

LAMPIRAN A PERHITUNGAN

- $\text{BaCl}_2 \text{ 2 mg/L} = \frac{2 \text{ mg}}{1000 \text{ L}}$

- $\text{H}_2\text{SO}_4 \text{ 2 M}$

$$M = \frac{\% \times Bj \times 1000}{Mr}$$

$$M = \frac{98\% \times 1,84 \times 1000}{98} = 18,4$$

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 = \frac{100 \times 2}{18,4} = 10,87 \text{ mL}$$

L.1 Penentuan Efesiensi Presipitasi

$$\begin{aligned} (\%) &= \frac{[\text{terserap}]}{[\text{awal}]} \\ &= \frac{2,646,5 - 0,120}{2,646,5} \\ &= 99,995\% \end{aligned}$$

L.2 Penentuan Efesiensi Adsorpsi

Perlakuan	Sisa	Efesiensi
pH 11; 0,5g	0,098	18,3%
pH 11; 1,5g	0,044	63,3%
pH 11; 2,5g	0,043	64,1%
pH 4,6; 0,5g	0,115	4,1%
pH 4,6; 1,5g	0,116	3,3%
pH 4,6; 2,5g	0,120	0%
pH 11; 2,5g; 0,5 jam	0,048	60%
pH 11; 2,5g; 2 jam	0,043	64,1%
pH 11; 2,5g; 3,5 jam	0,044	63,3%
pH 11; 2,5g; 5,5 jam	0,042	65%

$$\begin{aligned} (\%) &= \frac{[\text{terserap}]}{[\text{awal}]} \\ &= \frac{0,120 - 0,098}{0,120} \\ &= 18,3\% \end{aligned}$$

L.3 Penentuan Isoterm Langmuir

Variasi Waktu	[Co] Ppm	[Ce] ppm	[terserap] ppm	qe (mg/g)
0,5 jam	0.120	0,048	0.072	0.0072
2 jam	0.120	0,043	0.077	0.0077
3,5 jam	0.120	0,044	0.076	0.0076
5,5 jam	0.120	0,042	0.078	0.0078

Dari data di atas diperoleh persamaan garis: $y = -0,1x + 0,012$

$$\frac{1}{q_e} = \frac{1}{q_m} + \frac{1}{kq_m}$$

$$\bullet \quad \frac{1}{q_m} = 0,1$$

$$q_m = 10$$

$$\bullet \quad \frac{1}{kq_m} = 0,012$$

$$k = \frac{1}{10 \times 0,012} = 8,3$$

L.4 Penentuan Isotherm Freundlich

Variasi Waktu	[Co] Ppm	[Ce] ppm	[terserap] ppm	qe (mg/g)	Log Ce	Log qe
0,5 jam	0.120	0,048	0.072	0.0072	-1.318	-2.142
2 jam	0.120	0,043	0.077	0.0077	-1.366	-2.113
3,5 jam	0.120	0,044	0.076	0.0076	-1.356	-2.119
5,5 jam	0.120	0,042	0.078	0.0078	-1.376	-2.107

Dari data di atas diperoleh persamaan garis: $y = -0,6037x - 2,9377$

$$\text{Log } q_e = \frac{1}{n} \text{Log } C_e + \text{Log } k$$

$$\text{Log } k = 2,9377$$

$$k = 10^{-2,9377}$$

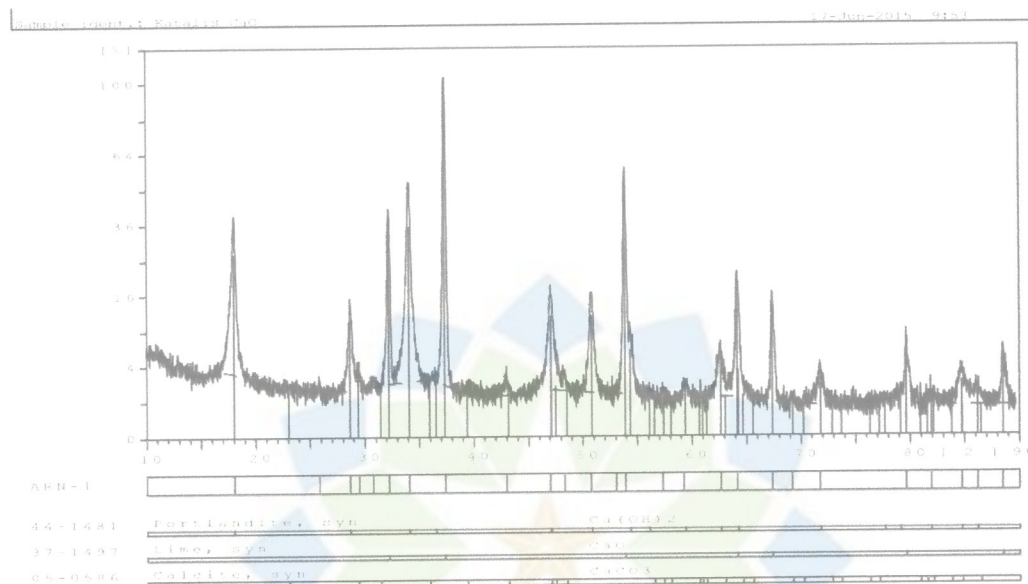
$$k = 866,36$$

$$\frac{1}{n} = 0,6037$$

$$n = \frac{1}{0,6037} = 1,656$$

LAMPIRAN B

1. Hasil Analisis XRD Cangkang Telur Ayam



File: ARN-2.DI

3-Mar-2015 16:12

Philips Analytical
software

PC-APD, Diffraction

Sample identification: CaO

Data measured at: 3-Mar-2015 15:45:00

Diffraction type: PW1710 BASED

Tube anode: Cu

Generator tension [kV]: 40

Generator current [mA]: 30

Wavelength Alpha1 [°]: 1.54060

Wavelength Alpha2 [°]: 1.54439

Intensity ratio (alpha2/alpha1): 0.500

Divergence slit: 1/2°

Receiving slit: 0.45

Monochromator used: YES

Start angle [2θ]: 10.000

End angle [2θ]: 89.980

Step size [2θ]: 0.020

Maximum intensity: 457.9600

Time per step [s]: 0.400

Type of scan: CONTINUOUS

Minimum peak tip width: 0.14

Maximum peak tip width: 2.00

Peak base width: 2.00

Minimum significance: 0.65

Number of peaks: 24

Angle	d-value	d-value	Peak width	Peak int	Back. int	Rel. int	Signif.
[2θ]	λ [Å]	λ [Å]	[2θ]	[counts]	[counts]	[%]	
17.940	4.9404	4.9526	0.320	262	35	57.3	3.85
18.195	4.8718	4.8838	0.160	246	34	53.8	0.94
24.970	3.5632	3.5719	0.480	6	19	1.4	1.02
26.315	3.3840	3.3923	0.160	14	20	3.0	0.68
27.175	3.2788	3.2869	0.320	13	20	2.8	1.02
28.810	3.0964	3.1040	0.280	123	21	26.9	4.73
29.520	3.0235	3.0309	0.160	58	22	12.6	1.01
30.800	2.9007	2.9078	0.480	6	22	1.3	1.20
34.130	2.6249	2.6314	0.240	458	32	100.0	3.31
39.560	2.2762	2.2818	0.640	5	17	1.1	0.92
43.120	2.0962	2.1014	0.320	12	15	2.5	0.92
47.040	1.9302	1.9350	0.200	119	29	25.9	0.84
50.875	1.7934	1.7978	0.320	164	18	35.8	6.23
54.370	1.6861	1.6902	0.200	79	15	17.3	1.32

55.910	1.6432	1.6473	0.400	6	13	1.3	0.70
57.665	1.5973	1.6012	0.480	3	11	0.7	0.85
59.430	1.5540	1.5578	0.320	16	10	3.5	0.98
60.565	1.5276	1.5313	0.200	6	10	1.3	0.88
62.690	1.4808	1.4844	0.480	50	10	11.0	3.60
64.545	1.4427	1.4462	0.800	26	10	5.7	2.89
71.770	1.3141	1.3174	0.240	27	9	5.9	1.06
79.245	1.2079	1.2109	0.640	4	10	0.9	0.78
81.930	1.1750	1.1778	0.640	6	10	1.4	1.36
84.890	1.1414	1.1442	0.720	26	14	5.7	5.13 File:
ARN-2.DI				3-Mar-2015 16:12			

Philips Analytical

PC-APD, Diffraction software

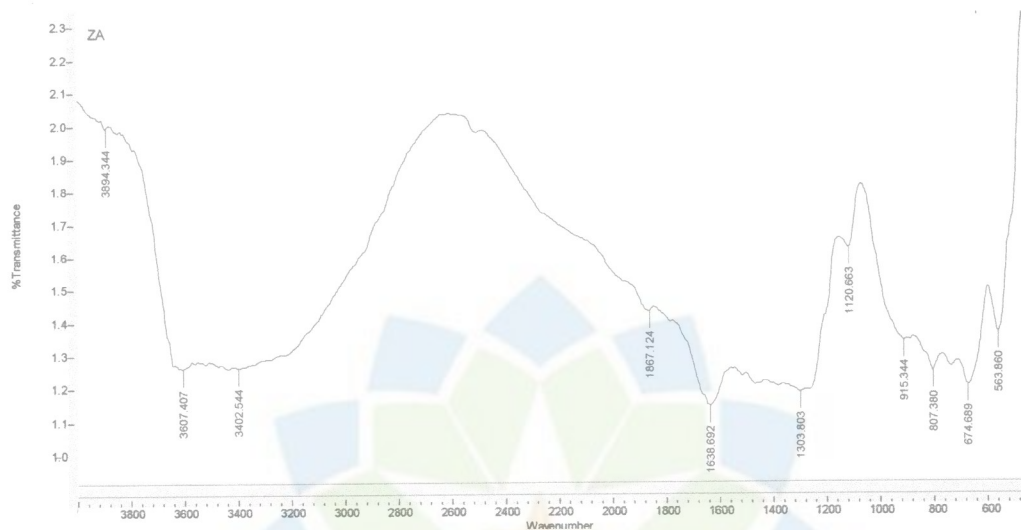
Angle d-value d-value Peak width Peak int Back. int Rel. int Signif.

[2θ] 2θ [°] 2θ [°] [2θ] [counts] [counts] [%]



LAMPIRAN C

1. Hasil Analisis FT-IR Pasir Zeolit



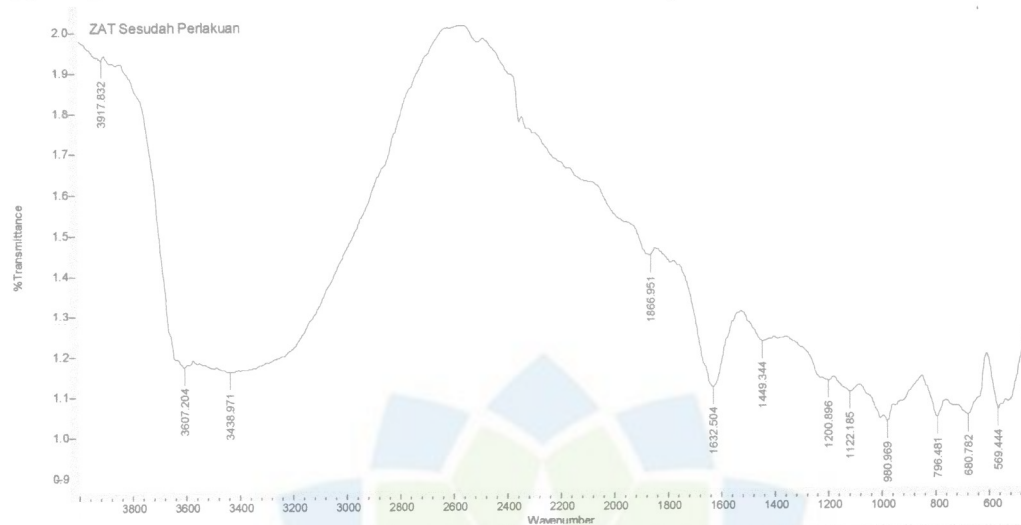
Peak List	Center	Area	Height	Left Edge	Right Edge
Peak1	563.860	-23.017	0.366	581.433	516.829
Peak2	674.689	-7.905	0.149	693.284	636.394
Peak3	807.380	-2.281	0.066	843.704	790.672
Peak4	915.344	-7.188	0.034	993.161	908.308
Peak5	1120.663	-3.370	0.099	1138.760	1098.262
Peak6	1303.803	-19.038	0.155	1335.464	1229.398
Peak7	1638.692	-13.830	0.164	1707.658	1599.664
Peak8	1867.124	-4.952	0.029	2180.132	1859.042
Peak9	3402.544	-0.160	-0.001	3397.959	3314.071
Peak10	3607.407	-0.417	0.015	3621.662	3590.806
Peak11	3894.344	-0.227	0.018	3901.289	3884.897

2. Hasil Analisis FT-IR Pasir Zeolit Teraktivasi



Peak List	Center	Area	Height	Left Edge	Right Edge
Peak1	439.732	-1.970	0.080	457.047	431.977
Peak2	506.086	-2.179	0.100	512.972	489.831
Peak3	553.779	-3.641	0.094	582.397	537.078
Peak4	679.794	-0.286	0.018	691.356	672.071
Peak5	801.662	-1.730	0.051	828.277	785.850
Peak6	979.612	-3.952	0.061	1031.730	957.484
Peak7	1122.036	-1.459	0.042	1146.474	1104.048
Peak8	1297.942	-7.654	0.087	1368.248	1257.361
Peak9	1633.252	-18.236	0.206	1705.729	1589.057
Peak10	1866.747	5.047	-0.002	2076.959	1870.613
Peak11	3263.521	-23.110	0.015	3268.752	2935.127
Peak12	3440.774	-0.463	0.013	3464.491	3420.137
Peak13	3605.458	-0.173	0.010	3618.769	3597.556
Peak14	3893.178	0.000	0.002	3885.862	3885.862

3. Hasil Analisis FT-IR Pasir Zeolit Sesudah Adsorpsi



Peak List	Center	Area	Height	Left Edge	Right Edge
Peak1	418.451	-1.304	0.064	433.905	410.764
Peak2	569.444	-1.894	0.070	589.147	553.470
Peak3	680.782	-6.312	0.099	723.175	646.037
Peak4	796.481	-2.087	0.062	824.420	781.029
Peak5	980.969	-0.396	0.025	989.304	970.019
Peak6	1122.185	-0.982	0.024	1151.295	1103.083
Peak7	1200.896	-1.593	0.020	1281.467	1192.757
Peak8	1449.344	-1.028	0.027	1485.884	1433.815
Peak9	1632.504	-22.818	0.242	1704.765	1578.450
Peak10	1866.951	-2.024	0.031	1978.607	1859.042
Peak11	3438.971	-0.214	0.007	3461.599	3420.137
Peak12	3607.204	-0.193	0.012	3619.733	3599.484
Peak13	3917.832	-0.630	0.016	3960.108	3912.860

UNIVERSITAS ISLAM NEGERI
SUNAN GUNUNG DJATI
BANDUNG

RIWAYAT HIDUP PENULIS



Penulis bernama Masfufah Mulyasyaroh, dilahirkan pada 17 April 1994, merupakan anak pertama dari empat bersaudara dari pasangan Bapak Mulyana dan Ibu Ai Pipin.

Penulis menyelesaikan pendidikan formalnya di SD Negeri Sukamukti II Kabupaten Bandung pada 2006, SMP Negeri 1 Margahayu Kabupaten Bandung pada 2009, dan MAN Cipasung Kabupaten Tasikmalaya pada 2012.

Pada 2012, penulis terdaftar sebagai mahasiswa Jurusan Kimia, Fakultas Sains dan Teknologi, UIN Sunan Gunung Djati Bandung, melalui Seleksi Ujian Tulis.

Penulis menyelesaikan Program Strata 1 (S1) pada 2016. Dalam menyelesaikan tugas studi akhir, penulis menulis skripsi dengan judul “Penanganan Logam Kromium Total dan Senyawa Organik dalam Limbah Cair Penyamakan Kulit Garut dengan Bahan Ramah Lingkungan” di bawah bimbingan Bapak Soni Setiadji, M.T, M.Si dan Ibu Vina Amalia, M.Si

UIN
UNIVERSITAS ISLAM NEGERI
SUNAN GUNUNG DJATI
BANDUNG