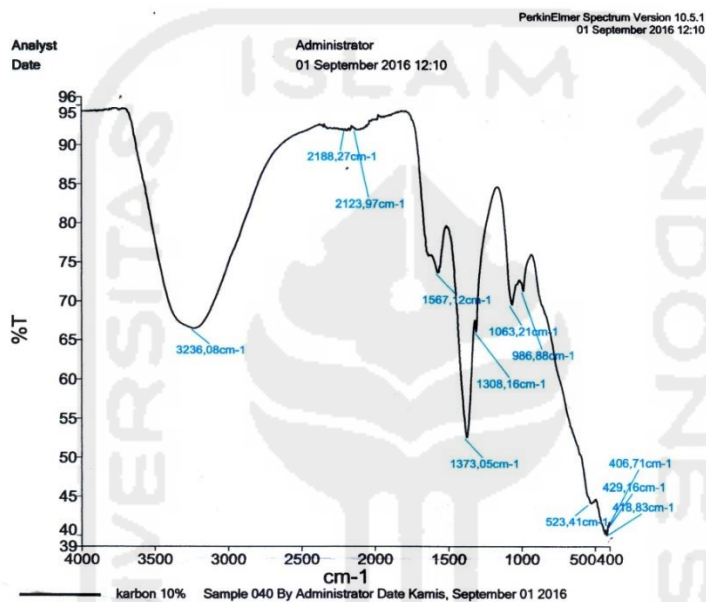




# LAMPIRAN

## Lampiran 1: Hasil spektrofotometer inframerah karbon aktif

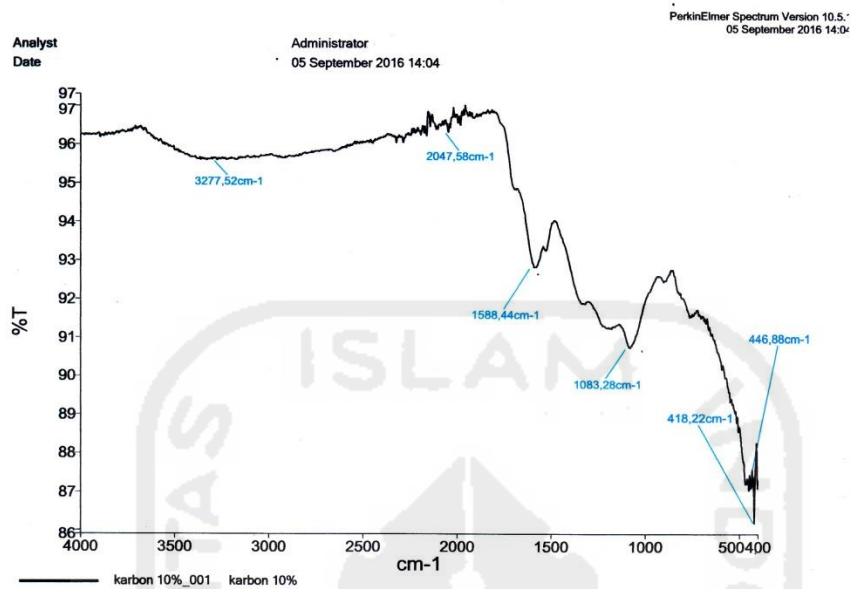
### 1. Hasil analisis karbon aktif non modifikasi



Source Spectra Results	
Spectrum Name	Number Of Peaks
karbon 10%	12

List of Peak Area/Height		
Peak Number	X (cm-1)	Y (%T)
1	3236,08	66,51
2	2188,27	91,86
3	2123,97	91,94
4	1567,12	73,66
5	1373,05	52,58
6	1308,16	66,11
7	1063,21	69,58
8	986,88	71,33
9	523,41	44,07
10	429,16	40,2
11	418,83	40
12	406,71	41,03

## 2. Hasil analisis karbon aktif setelah dimodifikasi



Source Spectra Results	
Spectrum Name	Number Of Peaks
karbon 10%_001	6

List of Peak Area/Height		
Peak Number	X (cm-1)	Y (%T)
1	3277,52	95,61
2	2047,58	96,33
3 C = C	1588,44	92,82
4 C - O	1083,28	90,74
5	446,88	87,04
6	418,22	86,18

Setelah di rendam H<sub>2</sub>O<sub>2</sub>

## Lampiran 2: Perhitungan penentuan waktu optimum adsorpsi fenol

### 2.1 Perhitungan penentuan waktu optimum adsorpsi fenol

Banyaknya fenol yang teradsorpsi (mg/g) adsorben (karbon aktif tandan pisang) ditentukan menggunakan persamaan:

$$W = \frac{(C_o - C_e)V}{W_a}$$

Dimana :

W = jumlah fenol yang teradsorpsi (mg/g)

C<sub>o</sub> = konsentrasi fenol sebelum adsorpsi

C<sub>e</sub> = konsentrasi fenol setelah adsorpsi

V = volume larutan fenol (L)

W<sub>a</sub> = jumlah adsorben karbon aktif (G)

- a. Waktu pengocokan 15 menit

$$W = \frac{(C_o - C_e)V}{W_a}$$

$$W = \frac{(50 \text{ mg/L} - 20.6410 \text{ ppm})0,05 \text{ L}}{0,5 \text{ gram}}$$

$$W = 2,9359 \text{ mg/g}$$

b. Waktu pengocokan 30 menit

$$W = \frac{(C_o - C_e)V}{W_a}$$

$$W = \frac{(50 \text{ mg/L} - 24,3219 \text{ mg/L}) 0,05 \text{ L}}{0,5 \text{ gram}}$$

$$W = 2,5678 \text{ mg/g}$$

c. Waktu pengocokan 45 menit

$$W = \frac{(C_o - C_e)V}{W_a}$$

$$W = \frac{(50 \text{ mg/L} - 19,8294 \text{ mg/L}) 0,05 \text{ L}}{0,5 \text{ gram}}$$

$$W = 3,017 \text{ mg/g}$$

d. Waktu pengocokan 60 menit

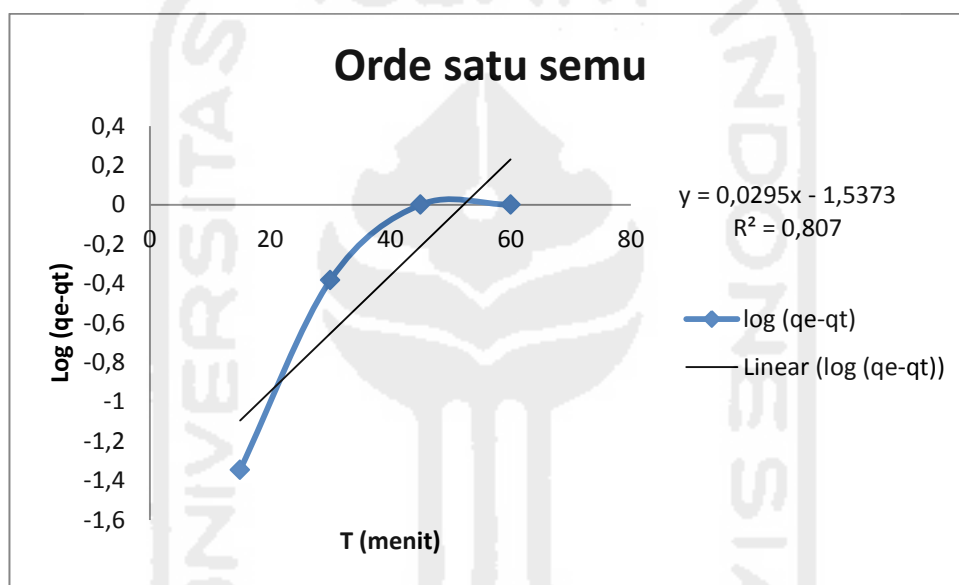
$$W = \frac{(C_o - C_e)V}{W_a}$$

$$W = \frac{(50 \text{ mg/L} - 20,1857 \text{ mg/L}) 0,05 \text{ L}}{0,5 \text{ gram}}$$

$$W = 2,9814 \text{ mg/g}$$

## 2.2 Tabel Perhitungan Orde Semu Fenol

T (menit)	C. Awal (ppm)	C.Akhir (ppm)	q <sub>e</sub>	q <sub>t</sub>	(q <sub>e</sub> -q <sub>t</sub> )	log (q <sub>e</sub> -q <sub>t</sub> )	t/q <sub>t</sub>
15	50	20,641	2,981	2,9359	0,0451	-1,3458235	5,109166
30	50	24,3219	2,981	2,567	0,414	-0,3829997	11,68679
45	50	19,8294	2,981	3,017	-0,036	#NUM!	14,91548
60	50	20,1857	2,981	2,981	0	#NUM!	20,12747



### Lampiran 3: Perhitungan penentuan kapasitas adsorpsi fenol

#### 1. Perhitungan penentuan kapasitas fenol teradsorpsi

- a. Fenol konsentrasi 20 mg/L

$$W = \frac{(C_o - C_e)V}{W_a}$$

$$W = \frac{(20 \text{ mg/L} - 14,1249 \text{ mg/L})0,05 \text{ L}}{0,5 \text{ g}}$$

$$W = 0,5785 \text{ mg/g}$$

- b. Fenol konsentrasi 30 mg/L

$$W = \frac{(C_o - C_e)V}{W_a}$$

$$W = \frac{(30 \text{ mg/L} - 13,9980 \text{ mg/L})0,05 \text{ L}}{0,5 \text{ g}}$$

$$W = 1,6002 \text{ mg/g}$$

- c. Fenol konsentrasi 40 mg/L

$$W = \frac{(C_o - C_e)V}{W_a}$$

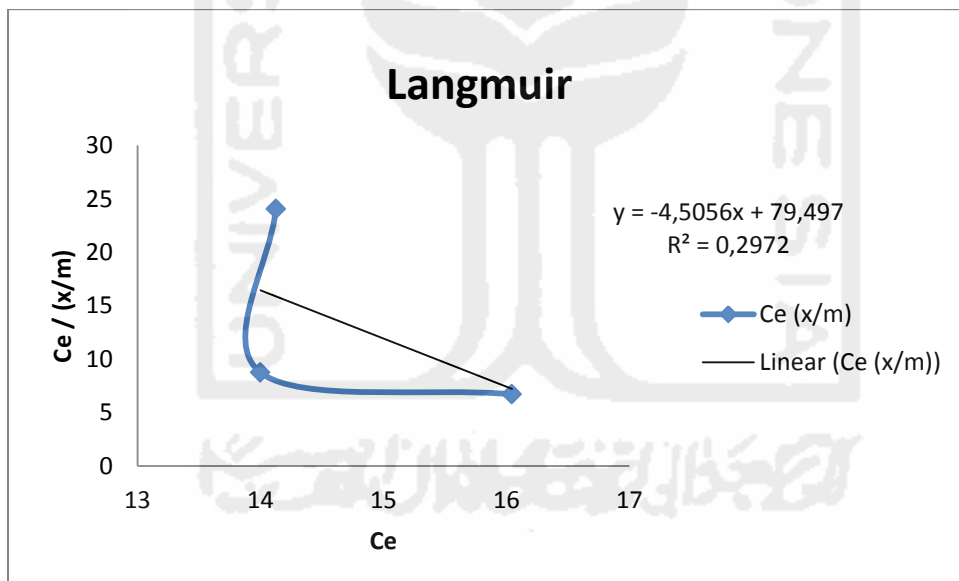
$$W = \frac{(40 \text{ mg/L} - 16,0447 \text{ mg/L})0,05 \text{ L}}{0,5 \text{ g}}$$

$$W = 2,3955 \text{ mg/g}$$

Perhitungan isothermal Langmuir dan Freudlich untuk adsorpsi fenol oleh karbon aktif

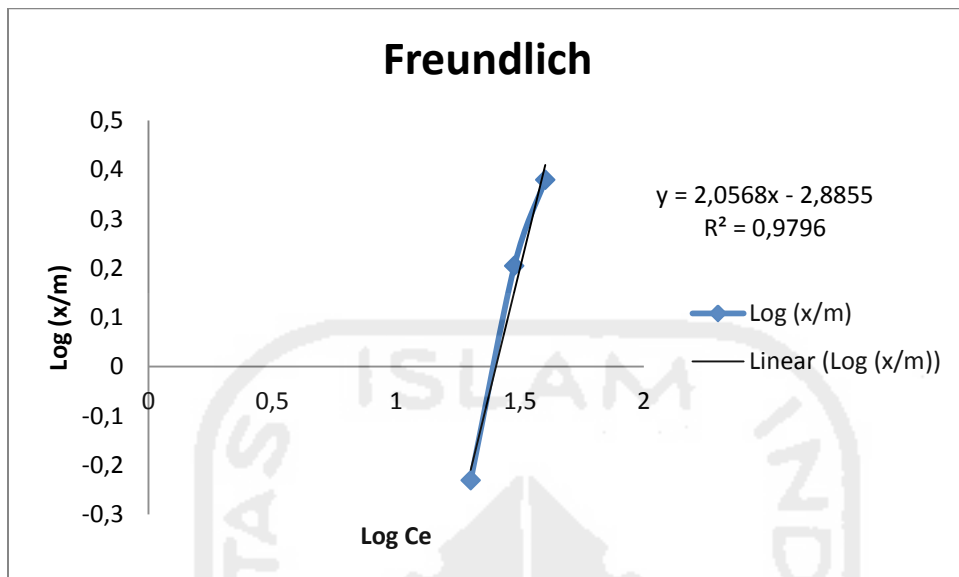
Co (mg/L)	Ce (mg/L)	C. selisih (mg/L)	Log Ce	x/m	log x/m	Ce/(x/m)
20	14,1249	5,8751	1,301029996	0,5875	-0,23099213	24,04238298
30	13,998	16,002	1,477121255	1,6002	0,204174266	8,747656543
40	16,0447	23,9553	1,602059991	2,3955	0,379396175	6,697850136

### 3.2 Kurva persamaan isothermal Langmuir





### 3.3 Kurva persamaan isothermal Freundlich



#### Lampiran 4. Perhitungan pH optimum fenol

Tabel perhitungan pH optimum fenol

pH	Co (mg/L)	Ce (mg/L)	V (L)	Wa (g)	W (mg/g)
3	50	15,4370	0,05	0,5	3,456
5	50	22,5473	0,05	0,5	2,745
7	50	24,0769	0,05	0,5	2,5923
8	50	24,6315	0,05	0,5	2,5368

## Lampiran 5. Kurva baku fenol

### 5.1 Absorbansi fenol

Tabel Absorbansi Larutan Standar Fenol

Standar	Konsentrasi (ppm)	Absorbansi
<b>Std 1</b>	10	0,172
<b>Std 2</b>	20	0,359
<b>Std 3</b>	30	0,559
<b>Std4</b>	40	0,678
<b>Std 5</b>	50	0,867

