DAFTAR PUSTAKA

Bahlburg H, Dobrzinski N, 2009, *A review of the Chemical Index of Alteration (CIA) and its application to the study of Neoproterozoic glacial deposits and climate transitions,*The Geological Record of Neoproterozoic Glaciations. Geological Society, London, Memoir

Bain C, Ritchie PSFR, Clark DR, Duthie DM, 1980, *Geochemistry and mineralogy of weathered basalt from Morvern, Scotland*, Mineralogical Magazine,v.43.

Bakosurtanal, 1991.*Peta Rupa Bumi Lembar Barru nomor 2011–61,* Edisi I,Cibinong, Bogor.

Blond JSL, et al, 2015, *Weathering of the Ethiopian volcanic province: A new weathering index to characterize and compare soils***,** American Mineralogist, V 100.

Delvigne J, Bisdom EBA, Stoops G, 1979, *Olivines, Their Pseudomorphs and Secondary Products*, Pedologie XXIX.

Dhannoun HY, Othman SM, Dabbagh SM, 2010,*The Relation Between Index of Alteration and Some Major and Trace Elements Content in Rocks of Injana Formation of North Iraq*,Iraqi National Journal of Earth Science,v.11

Egbert RL, 1989, *A Paleoclimate Classification System with U.S. Western Interior Examples, Golde Colorado*, The Mountain Geologist The Rocky Mountain Association of Geologists.

Gour Dolui, Soumendu C, Chatterjee d N, 2014, *Weathering and ineralogical Alteration of Granitic Rocks in Southern Purulia District, West Bengal, India*, International *Research Journal of Earth Sciences,* ISSN 2321–2527.

Harnois, L., 1988. *The CIW index: a new chemical index of weathering*, Sedimentary Geology .

Herrington R, Boni M, Skarpelis, Large D, 2007, *Palaeoclimate, weathering and ore deposits – a European perspective Richard Herrington* Proceedings of the Ninth Biennial SGA Meeting, Dublin.

Huang, Walter T, Ph.D. 1962. *Petrology*, McGraw-Hill Book Company

Islam MR, Peuraniemib V, Aariob R, Rojstaczera S,2002, *Geochemistry and mineralogy of saprolite in Finnish Lapland Applied Geochemistry*, www.elsevier.com.

Lamb H. H, 1972, *British Isles weather types and a register of daily sequence of circulation patterns*, Geophysical Memoir, v. 116, HMSO, London.

Madukwe HY, Bassey, 2015, *Geochemistry of the Ogwashi-Asaba Formation, Anambra Basin, Nigeria: Implications for Provenance, Tectonic Setting, Source Area Weathering, Classification and Maturity*, International Journal of Science and Technology

Nesbitt, H.W., Young, G.M., 1982, *Early Proterozoic climates and plate motions inferred from major element chemistry of lutite*.

Nesbitt, H.W., Young, G.M., 1989, *Formation and diagenesis of weathering profiles*, Journal of Geology 97.

Ojo OJ, Adepoju SA, Akhassan N, 2014, *Geochemical and Mineralogical Studies of Kaolinitic Clays in Parts of Ilorin, Southwestern Basement Rock Area, Nigeri*a, Universal Journal of Geoscience

Prince JR, Velbel MA, 2003, *Chemical Weathering Indices Applied to Weathering Profiles Developed on Heterogeneus Felsic Metamorphic Parents*, Chemical Geology, Eksevier.

Ramanaidou G, Nahon D. Decarreau A, Melfi, AJ, 1996, *Hematite and Goethite Fromm Duricrust Developed By Lateritic Chemical Weathering of Precambrium Banded Iron Formations*, Clays and Clay Minerals, V.44, No. 1.

Regassa A, Daele v K,Paepe d P, Deckers J,Asrat A, Ranst v E,2014, *Characterizing weathering intensity and trends of geological materials in the Gilgel Gibe catchment, southwestern Ethiopia* Journal of African Earth Sciences

Sheldon ND, Tabor NJ, 2009, *Quantitative paleoenvironmental and paleoclimatic reconstruction using paleosols*, Earth-Science Reviews, journal homepage: www.elsevier.com/locate/earscirev

Sukamto. Rab., 1975. *Structural of Sulawesi In The Light of Plate Tectonic*, Dept. of Mine & Energi, Jakarta.

Sukamto, R, 1982. *Geologi Lembar Pangkajene dan Watampone Bagian Barat, Sulawesi*, Pusat Penelitian dan Pengembangan Geologi Direktorat Pertambangan Umum Departemen Pertambangan dan Energi, Bandung, Indonesia.

Travis, R.B., 1955, *Classification of Rocks*, The Colorado School of Mines, Golden Colorado, USA, p. 1 – 12.

Thornburry, W. D., 1969, *Principles of Geomorphology, Second edition*, John Willey & Sons, Inc, New York, USA.

van Leeuwen, T.M., 1981, *The Geology of Southweast Sulawesi With Special Reference of the Biru Area*, *The Geology and Tectonics of Eastern Indonesia*, Geological Research and Development Centre, Spec. Publ. No. 2, p. 227 – 304.

Vojcu G, Bardoux M, Volco D, 1997, *Mineralogical Norm Calculations Applied Tropical Weathering Profiles*, Mineralogical Magazine,v.61.

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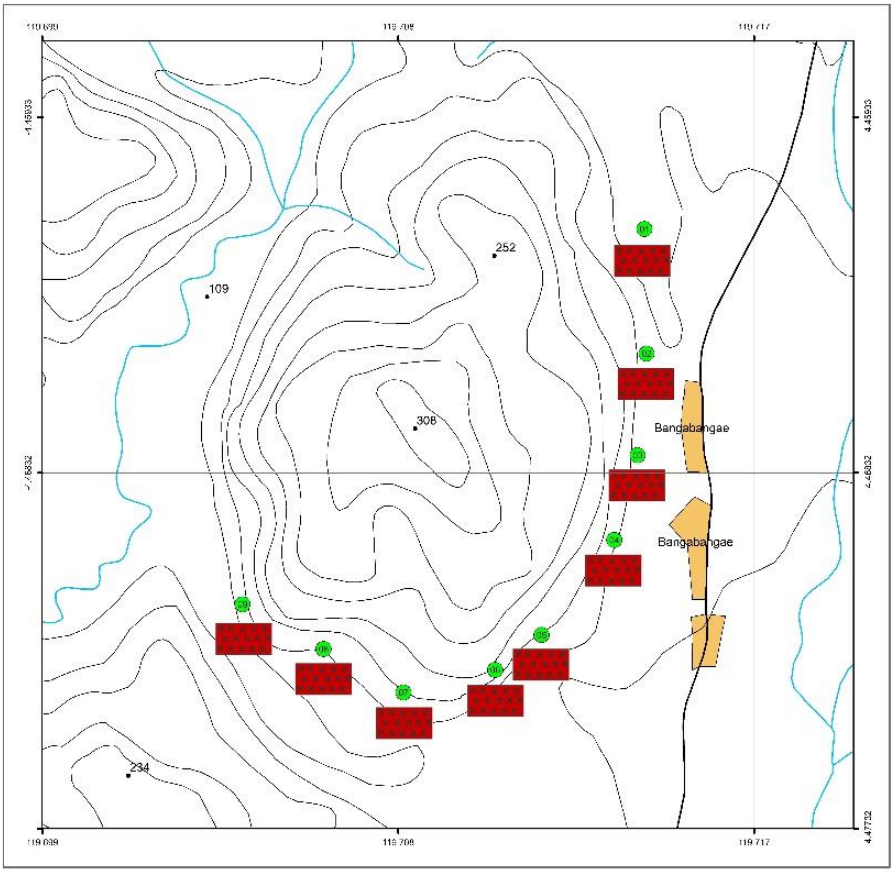
LAMPIRAN



KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN
UNIVERSITAS HASANUDDIN
FAKULTAS TEKNIK
DEPARTEMEN TEKNIK GEOLOGI

PETA PENGAMATAN
DAERAH PALAKKA KECAMATAN TANETERIAJA
KABUPATEN BARRU PROVINSI SULAWESI SELATAN

0 120 240 480
M

SKALA 1 :12.000
Indeks Kontur 6 Meter

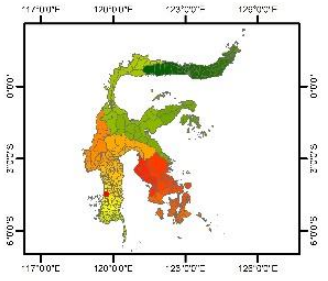
OLEH :
Uswatun Khoiriyah
D611 15 016

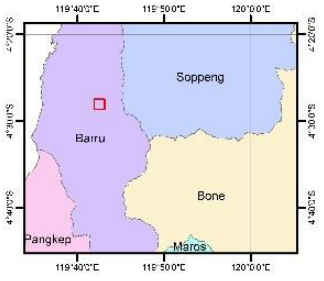
MAKASSAR
2022

Keterangan :

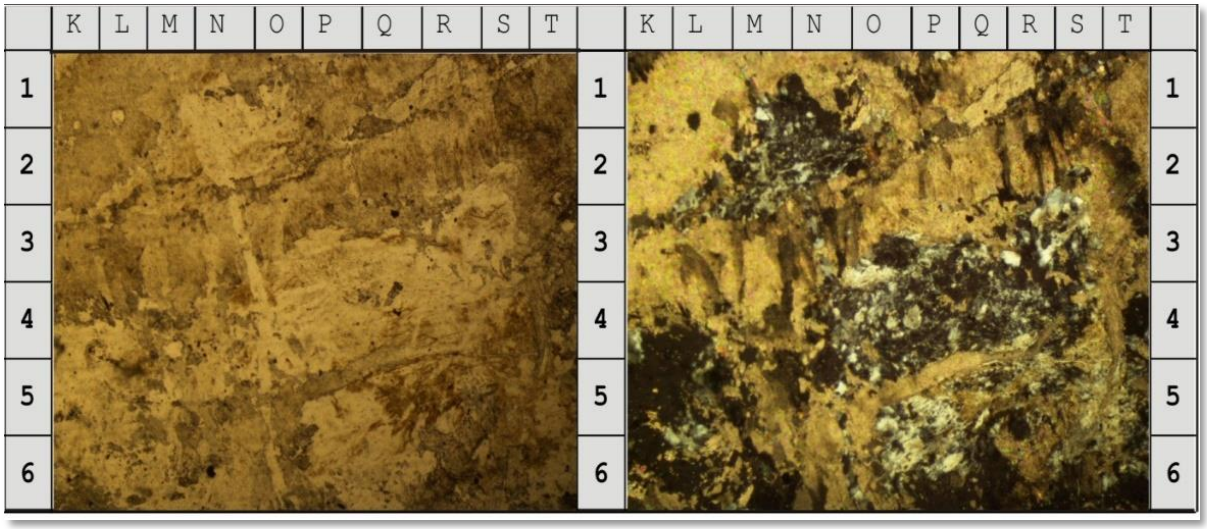
- TITIK STASIUN
- PERIDOTIT
- GARIS KONTUR
- TITIK KETINGGIAN
- SUNGAI
- JALAN
- PEMUKIMAN

PETA TUNJUK LOKASI





Nama Batuan	: Peridotite	Nomor Stasiun	: ST 02
Satuan	: Ultramafik	Lokasi	: Palakka



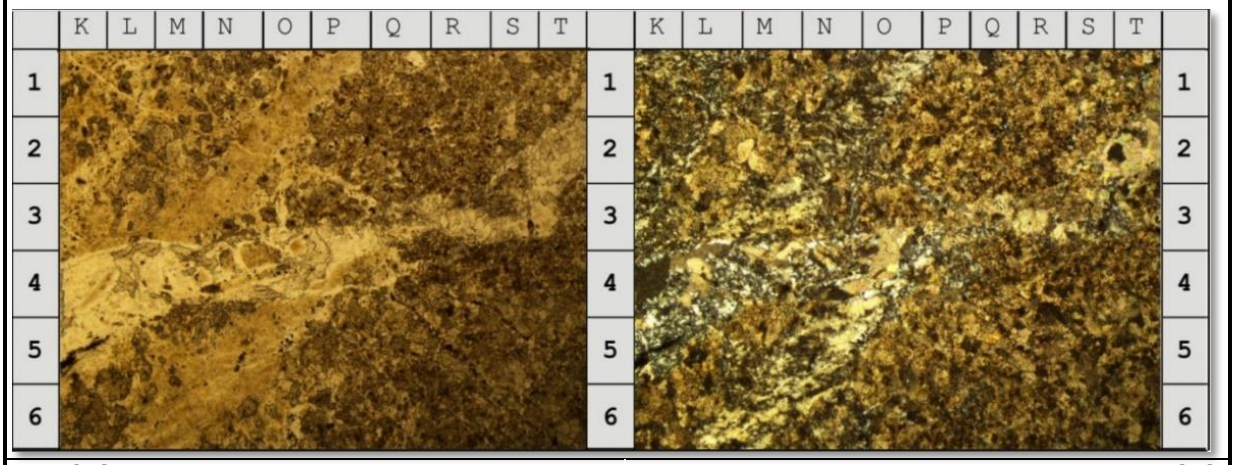
// - Nikol X - Nikol

Tipe Batuan	Batuan Beku
Struktur Batuan	Masif
Kenampakan Mikroskopis	Warna absorbsi Kecoklatan, warna interferensi kuning-kehitaman, tekstur holokristalin, bentuk mineral subhedral – anhedral. Komposisi mineral terdiri dari Olivine, Kuarsa, Hornblende, biotite dan Mineral Opaq, Ukuran mineral < 0,01 mm – 2,11 mm.

Deskripsi Material

Komposisi Material	(%)	Keterangan Optik Material
Olivine (S1)	35	Warna absorbsi kuning kecokelatan, bentuk subhedral-anhedral , belahan tidak ada, relief rendah, ukuran mineral 0,3-0,5 mm, warna interferensi hijau-biru, pecahan tidak ada, pleokroisme dwikroik, jenis gelapan miring sebesar 6^o.
Kuarsa (P6)	10	Warna absorpsi tidak berwarna, pleokroisme tidak ada, relief rendah, bentuk subangular-angular, belahan tidak ada, ukuran mineral 0,02 – 1,10 mm, warna interferensi putih keabu-abuan, jenis gelapan bergelombang.
Hornblende (N3)	25	Warna absorbsi kuning kecokelatan, bentuk subhedral-anhedral , belahan tidak ada, relief agak tinggi, pleokrisme monokroik, ukuran mineral 0,03-0,5 mm, warna interferensi kuning kecoklatan, jenis gelapan miring sebesar 13^o.
Biotite (R5)	10	Warna absorbsi merah kecoklatan, warna, pleokroisme monokroik, bentuk mineral subrounded – subangular, relief sedang, intensitas lemah, ukuran mineral 0,025 mm – 0,03 mm, interferensi kuning kecoklatan, jenis gelapan paralel sebesar 90^o.
Serpentin (K5)	15	Warna absorsi transparan/*colourles*, , pleokrisme monokroik, relief sedang, bentuk subhedral-anhedral, belahan tidak ada, pecahan tidak rata, ukuran mineral 0,5-2,11 mm, warna interferensi abu-abu kehitaman, sudut gelapan 6°, jenis gelapan miring.
Opaq (N6)	5	Warna absorbsi hitam, warna interferensi hitam, ukuran 0,01 – 0,25 mm
Nama Batuan		Peridotit (Travis 1955)

Nama Batuan	: Peridotit	Nomor Stasiun	: ST 03
Satuan	: Ultramafik	Lokasi	: Palakka



// - Nikol X - Nikol

Tipe Batuan	Batuan Beku
Struktur Batuan	Masif
Kenampakan Mikroskopis	Warna absorbsi Kecoklatan, warna interferensi kuning-kehitaman, tekstur holokristalin, bentuk mineral subhedral – anhedral. Komposisi mineral terdiri dari Olivine, Kuarsa, Hornblende, Piroksin dan Mineral Opaq, Ukuran mineral 0,01 mm – 0,22 mm.

Deskripsi Material

Komposisi Material	(%)	Keterangan Optik Material
Kuarsa (K5)	10	Warna absorpsi tidak berwarna, pleokroisme tidak ada, relief rendah, bentuk subangular-angular, belahan tidak ada, ukuran mineral 0,02 – 0,22 mm, warna interferensi putih keabu-abuan, jenis pemadaman bergelombang.
Piroksin (K2)	10	Warna absorbsi cokelat, tidak memiliki pleokroisme, relief tinggi, belahan satu arah, ukuran mineral 0,01-0,25 mm, warna interferensi coklat kehitaman, jenis gelapan miring dengan sudut gelapan 6°.
Hornblende (R1)	50	Warna absorbsi kuning kecokelatan, bentuk subhedral-anhedral , belahan tidak ada, relief agak tinggi, pleokrisme monokroik, ukuran mineral 0,25-0,01 mm, warna interferensi kuning kecoklatan, jenis gelapan miring sebesar 9^{o} .
Olivin (T2)	25	Warna absorbsi kuning kecokelatan, bentuk subhedral-anhedral , belahan tidak ada, relief rendah, ukuran mineral 0,1-0,25 mm, warna interferensi hijau-biru, pecahan tidak ada, pleokroisme dwikroik, jenis gelapan miring sebesar 16^{o}.
Opak (Opq)	5	Warna absorbsi hitam, warna interferensi hitam, ukuran 0,01 – 0,25 mm
Nama Batuan		Peridotit (Travis 1955)

**Group : Standard
Data : 01#geoh

Strongest 3 peaks

no.	peak no.	2Theta (deg)	d (A)	I/I1	FWHM (deg)	Intensity (Counts)	Integrated Int (Counts)
1	4	27.1978	3.27615	100	0.57570	105	3007
2	43	68.3725	1.37092	73	0.78500	77	3193
3	60	79.9600	1.19887	57	0.80000	60	1891

Peak Data List

peak no.	2Theta (deg)	d (A)	I/I1	FWHM (deg)	Intensity (Counts)	Integrated Int (Counts)
1	21.4300	4.14309	16	0.62000	17	537
2	24.6000	3.61592	26	0.60000	27	855
3	25.4600	3.49569	4	0.00000	4	0
4	27.1978	3.27615	100	0.57570	105	3007
5	28.1500	3.16746	5	0.10000	5	72
6	28.9850	3.07808	3	0.09000	3	26
7	30.4650	2.93183	4	0.13000	4	69
8	32.7500	2.73231	4	0.06000	4	27
9	33.4300	2.67827	6	0.38000	6	207
10	34.2150	2.61859	7	0.23000	7	140
11	35.2050	2.54719	9	0.35000	9	224
12	36.0700	2.48807	23	0.74000	24	835
13	36.9516	2.43070	30	0.67670	32	976
14	37.7200	2.38293	8	0.52000	8	286
15	38.6900	2.32540	12	0.54000	13	405
16	39.9350	2.25572	29	0.67000	30	797
17	40.6600	2.21716	18	1.20000	19	864
18	41.4200	2.17822	10	0.00000	10	0
19	41.7600	2.16126	8	0.36000	8	247
20	42.7700	2.11253	18	0.46000	19	550
21	45.4300	1.99483	15	0.58000	16	405
22	46.1400	1.96578	15	0.72000	16	483
23	46.7300	1.94232	5	0.22000	5	75
24	48.4150	1.87859	3	0.05000	3	15
25	49.6600	1.83436	11	0.28000	12	258
26	50.4900	1.80614	53	0.62000	56	1750
27	51.6400	1.76859	5	0.08000	5	43
28	52.8600	1.73061	3	0.04000	3	14
29	53.9400	1.69848	16	0.64000	17	630
30	55.2800	1.66043	25	0.74000	26	738
31	55.6600	1.65000	16	0.48000	17	427
32	56.5250	1.62678	8	0.13000	8	100
33	56.9200	1.61643	3	0.02000	3	16
34	57.6366	1.59802	8	0.35330	8	245
35	58.3850	1.57931	5	0.11000	5	66
36	59.4000	1.55472	7	0.36000	7	200
37	60.3725	1.53198	50	0.69500	53	1975
38	61.2200	1.51279	13	0.28000	14	370
39	62.6700	1.48123	15	0.70000	16	462
40	63.2200	1.46966	10	0.76000	11	349
41	64.3766	1.44602	21	0.52670	22	618
42	66.2700	1.40922	4	0.10000	4	54
43	68.3725	1.37092	73	0.78500	77	3193
44	69.3700	1.35363	10	0.14000	11	151
45	70.3200	1.33765	5	0.04000	5	29
46	70.9500	1.32731	8	0.26000	8	128
47	71.5900	1.31701	12	0.58000	13	371
48	72.4833	1.30296	14	0.76670	15	555

49	73.1800	1.29227	15	0.32000	16	219
50	73.6000	1.28593	28	0.68000	29	1127
51	74.4800	1.27290	19	0.00000	20	0
52	75.3400	1.26049	21	0.64000	22	946

peak no.	2Theta (deg)	d (A)	I/I1	FWHM (deg)	Intensity (Counts)	Integrated Int (Counts)
53	75.8850	1.25278	39	0.77000	41	1178
54	76.7600	1.24067	23	0.60000	24	747
55	77.2000	1.23469	24	0.00000	25	0
56	77.6200	1.22906	29	0.00000	30	0
57	78.1200	1.22244	37	0.00000	39	0
58	78.5400	1.21695	30	0.00000	32	0
59	78.9200	1.21204	31	0.00000	33	0
60	79.9600	1.19887	57	0.80000	60	1891

*** Basic Data Process ***

Data Infomation

Group : Standard

Data : 01#geoh

Sample Nmae : batuan

Comment :

Date & Time : 04-11-19 11:55:23

```
# Measurement Condition
    X-ray tube
          target               : Cu
          voltage              : 40.0 (kV)
          current              : 30.0 (mA)
    Slits
          Auto Slit            : Used
          divergence slit      :   1.00000 (deg)
          scatter slit         :   1.00000 (deg)
          receiving slit       :   0.30000(mm)
    Scanning
          drive axis           : Theta-2Theta
          scan range           :   20.0000 - 80.0000 (deg)
          scan mode            : Continuous Scan
          scan speed           :    2.0000 (deg/min)
          sampling pitch       :    0.0200 (deg)
          preset time          :    0.60 (sec)

# Data Process Condition
    Smoothing                  [ AUTO ]
          smoothing points     : 51
    B.G.Subtruction            [ AUTO ]
          sampling points      : 51
          repeat times         : 30
    Ka1-a2 Separate            [ MANUAL ]
          Ka1 a2 ratio         : 50 (%)
    Peak Search                [ AUTO ]
          differential points  : 31
          FWHM threhold        : 0.050 (deg)
          intensity threhold   : 30 (par mil)
          FWHM ratio  (n-1)/n  : 2
    System error Correction    [ NO ]
    Precise peak Correction    [ NO ]
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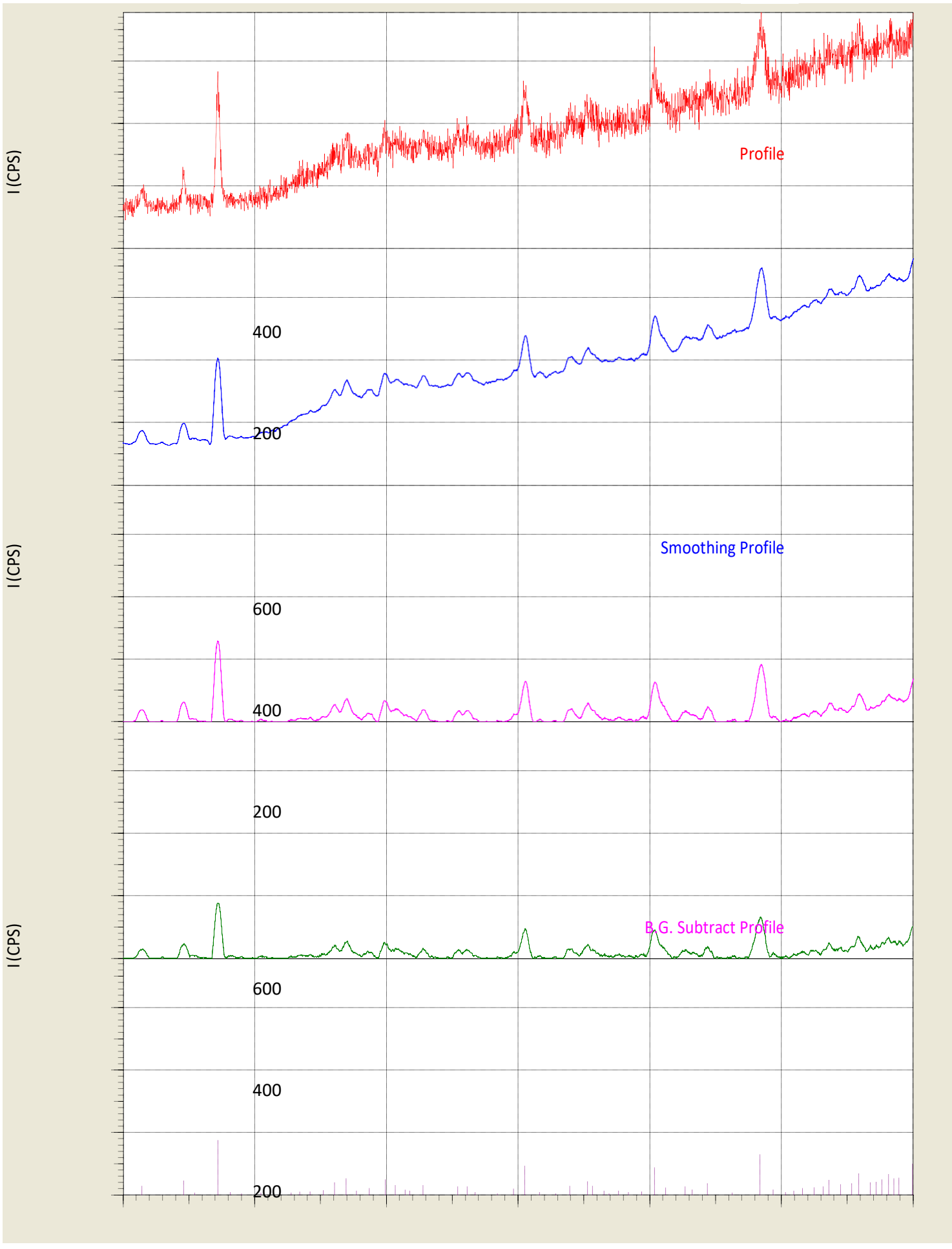

I (CPS)
Profile
400
200
I (CPS)
Smoothing Profile
600
400
200
I (CPS)
B.G. Subtract Profile
600
400
200

*** Basic Data Process ***

Group : Standard

Data : 02#geoh

Strongest 3 peaks

no.	peak (deg)	2Theta (deg)	d (A)	I/I1 (Counts)	FWHM (Counts)	Intensity	Integrated Int
1	5	26.7637	3.32830	100	0.23810	3759	49568
2	8	31.0336	2.87940	31	0.21750	1169	13897
3	2	24.1414	3.68356	26	0.22220	983	11800

Peak Data List

peak	2Theta (deg)	d (A)	I/I1 (Counts)	FWHM (Counts)	Intensity	Integrated Int
1	20.9795	4.23103	12	0.25520	454	8256
2	24.1414	3.68356	26	0.22220	983	11800
3	24.4600	3.63629	3	0.19600	118	2237
4	25.0125	3.55721	6	0.30300	214	3789
5	26.7637	3.32830	100	0.23810	3759	49568
6	27.1200	3.28537	6	0.12160	239	4070
7	27.9711	3.18731	9	0.17450	337	3799
8	31.0336	2.87940	31	0.21750	1169	13897
9	31.3200	2.85372	5	0.13860	200	2712
10	34.0176	2.63334	6	0.13150	238	2121
11	35.1800	2.54894	4	0.52280	160	4280
12	35.4800	2.52808	4	0.36500	154	3302
13	36.6334	2.45108	7	0.24620	246	4284
14	37.7459	2.38136	19	0.15860	728	6524
15	38.5438	2.33388	3	0.33420	122	2485
16	39.5640	2.27602	8	0.30200	291	4944
17	40.4011	2.23077	4	0.28220	150	2239
18	41.2388	2.18737	6	0.30620	233	3916
19	42.5433	2.12327	5	0.28670	183	3296
20	45.0688	2.00998	7	0.23580	271	2882
21	45.3600	1.99775	4	0.49540	158	3176
22	45.8800	1.97631	7	0.34000	255	3390
23	46.0600	1.96900	8	0.16540	312	2431
24	50.2200	1.81521	16	0.24120	584	8923
25	50.6200	1.80181	14	0.24180	538	7920
26	51.1200	1.78535	11	0.25420	414	5358
27	51.3200	1.77886	19	0.16380	708	5925
28	53.7053	1.70534	3	0.29070	125	2383
29	54.9600	1.66934	5	0.25660	186	2973
30	55.4200	1.65657	4	0.31000	140	3419
31	59.2052	1.55937	5	0.15860	203	2190
32	60.0208	1.54012	15	0.31320	550	7871
33	60.2600	1.53457	5	0.16140	176	2176
34	60.9166	1.51960	3	0.33320	120	2694
35	67.8400	1.38038	8	0.33060	290	5965
36	68.2707	1.37272	12	0.43930	441	9717

37 75.7383 1.25485 3 0.29940 121 2282

*** Basic Data Process ***

Data Infomation

Group : Standard

Data : 02#geoh

Sample Nmae : batuan

Comment :

Date & Time : 04-11-19 11:20:55

#

Measurement Condition X-ray tube

target : Cu

voltage : 40.0 (kV)

current : 30.0 (mA)

Slits

Auto Slit : Used divergence slit : 1.00000 (deg) scatter slit : 1.00000 (deg) receiving slit : 0.30000(mm) Scanning

drive axis : Theta-2Theta scan range : 20.0000 - 80.0000 (deg) scan mode : Continuous Scan scan speed : 2.0000 (deg/min) sampling pitch : 0.0200 (deg) preset time : 0.60 (sec)

Data Process Condition

Smoothing [AUTO]

smoothing points : 13

B.G.Subtruction [AUTO]

sampling points : 15

repeat times : 30 Ka1-a2 Separate [MANUAL]

Ka1 a2 ratio : 50 (%) Peak Search [AUTO]

differential points : 13 FWHM threhold : 0.050 (deg)

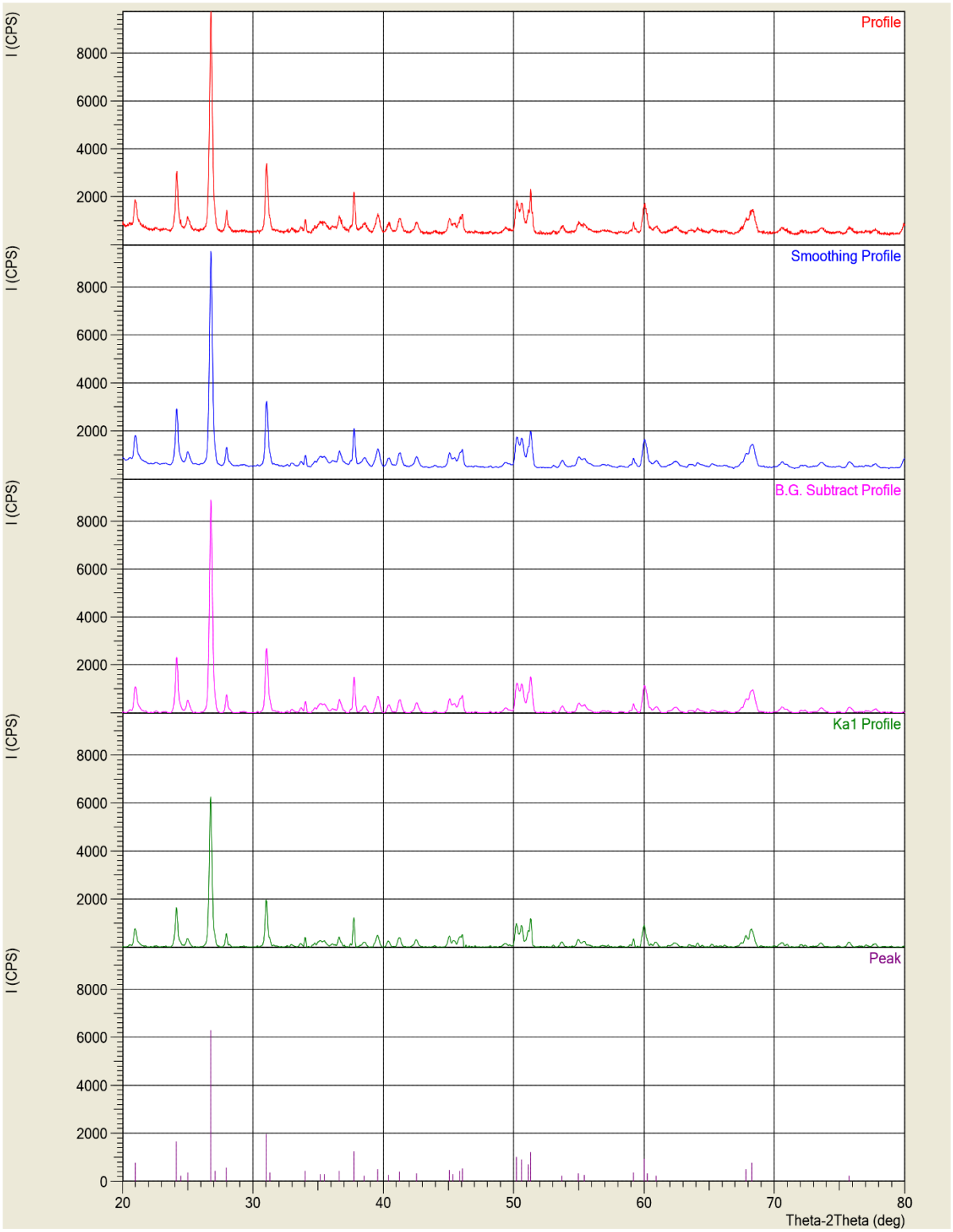
intensity threhold : 30 (par mil)

FWHM ratio (n-1)/n : 2

System error Correction [NO]

Precise peak Correction [NO]

< Group: Standard Data: 02#geoh >



*** Basic Data Process ***

Group : Standard

Data : 03#geoU

Strongest 3 peaks

no.	peak (deg)	2Theta (deg)	d (A)	I/I1 (Counts)	FWHM (Counts)	Intensity	Integrated Int
1	5	26.8589	3.31671	100	0.30800	2998	48428
2	9	31.1582	2.86817	37	0.30400	1116	19721
3	29	51.3948	1.77645	24	0.23510	727	8650

Peak Data List

peak	2Theta (deg)	d (A)	I/I1 (Counts)	FWHM (Counts)	Intensity	Integrated Int
1	21.0957	4.20799	14	0.35050	420	7262
2	21.4400	4.14118	4	0.19580	124	1508
3	24.2458	3.66793	22	0.33460	664	10689
4	24.5800	3.61881	5	0.19060	155	2376
5	26.8589	3.31671	100	0.30800	2998	48428
6	27.2600	3.26882	12	0.12260	346	5096
7	28.1000	3.17298	8	0.28160	248	3971
8	29.4931	3.02620	4	0.32800	116	2081
9	31.1582	2.86817	37	0.30400	1116	19721
10	32.7519	2.73215	14	0.27730	423	6475
11	33.1000	2.70421	3	0.17760	99	1508
12	35.6600	2.51573	3	0.40880	101	2390
13	35.9000	2.49946	5	0.24840	149	1669
14	36.7470	2.44377	8	0.30460	247	4374
15	37.6049	2.38996	3	0.34130	90	2337
16	38.8544	2.31593	6	0.22080	166	2254
17	39.6655	2.27043	11	0.25230	321	4498
18	40.5377	2.22356	6	0.30140	186	3064
19	41.3450	2.18199	13	0.28180	386	6215
20	42.6746	2.11704	7	0.31080	221	4055
21	43.1380	2.09536	19	0.24800	567	7511
22	45.1604	2.00611	20	0.22860	606	7129
23	45.5400	1.99027	4	0.23560	105	1810
24	46.0396	1.96983	8	0.42960	231	6343
25	49.4131	1.84295	4	0.28230	113	2137
26	50.3388	1.81121	23	0.30310	700	10474
27	50.7200	1.79849	11	0.32000	325	5629
28	51.1600	1.78405	9	0.18960	258	2554
29	51.3948	1.77645	24	0.23510	727	8650
30	53.9794	1.69733	14	0.47170	427	10291
31	55.0732	1.66618	7	0.33590	214	3565
32	55.5211	1.65379	4	0.27430	111	1742
33	60.1308	1.53756	19	0.32740	559	10758
34	61.0238	1.51718	5	0.21820	148	2190
35	61.5682	1.50507	4	0.32510	131	2726
36	63.6083	1.46162	3	0.24330	95	1813

37	67.5000	1.38650	5	0.24000	153	2018
38	67.9400	1.37859	10	0.42540	312	5710
39	68.3623	1.37110	17	0.35390	509	9316
40	70.3982	1.33635	3	0.39150	91	2994
41	73.6275	1.28551	4	0.37500	117	3012
42	75.8305	1.25355	5	0.30610	152	3040
43	77.8146	1.22647	3	0.26920	101	1922
44	79.9000	1.19962	5	0.13000	153	1719

*** Basic Data Process ***

Data Infomation

Group : Standard

Data : 03#geoU
Sample Nmae : batuan

Comment :

Date & Time : 04-11-19 09:39:53

#
Measurement
Condition X-
ray tube

target : Cu
voltage : 40.0 (kV)
current : 30.0 (mA)

Slits

Auto Slit : Used divergence
slit : 1.00000 (deg) scatter slit
: 1.00000 (deg) receiving slit :
0.30000(mm) Scanning

drive axis : Theta-2Theta scan range :
20.0000 - 80.0000 (deg) scan mode : Continuous
Scan scan speed : 2.0000 (deg/min) sampling
pitch : 0.0200 (deg) preset time : 0.60 (sec)

Data Process Condition

Smoothing [AUTO]
smoothing points : 17
B.G.Subtruction [AUTO]
sampling points : 17
repeat times : 30 Ka1-a2
Separate [MANUAL]

Ka1 a2 ratio : 50 (%) Peak
Search [AUTO]

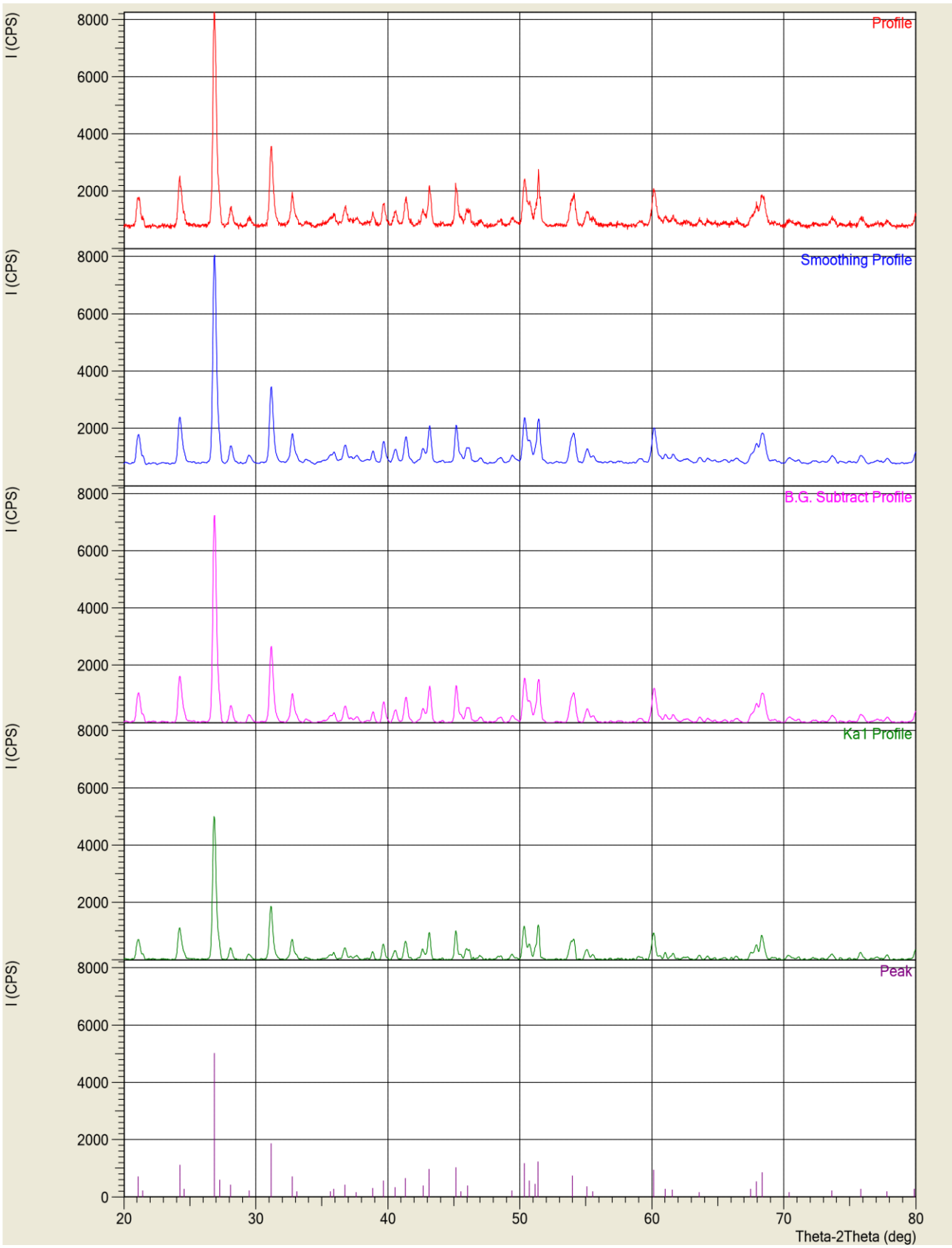
differential points : 17 FWHM
threhold : 0.050 (deg)
intensity threhold : 30 (par mil)

FWHM ratio (n-1)/n : 2

System error Correction [NO]

Precise peak Correction [NO]

< Group: Standard Data: 03#geoU >


I (CPS)
8000
6000
4000
2000
Profile
Smoothing Profile
B.G. Subtract Profile
Ka1 Profile
Peak
0
20
30
40
50
60
70
80
Theta-2Theta (deg)

*** Basic Data Process ***

Group : Standard

Data : 04#geoU

Strongest 3 peaks

no.	peak (deg)	2Theta (deg)	d (A)	I/I1	FWHM (deg)	Intensity (Counts)	Integrated Int (Counts)
1	9	26.8928	3.31261	100	0.32600	1368	23576
2	12	28.1551	3.16690	92	0.33690	1260	21518
3	6	24.3954	3.64578	32	0.51480	437	10956

Peak Data List

peak	2Theta (deg)	d (A)	I/I1	FWHM (deg)	Intensity (Counts)	Integrated Int (Counts)
1	20.1667	4.39969	6	0.22070	77	788
2	21.1454	4.19821	18	0.25090	250	3466
3	22.2856	3.98593	23	0.34650	319	5904
4	23.2957	3.81533	5	0.27140	71	1048
5	23.8200	3.73253	12	0.28860	164	2517
6	24.3954	3.64578	32	0.51480	437	10956
7	25.5004	3.49024	20	0.51920	276	5702
8	25.8200	3.44776	8	0.18760	113	1190
9	26.8928	3.31261	100	0.32600	1368	23576
10	27.3600	3.25710	4	0.00000	50	0
11	27.7600	3.21107	10	0.21720	141	2884
12	28.1551	3.16690	92	0.33690	1260	21518
13	28.5800	3.12077	18	0.16800	247	3708
14	30.3400	2.94363	8	0.36440	115	2176
15	30.7400	2.90623	19	0.44660	262	4671
16	31.1684	2.86725	24	0.36680	327	4647
17	31.6000	2.82907	7	0.53000	100	2919
18	33.2554	2.69193	7	0.31090	101	1981
19	34.1954	2.62005	3	0.24420	45	878
20	35.2474	2.54422	19	0.41250	266	5861
21	35.7200	2.51164	4	0.22400	48	873
22	36.8253	2.43875	15	0.42700	200	4758
23	37.2600	2.41129	4	0.00000	57	0
24	37.7060	2.38379	6	0.50800	81	2788
25	39.0639	2.30399	10	0.29040	130	2052
26	39.7262	2.26710	6	0.26040	81	1144
27	40.5341	2.22375	7	0.39830	89	1788
28	41.2776	2.18540	11	0.48870	145	3434
29	42.7084	2.11544	12	0.34570	166	3357
30	43.6322	2.07277	5	0.39780	63	1548
31	45.2187	2.00366	11	0.54250	156	4186
32	45.5600	1.98944	6	0.00000	79	0
33	46.0175	1.97072	10	0.34710	143	3507
34	48.2455	1.88479	8	0.45110	108	2858
35	49.4531	1.84155	10	0.31770	139	2267
36	49.9800	1.82337	9	0.36000	122	2030

37	50.2852	1.81301	21	0.47710	289	5204			
38	50.8400	1.79452	9	0.39200	122	2294			
39	51.3420	1.77815	10	0.37410	138	2560			
40	52.8589	1.73064	5	0.24220	73	1384			
41	53.4340	1.71336	6	0.31690	84	1361			
42	53.8775	1.70030	3	0.21500	43	576			
43	55.1502	1.66404	10	0.34620	130	2366			
44	55.4800	1.65492	6	0.55000	78	1843			
45	56.4716	1.62819	5	0.24670	75	1170	46	58.9100	1.56648
3	0.26000	47	1212						
47	60.1713	1.53662	18	0.28140	241	3872			
48	60.9855	1.51804	8	0.40440	104	2370			
49	62.0393	1.49476	11	0.46140	150	2977			
50	62.3200	1.48870	5	0.24000	65	971			
51	63.8269	1.45714	5	0.33380	73	1557			
52	64.2151	1.44927	10	0.23250	138	1658			

peak	2Theta	d	I/I1	FWHM	Intensity	Integrated Int			
no.	(deg)	(A)		(deg)	(Counts)	(Counts)			
53	65.5033	1.42385	5	0.39330	72	2738			
54	67.5200	1.38614	6	0.44000	78	1631			
55	68.0000	1.37752	12	0.41540	168	3353			
56	68.4600	1.36938	18	0.29240	247	3874			
57	69.6543	1.34879	7	0.41140	92	2026	58	70.0600	1.34197
4	0.36800	49	988						
59	70.8412	1.32908	3	0.31750	46	1204			
60	73.6986	1.28445	5	0.33070	71	2306			
61	75.9153	1.25236	5	0.29290	74	1234			
62	77.9200	1.22508	5	0.30500	74	1138			
63	78.2069	1.22130	9	0.37380	117	1797			

*** Basic Data Process ***

Data Infomation

Group : Standard

Data : 04#geoU
Sample Nmae : batuan

Comment :

Date & Time : 04-11-19 10:13:38

#
Measurement
Condition X-
ray tube

target : Cu
voltage : 40.0 (kV)
current : 30.0 (mA)

Slits

Auto Slit : Used divergence
slit : 1.00000 (deg) scatter slit
: 1.00000 (deg) receiving slit :
0.30000(mm) Scanning

drive axis : Theta-2Theta scan range :
20.0000 - 80.0000 (deg) scan mode : Continuous
Scan scan speed : 2.0000 (deg/min) sampling
pitch : 0.0200 (deg) preset time : 0.60 (sec)

Data Process Condition

Smoothing [AUTO]
smoothing points : 19
B.G.Subtruction [AUTO]
sampling points : 19
repeat times : 30 Ka1-a2
Separate [MANUAL]

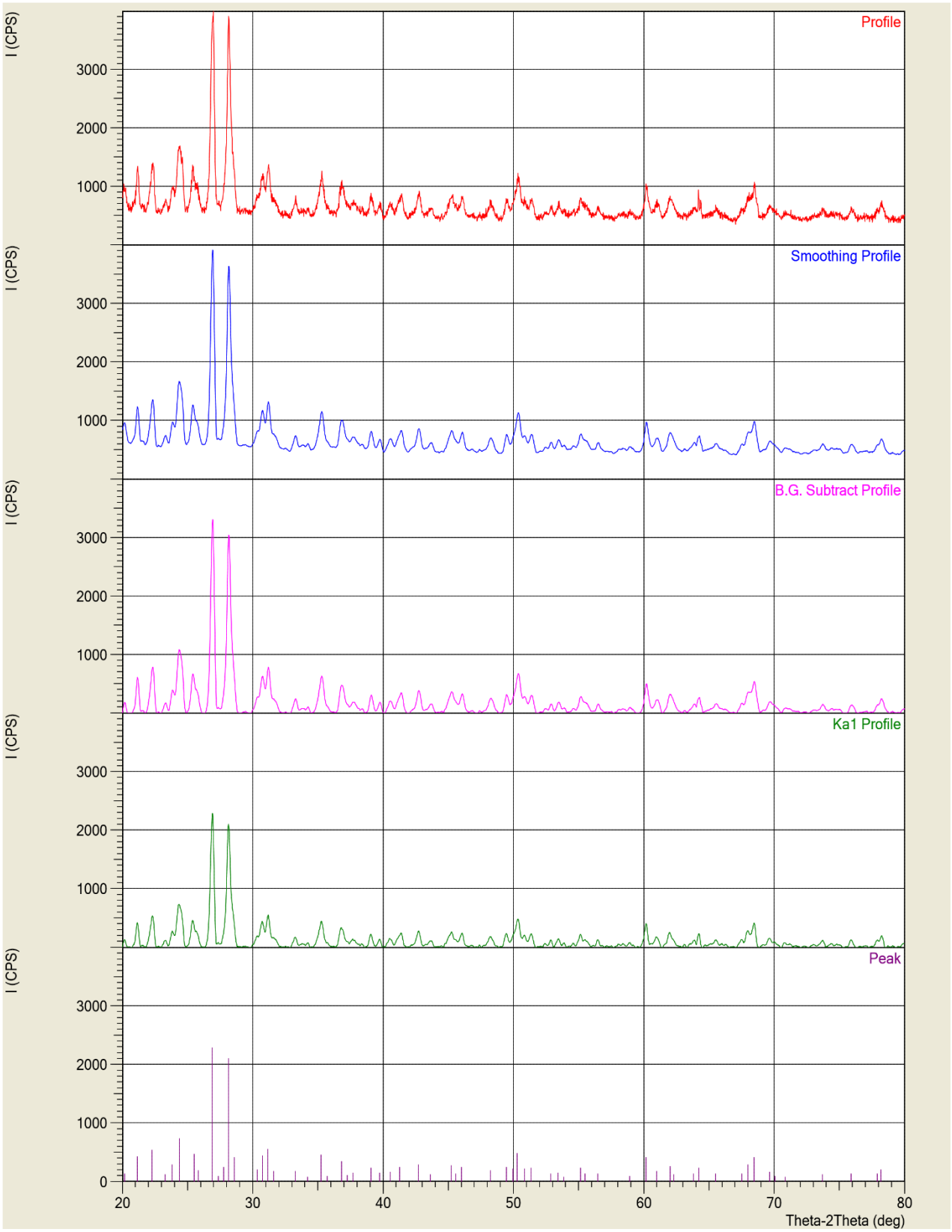
Ka1 a2 ratio : 50 (%) Peak
Search [AUTO]
differential points : 17 FWHM
threhold : 0.050 (deg)
intensity threhold : 30 (par mil)

FWHM ratio (n-1)/n : 2

System error Correction [NO]

Precise peak Correction [NO]

< Group: Standard Data: 04#geoU >



TEST REPORT

Panaikang, Jl. H. J. Kalla
Lorong Angkasa Satu
Kota Makassar
Sulawesi Selatan
Indonesia

Job Number : 152607
Customer Ref : F1112

Number of samples : 3

Report Comprising : Cover Sheet, Scheme Description, Results

Total Pages : 6

Notes :
N.A = Not Analyzed
I.S = Insufficient Sample
L.N.R = Listed Not Received
R.N.L = Received Not Listed

Customer Notes :

Approved Signature for:

Andrew Riley
General Manager

PT Intertek Utama Services
Jl. Raya Bogor KM 28, Jakarta Timur 13710, Indonesia
Tel: (+62 21) 2938 4454 Fax: (+62 21) 2938 4465

SCHEME DESCRIPTION

Ref : F1112 **Job : 152607**

Scheme code: XR80

XRF whole rock analysis. Samples fused using Lithium Metaborate and analysed by XRF. XRF analysis determines total element concentrations which are reported as oxides.

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Intertek

FINAL REPORT

Ref : F1112

Job : 152607

SAMPLE	Al2O3	CaO	Cr2O3	Fe2O3	K2O	MgO	MnO	Na2O	P2O5
01	2.97	0.02	0.997	8.11	0.09	0.32	0.023	0.04	0.018
02	4.13	0.02	0.837	14.38	0.03	0.44	0.109	0.05	0.016
03	6.39	1.00	1.266	21.79	<0.01	5.96	0.414	<0.01	0.025
UNITS	%	%	%	%	%	%	%	%	%
DET LIM	0.01	0.01	0.005	0.01	0.01	0.01	0.005	0.01	0.001
SCHEME	**XR80**	**XR80**	**XR80**	**XR80**	**XR80**	**XR80**	**XR80**	**XR80**	**XR80**

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Intertek

FINAL REPORT

Ref : F1112 **Job : 152607**

SAMPLE	SiO2	TiO2	S	LOI	Total				
01	83.78	0.07	0.021	2.7	99.19				
02	76.45	0.06	0.023	3.3	99.87				
03	56.71	0.13	0.017	5.8	99.54				
UNITS	%	%	%	%	%				
DET LIM	0.01	0.01	0.002	0.1	0				
SCHEME	**XR80**	**XR80**	**XR80**	**XR80**	**XR80**				

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Intertek

QUALITY CONTROL

Ref : F1112 **Job : 152607**

SAMPLE	Al2O3	CaO	Cr2O3	Fe2O3	K2O	MgO	MnO	Na2O	P2O5
BLK BLANK	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.005	<0.01	<0.001
REP 03	6.37	1	1.253	21.84	0.01	5.95	0.414	0.02	0.026
UNK 03	6.39	1	1.266	21.79	<0.01	5.96	0.414	<0.01	0.025
STD AMIS0203	1.71	0.17	0.076	3.19	0.3	0.34	0.03	0.06	0.027
Lower Bound	1.66	0.15	0.07	3.17	0.28	0.3	0.03	0.04	0.03
Upper Bound	1.74	0.19	0.09	3.27	0.32	0.38	0.03	0.08	0.03
STD NCS DC 73321	12.25	1.26	0.008	1.97	3.06	0.6	0.042	2.74	0.074
Lower Bound	11.383	1.08	0.00	1.8	2.74	0.46	0.03	2.44	0.04
Upper Bound	13.097	1.46	0.01	2.2	3.34	0.7	0.05	2.98	0.11
STD OREAS 191	4.18	0.28	1.237	24.88		10.04	0.395		
Lower Bound	4.17	0.27	1.18	24.301		9.8	0.38		
Upper Bound	4.37	0.29	1.26	25.419		10.32	0.41		

UNITS	%	%	%	%	%	%	%	%	%
DETECTION LIMIT	0.01	0.01	0.005	0.01	0.01	0.01	0.005	0.01	0.001
SCHEME	XR80	XR80	XR80	XR80	XR80	XR80	XR80	XR80	XR80

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