LAMPIRAN

1. Proses *Squeeze Casting*

2. spesimen uji

3. Uji XRF

Compound	Al	Si	P	Ca	Ti	V	Cr	Mn	Fe	Ni	Cu	Zn	Ba	Re
Conc	75,2	16,9	0 36	0,35	0,067	0,02	0,080	0,13	1,14	2,77	2,82	0,10	0,02	0,04
Unit	%	%	%	%	%	%	%	%	%	%	%	%	%	%

Sample ident

E 420 (Alumunium 2075)

Application	<Standardless>
Sequence	1 of 1
Measurement time	16-mei-2018 09:15:19
Position	2

4. proses perlakuan panas T6

Pengujian SEM-EDS dan XRD
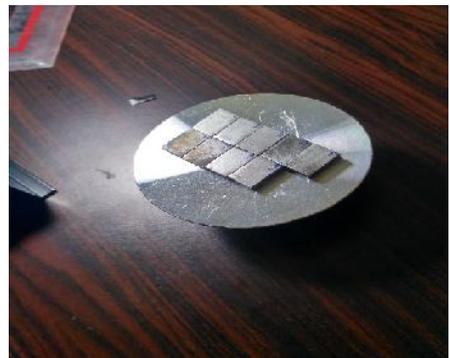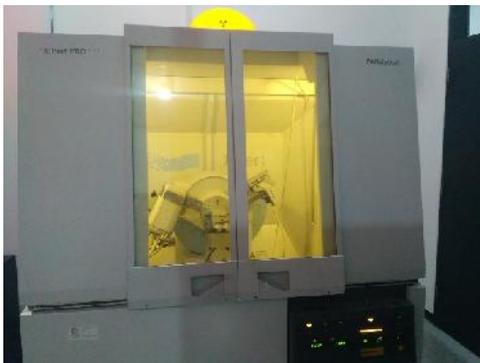
25062018

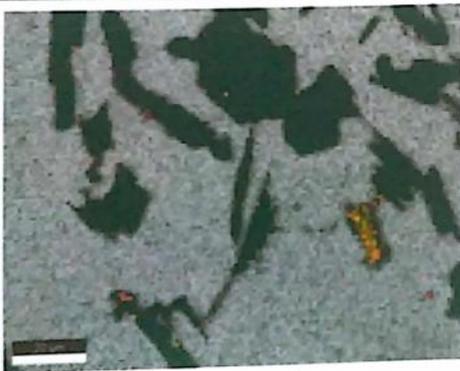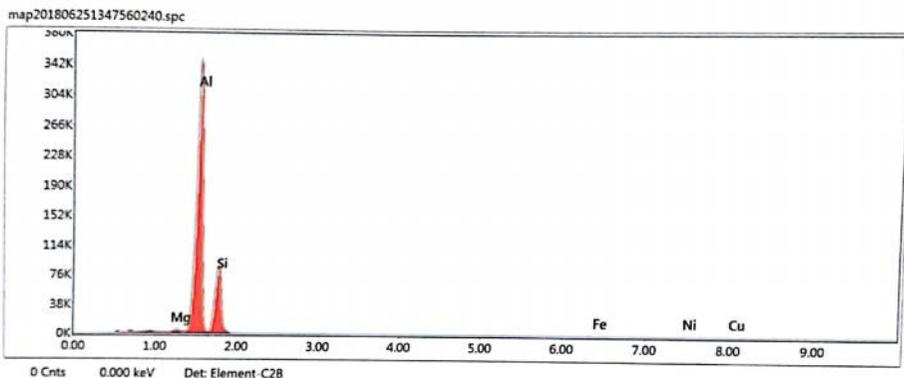|	
Author:	Teknik Mesin FTI - ITS
Creation:	06/25/2018 1:50:43 PM
Sample Name:	Al100-700

Area 1
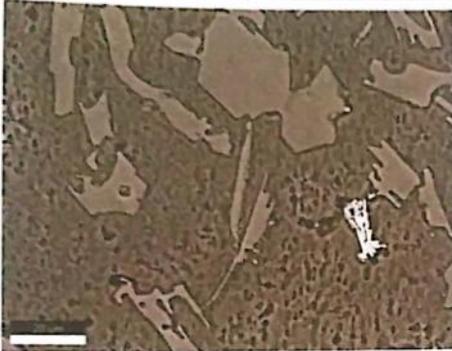
Image

Live Map 1

ElementOverlay

2% MgK

76% AlK

21% SiK

0% FeK

0% NiK

0% CuK

| kV: 15 | Mag: 1000 | Takeoff: 25 | Live Time(s): 133.1 | Amp Time(µs): 3.84 | Resolution (eV) 129.4 |

Sum Spectrum

map201806251347560240.spc

Smart Quant Results

Element	Weight %	Atomic %	Net Int.	Error %	Kratio	Z	A	F
MgK	0.84	0.95	260.44	3.31	0.0079	1.0350	0.8961	1.0097
AlK	66.67	68.00	20599.17	1.84	0.6358	0.9956	0.9546	1.0036
SiK	30.99	30.37	5424.30	6.01	0.1709	1.0164	0.5424	1.0002
FeK	0.19	0.09	10.04	25.40	0.0017	0.8418	0.9926	1.0718
NiK	0.43	0.20	15.80	23.24	0.0040	0.8443	0.9995	1.1022
CuK	0.89	0.38	24.65	12.85	0.0079	0.7979	1.0013	1.1209

EDAX APEX

25062018

Author:	Teknik Mesin FTI - ITS
Creation:	06/25/2018 1:37:01 PM
Sample Name:	AI100-680

Area 1

Image
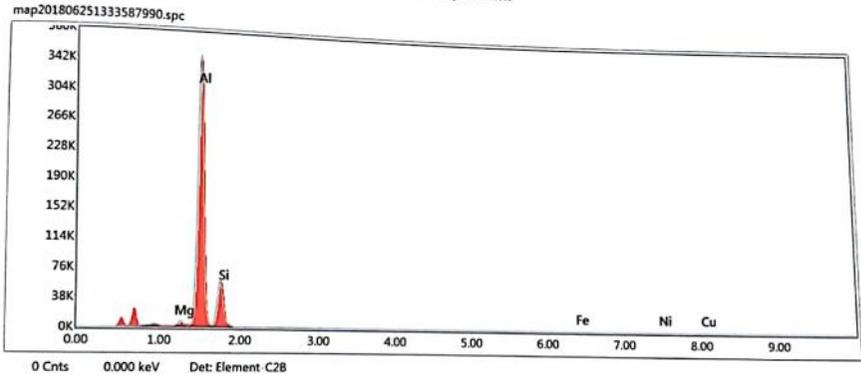
Live Map 1

ElementOverlay

- 2% MgK
- 81% AlK
- 16% SiK
- 0% FeK
- 0% NiK
- 1% CuK

| kV | 15 | Mag 1000 | Takeoff 25 | Live Time(s) 145.9 | Amp Time(µs) 3.84 | Resolution.(eV) 129.4 |

Sum Spectrum

map201806251333587990.spc

0 Cnts   0.000 keV   Det: Element-C2B

Smart Quant Results

Element	Weight %	Atomic %	Net Int.	Error %	Kratio	Z	A	F
MgK	1.29	1.47	338.62	3.43	0.0118	1.0388	0.8733	1.0087
AlK	72.07	73.89	18861.64	2.06	0.6728	0.9993	0.9319	1.0025
SiK	23.68	23.32	3408.71	6.33	0.1241	1.0201	0.5137	1.0003
FeK	0.26	0.13	11.74	24.24	0.0023	0.8451	0.9931	1.0781
NiK	0.57	0.27	18.26	20.20	0.0053	0.8477	0.9996	1.1045
CuK	2.14	0.93	50.93	8.00	0.0190	0.8012	1.0014	1.1079

EDAX APEX

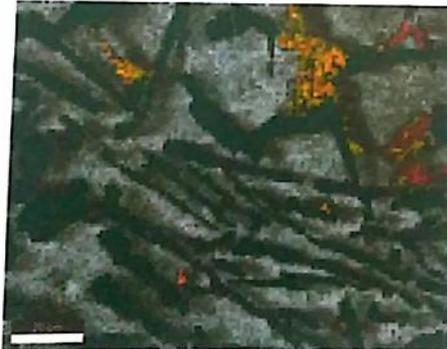|	25062018
Author:	Teknik Mesin FTI - ITS
Creation:	06/25/2018 11:49:58 AM
Sample Name:	Al90-680

Area 1

Image

Live Map 1

ElementOverlay

- 3% MgK
- 66% AlK
- 29% SiK
- 1% FeK
- 1% NiK
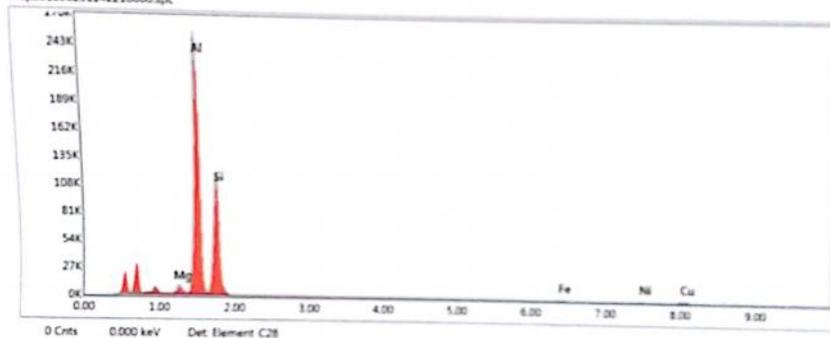- 1% CuK

ev 15	Mag: 1000	Takeoff: 25	Live Time(s): 366.1	Amp Time(μs): 3.84	Resolution (eV): 129.4

Sum Spectrum

map201806251142218000.spc

Smart Quant Results

Element	Weight %	Atomic %	Net Int.	Error %	Kratio	Z	A	F
MgK	1.71	2.01	173.71	3.89	0.0143	1.0422	0.7945	1.0063
AlK	52.50	55.49	5457.99	2.70	0.4589	1.0027	0.8687	1.0004
SiK	38.56	39.15	2667.33	5.63	0.2289	1.0237	0.5797	1.0094
FeK	0.76	0.39	15.03	11.18	0.0073	0.8451	0.9921	1.0844
NiK	1.39	0.68	18.91	8.90	0.0130	0.8519	0.9966	1.0969
CuK	5.08	2.28	50.23	6.31	0.0441	0.8054	1.0095	1.0783

EDAX APEX

25062018

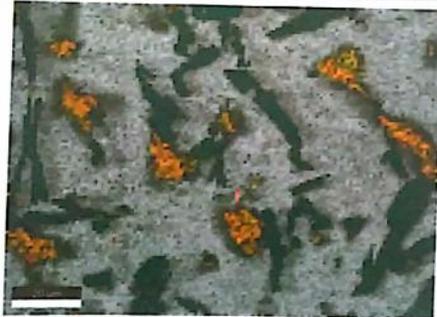|	
Author:	Teknik Mesin FTI - ITS
Creation:	06/25/2018 1:22:36 PM
Sample Name:	Al90-720

Area 1
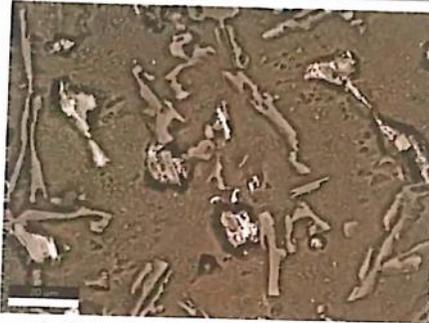
Image
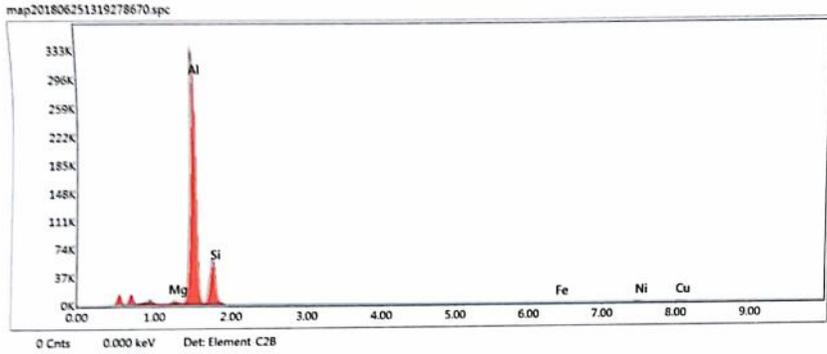
Live Map 1

ElementOverlay

- 2% MgK
- 79% AlK
- 16% SiK
- 1% FeK
- 1% NiK
- 1% CuK

| kV 15 | Mag 1000 | Takeoff 25 | Live Time(s) 151 | Amp Time(µs) 3.84 | Resolution (eV) 129 4 |

Sum Spectrum

map20180625131927867O.spc

0 Cnts   0.000 keV   Det: Element C2B

Smart Quant Results

Element	Weight %	Atomic %	Net Int.	Error %	Kratio	Z	A	F
MgK	0.99	1.15	242.02	4.15	0.0084	1.0448	0.8093	1.0068
AlK	69.73	73.04	17502.29	2.49	0.6236	1.0051	0.8880	1.0021
SiK	22.54	22.68	3248.11	6.37	0.1181	1.0261	0.5105	1.0004
FeK	0.46	0.23	21.64	13.98	0.0043	0.8508	0.9931	1.0396
NiK	2.79	1.34	89.00	5.82	0.0259	0.8536	0.9995	1.0884
CuK	3.49	1.55	82.10	6.13	0.0306	0.8069	1.0011	1.0827

EDAX APEX

25062018

Author:	Teknik Mesin FTI - ITS
Creation:	06/25/2018 12:09:55 PM
Sample Name:	Al90-700

Area 1

Image

Live Map 1

ElementOverlay
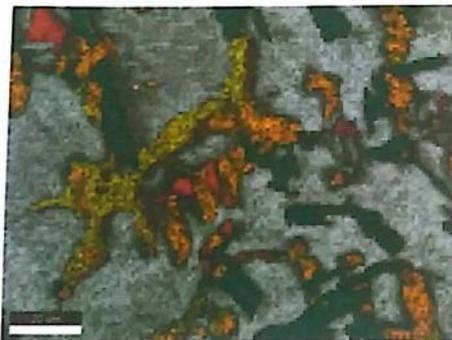
- **5%** MgK
- **72%** AlK
- **16%** SiK
- **1%** FeK
- **3%** NiK
- **2%** CuK

| 15 | Mag: 1000 | Takeoff: 25 | Live Time(s): 363.5 | Amp Time(μs): 3.84 | Resolution (eV) 129 4 |

Sum Spectrum

map201806251202192660.spc

0 Cnts   0.000 keV   Det: Element C2B
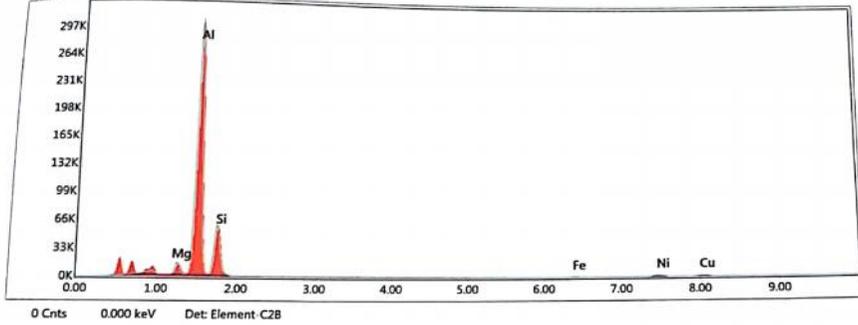
Smart Quant Results

Element	Weight %	Atomic %	Net Int.	Error %	Kratio	Z	A	F
MgK	2.93	3.52	292.99	4.57	0.0222	1.0543	0.7162	1.0046
AlK	63.26	68.64	6589.67	3.42	0.5112	1.0143	0.7954	1.0016
SiK	20.58	21.46	1366.74	6.40	0.1082	1.0357	0.5074	1.0006
FeK	0.75	0.39	16.46	10.09	0.0071	0.8600	0.9933	1.1028
NiK	6.20	3.09	90.58	4.17	0.0574	0.8631	0.9992	1.0727
CuK	6.28	2.89	66.86	4.81	0.0542	0.8161	1.0008	1.0573

EDAX APEX

	25062018

Author: Teknik Mesin FTI - ITS
Creation: 06/25/2018 11:23:01 AM
Sample Name: Al80-720

Area 1

Image
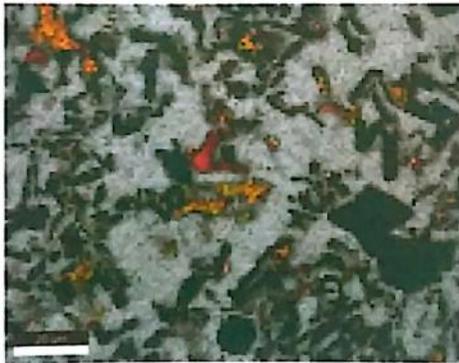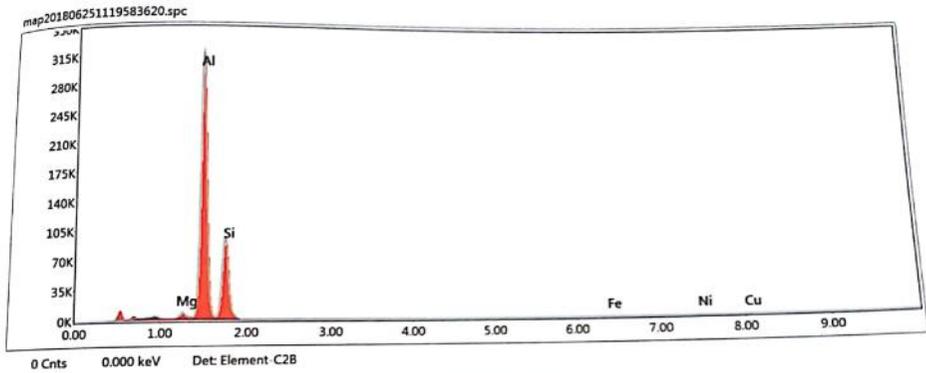
Live Map 1

ElementOverlay

- 3% MgK
- 72% AlK
- 24% SiK
- 0% FeK
- 1% NiK
- 1% CuK

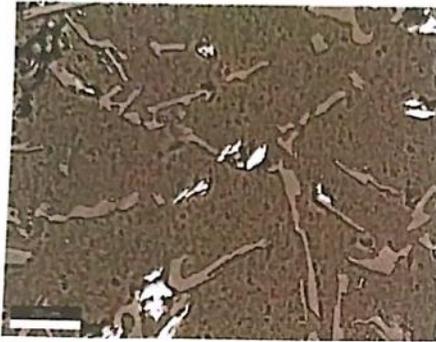|	Mag: 1000	Takeoff: 25	Live Time(s) 148.5	Amp Time(μs) 3.84	Resolution (eV) 129.4
15					

Sum Spectrum

map2018062511195836 20.spc

0 Cnts   0.000 keV   Det: Element-C2B

Smart Quant Results

Element	Weight %	Atomic %	Net Int.	Error %	Kratio	Z	A	F
MgK	1.38	1.58	377.06	3.46	0.0123	1.0378	0.8540	1.0080
AlK	62.04	64.13	17026.03	2.21	0.5698	0.9984	0.9169	1.0033
SiK	32.74	32.51	5398.60	5.91	0.1844	1.0192	0.5525	1.0003
FeK	0.39	0.19	18.90	19.65	0.0035	0.8447	0.9925	1.0796
NiK	1.64	0.78	55.60	7.47	0.0152	0.8473	0.9992	1.0925
CuK	1.81	0.80	45.72	8.11	0.0160	0.8008	1.0010	1.1004

EDAX APEX

25062018

Author:	Teknik Mesin FTI - ITS
Creation:	06/25/2018 11:03:46 AM
Sample Name:	Al80-700

Area 1

Image

Live Map 1

Element Overlay
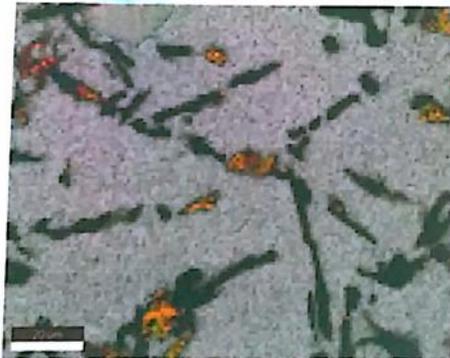
- **2%** MgK
- **86%** AlK
- **11%** SiK
- **0%** FeK
- **1%** NiK
- **0%** CuK

| AV 15 | Mag 1000 | Takeoff 25 | Live Time(s) 135.7 | Amp Time(µs) 3.84 | Resolution (eV) 129.4 |

Sum Spectrum

map201806251101003190.spc

| 0 Cnts | 0.000 keV | Det: Element C2B |
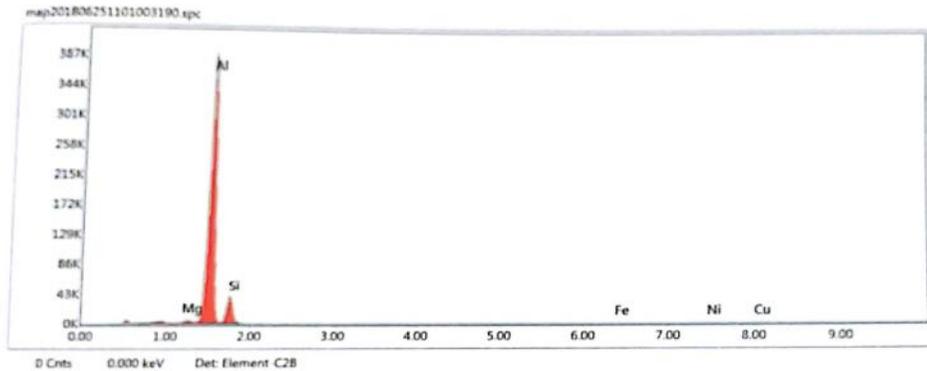
Smart Quant Results

Element	Weight %	Atomic %	Net Int.	Error %	Kratio	Z	A	F
MgK	0.90	1.02	256.91	3.44	0.0083	1.0398	0.8824	1.0091
AlK	79.49	81.17	22649.25	1.94	0.7514	1.0002	0.9434	1.0019
SiK	16.91	16.58	2492.10	6.61	0.0844	1.0211	0.4887	1.0003
FeK	0.25	0.12	12.24	29.69	0.0022	0.8458	0.9936	1.0790
NiK	1.15	0.54	39.45	10.10	0.0107	0.8483	0.9999	1.0990
CuK	1.31	0.57	33.86	9.96	0.0117	0.8017	1.0016	1.1120

Mag: 500   Takeoff: 25   Live Time(s): 1571.4   Amp Time(µs): 3.84   Resolution (eV): 129.4

Sum Spectrum

map201806251012302185sp.spc

0 Cnts   0.000 keV   Det: Element C2B
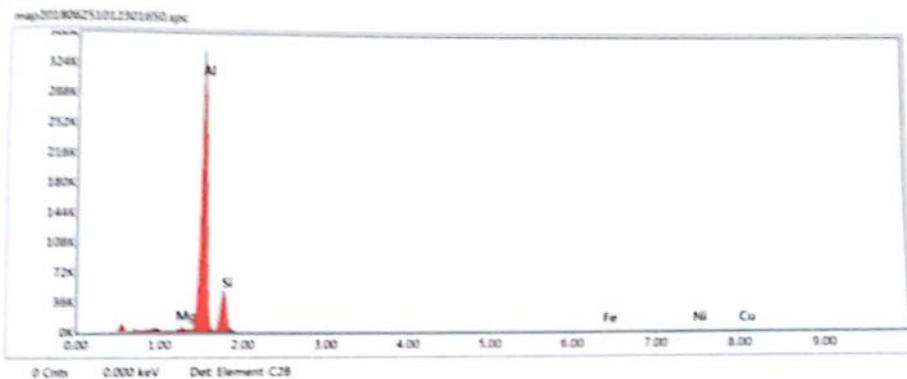
Smart Quant Results

Element	Weight %	Atomic %	Net Int.	Error %	K ratio	Z	A	F
MgK	1.01	1.18	19.56	3.80	0.0090	1.0421	0.8437	1.0078
AlK	73.51	76.06	1436.50	2.24	0.6746	1.0025	0.9136	1.0021
SiK	20.74	20.61	223.06	6.45	0.1068	1.0234	0.5030	1.0094
FeK	0.36	0.18	1.29	16.58	0.0033	0.8482	0.9933	1.0546
NiK	1.82	0.87	4.44	7.31	0.0170	0.8508	0.9996	1.0945
CuK	2.55	1.12	4.60	7.06	0.0225	0.8042	1.0013	1.0951

25062018

Author: Teknik Mesin FTI - ITS
Creation: 06/25/2018 2:04:37 PM
Sample Name: Al100-720
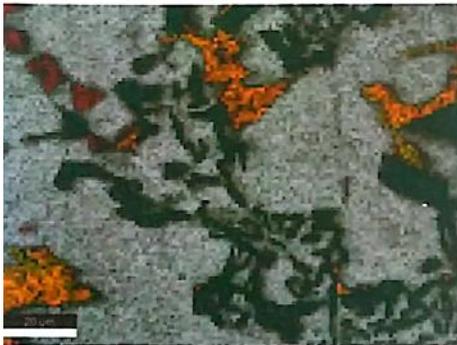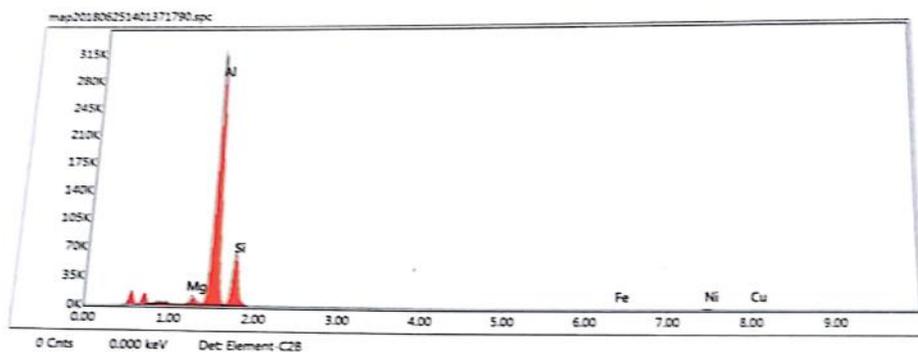
Area 1

Image

ye Map 1

ementOverlay

4% MgK
75% AlK
18% SiK
1% FeK
2% NiK
1% CuK

| kV 15 | Mag 1000 | Takeoff 25 | Live Time(s) 143.4 | Amp Time(µs) 3.84 | Resolution (eV) 129.4 |

Sum Spectrum

map201806251401371790.spc

0 Cnts   0.000 keV   Det: Element-C2B

Smart Quant Results

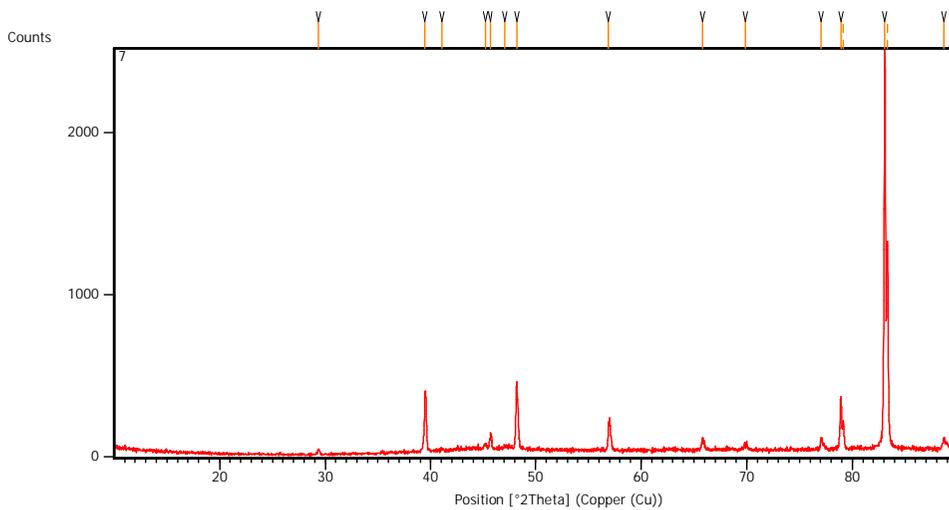| Element	Weight %	Atomic %	Net Int.	Error %	Kratio	Z	A	F
MgK	2.13	2.47	550.08	3.61	0.0183	1.0426	0.8186	1.0069
AlK	67.16	70.07	17444.68	2.56	0.5952	1.0030	0.8816	1.0023
SiK	24.48	24.54	3741.07	6.27	0.1303	1.0241	0.5195	1.0004
FeK	0.47	0.24	22.78	13.48	0.0043	0.8490	0.9931	1.0669
NiK	3.54	1.70	117.02	5.20	0.0326	0.8517	0.9994	1.0814
CuK	2.22	0.98	54.53	7.38	0.0194	0.8051	1.0011	1.0663

This is the simple example template containing only headers for each report item and the bookmarks. The invisible bookmarks are indicated by text between brackets. Modify it according to your own needs and standards.

Measurement Conditions: (Bookmark 1)

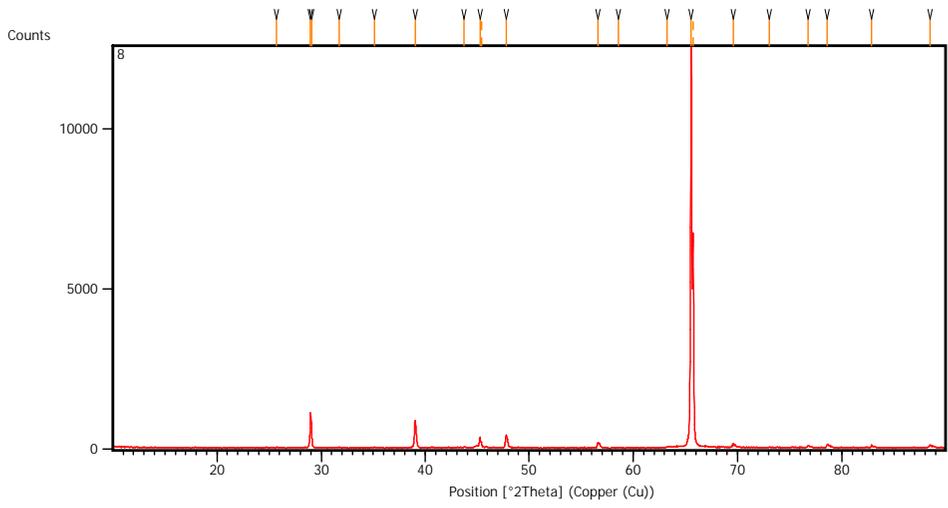|	
Dataset Name	7
File name	E:\DATA PENGUJIAN\Pengujian 2018\Juli\Moch.Sifaul Hadi\7\7.rd
Comment	Configuration=Reflection-Transmission Sp Goniometer=PW3050/60 (Theta/Theta); Mini
Measurement Date / Time	7/6/2018 10:55:00 AM
Raw Data Origin	PHILIPS-binary (scan) (.RD)
Scan Axis	Gonio
Start Position [°2Th.]	10.0084
End Position [°2Th.]	89.9764
Step Size [°2Th.]	0.0170
Scan Step Time [s]	10.1500
Scan Type	Continuous
Offset [°2Th.]	0.0000
Divergence Slit Type	Fixed
Divergence Slit Size [°]	0.2500
Specimen Length [mm]	10.00
Receiving Slit Size [mm]	12.7500
Measurement Temperature [°C]	-273.15
Anode Material	Cu
K-Alpha1 [Å]	1.54060
K-Alpha2 [Å]	1.54443
K-Beta [Å]	1.39225
K-A2 / K-A1 Ratio	0.50000
Generator Settings	30 mA, 40 kV
Diffractometer Type	XPert MPD
Diffractometer Number	1
Goniometer Radius [mm]	200.00
Dist. Focus-Diverg. Slit [mm]	91.00
Incident Beam Monochromator	No
Spinning	No

Main Graphics, Analyze View: (Bookmark 2)

1.1 **Peak List:** *(Bookmark 3)*

This is the simple example template containing only headers for each report item and the bookmarks. The invisible bookmarks are indicated by text between brackets. Modify it according to your own needs and standards.

Measurement Conditions: (Bookmark 1)

Dataset Name	8
File name	E:\DATA PENGUJIAN\Pengujian 2018\Juli\Moch.Sifaul Hadi\8\8.rd
Comment	Configuration=Reflection-Transmission Sp Goniometer=PW3050/60 (Theta/Theta); Mini
Measurement Date / Time	7/6/2018 10:40:00 AM
Raw Data Origin	PHILIPS-binary (scan) (.RD)
Scan Axis	Gonio
Start Position [°2Th.]	10.0084
End Position [°2Th.]	89.9764
Step Size [°2Th.]	0.0170
Scan Step Time [s]	10.1500
Scan Type	Continuous
Offset [°2Th.]	0.0000
Divergence Slit Type	Fixed
Divergence Slit Size [°]	0.2500
Specimen Length [mm]	10.00
Receiving Slit Size [mm]	12.7500
Measurement Temperature [°C]	-273.15
Anode Material	Cu
K-Alpha1 [Å]	1.54060
K-Alpha2 [Å]	1.54443
K-Beta [Å]	1.39225
K-A2 / K-A1 Ratio	0.50000
Generator Settings	30 mA, 40 kV
Diffractometer Type	XPert MPD
Diffractometer Number	1
Goniometer Radius [mm]	200.00
Dist. Focus-Diverg. Slit [mm]	91.00
Incident Beam Monochromator	No
Spinning	No

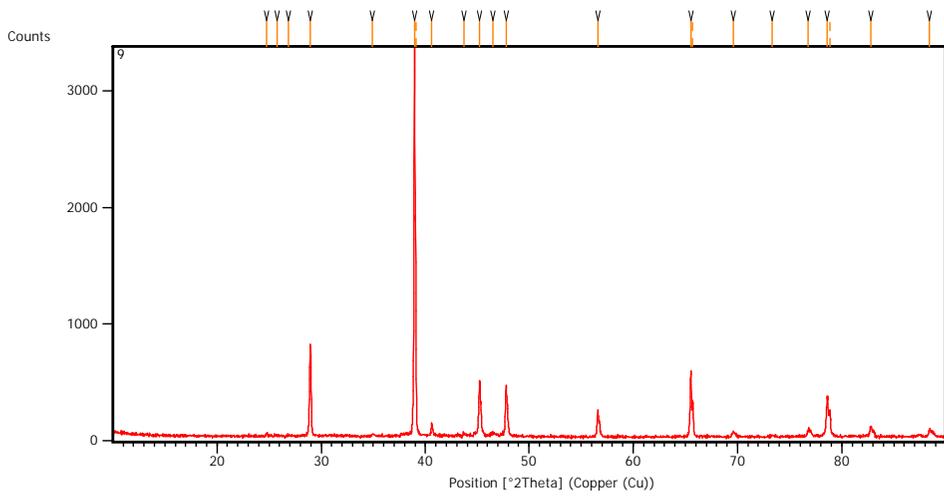## *Main Graphics, Analyze View:* (Bookmark 2)

This is the simple example template containing only headers for each report item and the bookmarks. The invisible bookmarks are indicated by text between brackets.
Modify it according to your own needs and standards.

Measurement Conditions: (Bookmark 1)

Dataset Name	9
File name	E:\DATA PENGUJIAN\Pengujian 2018\Juli\Moch.Sifaul
Hadi\9\9.rd	
Comment	Configuration=Reflection-Transmission Sp
	Goniometer=PW3050/60 (Theta/Theta); Mini
Measurement Date / Time	7/6/2018 10:30:00 AM
Raw Data Origin	PHILIPS-binary (scan) (.RD)
Scan Axis	Gonio
Start Position [°2Th.]	10.0084
End Position [°2Th.]	89.9764
Step Size [°2Th.]	0.0170
Scan Step Time [s]	10.1500
Scan Type	Continuous
Offset [°2Th.]	0.0000
Divergence Slit Type	Fixed
Divergence Slit Size [°]	0.2500
Specimen Length [mm]	10.00
Receiving Slit Size [mm]	12.7500
Measurement Temperature [°C]	-273.15
Anode Material	Cu
K-Alpha1 [Å]	1.54060
K-Alpha2 [Å]	1.54443
K-Beta [Å]	1.39225
K-A2 / K-A1 Ratio	0.50000
Generator Settings	30 mA, 40 kV
Diffractometer Type	XPert MPD
Diffractometer Number	1
Goniometer Radius [mm]	200.00
Dist. Focus-Diverg. Slit [mm]	91.00
Incident Beam Monochromator	No
Spinning	No

Main Graphics, Analyze View: (Bookmark 2)

DAFTAR RIWAYAT PENULIS

Moch. Sifaul Hadi lahir di Kota Surabaya tepatnya di kelurahan Rungkut Menaggal Kecamatan Gunung Anyar Kabupaten Surabaya Provinsi Jawa Timur. Anak ketiga dari pasangan suami-istri Abdul Manab dan Qomariyah.

Penulis memulai pendidikan di SDI Kyai Amin Surabaya Kec. Gunung Anyar 2008. Kemudian setelah lulus pendidikan dasar ia melanjutkan ke SMP Al - Amin Surabaya di tahun 2011. Tamat SMP

Melanjutkan ke SMK Negeri 3 Surabaya pada tahun 2011. Lulus Tahun 2014 diteruskan kuliah di Universitas 17 agustus 1945 Surabaya Fakultas Teknik Jurusan Mesin. Pengalaman organisasi yang pernah ia lakukan yaitu di tahun 2016 aktif menjadi pengurus Himpunan Mahasiswa Mesin sebagai Kabid Bengkel.