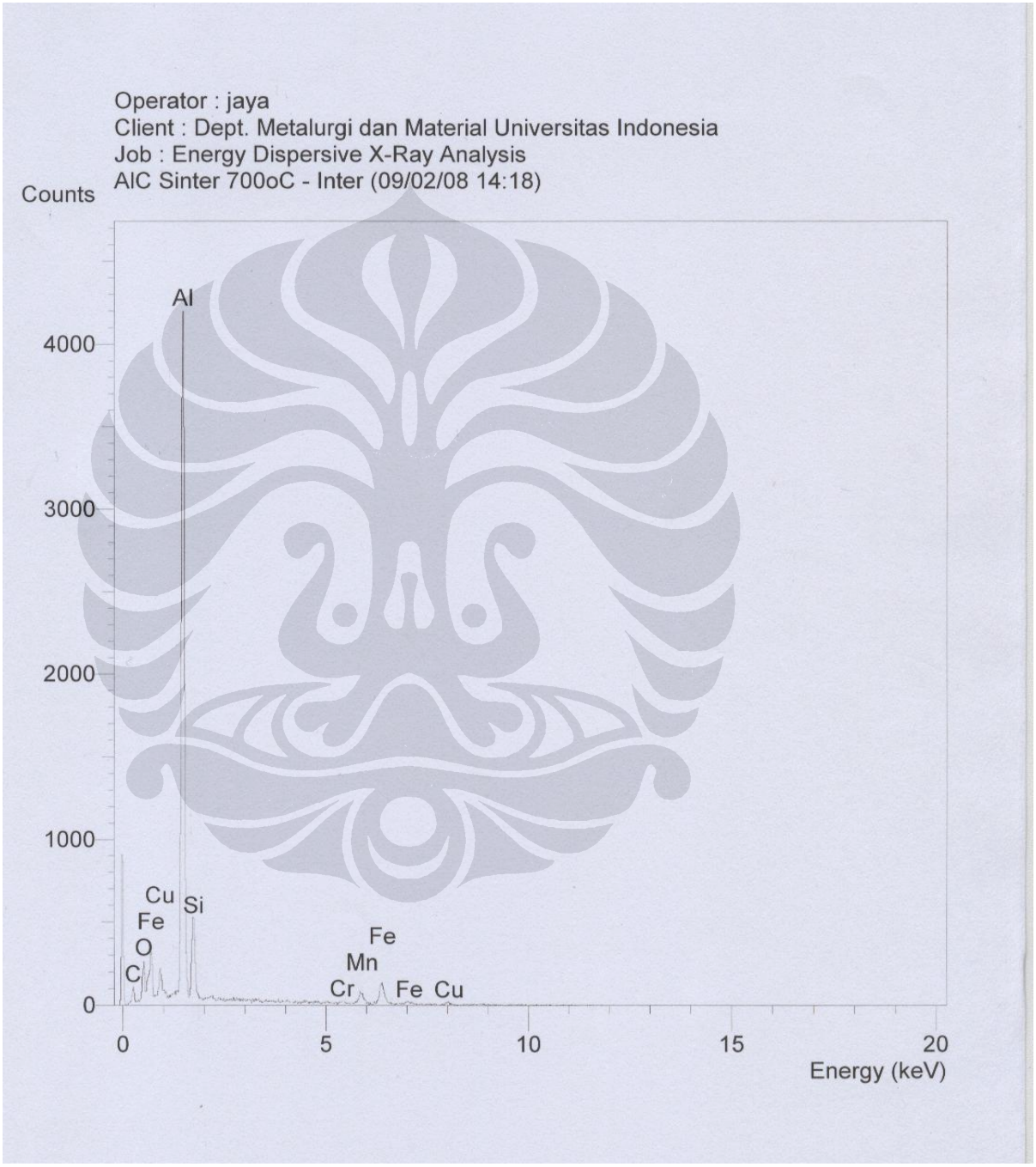
LAMPIRAN

Data Komposisi Hasil Uji EDS untuk Sampel *Reinforced Sinter* 700^{o}C

a) Fasa berwarna putih (intermetallic)



SEMQuant results. Listed at 14:20:21 on 09/02/08
Operator: jaya
Client: Dept. Metalurgi dan Material Universitas Indonesia
Job: Energy Dispersive X-Ray Analysis
Spectrum label: AlC Sinter 700oC - Inter

System resolution = 62 eV

Quantitative method: ZAF (3 iterations).
Analysed all elements and normalised results.

2 peaks possibly omitted: -0.02, 2.18 keV

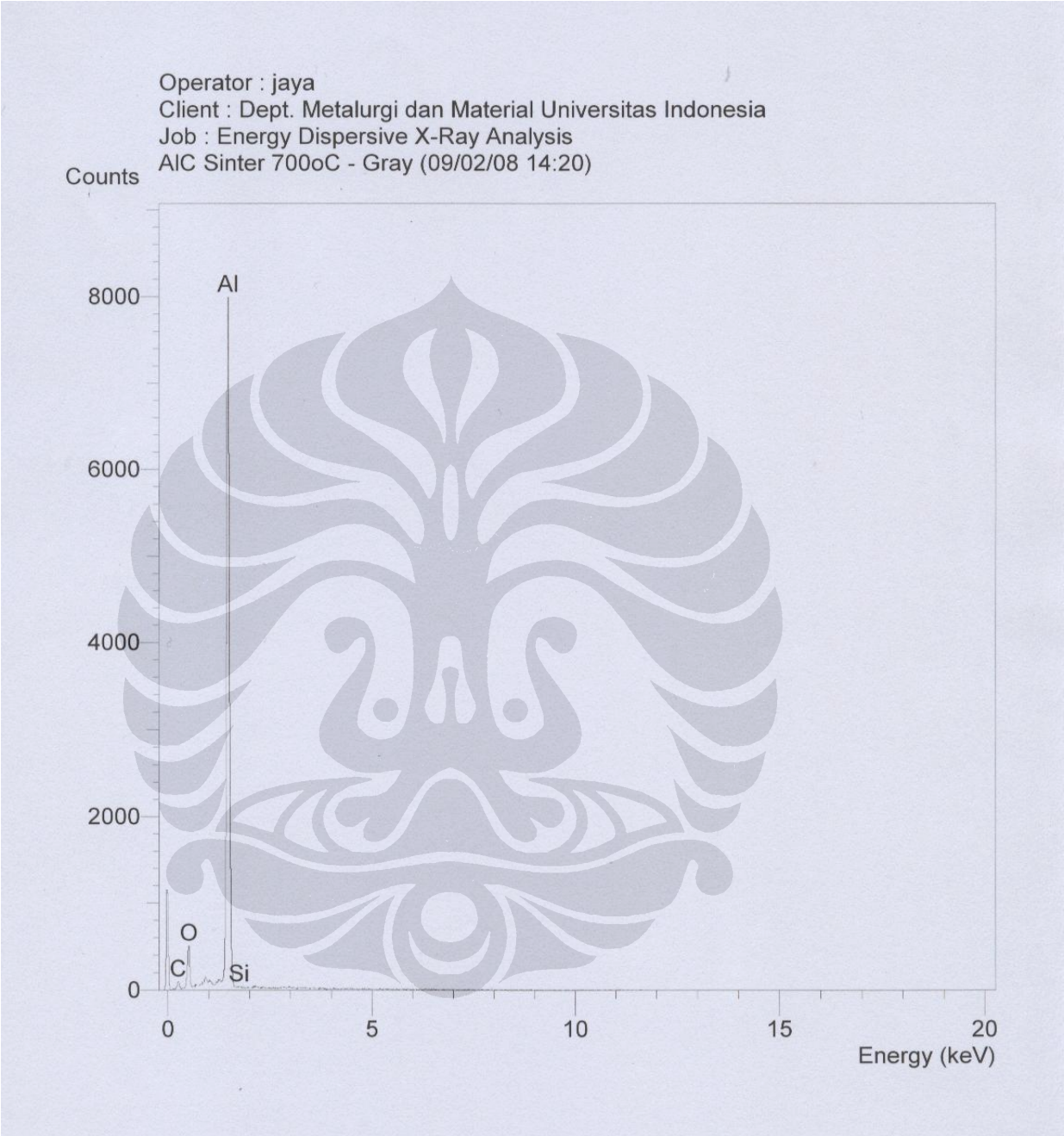
Standards :

C	K	Carbon Low 13/09/06
O	K	AL2O3 22/03/06
Al	K	CeAl2 03/03/07
Si	K	Low Carbon Steel 13/09/06
Cr	K	Chromium 22/03/06
Mn	K	Mangan 02 13/09/06
Fe	K	FeS2 22/03/06
Cu	K	Copper 22/03/06

Elmt	Spect. Type	Element %	Atomic %
C K	ED	1.18	3.26
O K	ED	2.99	6.21
Al K	ED	49.43	60.95
Si K	ED	5.04	5.97
Cr K	ED	0.75	0.48
Mn K	ED	6.81	4.13
Fe K	ED	17.98	10.71
Cu K	ED	15.82	8.29
Total		100.00	100.00

* = <2 Sigma

b) Fasa berwarna abu-abu



SEMQuant results. Listed at 14:22:11 on 09/02/08
Operator: jaya
Client: Dept. Metalurgi dan Material Universitas Indonesia
Job: Energy Dispersive X-Ray Analysis
Spectrum label: AlC Sinter 700oC - Gray

System resolution = 59 eV

Quantitative method: ZAF (3 iterations).
Analysed all elements and normalised results.

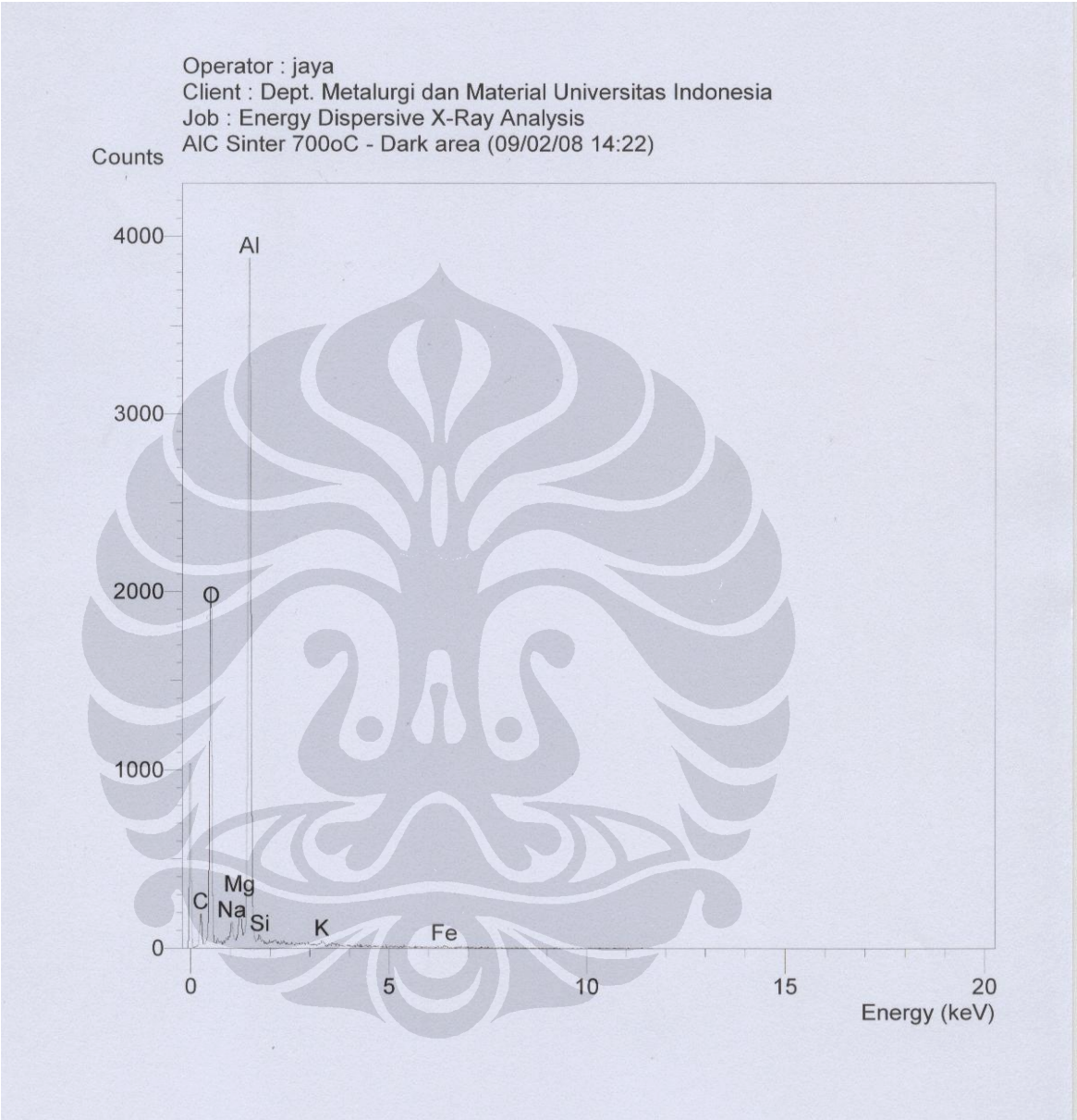
3 peaks possibly omitted: -0.02, 0.94, 2.14 keV

Standards :
C K Carbon Low 13/09/06
O K AL2O3 22/03/06
Al K CeAl2 03/03/07
Si K Low Carbon Steel 13/09/06

Elmt	Spect. Type	Element %	Atomic %
C K	ED	1.48	3.03
O K	ED	11.11	17.11
Al K	ED	87.07	79.55
Si K	ED	0.35	0.31
Total		100.00	100.00

* = <2 Sigma

c) Fasa berwarna hitam



SEMQuant results. Listed at 14:25:12 on 09/02/08
Operator: jaya
Client: Dept. Metalurgi dan Material Universitas Indonesia
Job: Energy Dispersive X-Ray Analysis
Spectrum label: AlC Sinter 700oC - Dark area

System resolution = 60 eV

Quantitative method: ZAF (3 iterations).
Analysed all elements and normalised results.

1 peak possibly omitted: -0.02 keV

Standards :

C	K	Carbon Low 13/09/06
O	K	AL2O3 22/03/06
Na	K	Orthoclase 22/03/06
Mg	K	MagOxide 22/03/06
Al	K	CeAl2 03/03/07
Si	K	Low Carbon Steel 13/09/06
K	K	Orthoclase 22/03/06
Fe	K	FeS2 22/03/06

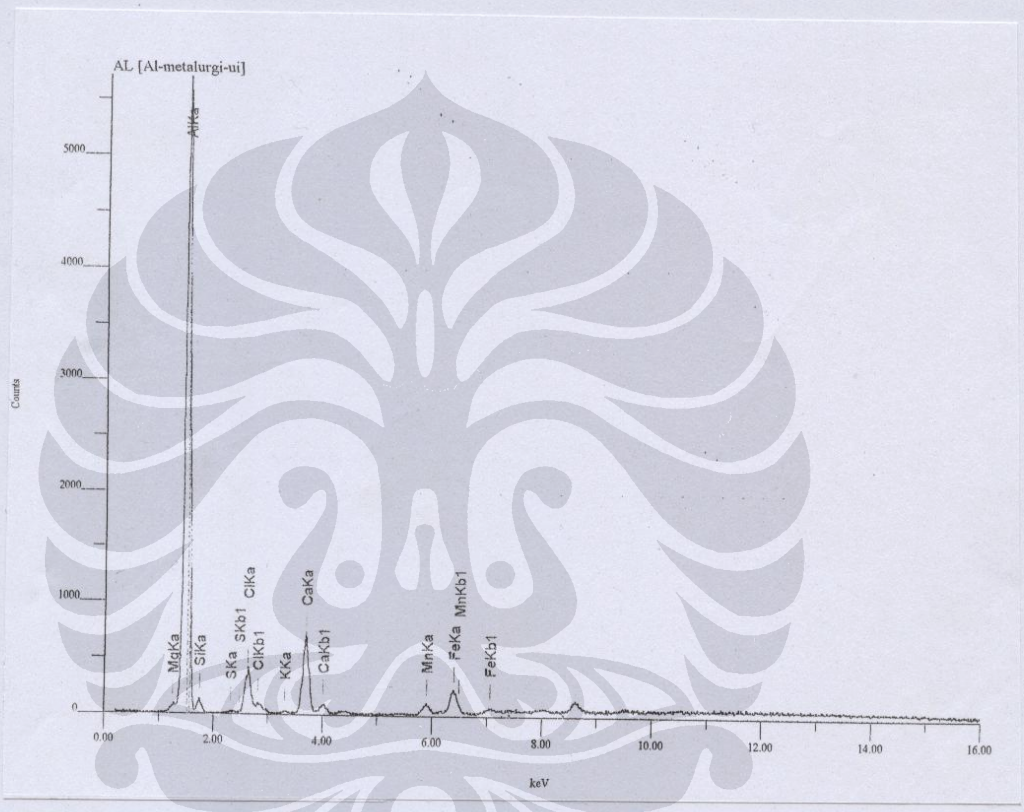
Elmt	Spect. Type	Element %	Atomic %
C K	ED	2.10	3.65
O K	ED	39.74	51.84
Na K	ED	2.01	1.83
Mg K	ED	1.34	1.15
Al K	ED	51.44	39.79
Si K	ED	0.73	0.54
K K	ED	1.36	0.73
Fe K	ED	1.27	0.48
Total		100.00	100.00

* = <2 Sigma

Data Komposisi Hasil Uji XRF dan EDS untuk Serbuk Aluminium

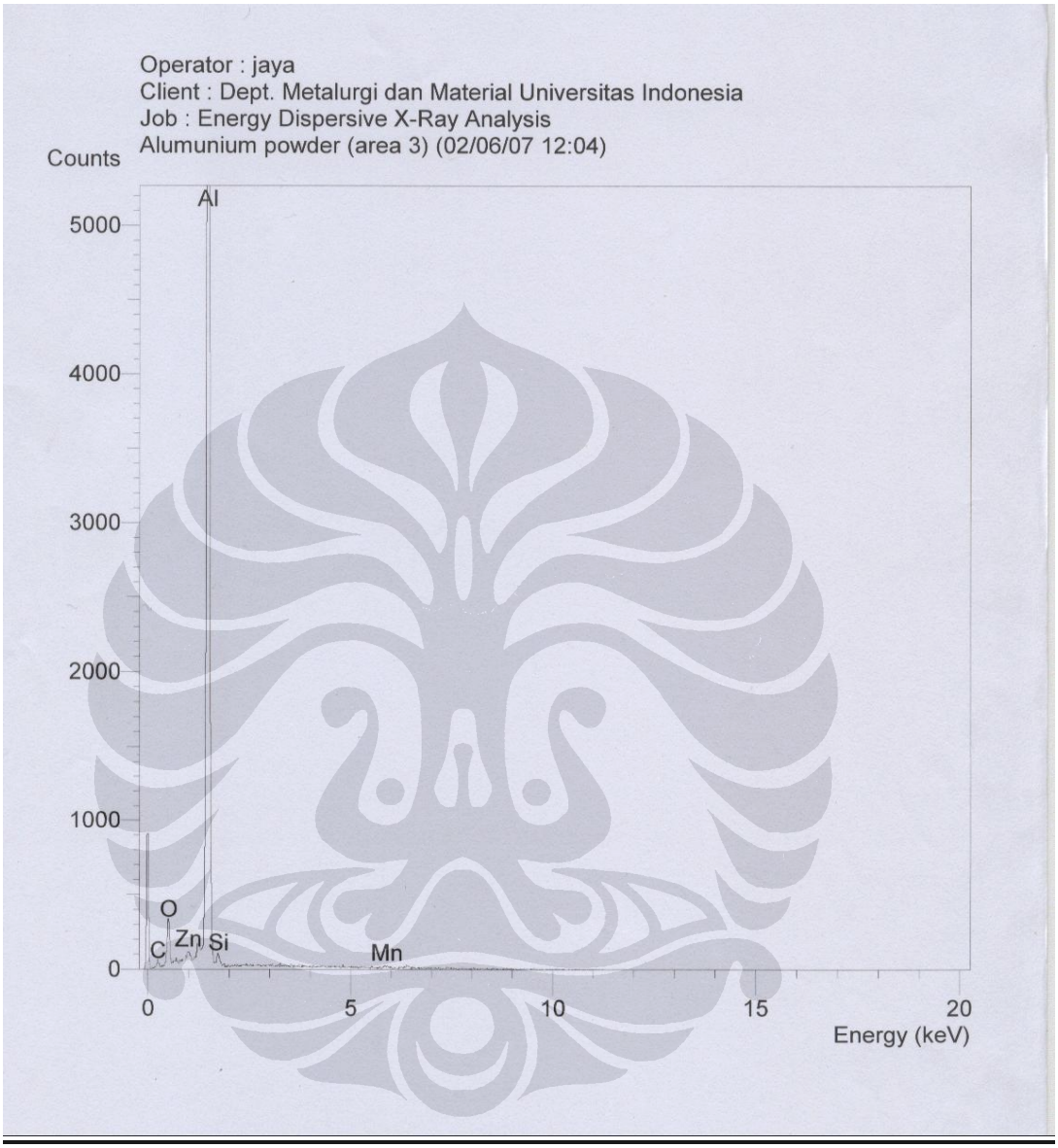
LAMPIRAN Karakterisasi serbuk

1. Komposisi Kmia serbuk Al yang diuji dengan analisa XRF



Tabel 1 : Komposisi kimia serbuk Al

Unsur	Al	Si	S	Cl	K	Ca	Mn	Fe
% berat	86	2.31	0.12	3.47	0.29	5.99	0.33	0.65


Operator : jaya
Client : Dept. Metalurgi dan Material Universitas Indonesia
Job : Energy Dispersive X-Ray Analysis
Alumunium powder (area 3) (02/06/07 12:04)
Counts
5000
4000
3000
2000
1000
0
Al
O
C
Zn
Si
Mn
0
5
10
15
20
Energy (keV)

Data Pengolahan Pengujian Kekerasan

Beban (P) **= 31.25 Kg**

Diameter Indentor (D) **= 1.6 mm**

Perlakuan Sampel (nomor sampel)	d_1 (mm)		$\overline{d_1}$ (mm)	BHN_1 (Kg/mm^2)	d_2 (mm)		$\overline{d_2}$ (mm)	BHN_2 (Kg/mm^2)	d_3 (mm)		$\overline{d_3}$ (mm)	BHN_3 (Kg/mm^2)	Stand. Deviasi	BHN rata2 (Kg/mm^2)
	x	y			x	y			x	y				
Reinforced non sinter (55)	1.257	1.273	1.265	20.055	1.378	1.384	1.381	15.707	1.359	1.408	1.384	15.623	2.535	
Reinforced non sinter (41)	1.370	1.345	1.358	16.518	1.339	1.366	1.353	16.695	1.354	1.413	1.384	15.623	0.575	**16.703**
Reinforced sinter 500^{0}C (17)	0.841	0.843	0.842	51.949	0.902	0.911	0.907	44.182	0.926	0.845	0.886	46.528	3.984	
Reinforced sinter 500^{0}C (29)	0.878	0.845	0.862	49.418	0.930	0.877	0.904	44.507	0.910	0.858	0.884	46.701	2.460	**47.214**
Reinforced sinter 550^{0}C (3)	0.893	0.880	0.887	46.412	0.928	0.897	0.913	43.541	0.954	0.933	0.944	40.418	2.998	
Reinforced sinter 550^{0}C (38)	0.817	0.825	0.821	54.876	0.820	0.842	0.831	53.455	0.850	0.838	0.844	51.681	1.601	**48.397**
Reinforced sinter 600^{0}C (2)	0.772	0.737	0.755	65.798	0.742	0.707	0.725	71.731	0.750	0.735	0.743	68.085	2.992	
Reinforced sinter 600^{0}C (16)	0.781	0.740	0.761	64.695	0.735	0.728	0.732	70.281	0.778	0.770	0.774	62.304	4.094	**67.149**
Reinforced sinter 650^{0}C (5)	0.756	0.743	0.750	66.738	0.741	0.680	0.711	74.758	0.766	0.750	0.758	65.151	5.150	**68.882**
Reinforced sinter 700^{0}C (23)													11.45	
Reinforced sinter 700^{0}C (32)	0.720	0.732	0.726	71.416	0.673	0.627	0.650	90.160	0.728	0.744	0.736	69.371	8	
	0.699	0.701	0.700	77.149	0.731	0.728	0.730	70.691	0.657	0.667	0.662	86.767	8.090	**77.592**

Data Pengolahan Pengujian Keausan

Jarak Luncur (x) **= 100000 mm**

Tebal Cincin (B) **= 3.4 mm**

Jari-jari Cincin (r) **= 15 mm**

Beban (P) **= 3.16 Kg**

Kecepatan Pembebanan **= 2.38 m/s**

Perlakuan Sampel (nomor sampel)	b (mm)	W (mm^3)	Laju Aus (x 10^{-6} mm^3/mm)	Standar Deviasi	Laju Aus rata-rata (x 10^{-6} mm^3/mm)
Reinforced non sinter (55)	10.273	20.479	205.0		
Reinforced non sinter (41)	11.429	28.199	282.0	54.45	**243.0**
Reinforced sinter 500^0C (44)	8.207	9.213	92.1		
Reinforced sinter 500^0C (56)	7.958	9.520	95.2	2.19	**93.7**
Reinforced sinter 550^0C (3)	5.278	2.777	27.8		
Reinforced sinter 550^0C (38)	5.014	2.381	23.8	2.83	**25.8**
Reinforced sinter 600^0C (2)	4.569	1.802	18.0		
Reinforced sinter 600^0C (16)	4.933	2.267	22.7	3.32	**20.3**
Reinforced sinter 650^0C (28)	5.001	2.363	23.6		
Reinforced sinter 650^0C (37)	3.969	1.181	11.8	8.34	**17.7**
Reinforced sinter 700^0C (4)	4.271	1.472	14.7		
Reinforced sinter 700^0C (43)	4.089	1.291	12.9	1.27	**13.8**

Data Pengolahan Pengujian Kuat Tekan

Perlakuan Sampel (nomor sampel)	Diameter (mm)	Tinggi (mm)	Luas (mm^2)	Beban (Newton)	Kuat Tekan (N/mm^2)	Standar Deviasi	Kuat Tekan rata-rata (N/mm^2)	Kondisi Akhir
Reinforced non sinter (48)	20.10	5.15	317.31	82,500	259.998			hancur
Reinforced non sinter (52)	20.10	5.00	317.31	81,000	255.271	3.343	**257.6**	hancur
Reinforced sinter 500^0C (15)	20.25	6.50	322.06	162,500	504.564			pinggirnya hancur
Reinforced sinter 500^0C (27)	20.20	6.40	320.47	170,600	532.343	19.643	**518.5**	pinggirnya hancur
Reinforced sinter 550^0C (39)	20.25	6.10	322.06	174,000	540.272			pinggirnya hancur
Reinforced sinter 550^0C (51)	20.20	6.10	320.47	174,000	542.953	1.895	**541.6**	pinggirnya hancur
Reinforced sinter 600^0C (33)	20.20	5.70	320.47	177,900	555.122			pinggirnya hancur
Reinforced sinter 600^0C (26)	20.20	5.80	320.47	178,000	555.434	0.221	**555.3**	pinggirnya hancur
Reinforced sinter 650^0C (36)	20.25	5.65	322.06	179,000	555.797			pinggirnya hancur
Reinforced sinter 650^0C (22)	20.20	5.70	320.47	183,500	572.596	11.879	**564.2**	pinggirnya hancur
Reinforced sinter 700^0C (7)	20.20	5.50	320.47	188,000	586.638			pinggirnya hancur
Reinforced sinter 700^0C (42)	20.25	5.40	322.06	190,500	591.505	3.441	**589.1**	pinggirnya hancur

Data Pengolahan Pengujian Densitas

Massa Jenis Air = 1.01189 gram/cm^3

Perlakuan Sampel (nomor sampel)	Berat Kering (gram)	Berat dalam Air (gram)	Volume Sampel (cm^3)	Densitas Sampel (gram/cm^3)	Standar Deviasi	Densitas rata-rata (gram/cm^3)
Reinforced non sinter (34)	3.74	1.83	1.808	2.068		
Reinforced non sinter (50)	3.63	1.88	1.858	1.954		
Reinforced non sinter (53)	3.72	1.83	1.808	2.057	0.063	**2.03**
Reinforced sinter 500^{0}C (10)	4.83	2.30	2.273	2.125		
Reinforced sinter 500^{0}C (44)	4.70	2.23	2.204	2.133		
Reinforced sinter 500^{0}C (56)	4.29	2.33	2.303	1.863	0.153	**2.04**
Reinforced sinter 550^{0}C (18)	4.10	1.92	1.897	2.161		
Reinforced sinter 550^{0}C (21)	4.03	2.06	2.036	1.980		
Reinforced sinter 550^{0}C	4.33	2.10	2.075	2.086	0.091	**2.08**

(31)						
Reinforced sinter 600^0C (6)						
Reinforced sinter 600^0C (9)	4.18	1.95	1.927	2.169		
Reinforced sinter 600^0C (20)	4.20 4.20	2.01 2.13	1.986 2.105	2.114 1.995	0.089	**2.09**
Reinforced sinter 650^0C (11)						
Reinforced sinter 650^0C (28)	4.08	1.88	1.858	2.196		
Reinforced sinter 650^0C (37)	4.03 4.03	2.08 1.91	2.056 1.888	1.961 2.135	0.122	**2.10**
Reinforced sinter 700^0C (43)						
Reinforced sinter 700^0C (4)	3.99	1.88	1.858	2.148		
Reinforced sinter 700^0C (14)	3.94 3.92	1.85 1.88	1.828 1.858	2.155 2.110	0.024	**2.14**

Data Pengolahan Pengujian Porositas

Perlakuan Sampel (nomor sampel)	Berat Kering (gram)	Berat dalam Air (gram)	Volume Sampel (cm^3)	Densitas Sampel ($gram/cm^3$)	Densitas Teori ($gram/cm^3$)	Porositas (%)	Standar Deviasi	Porositas rata-rata (%)
Reinforced non sinter (34)	3.74	1.83	1.808	2.068		23.914		**25.45**
Reinforced non sinter (50)	3.63	1.88	1.858	1.954		28.116		
Reinforced non sinter (53)	3.72	1.83	1.808	2.057	2.718	24.321	2.317	
Reinforced sinter 500^0C (10)	4.83	2.30	2.273	2.125		21.991		**25.10**
Reinforced sinter 500^0C (44)	4.70	2.23	2.204	2.133		21.708		
Reinforced sinter 500^0C (56)	4.29	2.33	2.303	1.863	2.724	31.604	5.634	
Reinforced sinter 550^0C (18)	4.10	1.92	1.897	2.161		20.792		**23.91**
Reinforced sinter 550^0C (21)	4.03	2.06	2.036	1.980		27.435		
Reinforced sinter 550^0C (31)	4.33	2.10	2.075	2.086	2.728	23.518	3.339	
Reinforced sinter 600^0C (6)	4.18	1.95	1.927	2.169		20.459		**23.25**
Reinforced sinter 600^0C (9)	4.20	2.01	1.986	2.114		22.464		
Reinforced sinter 600^0C (20)	4.20	2.13	2.105	1.995	2.727	26.833	3.259	
Reinforced sinter 650^0C (11)	4.08	1.88	1.858	2.196		19.383		**23.01**
Reinforced sinter 650^0C (28)	4.03	2.08	2.056	1.961		28.027		
Reinforced sinter 650^0C (37)	4.03	1.91	1.888	2.135	2.724	21.621	4.487	
Reinforced sinter 700^0C (43)	3.99	1.88	1.858	2.148		21.190		**21.56**
Reinforced sinter 700^0C (4)	3.94	1.85	1.828	2.155		20.916		
Reinforced sinter 700^0C (14)	3.92	1.88	1.858	2.110	2.725	22.573	0.888	