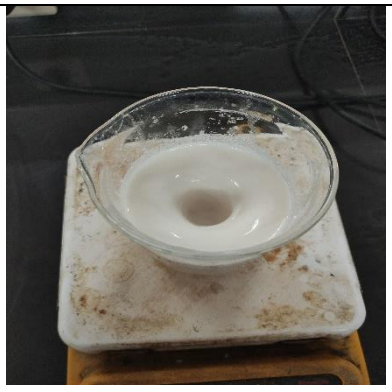
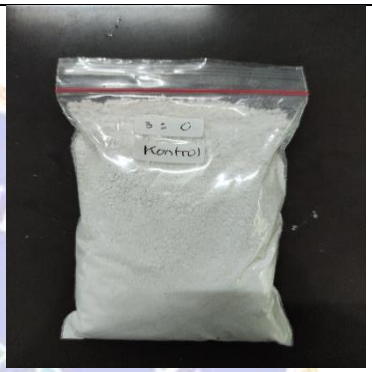
Lampiran

Lampiran 1. Dokumentasi penelitian

	
Tulang sapi yang belum dibersihkan	Furnace
	
Furnace	Tulang sapi Yang difurnace
	
Penumbukan Tulang Sapi	Balmill
	

Proses Penimbangan	Proses Pembuatan Campuran
	
Gel Yang Dihasilkan	Proses Auoklaf
	
Proses Oven suhu 100ºC	Serbuk Yang dihasilkan

Lampiran 2. Hasil Pengujian Laboratorium

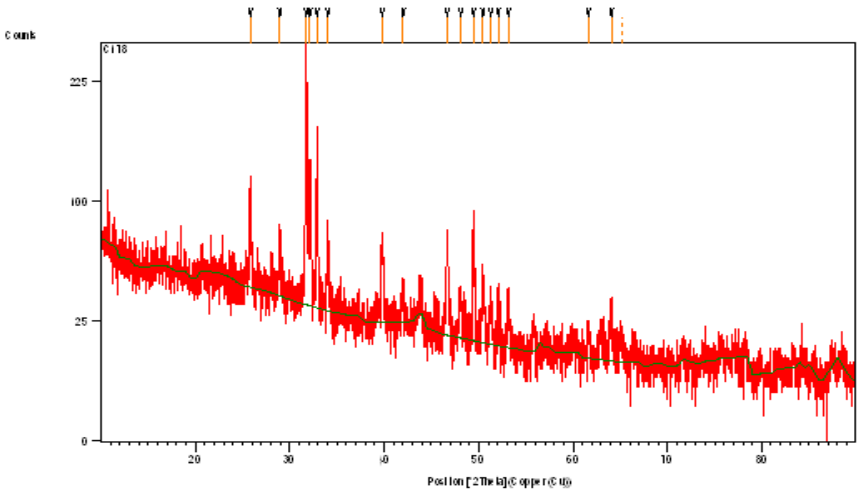
Lampiran 2. Hasil Karakterisasi XRD, XRF, FTIR dan SEM

2.1 Hasil Pengujian XRD

Anchor Scan Parameters

Dataset Name:	C178
File name:	E:\X'Pert Data\2022\February\15 Feb 2022\C178\C178.xrdml
Sample Identification:	C178
Comment:	Theta (10-90) Configuration=Stage Flat Samples, Owner=User-1, Creation date=9/15/2009 2:20:30 PM Goniometer=PW3050/60 (Theta/Theta); Minimum step size 2Theta:0.001; Minimum step size Omega:0.001 Sample stage=PW3071/xx Bracket Diffractometer system=XPERT-PRO Measurement program=Theta (10-90), Owner=User-1, Creation date=1/25/2018 8:59:22 AM 0.02 degpermin 46 min
Measurement Date / Time:	2/15/2022 9:49:07 AM
Operator:	State Univ of Malang
Raw Data Origin:	XRD measurement (*.XRDML)
Scan Axis:	Gonio
Start Position [°2Th.]:	10.0100
End Position [°2Th.]:	89.9900
Step Size [°2Th.]:	0.0200
Scan Step Time [s]:	0.7000
Scan Type:	Continuous
Offset [°2Th.]:	0.0000
Divergence Slit Type:	Fixed
Divergence Slit Size [°]:	0.9570
Specimen Length [mm]:	10.00
Receiving Slit Size [mm]:	0.1000
Measurement Temperature [°C]:	25.00
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:	0000000011063758
Diffractometer Number:	0
Goniometer Radius [mm]:	240.00
Dist. Focus-Diverg. Slit [mm]:	91.00
Incident Beam Monochromator:	No
Spinning:	No

Graphics



Peak List

Pos.[°2Th.]	Height[cts]	FWHM[°2Th.]	d-spacing[Å]	Rel.Int.[%]
25.8229	76.28	0.1574	3.45024	30.84
28.9288	44.66	0.1181	3.08648	18.06
31.7453	247.33	0.1181	2.81878	100.00
32.1621	101.50	0.1574	2.78319	41.04
32.8959	142.26	0.0984	2.72278	57.52
34.0222	52.41	0.1574	2.63517	21.19
39.8055	47.28	0.1968	2.26463	19.11
41.9986	12.37	0.4723	2.15131	5.00
46.6846	53.42	0.1968	1.94571	21.60
48.0767	17.64	0.2362	1.89258	7.13
49.4458	59.14	0.2362	1.84333	23.91
50.4707	31.26	0.2362	1.80828	12.64
51.2896	20.64	0.3149	1.78132	8.34
52.0981	21.91	0.2362	1.75556	8.86
53.1658	21.47	0.2362	1.72279	8.68
61.6511	10.02	0.4723	1.50449	4.05
64.0650	15.18	0.3840	1.45230	6.14
65.1391	8.21	0.5760	1.43448	3.32

Document History

Insert Measurement:
- File name = "C178.xrdml"
- Modification time = "2/15/2022 11:33:22 AM"
- Modification editor = "State Univ of Malang"

Default properties:
- Measurement step axis = "None"
- Internal wavelengths used from anode material: Copper (Cu)
- Original K-Alpha1 wavelength = "1.54060"
- Used K-Alpha1 wavelength = "1.54060"
- Original K-Alpha2 wavelength = "1.54443"
- Used K-Alpha2 wavelength = "1.54443"
- Original K-Beta wavelength = "1.39225"
- Used K-Beta wavelength = "1.39225"
- Dist. focus to div. slit = "91.00000"
- Irradiated length = "10.00000"
- Spinner used = "No"
- Linear detector mode = "None"
- Length linear detector = "2"
- Step axis value = "0.00000"
- Offset = "0.00000"
- Sample length = "10.00000"
- Modification time = "2/15/2022 11:33:22 AM"
- Modification editor = "State Univ of Malang"

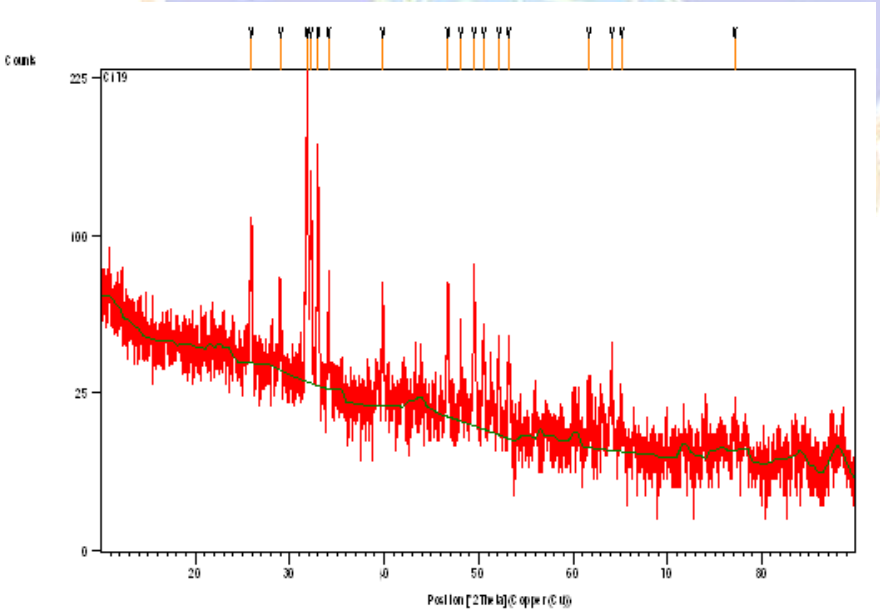
Search Peaks:
- Minimum significance = "2.00"
- Minimum tip width = "0.01"
- Maximum tip width = "1.00"
- Peak base width = "2.00"
- Method = "Top of smoothed peak"
- Modification time = "4/17/2017 8:55:59 AM"
- Modification editor = "State Univ of Malang"

Anchor Scan Parameters

Dataset Name:	C179
File name:	E:\X'Pert Data\2022\February\15 Feb 2022\C179\C179.xrdml
Sample Identification:	C179
Comment:	Theta (10-90) Configuration=Stage Flat Samples, Owner=User-1, Creation date=9/15/2009 2:20:30 PM

	Goniometer=PW3050/60 (Theta/Theta); Minimum step size 2Theta:0.001; Minimum step size Omega:0.001 Sample stage=PW3071/xx Bracket Diffractometer system=XPERT-PRO Measurement program=Theta (10-90), Owner=User-1, Creation date=1/25/2018 8:59:22 AM 0.02 degpermin 46 min
Measurement Date / Time:	2/15/2022 10:37:24 AM
Operator:	State Univ of Malang
Raw Data Origin:	XRD measurement (*.XRDML)
Scan Axis:	Gonio
Start Position [°2Th.]:	10.0100
End Position [°2Th.]:	89.9900
Step Size [°2Th.]:	0.0200
Scan Step Time [s]:	0.7000
Scan Type:	Continuous
Offset [°2Th.]:	0.0000
Divergence Slit Type:	Fixed
Divergence Slit Size [°]:	0.9570
Specimen Length [mm]:	10.00
Receiving Slit Size [mm]:	0.1000
Measurement Temperature [°C]:	25.00
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:	0000000011063758
Diffractometer Number:	0
Goniometer Radius [mm]:	240.00
Dist. Focus-Diverg. Slit [mm]:	91.00
Incident Beam Monochromator:	No
Spinning:	No

Graphics



Peak List

Pos.[°2Th.]	Height[cts]	FWHM[°2Th.]	d-spacing[Å]	Rel.Int.[%]
25.9160	72.78	0.1574	3.43805	35.82
29.0128	27.14	0.2362	3.07774	13.36
31.8195	203.19	0.1574	2.81238	100.00

32.2342	84.55	0.1574	2.77714	41.61
32.9859	135.50	0.1574	2.71555	66.69
34.1219	35.09	0.1574	2.62769	17.27
39.8599	47.31	0.1574	2.26167	23.28
46.7653	54.38	0.2362	1.94254	26.76
48.1294	29.71	0.1574	1.89063	14.62
49.5267	62.48	0.1574	1.84051	30.75
50.5530	28.64	0.2362	1.80553	14.09
52.1433	23.84	0.2362	1.75414	11.73
53.2049	32.27	0.1574	1.72162	15.88
61.6792	9.56	0.4723	1.50387	4.70
64.1161	16.73	0.3936	1.45246	8.23
65.1461	8.42	0.4723	1.43197	4.15
77.1418	6.77	0.5760	1.23548	3.33

Document History

Insert Measurement:
- File name = "C179.xrdml"
- Modification time = "2/15/2022 11:33:54 AM"
- Modification editor = "State Univ of Malang"

Default properties:
- Measurement step axis = "None"
- Internal wavelengths used from anode material: Copper (Cu)
- Original K-Alpha1 wavelength = "1.54060"
- Used K-Alpha1 wavelength = "1.54060"
- Original K-Alpha2 wavelength = "1.54443"
- Used K-Alpha2 wavelength = "1.54443"
- Original K-Beta wavelength = "1.39225"
- Used K-Beta wavelength = "1.39225"
- Dist. focus to div. slit = "91.00000"
- Irradiated length = "10.00000"
- Spinner used = "No"
- Linear detector mode = "None"
- Length linear detector = "2"
- Step axis value = "0.00000"
- Offset = "0.00000"
- Sample length = "10.00000"
- Modification time = "2/15/2022 11:33:54 AM"
- Modification editor = "State Univ of Malang"

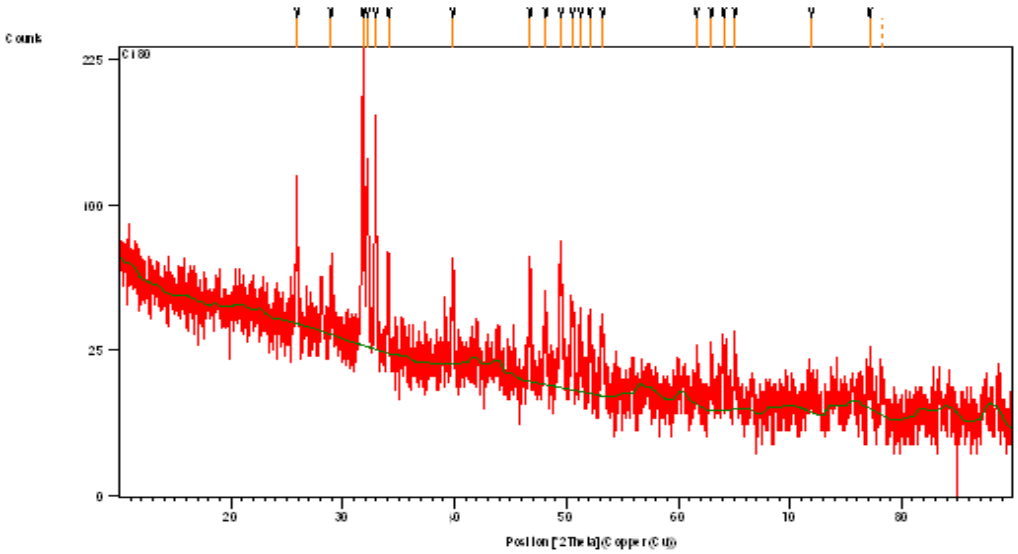
Search Peaks:
- Minimum significance = "2.00"
- Minimum tip width = "0.01"
- Maximum tip width = "1.00"
- Peak base width = "2.00"
- Method = "Top of smoothed peak"
- Modification time = "4/17/2017 8:55:59 AM"
- Modification editor = "State Univ of Malang"

Anchor Scan Parameters

Dataset Name:	C180
File name:	E:\X'Pert Data\2022\February\15 Feb 2022\C180\C180.xrdml
Sample Identification:	C180
Comment:	Theta (10-90) Configuration=Stage Flat Samples, Owner=User-1, Creation date=9/15/2009 2:20:30 PM Goniometer=PW3050/60 (Theta/Theta); Minimum step size 2Theta:0.001; Minimum step size Omega:0.001 Sample stage=PW3071/xx Bracket Diffractometer system=XPERT-PRO Measurement program=Theta (10-90), Owner=User-1, Creation date=1/25/2018 8:59:22 AM 0.02 degpermin 46 min
Measurement Date / Time:	2/15/2022 11:26:16 AM
Operator:	State Univ of Malang

Raw Data Origin:	XRD measurement (*.XRDML)
Scan Axis:	Gonio
Start Position [°2Th.]:	10.0100
End Position [°2Th.]:	89.9900
Step Size [°2Th.]:	0.0200
Scan Step Time [s]:	0.7000
Scan Type:	Continuous
Offset [°2Th.]:	0.0000
Divergence Slit Type:	Fixed
Divergence Slit Size [°]:	0.9570
Specimen Length [mm]:	10.00
Receiving Slit Size [mm]:	0.1000
Measurement Temperature [°C]:	25.00
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:	0000000011063758
Diffractometer Number:	0
Goniometer Radius [mm]:	240.00
Dist. Focus-Diverg. Slit [mm]:	91.00
Incident Beam Monochromator:	No
Spinning:	No

Graphics



Peak List

Pos.[°2Th.]	Height[cts]	FWHM[°2Th.]	d-spacing[Å]	Rel.Int.[%]
25.8892	80.65	0.0787	3.44155	38.58
28.9636	33.97	0.1181	3.08286	16.25
31.8028	209.04	0.0984	2.81382	100.00
32.1943	103.45	0.1181	2.78049	49.49
32.9312	127.90	0.1181	2.71993	61.19
34.0766	43.92	0.1181	2.63108	21.01
39.8485	39.96	0.1968	2.26229	19.11
46.7180	49.13	0.1968	1.94440	23.50
48.1384	25.24	0.2362	1.89029	12.08
49.4961	54.54	0.1574	1.84158	26.09
50.5304	28.34	0.2362	1.80628	13.56

51.2976	20.19	0.3149	1.78106	9.66
52.1160	24.07	0.1968	1.75500	11.51
53.2156	23.06	0.3149	1.72130	11.03
61.6494	8.30	0.4723	1.50452	3.97
62.9873	12.06	0.3149	1.47575	5.77
64.0739	13.03	0.4723	1.45332	6.23
65.0861	13.41	0.2362	1.43315	6.41
71.9136	4.72	0.9446	1.31296	2.26
77.1440	7.96	0.5760	1.23545	3.81
78.2785	7.47	0.5760	1.22339	3.57

Document History

Insert Measurement:
- File name = "C180.xrdml"
- Modification time = "2/15/2022 1:00:47 PM"
- Modification editor = "State Univ of Malang"

Default properties:
- Measurement step axis = "None"
- Internal wavelengths used from anode material: Copper (Cu)
- Original K-Alpha1 wavelength = "1.54060"
- Used K-Alpha1 wavelength = "1.54060"
- Original K-Alpha2 wavelength = "1.54443"
- Used K-Alpha2 wavelength = "1.54443"
- Original K-Beta wavelength = "1.39225"
- Used K-Beta wavelength = "1.39225"
- Dist. focus to div. slit = "91.00000"
- Irradiated length = "10.00000"
- Spinner used = "No"
- Linear detector mode = "None"
- Length linear detector = "2"
- Step axis value = "0.00000"
- Offset = "0.00000"
- Sample length = "10.00000"
- Modification time = "2/15/2022 1:00:47 PM"
- Modification editor = "State Univ of Malang"

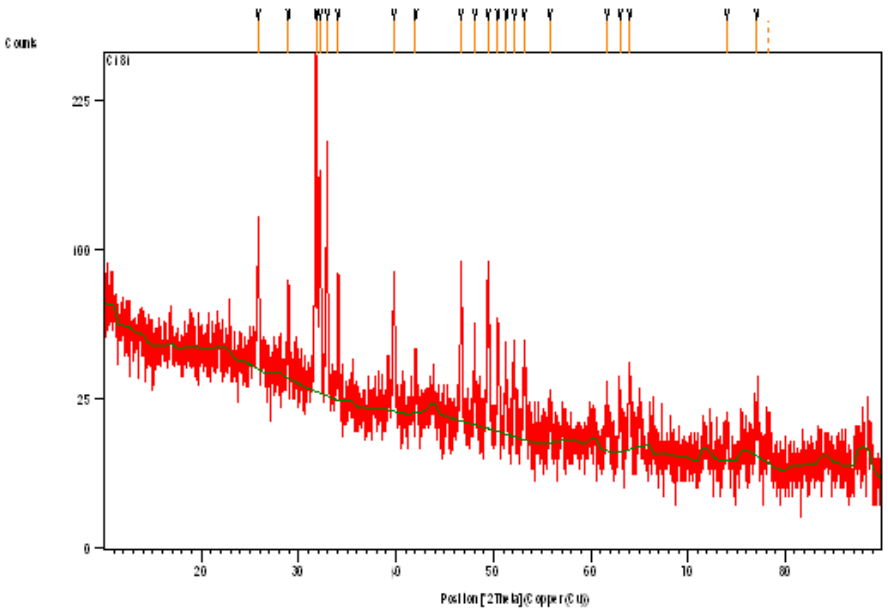
Search Peaks:
- Minimum significance = "2.00"
- Minimum tip width = "0.01"
- Maximum tip width = "1.00"
- Peak base width = "2.00"
- Method = "Top of smoothed peak"
- Modification time = "4/17/2017 8:55:59 AM"
- Modification editor = "State Univ of Malang"

Anchor Scan Parameters

Dataset Name:	C181
File name:	E:\X'Pert Data\2022\February\15 Feb 2022\C181\C181.xrdml
Sample Identification:	C181
Comment:	Theta (10-90) Configuration=Stage Flat Samples, Owner=User-1, Creation date=9/15/2009 2:20:30 PM Goniometer=PW3050/60 (Theta/Theta); Minimum step size 2Theta:0.001; Minimum step size Omega:0.001 Sample stage=PW3071/xx Bracket Diffractometer system=XPERT-PRO Measurement program=Theta (10-90), Owner=User-1, Creation date=1/25/2018 8:59:22 AM 0.02 degpermin 46 min
Measurement Date / Time:	2/15/2022 12:14:25 PM
Operator:	State Univ of Malang
Raw Data Origin:	XRD measurement (*.XRDML)
Scan Axis:	Gonio
Start Position [°2Th.]:	10.0100
End Position [°2Th.]:	89.9900
Step Size [°2Th.]:	0.0200

Scan Step Time [s]:	0.7000
Scan Type:	Continuous
Offset [°2Th.]:	0.0000
Divergence Slit Type:	Fixed
Divergence Slit Size [°]:	0.9570
Specimen Length [mm]:	10.00
Receiving Slit Size [mm]:	0.1000
Measurement Temperature [°C]:	25.00
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:	0000000011063758
Diffractometer Number:	0
Goniometer Radius [mm]:	240.00
Dist. Focus-Diverg. Slit [mm]:	91.00
Incident Beam Monochromator:	No
Spinning:	No

Graphics



Peak List

Pos.[°2Th.]	Height[cts]	FWHM[°2Th.]	d-spacing[Å]	Rel.Int.[%]
25.8689	85.06	0.1378	3.44420	35.17
28.9539	49.86	0.1378	3.08386	20.62
31.7765	241.82	0.1181	2.81609	100.00
32.1786	131.24	0.0984	2.78181	54.27
32.9195	154.73	0.1378	2.72088	63.99
34.0589	59.93	0.1574	2.63242	24.78
39.8032	64.00	0.1378	2.26476	26.47
42.0439	15.94	0.2362	2.14910	6.59
46.6970	69.69	0.2362	1.94522	28.82
48.1013	19.84	0.2362	1.89166	8.20
49.4687	67.19	0.1968	1.84253	27.78
50.4865	36.57	0.1574	1.80775	15.12
51.3190	20.93	0.2362	1.78036	8.66
52.1331	21.19	0.2362	1.75446	8.76

53.2031	27.28	0.1968	1.72167	11.28
55.8400	9.11	0.4723	1.64646	3.77
61.7206	10.19	0.6298	1.50296	4.21
63.0245	10.89	0.2362	1.47497	4.50
64.0253	18.48	0.3936	1.45431	7.64
74.0168	9.68	0.5510	1.28077	4.00
77.0736	11.49	0.5760	1.23640	4.75
78.2340	8.08	0.5760	1.22398	3.34

Document History

Insert Measurement:
- File name = "C181.xrdml"
- Modification time = "2/15/2022 2:44:43 PM"
- Modification editor = "State Univ of Malang"

Default properties:
- Measurement step axis = "None"
- Internal wavelengths used from anode material: Copper (Cu)
- Original K-Alpha1 wavelength = "1.54060"
- Used K-Alpha1 wavelength = "1.54060"
- Original K-Alpha2 wavelength = "1.54443"
- Used K-Alpha2 wavelength = "1.54443"
- Original K-Beta wavelength = "1.39225"
- Used K-Beta wavelength = "1.39225"
- Dist. focus to div. slit = "91.00000"
- Irradiated length = "10.00000"
- Spinner used = "No"
- Linear detector mode = "None"
- Length linear detector = "2"
- Step axis value = "0.00000"
- Offset = "0.00000"
- Sample length = "10.00000"
- Modification time = "2/15/2022 2:44:43 PM"
- Modification editor = "State Univ of Malang"

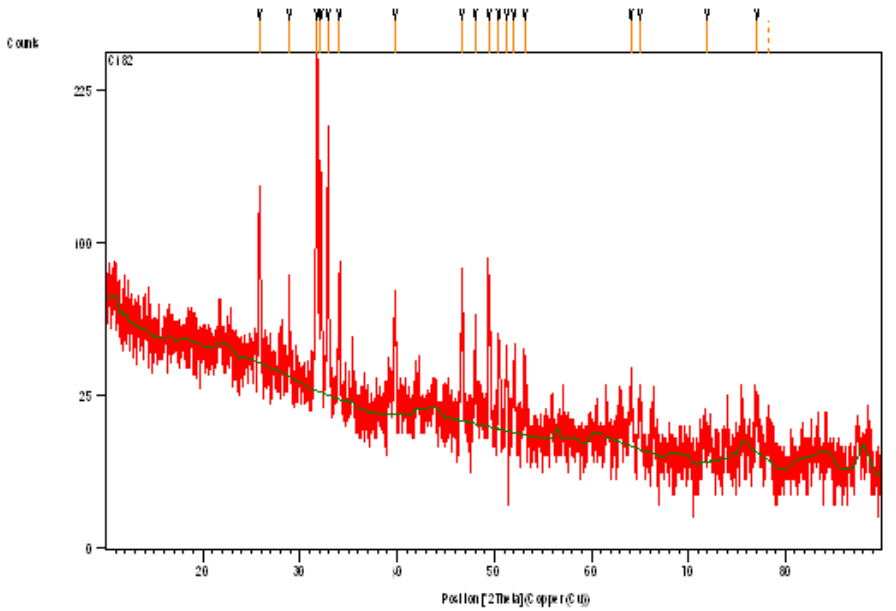
Search Peaks:
- Minimum significance = "2.00"
- Minimum tip width = "0.01"
- Maximum tip width = "1.00"
- Peak base width = "2.00"
- Method = "Top of smoothed peak"
- Modification time = "4/17/2017 8:55:59 AM"
- Modification editor = "State Univ of Malang"

Anchor Scan Parameters

Dataset Name:	C182
File name:	E:\X'Pert Data\2022\February\15 Feb 2022\C182\C182.xrdml
Sample Identification:	C182
Comment:	Theta (10-90) Configuration=Stage Flat Samples, Owner=User-1, Creation date=9/15/2009 2:20:30 PM Goniometer=PW3050/60 (Theta/Theta); Minimum step size 2Theta:0.001; Minimum step size Omega:0.001 Sample stage=PW3071/xx Bracket Diffractometer system=XPERT-PRO Measurement program=Theta (10-90), Owner=User-1, Creation date=1/25/2018 8:59:22 AM 0.02 degpermin 46 min
Measurement Date / Time:	2/15/2022 1:02:43 PM
Operator:	State Univ of Malang
Raw Data Origin:	XRD measurement (*.XRDML)
Scan Axis:	Gonio
Start Position [°2Th.]:	10.0100
End Position [°2Th.]:	89.9900
Step Size [°2Th.]:	0.0200
Scan Step Time [s]:	0.7000
Scan Type:	Continuous
Offset [°2Th.]:	0.0000

Divergence Slit Type:	Fixed
Divergence Slit Size [°]:	0.9570
Specimen Length [mm]:	10.00
Receiving Slit Size [mm]:	0.1000
Measurement Temperature [°C]:	25.00
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:	0000000011063758
Diffractometer Number:	0
Goniometer Radius [mm]:	240.00
Dist. Focus-Diverg. Slit [mm]:	91.00
Incident Beam Monochromator:	No
Spinning:	No

Graphics



Peak List

Pos.[°2Th.]	Height[cts]	FWHM[°2Th.]	d-spacing[Å]	Rel.Int.[%]
25.8192	88.89	0.1181	3.45072	37.38
28.9027	40.92	0.1181	3.08921	17.21
31.7555	237.79	0.1181	2.81790	100.00
32.1594	123.16	0.1574	2.78343	51.79
32.8762	168.15	0.0787	2.72436	70.72
34.0539	55.85	0.1574	2.63279	23.49
39.7779	44.99	0.1574	2.26614	18.92
46.6701	61.42	0.1968	1.94628	25.83
48.0622	33.76	0.1181	1.89311	14.20
49.4605	56.71	0.2755	1.84282	23.85
50.4741	33.14	0.1968	1.80817	13.94
51.2569	23.43	0.1968	1.78238	9.85
52.0550	20.88	0.2755	1.75691	8.78
53.1496	24.82	0.2362	1.72328	10.44
64.0663	13.31	0.3936	1.45347	5.60
65.0278	12.53	0.3149	1.43429	5.27

71.8946	4.65	0.9446	1.31326	1.96
77.0645	10.23	0.5760	1.23652	4.30
78.2334	8.42	0.5760	1.22398	3.54

Document History

Insert Measurement:
- File name = "C182.xrdml"
- Modification time = "2/15/2022 2:45:12 PM"
- Modification editor = "State Univ of Malang"

Default properties:
- Measurement step axis = "None"
- Internal wavelengths used from anode material: Copper (Cu)
- Original K-Alpha1 wavelength = "1.54060"
- Used K-Alpha1 wavelength = "1.54060"
- Original K-Alpha2 wavelength = "1.54443"
- Used K-Alpha2 wavelength = "1.54443"
- Original K-Beta wavelength = "1.39225"
- Used K-Beta wavelength = "1.39225"
- Dist. focus to div. slit = "91.00000"
- Irradiated length = "10.00000"
- Spinner used = "No"
- Linear detector mode = "None"
- Length linear detector = "2"
- Step axis value = "0.00000"
- Offset = "0.00000"
- Sample length = "10.00000"
- Modification time = "2/15/2022 2:45:12 PM"
- Modification editor = "State Univ of Malang"

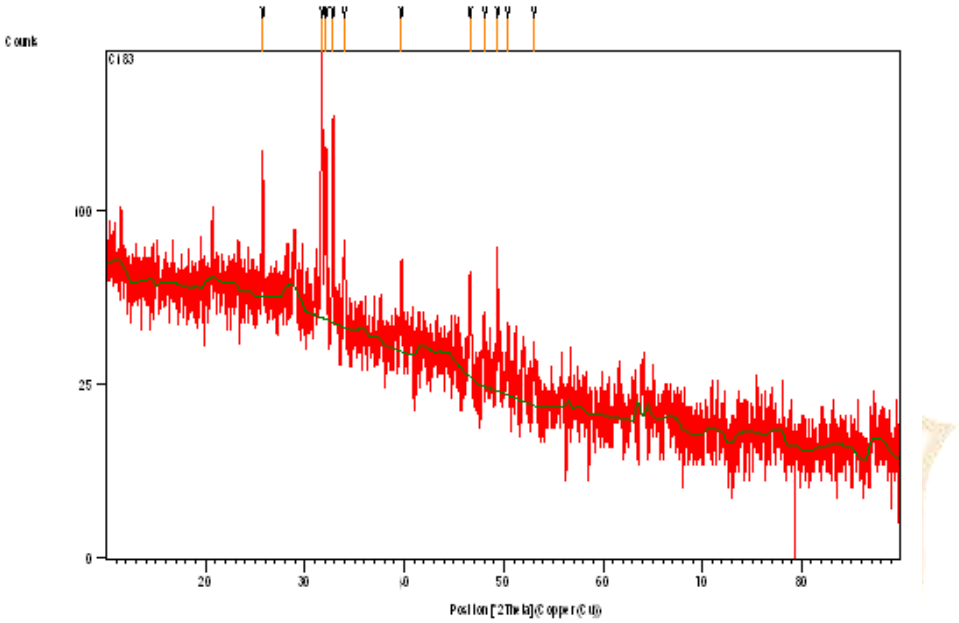
Search Peaks:
- Minimum significance = "2.00"
- Minimum tip width = "0.01"
- Maximum tip width = "1.00"
- Peak base width = "2.00"
- Method = "Top of smoothed peak"
- Modification time = "4/17/2017 8:55:59 AM"
- Modification editor = "State Univ of Malang"

Anchor Scan Parameters

Dataset Name:	C183
File name:	E:\X'Pert Data\2022\February\15 Feb 2022\C183\C183.xrdml
Sample Identification:	C183
Comment:	Theta (10-90) Configuration=Stage Flat Samples, Owner=User-1, Creation date=9/15/2009 2:20:30 PM Goniometer=PW3050/60 (Theta/Theta); Minimum step size 2Theta:0.001; Minimum step size Omega:0.001 Sample stage=PW3071/xx Bracket Diffractometer system=XPERT-PRO Measurement program=Theta (10-90), Owner=User-1, Creation date=1/25/2018 8:59:22 AM 0.02 degpermin 46 min
Measurement Date / Time:	2/15/2022 1:51:38 PM
Operator:	State Univ of Malang
Raw Data Origin:	XRD measurement (*.XRDML)
Scan Axis:	Gonio
Start Position [°2Th.]:	10.0100
End Position [°2Th.]:	89.9900
Step Size [°2Th.]:	0.0200
Scan Step Time [s]:	0.7000
Scan Type:	Continuous
Offset [°2Th.]:	0.0000
Divergence Slit Type:	Fixed
Divergence Slit Size [°]:	0.9570
Specimen Length [mm]:	10.00
Receiving Slit Size [mm]:	0.1000
Measurement Temperature [°C]:	25.00
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:	0000000011063758
Diffractometer Number:	0
Goniometer Radius [mm]:	240.00
Dist. Focus-Diverg. Slit [mm]:	91.00
Incident Beam Monochromator:	No
Spinning:	No

Graphics



Peak List

Pos.[°2Th.]	Height[cts]	FWHM[°2Th.]	d-spacing[Å]	Rel.Int.[%]
25.7850	63.29	0.1181	3.45521	37.08
31.6958	170.67	0.1181	2.82307	100.00
32.1101	76.99	0.1574	2.78759	45.11
32.8347	116.42	0.1378	2.72771	68.21
33.9748	34.18	0.1181	2.63874	20.03
39.7147	29.66	0.2362	2.26960	17.38
46.6146	35.01	0.1968	1.94847	20.51
48.0679	11.67	0.4723	1.89290	6.84
49.3832	46.38	0.1181	1.84552	27.18
50.4272	18.16	0.2362	1.80974	10.64
53.0683	13.96	0.5760	1.72430	8.18

Document History

Insert Measurement:
- File name = "C183.xrdml"
- Modification time = "2/15/2022 2:46:08 PM"
- Modification editor = "State Univ of Malang"

Default properties:
- Measurement step axis = "None"
- Internal wavelengths used from anode material: Copper (Cu)

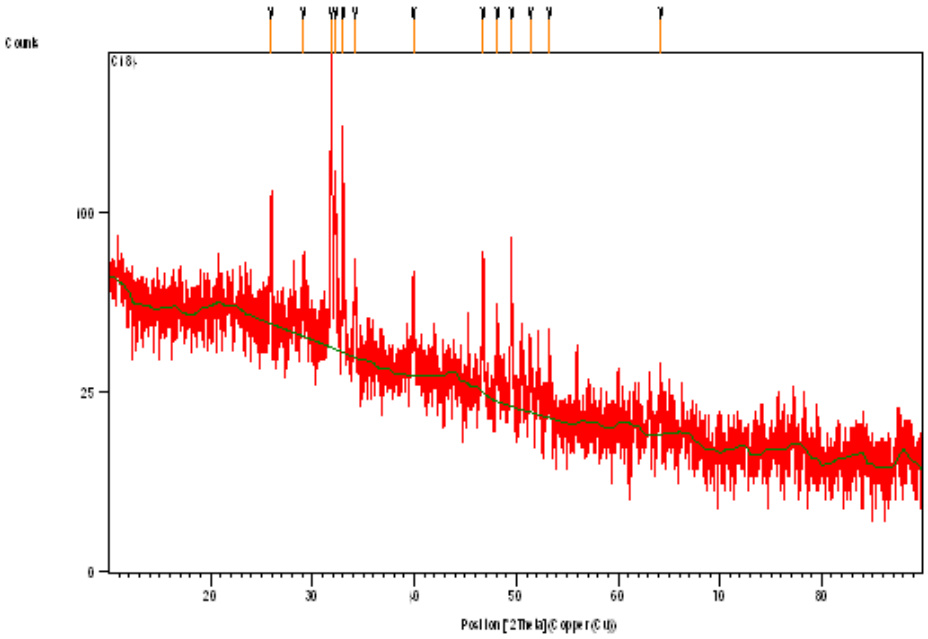
- Original K-Alpha1 wavelength = "1.54060"
- Used K-Alpha1 wavelength = "1.54060"
- Original K-Alpha2 wavelength = "1.54443"
- Used K-Alpha2 wavelength = "1.54443"
- Original K-Beta wavelength = "1.39225"
- Used K-Beta wavelength = "1.39225"
- Dist. focus to div. slit = "91.00000"
- Irradiated length = "10.00000"
- Spinner used = "No"
- Linear detector mode = "None"
- Length linear detector = "2"
- Step axis value = "0.00000"
- Offset = "0.00000"
- Sample length = "10.00000"
- Modification time = "2/15/2022 2:46:08 PM"
- Modification editor = "State Univ of Malang"

Search Peaks:
- Minimum significance = "2.00"
- Minimum tip width = "0.01"
- Maximum tip width = "1.00"
- Peak base width = "2.00"
- Method = "Top of smoothed peak"
- Modification time = "4/17/2017 8:55:59 AM"
- Modification editor = "State Univ of Malang"

Anchor Scan Parameters

Dataset Name:	C184
File name:	E:\X'Pert Data\2022\February\15 Feb 2022\C184\C184.xrdml
Sample Identification:	C184
Comment:	Theta (10-90) Configuration=Stage Flat Samples, Owner=User-1, Creation date=9/15/2009 2:20:30 PM Goniometer=PW3050/60 (Theta/Theta); Minimum step size 2Theta:0.001; Minimum step size Omega:0.001 Sample stage=PW3071/xx Bracket Diffractometer system=XPERT-PRO Measurement program=Theta (10-90), Owner=User-1, Creation date=1/25/2018 8:59:22 AM 0.02 degpermin 46 min
Measurement Date / Time:	2/15/2022 2:40:45 PM
Operator:	State Univ of Malang
Raw Data Origin:	XRD measurement (*.XRDML)
Scan Axis:	Gonio
Start Position [°2Th.]:	10.0100
End Position [°2Th.]:	89.9900
Step Size [°2Th.]:	0.0200
Scan Step Time [s]:	0.7000
Scan Type:	Continuous
Offset [°2Th.]:	0.0000
Divergence Slit Type:	Fixed
Divergence Slit Size [°]:	0.9570
Specimen Length [mm]:	10.00
Receiving Slit Size [mm]:	0.1000
Measurement Temperature [°C]:	25.00
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:	0000000011063758
Diffractometer Number:	0
Goniometer Radius [mm]:	240.00
Dist. Focus-Diverg. Slit [mm]:	91.00
Incident Beam Monochromator:	No
Spinning:	No

Graphics



Peak List

Pos.[°2Th.]	Height[cts]	FWHM[°2Th.]	d-spacing[Å]	Rel.Int.[%]
25.9349	62.25	0.1574	3.43559	42.81
29.1126	18.03	0.4723	3.06742	12.40
31.8571	145.41	0.1378	2.80915	100.00
32.2485	85.87	0.1574	2.77594	59.06
32.9949	106.19	0.1574	2.71483	73.03
34.1319	37.49	0.2362	2.62695	25.78
39.9106	28.76	0.2362	2.25891	19.78
46.7783	46.53	0.1968	1.94203	32.00
48.1456	20.22	0.2362	1.89003	13.90
49.5552	48.15	0.1968	1.83952	33.11
51.3904	17.19	0.2362	1.77806	11.82
53.2739	16.97	0.2362	1.71955	11.67
64.1776	11.12	0.5760	1.45002	7.65

Document History

Insert Measurement:
- File name = "C184.xrdml"
- Modification time = "2/16/2022 9:13:22 AM"
- Modification editor = "State Univ of Malang"

Default properties:
- Measurement step axis = "None"
- Internal wavelengths used from anode material: Copper (Cu)
- Original K-Alpha1 wavelength = "1.54060"
- Used K-Alpha1 wavelength = "1.54060"
- Original K-Alpha2 wavelength = "1.54443"
- Used K-Alpha2 wavelength = "1.54443"
- Original K-Beta wavelength = "1.39225"
- Used K-Beta wavelength = "1.39225"
- Dist. focus to div. slit = "91.00000"
- Irradiated length = "10.00000"
- Spinner used = "No"
- Linear detector mode = "None"
- Length linear detector = "2"

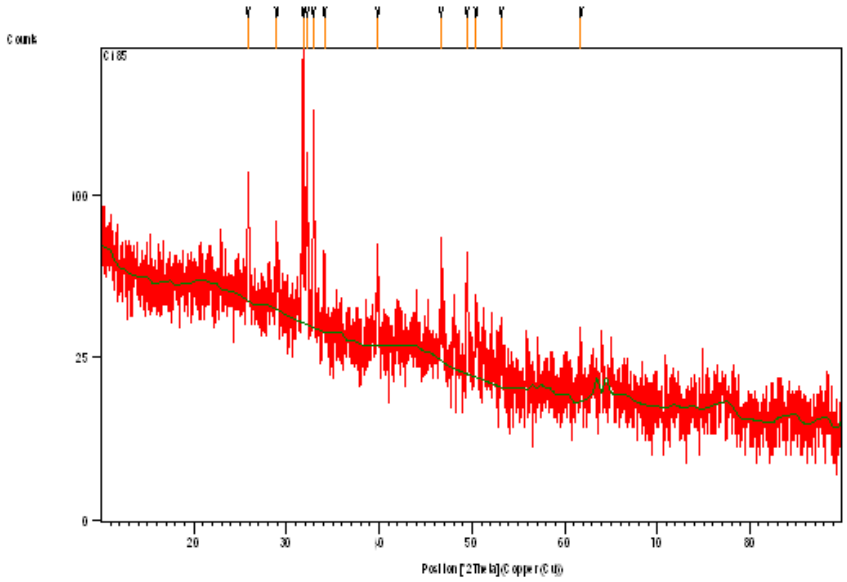
- Step axis value = "0.00000"
- Offset = "0.00000"
- Sample length = "10.00000"
- Modification time = "2/16/2022 9:13:22 AM"
- Modification editor = "State Univ of Malang"

Search Peaks:
- Minimum significance = "2.00"
- Minimum tip width = "0.01"
- Maximum tip width = "1.00"
- Peak base width = "2.00"
- Method = "Top of smoothed peak"
- Modification time = "4/17/2017 8:55:59 AM"
- Modification editor = "State Univ of Malang"

Anchor Scan Parameters

Dataset Name:	C185
File name:	E:\X'Pert Data\2022\February\16 Feb 2022\C185\C185.xrdml
Sample Identification:	C185
Comment:	Theta (10-90) Configuration=Stage Flat Samples, Owner=User-1, Creation date=9/15/2009 2:20:30 PM Goniometer=PW3050/60 (Theta/Theta); Minimum step size 2Theta:0.001; Minimum step size Omega:0.001 Sample stage=PW3071/xx Bracket Diffractometer system=XPERT-PRO Measurement program=Theta (10-90), Owner=User-1, Creation date=1/25/2018 8:59:22 AM 0.02 degpermin 46 min
Measurement Date / Time:	2/16/2022 7:41:13 AM
Operator:	State Univ of Malang
Raw Data Origin:	XRD measurement (*.XRDML)
Scan Axis:	Gonio
Start Position [°2Th.]:	10.0100
End Position [°2Th.]:	89.9900
Step Size [°2Th.]:	0.0200
Scan Step Time [s]:	0.7000
Scan Type:	Continuous
Offset [°2Th.]:	0.0000
Divergence Slit Type:	Fixed
Divergence Slit Size [°]:	0.9570
Specimen Length [mm]:	10.00
Receiving Slit Size [mm]:	0.1000
Measurement Temperature [°C]:	25.00
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:	0000000011063758
Diffractometer Number:	0
Goniometer Radius [mm]:	240.00
Dist. Focus-Diverg. Slit [mm]:	91.00
Incident Beam Monochromator:	No
Spinning:	No

Graphics



Peak List

Pos.[°2Th.]	Height[cts]	FWHM[°2Th.]	d-spacing[Å]	Rel.Int.[%]
25.8698	66.17	0.1574	3.44409	43.19
28.9741	25.74	0.2362	3.08176	16.80
31.7844	153.21	0.0984	2.81541	100.00
32.1869	83.37	0.1181	2.78111	54.41
32.9089	123.49	0.0787	2.72173	80.60
34.0789	25.21	0.1574	2.63092	16.46
39.8312	35.59	0.1574	2.26323	23.23
46.7113	32.67	0.2362	1.94466	21.33
49.4836	40.26	0.2362	1.84201	26.28
50.4967	19.73	0.3149	1.80741	12.88
53.1940	16.38	0.2362	1.72195	10.69
61.7317	6.70	0.8640	1.50147	4.37

Document History

Insert Measurement:
- File name = "C185.xrdml"
- Modification time = "2/16/2022 9:14:26 AM"
- Modification editor = "State Univ of Malang"

Default properties:
- Measurement step axis = "None"
- Internal wavelengths used from anode material: Copper (Cu)
- Original K-Alpha1 wavelength = "1.54060"
- Used K-Alpha1 wavelength = "1.54060"
- Original K-Alpha2 wavelength = "1.54443"
- Used K-Alpha2 wavelength = "1.54443"
- Original K-Beta wavelength = "1.39225"
- Used K-Beta wavelength = "1.39225"
- Dist. focus to div. slit = "91.00000"
- Irradiated length = "10.00000"
- Spinner used = "No"
- Linear detector mode = "None"
- Length linear detector = "2"
- Step axis value = "0.00000"
- Offset = "0.00000"
- Sample length = "10.00000"
- Modification time = "2/16/2022 9:14:26 AM"

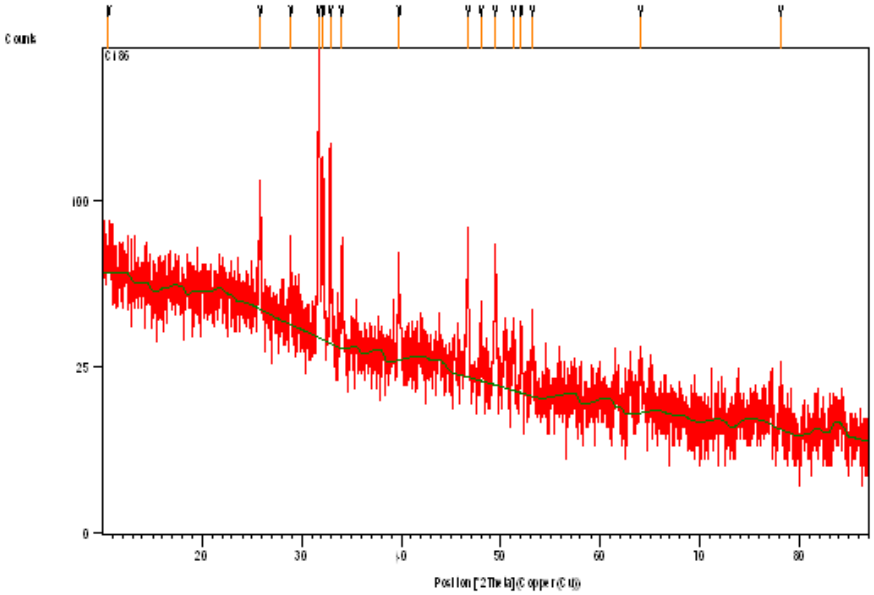
- Modification editor = "State Univ of Malang"

Search Peaks:
- Minimum significance = "2.00"
- Minimum tip width = "0.01"
- Maximum tip width = "1.00"
- Peak base width = "2.00"
- Method = "Top of smoothed peak"
- Modification time = "4/17/2017 8:55:59 AM"
- Modification editor = "State Univ of Malang"

Anchor Scan Parameters

Dataset Name:	C186
File name:	E:\X'Pert Data\2022\February\16 Feb 2022\C186\C186.xrdml
Sample Identification:	C186
Comment:	Theta (10-90) Configuration=Stage Flat Samples, Owner=User-1, Creation date=9/15/2009 2:20:30 PM Goniometer=PW3050/60 (Theta/Theta); Minimum step size 2Theta:0.001; Minimum step size Omega:0.001 Sample stage=PW3071/xx Bracket Diffractometer system=XPERT-PRO Measurement program=Theta (10-90), Owner=User-1, Creation date=1/25/2018 8:59:22 AM 0.02 degpermin 46 min
Measurement Date / Time:	2/16/2022 8:29:33 AM
Operator:	State Univ of Malang
Raw Data Origin:	XRD measurement (*.XRDML)
Scan Axis:	Gonio
Start Position [°2Th.]:	10.0100
End Position [°2Th.]:	87.0700
Step Size [°2Th.]:	0.0200
Scan Step Time [s]:	0.7000
Scan Type:	Continuous
Offset [°2Th.]:	0.0000
Divergence Slit Type:	Fixed
Divergence Slit Size [°]:	0.9570
Specimen Length [mm]:	10.00
Receiving Slit Size [mm]:	0.1000
Measurement Temperature [°C]:	25.00
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:	0000000011063758
Diffractometer Number:	0
Goniometer Radius [mm]:	240.00
Dist. Focus-Diverg. Slit [mm]:	91.00
Incident Beam Monochromator:	No
Spinning:	No

Graphics



Peak List

Pos.[°2Th.]	Height[cts]	FWHM[°2Th.]	d-spacing[Å]	Rel.Int.[%]
10.6107	10.18	0.9446	8.33777	6.15
25.8340	57.71	0.1181	3.44877	34.84
28.9165	24.69	0.2362	3.08777	14.90
31.7397	165.63	0.1181	2.81927	100.00
32.1554	83.03	0.1574	2.78376	50.13
32.8891	96.66	0.1378	2.72332	58.36
34.0178	39.21	0.1181	2.63550	23.67
39.7716	34.65	0.3149	2.26649	20.92
46.6779	48.45	0.1574	1.94598	29.25
48.0266	13.01	0.4723	1.89443	7.85
49.4445	45.45	0.2362	1.84338	27.44
51.2706	18.15	0.2362	1.78193	10.96
52.0734	15.42	0.2362	1.75633	9.31
53.1847	17.06	0.2362	1.72223	10.30
64.0546	11.19	0.4723	1.45371	6.76
78.1180	4.32	0.7680	1.22246	2.61

Document History

Insert Measurement:
- File name = "C186.xrdml"
- Modification time = "2/16/2022 9:14:56 AM"
- Modification editor = "State Univ of Malang"

Default properties:
- Measurement step axis = "None"
- Internal wavelengths used from anode material: Copper (Cu)
- Original K-Alpha1 wavelength = "1.54060"
- Used K-Alpha1 wavelength = "1.54060"
- Original K-Alpha2 wavelength = "1.54443"
- Used K-Alpha2 wavelength = "1.54443"
- Original K-Beta wavelength = "1.39225"
- Used K-Beta wavelength = "1.39225"
- Dist. focus to div. slit = "91.00000"
- Irradiated length = "10.00000"
- Spinner used = "No"

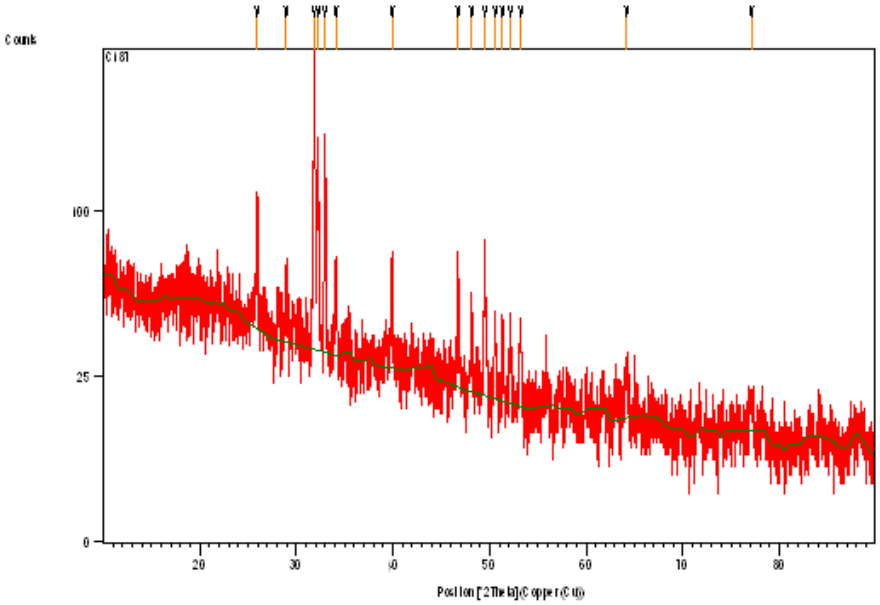
- Linear detector mode = "None"
- Length linear detector = "2"
- Step axis value = "0.00000"
- Offset = "0.00000"
- Sample length = "10.00000"
- Modification time = "2/16/2022 9:14:56 AM"
- Modification editor = "State Univ of Malang"

Search Peaks:
- Minimum significance = "2.00"
- Minimum tip width = "0.01"
- Maximum tip width = "1.00"
- Peak base width = "2.00"
- Method = "Top of smoothed peak"
- Modification time = "4/17/2017 8:55:59 AM"
- Modification editor = "State Univ of Malang"

Anchor Scan Parameters

Dataset Name:	C187
File name:	E:\X'Pert Data\2022\February\16 Feb 2022\C187\C187.xrdml
Sample Identification:	C187
Comment:	Theta (10-90) Configuration=Stage Flat Samples, Owner=User-1, Creation date=9/15/2009 2:20:30 PM Goniometer=PW3050/60 (Theta/Theta); Minimum step size 2Theta:0.001; Minimum step size Omega:0.001 Sample stage=PW3071/xx Bracket Diffractometer system=XPERT-PRO Measurement program=Theta (10-90), Owner=User-1, Creation date=1/25/2018 8:59:22 AM 0.02 degpermin 46 min
Measurement Date / Time:	2/16/2022 9:17:56 AM
Operator:	State Univ of Malang
Raw Data Origin:	XRD measurement (*.XRDML)
Scan Axis:	Gonio
Start Position [°2Th.]:	10.0100
End Position [°2Th.]:	89.9900
Step Size [°2Th.]:	0.0200
Scan Step Time [s]:	0.7000
Scan Type:	Continuous
Offset [°2Th.]:	0.0000
Divergence Slit Type:	Fixed
Divergence Slit Size [°]:	0.9570
Specimen Length [mm]:	10.00
Receiving Slit Size [mm]:	0.1000
Measurement Temperature [°C]:	25.00
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:	0000000011063758
Diffractometer Number:	0
Goniometer Radius [mm]:	240.00
Dist. Focus-Diverg. Slit [mm]:	91.00
Incident Beam Monochromator:	No
Spinning:	No

Graphics



Peak List

Pos.[°2Th.]	Height[cts]	FWHM[°2Th.]	d-spacing[Å]	Rel.Int.[%]
25.9275	63.72	0.1181	3.43655	33.14
28.9760	34.51	0.1181	3.08156	17.95
31.8376	192.27	0.1181	2.81082	100.00
32.2388	99.01	0.1574	2.77675	51.50
32.9752	107.80	0.1574	2.71641	56.07
34.1134	37.65	0.1574	2.62833	19.58
39.8834	41.71	0.1574	2.26039	21.69
46.7527	42.37	0.2362	1.94304	22.03
48.1397	19.97	0.2362	1.89025	10.38
49.5277	56.05	0.1574	1.84048	29.15
50.5795	24.43	0.2362	1.80464	12.71
51.3458	17.51	0.2755	1.77950	9.11
52.1575	17.43	0.2362	1.75370	9.07
53.2262	26.05	0.2362	1.72098	13.55
64.1733	11.72	0.4723	1.45131	6.10
77.1319	6.67	0.5760	1.23561	3.47

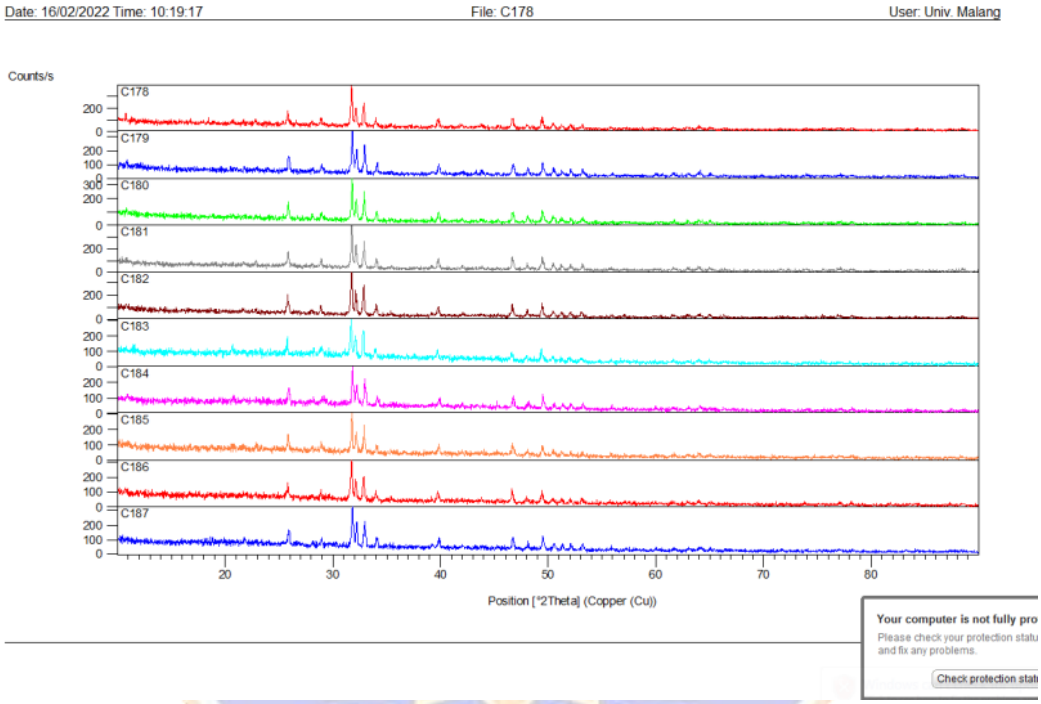
Document History

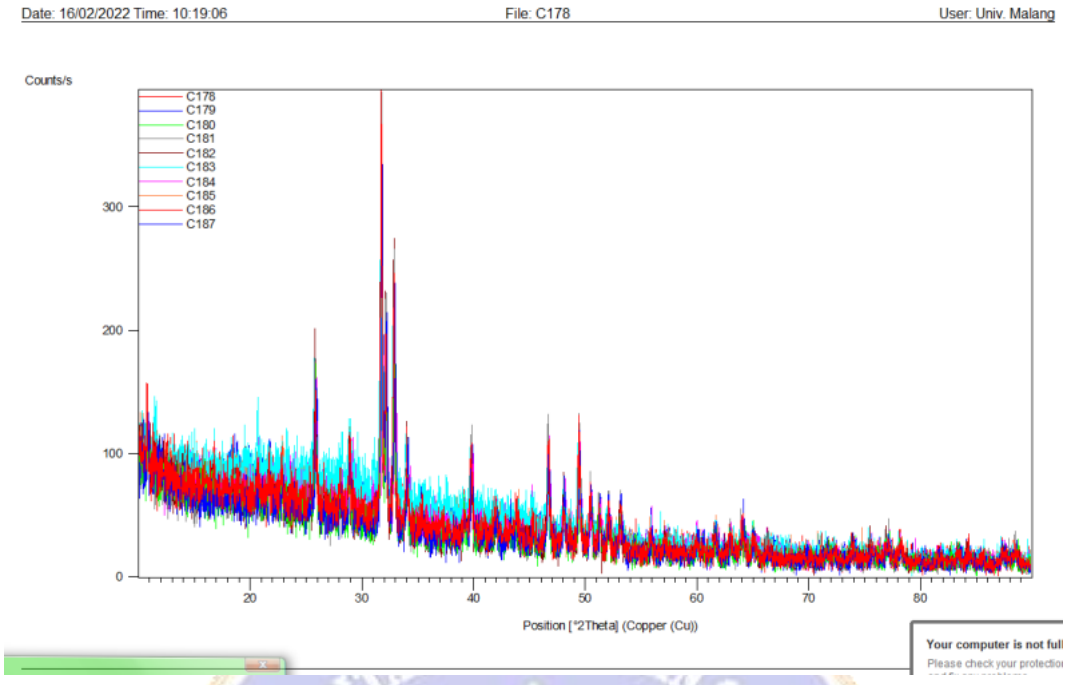
Insert Measurement:
- File name = "C187.xrdml"
- Modification time = "2/16/2022 10:10:15 AM"
- Modification editor = "State Univ of Malang"

Default properties:
- Measurement step axis = "None"
- Internal wavelengths used from anode material: Copper (Cu)
- Original K-Alpha1 wavelength = "1.54060"
- Used K-Alpha1 wavelength = "1.54060"
- Original K-Alpha2 wavelength = "1.54443"
- Used K-Alpha2 wavelength = "1.54443"
- Original K-Beta wavelength = "1.39225"
- Used K-Beta wavelength = "1.39225"
- Dist. focus to div. slit = "91.00000"
- Irradiated length = "10.00000"
- Spinner used = "No"

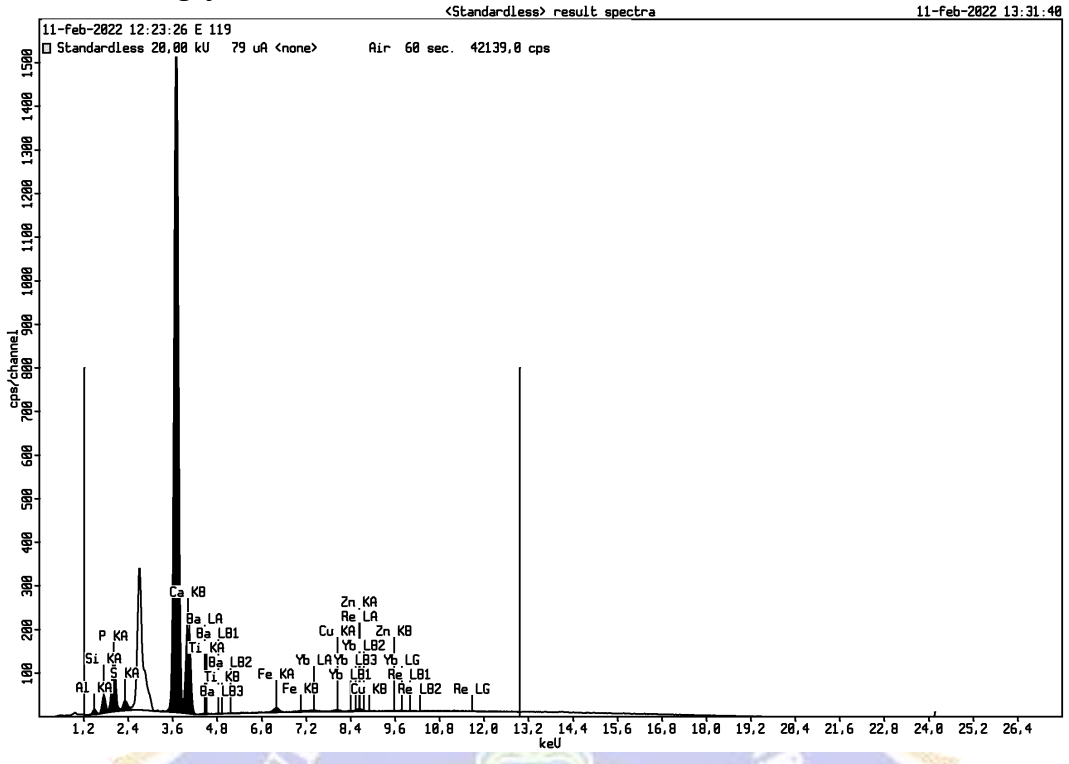
- Linear detector mode = "None"
- Length linear detector = "2"
- Step axis value = "0.00000"
- Offset = "0.00000"
- Sample length = "10.00000"
- Modification time = "2/16/2022 10:10:15 AM"
- Modification editor = "State Univ of Malang"

Search Peaks:
- Minimum significance = "2.00"
- Minimum tip width = "0.01"
- Maximum tip width = "1.00"
- Peak base width = "2.00"
- Method = "Top of smoothed peak"
- Modification time = "4/17/2017 8:55:59 AM"
- Modification editor = "State Univ of Malang"




Date: 16/02/2022 Time: 10:19:06
File: C178
User: Univ. Malang
Counts/s
C178
C179
C180
C181
C182
C183
C184
C185
C186
C187
300
200
100
0
20
30
40
50
60
70
80
Position [°2Theta] (Copper (Cu))
Your computer is not full

2.2 Hasil Pengujian XRF

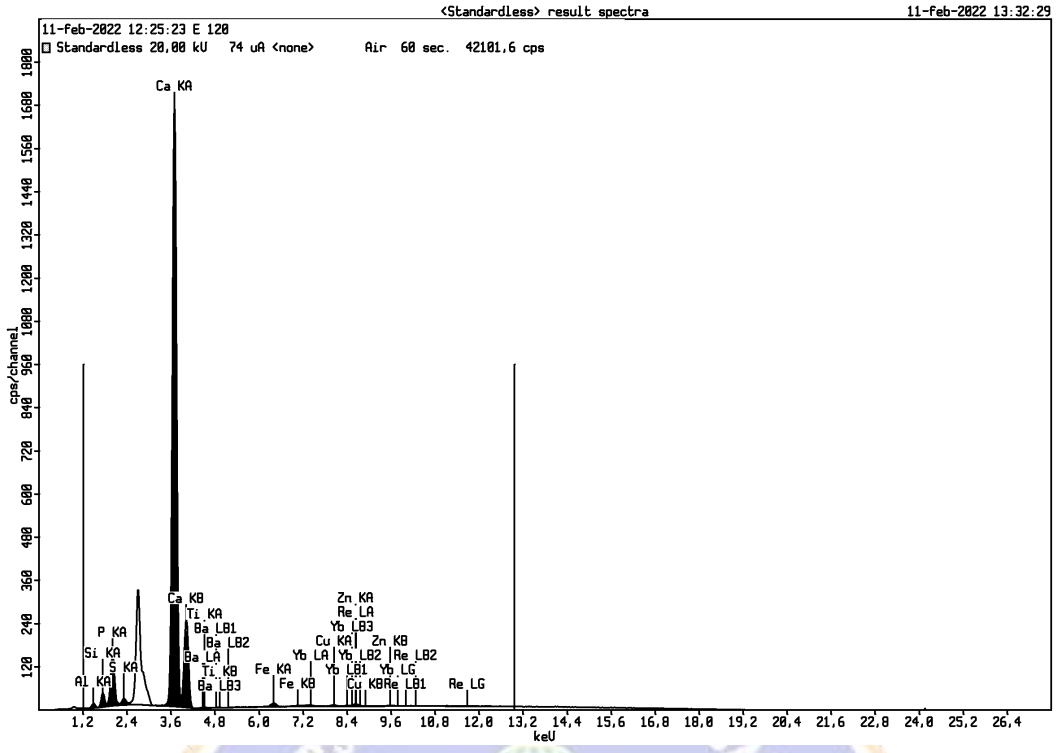


11-feb-2022 13:31:02 **Sample results** Page 1

Sample ident
E 119

Application	<Standardless>
Sequence	1 of 1
Measurement time	11-feb-2022 12:23:26
Position	8

Compound	Al	Si	P	S	Ca	Ti	Fe	Cu	Zn	Ba	Yb	Re
Conc	6,1	7,45	10,9	1,1	72,8	0,04	0,34	0,10	0,13	0,53	0,34	0,1
Unit	%	%	%	%	%	%	%	%	%	%	%	%

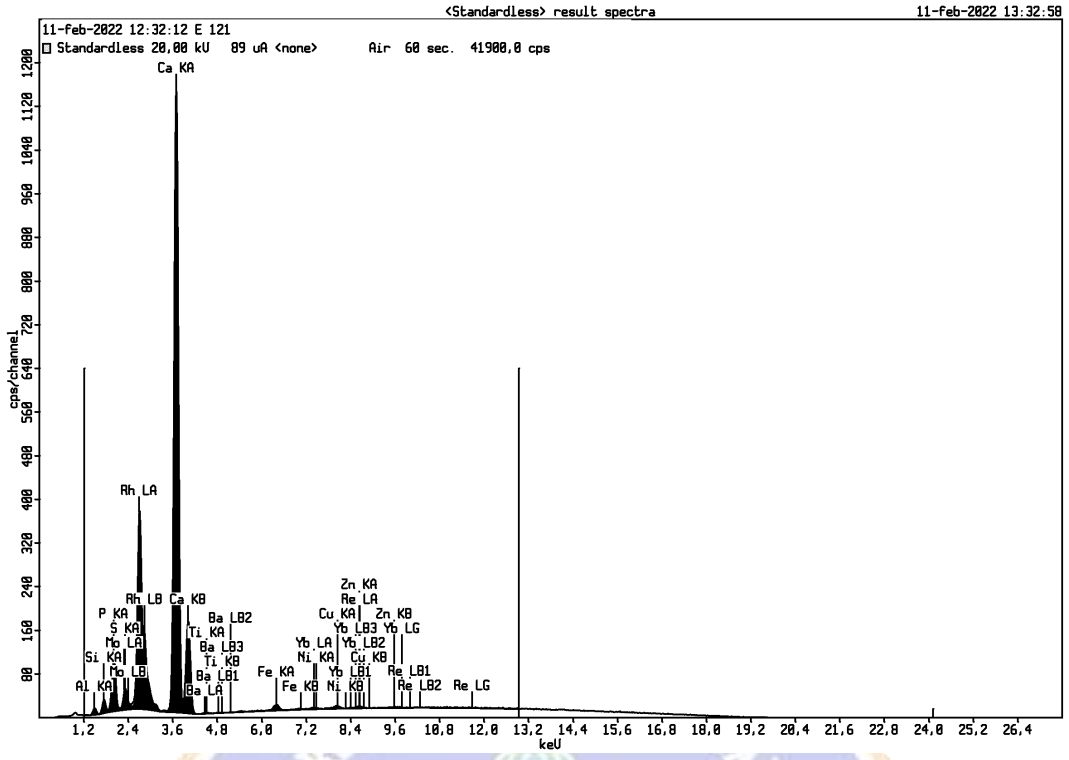


Sample results

Sample ident
E 120

Application	<Standardless>
Sequence	1 of 1
Measurement time	11-feb-2022 12:25:23
Position	9

Compound	Al	Si	P	S	Ca	Ti	Fe	Cu	Zn	Ba	Yb	Re
Conc	6,4	6,71	11,8	0,79	72,9	0,05	0,30	0,087	0,12	0,4	0,31	0,09
Unit	%	%	%	%	%	%	%	%	%	%	%	%

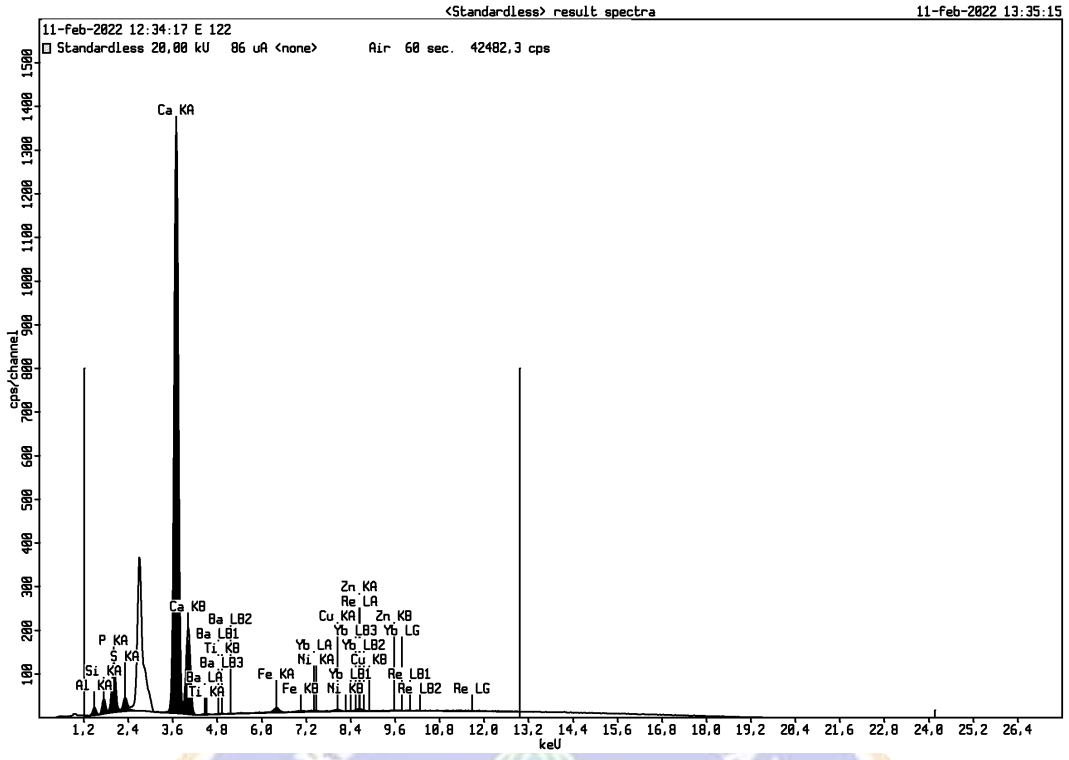


Sample results

Sample ident
E 121

Application	<Standardless>
Sequence	1 of 1
Measurement time	11-feb-2022 12:32:12
Position	10

Compound	Al	Si	P	S	Ca	Ti	Fe	Ni	Cu	Zn	Mo	Ba	Yb	Re
Conc	8,6	6,1	10,9	2,2	70,5	0,05	0,43	0,05	0,17	0,08	0,1	0,4	0,3	0,2
Unit	%	%	%	%	%	%	%	%	%	%	%	%	%	%



Sample results

Sample ident
E 122

Application	<Standardless>
Sequence	1 of 1
Measurement time	11-feb-2022 12:34:17
Position	11

Compound	Al	Si	P	S	Ca	Ti	Fe	Ni	Cu	Zn	Ba	Yb	Re
Conc	10	7,1	11,5	1,8	67,8	0,03	0,37	0,04	0,12	0,11	0,6	0,2	0,2
Unit	%	%	%	%	%	%	%	%	%	%	%	%	%

2.3 Hasil Pengujian FTIR

UNIVERSITAS NEGERI MALANG
FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM
LABORATORIUM MINERAL DAN MATERIAL MAJU
(LABORATORIUM SENTRAL)
Jalan Semarang 5, Malang 65145
Telp. 0341-551312 (psw 200)/ 574895/ 08510600108
E-mail : laboratoriumsentralum@yahoo.co.id / lab.sentral@um.ac.id
Website : central-laboratory.um.ac.id

Komite Akreditasi Nasional
Laboratorium Penguji
LP-1398-IDN

Customers	**: Dr. rer.nat. I Wayan Karyasa, S.Pd., M.Sc. - UNDIKSHA**
Contact Customer	: 0813 5394 4585
Email	: karyasa.undhiksha@gmail.com
Test Equipment	: XRD, XRF, FTIR, SEM
Received Date	: Februari 07, 2022
Order Number	: LSUM.P.0138.2022
OPERATOR, ANALYZER &SUPERVISOR	
Analyzer	: Ummu Kultsum, S.Si., Mailinda Ayu Hana M., S.Si., Halimahtus Sahdiah, S.Si.
Supervisor	: Nandang Mufti, S. Si., M.T., Ph.D., Dra. Surjani Wonorahardjo, Ph.D.

SAMPLE CODE

No	Nama Sampel	Metode	Kode Sampel
1	Ko tanpa Oven (Xo) XRD	IK.M.C.1*	C 178
2	Ko 50 (X1) XRD		C 179
3	Ko 100 (X2) XRD		C 180
4	Ko 150 (X3) XRD		C 181
5	Ko 200 (X4) XRD		C 182
6	3 : Tanpa Oven (X5) XRD		C 183
7	3 : 50 (X6) XRD		C 184
8	3 : 100 (X7) XRD		C 185
9	3 : 150 (X8) XRD		C 186
10	3 : 200 (X9) XRD		C 187
11	Ko tanpa oven (Fo) FTIR	IK.M.F.1	F 110
12	Ko 100 (F1) FTIR		F 111
13	3 : Tanpa Oven (F2) FTIR		F 112
14	3 : 100 (F3) FTIR		F 113
15	Ko tanpa oven (Ro) XRF	IK.M.E.1*	E 119
16	Ko 100 (R1) XRF		E 120
17	3 : Tanpa Oven (R2) XRF		E 121
18	3 : 100 (R3) XRF		E 122
19	Ko Tanpa oven (So) SEM	IK.M.A.1	A 117
20	Ko 100 (S1) SEM		A 118
21	3 : Tanpa oven (S2) SEM		A 119
22	3 : 100 (S3) SEM		A 120

Hasil analisa hanya berlaku untuk sampel yang diuji.
*Metode pengujian termasuk dalam ruang lingkup akreditasi.

UNIVERSITAS NEGERI MALANG
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LABORATORIUM MINERAL DAN MATERIAL MAJU (LABORATORIUM SENTRAL)
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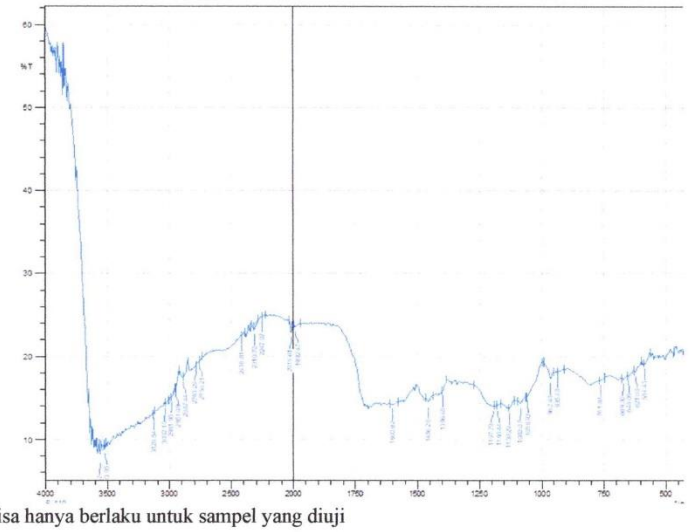
Telp. 0341-551312 (psw 200)/ 574895/ 085106001088
E-mail : laboratoriumsentralum@yahoo.co.id / lab.sentral@um.ac.id
Website : central-laboratory.um.ac.id

LAPORAN HASIL UJI
LSUM.LHU.F.121.2022

Customers	**: Dr. rer. Nat. I Wayan Karyasa, S.Pd., M.Sc - UNDIKSHA**
Contact Customer	: 081353944585, 083114225285/ Email : karyasa.undiksha@gmail.com
Methods	: IKM.F.1
Test Equipment	: FT-IR
Received Date	: 07 Februari 2022
Order Number	: LSUM.P.138.2022
SPECIMEN DESCRIPTION	
Condition of Samples	: Sampel serbuk putih dalam plastik klip
Sample Code	: F 110
Material Name	: Ko tanpa oven (Fo) FTIR
Measurement time	: 09 Februari 2022
OPERATOR, ANALYZER &SUPERVISOR	
Analyzer	: Mailinda A.H., S.Si
Supervisor	: Dra.Surjani Wonorahardjo, Ph.D.

RESULTS

Remark:



-Hasil analisa hanya berlaku untuk sampel yang diuji

Malang, 11 Februari 2022

Mengetahui,	Menyetujui
Manajer Teknis	a.n Dekan
	Kepala Lab. Mineral dan Material Maju FMIPA UM
Dra.Surjani Wonorahardjo, Ph.D.	Nandang Mufti, S.Si, M.T, Ph.D
NIP.196605281991032001	NIP. 197208152005011001

UNIVERSITAS NEGERI MALANG
FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM
LABORATORIUM MINERAL DAN MATERIAL MAJU (LABORATORIUM SENTRAL)
Jalan Semarang 5, Malang 65145
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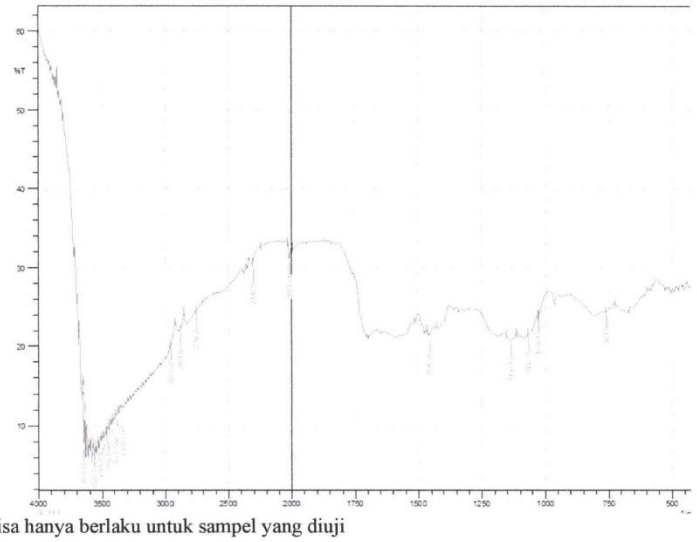
Website : central-laboratory.um.ac.id

LAPORAN HASIL UJI
LSUM.LHU.F.122.2022

Customers	**: Dr. rer. Nat. I Wayan Karyasa, S.Pd., M.Sc - UNDIKSHA**
Contact Customer	: 081353944585, 083114225285/ Email : karyasa.undiksha@gmail.com
Methods	: IKM.F.1
Test Equipment	: FT-IR
Received Date	: 07 Februari 2022
Order Number	: LSUM.P.138.2022
SPECIMEN DESCRIPTION	
Condition of Samples	: Sampel serbuk putih dalam plastik klip
Sample Code	: F 111
Material Name	: Ko 100° (F_1) FTIR
Measurement time	: 09 Februari 2022
OPERATOR, ANALYZER &SUPERVISOR	
Analyzer	: Mailinda A.H., S.Si
Supervisor	: Dra.Surjani Wonorahardjo, Ph.D.

RESULTS

Remark:



-Hasil analisa hanya berlaku untuk sampel yang diuji

Malang, 11 Februari 2022

Mengetahui,
Manajer Teknis

Dra.Surjani Wonorahardjo, Ph.D.
NIP.196605281991032001

Menyetujui
a.n Dekan
Kepala Lab. Mineral dan Material Maju FMIPA UM

Nandang Mufti, S.Si, M.T, Ph.D
NIP. 197208152005011001

UNIVERSITAS NEGERI MALANG
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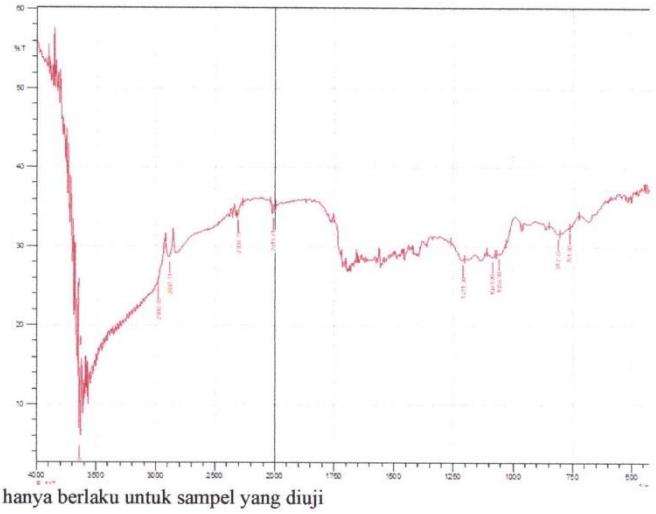
E-mail : laboratoriumsentralum@yahoo.co.id / lab.sentral@um.ac.id
Website : central-laboratory.um.ac.id

LAPORAN HASIL UJI
LSUM.LHU.F.123.2022

Customers	**: Dr. rer. Nat. I Wayan Karyasa, S.Pd., M.Sc - UNDIKSHA**
Contact Customer	: 081353944585, 083114225285/ Email : karyasa.undiksha@gmail.com
Methods	: IKM.F.1
Test Equipment	: FT-IR
Received Date	: 07 Februari 2022
Order Number	: LSUM.P.138.2022
SPECIMEN DESCRIPTION	
Condition of Samples	: Sampel serbuk putih dalam plastik klip
Sample Code	: F 112
Material Name	: 3 : tanpa oven (F2) FTIR
Measurement time	: 09 Februari 2022
OPERATOR, ANALYZER &SUPERVISOR	
Analyzer	: Mailinda A.H., S.Si
Supervisor	: Dra.Surjani Wonorahardjo, Ph.D.
RESULTS	

Remark:



-Hasil analisa hanya berlaku untuk sampel yang diuji

Malang, 11 Februari 2022

Mengetahui,	Menyetujui
Manajer Teknis	a.n Dekan
	Kepala Lab. Mineral dan Material Maju FMIPA UM
Dra.Surjani Wonorahardjo, Ph.D.	Nandang Mufti, S.Si, M.T, Ph.D
NIP.196605281991032001	NIP. 197208152005011001

UNIVERSITAS NEGERI MALANG
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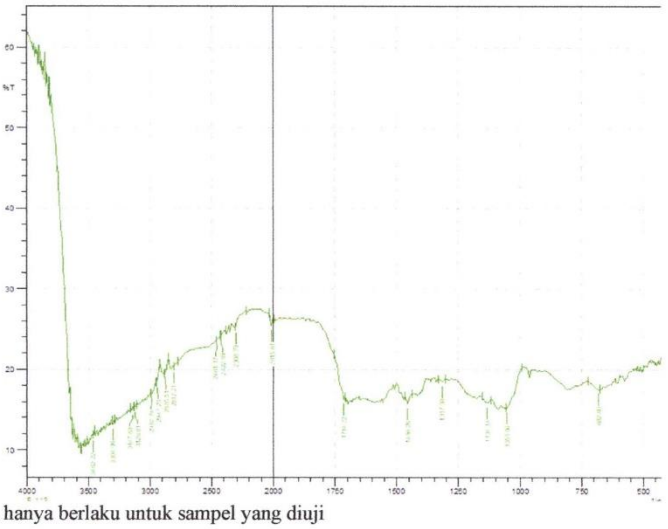
Website : central-laboratory.um.ac.id

LAPORAN HASIL UJI
LSUM.LHU.F.124.2022

Customers	**: Dr. rer. Nat. I Wayan Karyasa, S.Pd., M.Sc - UNDIKSHA**
Contact Customer	: 081353944585, 083114225285/ Email : karyasa.undiksha@gmail.com
Methods	: IKM.F.1
Test Equipment	: FT-IR
Received Date	: 07 Februari 2022
Order Number	: LSUM.P.138.2022
SPECIMEN DESCRIPTION	
Condition of Samples	: Sampel serbuk putih dalam plastik klip
Sample Code	: F 113
Material Name	: 3 : 100° (F3) FTIR
Measurement time	: 09 Februari 2022
OPERATOR, ANALYZER &SUPERVISOR	
Analyzer	: Mailinda A.H., S.Si
Supervisor	: Dra.Surjani Wonorahardjo, Ph.D.

RESULTS

Remark:



-Hasil analisa hanya berlaku untuk sampel yang diuji

Malang, 11 Februari 2022

Mengetahui,
Manajer Teknis

Menyetujui
a.n Dekan
Kepala Lab. Mineral dan Material Maju FMIPA UM

Dra.Surjani Wonorahardjo, Ph.D.
NIP.196605281991032001

Nandang Mufti, S.Si, M.T, Ph.D
NIP. 197208152005011001

UNIVERSITAS NEGERI MALANG
FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM
LABORATORIUM MINERAL DAN MATERIAL MAJU (LABORATORIUM SENTRAL)
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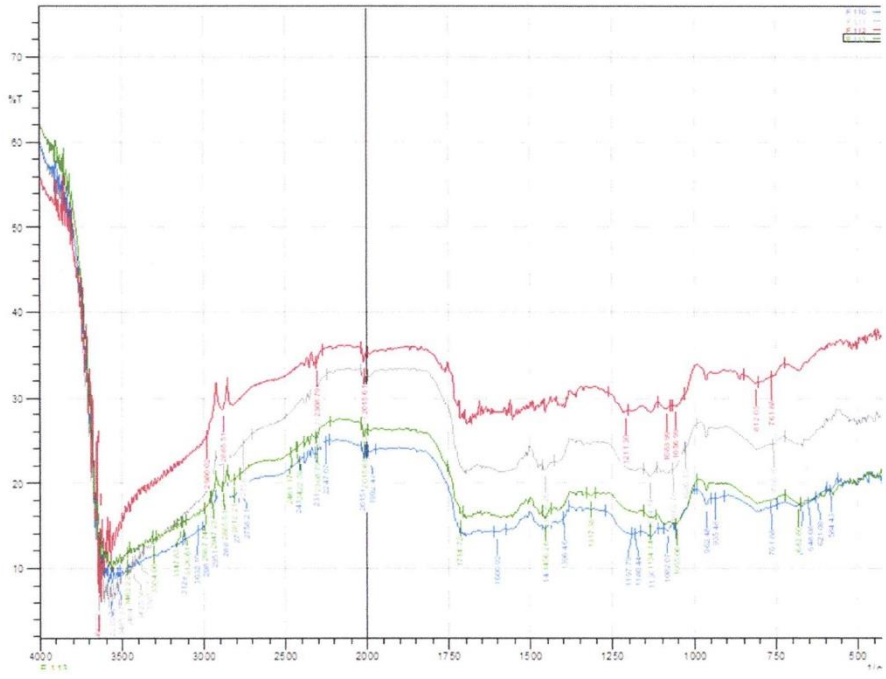
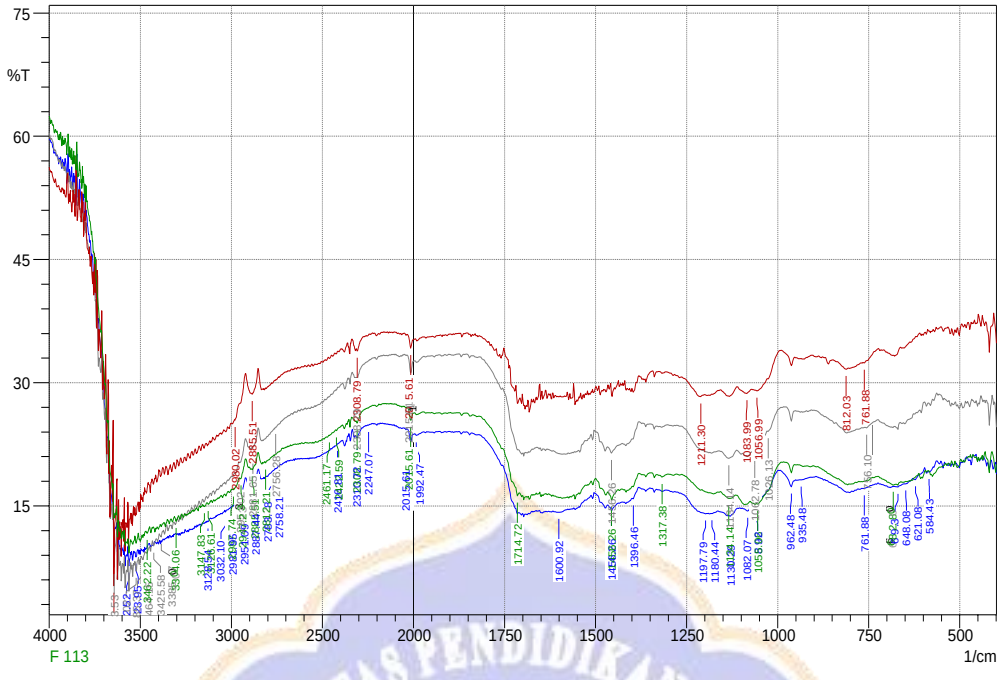
E-mail : laboratoriumsentralum@yahoo.co.id / lab.sentral@um.ac.id
Website : central-laboratory.um.ac.id

F 110 – F 113



1. Muncul puncak pada panjang gelombang 675-995 cm^{-1} yang kemungkinan menunjukkan adanya gugus fungsi C-H Alkena yang biasanya muncul pada panjang gelombang 3010-3095 & 675-995 cm^{-1}.
2. Muncul puncak pada panjang gelombang 690-900 cm^{-1} yang kemungkinan menunjukkan adanya gugus fungsi C-H cincin aromatik yang biasanya muncul pada panjang gelombang 3010-3100 & 690-900 cm^{-1}.
3. Muncul puncak pada panjang gelombang 1050-1300 cm^{-1} yang kemungkinan menunjukkan adanya gugus fungsi C-O Alkohol/ eter/ asam karboksilat/ ester yang biasanya muncul pada panjang gelombang tersebut.
4. Muncul puncak pada panjang gelombang 1180-1360 cm^{-1} yang kemungkinan menunjukkan adanya gugus fungsi C-N Amina/ amida yang biasanya muncul pada panjang gelombang tersebut.
5. Muncul puncak pada panjang gelombang 2850-2970 & 1340-1470 cm^{-1} yang kemungkinan menunjukkan adanya gugus fungsi C-H Alkana yang biasanya muncul pada panjang gelombang tersebut.



	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area
1	584.43	19.12	0.202	586.36	563.21	16.332	0.108
2	621.08	18.221	0.326	626.87	597.93	21.029	0.119
3	648.08	17.69	0.132	651.94	628.79	17.258	0.054
4	669.3	17.296	0.186	677.01	651.94	18.979	0.037
5	761.88	17.128	0.087	765.74	746.45	14.714	0.031
6	935.48	18.185	0.036	937.4	908.47	21.305	0.013
7	962.48	17.348	1.172	991.41	950.91	29.857	0.391
8	1058.92	15.189	0.13	1060.85	999.13	47.562	0.402
9	1082.07	14.379	0.541	1095.57	1064.71	25.672	0.212
10	1130.29	13.744	0.264	1134.14	1111	19.634	0.105
11	1180.44	14.075	0.054	1182.36	1165	14.704	0.023
12	1197.79	14.059	0.229	1273.02	1192.01	66.454	0.522
13	1396.46	15.884	0.361	1400.32	1382.96	13.589	0.08
14	1456.26	14.443	0.758	1465.9	1438.9	22.318	0.254
15	1600.92	14.231	0.163	1610.56	1577.77	27.643	0.102
16	1992.47	23.594	0.238	1996.32	1973.18	14.431	0.051
17	2015.61	22.853	1.128	2034.9	2004.04	19.36	0.256
18	2247.07	24.843	0.047	2250.93	2227.78	13.963	0.012
19	2310.72	23.289	0.499	2318.44	2283.72	21.64	0.161
20	2416.81	22.528	0.065	2418.74	2389.8	18.588	0.011
21	2758.21	19.541	0.038	2760.14	2733.13	19.034	0.043
22	2783.28	18.965	0.045	2785.21	2760.14	17.929	0.007
23	2887.44	17.512	0.119	2889.37	2852.72	27.133	0.298
24	2951.09	16.218	0.298	2954.95	2922.16	25.146	0.229
25	2981.95	15.087	0.108	2983.88	2956.87	21.81	0.091
26	3032.1	14.275	0.182	3034.03	3005.1	24.196	0.05
27	3128.54	13.08	0.114	3130.47	3115.04	13.513	0.025
28	3523.95	8.819	0.69	3529.73	3514.3	16.018	0.287
29	3562.52	7.705	1.784	3566.38	3552.88	14.466	0.63
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area
1	756.1	24.497	0.126	758.02	725.23	19.708	0.012
2	1026.13	24.095	0.175	1028.06	991.41	21.653	0.053
3	1062.78	21.64	0.29	1066.64	1029.99	23.66	0.214

Date/Time; 2/9/2022 2:01:52 PM
No. of Scans; 40

4	1134.14	20.79	0.932	1153.43	1112.93	27.309	0.455
5	1456.26	21.436	0.853	1465.9	1427.32	25.29	0.232
6	2015.61	31.199	1.831	2034.9	1996.32	18.915	0.347
7	2308.79	30.417	0.346	2312.65	2243.21	34.428	0.029
8	2756.28	24.584	0.045	2758.21	2704.2	32.359	0.026
9	2881.65	22.139	0.147	2883.58	2852.72	19.695	0.206
10	2953.02	20.288	0.357	2956.87	2922.16	23.224	0.257
11	3385.07	11.248	0.544	3394.72	3373.5	19.841	0.176
12	3425.58	10.153	0.701	3433.29	3414	18.852	0.275
13	3464.15	9.265	0.121	3466.08	3448.72	17.601	0.036
14	3485.37	8.284	0.812	3493.09	3473.8	20.325	0.317
15	3522.02	7.076	1.276	3527.8	3510.45	19.13	0.53
16	3643.53	7.555	7.197	3649.32	3630.03	19.318	2.715
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area
1	761.88	32.391	0.142	763.81	725.23	18.447	0.04
2	812.03	31.633	0.275	848.68	806.25	20.9	0.053
3	1056.99	29.008	0.498	1066.64	1029.99	19.453	0.206
4	1083.99	28.697	0.551	1109.07	1074.35	18.691	0.188
5	1211.3	28.306	0.574	1263.37	1201.65	32.899	0.25
6	2015.61	34.19	1.4	2034.9	1996.32	17.533	0.219
7	2308.79	33.871	0.388	2312.65	2274.07	17.661	0.049
8	2885.51	28.613	2.819	2920.23	2852.72	35.779	1.846
9	2980.02	25.452	0.216	2981.95	2922.16	33.207	0.397
10	3645.46	5.274	18.67	3649.32	3630.03	17.705	4.647
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area
1	682.8	17.544	0.228	723.31	677.01	34.487	0.131
2	1055.06	15.255	0.179	1056.99	991.41	49.709	0.487
3	1134.14	15.91	0.601	1155.36	1116.78	30.535	0.368
4	1317.38	18.511	0.339	1330.88	1301.95	21.053	0.089
5	1456.26	15.754	1.069	1465.9	1438.9	21.194	0.321
6	1714.72	16.256	1.044	1753.29	1708.93	32.435	0.431
7	2015.61	25.439	1.2	2034.9	1998.25	21.325	0.272
8	2308.79	25.087	0.389	2314.58	2223.92	52.265	0.055
9	2422.59	24.188	0.13	2426.45	2389.8	22.357	0.019
10	2461.17	23.58	0.073	2463.1	2428.38	21.586	0.036
11	2812.21	20.256	0.207	2816.07	2777.5	26.444	0.077
12	2885.51	19.427	0.317	2889.37	2854.65	24.167	0.303
13	2947.23	18.338	0.638	2954.95	2922.16	23.449	0.264
14	2987.74	16.99	0.27	2993.52	2956.87	27.735	0.216
15	3126.61	15.201	0.296	3134.33	3111.18	18.8	0.096
16	3147.83	14.949	0.321	3157.47	3136.25	17.43	0.124
17	3304.06	13.16	0.597	3311.78	3290.56	18.486	0.217
18	3462.22	11.697	0.4	3468.01	3448.72	17.765	0.164

Comment; 2/9/2022 2:36:07 PM

F 110 40

F 111 40

F 112 40

F 113 4 [1/cm]

Apodization; Happ-Genzel

Happ-Genzel

Happ-Genzel

Happ-Genzel

2.4 Hasil Pengujian SEM

UNIVERSITAS NEGERI MALANG
FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM
LABORATORIUM MINERAL DAN MATERIAL MAJU
(LABORATORIUM SENTRAL)
Jalan Semarang 5, Malang 65145
Telp. 0341-551312 (psw 200)/ 574895/ 085106001088
E-mail : laboratoriumsentralum@yahoo.co.id / lab.sentral@um.ac.id
Website : central-laboratory.um.ac.id

KAN
Komite Akreditasi Nasional
Laboratorium Penguji
LP-1398-IDN

Customers	**: Dr. rer.nat. I Wayan Karyasa, S.Pd., M.Sc. - UNDIKSHA**
Contact Customer	: 0813 5394 4585
Email	: karyasa.undhiksha@gmail.com
Test Equipment	: XRD, XRF, FTIR, SEM
Received Date	: Februari 07, 2022
Order Number	: LSUM.P.0138.2022
OPERATOR, ANALYZER &SUPERVISOR	
Analyzer	: Ummu Kultsum, S.Si., Mailinda Ayu Hana M., S.Si., Halimahtus Sahdiah, S.Si.
Supervisor	: Nandang Mufti, S. Si., M.T., Ph.D., Dra. Surjani Wonorahardjo, Ph.D.

SAMPLE CODE

No	Nama Sampel	Metode	Kode Sampel
1	Ko tanpa Oven (Xo) XRD	IK.M.C.1*	C 178
2	Ko 50 (X1) XRD		C 179
3	Ko 100 (X2) XRD		C 180
4	Ko 150 (X3) XRD		C 181
5	Ko 200 (X4) XRD		C 182
6	3 : Tanpa Oven (X5) XRD		C 183
7	3 : 50 (X6) XRD		C 184
8	3 : 100 (X7) XRD		C 185
9	3 : 150 (X8) XRD		C 186
10	3 : 200 (X9) XRD		C 187
11	Ko tanpa oven (Fo) FTIR	IK.M.F.1	F 110
12	Ko 100 (F1) FTIR		F 111
13	3 : Tanpa Oven (F2) FTIR		F 112
14	3 : 100 (F3) FTIR		F 113
15	Ko tanpa oven (Ro) XRF	IK.M.E.1*	E 119
16	Ko 100 (R1) XRF		E 120
17	3 : Tanpa Oven (R2) XRF		E 121
18	3 : 100 (R3) XRF		E 122
19	Ko Tanpa oven (So) SEM	IK.M.A.1	A 117
20	Ko 100 (S1) SEM		A 118
21	3 : Tanpa oven (S2) SEM		A 119
22	3 : 100 (S3) SEM		A 120

Hasil analisa hanya berlaku untuk sampel yang diuji.
*Metode pengujian termasuk dalam ruang lingkup akreditasi.

UNIVERSITAS NEGERI MALANG
FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM
LABORATORIUM MINERAL DAN MATERIAL MAJU (LABORATORIUM SENTRAL)
Jalan Semarang 5, Malang 65145
Telp. 0341-551312 (psw 200)/ 574895/ 085106001088
E-mail : laboratoriumsentralum@yahoo.co.id /lab.sentral@um.ac.id
Website : central-laboratory.um.ac.id

LAPORAN HASIL UJI
LSUM.LHU.A.00110.2022

Customers	: **Dr.rer.nat. I Wayan Karyasa , S.Pd., M.Sc. – UNDIKSHA**
Contact Customer	: 081353944585 / email : karyasa.undiksha@gmail.com
Methods	: IKM.A.1
Test Equipment	: SEM
Received Date	: 07 Februari 2022
Order Number	: LSUM.P.00138.2022

SPECIMEN DESCRIPTION

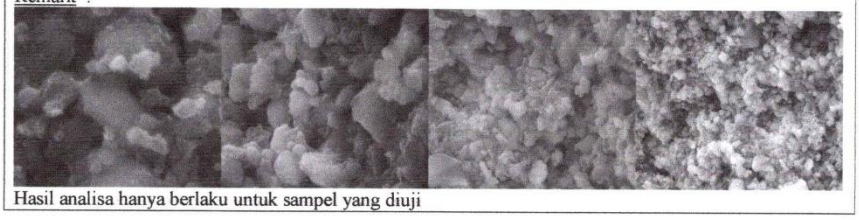
Condition of Samples	: Sampel serbuk warna putih dalam plastik klip
Sample Code	: A117
Material Name	: Ko Tanpa Oven (So)
Measurement time	: 10 Februari 2022

OPERATOR, ANALYZER &SUPERVISOR

Analyzer	: Halimahtus Sahdiah, S.Si
Supervisor	: Nandang Mufti, S.Si, M.T, Ph.D

RESULTS

Remark :



Hasil analisa hanya berlaku untuk sampel yang diuji

Malang , 11 Februari 2022
Menyetujui
a.n Dekan
Kepala Lab. Mineral dan Material Maju FMIPA UM

Mengetahui,
Manajer Teknis

Dra.Surjani Wonorahardjo, Ph.D.
NIP.196605281991032001

Nandang Mufti, S.Si, M.T, Ph.D
NIP. 197208152005011001

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E-mail : laboratoriumsentralum@yahoo.co.id / lab.sentral@um.ac.id
Website : central-laboratory.um.ac.id

LAPORAN HASIL UJI
LSUM.LHU.A.00111.2022

Customers	: **Dr.rer.nat. I Wayan Karyasa , S.Pd., M.Sc. – UNDIKSHA**
Contact Customer	: 081353944585 / email : karyasa.undiksha@gmail.com
Methods	: IKM.A.1
Test Equipment	: SEM
Received Date	: 07 Februari 2022
Order Number	: LSUM.P.00138.2022

SPECIMEN DESCRIPTION

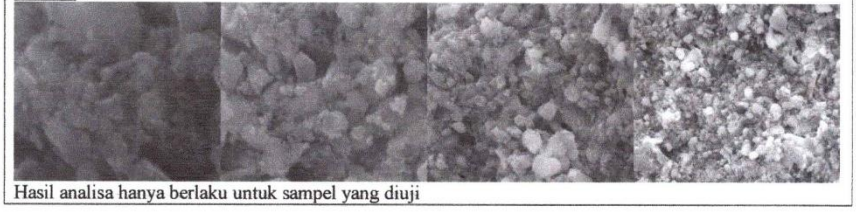
Condition of Samples	: Sampel serbuk warna putih dalam plastik klip
Sample Code	: A118
Material Name	: Ko 100^0C (S_1)
Measurement time	: 10 Februari 2022

OPERATOR, ANALYZER &SUPERVISOR

Analyzer	: Halimahtus Sahdiah, S.Si
Supervisor	: Nandang Mufti, S.Si, M.T, Ph.D

RESULTS

Remark :



Hasil analisa hanya berlaku untuk sampel yang diuji

Malang , 11 Februari 2022

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Website : central-laboratory.um.ac.id

LAPORAN HASIL UJI
LSUM.LHU.A.00112.2022

Customers	: **Dr.rer.nat. I Wayan Karyasa , S.Pd., M.Sc. – UNDIKSHA**
Contact Customer	: 081353944585 / email : karyasa.undiksha@gmail.com
Methods	: IKM.A.1
Test Equipment	: SEM
Received Date	: 07 Februari 2022
Order Number	: LSUM.P.00138.2022

SPECIMEN DESCRIPTION

Condition of Samples	: Sampel serbuk warna putih dalam plastik klip
Sample Code	: A119
Material Name	: 3 : Tanpa oven (S_2)
Measurement time	: 10 Februari 2022

OPERATOR, ANALYZER &SUPERVISOR

Analyzer	: Halimahtus Sahdiah, S.Si
Supervisor	: Nandang Mufti, S.Si, M.T, Ph.D

RESULTS

Remark :

Hasil analisa hanya berlaku untuk sampel yang diuji

Malang , 11 Februari 2022

Mengetahui,
Manajer Teknis

Dra.Surjani Wonorahardjo, Ph.D.
NIP.196605281991032001

Menyetujui
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Kepala Lab. Mineral dan Material Maju FMIPA UM

Nandang Mufti, S.Si, M.T, Ph.D
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Website : central-laboratory.um.ac.id

LAPORAN HASIL UJI
LSUM.LHU.A.00113.2022

Customers	: **Dr.rer.nat. I Wayan Karyasa , S.Pd., M.Sc. – UNDIKSHA**
Contact Customer	: 081353944585 / email : karyasa.undiksha@gmail.com
Methods	: IKM.A.1
Test Equipment	: SEM
Received Date	: 07 Februari 2022
Order Number	: LSUM.P.00138.2022

SPECIMEN DESCRIPTION

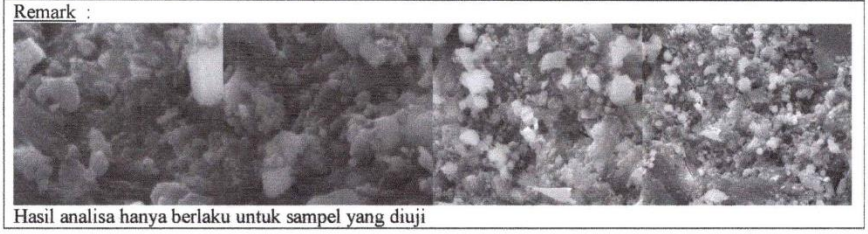
Condition of Samples	: Sampel serbuk warna putih dalam plastik klip
Sample Code	: A120
Material Name	: 3 : 100^0 (S_3)
Measurement time	: 10 Februari 2022

OPERATOR, ANALYZER &SUPERVISOR

Analyzer	: Halimahtus Sahdiah, S.Si
Supervisor	: Nandang Mufti, S.Si, M.T, Ph.D

RESULTS

Remark :



Hasil analisa hanya berlaku untuk sampel yang diuji

Malang , 11 Februari 2022

Mengetahui,
Manajer Teknis

Dra.Surjani Wonorahardjo, Ph.D.
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Menyetujui
a.n Dekan
Kepala Lab. Mineral dan Material Maju FMIPA UM

Nandang Mufti, S.Si, M.T, Ph.D
NIP. 197208152005011001

Lampiran 3. Hasil Pengujian Statistik

Lampiran Pengujian Statistik Derajat Kristalinitas

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Residual for Derajat	30	100.0%	0	0.0%	30	100.0%

Descriptives

			Statistic	Std. Error
Residual for Derajat	Mean		.0000	.20231
	95% Confidence Interval for Mean	Lower Bound	-.4138	
		Upper Bound	.4138	
	5% Trimmed Mean		-.0415	
	Median		-.1350	
	Variance		1.228	
	Std. Deviation		1.10811	
	Minimum		-1.98	
	Maximum		2.96	
	Range		4.93	
	Interquartile Range		1.48	
	Skewness		.686	.427
	Kurtosis		.557	.833

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual for Derajat	.101	30	.200*	.967	30	.471

*. This is a lower bound of the true significance.

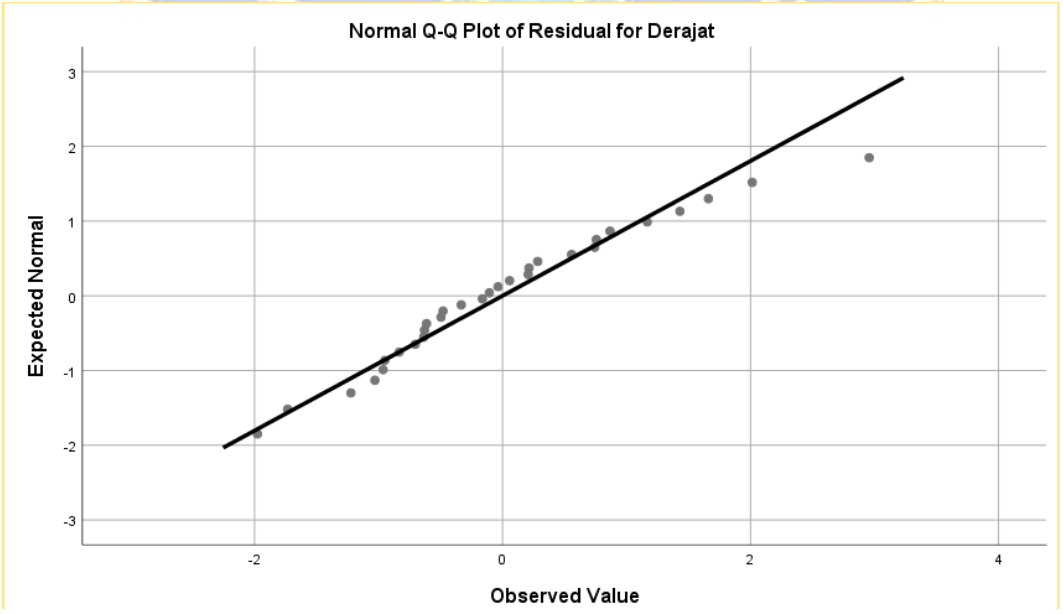
a. Lilliefors Significance Correction

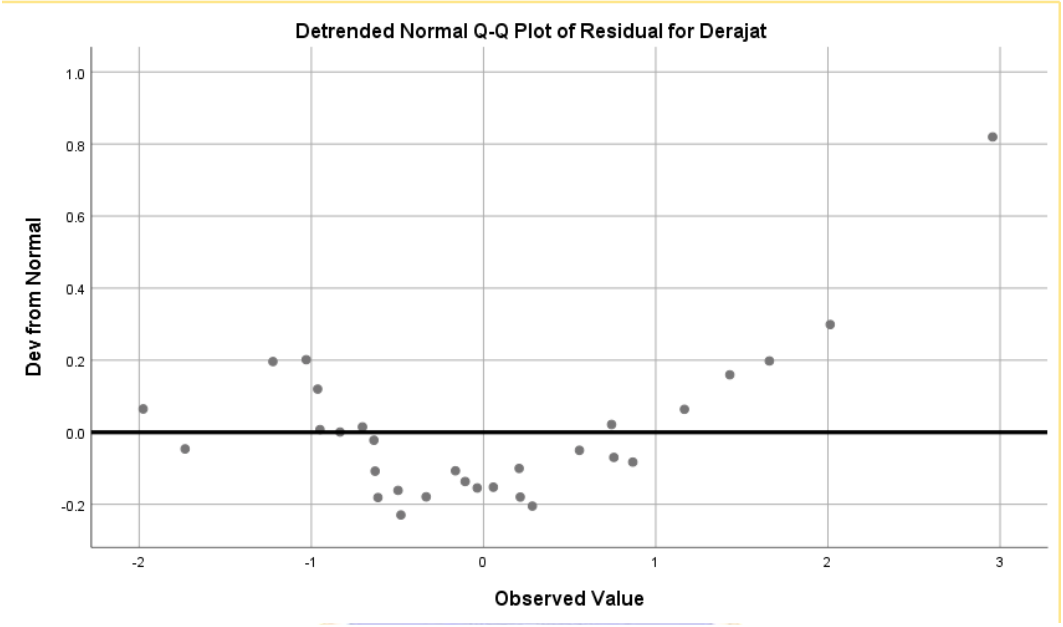
Residual for Derajat

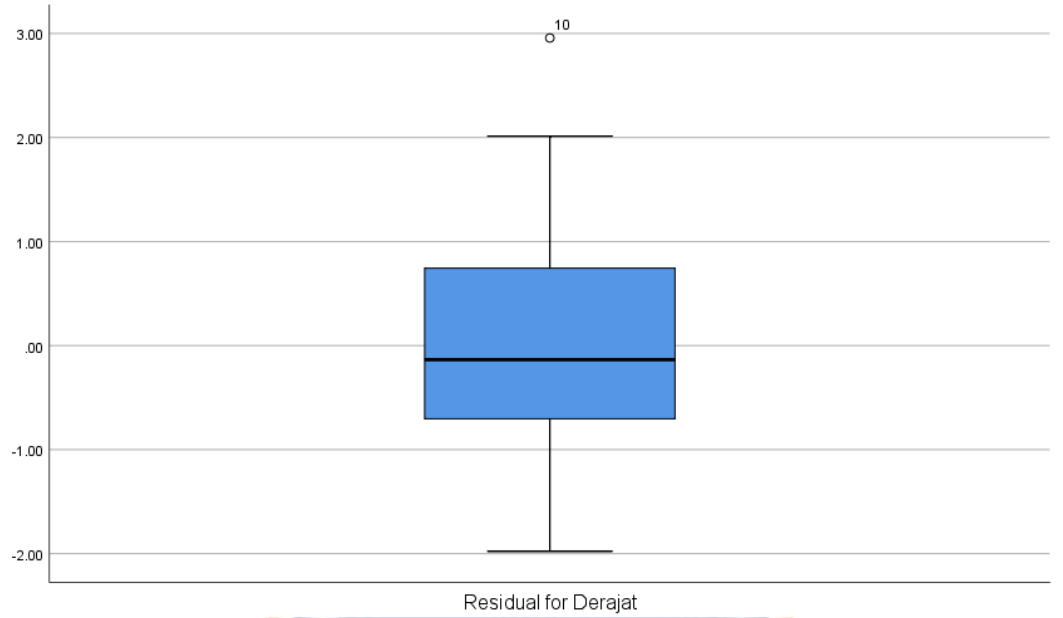
Residual for Derajat Stem-and-Leaf Plot

Frequency	Stem &	Leaf
2,00	-1 .	79
2,00	-1 .	02
7,00	-0 .	6667899
6,00	-0 .	011344
4,00	0 .	0222
4,00	0 .	5778
2,00	1 .	14
1,00	1 .	6
1,00	2 .	0
1,00 Extremes		(>=3,0)

Stem width: 1,00
Each leaf: 1 case(s)




Detrended Normal Q-Q Plot of Residual for Derajat
Dev from Normal
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-2
-1
0
1
2
3
Observed Value


10
3.00
2.00
1.00
.00
-1.00
-2.00
Residual for Derajat

Univariate Analysis of Variance

Between-Subjects Factors

		Value Label	N
Komposisi	1.00	K0	15
	2.00	K3	15
Suhu	1.00	T0	6
	2.00	T1	6
	3.00	T2	6
	4.00	T3	6
	5.00	T4	6

Descriptive Statistics

Dependent Variable: Derajat

Komposisi	Suhu	Mean	Std. Deviation	N
K0	T0	29.1800	1.45145	3
	T1	29.9600	1.26052	3
	T2	34.1667	.43155	3
	T3	32.6333	2.57321	3
	T4	31.5933	.58705	3
	Total	31.5067	2.23878	15
K3	T0	19.4233	.79764	3
	T1	23.0433	.87843	3
	T2	23.6467	1.99525	3
	T3	28.0433	1.04083	3
	T4	26.8567	.69616	3
	Total	24.2027	3.30349	15
Total	T0	24.3017	5.44563	6
	T1	26.5017	3.91105	6
	T2	28.9067	5.90492	6
	T3	30.3383	3.06632	6
	T4	29.2250	2.65754	6
	Total	27.8547	4.63519	30

Levene's Test of Equality of Error Variances[a,b]

		Levene Statistic	df1	df2	Sig.
Derajat	Based on Mean	2.335	9	20	.055
	Based on Median	.489	9	20	.865
	Based on Median and with adjusted df	.489	9	6.974	.843
	Based on trimmed mean	2.127	9	20	.077

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Dependent variable: Derajat

b. Design: Intercept + Komposisi + Suhu + Komposisi * Suhu

Tests of Between-Subjects Effects

Dependent Variable: Derajat

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	587.456[a]	9	65.273	36.660	.000
Intercept	23276.474	1	23276.474	13073.170	.000
Komposisi	400.113	1	400.113	224.722	.000
Suhu	141.645	4	35.411	19.889	.000
Komposisi * Suhu	45.698	4	11.424	6.417	.002
Error	35.610	20	1.780		
Total	23899.539	30			
Corrected Total	623.066	29			

a. R Squared = .943 (Adjusted R Squared = .917)

Estimated Marginal Means

1. Komposisi

Dependent Variable: Derajat

Komposisi	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
K0	31.507	.345	30.788	32.225
K3	24.203	.345	23.484	24.921

2. Suhu

Dependent Variable: Derajat

Suhu	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
T0	24.302	.545	23.165	25.438
T1	26.502	.545	25.365	27.638
T2	28.907	.545	27.770	30.043
T3	30.338	.545	29.202	31.475
T4	29.225	.545	28.089	30.361

3. Komposisi * Suhu

Dependent Variable: Derajat

Komposisi	Suhu	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
K0	T0	29.180	.770	27.573	30.787
	T1	29.960	.770	28.353	31.567
	T2	34.167	.770	32.560	35.774
	T3	32.633	.770	31.026	34.240
	T4	31.593	.770	29.986	33.200
K3	T0	19.423	.770	17.816	21.030
	T1	23.043	.770	21.436	24.650
	T2	23.647	.770	22.040	25.254
	T3	28.043	.770	26.436	29.650
	T4	26.857	.770	25.250	28.464

Lampiran Pengujian Statistik Ukuran Partikel

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Standardized Residual for Ukuran	16	100.0%	0	0.0%	16	100.0%

Descriptives

			Statistic	Std. Error
Standardized Residual for Ukuran	Mean		.0000	.22361
	95% Confidence Interval for Mean	Lower Bound	-.4766	
		Upper Bound	.4766	
	5% Trimmed Mean		.0032	
	Median		.1308	
	Variance		.800	
	Std. Deviation		.89443	
	Minimum		-1.32	
	Maximum		1.26	
	Range		2.59	
	Interquartile Range		1.83	
	Skewness		-.085	.564
	Kurtosis		-1.289	1.091

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Standardized Residual for Ukuran	.129	16	.200*	.930	16	.248

*. This is a lower bound of the true significance.

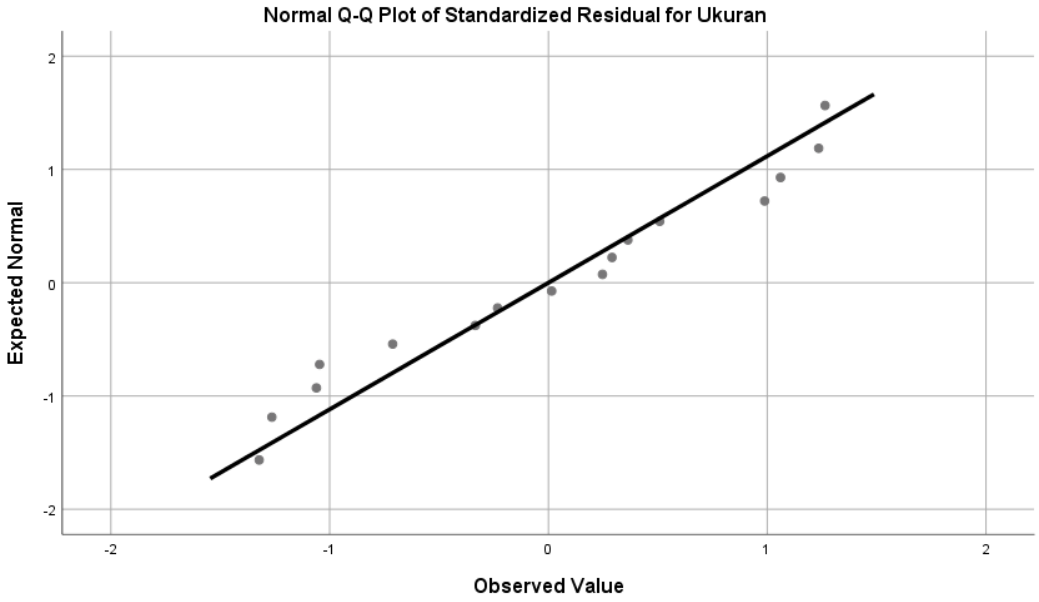
a. Lilliefors Significance Correction

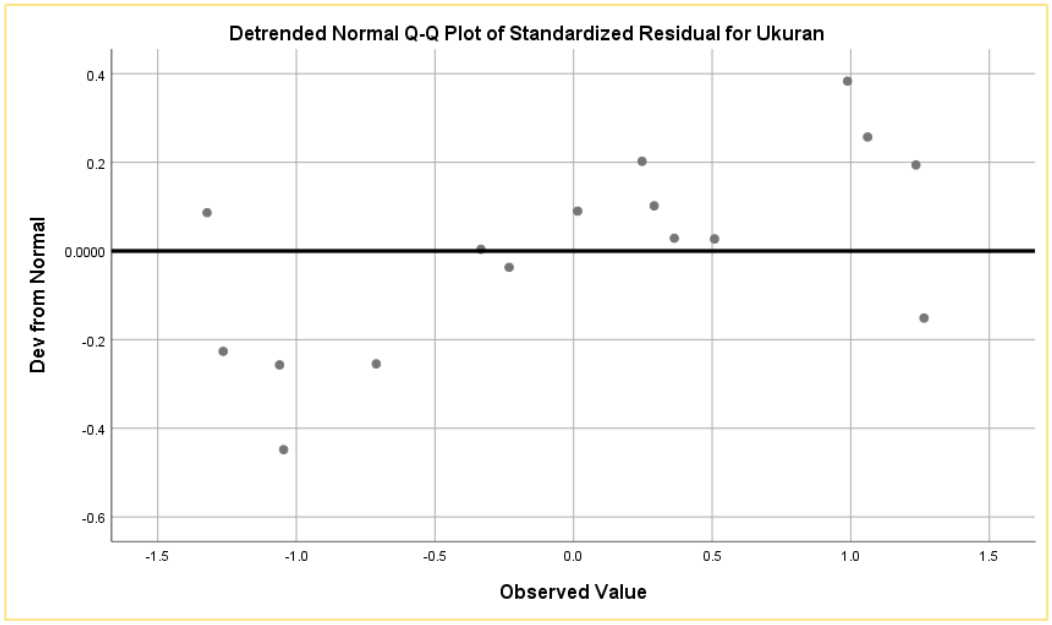
Standardized Residual for Ukuran

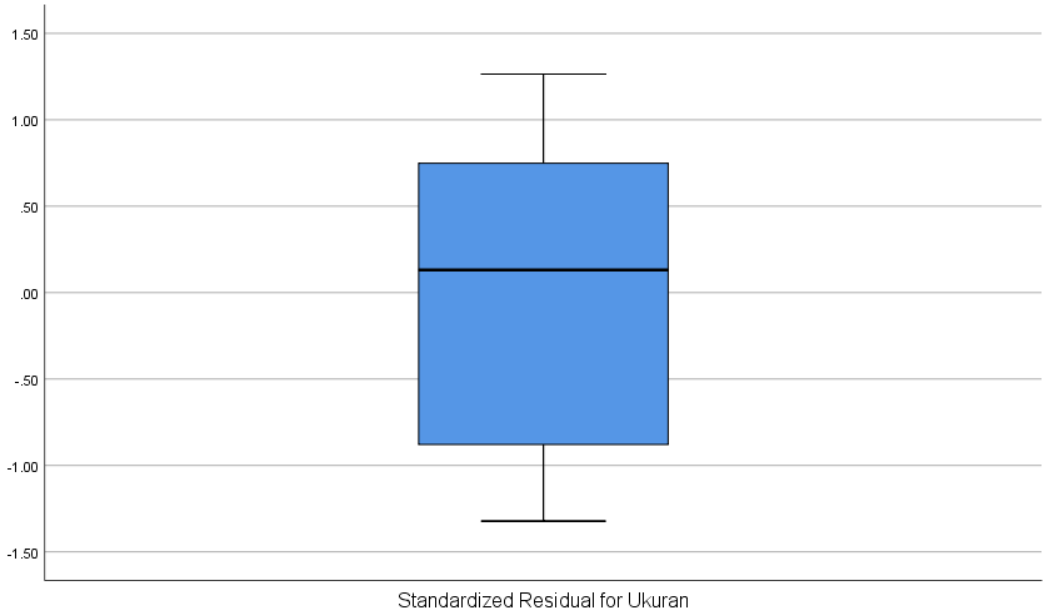
Standardized Residual for Ukuran Stem-and-Leaf Plot

Frequency	Stem &	Leaf
4.00	-1 .	0023
1.00	-0 .	7
2.00	-0 .	23
4.00	0 .	0223
2.00	0 .	59
3.00	1 .	022

Stem width: 1.00
Each leaf: 1 case(s)




Detrended Normal Q-Q Plot of Standardized Residual for Ukuran
Dev from Normal
0.4
0.2
0.0000
-0.2
-0.4
-0.6
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
Observed Value


1.50
1.00
.50
.00
-.50
-1.00
-1.50
Standardized Residual for Ukuran

Univariate Analysis of Variance

Between-Subjects Factors

		Value Label	N
Komposisi	1.00	K0	8
	2.00	K3	8
Temperatur	1.00	T0	8
	2.00	T2	8

Descriptive Statistics

Dependent Variable: Ukuran Partikel

Komposisi	Temperatur	Mean	Std. Deviation	N
K0	T0	.5675	.17017	4
	T2	.4400	.14765	4
	Total	.5037	.16248	8
K3	T0	.5275	.18228	4
	T2	.4225	.18554	4
	Total	.4750	.17928	8
Total	T0	.5475	.16464	8
	T2	.4313	.15551	8
	Total	.4894	.16595	16

Levene's Test of Equality of Error Variances[a,b]

		Levene Statistic	df1	df2	Sig.
Ukuran Partikel	Based on Mean	.225	3	12	.877
	Based on Median	.221	3	12	.880
	Based on Median and with adjusted df	.221	3	10.047	.880
	Based on trimmed mean	.229	3	12	.874

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Dependent variable: Ukuran Partikel

b. Design: Intercept + Komposisi + Temperatur + Komposisi * Temperatur

Tests of Between-Subjects Effects

Dependent Variable: Ukuran Partikel

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	.058[a]	3	.019	.652	.597
Intercept	3.832	1	3.832	129.444	.000
Komposisi	.003	1	.003	.112	.744
Temperatur	.054	1	.054	1.826	.202
Komposisi * Temperatur	.001	1	.001	.017	.898
Error	.355	12	.030		
Total	4.245	16			
Corrected Total	.413	15			

a. R Squared = .140 (Adjusted R Squared = -.075)

Estimated Marginal Means

1. Komposisi

Dependent Variable: Ukuran Partikel

Komposisi	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
K0	.504	.061	.371	.636
K3	.475	.061	.342	.608

2. Temperatur

Dependent Variable: Ukuran Partikel

Temperatur	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
T0	.548	.061	.415	.680
T2	.431	.061	.299	.564

3. Komposisi * Temperatur

Dependent Variable: Ukuran Partikel

Komposisi	Temperatur	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
K0	T0	.568	.086	.380	.755
	T2	.440	.086	.253	.627
K3	T0	.528	.086	.340	.715
	T2	.422	.086	.235	.610


UNIVERSITAS PENDIDIKAN GANESHA
UNDIKSHA

Lampiran 4. Perhitungan

Perhitungan bahan yang digunakan dalam hal ini yaitu Alumina (Al_2O_3), Hidroksiapatit ($Ca_{10}(PO_4)_6(OH)_2$), Air (H_2O) dan NaOH.

1. Pembuatan Sol Kalsium Fosfat

Sol Kalsium fosfat dibuat dengan mencampurkan 40% hidroksiapatit dan 60% air. Dalam perhitungan ini yang digunakan yaitu persen berat (%w/w). sehingga massa hidroksiapatit yang digunakan yaitu 40 gram dan massa air yang digunakan yaitu 60 gram.

2. pembuatan sol natrium aluminat

1 M Alumina

$$M = \frac{g}{Mr} \times \frac{1000}{V}$$

$$1 = \frac{g}{102} \times \frac{1000}{100}$$

$$g = \frac{102}{10}$$

$$g = 10{,}2$$

2 M NaOH

$$M = \frac{g}{Mr} \times \frac{1000}{V}$$

$$2 = \frac{g}{40} \times \frac{1000}{100}$$

$$g = \frac{80}{10}$$

$$g = 8$$

3 M H_2O

3 × 18 mL

54 mL Aquades

3. Perhitungan Massa Dalam Pembuatan Sol Kalsium Fosfat

Pembuatan sol kalsium fosfat mengguanakn 40 gram bubuk hidroksiapatit dan 60 gram air. Volume kalsium fosfat yang digunakan dalam proses pencampuran sol kalsium fosfat dan sol natrium aluminat sebanyak 150 mL sehingga massa kalsium fosfat dapat dihitung.

$$Massa\ Kalsium\ fosfat = \frac{40}{100} \times 150 = 60\ gram$$

Massa kalsium fosfat yang terdapat dalam 150 mL sol kalsium fosfat yaitu sebanyak 60 gram.

5. Perhitungan Massa Dalam Pembuatan Sol Natrium Aluminat

Pembuatan sol natrium aluminat menggunakan perbandingan mol dengan reaksi

$Al_2O_3 + 2NaOH + 3H_2O \rightarrow 2NaAl(OH)_4$ sehingga massa yang digunakan dalam pembuatan larutan yaitu 10,2 gram Al_2O_3, 8 gram NaOH dan 54 gram air sehingga massa natrium aluminat dapat dihitung.

- Massa Al_2O_3 dalam 50 mL Sol Natrium Aluminat

$$Massa\ Al2O3 = \frac{10,2}{72,2} \times 50 = 7,06\ gram$$

$$Massa\ NaOH = \frac{8}{72,2} \times 50 = 5,5\ gram$$

- Massa Al_2O_3 dalam 100 mL Sol Natrium Aluminat

$$Massa\ Al2O3 = \frac{10,2}{72,2} \times 100 = 14,12\ gram$$

$$Massa\ NaOH = \frac{8}{72,2} \times 100 = 11\ gram$$

- Massa Al_2O_3 dalam 150 mL Sol Natrium Aluminat

$$Massa\ Al2O3 = \frac{10,2}{72,2} \times 150 = 21,19\ gram$$

$$Massa\ NaOH = \frac{8}{72,2} \times 150 = 16,6\ gram$$

- Massa Al_2O_3 dalam 200 mL Sol Natrium Aluminat

$$Massa\ Al2O3 = \frac{10,2}{72,2} \times 200 = 28,25\ gram$$

$$Massa\ NaOH = \frac{8}{72,2} \times 200 = 22,16\ gram$$

- Massa Al_2O_3 dalam 250 mL Sol Natrium Aluminat

$$Massa\ Al2O3\ = \frac{10,2}{72,2} \times 250 = 35,31\ gram$$

$$Massa\ NaOH\ = \frac{8}{72,2} \times 250 = 27,7\ gram$$

- Massa Al_2O_3 dalam 300 mL Sol Natrium Aluminat

$$Massa\ Al2O3\ = \frac{10,2}{72,2} \times 300 = 42,38\ gram$$

$$Massa\ NaOH\ = \frac{8}{72,2} \times 300 = 33,24\ gram$$

6. Perhitungan Perbandingan Mol Ca-Al-P-O

a. Perhitungan pada komposisi K0

- Mol Ca

$$\frac{m\ Ha \times Ar\ Ca}{m\ Total \times Mr\ Ha} \rightarrow \frac{60 \times 40}{60 \times 502} \rightarrow \frac{2400}{30120} \rightarrow 0,08 \times 100 = 8\ mol.$$

- Mol P

$$\frac{m\ Ha \times Ar\ P}{m\ Total \times Mr\ Ha} \rightarrow \frac{60 \times 31}{60 \times 502} \rightarrow \frac{1860}{30120} \rightarrow 0,06 \times 100 = 6\ mol.$$

- Mol Al

$$\frac{m\ Al2O3 \times Ar\ Al}{m\ Total \times (Mr\ Ha + Al2O3)} \rightarrow \frac{0 \times 27}{60 \times 622} \rightarrow \frac{0}{37320} \rightarrow 0 \times 100 = 0\ mol.$$

- Mol O

$$\frac{(m\ Ha + Al2O3) \times Ar\ O}{m\ Total \times (Mr\ Ha + Al2O3)} \rightarrow \frac{60 \times 27}{60 \times 622} \rightarrow \frac{1620}{37320} \rightarrow 0,04 \times 100 = 4\ mol.$$

b. Perhitungan pada komposisi K1

- Mol Ca

$$\frac{m\ Ha \times Ar\ Ca}{m\ Total \times Mr\ Ha} \rightarrow \frac{60 \times 40}{60 \times 502} \rightarrow \frac{2400}{30120} \rightarrow 0,08 \times 100 = 8\ mol.$$

- Mol P

$$\frac{m\ Ha \times Ar\ P}{m\ Total \times Mr\ Ha} \rightarrow \frac{60 \times 31}{60 \times 502} \rightarrow \frac{1860}{30120} \rightarrow 0,06 \times 100 = 6\ mol.$$

- Mol Al

$$\frac{m\ Al2O3 \times Ar\ Al}{m\ Total \times (Mr\ Ha + Al2O3)} \rightarrow \frac{7,06 \times 27}{67,06 \times 622} \rightarrow \frac{190,62}{41711,32} \rightarrow 0,005 \times 100 = 0,5\ mol.$$

- Mol O

$$\frac{(m\ Ha+Al2O3)\times Ar\ O}{m\ Total\times(Mr\ Ha+\ Al2O3)} \rightarrow \frac{67{,}06\times16}{67{,}06\times622} \rightarrow \frac{1072{,}96}{41711{,}32} \rightarrow 0{,}025\times100 = 2{,}5\ mol.$$

c. Perhitungan pada komposisi K2

- Mol Ca

$$\frac{m\ Ha\times Ar\ Ca}{m\ Total\times Mr\ Ha} \rightarrow \frac{60\times40}{60\times502} \rightarrow \frac{2400}{30120} \rightarrow 0{,}08\times100 = 8\ mol.$$

- Mol P

$$\frac{m\ Ha\times Ar\ P}{m\ Total\times Mr\ Ha} \rightarrow \frac{60\times31}{60\times502} \rightarrow \frac{1860}{30120} \rightarrow 0{,}06\times100 = 6\ mol.$$

- Mol Al

$$\frac{m\ Al2O3\times Ar\ Al}{m\ Total\times(Mr\ Ha+\ Al2O3)} \rightarrow \frac{14{,}12\times27}{74{,}12\times622} \rightarrow \frac{381{,}24}{46102{,}64} \rightarrow 0{,}008\times100 = 0{,}8\ mol.$$

- Mol O

$$\frac{(m\ Ha+Al2O3)\times Ar\ O}{m\ Total\times(Mr\ Ha+\ Al2O3)} \rightarrow \frac{74{,}12\times16}{74{,}12\times622} \rightarrow \frac{1810{,}62}{46102{,}64} \rightarrow 0{,}04\times100 = 4\ mol.$$

d. Perhitungan pada komposisi K3

- Mol Ca

$$\frac{m\ Ha\times Ar\ Ca}{m\ Total\times Mr\ Ha} \rightarrow \frac{60\times40}{60\times502} \rightarrow \frac{2400}{30120} \rightarrow 0{,}08\times100 = 8\ mol.$$

- Mol P

$$\frac{m\ Ha\times Ar\ P}{m\ Total\times Mr\ Ha} \rightarrow \frac{60\times31}{60\times502} \rightarrow \frac{1860}{30120} \rightarrow 0{,}06\times100 = 6\ mol.$$

- Mol Al

$$\frac{m\ Al2O3\times Ar\ Al}{m\ Total\times(Mr\ Ha+\ Al2O3)} \rightarrow \frac{21{,}19\times27}{81{,}19\times622} \rightarrow \frac{572{,}13}{50500{,}18} \rightarrow 0{,}01\times100 = 1\ mol.$$

- Mol O

$$\frac{(m\ Ha+Al2O3)\times Ar\ O}{m\ Total\times(Mr\ Ha+\ Al2O3)} \rightarrow \frac{81{,}19\times16}{81{,}19\times622} \rightarrow \frac{1299{,}04}{50500{,}18} \rightarrow 0{,}025\times100 = 2{,}5\ mol.$$

e. Perhitungan pada komposisi K4

- Mol Ca

$$\frac{m\ Ha\times Ar\ Ca}{m\ Total\times Mr\ Ha} \rightarrow \frac{60\times40}{60\times502} \rightarrow \frac{2400}{30120} \rightarrow 0{,}08\times100 = 8\ mol.$$

- Mol P

$$\frac{m\ Ha\times Ar\ P}{m\ Total\times Mr\ Ha} \rightarrow \frac{60\times31}{60\times502} \rightarrow \frac{1860}{30120} \rightarrow 0{,}06\times100 = 6\ mol.$$

- Mol Al

$$\frac{m\ Al2O3\times Ar\ Al}{m\ Total\times(Mr\ Ha+\ Al2O3)} \rightarrow \frac{28{,}25\times27}{88{,}25\times622} \rightarrow \frac{762{,}75}{54891{,}5} \rightarrow 0{,}014\times100 = 1{,}4\ mol.$$

- Mol O

$$\frac{(m\ Ha+Al2O3)\times Ar\ O}{m\ Total\times(Mr\ Ha+\ Al2O3)} \rightarrow \frac{88{,}25\times16}{88{,}25\times622} \rightarrow \frac{1412}{50500{,}18} \rightarrow 0{,}028\times100 = 2{,}8\ mol.$$

f. Perhitungan pada komposisi K5

- Mol Ca

$$\frac{m\ Ha\times Ar\ Ca}{m\ Total\times Mr\ Ha} \rightarrow \frac{60\times40}{60\times502} \rightarrow \frac{2400}{30120} \rightarrow 0{,}08\times100 = 8\ mol.$$

- Mol P

$$\frac{m\ Ha\times Ar\ P}{m\ Total\times Mr\ Ha} \rightarrow \frac{60\times31}{60\times502} \rightarrow \frac{1860}{30120} \rightarrow 0{,}06\times100 = 6\ mol.$$

- Mol Al

$$\frac{m\ Al2O3\times Ar\ Al}{m\ Total\times(Mr\ Ha+\ Al2O3)} \rightarrow \frac{35{,}31\times27}{95{,}31\times622} \rightarrow \frac{953{,}37}{59282{,}82} \rightarrow 0{,}016\times100 = 1{,}6\ mol.$$

- Mol O

$$\frac{(m\ Ha+Al2O3)\times Ar\ O}{m\ Total\times(Mr\ Ha+\ Al2O3)} \rightarrow \frac{95{,}31\times16}{95{,}31\times622} \rightarrow \frac{1524{,}96}{59282{,}82} \rightarrow 0{,}025\times100 = 2{,}5\ mol.$$

g. Perhitungan pada komposisi K6

- Mol Ca

$$\frac{m\ Ha\times Ar\ Ca}{m\ Total\times Mr\ Ha} \rightarrow \frac{60\times40}{60\times502} \rightarrow \frac{2400}{30120} \rightarrow 0{,}08\times100 = 8\ mol.$$

- Mol P

$$\frac{m\ Ha\times Ar\ P}{m\ Total\times Mr\ Ha} \rightarrow \frac{60\times31}{60\times502} \rightarrow \frac{1860}{30120} \rightarrow 0{,}06\times100 = 6\ mol.$$

- Mol Al

$$\frac{m\ Al2O3\times Ar\ Al}{m\ Total\times(Mr\ Ha+\ Al2O3)} \rightarrow \frac{42{,}38\times27}{102{,}38\times622} \rightarrow \frac{1144{,}26}{61428} \rightarrow 0{,}018\times100 = 1{,}8\ mol.$$

- Mol O

$$\frac{(m\ Ha+Al2O3)\times Ar\ O}{m\ Total\times(Mr\ Ha+\ Al2O3)} \rightarrow \frac{102{,}38\times16}{102{,}38\times622} \rightarrow \frac{1638{,}08}{61428} \rightarrow 0{,}026\times100 = 2{,}6\ mol.$$

7. Perhitungan %w/w

a. Komposisi K0

- Komposisi Ca dalam perhitungan : $\frac{M\ Ca}{M\ Total}\times100 \rightarrow \frac{8}{18}\times100 \rightarrow 44{,}44\%$
- Komposisi P dalam perhitungan : $\frac{M\ P}{M\ Total}\times100 \rightarrow \frac{6}{18}\times100 \rightarrow 33{,}33\%$
- Komposisi Al dalam perhitungan : $\frac{M\ Al}{M\ Total}\times100 \rightarrow \frac{0}{18}\times100 \rightarrow 0\%$
- Komposisi O dalam perhitungan : $\frac{M\ O}{M\ Total}\times100 \rightarrow \frac{4}{18}\times100 \rightarrow 22{,}22\%$

a. Komposisi K1

- Komposisi Ca dalam perhitungan : $\frac{M\ Ca}{M\ Total} \times 100 \rightarrow \frac{8}{17} \times 100 \rightarrow 47{,}05\%$
- Komposisi P dalam perhitungan : $\frac{M\ P}{M\ Total} \times 100 \rightarrow \frac{6}{17} \times 100 \rightarrow 35{,}29\%$
- Komposisi Al dalam perhitungan : $\frac{M\ Al}{M\ Total} \times 100 \rightarrow \frac{0{,}5}{17} \times 100 \rightarrow 2{,}94\%$
- Komposisi O dalam perhitungan : $\frac{M\ O}{M\ Total} \times 100 \rightarrow \frac{2{,}5}{18} \times 100 \rightarrow 14{,}7\%$

c. Komposisi K2

- Komposisi Ca dalam perhitungan : $\frac{M\ Ca}{M\ Total} \times 100 \rightarrow \frac{8}{18{,}8} \times 100 \rightarrow 42{,}55\%$
- Komposisi P dalam perhitungan : $\frac{M\ P}{M\ Total} \times 100 \rightarrow \frac{6}{18{,}8} \times 100 \rightarrow 31{,}91\%$
- Komposisi Al dalam perhitungan : $\frac{M\ Al}{M\ Total} \times 100 \rightarrow \frac{0{,}8}{18{,}8} \times 100 \rightarrow 4{,}25\%$
- Komposisi O dalam perhitungan : $\frac{M\ O}{M\ Total} \times 100 \rightarrow \frac{4}{18{,}8} \times 100 \rightarrow 21{,}27\%$

d. Komposisi K3

- Komposisi Ca dalam perhitungan : $\frac{M\ Ca}{M\ Total} \times 100 \rightarrow \frac{8}{17{,}5} \times 100 \rightarrow 45{,}71\%$
- Komposisi P dalam perhitungan : $\frac{M\ P}{M\ Total} \times 100 \rightarrow \frac{6}{17{,}5} \times 100 \rightarrow 34{,}28\%$
- Komposisi Al dalam perhitungan : $\frac{M\ Al}{M\ Total} \times 100 \rightarrow \frac{1}{17{,}5} \times 100 \rightarrow 5{,}7\%$
- Komposisi O dalam perhitungan : $\frac{M\ O}{M\ Total} \times 100 \rightarrow \frac{2{,}5}{17{,}5} \times 100 \rightarrow 14{,}28$

e. Komposisi K4

- Komposisi Ca dalam perhitungan : $\frac{M\ Ca}{M\ Total} \times 100 \rightarrow \frac{8}{18{,}2} \times 100 \rightarrow 43{,}95\%$
- Komposisi P dalam perhitungan : $\frac{M\ P}{M\ Total} \times 100 \rightarrow \frac{6}{18{,}2} \times 100 \rightarrow 32{,}96\%$
- Komposisi Al dalam perhitungan : $\frac{M\ Al}{M\ Total} \times 100 \rightarrow \frac{1{,}4}{18{,}2} \times 100 \rightarrow 7{,}69\%$
- Komposisi O dalam perhitungan : $\frac{M\ O}{M\ Total} \times 100 \rightarrow \frac{2{,}8}{18{,}2} \times 100 \rightarrow 15{,}38\%$

e. Komposisi K5

- Komposisi Ca dalam perhitungan : $\frac{M\ Ca}{M\ Total} \times 100 \rightarrow \frac{8}{18{,}1} \times 100 \rightarrow 44{,}19\%$
- Komposisi P dalam perhitungan : $\frac{M\ P}{M\ Total} \times 100 \rightarrow \frac{6}{18{,}1} \times 100 \rightarrow 33{,}14\%$
- Komposisi Al dalam perhitungan : $\frac{M\ Al}{M\ Total} \times 100 \rightarrow \frac{1{,}6}{18{,}1} \times 100 \rightarrow 8{,}83\%$
- Komposisi O dalam perhitungan : $\frac{M\ O}{M\ Total} \times 100 \rightarrow \frac{2{,}5}{18{,}2} \times 100 \rightarrow 13{,}81\%$

e. Komposisi K6

- Komposisi Ca dalam perhitungan : $\frac{M\,Ca}{M\,Total} \times 100 \rightarrow \frac{8}{18,4} \times 100 \rightarrow 43,47\%$
- Komposisi P dalam perhitungan : $\frac{M\,P}{M\,Total} \times 100 \rightarrow \frac{6}{18,4} \times 100 \rightarrow 32,6\%$
- Komposisi Al dalam perhitungan : $\frac{M\,Al}{M\,Total} \times 100 \rightarrow \frac{1,4}{18,4} \times 100 \rightarrow 7,6\%$
- Komposisi O dalam perhitungan : $\frac{M\,O}{M\,Total} \times 100 \rightarrow \frac{2,8}{18,4} \times 100 \rightarrow 15,21\%$

8. Perhitungan derajat kristalinitas

a. K0T0

K0T0												
										Nilai Area		
Index	Area	AreaIntgP	Row Inde:	Beginning	Ending X	FWHM	Center	Height		Ulangan 1	Ulangan 2	Ulangan 3
1	68.912	3.0881	791	25.13	26.35	0.97703	25.83	87.8		68.912	69.728	69.728
2	47.09533	2.11045	944	28.51	29.51	0.98	28.89	61.46667		47.09533	45.482	44.76533
3	72.744	3.25982	1086	31.29	32.01	0.42479	31.73	167.8		72.744	90.91333	89.53267
4	40	1.79249	1106	32.01	32.57	0.36654	32.13	101.2667		40	36.706	36.706
5	64.128	2.87372	1143	32.57	33.65	0.41887	32.87	115.1333		64.128	56.18333	64.128
6	32.348	1.44959	1201	33.67	34.41	0.72	34.03	58.6		32.348	43.73467	44.43067
7	34.01533	1.5243	1488	39.43	40.29	0.653	39.77	58.46667		34.01533	30.664	61.74467
8	27.756	1.24381	1599	41.67	42.63	0.94	41.99	36.53333		27.756	18.174	35.306
9	40.13733	1.79864	1835	46.01	47.23	0.50273	46.71	60		40.13733	38.94	40.13733
10	41.31533	1.85143	1904	47.23	49.01	1.76	48.09	34.53333		41.31533	30.752	30.34333
11	34.60867	1.55089	1973	49.01	50.03	0.46016	49.47	62.4		34.60867	34.60867	34.60867
12	23.83733	1.0682	2023	50.03	50.91	0.71169	50.47	39.2		23.83733	23.83733	23.83733
13	17.968	0.80519	2064	50.91	51.67	0.74	51.29	31.6		17.968	17.968	17.968
14	21.23533	0.9516	2106	51.67	52.67	0.731	52.13	32		21.23533	21.23533	21.23533
15	21.18533	0.94936	2157	52.71	53.71	0.87808	53.15	30.73333		21.18533	22.34533	24.15933
16	12.412	0.55621	2584	61.35	62.11	0.74	61.69	21.13333		12.412	12.93	12.412
17	18.068	0.80967	2701	63.65	64.65	0.82286	64.03	25.6		18.068	16.36	18.34267
18	17.12133	0.76725	2752	64.63	65.81	1.16	65.05	20		17.12133	15.35867	16.45733
									Total :	634.8873	625.9207	685.8427
Index	Area	AreaIntgP	Row Inde:	Beginning	Ending X	FWHM	Center	Height	Nilai DK	28.55717	28.15385	30.84913
1	2223.215	99.6273	1086	10.13	89.99	0.70274	31.73	167.8				

b. K0T1

K0T1												
Index	Area	AreaIntgP	Row Inde:	Beginning	Ending X	FWHM	Center	Height		Ulangan 1	Ulangan 2	Ulangan 3
1	53.82	3.29635	795	25.23	26.41	0.57273	25.91	76.6		53.82	47.32	83.27067
2	35.61333	2.18123	951	28.51	29.51	0.98	29.03	49.33333		35.61333	32.04667	37.8
3	71.374	4.37149	1091	31.05	32.05	0.39465	31.83	152.6667		71.374	74.73467	73.71667
4	33.42267	2.04706	1109	32.09	32.57	0.33745	32.19	97.66667		33.42267	35.102	33.42267
5	53.34333	3.26715	1147	32.57	33.63	0.38981	32.95	105.6667		53.34333	53.34333	53.34333
6	28.20267	1.72735	1203	33.61	34.53	0.57948	34.07	46.8		28.20267	28.63733	32.82733
7	45.89333	2.81086	1493	38.85	40.65	0.55974	39.87	46.26667		45.89333	48.14667	47.516
8	31.656	1.93885	1839	46.29	47.53	0.4439	46.79	52.53333		31.656	40.114	33.008
9	25.45	1.55875	1908	47.53	48.95	0.83365	48.17	30.8		25.45	25.45	25.45
10	31.036	1.90088	1977	48.95	50.13	0.42319	49.55	54.86667		31.036	31.036	31.036
11	17.28133	1.05844	2028	50.13	50.93	0.50375	50.57	33.33333		17.28133	17.28133	17.28133
12	15.52333	0.95077	2108	51.79	52.67	0.51796	52.17	28		15.52333	16.06133	15.52333
13	18.486	1.13222	2162	52.67	53.85	0.49641	53.25	29.33333		18.486	18.486	17.956
14	9.444	0.57842	2582	61.31	62.19	0.64457	61.65	15.6		9.444	9.30867	13.30667
15	13.52267	0.82823	2704	63.61	64.61	0.575	64.09	21.93333		13.52267	13.68333	13.52267
16	10.95333	0.67087	2755	64.63	65.83	0.67986	65.11	15.4		10.95333	11.12	11.12
17	10.50667	0.64351	3355	76.45	77.85	0.79625	77.11	12.6		10.50667	11.84733	6.83667
									Total :	505.5287	513.7187	546.9373
Index	Area	AreaIntgP	Row Inde:	Beginning	Ending X	FWHM	Center	Height	Nilai DK	29.01659	29.48669	31.39339
1	1742.205	99.86045	1090	10.05	89.99	0.23607	31.81	210.8				

c. K0T2

K0T2												
Index	Area	AreaIntgP	Row Index	Beginning	Ending X	FWHM	Center	Height		Ulangan 1	Ulangan 2	Ulangan 3
1	63.41867	4.10631	792	24.89	26.49	0.57283	25.85	69.93333		63.41867	63.41867	53.802
2	40.97067	2.65282	946	28.65	29.95	1.28	28.93	45.26667		40.97067	43.96867	44.264
3	73.65733	4.76925	1089	30.53	31.99	0.35367	31.79	141.4		73.65733	76.54	74.74067
4	31.91133	2.06623	1109	32.03	32.55	0.36641	32.19	85.86667		31.91133	31.91133	31.91133
5	49.054	3.17621	1146	32.55	33.65	0.37258	32.93	97.4		49.054	49.054	49.054
6	34.506	2.23423	1202	33.65	35.05	0.49176	34.05	45.33333		34.506	33.50467	33.17067
7	22.074	1.42927	1491	39.43	40.21	0.47498	39.83	44.33333		22.074	21.75	22.71467
8	29.96	1.93988	1837	45.87	47.29	0.42393	46.75	49.53333		29.96	29.96	29.96
9	27.50733	1.78108	1905	47.29	49.01	0.515	48.11	29.86667		27.50733	27.50733	27.50733
10	26.922	1.74318	1976	49.01	50.01	0.44121	49.53	51.66667		26.922	26.922	26.922
11	18.35733	1.18862	2027	50.01	50.93	0.51066	50.55	32.93333		18.35733	18.35733	18.35733
12	13.03133	0.84377	2067	50.93	51.73	0.68702	51.35	22.8		13.03133	13.03133	13.03133
13	14.23333	0.9216	2106	51.73	52.71	0.50367	52.13	23.53333		14.23333	14.23333	11.702
14	16.276	1.05386	2161	52.73	53.85	0.54098	53.23	25.86667		16.276	15.866	16.792
15	10.89267	0.70529	2500	59.65	60.87	1.071	60.01	12.13333		10.89267	9.496	9.496
16	9.384	0.60761	2583	61.19	62.37	0.70691	61.67	13.2		9.384	8.23133	7.72267
17	15.12067	0.97905	2702	63.37	64.73	0.82314	64.05	17.53333		15.12067	14.18533	14.86933
18	9.66467	0.62578	2755	64.73	65.91	0.53974	65.11	15.2		9.66467	9.54733	9.48467
19	9.57467	0.61995	3091	71.35	72.85	1.338	71.83	8.86667		9.57467	9.668	9.44533
20	8.45333	0.54735	3357	76.63	77.69	0.66533	77.15	12.53333		8.45333	8.78933	9.094
21	6.05467	0.39203	3410	77.79	78.87	0.55896	78.21	10		6.05467	6.138	6.05533
									Total:	531.024	532.08	520.0967
Index	Area	AreaIntgP	Row Index	Beginning	Ending X	FWHM	Center	Height	Nilai DK	34.38373	34.4521	33.67618
1	1544.405	99.99892	1089	10.01	89.97	0.41277	31.79	141.4				

d. K0T3

K0T3												
Index	Area	AreaIntgP	Row Index	Beginning	Ending X	FWHM	Center	Height		Ulangan 1	Ulangan 2	Ulangan 3
1	46.28733	2.79927	793	25.39	26.23	0.57574	25.87	83.13333		61.55267	46.28733	45.51333
2	27.61	1.66974	945	28.53	29.23	0.68	28.91	51.6		43.10133	27.61	32.67533
3	84.60733	5.1167	1088	30.73	32.01	0.39135	31.77	176.2		84.60733	84.60733	74.26133
4	38.984	2.35759	1107	32.01	32.55	0.36347	32.15	104.1333		38.984	38.984	38.984
5	46.10667	2.78834	1145	32.55	33.27	0.36691	32.91	111.2		51.068	46.10667	51.068
6	23.04867	1.39389	1202	33.77	34.39	0.44051	34.05	53.53333		34.752	23.04867	30.10533
7	25.646	1.55096	1492	39.47	40.29	0.47745	39.85	49.13333		26.16533	25.646	25.746
8	34.58067	2.0913	1835	46.11	47.49	0.41068	46.71	58.73333		15.61933	34.58067	37.044
9	26.368	1.59463	1906	47.49	48.99	1.06543	48.13	28		40.14867	26.368	26.368
10	29.78933	1.80154	1975	48.99	49.97	0.43378	49.51	58.93333		26.368	29.78933	29.78933
11	18.844	1.13961	2025	49.97	50.91	0.46792	50.51	34.6		29.78933	18.844	18.844
12	13.27667	0.80292	2065	50.91	51.63	0.54982	51.31	26.86667		18.844	13.27667	13.27667
13	18.20667	1.10106	2105	51.63	52.77	0.53156	52.11	27.2		13.27667	18.20667	18.20667
14	14.906	0.90145	2158	52.77	53.63	0.45074	53.17	28.53333		18.20667	14.906	14.906
15	11.118	0.67237	2295	55.29	56.31	0.739	55.91	16.26667		20.19133	11.118	9.38267
16	8.89667	0.53803	2586	61.31	62.07	0.74	61.73	15.13333		15.04133	8.89667	9.23333
17	8.258	0.49941	2651	62.65	63.37	0.54	63.03	16.8		12.83067	8.258	8.80667
18	11.11467	0.67217	2702	63.69	64.39	0.5443	64.05	22.86667		12.02333	11.11467	11.80733
19	7.244	0.43809	3199	73.49	74.53	0.64821	73.99	11.2		9.552	7.244	7.66533
20	9.64933	0.58355	3354	76.69	77.79	0.63667	77.09	15.2		9.711	9.64933	9.7
21	6.48933	0.39245	3411	77.81	78.77	0.56933	78.23	11.4		6.672	6.48933	6.146
Index	Area	AreaIntgP	Row Index	Beginning	Ending X	FWHM	Center	Height	Total:	588.505	511.0313	519.5293
1	1653.553	100	1088	10.01	89.99	0.40594	31.77	176.2	Nilai DK	35.59034	30.90505	31.41898

e. K0T4

K0T4												
Index	Area	AreaIntgP	Row Inde:	Beginning	Ending X	FWHM	Center	Height		Ulangan 1	Ulangan 2	Ulangan 3
1	45.832	2.78824	792	25.43	26.27	0.45213	25.85	88.6		45.832	58.832	45.578
2	29.734	1.8089	944	28.51	29.37	0.84	28.89	46.86667		29.734	29.24333	28.65867
3	70.686	4.30025	1087	31.07	31.97	0.37991	31.75	168		70.686	70.686	70.686
4	37.71667	2.29453	1107	31.97	32.53	0.38028	32.15	95.73333		37.71667	37.71667	37.71667
5	51.96533	3.16136	1144	32.53	33.45	0.37544	32.89	113.3333		51.96533	51.96533	51.96533
6	32.296	1.96476	1201	33.43	34.49	0.50264	34.03	52.4		32.296	34.592	31.888
7	35.16067	2.13903	1489	38.75	40.15	0.47283	39.79	45.6		35.16067	40.732	38.66133
8	33.85533	2.05962	1834	46.19	47.65	0.42338	46.69	53.73333		33.85533	33.85533	33.85533
9	27.46133	1.67064	1903	47.65	49.11	0.97606	48.07	31.6		27.46133	27.46133	27.46133
10	26.78333	1.62939	1973	49.11	50.03	0.40811	49.47	57.8		26.78333	26.78333	26.78333
11	16.59933	1.00984	2025	50.03	50.85	0.45377	50.51	33		16.59933	16.59933	16.59933
12	13.56467	0.82522	2063	50.85	51.61	0.50585	51.27	27.06667		13.56467	13.56467	13.56467
13	14.24467	0.86659	2104	51.61	52.47	0.523	52.09	26.2		14.24467	14.24467	14.24467
14	19.90933	1.2112	2159	52.45	53.83	0.5052	53.19	27.4		19.90933	20.20733	19.66267
15	12.844	0.78138	2702	63.55	64.59	0.59944	64.05	20.2		12.844	12.51	12.88133
16	10.27467	0.62507	2751	64.61	65.73	0.5399	65.03	16.46667		10.27467	10.11733	10.26733
17	11.76867	0.71596	3082	70.59	72.69	1.205	71.65	9.66667		11.76867	10.52533	10.84533
18	10.96	0.66676	3351	76.51	77.81	0.64679	77.03	14.2		10.96	11.332	10.99
19	7.628	0.46406	3410	77.77	79.03	0.55762	78.21	11.46667		7.628	7.54533	7.30733
									Total:	509.284	528.5133	509.6167
Index	Area	AreaIntgP	Row Inde:	Beginning	Ending X	FWHM	Center	Height	Nilai DK	30.9828	32.15264	31.00304
1	1643.764	100	1087	10.01	89.99	0.38833	31.75	168				

f. K3T0

K3T0												
Index	Area	AreaIntgP	Row Inde:	Beginning	Ending X	FWHM	Center	Height		Ulangan 1	Ulangan 2	Ulangan 3
1	46.94533	2.12829	787	25.43	26.15	0.7	25.75	84.26667		46.94533	74.36133	43.92867
2	89.43933	4.05479	1084	30.75	31.95	0.45074	31.69	134.8667		89.43933	87.71667	90.288
3	38.84533	1.76108	1104	31.95	32.49	0.39575	32.09	97.2		38.84533	38.84533	38.84533
4	65.87467	2.98647	1140	32.49	33.59	0.44455	32.81	105.6		65.87467	65.87467	65.87467
5	32.40533	1.46912	1199	33.59	34.29	0.68	33.99	58.33333		32.40533	34.55533	31.69533
6	31.086	1.4093	1484	39.33	40.13	0.78	39.69	49.86667		31.086	31.11	31.086
7	35.498	1.60932	1831	45.79	47.03	0.87413	46.63	45		35.498	31.66533	29.02067
8	19.39067	0.87909	1898	47.59	48.37	0.76	47.97	31.6		19.39067	19.39067	18.522
9	29.956	1.35807	1971	48.95	49.97	0.55726	49.43	48		29.956	29.956	29.956
10	18.5	0.83871	2022	49.97	50.79	0.8	50.45	30		18.5	18.17	17.84
11	16.94467	0.7682	2154	52.75	53.67	0.84583	53.09	25.26667		16.94467	15.91067	17.08333
									Total:	424.8853	447.556	414.14
Index	Area	AreaIntgP	Row Inde:	Beginning	Ending X	FWHM	Center	Height	Nilai DK	19.26243	20.29022	18.77528
1	2205.772	100	1084	10.01	89.99	0.79307	31.69	134.8667				

g. K3T1

K3T1												
Index	Area	AreaIntgP	Row Inde:	Beginning	Ending X	FWHM	Center	Height		Ulangan 1	Ulangan 2	Ulangan 3
1	61.97267	3.07281	794	25.21	26.35	1.12	25.89	79		61.97267	48.12733	46.45667
2	41.46333	2.05589	956	28.71	29.57	0.84	29.13	56.73333		41.46333	43.10467	40.682
3	85.58067	4.24338	1093	31.35	32.37	0.70109	31.87	138.4		85.58067	62.42733	63.978
4	15.248	0.75605	1118	32.37	32.69	0.3	32.37	73.86667		15.248	38.40133	38.40133
5	57.70933	2.86142	1150	32.69	33.83	0.42974	33.01	94.86667		57.70933	57.70933	57.70933
6	28.81667	1.42883	1208	33.83	34.55	0.695	34.17	53.6		28.81667	28.90333	28.90333
7	29.64467	1.46988	1495	39.49	40.31	0.8	39.91	49		29.64467	29.04333	30.784
8	34.78933	1.72497	1836	46.35	47.55	0.54533	46.73	50.8		34.78933	32.13867	51.18067
9	31.832	1.57834	1906	47.75	49.11	1.34	48.13	34.13333		31.832	32.90067	32.90067
10	24.95	1.23711	1978	49.17	50.03	0.45425	49.57	48.73333		24.95	24.95	26.01867
11	16.65333	0.82573	2068	51.03	51.83	0.78	51.37	27.73333		16.65333	16.034	15.38533
12	20.72	1.02737	2164	52.59	53.73	0.99455	53.29	26		20.72	20.23467	20.476
13	29.696	1.47243	2710	63.29	65.65	0.71042	64.21	20.6		29.696	10.518	15.12333
									Total:	479.076	444.4927	467.9993
Index	Area	AreaIntgP	Row Inde:	Beginning	Ending X	FWHM	Center	Height	Nilai DK	23.80151	22.08334	23.2512
1	2012.796	99.80126	1093	10.07	89.99	0.74054	31.87	138.4				

h. K3T2

K3T2												
Index	Area	AreaIntgP	Row Inde:	Beginning	Ending X	FWHM	Center	Height		Ulangan 1	Ulangan 2	Ulangan 3
1	51.21533	2.60086	791	25.53	26.45	0.9	25.83	78.33333		51.21533	98.19533	82.53267
2	47.15467	2.39465	950	28.65	29.73	1.06	29.01	56.46667		47.15467	45.954	45.00333
3	74.60267	3.78854	1088	30.81	32.03	0.42333	31.77	124.1333		74.60267	71.27333	74.60267
4	30.85067	1.56668	1109	32.03	32.51	0.42921	32.19	80.6		30.85067	30.85067	30.85067
5	58.002	2.94551	1145	32.51	33.71	0.46263	32.91	87.06667		58.002	58.002	58.002
6	27.36267	1.38955	1202	33.69	34.45	0.74	34.05	47.46667		27.36267	28.99067	28.44333
7	25.63	1.30156	1491	39.49	40.23	0.72	39.83	46.46667		25.63	41.14133	23.62067
8	30.31267	1.53936	1837	46.29	47.27	0.58855	46.75	48.73333		30.31267	34.638	28.74933
9	18.11467	0.91991	1902	47.65	48.43	0.76	48.05	30.46667		18.11467	28.02933	26.62533
10	22.75	1.15531	1975	49.11	49.89	0.47029	49.51	45.86667		22.75	25.678	24.226
11	13.71067	0.69627	2064	50.95	51.61	0.64	51.29	26.46667		13.71067	15.39533	14.37067
12	15.49267	0.78676	2161	52.89	53.79	0.84214	53.23	24.33333		15.49267	15.41333	15.908
13	11.68	0.59314	2702	63.75	64.53	0.69625	64.05	20.46667		11.68	11.85267	12.05933
									Total:	426.8787	505.414	464.994
Index	Area	AreaIntgP	Row Inde:	Beginning	Ending X	FWHM	Center	Height	Nilai DK	21.67812	25.66636	23.61372
1	1969.169	100	1088	10.01	89.99	0.74461	31.77	124.1333				

i. K3T3

K3T3												
Index	Area	AreaIntgP	Row Inde:	Beginning	Ending X	FWHM	Center	Height		Ulangan 1	Ulangan 2	Ulangan 3
1	39.25533	2.22145	41	10.51	11.13	0.6	10.83	69.53333		39.25533	40.33133	37.90133
2	93.554	5.29419	791	24.89	26.93	1.915	25.83	73.93333		93.554	79.872	63.82467
3	35.08067	1.9852	945	28.43	29.31	0.86	28.91	48.33333		35.08067	33.008	32.28467
4	71.454	4.04356	1086	30.83	31.97	0.41014	31.73	133.5333		71.454	66.62	65.38067
5	32.99467	1.86716	1106	31.97	32.51	0.40043	32.13	81.46667		32.99467	28.81733	35.08733
6	43.89133	2.4838	1143	32.53	33.35	0.41548	32.87	90.6		43.89133	46.042	44.436
7	35.19667	1.99177	1203	33.49	34.57	0.96692	34.07	46.73333		35.19667	36.45133	36.45133
8	27.78067	1.5721	1489	39.43	40.33	0.62772	39.79	45.66667		27.78067	26.05667	27.78067
9	26.77533	1.51521	1833	46.13	47.09	0.47282	46.67	47.8		26.77533	25.72533	25.72533
10	17.266	0.97708	1900	47.63	48.49	0.81882	48.01	27.06667		17.266	16.64	16.07067
11	28.14667	1.59281	1971	48.91	50.05	0.48271	49.43	45.8		28.14667	28.14667	28.14667
12	13.20267	0.74713	2061	50.89	51.65	0.64625	51.23	24.2		13.20267	13.20267	13.45533
13	15.61333	0.88355	2103	51.65	52.71	0.58922	52.07	23.06667		15.61333	11.44267	15.61333
14	16.278	0.92117	2159	52.75	53.77	0.61943	53.19	25.2		16.278	16.904	17.83133
15	11.81333	0.66851	2701	63.65	64.69	0.76425	64.03	17.53333		11.81333	12.41467	13.25467
16	5.512	0.31192	3406	77.73	78.83	0.65773	78.13	8.26667		5.512	5.72467	5.42267
									Total:	513.8147	487.3993	478.6667
Index	Area	AreaIntgP	Row Inde:	Beginning	Ending X	FWHM	Center	Height	Nilai DK	29.21205	27.71025	27.21377
1	1758.914	99.53638	1086	10.15	87.07	0.72522	31.73	133.5333				

j. K3T4

K3T4												
Index	Area	AreaIntgP	Row Inde:	Beginning	Ending X	FWHM	Center	Height		Ulangan 1	Ulangan 2	Ulangan 3
1	64.528	3.52052	793	25.09	26.37	1.09526	25.87	76.6		64.528	63.89667	83.00333
2	34.35267	1.87421	948	28.45	29.31	0.84	28.97	50.2		34.35267	33.68133	32.37467
3	65.81933	3.59097	1092	31.31	32.09	0.41804	31.85	149.1333		65.81933	77.562	65.81933
4	35.22733	1.92193	1111	32.09	32.63	0.3611	32.23	92.8		35.22733	35.872	36.92933
5	48.42133	2.64177	1149	32.63	33.53	0.40542	32.99	98.33333		48.42133	49.52	54.56333
6	30.67067	1.67333	1205	33.71	34.55	0.68563	34.11	53.13333		30.67067	31.68933	32.18533
7	31.47	1.71694	1493	39.55	40.53	0.755	39.87	48.73333		31.47	30.59533	30.696
8	33.99867	1.8549	1838	46.13	47.39	0.48942	46.77	48.86667		33.99867	34.21067	38.51667
9	17.91333	0.97732	1906	47.67	48.53	0.75923	48.13	29		17.91333	17.56333	17.56333
10	28.23667	1.54054	1977	49.01	50.05	0.44858	49.55	50.53333		28.23667	28.23667	28.23667
11	18.11067	0.98808	2029	50.05	50.97	0.57966	50.59	30		18.11067	18.11067	18.11067
12	13.092	0.71427	2066	50.97	51.67	0.62136	51.33	25.6		13.092	13.092	13.092
13	17.11467	0.93374	2109	51.67	52.67	0.7375	52.19	26.13333		17.11467	15.27733	17.11467
14	17.83933	0.97328	2162	52.69	53.79	0.49083	53.25	28.2		17.83933	17.47667	16.48267
15	12.992	0.70882	2708	63.75	64.75	0.71513	64.17	19.53333		12.992	12.492	12.492
16	10.84333	0.59159	3357	76.29	77.75	0.757	77.15	12		10.84333	11.12733	8.78133
									Total:	480.63	490.4033	505.9613
Index	Area	AreaIntgP	Row Inde:	Beginning	Ending X	FWHM	Center	Height	Nilai DK	26.22476	26.75802	27.60692
1	1832.734	99.99033	1092	10.01	89.79	0.69867	31.85	149.1333				

9. Perhitungan Porositas

h max	65600	117 20kx	h max	65600	117 50kx	h max	65600	117 100kx	h max	65600
h min	0		h min	0		h min	0		h min	0
x	1023		x	1023		x	1023		x	1023
y	942		y	942		y	942		y	942
v total	63216489600		v total	63216489600		v total	63216489600		v total	63216489600
v solid	23010232153		v solid	19439151747		v solid	19012331994		v solid	17397861335
v integral	23010232153		v integral	19439151747		v integral	19012331994		v integral	17397861335
v pori	40206257447		v pori	43777337853		v pori	44204157607		v pori	45818628266
porositas	0.636009018		porositas	0.692498716		porositas	0.699250431		porositas	0.72478919
presentas	63.60090176		presentas	69.24987156		presentas	69.92504311		presentas	72.47891896
					68.81368					
		118 20kx	h max	65600	118 50kx	h max	65600	118 50kx	h max	65600
h max	65600		h min	0		h min	0		h min	0
h min	0		x	1023		x	1023		x	1023
x	1023		y	942		y	942		y	942
y	942		v total	63216489600		v total	63216489600		v total	63216489600
v total	63216489600		v solid	19366156101		v solid	18265739669		v solid	14268984380
v solid	25149626148		v integral	19366156101		v integral	18265739669		v integral	14268984380
v integral	25149626148		v pori	43850333499		v pori	44950749931		v pori	48947505220
v pori	38066863453		porositas	0.693653409		porositas	0.711060519		porositas	0.774283823
porositas	0.602166677		presentas	69.36534087		presentas	71.10605194		presentas	77.42838226
presentas	60.21666767									
					69.52911					

h max	65600	119 20kx	h max	65600	119 50kx	h max	65600	119 50kx	h max	65600
h min	0		h min	0		h min	0		h min	0
x	1023		x	1023		x	1023		x	1023
y	942		y	942		y	942		y	942
v total	63216489600		v total	63216489600		v total	63216489600		v total	63216489600
v solid	23128077383		v solid	14500806604		v solid	14011029561		v solid	14138228563
v integral	23128077383		v integral	14500806604		v integral	14011029561		v integral	14138228563
v pori	40088412217		v pori	48715682996		v pori	49205460039		v pori	49078261038
porositas	0.634144864		porositas	0.770616706		porositas	0.778364322		porositas	0.776352204
presentas	63.41448643		presentas	77.06167062		presentas	77.83643216		presentas	77.63522041
					73.98695					
h max	65600	120 20kx	h max	65600	120 50kx	h max	65600	120 50kx	h max	65600
h min	0		h min	0		h min	0		h min	0
x	1023		x	1023		x	1023		x	1023
y	942		y	942		y	942		y	942
v total	63216489600		v total	63216489600		v total	63216489600		v total	63216489600
v solid	20540180289		v solid	21056918174		v solid	13461755668		v solid	9573879522
v integral	20540180289		v integral	21056918174		v integral	13461755668		v integral	9573879522
v pori	42676309312		v pori	42159571426		v pori	49754733932		v pori	53642610079
porositas	0.675081922		porositas	0.666907823		porositas	0.787053097		porositas	0.848554078
presentas	67.50819222		presentas	66.69078225		presentas	78.70530972		presentas	84.85540785
					74.43992					

10. Perhitungan Ukuran Partikel

a. K0T0

1	A117 100(	0.001	104.668	8.683	71	120	49.764	0.4		31	A117 100(	0.002	68.596	3.857	56	78.82	-116.841	0.546
2	A117 100(	0.001	104.434	9.008	73.926	122.933	-39.56	0.35		32	A117 100(	0.002	67.593	3.962	55.717	78.29	-35.48	0.677
3	A117 100(	8.34E-04	103.603	7.573	74	119.194	106.928	0.282		33	A117 100(	4.90E-04	77.526	7.737	60	95	-90	0.164
4	A117 100(	9.98E-04	98.834	7.257	73	118.321	40.061	0.337		34	A117 100(	4.56E-04	75.239	5.953	58	92	162.255	0.154
5	A117 100(	7.65E-04	93.729	7.617	76	110.709	57.031	0.259		35	A117 100(	0.004	83.382	17.922	45.033	121.737	-32.225	1.463
6	A117 100(	0.001	90.649	9.622	76	114.16	143.13	0.381		36	A117 100(	0.002	91.891	13.177	55	125.043	65.253	0.827
7	A117 100(	7.22E-04	100.469	6.085	84.292	116.778	62.819	0.244		37	A117 100(	4.99E-04	99.204	13.809	0	110.971	-61.631	0.167
8	A117 100(	7.40E-04	102	8.13	87.162	118.694	-15.018	0.249		38	A117 100(	6.11E-04	99.718	12.99	0	109.841	38.66	0.207
9	A117 100(	5.50E-04	93.509	4.083	84	100.836	-37.235	0.184		39	A117 100(	0.001	72.737	4.798	59.189	85.113	-32.185	0.495
10	A117 100(	5.50E-04	97.379	8.404	80.975	113.827	-116.565	0.184		40	A117 100(	0.002	74.116	4.643	61.88	87.257	49.565	0.547
11	A117 100(	4.73E-04	85.323	4.838	71.524	96.69	-15.068	0.158		41	A117 100(	0.001	84.429	11.943	0	106.62	-91.614	0.417
12	A117 100(	5.16E-04	85.677	4.866	67	94.783	-113.962	0.173		42	A117 100(	0.004	85.369	8.967	62.562	105.745	-0.488	1.378
13	A117 100(	6.71E-04	116.176	8.853	94.724	132.835	81.027	0.226		43	A117 100(	7.40E-04	88.076	6.519	71	101.803	-70.71	0.249
14	A117 100(	6.79E-04	117.744	6.726	99	132.769	2.936	0.229		44	A117 100(	6.88E-04	88.089	5.593	78.489	100.151	42.955	0.232
15	A117 100(	6.54E-04	92.975	8.588	71	112.6	-50.389	0.221		45	A117 100(	7.48E-04	92.72	5.473	81.522	104.495	-50.194	0.252
16	A117 100(	6.28E-04	91.604	5.233	79.389	105.5	59.859	0.21		46	A117 100(	7.65E-04	85.841	6.721	71.983	103.653	-57.031	0.259
17	A117 100(	7.14E-04	69.792	5.338	55	82.889	-68.459	0.24		47	A117 100(	8.77E-04	85.113	3.35	78.368	93.844	-166.239	0.296
18	A117 100(	8.60E-04	71.521	4.617	63.347	83.994	40.101	0.291		48	A117 100(	5.59E-04	84.039	3.56	72	94.578	-75.53	0.188
19	A117 100(	4.13E-04	71.399	7.735	54.354	83	-64.537	0.136		49	A117 100(	4.30E-04	82.671	3.449	73.16	90.898	21.371	0.145
20	A117 100(	4.82E-04	74.568	3.928	65.585	86.58	64.359	0.163		50	A117 100(	7.65E-04	86.368	5.001	75	97.678	68.682	0.258
21	A117 100(	0.001	76.744	8.838	44	100.043	-48.311	0.503		51	A117 100(	0.001	88.536	5.963	76.203	104.62	140.08	0.375
22	A117 100(	0.002	82.765	8.969	67.723	103.658	-134.17	0.572		52	A117 100(	7.14E-04	92.254	4.799	75	102.162	-120.964	0.239
23	A117 100(	2.32E-04	95.596	16.42	63.586	121.805	-67.38	0.076		53	A117 100(	4.04E-04	74.774	4.416	60.019	82.276	-52.125	0.134
24	A117 100(	6.19E-04	91.527	9.163	60.55	110.586	28.74	0.207		54	A117 100(	4.30E-04	73.204	2.89	67.055	78.271	-148.241	0.145
25	A117 100(	0.001	73.934	14.802	49	106.148	-60.489	0.357		55	A117 100(	5.59E-04	70.291	3.968	59	78.072	-53.842	0.189
26	A117 100(	0.001	74.278	8.153	56.75	91	51.34	0.376		56	A117 100(	4.73E-04	71.226	4.087	62	83.667	-131.987	0.158
27	A117 100(	0.001	73.421	4.372	61	83.993	-47.793	0.34		57	A117 100(	6.36E-04	58.639	3.063	50.843	65.679	-101.004	0.215
28	A117 100(	0.001	75.204	6.891	59.988	91.935	58.392	0.358		58	A117 100(	7.74E-04	58.511	3.335	51.422	66.454	-40.462	0.262
29	A117 100(	0.002	84.684	8.446	58.033	98.557	31.95	0.643		59	A117 100(	6.79E-04	78.269	8.202	59.462	94.154	-91.469	0.229
30	A117 100(	0.003	83.882	6.919	64.572	103.182	-49.662	0.97		60	A117 100(	3.53E-04	73.678	7.148	61	86.8	177.138	0.117
									rata2	0.34								

		area	mean	stedv	min	max	r^2	r	d	
1	A117 100(	0.131	103.646	10.459	60	146	0.0655	0.36194	0.72388	sampel 117 100kx area
2	A117 100(	0.044	111.181	13.381	64	147	0.022	0.20976	0.41952	
3	A117 100(	0.046	93.168	10.707	60	128	0.023	0.21448	0.42895	
4	A117 100(	0.024	93.123	7.649	69	124	0.012	0.15492	0.30984	
5	A117 100(	0.939	84.978	16.519	34	147	0.4695	0.96902	1.93804	
6	A117 100(	0.069	69.709	6.097	46	95	0.0345	0.26268	0.52536	
7	A117 100(	0.094	103.125	10.53	53	139	0.047	0.30659	0.61319	
8	A117 100(	0.054	82.892	7.875	58	111	0.027	0.23238	0.46476	
9	A117 100(	0.128	94.878	10.625	47	129	0.064	0.35777	0.71554	
10	A117 100(	0.02	83.06	5.627	61	104	0.01	0.14142	0.28284	
11	A117 100(	0.304	66.274	6.539	43	92	0.152	0.55136	1.10272	
12	A117 100(	0.034	73.997	8.8	43	105	0.017	0.18439	0.36878	
13	A117 100(	0.27	80.362	10.9	37	139	0.135	0.51962	1.03923	
14	A117 100(	0.781	83.154	10.955	46	129	0.3905	0.88374	1.76748	
15	A117 100(	0.014	72.657	8.048	48	99	0.007	0.11832	0.23664	
16	A117 100(	0.02	87.279	6.599	67	112	0.01	0.14142	0.28284	
17	A117 100(	0.027	92.968	9.593	68	126	0.0135	0.16432	0.32863	
18	A117 100(	0.035	88.561	6.969	54	110	0.0175	0.18708	0.37417	
19	A117 100(	0.44	80.943	9.906	44	122	0.22	0.66332	1.32665	
20	A117 100(	0.093	75.268	8.99	45	110	0.0465	0.30496	0.60992	
21	A117 100(	0.068	82.573	10.73	49	118	0.034	0.26077	0.52154	
22	A117 100(	0.022	60.244	6.437	42	84	0.011	0.14832	0.29665	
23	A117 100(	0.052	56.797	6.026	38	77	0.026	0.22804	0.45607	
24	A117 100(	0.024	69.707	8.287	44	94	0.012	0.15492	0.30984	
25	A117 100(	0.08	63.43	5.026	46	82	0.04	0.28284	0.56569	
26	A117 100(	0.014	58.276	5.354	43	79	0.007	0.11832	0.23664	
27	A117 100(	0.01	68.321	5.34	51	85	0.005	0.1	0.2	
28	A117 100(	8.60E-06	45	0	45	45	4.3E-06	0.00293	0.00587	
29	A117 100(	0.017	70.95	7.286	43	93	0.0085	0.13038	0.26077	
30	A117 100(	0.082	72.125	7.384	44	98	0.041	0.28636	0.57271	
									0.576	

	Label	Area	Mean	StdDev	Min	Max	Angle	Length
1	A117 50k	0.003	98,868	10,594	60,000	121,513	2,936	0.458
2	A117 50k	0.003	100,384	4,489	91,083	111,819	-89,204	0.422
3	A117 50k	0.002	113,260	7,470	95,000	128,642	-3,240	0.311
4	A117 50k	0.002	110,196	7,497	91,000	130,000	-90,000	0.293
5	A117 50k	0.002	80,096	4,249	71,240	89,380	-51,520	0.292
6	A117 50k	0.001	78,995	2,946	73,757	85,071	27,216	0.231
7	A117 50k	0.002	83,802	14,696	62,185	113,062	2,643	0.382
8	A117 50k	0.003	81,081	4,631	71,969	97,203	102,995	0.548
9	A117 50k	0.009	78,341	13,240	50,774	104,907	7,182	1.454
10	A117 50k	0.01	81,186	6,098	68,285	100,395	-83,919	1.716
11	A117 50k	0.007	92,001	4,430	79,000	105,274	-77,093	1.155
12	A117 50k	0.004	87,392	7,991	70,845	109,333	10,257	0.626
13	A117 50k	0.007	105,616	11,195	62,390	127,154	-68,254	1.124
14	A117 50k	0.005	105,124	6,106	89,970	123,388	24,092	0.79
15	A117 50k	0.005	85,077	17,864	0	255,000	-90,390	0.862
16	A117 50k	0.004	84,044	4,724	68,000	91,636	177,917	0.646
17	A117 50k	0.003	90,495	6,819	64,000	102,652	-84,413	0.542
18	A117 50k	0.003	91,548	7,570	73,556	112,444	4,939	0.477
19	A117 50k	0.002	110,291	5,889	100,306	124,467	-28,124	0.386
20	A117 50k	0.002	108,010	4,995	95,176	120,003	49,764	0.3
21	A117 50k	0.002	98,783	4,926	84,620	111,141	-3,225	0.417
22	A117 50k	0.003	98,350	13,418	71,000	125,931	-90,659	0.51
23	A117 50k	0.004	104,914	7,277	87,055	124,138	2,102	0.64
24	A117 50k	0.004	100,087	6,899	81,724	112,448	92,961	0.681
25	A117 50k	0.005	89,754	14,251	67,059	139,013	-90,377	0.892
26	A117 50k	0.004	91,424	8,896	67,000	108,000	0	0.727
27	A117 50k	0.002	87,200	9,505	66,294	103,338	0.843	0.399
28	A117 50k	0.003	92,447	6,444	77,658	105,945	-93,136	0.429
29	A117 50k	0.007	83,833	10,657	63,019	103,194	-26,328	1.27
30	A117 50k	0.004	81,843	4,117	67,000	96,000	53,130	0.674
							Rata2=	0.612

	Label	Area	Mean	StdDev	Min	Max	Angle	Length
31	A117 50k	0.005	71,422	4,841	59,014	80,778	56,553	0.766
32	A117 50k	0.003	78,906	7,093	64,481	92,374	-28,780	0.475
33	A117 50k	0.003	91,676	4,345	84,458	103,518	-1,380	0.487
34	A117 50k	0.004	96,046	8,580	75,000	117,891	-90,567	0.592
35	A117 50k	0.003	83,761	11,007	64,795	105,374	-13,109	0.44
36	A117 50k	0.003	86,143	6,538	75,981	103,458	-107,987	0.475
37	A117 50k	0.004	93,475	5,720	77,451	108,869	2,347	0.716
38	A117 50k	0.004	96,323	4,791	85,000	109,940	-85,564	0.682
39	A117 50k	0.009	103,023	17,936	64,334	137,103	-31,621	1.577
40	A117 50k	0.005	107,933	5,873	82,000	119,257	46,245	0.763
41	A117 50k	0.004	64,203	9,655	40,347	84,369	-11,619	0.641
42	A117 50k	0.004	69,527	6,319	55,000	81,904	45,395	0.601
43	A117 50k	0.003	62,450	7,881	51,000	85,123	8,807	0.421
44	A117 50k	0.004	61,916	2,939	55,175	68,488	97,352	0.733
45	A117 50k	0.003	77,633	7,856	60,000	101,288	-5,477	0.43
46	A117 50k	0.003	75,081	4,173	63,000	83,000	-95,711	0.472
47	A117 50k	0.004	78,119	7,598	65,975	97,108	5,356	0.754
48	A117 50k	0.004	69,534	5,412	57,106	86,080	91,521	0.663
49	A117 50k	0.002	102,146	5,404	79,000	111,585	-16,966	0.362
50	A117 50k	0.001	101,162	3,419	93,469	109,250	46,909	0.249
51	A117 50k	0.003	80,918	8,283	65,165	95,584	-60,440	0.452
52	A117 50k	0.002	77,780	3,040	71,485	85,541	-139,128	0.403
53	A117 50k	0.003	95,058	9,231	79,992	115,826	-9,841	0.583
54	A117 50k	0.005	94,900	3,438	85,083	103,087	72,745	0.811
55	A117 50k	0.002	99,238	4,356	89,250	112,000	-1,102	0.305
56	A117 50k	0.003	97,315	3,996	87,297	106,231	89,370	0.534
57	A117 50k	0.002	79,804	5,601	68,408	97,000	5,826	0.289
58	A117 50k	0.002	78,395	4,992	67,000	88,840	96,843	0.295
59	A117 50k	0.003	79,309	10,569	65,418	100,266	5,064	0.465
60	A117 50k	0.004	82,425	6,869	70,908	101,752	99,293	0.654

	Label	Area	Mean	StdDev	Min	Max	R'2	r	d	Perhitungan area	
1	A117 50k:	0.139	98,459	9,293	57	126	0.0695	0.2636	0.527		
2	A117 50k:	0.063	113,703	9,102	82	150	0.0315	0.1775	0.355		
3	A117 50k:	0.046	102,159	8,639	73	131	0.023	0.1517	0.303		
4	A117 50k:	0.401	100,365	10,919	56	147	0.2005	0.4478	0.896		
5	A117 50k:	0.142	84,948	11,630	55	123	0.071	0.2665	0.533		
6	A117 50k:	0.067	77,960	7,060	49	100	0.0335	0.183	0.366		
7	A117 50k:	0.511	86,470	10,959	46	142	0.2555	0.5055	1.011		
8	A117 50k:	0.138	81,851	11,017	58	120	0.069	0.2627	0.525		
9	A117 50k:	0.098	109,626	8,971	75	141	0.049	0.2214	0.443		
10	A117 50k:	0.182	97,508	13,569	64	141	0.091	0.3017	0.603		
11	A117 50k:	0.183	89,470	8,437	53	119	0.0915	0.3025	0.605		
12	A117 50k:	0.101	75,894	7,165	52	103	0.0505	0.2247	0.449		
13	A117 50k:	0.126	89,562	10,455	48	123	0.063	0.251	0.502		
14	A117 50k:	0.045	81,363	6,358	63	104	0.0225	0.15	0.3		
15	A117 50k:	0.506	90,358	9,711	49	131	0.253	0.503	1.006		
16	A117 50k:	0.692	90,166	11,554	49	127	0.346	0.5882	1.176		
17	A117 50k:	0.482	84,572	10,163	52	138	0.241	0.4909	0.982		
18	A117 50k:	0.702	100,597	13,970	55	146	0.351	0.5925	1.185		
19	A117 50k:	1.007	104,508	14,584	61	153	0.5035	0.7096	1.419		
20	A117 50k:	0.163	74,492	10,112	41	110	0.0815	0.2855	0.571		
21	A117 50k:	0.3	75,811	9,813	47	112	0.15	0.3873	0.775		
22	A117 50k:	1.367	84,068	11,717	46	125	0.6835	0.8267	1.653		
23	A117 50k:	0.496	82,909	9,403	56	113	0.248	0.498	0.996		
24	A117 50k:	0.399	108,147	10,991	52	143	0.1995	0.4467	0.893		
25	A117 50k:	0.394	93,763	6,855	54	118	0.197	0.4438	0.888		
26	A117 50k:	0.166	99,353	5,957	73	123	0.083	0.2881	0.576		
27	A117 50k:	0.222	94,460	8,573	68	131	0.111	0.3332	0.666		
28	A117 50k:	0.321	82,946	9,990	57	123	0.1605	0.4006	0.801		
29	A117 50k:	0.094	96,663	10,075	56	118	0.047	0.2168	0.434		
30	A117 50k:	0.553	94,150	10,311	63	127	0.2765	0.526	1.052		
									0.75		

b. K0T2

1	A118 100I	0.001	71.199	4.623	60	90.578	14.47	0.467	31	A118 100I	5.02E-04	64.217	4.959	55.161	77.331	-66.541	0.168
2	A118 100I	0.001	66.012	6.799	48.773	78.317	112.834	0.361	32	A118 100I	3.06E-04	66.66	3.059	61.102	73.959	-145.408	0.103
3	A118 100I	0.001	41.443	5.511	29.474	57.709	-39.95	0.445	33	A118 100I	4.93E-04	73.809	4.706	64.361	82.479	-28.369	0.166
4	A118 100I	5.44E-04	42.295	4.569	34.889	52.367	-124.695	0.184	34	A118 100I	8.84E-04	71.132	4.467	61.291	84.382	-115.821	0.301
5	A118 100I	3.91E-04	42.013	3.086	35	48.333	-66.297	0.131	35	A118 100I	6.89E-04	75.707	5.628	61.75	89.625	-75.44	0.232
6	A118 100I	3.49E-04	41.494	2.473	35.938	48	29.745	0.118	36	A118 100I	8.93E-04	73.899	3.86	67.99	92.35	-153.189	0.304
7	A118 100I	4.76E-04	46.837	3.962	39.43	57.4	-50.856	0.162	37	A118 100I	6.12E-04	63.566	5.292	47	73.343	-66.695	0.206
8	A118 100I	4.34E-04	45.727	3.9	39	54.005	-138.27	0.145	38	A118 100I	6.04E-04	64.255	5.015	52.68	75	-143.13	0.204
9	A118 100I	3.06E-04	45.443	4.854	34	58.686	-42.709	0.103	39	A118 100I	6.04E-04	70.216	14.685	50.952	99.421	164.168	0.203
10	A118 100I	2.38E-04	44.13	3.331	38	53	48.013	0.078	40	A118 100I	6.46E-04	65.496	8.063	53.305	85.829	69.624	0.218
11	A118 100I	3.32E-04	45.387	4.483	32	50.816	169.287	0.11	41	A118 100I	4.17E-04	69.887	4.319	59.076	78.766	-77.989	0.14
12	A118 100I	3.32E-04	48.26	2.662	41	54.346	71.565	0.111	42	A118 100I	6.89E-04	69.148	5.148	51	82	0	0.233
13	A118 100I	4.51E-04	48.589	2.2	44.716	53	-22.62	0.152	43	A118 100I	5.78E-04	73.381	6.572	60.776	86.574	-48.013	0.196
14	A118 100I	5.53E-04	47.064	4.324	37.75	59.62	-116.162	0.185	44	A118 100I	3.91E-04	73.498	3.596	67.044	81.893	49.538	0.13
15	A118 100I	2.30E-04	44.099	3.877	34.751	53	-38.66	0.075	45	A118 100I	4.51E-04	71.507	7.32	52	87.192	-41.906	0.153
16	A118 100I	2.30E-04	44.949	4.837	34	50.189	-112.62	0.076	46	A118 100I	2.98E-04	68.021	5.411	57.215	78.426	-132.614	0.099
17	A118 100I	2.21E-04	50.26	4.993	42.278	57.736	-26.565	0.072	47	A118 100I	0.003	65.926	9.178	44.146	86.947	-37.466	0.896
18	A118 100I	2.38E-04	49.257	3.598	41	54.366	-105.068	0.079	48	A118 100I	0.001	63.403	5.77	51.995	77.832	46.623	0.509
19	A118 100I	9.69E-04	58.245	6.879	0	71.016	-43.568	0.33	49	A118 100I	6.55E-04	52.259	3.446	44.529	63.429	-96.843	0.22
20	A118 100I	0.001	62.544	5.493	53.925	83.394	-157.294	0.446	50	A118 100I	9.52E-04	49.902	4.677	38	61	180	0.324
21	A118 100I	7.06E-04	61.73	2.999	51.28	68.044	-67.81	0.239	51	A118 100I	4.25E-04	61.38	4.39	48	70.665	-55.008	0.142
22	A118 100I	9.95E-04	59.661	7.345	0	69.194	-158.29	0.339	52	A118 100I	5.78E-04	64.255	4.364	56.911	76	31.551	0.195
23	A118 100I	0.003	72.437	12.982	44.017	106.38	143.852	1.018	53	A118 100I	4.51E-04	96.338	9.023	83	117.139	43.452	0.153
24	A118 100I	0.003	74.782	6.054	63.568	94.386	27.605	0.862	54	A118 100I	0.001	87.466	8.665	72.878	109.389	-58.392	0.49
25	A118 100I	2.89E-04	89.147	5.106	80	100	0	0.096	55	A118 100I	2.72E-04	77.077	5.173	63.634	84.568	13.134	0.09
26	A118 100I	6.21E-04	86.757	4.772	70	95.11	100.376	0.21	56	A118 100I	4.51E-04	76.108	5.929	65	86.201	-81.085	0.151
27	A118 100I	4.00E-04	72.645	6.917	61.527	87.853	-44.119	0.134	57	A118 100I	0.001	78.385	5.625	66.055	97.315	-40.236	0.348
28	A118 100I	6.12E-04	70.532	3.957	60.575	80.628	-147.653	0.207	58	A118 100I	0.001	79.966	9.692	51	97.163	30.129	0.378
29	A118 100I	3.91E-04	74.502	9.866	56.895	91.951	-79.695	0.13	59	A118 100I	0.001	58.892	9.19	35	79.163	17.592	0.502
30	A118 100I	7.57E-04	73.736	4.941	65.909	89.239	-158.078	0.258	60	A118 100I	0.001	60.248	6.718	42.8	72	87.138	0.409
								rata2	0.2607									

no	sampel	area					r^2	r	d			
1	A118 100I	0.154	67.501	8.292	39	98	0.077	0.27749	0.55498		118 100kx suhu 100	
2	A118 100I	0.086	73.264	6.383	50	99	0.043	0.20736	0.41473			
3	A118 100I	0.54	76.137	10.156	42	115	0.27	0.51962	1.03923			
4	A118 100I	0.015	86.113	6.594	60	103	0.0075	0.0866	0.17321			
5	A118 100I	0.055	76.251	7.516	49	102	0.0275	0.16583	0.33166			
6	A118 100I	0.164	78.948	9.314	49	114	0.082	0.28636	0.57271			
7	A118 100I	0.022	74.203	6.687	56	105	0.011	0.10488	0.20976			
8	A118 100I	0.359	64.344	9.591	33	101	0.1795	0.42367	0.84735			
9	A118 100I	0.069	59.439	6.286	35	78	0.0345	0.18574	0.37148			
10	A118 100I	0.066	54.288	7.526	33	80	0.033	0.18166	0.36332			
11	A118 100I	0.03	64.326	5.591	44	85	0.015	0.12247	0.24495			
12	A118 100I	0.105	62.009	8.308	26	96	0.0525	0.22913	0.45826			
13	A118 100I	0.024	60.941	5.015	47	83	0.012	0.10954	0.21909			
14	A118 100I	0.078	72.185	7.104	51	102	0.039	0.19748	0.39497			
15	A118 100I	0.041	62.163	10.67	37	99	0.0205	0.14318	0.28636			
16	A118 100I	0.021	72.544	8.036	49	108	0.0105	0.10247	0.20494			
17	A118 100I	0.011	69.115	6.459	50	92	0.0055	0.07416	0.14832			
18	A118 100I	0.059	43.037	5.469	27	63	0.0295	0.17176	0.34351			
19	A118 100I	0.033	47.866	5.172	32	64	0.0165	0.12845	0.2569			
20	A118 100I	0.048	55.383	7.599	23	86	0.024	0.15492	0.30984			
21	A118 100I	0.041	57.098	5.505	38	82	0.0205	0.14318	0.28636			
22	A118 100I	0.043	66.404	5.54	49	85	0.0215	0.14663	0.29326			
23	A118 100I	0.047	66.802	9.308	47	106	0.0235	0.1533	0.30659			
24	A118 100I	0.044	60.103	8.931	34	89	0.022	0.14832	0.29665			
25	A118 100I	0.025	64.331	6.876	44	88	0.0125	0.1118	0.22361			
26	A118 100I	0.7281	58.464	15.122	15	126	0.36405	0.60337	1.20673			
27	A118 100I	0.15	67.457	8.463	38	108	0.075	0.27386	0.54772			
28	A118 100I	0.111	67.7	6.992	42	93	0.0555	0.23558	0.47117			
29	A118 100I	0.086	62.382	7.536	37	87	0.043	0.20736	0.41473			
30	A118 100I	0.067	56.261	6.639	35	84	0.0335	0.18303	0.36606			
									0.40528			

	Label	Area	Mean	StdDev	Min	Max	Angle	Length
1	A118 50k	0.005	74.515	9.24	57	95.333	-68.85	0.852
2	A118 50k	0.003	73.88	5.173	49	83.557	25.688	0.508
3	A118 50k	0.005	85.068	8.137	63	112.444	-73.508	0.919
4	A118 50k	0.004	86.175	3.66	78.605	98.153	-140.307	0.753
5	A118 50k	0.004	89.26	8.463	68	101.835	-51.137	0.767
6	A118 50k	0.003	97.382	5.629	75	109.017	45	0.516
7	A118 50k	0.002	81.237	5.564	62.636	94.364	-5.194	0.32
8	A118 50k	0.003	78.182	6.097	61	88.306	-82.488	0.532
9	A118 50k	0.002	73.905	6.363	64.351	88.587	-50.332	0.309
10	A118 50k	0.002	68.834	3.197	57	74.48	-126.87	0.29
11	A118 50k	0.004	87.258	5.707	67	97.167	-43.512	0.631
12	A118 50k	0.004	93.323	7.671	57	108.25	29.999	0.649
13	A118 50k	0.004	81.441	5.845	64	91.983	-39.094	0.717
14	A118 50k	0.003	80.5	4.934	67.065	88.266	-136.909	0.492
15	A118 50k	0.007	97.264	21.376	66.309	144.294	46.388	1.185
16	A118 50k	0.005	110.626	14.103	83	143.026	133.561	0.816
17	A118 50k	0.004	92.753	11.156	68.653	120.498	-45.63	0.746
18	A118 50k	0.003	91.03	7.89	75.827	109.975	41.987	0.468
19	A118 50k	0.003	87.961	3.905	79.661	96.231	-69.057	0.503
20	A118 50k	0.003	89.545	9.231	66	107.6	-134.493	0.463
21	A118 50k	0.005	92.403	5.067	80.542	108.96	-32.312	0.803
22	A118 50k	0.003	85.584	6.535	68.444	100.26	57.265	0.482
23	A118 50k	0.002	86.992	9.185	65	104	-62.488	0.314
24	A118 50k	0.001	90.681	12.331	74.531	113.918	-135	0.246
25	A118 50k	0.002	97.235	6.312	85.787	113.452	-67.249	0.39
26	A118 50k	0.002	92.224	7.802	79	114.639	46.245	0.377
27	A118 50k	0.004	86.795	7.753	66	102.646	-67.141	0.642
28	A118 50k	0.003	84.032	4.872	68	94.317	33.879	0.489
29	A118 50k	0.003	79.546	9.485	52.754	95.304	42.357	0.533
30	A118 50k	0.003	83.281	3.184	73.667	90.4	-41.845	0.521
							Rata 2=	0.49668

	Label	Area	Mean	StdDev	Min	Max	Angle	Length
31	A118 50k	0.002	103.958	16.184	0	115.56	2.291	0.29
32	A118 50k	0.003	107.851	22.626	0	255	-85.741	0.546
33	A118 50k	0.004	69.442	5.102	57	85.36	-58.617	0.679
34	A118 50k	0.001	69.355	4.245	52	75.306	-140.906	0.239
35	A118 50k	0.003	79.295	4.687	66	87	-28.98	0.431
36	A118 50k	0.003	76.748	6.475	60	87.492	57.131	0.449
37	A118 50k	0.003	76.922	5.797	61	86.91	-41.392	0.456
38	A118 50k	0.002	76.227	5.686	67.066	90.357	41.186	0.308
39	A118 50k	0.002	101.807	7.352	83	116.249	-57.995	0.273
40	A118 50k	0.001	99.865	7.985	71	112.222	39.094	0.239
41	A118 50k	0.004	97.648	5.848	86.073	114	14.273	0.682
42	A118 50k	0.004	98.657	4.366	86.247	106.052	96.038	0.606
43	A118 50k	0.003	82.997	8.069	67	102.614	-48.424	0.48
44	A118 50k	0.002	90.726	12.581	63	109.889	-116.175	0.381
45	A118 50k	0.003	95.004	3.91	86.696	105.055	-55.823	0.568
46	A118 50k	0.002	97.146	8.721	77	115.453	-136.273	0.369
47	A118 50k	0.002	107.087	4.604	92.653	118.163	178.831	0.284
48	A118 50k	0.005	101.633	5.723	87.689	113.642	89.241	0.875
49	A118 50k	0.002	95.179	8.166	76	112	-43.315	0.279
50	A118 50k	0.002	96.607	6.365	74	109.113	-120.53	0.262
51	A118 50k	0.002	98.656	4.953	83.111	108	-86.82	0.314
52	A118 50k	0.002	100.574	4.054	89.667	109.667	-176.186	0.261
53	A118 50k	0.003	102.212	9.552	79.891	118.578	68.429	0.536
54	A118 50k	0.003	104.812	10.657	72	119.2	-17.103	0.473
55	A118 50k	0.002	88.878	11.318	62	107.406	-70.769	0.264
56	A118 50k	0.002	84.843	9.514	69	104.898	-173.234	0.344
57	A118 50k	0.003	83.551	6.206	64	101.744	2.663	0.499
58	A118 50k	0.002	85.186	5.848	71.182	101	87.397	0.383
59	A118 50k	0.001	90.42	7.528	77.357	104.524	-9.689	0.241
60	A118 50k	0.003	101.674	4.481	80	110.615	77.989	0.557

	Label	Area	Mean	StdDev	Min	Max	r2	r	d	Perhitungan Area
1	A118 50k	0.415	75.461	10.214	50	117	0.2075	0.45552	0.91104	
2	A118 50k	0.21	77.269	9.617	47	104	0.105	0.32404	0.64807	
3	A118 50k	0.367	87.442	11.15	46	115	0.1835	0.42837	0.85674	
4	A118 50k	0.494	86.783	8.412	48	132	0.247	0.49699	0.99398	
5	A118 50k	0.257	85.33	10.626	44	132	0.1285	0.35847	0.71694	
6	A118 50k	0.343	86.206	10.324	45	117	0.1715	0.41413	0.82825	
7	A118 50k	0.49	93.757	12.443	49	131	0.245	0.49497	0.98995	
8	A118 50k	0.148	89.362	6.357	66	113	0.074	0.27203	0.54406	
9	A118 50k	0.099	92.163	9.099	67	120	0.0495	0.22249	0.44497	
10	A118 50k	0.16	68.236	7.209	37	92	0.08	0.28284	0.56569	
11	A118 50k	0.147	76.575	6.835	53	94	0.0735	0.27111	0.54222	
12	A118 50k	0.07	84.802	12.358	58	127	0.035	0.18708	0.37417	
13	A118 50k	0.802	95.545	17.778	56	157	0.401	0.63325	1.26649	
14	A118 50k	0.207	101.823	13.636	60	137	0.1035	0.32171	0.64343	
15	A118 50k	0.111	93.309	7.112	67	124	0.0555	0.23558	0.47117	
16	A118 50k	0.047	99.157	4.51	83	114	0.0235	0.1533	0.30659	
17	A118 50k	0.132	85.742	5.945	67	108	0.066	0.2569	0.51381	
18	A118 50k	0.146	95.064	9.353	69	130	0.073	0.27019	0.54037	
19	A118 50k	0.06	87.822	11.094	58	113	0.03	0.17321	0.34641	
20	A118 50k	0.181	82.513	5.923	61	101	0.0905	0.30083	0.60166	
21	A118 50k	0.35	87.327	10.633	43	125	0.175	0.41833	0.83666	
22	A118 50k	0.041	92.375	9.613	70	119	0.0205	0.14318	0.28636	
23	A118 50k	0.208	102.324	7.473	66	123	0.104	0.32249	0.64498	
24	A118 50k	0.048	97.893	12.343	58	131	0.024	0.15492	0.30984	
25	A118 50k	0.042	90.534	10.821	63	123	0.021	0.14491	0.28983	
26	A118 50k	0.319	88.825	11.761	50	124	0.1595	0.39937	0.79875	
27	A118 50k	0.099	73.847	8.201	52	104	0.0495	0.22249	0.44497	
28	A118 50k	0.31	78.323	8.44	42	102	0.155	0.3937	0.7874	
29	A118 50k	0.15	75.173	7.497	45	100	0.075	0.27386	0.54772	
30	A118 50k	0.139	83.438	9.17	55	121	0.0695	0.26363	0.52726	
									0.61933	

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1	A119 100l	0.001	79.685	4.605	67.636	92.549	19.654	0.345		119 100kx
2	A119 100l	0.001	80.909	4.706	69.327	96.347	-59.394	0.478		
3	A119 100l	0.003	74.731	4.503	55	86.104	-51.992	0.876		
4	A119 100l	0.002	76.201	12.925	44	109.683	48.668	0.641		
5	A119 100l	0.001	74.467	4.692	64.69	86.395	-41.855	0.374		
6	A119 100l	0.001	72.16	6.252	56.732	92.09	62.103	0.446		
7	A119 100l	6.81E-04	69.709	5.948	52.1	83.25	-91.432	0.232		
8	A119 100l	4.71E-04	72.373	3.959	62.853	79.32	-167.471	0.16		
9	A119 100l	0.001	61.182	3.36	52.263	69.025	-35.218	0.362		
10	A119 100l	5.71E-04	63.84	6.916	53.317	82.237	38.928	0.194		
11	A119 100l	2.86E-04	86.88	5.191	77.066	98.424	-169.38	0.094		
12	A119 100l	7.73E-04	85.295	6.369	66	98.921	97.595	0.263		
13	A119 100l	3.11E-04	71.075	3.88	63	80.778	-26.565	0.104		
14	A119 100l	2.94E-04	71.668	4.31	63.73	83.661	-107.354	0.097		
15	A119 100l	4.12E-04	78.413	6.033	64.319	90.896	-33.024	0.138		
16	A119 100l	5.21E-04	78.77	5.04	70.095	92.446	-133.668	0.176		
17	A119 100l	0.001	68.455	4.759	51.97	79.186	27.582	0.438		
18	A119 100l	0.001	67.807	4.595	57.403	77.137	133.995	0.467		
19	A119 100l	5.80E-04	62.334	2.927	54.707	67.837	-52.125	0.198		
20	A119 100l	6.13E-04	62.428	3.216	53.765	73	-129.401	0.21		
21	A119 100l	0.001	66.476	4.723	53	81	52.633	0.401		
22	A119 100l	8.15E-04	64.623	4.418	56.422	77.667	-46.685	0.279		
23	A119 100l	5.97E-04	72.191	7.188	62.265	90	-39.174	0.202		
24	A119 100l	8.07E-04	64.533	6.241	50.236	80.335	-42.436	0.275		
25	A119 100l	0.001	65.929	3.659	57.193	74.136	-131.009	0.353		
26	A119 100l	6.05E-04	58.177	4.151	44.345	67.611	-80.272	0.206		
27	A119 100l	6.72E-04	59.45	3.912	40	65.803	-156.038	0.228		
28	A119 100l	0.003	73.246	4.964	61.61	87.584	-55.098	0.512		
29	A119 100l	0.001	65.915	9.334	49	82.051	51.71	0.421		
30	A119 100l	4.71E-04	77.517	6.06	64	89.704	-25.641	0.161		
								0.31103		

1	A119 100l	0.145	81.961	8.342	57	124	0.0725	0.26926	0.53852		119 100kx area
2	A119 100l	0.446	73.4	10.047	32	116	0.223	0.47223	0.94446		
3	A119 100l	0.197	66.273	6.673	40	91	0.0985	0.31385	0.62769		
4	A119 100l	0.03	62.631	4.627	46	80	0.015	0.12247	0.24495		
5	A119 100l	0.018	84.461	8.395	50	105	0.009	0.09487	0.18974		
6	A119 100l	0.102	74.003	6.82	48	103	0.051	0.22583	0.45166		
7	A119 100l	0.126	64.835	6.108	41	92	0.063	0.251	0.502		
8	A119 100l	0.142	61.817	6.363	39	93	0.071	0.26646	0.53292		
9	A119 100l	0.032	70.217	6.123	47	88	0.016	0.12649	0.25298		
10	A119 100l	0.011	70.634	6.254	52	93	0.0055	0.07416	0.14832		
11	A119 100l	0.623	62.507	7.165	35	106	0.3115	0.55812	1.11624		
12	A119 100l	0.096	65.83	8.093	34	96	0.048	0.21909	0.43818		
13	A119 100l	0.024	76.214	8.12	50	102	0.012	0.10954	0.21909		
14	A119 100l	0.536	67.558	11.826	33	109	0.268	0.51769	1.03537		
15	A119 100l	0.098	72.843	7.967	43	103	0.049	0.22136	0.44272		
16	A119 100l	0.179	48.54	5.964	29	85	0.0895	0.29917	0.59833		
17	A119 100l	0.096	47.409	4.422	29	67	0.048	0.21909	0.43818		
18	A119 100l	0.053	56.201	5.621	32	76	0.0265	0.16279	0.32558		
19	A119 100l	0.242	69.412	9.088	39	103	0.121	0.34785	0.6957		
20	A119 100l	0.035	63.261	6.166	42	86	0.0175	0.13229	0.26458		
21	A119 100l	0.008	62.305	6.334	46	88	0.004	0.06325	0.12649		
22	A119 100l	0.015	51.414	5.123	33	67	0.0075	0.0866	0.17321		
23	A119 100l	0.065	51.525	4.891	34	73	0.0325	0.18028	0.36056		
24	A119 100l	0.076	57.319	4.783	41	78	0.038	0.19494	0.38987		
25	A119 100l	0.103	69.273	7.007	42	102	0.0515	0.22694	0.45387		
26	A119 100l	0.03	49.545	5.204	29	66	0.015	0.12247	0.24495		
27	A119 100l	0.033	45.704	4.748	27	65	0.0165	0.12845	0.2569		
28	A119 100l	1.28	63.293	10.128	32	109	0.64	0.8	1.6		
29	A119 100l	0.075	61.356	18.669	0	255	0.0375	0.19365	0.3873		
30	A119 100l	0.023	60.961	5.819	41	86	0.0115	0.10724	0.21448		
									0.47383		

	Label	Area	Mean	StdDev	Min	Max	Angle	Length
1	A119 50k	0.005	82.052	4.213	69	90.091	-41.923	0.768
2	A119 50k	0.004	81.003	12.31	58.815	110.108	42.879	0.668
3	A119 50k	0.002	85.96	5.159	78.872	103.498	-37.519	0.412
4	A119 50k	0.002	89.224	8.149	79.91	112.388	-126.304	0.355
5	A119 50k	0.004	87.492	10.455	66.847	107.835	-52.461	0.699
6	A119 50k	0.004	88.459	8.998	72.898	110.196	-131.56	0.756
7	A119 50k	0.005	69.769	4.034	62.684	87.941	-49.586	0.773
8	A119 50k	0.004	70.838	4.28	61.498	87	-136.736	0.681
9	A119 50k	0.003	58.359	4.142	47.496	66.639	-49.611	0.513
10	A119 50k	0.004	60.224	3.891	53.537	72.4	-142.374	0.707
11	A119 50k	0.004	76.594	8.256	47	94.32	-46.109	0.639
12	A119 50k	0.003	72.403	5.002	53	83.057	33.864	0.534
13	A119 50k	0.004	58.553	5.751	41	68.174	-27.979	0.634
14	A119 50k	0.003	56.97	4.477	39	66.372	-122.067	0.571
15	A119 50k	0.004	56.244	8.867	32.367	74.347	-42.51	0.759
16	A119 50k	0.003	56.67	2.682	50.909	64.459	43.647	0.524
17	A119 50k	0.004	68.928	10.806	49	91	-19.502	0.594
18	A119 50k	0.002	83.144	15.824	60.214	118.205	-113.199	0.311
19	A119 50k	0.004	73.728	8.092	45.033	88.288	-54.934	0.741
20	A119 50k	0.006	63.963	9.556	44	83.307	-144.982	1.047
21	A119 50k	0.004	84.328	6.032	72.299	104.246	-82.26	0.606
22	A119 50k	0.003	78.769	13.204	0	100.531	22.457	0.473
23	A119 50k	0.002	69.736	4.195	56	81.696	-63.947	0.292
24	A119 50k	0.002	69.271	5.917	55	84.69	30.379	0.392
25	A119 50k	0.002	75.829	6.804	64.63	90.13	-96.203	0.27
26	A119 50k	0.003	70.958	5.956	56.347	81.931	3.965	0.59
27	A119 50k	0.002	61.232	4.37	54	73.754	-5.793	0.404
28	A119 50k	0.002	64.576	7.311	52	82	90	0.338
29	A119 50k	0.002	58.81	8.465	45.554	78.154	-50.194	0.319
30	A119 50k	0.002	56.051	3.389	43	63.188	-133.112	0.375
							rata2	0.59142

	Label	Area	Mean	StdDev	Min	Max	Angle	Length
31	A119 50k	0.003	71.554	5.505	57	84.83	-19.323	0.476
32	A119 50k	0.003	70.884	3.79	60.671	81.128	-119.11	0.587
33	A119 50k	0.007	60.204	6.783	47.616	82.417	-48.537	1.136
34	A119 50k	0.003	65.418	8.915	48	81.532	-132.879	0.446
35	A119 50k	0.004	55.279	7.964	41.833	72.719	-48.724	0.698
36	A119 50k	0.004	56.616	9.065	43.551	78.203	41.009	0.711
37	A119 50k	0.005	37.04	5.897	25.692	49.488	53.973	0.793
38	A119 50k	0.004	35.208	3.075	26.925	42.104	135.982	0.722
39	A119 50k	0.006	58.846	6.621	37	72.77	0.939	1.067
40	A119 50k	0.005	60.639	3.646	48	73.362	95.599	0.896
41	A119 50k	0.004	45.773	4.041	34	53.086	-50.954	0.676
42	A119 50k	0.003	46.826	3.945	36.433	55.878	46.353	0.524
43	A119 50k	0.003	62.923	4.009	53.462	73.111	23.703	0.522
44	A119 50k	0.002	63.981	5.864	50.651	78.6	111.801	0.377
45	A119 50k	0.003	68.848	4.236	59.697	78.006	21.656	0.427
46	A119 50k	0.002	67.878	4.148	60	78.407	-56.31	0.315
47	A119 50k	0.006	73.649	6.386	52	94.096	-53.588	1.022
48	A119 50k	0.003	68.202	12.792	41	88.214	47.816	0.504
49	A119 50k	0.006	62.247	4.468	51.558	72.651	-75.596	1.102
50	A119 50k	0.003	67.601	5.976	53.532	79.245	18.435	0.572
51	A119 50k	0.004	68.059	8.15	54.032	83.54	-33.563	0.728
52	A119 50k	0.003	67.037	8.859	47	90.471	53.973	0.476
53	A119 50k	0.003	46.98	4.823	36.943	55.782	-40.84	0.455
54	A119 50k	0.003	47.083	2.954	39.968	54.355	41.698	0.43
55	A119 50k	0.003	59.397	5.497	49	74.011	-46.614	0.586
56	A119 50k	0.002	56.684	6.251	41.316	67.105	42.138	0.33
57	A119 50k	0.006	59.144	4.561	46.811	70.007	-10.335	1.008
58	A119 50k	0.004	63.852	3.915	55.941	74	41.82	0.595
59	A119 50k	0.001	58.263	5.678	48.993	69.395	-60.945	0.24
60	A119 50k	0.002	56.786	3.805	49.603	67.17	34.563	0.319

	Label	Area	Mean	StdDev	Min	Max	r2	r	d
1	A119 50k:	0.411	62.046	6.765	41	100	0.2055	0.45332	0.90664
2	A119 50k:	0.597	67.175	9.353	35	103	0.2985	0.54635	1.0927
3	A119 50k:	0.155	74.004	8.601	48	103	0.0775	0.27839	0.55678
4	A119 50k:	0.129	64.72	6.572	34	87	0.0645	0.25397	0.50794
5	A119 50k:	0.076	56.806	6.45	37	77	0.038	0.19494	0.38987
6	A119 50k:	0.228	76.168	15.381	35	126	0.114	0.33764	0.67528
7	A119 50k:	0.439	87.229	11.971	51	132	0.2195	0.46851	0.93702
8	A119 50k:	0.145	57.096	5.866	40	78	0.0725	0.26926	0.53852
9	A119 50k:	0.109	68.844	8.298	42	103	0.0545	0.23345	0.4669
10	A119 50k:	0.387	57.557	10.726	30	104	0.1935	0.43989	0.87977
11	A119 50k:	0.33	65.618	10.47	40	97	0.165	0.4062	0.8124
12	A119 50k:	0.33	59.858	6.313	42	88	0.165	0.4062	0.8124
13	A119 50k:	0.135	64.092	6.128	46	89	0.0675	0.25981	0.51962
14	A119 50k:	0.216	69.513	7.87	38	93	0.108	0.32863	0.65727
15	A119 50k:	0.386	70.396	6.568	49	107	0.193	0.43932	0.87864
16	A119 50k:	0.285	48.994	8.627	28	86	0.1425	0.37749	0.75498
17	A119 50k:	0.125	70.05	6.488	51	95	0.0625	0.25	0.5
18	A119 50k:	0.502	70.895	13.759	36	114	0.251	0.501	1.002
19	A119 50k:	0.157	48.779	6.246	31	88	0.0785	0.28018	0.56036
20	A119 50k:	0.386	78.589	11.233	35	126	0.193	0.43932	0.87864
21	A119 50k:	0.116	88.082	9.556	49	134	0.058	0.24083	0.48166
22	A119 50k:	0.09	57.129	6.896	37	85	0.045	0.21213	0.42426
23	A119 50k:	0.344	34.591	5.355	14	56	0.172	0.41473	0.82946
24	A119 50k:	0.322	54.908	6.881	27	75	0.161	0.40125	0.8025
25	A119 50k:	0.523	64.098	7.122	40	98	0.2615	0.51137	1.02274
26	A119 50k:	0.746	59.233	9.283	18	91	0.373	0.61074	1.22147
27	A119 50k:	0.231	79.205	11.733	35	124	0.1155	0.33985	0.67971
28	A119 50k:	0.388	53.019	9.265	15	90	0.194	0.44045	0.88091
29	A119 50k:	0.313	70.417	9.032	32	101	0.1565	0.3956	0.7912
30	A119 50k:	0.415	57.397	10.283	24	92	0.2075	0.45552	0.91104
									0.74576

d. K3T2

1	A120 100l	0.002	86.049	8.122	0	98.4	-50.755	0.536		31	A120 100l	3.85E-04	39.208	7.605	26.12	53.05	-46.848	0.128
2	A120 100l	0.001	83.727	9.686	56.743	98.556	31.329	0.472		32	A120 100l	6.58E-04	41.99	4.383	28.421	50	42.879	0.223
3	A120 100l	4.19E-04	82.743	8.391	70.333	100.424	24.444	0.141		33	A120 100l	5.73E-04	39.646	6.288	25.455	52.182	-83.089	0.194
4	A120 100l	7.35E-04	81.258	12.064	56.782	112.804	-60.422	0.249		34	A120 100l	4.87E-04	41.482	2.936	34.913	47.337	21.038	0.163
5	A120 100l	0.001	60.457	7.943	44.09	81.719	-80.655	0.468		35	A120 100l	5.47E-04	45.502	3.76	35	53	-18.435	0.185
6	A120 100l	0.001	65.965	9.732	53.006	95.404	-149.184	0.388		36	A120 100l	4.79E-04	47.388	4.835	36.42	59.106	70.907	0.161
7	A120 100l	5.39E-04	45.834	7.129	34.336	61.831	-35.754	0.18		37	A120 100l	0.001	38.823	5.877	24	51.264	-7.461	0.495
8	A120 100l	7.10E-04	44.12	8.73	24	65	75.964	0.241		38	A120 100l	0.001	36.381	3.804	26.222	47.022	-105.945	0.426
9	A120 100l	0.001	47.634	8.741	32	72.256	47.49	0.381		39	A120 100l	6.16E-04	53.529	5.996	42.258	66.791	-38.157	0.208
10	A120 100l	0.002	47.868	9.719	33	83.31	-37.674	0.584		40	A120 100l	4.53E-04	47.833	7.057	37.746	65.663	-147.529	0.152
11	A120 100l	8.46E-04	43.463	4.618	27	53.04	-28.142	0.285		41	A120 100l	7.95E-04	42.526	7.701	27	64.371	-44.119	0.269
12	A120 100l	8.98E-04	45.146	5.901	34.88	59.264	-109.134	0.303		42	A120 100l	3.33E-04	46.201	7.657	31.607	63.593	-108.435	0.111
13	A120 100l	7.95E-04	52.496	4.236	42.391	63.435	-4.97	0.27		43	A120 100l	6.16E-04	34.725	3.495	26.128	43.528	-16.39	0.207
14	A120 100l	0.001	48.629	6.729	30.466	61.042	-63.435	0.432		44	A120 100l	4.10E-04	31.78	4.38	23	40.66	64.537	0.136
15	A120 100l	5.04E-04	45.157	4.231	34.966	55.172	-86.055	0.17		45	A120 100l	8.89E-04	41.98	4.684	34.751	58.699	-29.055	0.301
16	A120 100l	8.46E-04	41.64	3.822	31.714	52.936	-16.587	0.287		46	A120 100l	6.24E-04	46.314	5.36	35.335	58.5	-136.123	0.211
17	A120 100l	6.75E-04	52.506	7.644	32	71	-90	0.228		47	A120 100l	5.56E-04	61.288	9.58	44.406	82	-25.769	0.188
18	A120 100l	7.61E-04	51.126	5.2	41.682	65	-178.698	0.257		48	A120 100l	4.87E-04	61.86	5.191	46	73.48	55.176	0.164
19	A120 100l	4.28E-04	57.917	5.515	44.487	70.88	-34.992	0.143		49	A120 100l	5.13E-04	42.463	4.25	31.668	49.305	-47.726	0.174
20	A120 100l	5.64E-04	62.04	6.641	42	79.723	-113.429	0.191		50	A120 100l	4.79E-04	42.411	4.694	33.855	55.403	49.399	0.162
21	A120 100l	0.001	46.916	8.334	32.113	67.029	-21.523	0.446		51	A120 100l	2.65E-04	69.14	3.215	62	75.133	7.595	0.088
22	A120 100l	0.001	57.075	10.821	40.912	81.08	-126.501	0.364		52	A120 100l	3.16E-04	66.768	9.147	48.901	81	116.565	0.105
23	A120 100l	6.16E-04	35.48	3.144	25.273	42.416	-11.31	0.209		53	A120 100l	6.75E-04	32.121	3.169	25.852	39.556	-29.197	0.228
24	A120 100l	9.49E-04	36.509	4.294	28.865	50.535	-121.675	0.323		54	A120 100l	7.44E-04	31.816	2.794	24.599	38.209	-111.801	0.252
25	A120 100l	0.001	51.14	10.657	28.547	74.125	-89.105	0.374		55	A120 100l	5.22E-04	47.378	4.988	36.442	59.111	-21.448	0.176
26	A120 100l	8.04E-04	53.551	3.572	41.639	61.106	-171.347	0.272		56	A120 100l	3.51E-04	47.669	3.573	41	59.3	-107.526	0.117
27	A120 100l	3.59E-04	44.363	6.593	27.735	52.432	-78.69	0.119		57	A120 100l	2.65E-04	36.057	4.28	27	43	-53.13	0.088
28	A120 100l	3.85E-04	50.092	5.134	38	60.905	-144.162	0.13		58	A120 100l	3.85E-04	37.161	4.712	28.227	46.091	-149.931	0.128
29	A120 100l	4.02E-04	51.681	5.267	39	63	-90	0.135		59	A120 100l	4.96E-04	43.785	5.877	36.917	61.236	-36.469	0.167
30	A120 100l	8.29E-04	49.137	8.188	31.5	74.5	4.764	0.282		60	A120 100l	5.64E-04	39.656	3.528	31.496	50.4	-152.65	0.191
									rata2	0.244								

							r^2	r	d		
1	A120 100l	0.316	77.807	11.922	27	110	0.158	0.39749	0.79498		120 100kx area
2	A120 100l	0.027	77.639	10.532	51	114	0.0135	0.11619	0.23238		
3	A120 100l	0.148	47.339	9.428	24	92	0.074	0.27203	0.54406		
4	A120 100l	0.075	46.887	9.045	22	88	0.0375	0.19365	0.3873		
5	A120 100l	0.076	50.282	8.026	27	88	0.038	0.19494	0.38987		
6	A120 100l	0.027	47.251	8.53	24	73	0.0135	0.11619	0.23238		
7	A120 100l	0.139	62.961	12.904	22	111	0.0695	0.26363	0.52726		
8	A120 100l	0.036	51.025	6.649	30	76	0.018	0.13416	0.26833		
9	A120 100l	0.041	43.618	7.067	19	68	0.0205	0.14318	0.28636		
10	A120 100l	0.043	37.773	4.833	23	54	0.0215	0.14663	0.29326		
11	A120 100l	0.111	50.066	9.568	24	82	0.0555	0.23558	0.47117		
12	A120 100l	0.116	48.614	9.236	25	88	0.058	0.24083	0.48166		
13	A120 100l	0.027	41.83	8.844	19	73	0.0135	0.11619	0.23238		
14	A120 100l	0.028	41.722	6.95	17	64	0.014	0.11832	0.23664		
15	A120 100l	0.027	40.624	7.199	14	62	0.0135	0.11619	0.23238		
16	A120 100l	0.022	40.007	7.447	21	72	0.011	0.10488	0.20976		
17	A120 100l	0.029	42.971	5.176	24	59	0.0145	0.12042	0.24083		
18	A120 100l	0.021	59.453	7.812	35	84	0.0105	0.10247	0.20494		
19	A120 100l	0.022	46.63	5.751	22	68	0.011	0.10488	0.20976		
20	A120 100l	0.012	46.376	6.231	22	67	0.006	0.07746	0.15492		
21	A120 100l	0.023	47.889	9.27	21	75	0.0115	0.10724	0.21448		
22	A120 100l	0.037	50.696	8.996	23	80	0.0185	0.13601	0.27203		
23	A120 100l	0.031	43.512	8.862	21	75	0.0155	0.1245	0.249		
24	A120 100l	0.237	37.18	6.314	17	68	0.1185	0.34424	0.68848		
25	A120 100l	0.009	40.779	7.371	19	65	0.0045	0.06708	0.13416		
26	A120 100l	0.021	47.71	6.213	25	67	0.0105	0.10247	0.20494		
27	A120 100l	0.062	45.482	7.512	21	68	0.031	0.17607	0.35214		
28	A120 100l	0.015	48.656	5.523	29	66	0.0075	0.0866	0.17321		
29	A120 100l	0.008	38.31	4.918	25	54	0.004	0.06325	0.12649		
30	A120 100l	0.025	52.469	7.086	28	74	0.0125	0.1118	0.22361		
									0.30897		

	Label	Area	Mean	StdDev	Min	Max	Angle	Length
1	A120 50k	0.005	86.926	11.961	24	105.137	21.125	0.828
2	A120 50k	0.004	85.034	9.13	56.621	98.513	-67.816	0.65
3	A120 50k	0.005	77.177	7.884	56	94.318	-45.279	0.848
4	A120 50k	0.005	85.4	10.337	66.552	107.077	-139.667	0.813
5	A120 50k	0.005	82.271	14.182	47	125.818	-66.457	0.893
6	A120 50k	0.004	82.741	4.06	70.456	92.26	26.154	0.73
7	A120 50k	0.005	62.064	3.361	53.753	72.73	42.421	0.919
8	A120 50k	0.004	61.555	14.09	37	91.385	146.174	0.683
9	A120 50k	0.01	72.561	8.924	47.691	99.125	2.637	1.78
10	A120 50k	0.003	72.867	26.31	0	255	-90	0.433
11	A120 50k	0.003	62.469	6.132	48.833	79.272	40.156	0.49
12	A120 50k	0.002	61.156	4.909	52.662	72.387	-49.086	0.348
13	A120 50k	0.003	58.215	8.034	42	77.914	-63.759	0.463
14	A120 50k	0.002	52.245	3.834	43.966	62	30.114	0.338
15	A120 50k	0.002	64.327	12.278	42.609	88.826	-94.97	0.27
16	A120 50k	0.002	65.728	8.47	46.333	82	-3.814	0.352
17	A120 50k	0.002	52.594	7.802	38	72	-47.49	0.381
18	A120 50k	0.002	54.138	7.226	36	63.245	-145.751	0.333
19	A120 50k	0.002	72.9	4.31	62.203	79.273	-123.69	0.274
20	A120 50k	0.002	73.921	4.948	65.657	84.336	-31.264	0.383
21	A120 50k	0.003	79.962	20.147	27.901	108	-91.888	0.532
22	A120 50k	0.003	87.13	7.464	63	102.224	-38.66	0.449
23	A120 50k	0.003	63.382	11.491	40	94	-90	0.515
24	A120 50k	0.002	65.77	12.023	0	86.286	5.44	0.37
25	A120 50k	0.003	62.383	10.613	37.762	83.714	-84.56	0.493
26	A120 50k	0.003	61.662	6.24	48.185	75	4.939	0.475
27	A120 50k	0.005	86.594	14.323	61.265	124.691	91.264	0.796
28	A120 50k	0.003	84.387	4.807	71	94	0	0.538
29	A120 50k	0.002	66.594	4.527	58.282	83.693	-28.474	0.393
30	A120 50k	0.003	64.795	7.076	42	79.972	59.534	0.577
							rata2	0.51362

	Label	Area	Mean	StdDev	Min	Max	Angle	Length
31	A120 50k	0.002	89.382	12.399	59.13	114	-70.56	0.422
32	A120 50k	0.001	93.094	4.577	84.091	104.091	8.616	0.195
33	A120 50k	0.004	81.083	8.373	59	105.726	-83.601	0.63
34	A120 50k	0.002	84.588	4.158	74	92.942	3.318	0.404
35	A120 50k	0.008	44.997	6.669	29.696	59.247	10.808	1.31
36	A120 50k	0.004	43.833	3.477	34.872	57.35	108.925	0.649
37	A120 50k	0.003	60.818	18.006	27.395	92.939	-80.789	0.438
38	A120 50k	0.002	56.99	7.496	41.418	70.643	22.932	0.33
39	A120 50k	0.005	76.37	7.436	46	90.025	12.875	0.84
40	A120 50k	0.004	72.629	8.902	59.184	94.493	98.746	0.615
41	A120 50k	0.003	54.451	10.747	28.563	85.703	64.134	0.429
42	A120 50k	0.005	51.042	4.904	34	60.016	-29.745	0.802
43	A120 50k	0.003	57.991	14.516	27.784	88.6	-41.186	0.497
44	A120 50k	0.002	56.564	6.373	43	71.364	36.469	0.335
45	A120 50k	0.002	45.788	5.177	29	56.625	25.427	0.395
46	A120 50k	0.002	47.837	13.536	23	77.479	107.7	0.289
47	A120 50k	0.003	78.951	8.339	62.636	96.075	27.216	0.46
48	A120 50k	0.002	83.682	13.448	53	113.746	-66.682	0.369
49	A120 50k	0.003	66.043	7.264	39.63	77.393	49.994	0.428
50	A120 50k	0.002	71.369	7.489	59.765	88.118	-28.072	0.298
51	A120 50k	0.003	67.86	7.469	52	80.353	30.579	0.448
52	A120 50k	0.002	65.548	9.17	48	80.531	-58.627	0.281
53	A120 50k	0.002	46.345	5.259	32	57.671	-124.563	0.32
54	A120 50k	0.001	48.59	10.672	30	74	-36.027	0.239
55	A120 50k	0.001	79.152	11.477	63.213	104.119	-32.005	0.221
56	A120 50k	0.001	77.962	4.84	70.28	89.127	60.945	0.241
57	A120 50k	0.004	57.021	4.623	44.75	68.948	-97.181	0.749
58	A120 50k	0.002	57.469	5.023	42	72.552	174.036	0.394
59	A120 50k	0.001	70.907	5.935	55	80.488	-40.764	0.224
60	A120 50k	0.001	71.039	8.698	43	86.812	69.624	0.218

	Label	Area	Mean	StdDev	Min	Max	r2	r	d
1	A120 50k	0.431	73.377	8.047	30	106	0.2155	0.46422	0.92844
2	A120 50k	0.11	56.784	11.535	28	96	0.055	0.23452	0.46904
3	A120 50k	0.582	80.055	14.521	14	113	0.291	0.53944	1.07889
4	A120 50k	0.313	51.423	9.189	22	90	0.1565	0.3956	0.7912
5	A120 50k	0.044	78.526	10.867	53	122	0.022	0.14832	0.29665
6	A120 50k	0.618	77.911	11.108	34	122	0.309	0.55588	1.11176
7	A120 50k	0.382	57.65	7.78	25	88	0.191	0.43704	0.87407
8	A120 50k	0.139	68.613	6.523	44	98	0.0695	0.26363	0.52726
9	A120 50k	0.084	85.36	14.546	39	122	0.042	0.20494	0.40988
10	A120 50k	0.096	72.586	8.011	42	95	0.048	0.21909	0.43818
11	A120 50k	0.121	55.379	14.548	21	97	0.0605	0.24597	0.49193
12	A120 50k	0.11	51.885	10.086	23	84	0.055	0.23452	0.46904
13	A120 50k	0.081	49.052	10.745	22	92	0.0405	0.20125	0.40249
14	A120 50k	0.032	71.814	10.616	33	97	0.016	0.12649	0.25298
15	A120 50k	0.067	49.567	10.257	23	76	0.0335	0.18303	0.36606
16	A120 50k	0.457	66.011	16.517	27	127	0.2285	0.47802	0.95603
17	A120 50k	0.157	62.661	10.867	28	103	0.0785	0.28018	0.56036
18	A120 50k	0.558	81.692	14.446	36	138	0.279	0.5282	1.05641
19	A120 50k	0.134	63.621	13.822	19	116	0.067	0.25884	0.51769
20	A120 50k	0.194	84.236	16.111	31	122	0.097	0.31145	0.6229
21	A120 50k	0.338	87.951	12.742	51	134	0.169	0.4111	0.82219
22	A120 50k	0.125	76.788	11.169	41	118	0.0625	0.25	0.5
23	A120 50k	0.197	69.047	8.135	43	99	0.0985	0.31385	0.62769
24	A120 50k	0.823	45.84	9.182	22	94	0.4115	0.64148	1.28297
25	A120 50k	0.195	81.642	7.18	55	109	0.0975	0.31225	0.6245
26	A120 50k	0.532	82.561	11.298	46	131	0.266	0.51575	1.0315
27	A120 50k	0.071	65.444	12.887	27	103	0.0355	0.18841	0.37683
28	A120 50k	0.109	54.549	7.857	30	82	0.0545	0.23345	0.4669
29	A120 50k	0.14	59.882	8.075	30	89	0.07	0.26458	0.52915
30	A120 50k	0.102	67.62	11.092	34	103	0.051	0.22583	0.45166
									0.64449