × N × BE

gram = 0,25 L × 0,05 N × 40 g/eq

gram = 0,5000 gram

d) Pembuatan Larutan HCl 0,05 N

$$N = \frac{\% \times bj \times 10}{BE}$$

$$N = \frac{37 \times 1{,}19 \text{ g/mL} \times 10}{36{,}5 \text{ g/eq}}$$

$$N = 12{,}06 \text{ N}$$

$$V_1 \times N_1 = V_2 \times N_2$$

$$V_1 \times 12{,}06 \text{ N} = 250 \text{ mL} \times 0{,}05 \text{ N}$$

$$V_1 = 1{,}03 \text{ mL}$$

e) Pembuatan Larutan $Na_2B_4O_7$ 0,05 N

gram = L × N × BE

= 0,1 L × 0,05 N × 190,6 g/eq

= 0,9530 gram

f) Pembuatan Larutan $H_2C_2O_4$ 0,05 N

gram = L × N × BE

gram = 0,1 L × 0,05 N × 63 g/eq

gram = 0,3150 gram

g) Pembuatan Larutan KOH 1 M

gram = L × M × BM

gram = 0,1 L × 1 M × 56 g/mol

gram = 5,6000 gram

h) Pembuatan Larutan Metilen Biru 500 ppm

mg metilen biru = 500 ppm x 0,25 L

mg metilen biru = 125 mg

i) Pembuatan Larutan Metilen Biru 50 ppm

$V_1 \times C_1 = V_2 \times C_2$

$V_1 \times 500$ ppm = 100 mL × 50ppm

V_1 = 10 mL

j) Pembuatan Larutan Standar Metilen Biru 2, 4, 8 dan 16 ppm

$V_1 \times C_1 = V_2 \times C_2$

$V_1 \times 50$ ppm = 25 mL × 2 ppm

V_1 = 1 mL

$V_1 \times C_1 = V_2 \times C_2$

× 50 ppm = 25 mL × 4 ppm

V_1 = 2 mL

$$V_1 \times C_1 = V_2 \times C_2$$

$$V_1 \times 50 \text{ ppm} = 25 \text{ mL} \times 8 \text{ ppm}$$

$$V_1 = 4 \text{ mL}$$

$$V_1 \times C_1 = V_2 \times C_2$$

$$V_1 \times 50 \text{ ppm} = 25 \text{ mL} \times 16 \text{ ppm}$$

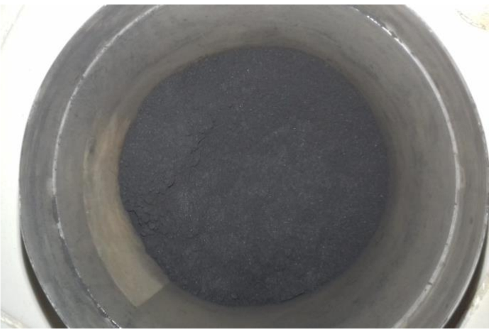
$$V_1 = 8 \text{ mL}$$

Lampiran 3. Dokumentasi Penelitian

Sampel Tempurung Kemiri

Karbon Tempurung Kemiri

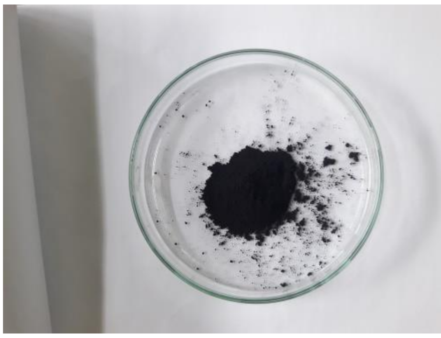
KTK 100 mesh



Proses aktivasi KTK dengan KOH

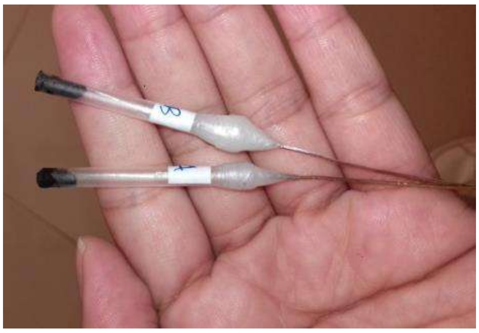
Proses penyaringan KATK

Proses penentuan kadar air



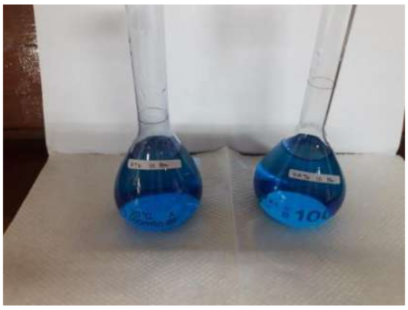
Proses penentuan kadar abu

Pembuatan elektroda



Proses pengukuran kapasitansi spesifik menggunakan alat Potensiostat.

Penentuan Luas Permukaan dengan Metilen Biru



Penentuan dengan Titrasi Boehm

Lampiran 4. Hasil Analisis Proksimat

A. Penentuan Kadar Air

1) Karbon Tempurung Kemiri

No.	Bobot Kosong Cawan (A)	Bobot Cawan + Sampel (B)	Bobot I	Bobot II	Bobot III	Bobot Rata-rata (C)	Bobot Akhir Sampel (B-C)	Bobot Awal Sampel (B-A)	Kadar Air (%)
1.	35,9784	36,9784	36,9560	36,9289	36,9282	36,9377	0,0507	1,000	5,07

$$\text{Kadar air (\%)} = \frac{\text{B-C}}{\text{B-A}} \times 100\ \% = \frac{0{,}0507}{1{,}000} \times 100\ \% = 5{,}07\%$$

2) Karbon Aktif Tempurung Kemiri

No.	Bobot Kosong Cawan (A)	Bobot Cawan + Sampel (B)	Bobot I	Bobot II	Bobot III	Bobot Rata-rata (C)	Bobot Akhir Sampel (B-C)	Bobot Awal Sampel (B-A)	Kadar Air (%)
1.	43,8417	44,8417	44,8337	44,8247	44,8221	44,8268	0,0149	1,000	1,49

$$\text{Kadar air (\%)} = \frac{\text{B-C}}{\text{B-A}} \times 100\ \% = \frac{0{,}0149}{1{,}000} \times 100\ \% = 1{,}49\%$$

B. Penentuan Kadar Abu

1) Karbon Tempurung Kemiri

No.	Bobot Kosong Cawan (A)	Bobot Cawan + Sampel (B)	Bobot I	Bobot II	Bobot III	Bobot Rata-rata (C)	Bobot Abu (C-A)	Bobot Awal Sampel (B-A)	Kadar Abu (%)
1.	26,1988	27,1988	26,7518	26,7410	26,7404	26,7444	0,5456	1,000	54,56

$$\text{Kadar abu (\%)} = \frac{\text{C-A}}{\text{B-A}} \text{ x } 100\ \% = \frac{0{,}5456}{1{,}000} \text{ x } 100\ \% = 54{,}56\%$$

2) Karbon Aktif Tempurung Kemiri

No.	Bobot Kosong Cawan (A)	Bobot Cawan + Sampel (B)	Bobot I	Bobot II	Bobot III	Bobot Rata-rata (C)	Bobot Abu (C-A)	Bobot Awal Sampel (B-A)	Kadar Abu (%)
1.	33,4356	34,4304	33,5139	33,5143	33,5146	33,5143	0,0787	0,9948	7,91

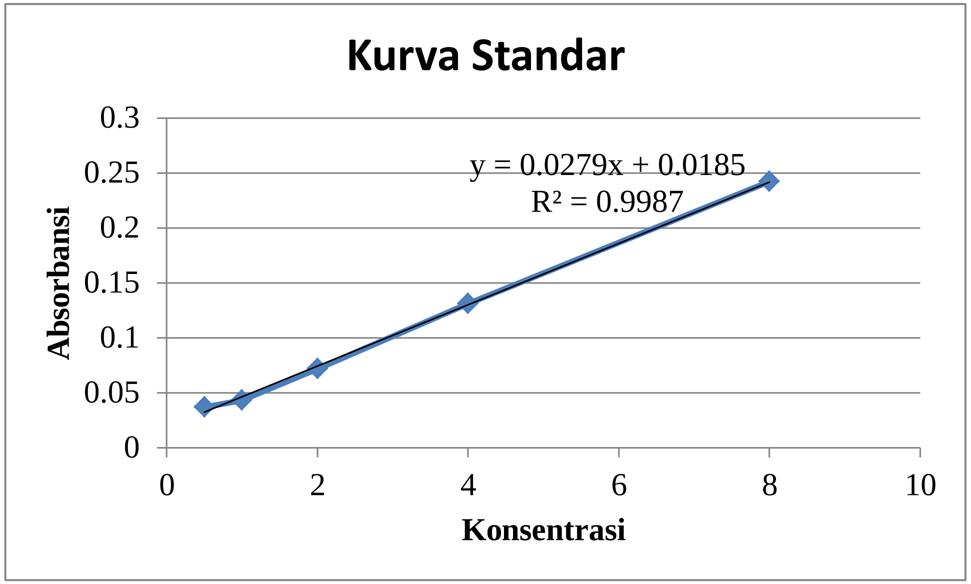
$$\text{Kadar abu (\%)} = \frac{\text{C-A}}{\text{B-A}} \text{ x } 100\ \% = \frac{0{,}0787}{0{,}9948} \text{ x } 100\ \% = 7{,}91\%$$

Lampiran 5. Hasil Analisis Luas Permukaan

Nilai absorbansi deret standar metilen biru

Konsentrasi (ppm)	Absorbansi
0,5	0,037
1	0,043
2	0,072
4	0,131
8	0,242

Kurva kalibrasi deret standar metilen biru



Konsentrasi metilen biru (C_0)

y = 0,0279x - 0,0185

1,62 = 0,0279x - 0,0185

x = 58,7275

1) Karbon Tempurung Kemiri

No.	Absorbansi	Pengenceran	C_e (mg/L)	C_o (mg/L)	Volume (L)	Massa (g)	Xm (mg/g)	S (m^2/g)
1.	0,058	500	3,0788	58,7275	0,0250	0,3030	4,5914	16,9894
2.	0,074	500	3,3154	58,7275	0,0250	0,3030	4,5719	16,9173
3.	0,074	500	3,3154	58,7275	0.,0250	0,3030	4,5719	16,9173
Rata-rata								16,9413

$$X_m = \frac{(C_o - C_e) \text{ x volume larutan}}{\text{massa karbon aktif}} = \frac{(58{,}7275-3{,}3154) \text{ x } 0{,}0250}{0{,}3030} = 4{,}5719 \text{ mg/g}$$

$$= \frac{4{,}5719 \text{ mg/g x } (6{,}02 \text{ x } 10^{23} \text{ mol}^{-1}) \text{ x } (197 \text{ x } 10^{-20} \text{ m}^2)}{320{,}5 \text{ g/mol}} = 16{,}9173 \text{ m}^2\text{/g}$$

2) Karbon Aktif Tempurung Kemiri

No.	Absorbansi	Pengenceran	C_e (mg/L)	C_o (mg/L)	Volume (L)	Massa (g)	Xm (mg/g)	S (m^2/g)
1.	0,078	500	3,4588	58,7275	0,0250	0,3018	4,5782	16,9406
2.	0,077	500	3,4229	58,7275	0,0250	0,3018	4,5812	16,9517
3.	0,077	500	3,4229	58,7275	0,0250	0,3018	4,5812	16,9517
Rata-rata								16,948

$$X_m = \frac{(C_o - C_e) \text{ x volume larutan}}{\text{massa karbon aktif}} = \frac{(58,7275-3,4229) \text{ x } 0,0250}{0,3018} = 4,5812 \text{ mg/g}$$

$$S = \frac{X_m \cdot N \cdot a}{Mr} = \frac{4,5812 \text{ mg/g x } (6,02 \text{ x } 10^{23} \text{ mol}^{-1}) \text{ x } (197 \text{ x } 10^{-20} \text{ m}^2)}{320,5 \text{ g/mol}} = 16,9517 \text{ m}^2\text{/g}$$

Lampiran 6. Hasil Analisis Gugus Fungsi dengan Titrasi Boehm

A. Karbon Tempurung Kemiri

1) Kadar Karboksilat

No	V. Sampel (Vs) (mL)	V. Titran $NaHCO_3$ (Vp) (mL)	Normal $NaHCO_3$	Normal HCl	V. HCl (mL)	Normal NaOH	V. NaOH (mL)	Massa Karbon (g)	n Karboksilat (meq/g)
1.	25	10	0,0500	0,0279	12	0,0480	4,4	0,1000	9.41
2.	25	10	0,0500	0,0279	12	0,0480	5,8	0,1000	11,09
Rata – rata									10,25

$$n_{karboksilat} = \frac{[V_{NaHCO_3}N_{NaHCO_3} - (N_{HCl}V_{HCl} - N_{NaOH}V_{NaOH})]\frac{V_p}{V_s}}{w}$$

$$n_{karboksilat} = \frac{[10 \times 0{,}0500 - ((0{,}0279 \times 12) - (0{,}0480 \times 5{,}8))]\frac{25}{10}}{0{,}1} = 11{,}09 \text{ meq/g}$$

2) Kadar Lakton

No	V. Sampel (Vs) (mL)	V. Titran Na_2CO_3 (Vp) (mL)	Normal Na_2CO_3	Normal HCl	V. HCl (mL)	Normal NaOH	V. NaOH (mL)	Massa Karbon (g)	n Lakton (meq/g)
1.	25	10	0,0500	0,0279	12	0,0480	1,6	0,1000	-4,17
2.	25	10	0,0500	0,0279	12	0,0480	1,0	0,1000	-4,92
Rata - rata									-4,545

$$n_{lakton} = \frac{\left[V_{Na_2CO_3} N_{Na_2CO_3} - \left(N_{HCl} V_{HCl} - N_{NaOH} V_{NaOH}\right)\right] \frac{V_p}{V_s}}{w} - n_{karboksilat}$$

$$n_{lakton} = \frac{[10 \text{ x } 0{,}0500 - ((0{,}0279 \text{ x } 12) - (0{,}0480 \text{ x } 1{,}0))] \frac{25}{10}}{0{,}1} - 11{,}09 = -4{,}545 \text{ meq/g}$$

3) Kadar Fenol

No	V. Sampel (Vs) (mL)	V. Titran NaOH (Vp) (mL)	Normal NaOH	Normal HCl	V. HCl (mL)	Normal NaOH	V. NaOH (mL)	Massa Karbon (g)	n Fenol (meq/g)
1.	25	10	0,0500	0,0279	12	0,0480	2,3	0,1000	0,345
2.	25	10	0,0500	0,0279	12	0,0480	2,3	0,1000	0,345
Rata – rata									0,345

$$n_{fenol} = \frac{[V_{NaOH}N_{NaOH} - (N_{HCl}V_{HCl} - N_{NaOH}V_{NaOH})]\frac{V_p}{V_s}}{w} - n_{karboksilat} - n_{lakton}$$

$$n_{fenol} = \frac{[10 \text{ x } 0{,}0500 - ((0{,}0279 \text{ x } 12) - (0{,}0480 \text{ x } 2{,}3))]\frac{25}{10}}{0{,}1} - 11{,}09 - (-4{,}545) = 0{,}345 \text{ meq/g}$$

4) Kadar Basa Total

No	V. Sampel (Vs) (mL)	V. Titran HCl (Vp) (mL)	Normal HCl	Normal NaOH	V. NaOH (mL)	Normal HCl	V. HCl (mL)	Massa Karbon (g)	n basa total (meq/g)
1.	25	10	0,0500	0,0480	12	0,0279	5,2	0,1000	1,727
2.	25	10	0,0500	0,0480	12	0,0279	5,5	0,1000	1,9362
Rata – rata									1,8316

$$n_{basa\ total} = \frac{[V_{HCl}N_{HCl} - (N_{NaOH}V_{NaOH} - N_{HCl}V_{HCl})]\frac{V_p}{V_s}}{w}$$

$$n_{basa\ total} = \frac{[10 \text{ x } 0{,}0500 - ((0{,}0480 \text{ x } 12) - (0{,}0279 \text{ x } 5{,}2))]\frac{25}{10}}{0{,}1} = 1{,}8316 \text{ meq/g}$$

B. Karbon Aktif Tempurung Kemiri

1) Kadar Karboksilat

No	V. Sampel (Vs) (mL)	V. Titran $NaHCO_3$ (Vp) (mL)	Normal $NaHCO_3$	Normal HCl	V. HCl (mL)	Normal NaOH	V. NaOH (mL)	Massa Karbon (g)	n Karboksilat (meq/g)
1.	25	10	0,0500	0,0279	12	0,0480	4,4	0,1000	9.41
2.	25	10	0,0500	0,0279	12	0,0480	5,7	0,1000	10,97
Rata – rata									10,19

$$n_{karboksilat} = \frac{\left[V_{NaHCO_3} N_{NaHCO_3} - \left(N_{HCl} V_{HCl} - N_{NaOH} V_{NaOH}\right)\right] \frac{V_p}{V_s}}{w}$$

$$n_{karboksilat} = \frac{[10 \text{ x } 0{,}5000 - ((0{,}0279 \text{ x } 12) - (0{,}0480 \text{ x } 5{,}7))] \frac{25}{10}}{0{,}1} = 10{,}97 \text{ meq/g}$$

2) Kadar Lakton

No	V. Sampel (Vs) (mL)	V. Titran Na_2CO_3 (Vp) (mL)	Normal Na_2CO_3	Normal HCl	V. HCl (mL)	Normal NaOH	V. NaOH (mL)	Massa Karbon (g)	n Lakton (meq/g)
1.	25	10	0,0500	0,0279	12	0,0480	1,9	0,1000	-4,56
2.	25	10	0,0500	0,0279	12	0,0480	2,0	0,1000	-4,44
Rata – rata									-4,5

$$n_{lakton} = \frac{\left[V_{Na_2CO_3} N_{Na_2CO_3} - (N_{HCl} V_{HCl} - N_{NaOH} V_{NaOH})\right] \frac{V_p}{V_s}}{w} - n_{karboksilat}$$

$$n_{lakton} = \frac{[10 \text{ x } 0{,}0500 - ((0{,}0279 \text{ x } 12) - (0{,}0480 \text{ x } 1{,}9))] \frac{25}{10}}{0{,}1} - 10{,}97 = -4{,}56 \text{ meq/g}$$

3) Kadar Fenol

No	V. Sampel (Vs) (mL)	V. Titran NaOH (Vp) (mL)	Normal NaOH	Normal HCl	V. HCl (mL)	Normal NaOH	V. NaOH (mL)	Massa Karbon (g)	n Fenol (meq/g)
1.	25	10	0,0500	0,0279	12	0,0480	4	0,1000	2,52
2.	25	10	0,0500	0,0279	12	0,0480	3	0,1000	1,32
Rata - rata									1,92

$$n_{fenol} = \frac{[V_{NaOH}N_{NaOH} - (N_{HCl}V_{HCl} - N_{NaOH}V_{NaOH})]\frac{V_p}{V_s}}{w} - n_{karboksilat} - n_{lakton}$$

$$n_{fenol} = \frac{[10 \text{ x } 0{,}0500 - ((0{,}0279 \text{ x } 12) - (0{,}0480 \text{ x } 4))]\frac{25}{10}}{0{,}1} - 10{,}97 - (-4{,}56) = 2{,}52 \text{ meq/g}$$

4) **Kadar Basa Total**

No	V. Sampel (Vs) (mL)	V. Titran HCl (Vp) (mL)	Normal HCl	Normal NaOH	V. NaOH (mL)	Normal HCl	V. HCl (mL)	Massa Karbon (g)	n basa total (meq/g)
1.	25	10	0,0500	0,0480	12	0,0279	6,8	0,1000	2,843
2.	25	10	0,0500	0,0480	12	0,0279	7	0,1000	2,9825
Rata – rata									2,913

$$n_{basa\ total} = \frac{[V_{HCl}N_{HCl} - (N_{NaOH}V_{NaOH} - N_{HCl}V_{HCl})]\frac{V_p}{V_s}}{w}$$

$$n_{basa\ total} = \frac{[10 \text{ x } 0{,}0500 - ((0{,}0480 \text{ x } 12) - (0{,}0279 \text{ x } 6{,}8))]\frac{25}{10}}{0{,}1} = 2{,}9902 \text{ meq/g}$$

Lampiran 7. Hasil Analisis Kapasitansi Spesifik

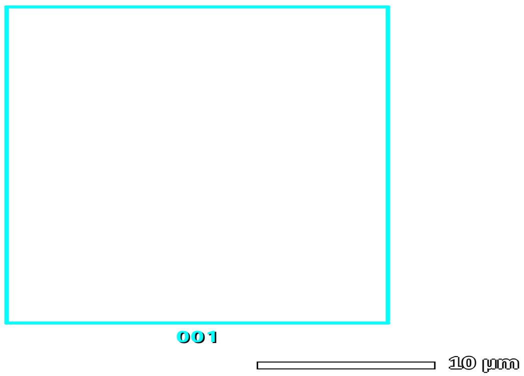
Elektrolit	Laju Scan (V/s)	Ic (A)	I_d (A)	Massa Sampel	Kapasitansi Spesifik (F/g)
Li_2SO_4	1,0 x 10^{-2}	3,34 x 10^{-5}	3,31 x 10^{-6}	0,1048	0,028745
	2,0 x 10^{-2}	3.29 x 10^{-5}	7.00 x 10^{-6}	0,1048	0.012381
	5,0 x 10^{-2}	3,47 x 10^{-5}	2,06 x 10^{-6}	0,1048	0,006226
Na_2SO_4	1,0 x 10^{-2}	2,20 x 10^{-5}	1,00 x 10^{-5}	0,1094	0,010969
	2,0 x 10^{-2}	3.02 x 10^{-5}	7.64 x 10^{-6}	0,1094	0.010315
	5,0 x 10^{-2}	2,18 x 10^{-5}	1,63 x 10^{-5}	0,1094	0,001005
K_2SO_4	1,0 x 10^{-2}	1,93 x 10^{-5}	1,72 x 10^{-5}	0,1029	0,002065
	2,0 x 10^{-2}	1,92 x 10^{-5}	1,64 x 10^{-5}	0,1029	0,001367
	[illegible] x 10^{-2}	1,88 x 10^{-5}	1,60 x 10^{-5}	0,1029	0,000547

$$Cs = \frac{Ic - Id}{v \times m} = \frac{3,34 \times 10^{-5} - 3,31 \times 10^{-6}}{1,0 \times 10^{-2} \times 0,1048} = 0,028745 \text{ F/g}$$

Lampiran 8. Hasil Analisis SEM

Sebelum Aktivasi KOH

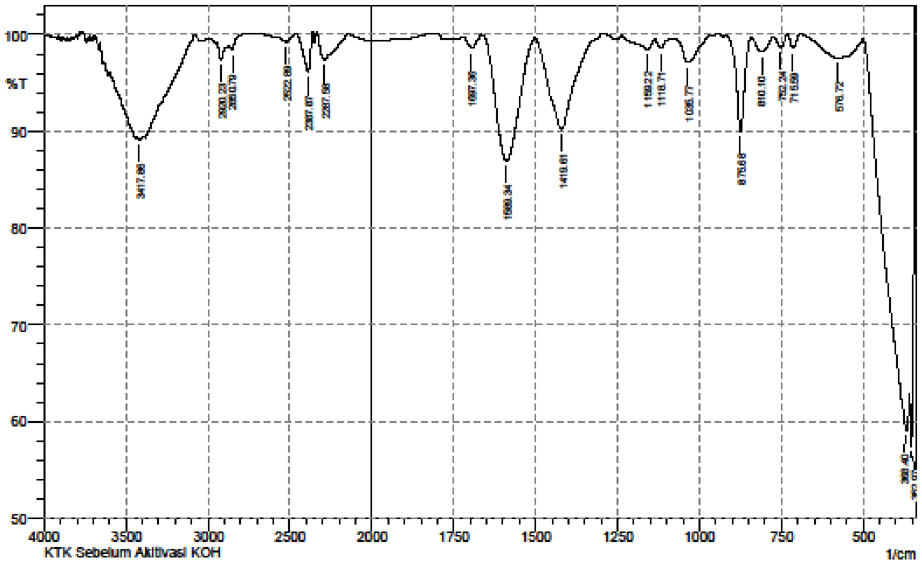
Setelah Aktivasi KOH



Lampiran 9. Hasil Analisis dengan FTIR

A. Karbon Tempurung Kemiri Sebelum Aktivasi KOH

SHIMADZU



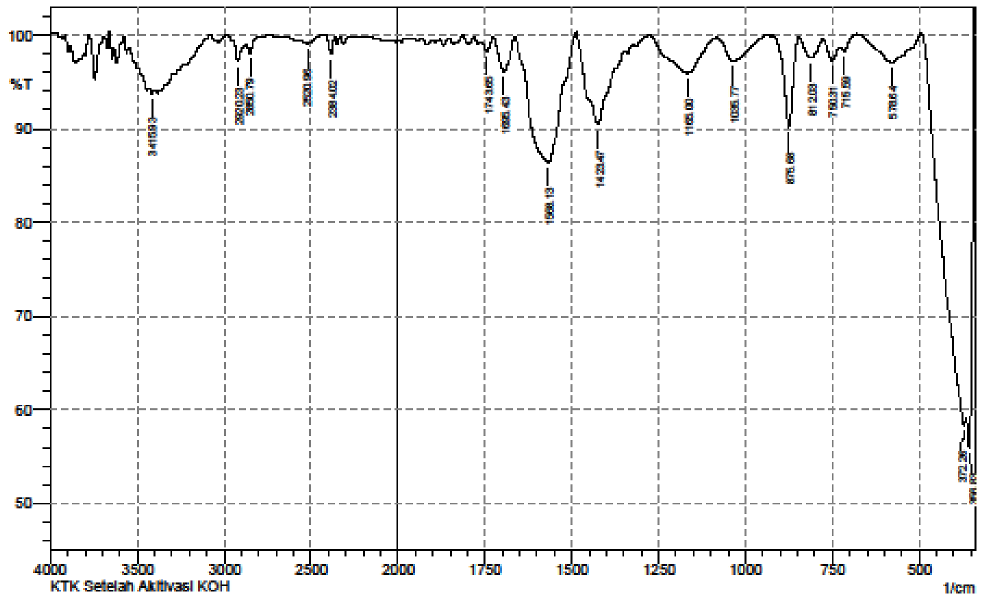
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area
1	352.97	57.49	21.67	358.76	339.47	2.39	1.37
2	368.4	59.07	5.3	499.56	360.69	16.79	2.29
3	576.72	97.53	0.02	578.64	553.57	0.26	0
4	715.59	98.58	1.56	731.02	688.59	0.11	0.13
5	752.24	98.73	1.22	773.46	731.02	0.13	0.12
6	810.1	98.21	1.53	842.89	773.46	0.33	0.25
7	875.68	90.01	9.8	914.26	842.89	1.26	1.21
8	1035.77	97.13	2.62	1074.35	945.12	0.69	0.6
9	1118.71	98.6	0.9	1138	1093.64	0.18	0.08
10	1159.22	98.48	1.11	1238.3	1138	0.4	0.26
11	1419.61	90.23	9.64	1502.55	1292.31	3.81	3.74
12	1589.34	86.89	12.96	1662.64	1504.48	4.68	4.57
13	1697.36	98.6	1.25	1718.58	1664.57	0.18	0.15
14	2287.58	97.43	2.82	2333.87	2146.77	1.14	1.3
15	2387.87	96.17	4.02	2451.53	2360.87	0.77	0.84
16	2522.89	99.24	0.72	2600.04	2451.53	0.23	0.2
17	2850.79	98.38	0.67	2870.08	2750.49	0.23	-0.03
18	2920.23	97.44	1.59	2949.16	2870.08	0.56	0.21
19	3417.86	89.04	0.33	3431.36	3394.72	1.82	0.03

Comment;
KTK Sebelum Akitivasi KOH

Date/Time; 9/5/2019 3:03:50 PM
No. of Scans;
Resolution;
Apodization;

B. Karbon Tempurung Kemiri Setelah Aktivasi KOH

SHIMADZU



	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area
1	356.83	55.86	19.44	364.55	339.47	3.83	1.84
2	372.26	58.21	2.75	491.85	366.48	15.37	1.04
3	578.64	97.08	3.07	669.3	493.78	1.22	1.34
4	715.59	98.25	0.87	729.09	680.87	0.18	0.06
5	750.31	97.28	1.81	777.31	729.09	0.37	0.19
6	812.03	97.57	2.11	846.75	777.31	0.46	0.36
7	875.68	90.18	9.68	921.97	846.75	1.28	1.24
8	1035.77	97.21	2.65	1082.07	937.4	0.9	0.86
9	1165	95.94	3.88	1274.95	1083.99	1.91	1.77
10	1423.47	90.43	8.94	1487.12	1348.24	3.27	2.82
11	1568.13	86.35	13.69	1662.64	1489.05	6.13	6.15
12	1695.43	96.04	3.78	1726.29	1662.64	0.61	0.56
13	1743.65	98.26	1.3	1762.94	1726.29	0.17	0.1
14	2384.02	97.94	1.93	2411.02	2366.66	0.23	0.21
15	2520.96	99.08	0.92	2677.2	2411.02	0.46	0.44
16	2850.79	98.11	1.12	2872.01	2785.21	0.3	0.1
17	2920.23	97.15	2.16	2949.16	2872.01	0.54	0.29
18	3415.93	93.72	0.48	3433.29	3400.5	0.88	0.04

Comment;
KTK Setelah Akitivasi KOH

Date/Time; 9/5/2019 3:19:19 PM
No. of Scans;
Resolution;
Apodization;

Lampiran 10. Hasil Analisis dengan XRD

A. Karbon Tempurung Kemiri Sebelum Aktivasi KOH

*** Basic Data Process ***

Group : Standard
Data : seb#Kalsinasi#KOH

Strongest 3 peaks

no.	peak no.	2Theta (deg)	d (A)	I/I1	FWHM (deg)	Intensity (Counts)	Integrated Int (Counts)
1	12	30.2250	2.95457	100	0.86220	813	38373
2	11	27.1045	3.28722	38	1.28100	309	25416
3	8	23.8800	3.72328	34	0.00000	275	0

Peak Data List

peak no.	2Theta (deg)	d (A)	I/I1	FWHM (deg)	Intensity (Counts)	Integrated Int (Counts)
1	15.1800	5.83192	5	1.16000	39	4145
2	16.1000	5.50068	5	0.00000	40	0
3	17.4200	5.08673	8	1.20000	61	6386
4	18.6000	4.76660	10	0.00000	78	0
5	19.4800	4.55321	13	0.00000	103	0
6	20.6000	4.30811	18	0.00000	143	0
7	22.0600	4.02618	24	0.00000	196	0
8	23.8800	3.72328	34	0.00000	275	0
9	24.9800	3.56176	25	0.00000	200	0
10	25.7400	3.45830	21	0.00000	171	0
11	27.1045	3.28722	38	1.28100	309	25416
12	30.2250	2.95457	100	0.86220	813	38373
13	36.6650	2.44904	14	0.93000	110	5275
14	40.2593	2.23830	22	1.17470	175	11885
15	41.8400	2.15732	5	0.00000	39	0
16	43.5000	2.07876	15	1.04000	124	6919
17	44.1400	2.05009	27	1.22000	217	12344
18	46.3200	1.95856	5	0.00000	40	0
19	48.9400	1.85965	20	2.00000	161	12698
20	49.5400	1.83853	19	1.19200	154	6917
21	58.2650	1.58227	5	1.45000	41	3228

B. Karbon Tempurung Kemiri Setelah Aktivasi KOH

*** Basic Data Process ***

Group : Standard
Data : set#Kalsinasi#KOH

Strongest 3 peaks

no.	peak no.	2Theta (deg)	d (A)	I/I1	FWHM (deg)	Intensity (Counts)	Integrated Int (Counts)
1	14	29.7016	3.00543	100	0.88620	467	21429
2	21	44.0328	2.05483	77	0.61230	358	9854
3	10	23.2600	3.82111	54	0.00000	253	0

Peak Data List

peak no.	2Theta (deg)	d (A)	I/I1	FWHM (deg)	Intensity (Counts)	Integrated Int (Counts)
1	14.4300	6.13331	4	0.32000	17	354
2	15.4000	5.74910	5	0.70000	25	1375
3	16.1000	5.50068	7	0.00000	34	0
4	17.1400	5.16919	13	1.96000	63	5568
5	18.0200	4.91869	19	0.00000	90	0
6	18.8400	4.70641	27	0.00000	125	0
7	21.1000	4.20714	40	0.00000	188	0
8	21.8000	4.07360	42	0.00000	195	0
9	22.4000	3.96583	46	0.00000	217	0
10	23.2600	3.82111	54	0.00000	253	0
11	24.6400	3.61014	40	0.00000	188	0
12	26.7200	3.33364	41	1.08660	193	20148
13	27.8800	3.19752	6	0.76000	27	1739
14	29.7016	3.00543	100	0.88620	467	21429
15	34.0100	2.63391	10	0.58000	46	1509
16	36.1850	2.48042	11	0.93000	53	2559
17	37.8252	2.37655	34	0.54590	157	4051
18	39.5830	2.27497	32	0.75400	150	6916
19	41.3400	2.18225	3	0.52000	16	789
20	43.2400	2.09066	16	1.09340	77	4562
21	44.0328	2.05483	77	0.61230	358	9854
22	45.0000	2.01289	3	0.00000	16	0
23	45.4400	1.99442	3	0.72000	15	807
24	47.8000	1.90131	12	1.02000	57	4165
25	48.5200	1.87477	17	0.00000	80	0
26	49.4200	1.84271	11	0.50660	50	3567
27	57.4883	1.60179	16	0.63670	77	2764
28	58.5400	1.57549	4	0.32000	21	687