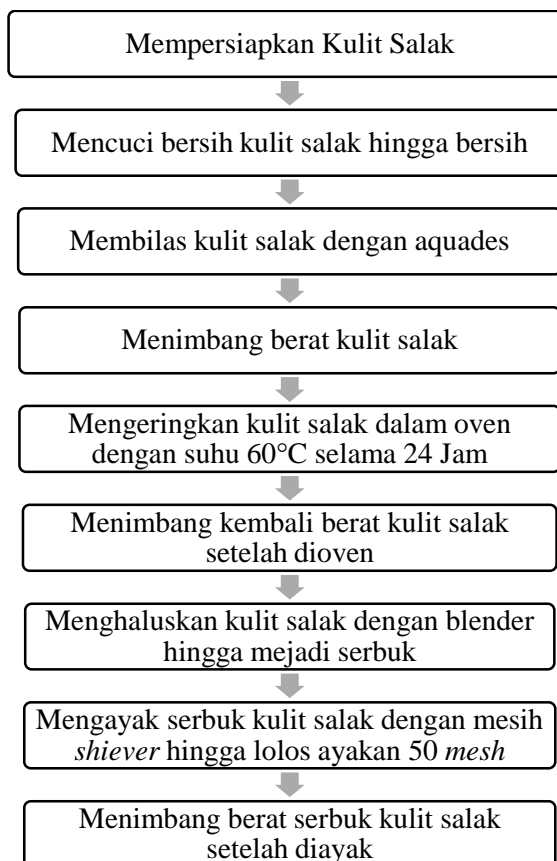


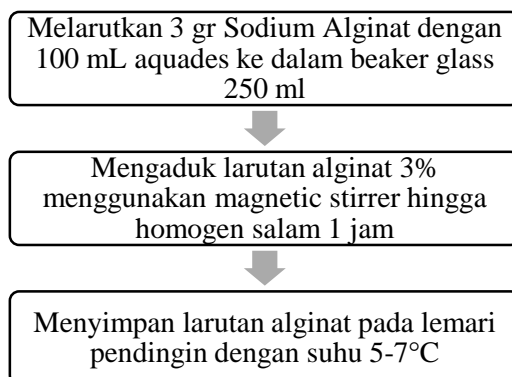
## LAMPIRAN

### Lampiran I Langkah kerja Pengujian

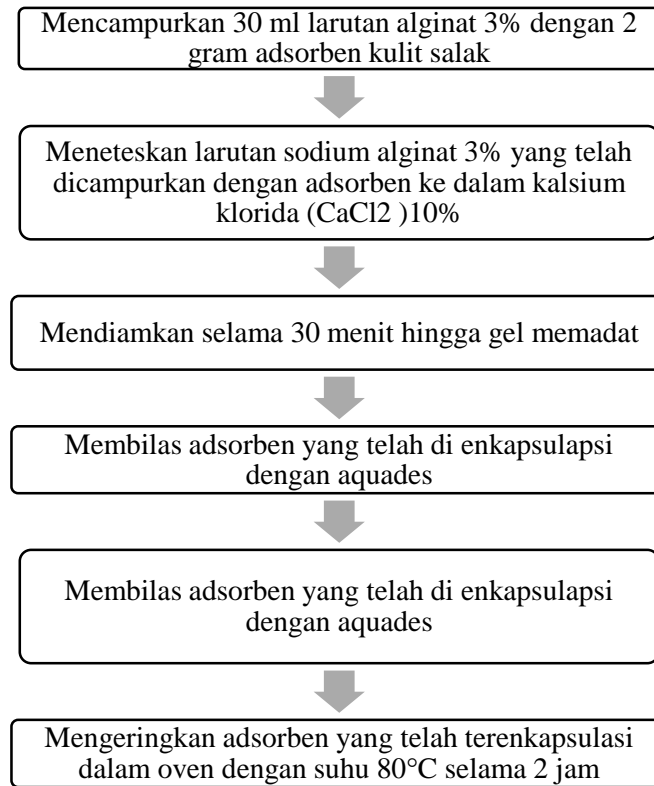
#### 1. Preparasi Adsorben Serbuk Kulit Salak



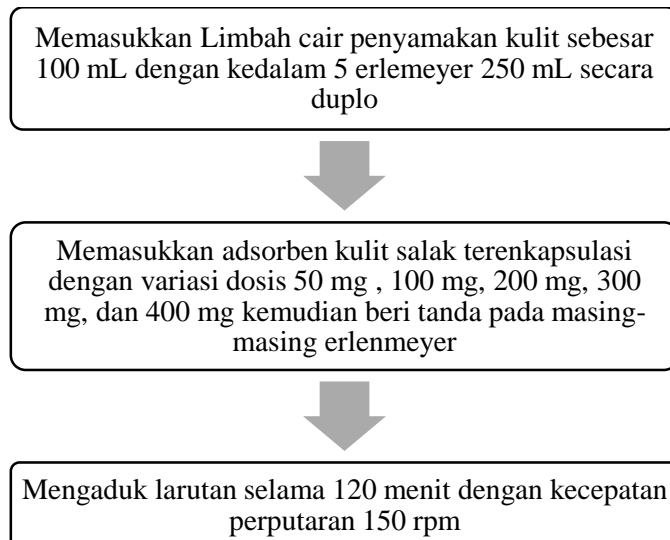
#### 2. Pembuatan Larutan Alginate 3 %



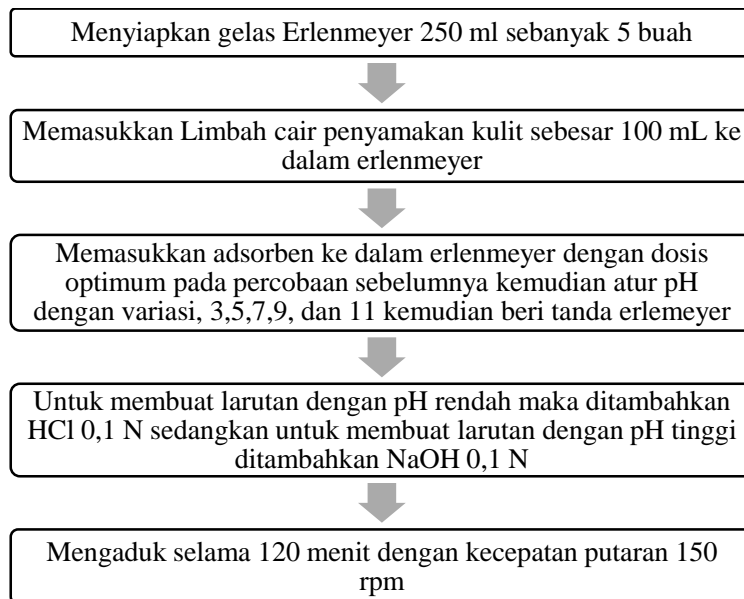
### 3. Pembuatan Adsorben yang dienkapsulasi dengan *Alginate Gel*



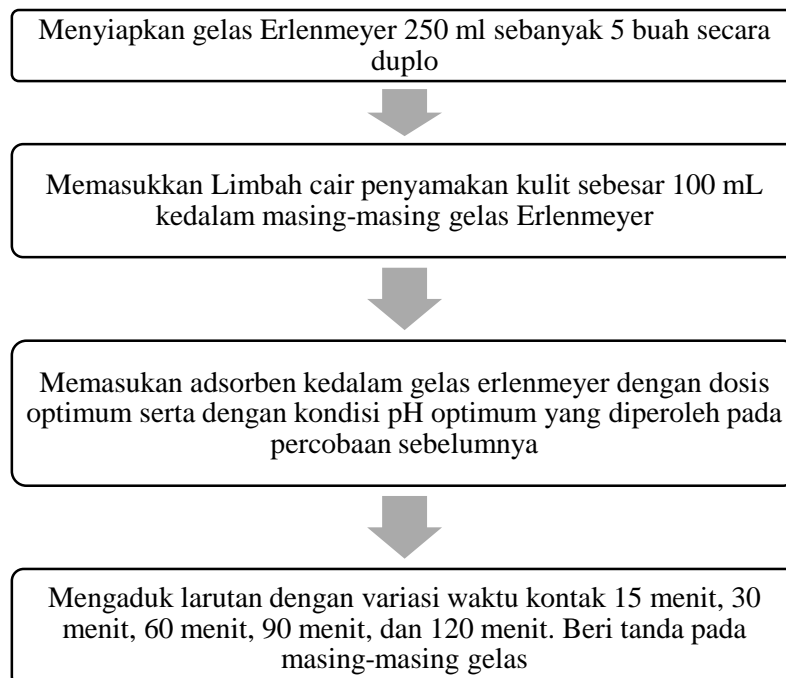
### 4. Variasi Massa Adsorben



## 5. Variasi pH



## 6. Variasi Waktu Kontak



## Lampiran II Perhitungan

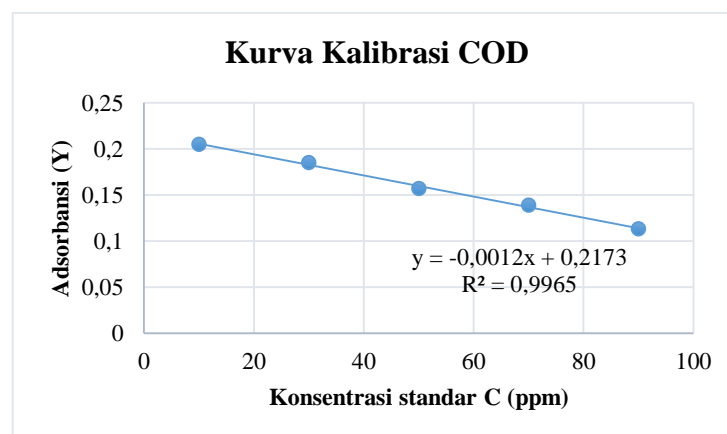
### 1. Pembuatan Kurva Kalibrasi COD

Data Hasil Pembuatan Larutan Standar

No.	Konsentrasi (C)	Absorbansi (A)
1	10	0,205
2	30	0,185
3	50	0,157
4	70	0,139
5	90	0,113

### 2. Persamaan Regresi Linier

x	y	xy	x <sup>2</sup>	y <sup>2</sup>
10	0,205	2,05	100	0,04203
30	0,185	5,55	900	0,03423
50	0,157	7,85	2500	0,02465
70	0,139	9,73	4900	0,01932
90	0,113	25,18	8400	0,01277
250	0,799	50,36	16800	0,6384



Regresi Linear =  $y = -0,0012x + 0,2173$  dengan  $R^2 = 0.9965$

<b>slope</b>	-0,0012x
<b>intercept</b>	0,2173

Maka dapat diperoleh nilai *slope* (b) sebagai berikut.

$$b = \frac{\sum xy - (\sum x \cdot \sum y)/n}{\sum x^2 - ((\sum x)^2/n)}$$

$$b = \frac{50,36 - (250 \times 0,799)/5}{16800 - \left(\frac{250}{5}\right)^2} = -0,0012$$

Sementara itu nilai intercept (a) dapat dihitung sebagai berikut.

$$a = \frac{\sum y - (b \cdot \sum x)}{n}$$

$$a = \frac{0,799 - (-0,0012 \times 250)}{5} = 0,02173$$

Sehingga, persamaan regresi linear adalah:

$$Y = bx + a$$

$$Y = -0,0012x + 0,2173$$

### 3. Perhitungan Sodium Alginate 3%

Diketahui :

Massa sodium alginate yang digunakan = 3 gram

Volume Aquades = 100 mL

$$\frac{3 \text{ gram}}{100 \text{ mL}} \times 100\% = 3\%$$

#### 4. Perhitungan Massa Adsorben Kulit Salak Terenkapsulasi

Diketahui

Data percobaan sebelum dioven :

Massa serbuk kulit salak yang dipakai : 52 gram

Larutan Sodium Alginate : 780 mL

Berat Na-alginate dalam 780 ml alginate 3% =  $\frac{3}{100} \times 780 \text{ mL} = 23,4 \text{ gram}$

Berat Na-alginate + adsorben (basah) = 680 gr

Data percobaan sesudah dioven :

Massa adsorben sesudah dioven = 52 gram

Berat alginate + adsorben (kering) = 23,4 gram + 52 gram = 75,4 gram

Kadar air =  $(75,4 \text{ gr} / 680 \text{ gr}) \times 100\% = 11,08 \%$

Massa Adsorben yang dipakai :

Massa optimum adsorben 0,4 gram. Untuk mencari massa adsorben dengan massa 0,4 gram dilakukan pembagian dari adsorben yang dipakai yaitu 130 gram agar massa adsorben yang dipakai sebesar 0,4 gram.

52 gram adsorben : 130 = 0,4 gram

23,4 gram alginate : 130 = 0,187 gram

Jadi massa dalam bulir adsorben yang dipakai :

0,4 gram + 0,187 gram = 0,587 gram

Jadi dalam massa bulir adsorben serbuk salak+alginate yang dipakai :

0,4 gr serbuk salak + 0,187 gr Alginate = 0,587 gram

### Lampiran III Data Hasil Penelitian

#### 1. Data Variasi Massa

- Parameter COD

Massa (Mg)	Abs	pH awal		Rerata pH	Konsentrasi (Mg/L)		Rerata Konsentrasi (Mg/L)	Efisiensi Adsorpsi (%)
		Awal	Akhir		Awal	Akhir		
L0 0 mg kontrol (1)	0,111	7	7	7	885,8	881,9	981,67	0,59%
L0 0 mg kontrol (2)	0,088	7	7		1077,5	1069,9		
L1 50 mg (1)	0,130	7	7	7	981,67	727,5	677,5	31,0%
L1 50 mg (2)	0,142	7	7			627,5		
L2 100 mg (1)	0,153	7	7	7	981,67	535,8	502,5	48,8%
L2 100 mg (2)	0,161	7	7			469,2		
L3 200 mg (1)	0,167	7	7	7	981,67	419,2	406,7	58,6%
L3 200 mg (2)	1,170	7	7			394,2		
L4 300 mg (1)	0,176	7	7	7	981,67	344,2	373,3	62,0%
L4 300 mg (2)	0,169	7	7			402,5		
L5 400 mg (1)	0,163	7	7	7	981,67	452,5	365,0	62,8%
L5 400 mg (2)	0,184	7	7			277,50		

#### Contoh perhitungan konsentrasi COD

Awal : L0 0 mg kontrol (1)

$$Y = bx + a$$

$$Y = -0,0012x + 0,2173$$

$$0,111 = -0,0012x + 0,2173$$

$$-0,0012x = 0,2173 - 0,111$$

$$-0,0012x = 0,1063$$

$$X = \frac{0,1063}{0,0012} = 88,58 \text{ Mg/L}$$

Konsentrasi Sebenarnya

$$C_{\text{total COD}} = C \times Fp$$

$$C = 88,85 \text{ Mg/L} \times 10$$

$$C = 885,8 \text{ Mg/L}$$

$$\text{Efisiensi Removal : } \eta = \frac{C_0 - C_a}{C_0} \times 100\%$$

$$\eta = \frac{981,67 \text{ Mg/L} - 677,5 \text{ Mg/L}}{981,67 \text{ Mg/L}} \times 100\% = 31,0\%$$

- Parameter TSS

No	Massa Adsorben (Mg)	Kertas Saring (W0) (gr)	Kertas Saring (W1) (gr)	C (Mg/L)	Rerata (Mg/L)	Effisiensi Adsorpsi (%)
1	L0 0 mg kontrol (1)	1,2418	1,2741	64,60	64,60	0,62%
2	L0 0 mg kontrol (2)	1,2482	1,2803	64,20		
3	L1 50 mg (1)	1,2501	1,2789	57,60	60,5	6,35%
4	L1 50 mg (2)	1,1498	1,1815	63,40		
6	L2 100 mg (1)	1,2414	1,2692	55,60	52,5	18,73%
7	L2 100 mg (2)	1,2471	1,2718	49,40		
10	L3 200 mg (1)	1,2450	1,2760	62,00	50,2	22,29%
11	L3 200 mg (2)	1,2540	1,2732	38,40		
12	L4 300 mg (1)	1,2460	1,2728	53,60	49,2	23,84%
13	L4 300 mg (2)	1,2530	1,2754	44,80		
16	L5 400 mg (1)	1,2533	1,2773	48,00	48,9	24,30%
17	L5 400 mg (2)	1,192	1,2169	49,80		

Contoh perhitungan konsentrasi TSS

L0 0 mg kontrol (1)

A= Berat Awal

B = Berat Akhir

$$\text{mg TSS per liter} = \frac{(A - B) \times 1000}{\text{Volume Contoh Uji}}$$

$$\text{mg TSS per liter} = \frac{(1,2741 \text{ gr} - 1,2418 \text{ gr}) \times 1000}{50 \text{ mL}}$$

$$= 0,646 \text{ gr/L} \times 1000$$

$$= 64,60 \text{ mg/L}$$

$$\text{Efisiensi Removal : } \eta = \frac{c_0 - c_a}{c_0} \times 100\%$$

$$\eta = \frac{64,40 \text{ mg/L} - 60,5 \text{ mg/L}}{64,40 \text{ mg/L}} \times 100\% = 6,35 \%$$

## 2. Data Variasi pH

- Parameter COD

No	Massa (mg)	pH Rencana	pH awal	Konsentrasi (Mg/L)		Rerata Konsentrasi (Mg/L)	Efisiensi Adsorpsi (%)
				Awal	Akhir		
1	400 mg	3	7	981,70	777,50	798,33	18,68%
2	400 mg	3	7	981,70	819,17		
3	400 mg	5	7	981,70	694,17	669,17	31,84%
4	400 mg	5	7	981,70	644,17		
5	400 mg	7	7	981,70	477,50	490,00	50,09%
6	400 mg	7	7	981,70	502,50		
7	400 mg	9	7	981,70	702,50	706,67	28,02%
8	400 mg	9	7	981,70	710,83		
9	400 mg	11	7	981,70	594,17	623,33	36,50%
10	400 mg	11	7	981,70	652,50		
11	Blanko	7		981,70	964,7	964,7	1,73%

- Parameter TSS

No	Massa Adsorben (Mg)	pH rencana	pH awal	Kertas Saring (W0) (gr)	Kertas Saring (W1) (gr)	C (Mg/L)	Rerata (Mg/L)	Efisiensi Adsorpsi (%)
1	400 mg	3	7	1,1740	1,1865	50,00	51,6	11,6%
2	400 mg	3	7	1,1806	1,1939	53,20		
3	400 mg	5	7	1,1829	1,1948	47,60	46,8	19,9%
4	400 mg	5	7	1,1797	1,1912	46,00		
5	400 mg	7	7	1,1865	1,1981	46,40	37,2	36,3%
6	400 mg	7	7	1,1857	1,1927	28,00		
7	400 mg	9	7	1,1900	1,2012	44,80	43,2	26,0%
8	400 mg	9	7	1,2017	1,2121	41,60		
9	400 mg	11	7	1,1938	1,2059	48,4	45	22,9%
10	400 mg	11	7	1,1888	1,1992	41,6		
11	Blanko	7		1,2068	1,2214	58,4	58,4	0,00%

### 3. Data Variasi Waktu

- Parameter COD

Waktu Kontak (menit)	pH awal		Rerata pH	Konsentrasi (Mg/L)		Rerata Konsentrasi (Mg/L)	Efisiensi Adsorpsi (%)
	Awal	Akhir		Awal	Akhir		
L0 0 menit kontrol (1)	7	7	7	902,50	902,50	927,50	2,8%
L0 0 menit kontrol (2)	7	7		902,50	952,50		
L1 15 menit (1)	7	7	7	902,50	802,50	785,83	12,9%
L1 15 menit (2)	7	7		902,50	769,17		
L2 30 menit(1)	7	7	7	902,50	660,83	640,00	29,1%
L2 30 menit (2)	7	7		902,50	619,17		
L3 60 menit (1)	7	7	7	902,50	552,50	519,17	42,5%
L3 60 menit (2)	7	7		902,50	485,83		
L4 90 menit (1)	7	7	7	902,50	319,17	315,00	65,1%
L4 90 menit (2)	7	7		902,50	310,83		
L5 120 menit (1)	7	7	7	902,50	194,17	194,17	78,5%
L5 120 menit (2)	7	7		902,50	152,50		

- Parameter TSS

No	Waktu Kontak (menit)	Kertas Saring (W0) (gr)	Kertas Saring (W1) (gr)	C (Mg/L)	Rerata (Mg/L)	Effisiensi Adsorpsi (%)
1	L0 0 menit kontrol (1)	1,1458	1,1802	68,80	66,8	1,5%
2	L0 0 menit kontrol (2)	1,1469	1,1793	64,80		
3	L1 15 menit (1)	1,1477	1,1785	61,60	59,90	10,3%
4	L1 15 menit (2)	1,1132	1,1423	58,20		
5	L2 30 menit(1)	1,1269	1,1533	52,80	52,00	22,2%
6	L2 30 menit (2)	1,1768	1,2024	51,20		
7	L3 60 menit (1)	1,1667	1,1914	49,40	47,80	28,4%
8	L3 60 menit (2)	1,1647	1,1878	46,20		
9	L4 90 menit (1)	1,138	1,1598	43,60	42,50	36,4%
10	L4 90 menit (2)	1,1779	1,1986	41,40		
11	L5 120 menit (1)	1,1699	1,1904	41,00	41,00	38,6%
12	L5 120 menit (2)	1,1613	1,1796	36,60		

#### 4. Data Hasil Proses Adsorpsi Kolom-Fitoremediasi

- Parameter COD

Hari	Sampel	Suhu	pH	Konsentrasi (Mg/L)	Rerata (Mg/L)	Efisiensi (%)
Hari 1	Inlet (1)	26	7,8	619,17	635,83	0,00%
	Inlet (2)			652,50		
	hari 1Bak Kontrol (1)	26	7,7	589,00	589,00	7,37%
	Hari 1 Bak Kontrol (2)			660,30		
	Hari 1 Fitoremediasi (1)	25	7,6	432,90	455,90	28,30%
	Hari 1 Fitoremediasi (2)			478,90		
Hari 2	hari 1Bak Kontrol (1)	25	7,9	559,04	560,05	11,92%
	Hari 1 Bak Kontrol (2)			560,05		
	Hari 1 Fitoremediasi (1)	24	7,6	365,75	381,78	39,96%
	Hari 1 Fitoremediasi (2)			397,81		
Hari 3	hari 1Bak Kontrol (1)	26	7,7	513,7	513,70	19,21%
	Hari 1 Bak Kontrol (2)			308,49		
	Hari 1 Fitoremediasi (1)	25	7,6	344,38	344,38	45,84%
	Hari 1 Fitoremediasi (2)			301,640		
Hari 4	hari 1Bak Kontrol (1)	26	7,7	461,23	461,23	27,46%
	Hari 1 Bak Kontrol (2)			331,78		
	Hari 1 Fitoremediasi (1)	25	7,6	267,67	278,63	56,18%
	Hari 1 Fitoremediasi (2)			278,63		
Hari 5	hari 1Bak Kontrol (1)	26	7,9	298,36	453,97	28,60%
	Hari 1 Bak Kontrol (2)			453,97		
	Hari 1 Fitoremediasi (1)	24	7,6	247,4	247,4	61,09%
	Hari 1 Fitoremediasi (2)			166,85		
Hari 6	hari 1Bak Kontrol (1)	25	7,8	452,33	452,33	28,86%
	Hari 1 Bak Kontrol (2)			180,55		
	Hari 1 Fitoremediasi (1)	24	7,7	432,6	246,58	61,22%
	Hari 1 Fitoremediasi (2)			246,58		
Hari 7	hari 1Bak Kontrol (1)	26	7,9	433,7	433,7	31,79%
	Hari 1 Bak Kontrol (2)			482,38		
	Hari 1 Fitoremediasi (1)	24	7,7	268,5	244,315	61,58%
	Hari 1 Fitoremediasi (2)			220,13		
Hari 8	hari 1Bak Kontrol (1)	26	7,8	402,47	426,575	32,91%
	Hari 1 Bak Kontrol (2)			450,68		
	Hari 1 Fitoremediasi (1)	25	7,7	406,85	241,37	62,04%
	Hari 1 Fitoremediasi (2)			241,37		
Hari 9	hari 1Bak Kontrol (1)	26	7,8	519,73	432,605	31,96%
	Hari 1 Bak Kontrol (2)			345,48		
	Hari 1 Fitoremediasi (1)	23,5	7,6	343,29	240,82	62,13%
	Hari 1 Fitoremediasi (2)			240,82		
Hari 10	hari 1Bak Kontrol (1)	26	7,8	506,41	430,18	32,34%
	Hari 1 Bak Kontrol (2)			430,18		

	Hari 1 Fitoremediasi (1)	24	7,5	228,39	210,45	66,90%
	Hari 1 Fitoremediasi (2)			210,45		
Hari 11	hari 1Bak Kontrol (1)	26	7,8	425,70	425,70	33,05%
	Hari 1 Bak Kontrol (2)			403,27		
	Hari 1 Fitoremediasi (1)	24	7,6	205,96	192,511	69,72%
	Hari 1 Fitoremediasi (2)			192,51		
Hari 12	hari 1Bak Kontrol (1)	26	7,8	412,24	412,24	35,17%
	Hari 1 Bak Kontrol (2)			344,98		
	Hari 1 Fitoremediasi (1)	25	7,5	179,06	188,03	70,43%
	Hari 1 Fitoremediasi (2)			197,00		
Hari 13	hari 1Bak Kontrol (1)	25	7,8	358,43	358,43	43,63%
	Hari 1 Bak Kontrol (2)			457,09		
	Hari 1 Fitoremediasi (1)	23	7,5	165,61	165,61	73,95%
	Hari 1 Fitoremediasi (2)			232,87		
Hari 14	hari 1Bak Kontrol (1)	25	7,7	416,73	389,82	38,69%
	Hari 1 Bak Kontrol (2)			389,82		
	Hari 1 Fitoremediasi (1)	24	7,5	161,12	161,12	74,66%
	Hari 1 Fitoremediasi (2)			219,42		

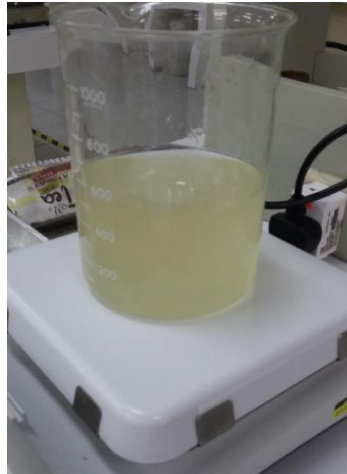
- Parameter TSS

No	Hari	Sampel	Suhu	pH	Kertas Saring (W0) (gr)	Kertas Saring (W1) (gr)	C (Mg/L)	Rerata (Mg/L)	Effisiensi (%)
1	Hari 1	Inlet (1)	26	7,8	1,2188	1,2504	63,20	64,80	0%
2		Inlet (2)			1,2150	1,2474	64,80		
3		Bak Kontrol (1)	26	7,7	1,2230	1,2582	70,40	62,80	3,09%
4		Bak Kontrol (2)			1,2182	1,2496	62,80		
5		Fitoremediasi (1)	25	7,6	1,2176	1,2411	47,00	47,00	27,47%
6		Fitoremediasi (2)			1,2185	1,2435	50,00		
7	Hari 2	Bak Kontrol (1)	25	7,9	1,2440	1,2740	60,00	60,00	7,41%
8		Bak Kontrol (2)			1,2136	1,2470	66,80		
9		Fitoremediasi (1)	24	7,6	1,2226	1,2458	46,40	44,20	31,79%
10		Fitoremediasi (2)			1,2135	1,2356	44,20		
11	Hari 3	Bak Kontrol (1)	26	7,7	1,2191	1,2488	59,40	59,60	8,02%
12		Bak Kontrol (2)			1,2176	1,2475	59,80		
13		Fitoremediasi (1)	25	7,6	1,2204	1,2412	41,60	40,20	37,96%
14		Fitoremediasi (2)			1,2354	1,2548	38,80		
15	Hari 4	Bak Kontrol (1)	26	7,7	1,2156	1,2458	60,40	58,80	9,26%
16		Bak Kontrol (2)			1,2232	1,2526	58,80		
17		Fitoremediasi (1)	25	7,6	1,2176	1,2348	34,40	36,80	43,21%
18		Fitoremediasi (2)			1,2245	1,2441	39,20		
19	Hari 5	Bak Kontrol (1)	26	7,9	1,2041	1,2345	60,80	57,90	10,65%
20		Bak Kontrol (2)			1,2177	1,2452	55,00		
21		Fitoremediasi (1)	24	7,6	1,2350	1,2544	38,80	33,60	48,15%

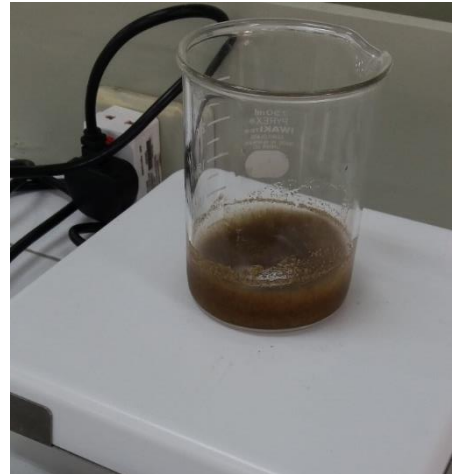
22		Fitoremediasi (2)			1,2159	1,2327	33,60		
23	Hari 6	Bak Kontrol (1)	25	7,8	1,2302	1,2585	56,60	56,00	13,58%
24		Bak Kontrol (2)			1,2211	1,2488	55,40		
25		Fitoremediasi (1)	24	7,7	1,2251	1,2406	31,00	27,90	56,94%
26		Fitoremediasi (2)			1,2202	1,2326	24,80		
27	Hari 7	Bak Kontrol (1)	26	7,9	1,2109	1,2364	51,00	53,90	16,82%
28		Bak Kontrol (2)			1,2166	1,2450	56,80		
29		Fitoremediasi (1)	24	7,7	1,2392	1,2510	23,60	21,80	66,36%
30		Fitoremediasi (2)			1,2335	1,2435	20,00		
31	Hari 8	Bak Kontrol (1)	26	7,9	1,2273	1,2507	46,80	48,20	25,62%
32		Bak Kontrol (2)			1,2282	1,2530	49,60		
33		Fitoremediasi (1)	24	7,8	1,2227	1,2348	24,20	19,60	69,75%
34		Fitoremediasi (2)			1,2266	1,2341	15,00		
35	Hari 9	Bak Kontrol (1)	26	7,8	1,2189	1,2421	46,40	46,40	28,40%
36		Bak Kontrol (2)			1,2081	1,2275	38,80		
37		Fitoremediasi (1)	23,5	7,6	1,2221	1,2309	17,60	19,40	70,06%
38		Fitoremediasi (2)			1,2267	1,2364	19,40		
39	Hari 10	Bak Kontrol (1)	25	7,7	1,1967	1,2160	38,60	46,20	28,70%
40		Bak Kontrol (2)			1,2149	1,2380	46,20		
41		Fitoremediasi (1)	24	7,5	1,2237	1,2330	18,60	18,50	71,45%
42		Fitoremediasi (2)			1,2109	1,2201	18,40		
43	Hari 11	Bak Kontrol (1)	26	7,8	1,2219	1,2405	37,20	46,00	29,01%
44		Bak Kontrol (2)			1,2158	1,2388	46,00		
45		Fitoremediasi (1)	24	7,6	1,2194	1,2293	19,80	18,30	71,76%
46		Fitoremediasi (2)			1,2157	1,2241	16,80		
47	Hari 12	Bak Kontrol (1)	26	7,8	1,2043	1,2176	26,60	45,70	29,48%
48		Bak Kontrol (2)			1,2039	1,2363	64,80		
49		Fitoremediasi (1)	25	7,5	1,2038	1,2129	18,20	18,20	71,91%
50		Fitoremediasi (2)			1,2335	1,2418	16,60		
51	Hari 13	Bak Kontrol (1)	25	7,8	1,2072	1,2334	52,40	45,60	29,63%
52		Bak Kontrol (2)			1,2286	1,2480	38,80		
53		Fitoremediasi (1)	23	7,5	1,2148	1,2242	18,80	17,90	72,38%
54		Fitoremediasi (2)			1,2189	1,2274	17,00		
55	Hari 14	Bak Kontrol (1)	25	7,7	1,2366	1,2548	36,40	44,90	30,71%
56		Bak Kontrol (2)			1,2360	1,2627	53,40		
57		Fitoremediasi (1)	24	7,5	1,2363	1,2454	18,20	17,20	73,46%
58		Fitoremediasi (2)			1,2282	1,2363	16,20		

## Lampiran IV Dokumentasi

### 1. Dokumentasi Proses Enkapsulasi Adsorben Kulit Salak



Preparasi Larutan Sodium Alginate 3%



Campuran Larutan Sodium Alginate 3% dengan serbuk kulit salak



Adsorben terenkapsulasi dalam larutan  $\text{CaCl}_2$



Adsorben setelah dibilas akuades



Adsorben Setelah dioven

## 2. Dokumentasi Percobaan Adsorpsi dan Pengujian Parameter



Proses Adsorpsi



Pengujian COD



Pembacaan Nilai Absorbansi COD menggunakan Spektrofotometer Uv-Vis



Penyaringan Padatan Tersuspensi pada Kertas Saring

## 3. Dokumentasi Reaktor Adsorpsi Kolom dan Fitoremediasi



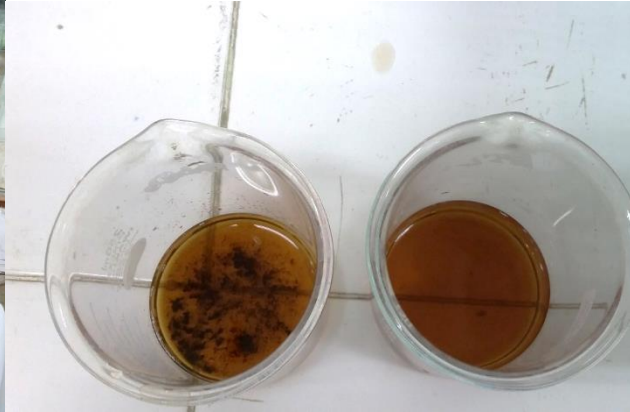
Rangkaian Reaktor Adsorpsi Kolom dan Fitoremediasi



Reaktor Fitoremediasi



Reaktor Adsorpsi Kolom



Perbandingan Effluen Adsorpsi Kolom dan Fitoremediasi

#### 4. Dokumentasi Kondisi Tanaman Eceng Gondok pada Proses Fitoremediasi



Fitoremediasi hari-0



Fitoremediasi Hari-1



Fitoremediasi hari-2



Fitoremediasi Hari-3



Fitoremediasi hari-4



Fitoremediasi Hari-5



Fitoremediasi hari-6



Fitoremediasi Hari-7



Fitoremediasi hari-8



Fitoremediasi Hari-9



Fitoremediasi hari-10



Fitoremediasi Hari-11



Fitoremediasi hari-12



Fitoremediasi Hari-13



Fitoremediasi hari-14

## Lampiran V Hasil Uji SEM

### 1. Enkapsulasi Adsorben Sebelum Adsorpsi

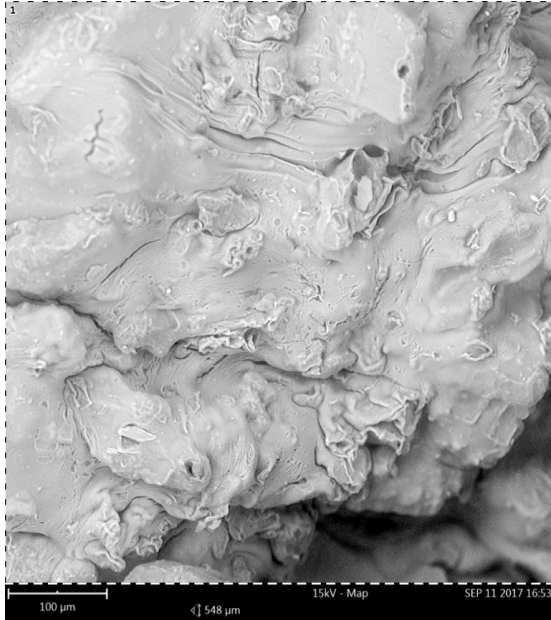
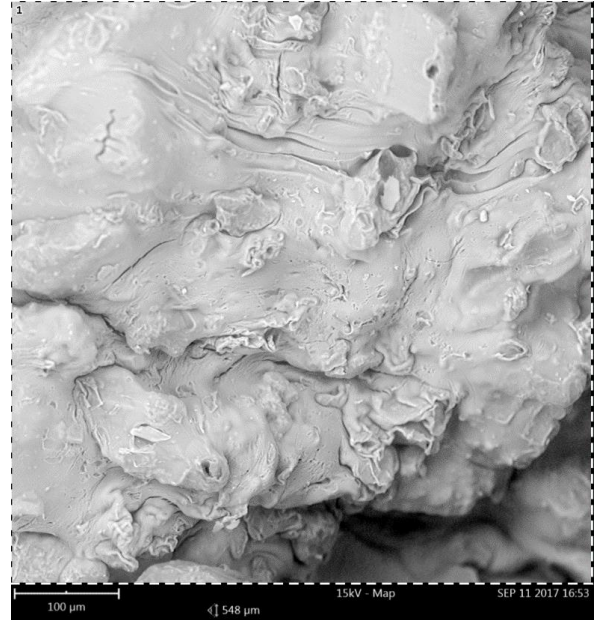
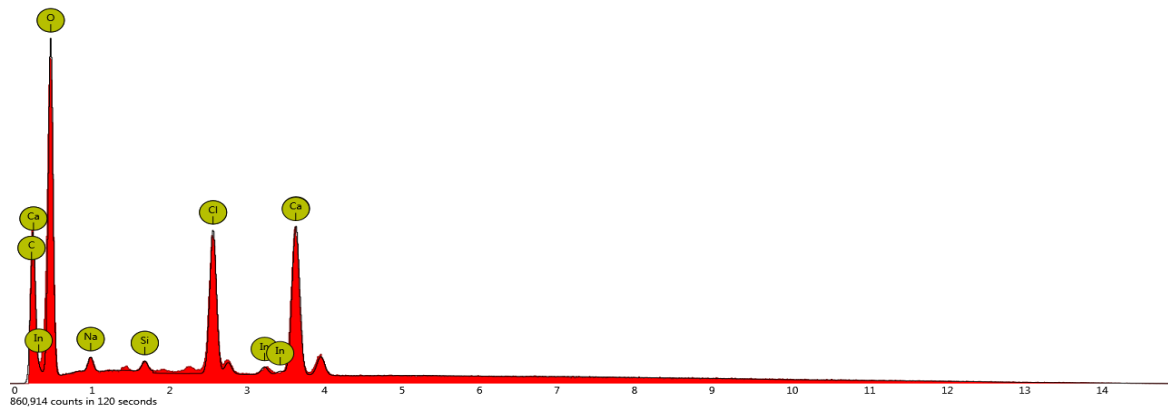


Image 1



1. region



Disabled elements: B, I, Po, Pu, Ru, Sb

**Element Number Element Symbol Element Name Atomic Concentration Error**

Element Number	Element Symbol	Element Name	Atomic Concentration	Error
8	O	Oxygen	80.7	0.3
20	Ca	Calcium	6.1	0.2
17	Cl	Chlorine	4.9	0.1
6	C	Carbon	5.8	0.7
11	Na	Sodium	1.9	0.1
14	Si	Silicon	0.3	0.4
49	In	Indium	0.3	0.1

## 2. Enkapsulasi Adsorben Setelah Adsorpsi



Image 1



1. region



Disabled elements: B

Element Number	Element Symbol	Element Name	Atomic Concentration	Error
8	O	Oxygen	85.5	0.2
6	C	Carbon	9.5	0.8
20	Ca	Calcium	3.5	0.2
14	Si	Silicon	1.1	0.0
13	Al	Aluminium	0.3	0.0

### 3. RAW Kulit Salak

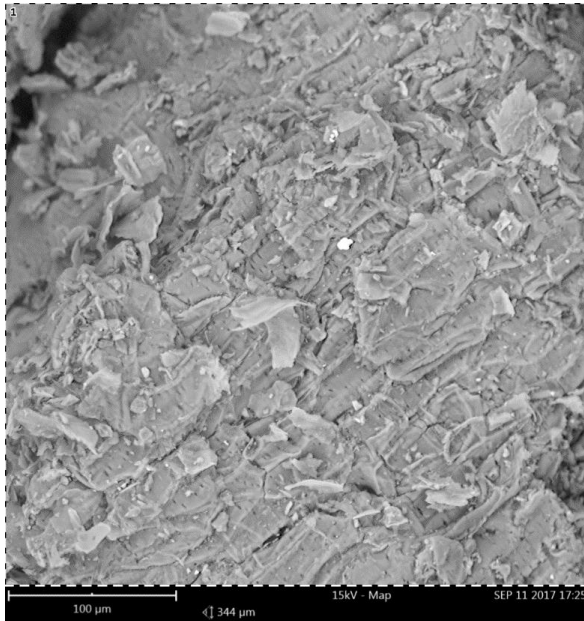
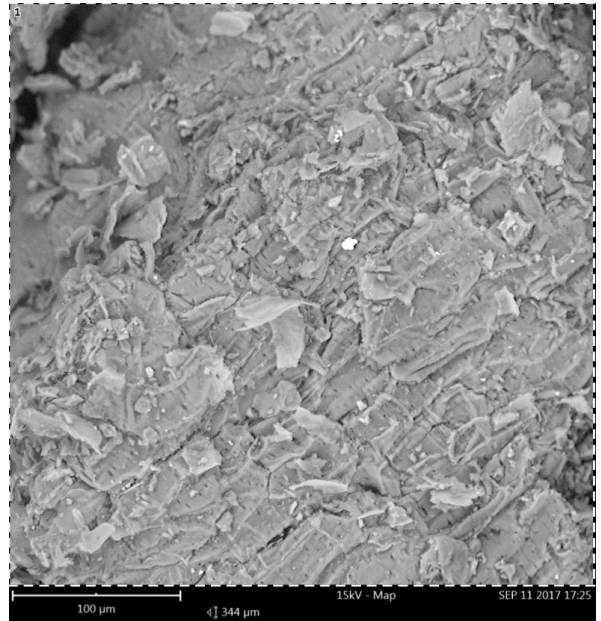
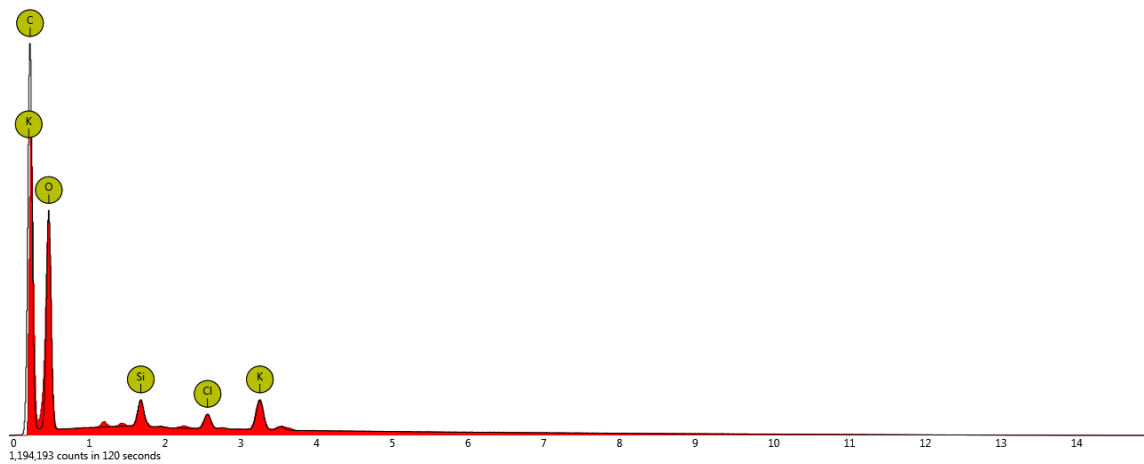


Image 1



1. region



Disabled elements: B, In

Element Number	Element Symbol	Element Name	Atomic Concentration	Error
6	C	Carbon	17.2	0.7
8	O	Oxygen	77.7	0.2
19	K	Potassium	2.4	0.1
14	Si	Silicon	1.6	0.0
17	Cl	Chlorine	1.1	0.0

## Lampiran VI Hasil Uji FTIR

## 1. Tabel Korelasi Gugus Fungsi

Range (cm <sup>-1</sup> ) and Intensity*	Group and Class	Assignment and Remarks
3700-3600 (s)	-OH in alcohols and phenols	OH stretch (dil soln)
3520-3320 (m-s)	-NH <sub>2</sub> in aromatic amines, primary amines and amides	NH stretch (dil soln)
3420-3250 (s)	-OH in alcohols and phenols	OH stretch (solids & liquids)
3360-3340 (m)	-NH <sub>2</sub> in primary amides	NH <sub>2</sub> antisym stretch (solids)
3320-3250 (m)	-OH in oximes	O-H stretch
3300-3250 (m-s)	≡CH in acetylenes	≡CH-H stretch
3300-3280 (s)	-NH in secondary amides	NH stretch (solids); also in polypeptides and proteins
3200-3180 (s)	-NH <sub>2</sub> in primary amides	NH <sub>2</sub> sym stretch (solids)
3200-3000 (v br)	-NH <sub>3</sub> <sup>+</sup> in amino acids	NH <sub>3</sub> <sup>+</sup> antisym stretch
3100-2400 (v br)	-OH in carboxylic acids	H-bonded OH stretch
3100-3000 (m)	=CH in aromatic and unsaturated hydrocarbons	=C-H stretch
2990-2850 (m-s)	-CH <sub>3</sub> and -CH <sub>2</sub> - in aliphatic compounds	CH antisym and sym stretching
2850-2700 (m)	-CH <sub>3</sub> attached to O or N	CH stretching modes
2750-2650 (w-m)	-CHO in aldehydes	overtone of CH bending (Fermi resonance)
2750-2350 (br)	-NH <sub>3</sub> <sup>+</sup> in amine hydrohalides	NH stretching modes
2720-2560 (m)	-OH in phosphorus oxyacids	associated OH stretching
2600-2540 (w)	-SH in alkyl mercaptans	S-H stretch; strong in Raman
2410-2280 (m)	-PH in phosphines	P-H stretch; sharp peak
2300-2230 (m)	N≡N in diazonium salts	N≡N stretch, aq soln
2285-2250 (s)	N=C=O in isocyanates	N=C=O antisym stretch
2260-2200 (m-s)	C≡N in nitriles	C≡N stretch
2260-2190 (w-m)	C≡C in alkynes (disubst)	C≡C stretch; strong in Raman
2190-2130 (m)	C≡N in thiocyanates	C≡N stretch
2175-2115 (s)	N≡C in isonitriles	N≡C stretch
2160-2080 (m)	N=N=N in azides	N=N=N antisym stretch
2140-2100 (w-m)	C≡C in alkynes (monosubst)	C≡C stretch
2000-1650 (w)	substituted benzene rings	several bands from overtone and combination bands
1980-1950 (s)	C=C=C in allenes	C=C=C antisym stretch
1870-1650 (vs)	C=O in carbonyl compounds	C=O stretch
1870-1830 (s)	C=O in β-lactones	C=O stretch
1870-1790 (vs)	C=O in anhydrides	C=O antisym stretch; part of doublet
1820-1800 (s)	C=O in acid halides	C=O stretch; lower for aromatic acid halides
1780-1760 (s)	C=O in γ-lactones	C=O stretch
1765-1725 (vs)	C=O in anhydrides	C=O sym stretch; part of doublet
1760-1740 (vs)	C=O in α-keto esters	C=O stretch; enol form
1750-1730 (s)	C=O in δ-lactones	C=O stretch
1750-1740 (vs)	C=O in esters	C=O stretch; 20 cm <sup>-1</sup> lower if unsaturated
1740-1720 (s)	C=O in aldehydes	C=O stretch; 30 cm <sup>-1</sup> lower if unsaturated
1720-1700 (s)	C=O in ketones	C=O stretch; 20 cm <sup>-1</sup> lower if unsaturated
1710-1690 (s)	C=O in carboxylic acids	C=O stretch; fairly broad
1690-1640 (s)	C=N in oximes	C=N stretch; also imines
1680-1620 (s)	C=O and NH <sub>2</sub> in primary amides	two bands from C=O stretch and NH <sub>2</sub> deformation
1680-1635 (s)	C=O in ureas	C=O stretch; broad band
1680-1630 (m-s)	C=C in alkenes, etc.	C=C stretch
1680-1630 (vs)	C=O in secondary amides	C=O stretch (Amide I band)

\*v = very, s = strong, m = medium, w = weak, br = broad.

TABLE 7-3 (Continued)

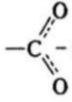
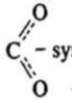

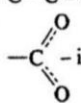
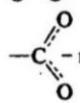
Range (cm <sup>-1</sup> ) and Intensity <sup>a</sup>	Group and Class	Assignment and Remarks
1670-1640 (s-vs)	C=O in benzophenones	C=O stretch
1670-1650 (vs)	C=O in primary amides	C=O stretch (Amide I band)
1670-1630 (vs)	C=O in tertiary amides	C=O stretch
1655-1635 (vs)	C=O in β-ketone esters	C=O stretch; enol form
1650-1620 (w-m)	N-H in primary amides	NH deformation (Amide II band)
1650-1580 (m-s)	NH <sub>2</sub> in primary amines	NH <sub>2</sub> deformation
1640-1580 (s)	NH <sub>3</sub> <sup>+</sup> in amino acids	NH <sub>3</sub> deformation
1640-1580 (vs)	C=O in β-diketones	C=O stretch; enol form
1620-1610 (s)	C=C in vinyl ethers	C=C stretch; doublet due to rotational isomerism
1615-1590 (m)	benzene ring in aromatic compounds	ring stretch; sharp peak
1615-1565 (s)	pyridine derivatives	ring stretch; doublet
1610-1580 (s)	NH <sub>2</sub> in amino acids	NH <sub>2</sub> deformation; broad band
1610-1560 (vs)	COO <sup>-</sup> in carboxylic acid salts	 - antisym stretch
1590-1580 (m)	NH <sub>2</sub> primary alkyl amide	NH <sub>2</sub> deformation (Amide II band)
1575-1545 (vs)	NO <sub>2</sub> in aliphatic nitro compounds	NO <sub>2</sub> antisym stretch
1565-1475 (vs)	NH in secondary amides	NH deformation (Amide II band)
1560-1510 (s)	triazine compounds	ring stretch; sharp band
1550-1490 (s)	NO <sub>2</sub> in aromatic nitro compounds	NO <sub>2</sub> antisym stretch
1530-1490 (s)	NH <sub>3</sub> <sup>+</sup> in amino acids or hydrochlorides	NH <sub>3</sub> <sup>+</sup> deformation
1530-1450 (m-s)	N=N-O in azoxy compounds	N=N-O antisym stretch
1515-1485 (m)	benzene ring in aromatic compounds	ring stretch, sharp band
1475-1450 (vs)	CH <sub>2</sub> in aliphatic compounds	CH <sub>2</sub> scissors vibration
1465-1440 (vs)	CH <sub>3</sub> in aliphatic compounds	CH <sub>3</sub> antisym deformation
1440-1400 (m)	OH in carboxylic acids	in-plane OH bending
1420-1400 (m)	C-N in primary amides	C-N stretch (Amide III band)
1400-1370 (m)	<i>t</i> -butyl group	CH <sub>3</sub> deformations (two bands)
1400-1310 (s)	COO <sup>-</sup> group in carboxylic acid salts	 - sym stretch; broad band
1390-1360 (vs)	SO <sub>2</sub> in sulfonyl chlorides	SO <sub>2</sub> antisym stretch
1380-1370 (s)	CH <sub>3</sub> in aliphatic compounds	CH <sub>3</sub> sym deformation
1380-1360 (m)	isopropyl group	CH <sub>3</sub> deformations (two bands)
1375-1350 (s)	NO <sub>2</sub> in aliphatic nitro compounds	NO <sub>2</sub> sym stretch
1360-1335 (vs)	SO <sub>2</sub> in sulfonamides	SO <sub>2</sub> antisym stretch
1360-1320 (vs)	NO <sub>2</sub> in aromatic nitro compounds	NO <sub>2</sub> sym stretch
1350-1280 (m-s)	N=N-O in azoxy compounds	N=N-O sym stretch
1335-1295 (vs)	SO <sub>2</sub> in sulfones	SO <sub>2</sub> antisym stretch
1330-1310 (m-s)	CF <sub>3</sub> attached to a benzene ring	CF <sub>3</sub> antisym stretch
1300-1200 (vs)	<sup>+</sup> N-O in pyridine <i>N</i> -oxides	N-O stretch
1300-1175 (vs)	P=O in phosphorus oxyacids and phosphates	P=O stretch
1300-1000 (vs)	C-F in aliphatic fluoro compounds	C-F stretch
1285-1240 (vs)	Ar-O in alkyl aryl ethers	C-O stretch
1280-1250 (vs)	Si-CH <sub>3</sub> in silanes	CH <sub>3</sub> sym deformation
1280-1240 (m-s)	 C in epoxides	C-O stretch
1280-1180 (s)	C-N in aromatic amines	C-N stretch
1280-1150 (vs)	C-O-C in esters, lactones	C-O-C antisym stretch

TABLE 7-3 (Continued)

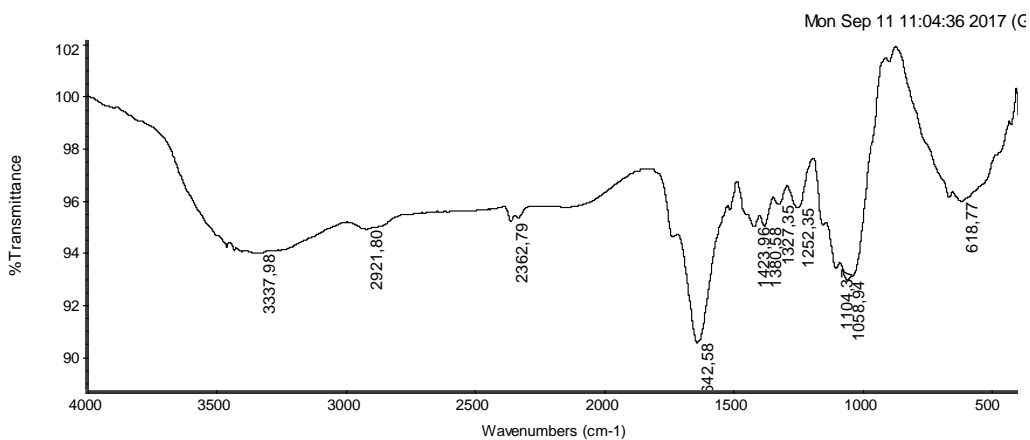
Range (cm <sup>-1</sup> ) and Intensity*	Group and Class	Assignment and Remarks
1255-1240 (m)	<i>t</i> -butyl in hydrocarbons	skeletal vibration; second band near 1200 cm <sup>-1</sup>
1245-1155 (vs)	SO <sub>3</sub> H in sulfonic acids	S=O stretch
1240-1070 (s-vs)	C—O—C in ethers	C—O—C stretch; also in esters
1230-1100 (s)	C—C—N in amines	C—C—N bending
1225-1200 (s)	C—O—C in vinyl ethers	C—O—C antisym stretch
1200-1165 (s)	SO <sub>2</sub> Cl in sulfonyl chlorides	SO <sub>2</sub> sym stretch
1200-1015 (vs)	C—OH in alcohols	C—O stretch
1170-1145 (s)	SO <sub>2</sub> NH <sub>2</sub> in sulfonamides	SO <sub>2</sub> sym stretch
1170-1140 (s)	SO <sub>2</sub> — in sulfones	SO <sub>2</sub> sym stretch
1160-1100 (m)	C=S in thiocarbonyl compounds	C=S stretch; strong in Raman
1150-1070 (vs)	C—O—C in aliphatic ethers	C—O—C antisym stretch
1120-1080 (s)	C—O—H in secondary or tertiary alcohols	C—O stretch
1120-1030 (s)	C—NH <sub>2</sub> in primary aliphatic amines	C—N stretch
1100-1000 (vs)	Si—O—Si in siloxanes	Si—O—Si antisym stretch
1080-1040 (s)	SO <sub>3</sub> H in sulfonic acids	SO <sub>3</sub> sym stretch
1065-1015 (s)	CH—O—H in cyclic alcohols	C—O stretch
1060-1025 (vs)	CH <sub>2</sub> —O—H in primary alcohols	C—O stretch
1060-1045 (vs)	S=O in alkyl sulfoxides	S=O stretch
1055-915 (vs)	P—O—C in organophosphorus compounds	P—O—C antisym stretch
1030-950 (w)	carbon ring in cyclic compounds	ring breathing mode; strong in Raman
1000-950 (s)	CH=CH <sub>2</sub> in vinyl compounds	=CH out-of-plane deformation
980-960 (vs)	CH=CH— in trans disubstituted alkenes	=CH out-of-plane deformation
950-900 (vs)	CH=CH <sub>2</sub> in vinyl compounds	CH <sub>2</sub> out-of-plane wag
900-865 (vs)	$\begin{array}{c} \text{R} \\   \\ \text{CH}_2=\text{C} \\   \\ \text{R}' \end{array}$ in vinylidenes	CH <sub>2</sub> out-of-plane wag
890-805 (vs)	1,2,4-trisubst benzenes	CH out-of-plane deformation (two bands)
860-760 (vs, br)	R—NH <sub>2</sub> primary amines	NH <sub>2</sub> wag
860-720 (vs)	Si—C in organosilicon compounds	Si—C stretch
850-830 (vs)	1,3,5-trisubst benzenes	CH out-of-plane deformation
850-810 (vs)	Si—CH <sub>3</sub> in silanes	Si—CH <sub>3</sub> rocking
850-790 (m)	$\begin{array}{c} \text{R} \\   \\ \text{CH}=\text{C} \\   \\ \text{R}' \end{array}$ in trisubst alkenes	CH out-of-plane deformation
850-550 (m)	C—Cl in chloro compounds	C—Cl stretch
830-810 (vs)	<i>p</i> -disubst benzenes	CH out-of-plane deformation
825-805 (vs)	1,2,4-trisubst benzenes	CH out-of-plane deformation
820-800 (s)	triazines	CH out-of-plane deformation
815-810 (s)	CH=CH <sub>2</sub> in vinyl ethers	CH <sub>2</sub> out-of-plane wag
810-790 (vs)	1,2,3,4-tetrasubst benzenes	CH out-of-plane deformation
800-690 (vs)	<i>m</i> -disubst benzenes	CH out-of-plane deformation (two bands)
785-680 (vs)	1,2,3-trisubst benzenes	CH out-of-plane deformation (two bands)
775-650 (m)	C—S in sulfonyl chlorides	C—S stretch; strong in Raman
770-690 (vs)	monosubst benzenes	CH out-of-plane deformation (two bands)
760-740 (s)	<i>o</i> -disubst benzenes	CH out-of-plane deformation
760-510 (s)	C—Cl alkyl chlorides	C—Cl stretch
740-720 (w-m)	—(CH <sub>2</sub> ) <sub><i>n</i></sub> — in hydrocarbons	CH <sub>2</sub> rocking in methylene chains; intensity depends on chain length
730-665 (s)	CH=CH in cis disubst alkenes	CH out-of-plane deformation
720-600 (s, br)	Ar—OH in phenols	OH out-of-plane deformation

Range (cm <sup>-1</sup> ) and Intensity <sup>a</sup>	Group and Class	Assignment and Remarks
710-570 (m)	C-S in sulfides	C-S stretch; strong in Raman
700-590 (s)	O-C=O in carboxylic acids	O-C=O bending
695-635 (s)	C-C-CHO in aldehydes	C-C-CHO bending
680-620 (s)	C-OH in alcohols	C-O-H bending
680-580 (s)	C≡C-H in alkynes	C≡C-H bending
650-600 (w)	S-C≡N in thiocyanates	S-C stretch; strong in Raman
650-600 (s)	NO <sub>2</sub> in aliphatic nitro compounds	NO <sub>2</sub> deformation
650-500 (s)	Ar-CF <sub>3</sub> in aromatic trifluoro-methyl compounds	CF <sub>3</sub> deformation (two or three bands)
650-500 (s)	C-Br in bromo compounds	C-Br stretch
645-615 (m-s)	naphthalenes	in-plane ring deformation
645-575 (s)	O-C-O in esters	O-C-O bend
640-630 (s)	=CH <sub>2</sub> in vinyl compounds	=CH <sub>2</sub> twisting
635-605 (m-s)	pyridines	in-plane ring deformation
630-570 (s)	N-C=O in amides	N-C=O bend
630-565 (s)	C-CO-C in ketones	C-CO-C bend
615-535 (s)	C=O in amides	C=O out-of-plane bend
610-565 (vs)	SO <sub>2</sub> in sulfonyl chlorides	SO <sub>2</sub> deformation
610-545 (m-s)	SO <sub>2</sub> in sulfones	SO <sub>2</sub> scissoring
600-465 (s)	C-I in iodo compounds	C-I stretch
580-530 (m-s)	C-C-CN in nitriles	C-C-CN bend
580-520 (m)	NO <sub>2</sub> in aromatic nitro compounds	NO <sub>2</sub> deformation
580-430 (s)	ring in cycloalkanes	ring deformation
580-420 (m-s)	ring in benzene derivatives	in-plane and out-of-plane ring deformations (two bands)
570-530 (vs)	SO <sub>2</sub> in sulfonyl chlorides	SO <sub>2</sub> rocking
565-520 (s)	C-C=O in aldehydes	C-C=O bend
565-440 (w-m)	C <sub>n</sub> H <sub>2n+1</sub> in alkyl groups	chain deformation modes (two bands)
560-510 (s)	C-C=O in ketones	C-C=O bend
560-500 (s)	 - in amino acids	 rocking
555-545 (s)	=CH <sub>2</sub> in vinyl compounds	=CH <sub>2</sub> twisting
550-465 (s)	C-C=O in carboxylic acids	C-C=O bend
545-520 (s)	naphthalenes	in-plane ring deformation
530-470 (m-s)	NO <sub>2</sub> in nitro compounds	NO <sub>2</sub> rocking
520-430 (m-s)	C-O-C in ethers	C-O-C bend
510-400 (s)	C-N-C in amines	C-N-C bend
490-465 (variable)	naphthalenes	out-of-plane ring bending
440-420 (s)	Cl-C=O in acid chlorides	Cl-C=O in-plane deformation
405-400 (s)	S-C≡N in thiocyanates	S-C≡N bend

## 2. Gugus Fungsi yang Terbaca pada Adsorben Kulit Salak

Range Frekuensi (cm <sup>-1</sup> )	Range Frekuensi Kulit Salak (cm <sup>-1</sup> )	Range Frekuensi kulit Salak Terenkapsulasi (cm <sup>-1</sup> )	Range Frekuensi Kulit Salak Terenkapsulasi Stlh Adsorpsi (cm <sup>-1</sup> )	Gugus	Senyawa			
3520 - 3320	3371,98	3410,32	3432,79	NH <sub>2</sub>	Aromatic amines, primary amines, & amides			
3420 - 3250				O-H	Alcohol & phenols			
3360 - 3340				-	NH <sub>2</sub>	Primary amides		
2990-2850	2921,80	-	-	CH <sub>3</sub> & CH <sub>2</sub>	Aliphatic compounds			
2750-2350	2362,79	2362,17	-	NH <sub>3</sub> <sup>+</sup>	Amine hydrohalides			
2410-2280		2334,27	-	PH	Phosphines			
1680-1620	1642,58	1635,20	1636,78	C=O & NH <sub>2</sub>	Primary amides			
1680-1635				C=O	Ureas			
1680-1630				C=C	Alkenes, etc			
1680-1630				C=O	Secondary amides			
1670-1640				C=O	Benzophenones			
1670-1630				C=O	Tertiary amides			
1655-1635				C=O	B-ketones ester			
1650-1620				N-H	Primary amides			
1650-1580				NH <sub>2</sub>	Primary amides			
1640-1580				NH <sub>3</sub> <sup>+</sup>	Amino acids			
1640-1580				-	C=O	B-diketones		
1560-1510				-	1515,37	1512,74	Triazine compound	Triazine compound
1550-1490							NO <sub>2</sub>	Aromatic nitro compounds
1530-1450	NH <sub>3</sub> <sup>+</sup>	Amino acids/hydrochlorides						
1530-1450	N=N-O	Azoxy compounds						
1440-1400	1423,96	1427,09	1424,55	OH	Carboxylic acids			
1400-1370	1380,58	1382,88	1382,64	t-butyl group	-			
1390-1360				COO <sup>-</sup>	Carboxylic acids salts			
1400-1310	1327,35	-	-	SO <sub>2</sub>	Sulfonyl chlorides			
1360-1320				NO <sub>2</sub>	Aromatic nitro compounds			
1350-1280				N=N-O	Aroxy compounds			
1335-1295				SO <sub>2</sub>	Sulfones			
1330-1310				CF <sub>2</sub>	Benzene ring			
1300-1200				1252,35	1258,84	1257,29	N-O	Pyridine N-oxides
1285-1240	Ar-O	Alkyl aryl ethers						
1280-1250	Si-CH <sub>3</sub>	Silanes						
1280-1240	-	Exposides						
1280-1180	C - N	Aromatic amines						
1280-1150	C - O - C	Esters, lactones						
1255-1240	-	t - butyl	Hydrocarbons					
1160-1100	1104,37	-	-				C - S	Thiocarbonyl compounds
1150-1070				C - O - C	Aliphatic ethers			
1120-1080				C - O - H	Secondary/tertiary alcohols			
1120-1030	1058,94	1038,35	1039,65	C - NH <sub>2</sub>	Primary aliphatic amines			
1100-1000				Si - O - Si	siloxanes			
1080-1040	-	-	-	SO <sub>3</sub> H	Sulfonic acids			
1065-1025	1038,35	1039,65	1039,65	CH <sub>2</sub> - O - H	Primary alcohols			
1060-1045	-	-	-	S - O	Alkyl sulfoxines			
1055-915	-	1038,35	1039,65	P - O - C	Organophosphorus			
900-865	-	-	895,12	$\text{CH}_2=\text{C} \begin{matrix} \diagup \text{R} \\ \diagdown \text{R}^+ \end{matrix}$	vinylidenes			
775-650	-	667,94	-	C - S	Sulfonyl chlorides			

730-665				CH = CH	Alkenes
760-510	618,77	606,41	-	C - Cl	Alkyl Chlorides
720-600					Ar - OH
710-570		C - S	Sulfides		
700-590		O - C = O	Carboxylic acids		
680-580		C≡C - H	Alkynes		
650-600		S - C = N	Thiocyanates		
650-600		NO <sub>2</sub>	Aliphatic nitro compounds		
650-500		Ar - CF <sub>3</sub>	Aromatic trifluoro-methyl compounds		
645-615		naphthalenes	-		
645-575		O - C - O	Esters		
635-605		Pyridines	-		
630-570		N - C = O	Amides		
630-565		C - CO - C	Ketones		
615-535		606,41	-	473,15	C = O
610-565	SO <sub>2</sub>				Sulfonyl chlorides
610-545	SO <sub>2</sub>				Sulfones
600-465	C - I				Iodio compounds
580-430	Ring in cycloalkanes				-
580-420	Ring in benzene derivatives				-
565-440	C <sub>n</sub> H <sub>2n+1</sub> in alkyl groups				
530-470	NO <sub>2</sub>				Nitro compounds
520-430	C - O - C				Ethers
510-400	C - N - C				Amines
490-465	naphthalenes				-



Collection time: Mon Sep 11 08:01:40 2017 (GMT+0)

Mon Sep 11 11:04:34 2017 (GMT+07:00)

FIND PEAKS:

Spectrum: \*\*1195-1 Raw Kulit Salak

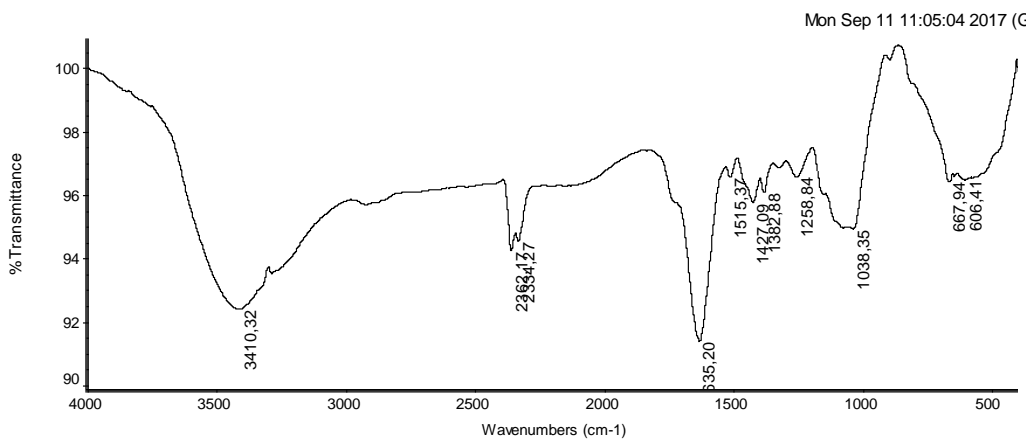
Region: 4000,00 400,00

Absolute threshold: 102,273

Sensitivity: 60

Peak list:

Position:	1642,58	Intensity:	90,499
Position:	1058,94	Intensity:	92,915
Position:	1104,37	Intensity:	93,341
Position:	3337,98	Intensity:	93,934
Position:	2921,80	Intensity:	94,857
Position:	1423,96	Intensity:	94,957
Position:	1380,58	Intensity:	94,968
Position:	2362,79	Intensity:	95,148
Position:	1252,35	Intensity:	95,700
Position:	1327,35	Intensity:	95,818
Position:	618,77	Intensity:	95,941



Collection time: Mon Sep 11 08:08:54 2017 (GMT+0)

Mon Sep 11 11:05:02 2017 (GMT+07:00)

FIND PEAKS:

Spectrum: \*\*1195-2 Ekapsulasi Sebelum Ads

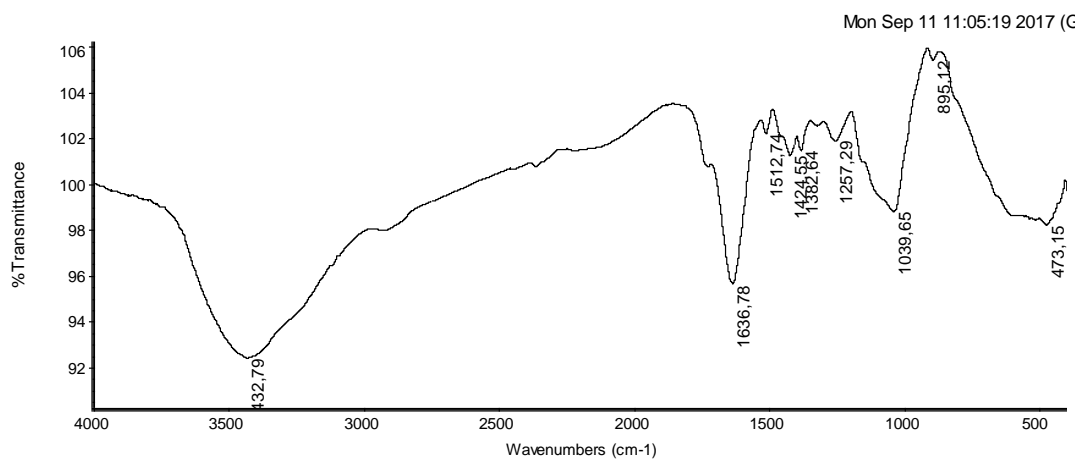
Region: 4000,00 400,00

Absolute threshold: 100,977

Sensitivity: 60

Peak list:

Position:	1635,20	Intensity:	91,345
Position:	3410,32	Intensity:	92,371
Position:	2362,17	Intensity:	94,197
Position:	2334,27	Intensity:	94,491
Position:	1038,35	Intensity:	94,891
Position:	1427,09	Intensity:	95,720
Position:	1382,88	Intensity:	96,048
Position:	667,94	Intensity:	96,388
Position:	606,41	Intensity:	96,440
Position:	1515,37	Intensity:	96,532
Position:	1258,84	Intensity:	96,538



Collection time: Mon Sep 11 08:16:10 2017 (GMT+0)

Mon Sep 11 11:05:18 2017 (GMT+07:00)

FIND PEAKS:

Spectrum: \*\*1195-3 Enkapsulasi Setelah Ads  
 Region: 4000,00 400,00  
 Absolute threshold: 106,301  
 Sensitivity: 60

Peak list:

Position: 3432,79	Intensity: 92,352
Position: 1636,78	Intensity: 95,583
Position: 473,15	Intensity: 98,169
Position: 1039,65	Intensity: 98,740
Position: 1424,55	Intensity: 101,203
Position: 1382,64	Intensity: 101,425
Position: 1257,29	Intensity: 101,844
Position: 1512,74	Intensity: 102,174
Position: 895,12	Intensity: 105,340