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LAMPIRAN

Lampiran 1 Perhitungan analisis proksimat reduktor

1. *Moisture Content* (MC)

W_1 = 10,7254 gr

W_2 = 10,7254 + 1,0002 = 11,7256 gr

W_3 = 11,6278 gr

Perhitungan:

$$MC = \frac{W2-W3}{W2-W1} \times 100\%$$

$$= \frac{11,7256 - 11,6278}{11,7256 - 10,7254} \times 100\%$$

$$= \frac{0,0978}{1,0002} \times 100\%$$

$$= 9,77\%$$

2. *Ash Content* (AC)

W_1 = 11,4803 gr

W_2 = 11,4803 + 1,0004 = 11,4807 gr

W_3 = 11,5539 gr

Perhitungan:

$$AC = \frac{W3-W1}{W2-W1} \times 100\%$$

$$= \frac{11,5539 - 11,4803}{11,4807 - 11,4803} \times 100\%$$

$$= \frac{0,0736}{1,0004} \times 100\%$$

$$= 7,35\%$$

3. *Volatile Matter* (VM)

W_1 = 18,7980 gr

W_2 = 18,7980 + 1,0002 = 19,7982 gr

W_3 = 19,4010 gr

Perhitungan:

$$VM = \frac{W2-W3}{W2-W1} \times 100\%$$

$$= \frac{19,7982 - 19,4010}{19,7982 - 18,7980} \times 100\%$$

$$= \frac{0,3972}{1,0002} \times 100\%$$

$$= 39,71\%$$

4. *Fix Carbon* (FC)

Moisture Content (MC) = 9,77%

Ash Content (AC) = 7,35%

Volatile Matter (VM) = 39,71%

Perhitungan:

FC = 100% - (MC + AC + VM)

= 100% - (9,77% + 7,35% + 39,71%)

= 100% - 56,83%

= 43,17%

Lampiran 2 Hasil Analisis XRD

1. Sampel Awal

Match! Phase Analysis Report

Sample: Ni-UGA (5-70)

Sample Data	
File name	NI-UGA.RAW
File path	F:/
Data collected	Dec 13, 2023 19:07:55
Data range	5.000° - 70.000°
Original data range	5.000° - 70.000°
Number of points	3251
Step size	0.020
Rietveld refinement converged	No
Alpha2 subtracted	No
Background subtr.	No
Data smoothed	Yes
Radiation	X-rays
Wavelength	1.540600 Å

Matched Phases

Index	***Amount (%)***	***Name***	***Formula sum***
A	39.0	Goethite	Fe O2
B	31.7	Lizardite	Al0.22 Fe0.15 H4 Mg2.79 O9 Si1.84
C	10.4	Silicon oxide Quartz low	O2 Si
D	10.1	Talc	H2 Mg3 O12 Si4
E	8.8	Montmorillonite	Al2 Ca0.5 O12 Si4
	7.6	*Unidentified peak area*	

A: Goethite (39.0 %)*	
Formula sum	Fe O2
Entry number	96-901-5697
Figure-of-Merit (FoM)	0.787427*
Total number of peaks	85
Peaks in range	85
Peaks matched	14
Intensity scale factor	0.91*
Space group	P b n m
Crystal system	orthorhombic
Unit cell	a= 4.6188 Å b= 9.9528 Å c= 3.0236 Å
I/Ic	3.62
Calc. density	4.198 g/cm³
Reference	Hazemann J.-L., Bérar J. F., Manceau A., "Rietveld studies of the aluminium-iron substitution in synthetic goethite", Materials Science Forum **79-82**, 821-826 (1991)

B: Lizardite (31.7 %)*	
Formula sum	Al0.22 Fe0.15 H4 Mg2.79 O9 Si1.84
Entry number	96-900-4995
Figure-of-Merit (FoM)	0.585618*
Total number of peaks	57
Peaks in range	57
Peaks matched	7
Intensity scale factor	0.30*
Space group	P 3 1 m
Crystal system	trigonal (hexagonal axes)
Unit cell	a= 5.3160 Å c= 7.1500 Å
I/Ic	1.47
Calc. density	2.674 g/cm³
Reference	Mellini M., Zanazzi P. F., "Effects of pressure on the structure of lizardite-1TSample: at P = 12.5 kbarLocality: Val Sissone", European Journal of Mineralogy **1**, 13-19 (1989)

C: Silicon oxide Quartz low (10.4 %)*	
Formula sum	O2 Si
Entry number	96-101-1160
Figure-of-Merit (FoM)	0.756477*
Total number of peaks	35
...ge	35
...ed	6
...e factor	0.23*
	P 32 2 1 S
...n	trigonal (hexagonal axes)
	a= 4.9100 Å c= 5.4000 Å
	3.37
.../	2.660 g/cm³
	2.654 g/cm³

Reference	Machatschki F, "Kristallstruktur von Tiefquarz", Fortschritte der Mineralogie **20**, 45-47 (1936)

D: Talc (10.1 %)*

Formula sum	H2 Mg3 O12 Si4
Entry number	96-900-8298
Figure-of-Merit (FoM)	0.709180*
Total number of peaks	251
Peaks in range	251
Peaks matched	40
Intensity scale factor	0.08*
Space group	C -1
Crystal system	triclinic (anorthic)
Unit cell	a= 5.2900 Å b= 9.1730 Å c= 9.4600 Å α= 90.460° β= 98.680 ° γ= 90.090 °
I/Ic	1.21
Calc. density	2.776 g/cm^3
Reference	Perdikatsis B., Burzlaff H., "Strukturverfeinerung am talk Mg3[(OH)2Si4O10]", Zeitschrift fur Kristallographie **156**, 177-186 (1981)

E: Montmorillonite (8.8 %)

Formula sum	Al2 Ca0.5 O12 Si4
Entry number	96-900-2780
Figure-of-Merit (FoM)	0.554662
Total number of peaks	92
Peaks in range	92
Peaks matched	16
Intensity scale factor	1.17
Space group	P 1
Crystal system	triclinic (anorthic)
Unit cell	a= 5.1800 Å b= 8.9800 Å c= 15.0000 Å α= 90.000° β= 90.000 ° γ= 90.000 °
I/Ic	20.54
Calc. density	1.801 g/cm^3
Reference	Viani A., Gualtieri A., Artioli G., "The nature of disorder in montmorillonite by simulation of X-ray powderpatterns Note: Structural simulation model", American Mineralogist **87**, 966-975 (2002)

(*)2theta values have been shifted internally for the calculation of the amounts, the intensity scaling factors as well as the figure-of-merit (FoM), due to the active search-match option 'Automatic zero point adaption'.

Candidates

Name	***Formula***	***Entry No.***	***FoM***
	C12 O7 P2 Zn	96-431-1830	0.8325
	C12 Cu2 O7 P2	96-431-1828	0.8292
Traskite	Ba24 Ca Cl6 Fe10 H58 O122 Si24 Ti6	96-900-9537	0.8289
	C7 F N O7 P2 Zr	96-723-8536	0.8277
Dy-NDC	C144 Dy12 O64	96-154-9851	0.8201
	C54 H95 N9 O17	96-200-0438	0.8152
Copper(II)-phenylphosphonate monohydrate (alphaCuPhP)	C6 H7 Cu O4 P	96-704-0826	0.8132
	C30 H26 I N O5 S	96-721-8374	0.8122
(Ga2 Ge2 S8) (C9 H20 N2)0.333	Ga2 Ge2 N0.666667 S8	96-154-1767	0.8121
Niobium selenide (1/3)	Nb Se3	96-100-8953	0.8114
Poly[bis(\m-pentafluorobenzenethiolato)lead(II)]	C12 F10 Pb S2	96-220-9191	0.8103
Na4 (N H4) P5 O15 (H2 O)4	N Na4 O18 P5	96-210-7010	0.8094
	C12 H10 O6 P2 Zr	96-210-1068	0.8088
catena-(1,8-Octanediammonium (\m~2~-fluoro)-tetrafluoro-aluminium)	C8 H22 Al F5 N2	96-110-0116	0.8078
	C54 Br18 N6 Pb6	96-434-5878	0.8035
	C8 H24 Cd Cl4 N2	96-200-0748	0.7988
	C26 H45 Ga6 N4 O42 P9 Zn3	96-410-0205	0.7982
Aerinite	C0.59 H18 Al3.05 Ca2.52 Fe1.36 Mg0.5 Na0.24 O31.77 Si6	96-900-5638	0.7978
La33.1 (H3 O)16 Al92 Si100 O384 (O H)23.3 (H2 O)143.9	Al92 H359.1 La33.1 O567.2 Si100	96-152-1727	0.7965
(Ga4 Se8) (C13 H26 N2)	Ga4 Se8	96-154-1834	0.7954
	C12 H28 B6 F24 N4 Na2	96-723-4759	0.7950
Silicon oxide - $-alpha (Quartz low)	O2 Si	96-101-1177	0.7932
Na0.99 Ba46.32 Si98.37 Al93.63 O384 (D2 O)51.296	Al93.63 Ba46.32 D102.592 Na0.99 O435.296 Si98.37	96-152-1760	0.7929
	C10.8 H25.2 Ga0.8 N1.8 O2.8 S6.5 Sn2.7	96-711-0246	0.7919
	C20 H20 Cl N5.5	96-720-0698	0.7918
	C48 H172 Cu4 Ge2 N12 O82 W18	96-430-1085	0.7917
	C48 H162 Cu4 Ge2 N12 O77 W18	96-430-1086	0.7911
potassium hydroxopentafluoroarsenate	As F5 H K O	96-200-3122	0.7910
	C4 Cl2 N2 O6 P2 Zr	96-434-8077	0.7900
(C6 H12 (N H2)2)2 Zn Ga7 (H P O4)2 (P O4)6 (O H) F4 (H2 O)3	C12 H41 F4 Ga7 N4 O36 P8 Zn	96-152-6075	0.7898
	C8 N2 O20 P5 Zr2	96-434-1851	0.7890
Rb27.74 Na27.6 (Al56 Si136 O384) (H2 O)4.32	Al56 H8.64 Na27.6 O388.32 Rb27.74 Si136	96-152-1414	0.7877
DMOF-1-bpdc-NO2	C36 H0 N2 O8 Zn2	96-721-4549	0.7862
	O4 S20 Sn10	96-155-0918	0.7859
Si O2	O2 Si	96-412-4031	0.7856
	C52 B6 Co F3 N7 O2	96-723-4123	0.7850
	Ge24 S48	96-412-3671	0.7846
l96 Si96 O384)	Al96 Na36 O384 Si96 Te38.1	96-152-6657	0.7834

Melanovanadite	Ca1.02 H10 O15 V4	96-901-0027	0.7825
Si O2	O2 Si	96-152-6861	0.7815
	C8 H24 Cd Cl4 N2	96-200-0749	0.7813
catena-bis(tris(2-Amineoethyl)amine-cadmium(ii)) hexacyano-iron(ii) trihydrate	C99 Cd11 Fe10.5 N77 O33	96-700-9718	0.7813
Al (P O4)	Al O4 P	96-153-3443	0.7811
Retgersite	Ni O10 S	96-901-1290	0.7810
	Er12 H172 K6 Na4 O410 W87	96-704-4078	0.7808
(Zn4 In16 S33) ((C5 H9 N H)2 (C H2)3)	In16 S33 Zn4	96-412-3976	0.7779
	C60 Cl24	96-154-8327	0.7768
Sm0.56 Sr0.94 Nb S3.5	S1.5 Sm0.56 Sr0.94	96-153-3478	0.7765
(Co4 In16 S33) ((C5 H9 N H)2 (C H2)3)	Co4 In16 S33	96-412-3977	0.7756
Melanovanadite	Ca1.02 H5 O15 V4	96-900-1074	0.7750
Ca V4 O10 (H2 O)5	Ca H10 O15 V4	96-153-8820	0.7735
	H172 K6 Na4 O410 Sm12 W87	96-704-4074	0.7731

and 2272 others...

Search-Match

Settings

Reference database used	COD-Inorg REV248644 2020.03.03
Automatic zeropoint adaptation	Yes
Minimum figure-of-merit (FoM)	0.60
2theta window for peak corr.	0.30 deg.
Minimum rel. int. for peak corr.	1
Parameter/influence 2theta	0.50
Parameter/influence intensities	0.50
Parameter multiple/single phase(s)	0.50

Criteria for entries added by user

Reference:

Entry number: 96-900-0849;96-900-1092;96-900-1093;96-900-1639;96-900-1640;96-900-1779;96-900-1883;96-900-4509;96-900-4510;96-900-4511;96-900-4512;96-900-4513;96-900-4514;96-900-4994;96-900-4995;96-900-7425;96-901-4665;96-901-5164;96-901-5487;96-901-5581;96-901-6051;96-901-6148;96-101-1153;96-300-0049;96-900-8041;96-900-8298;96-900-8732;96-901-4436;96-110-1055;96-900-2780;96-901-0957;96-901-0958;96-901-0959;96-901-0960;96-900-1226;96-900-1227;96-900-1228;96-900-1245;96-900-4374;96-900-4375;96-900-4376;96-900-4377;96-900-4378;96-900-4379;96-900-4380;96-900-4381;96-900-4384;96-900-4434;96-900-5257;96-900-9977

Peak List

No.	2theta [°]	d [Å]	I/I0	FWHM	Matched
1	5.88	15.0185	708.21	1.7330	E
2	9.28	9.5222	157.90	0.2838	D
3	10.46	8.4505	160.59	0.2754	
4	12.36	7.1554	790.37	0.4516	B
5	18.68	4.7464	483.10	0.3955	D
6	19.76	4.4893	367.13	1.0251	D,E
7	20.74	4.2793	694.71	2.6970	C,D,E
8	21.16	4.1953	1000.00	1.1694	A
9	21.48	4.1336	806.93	1.6014	D
10	22.20	4.0011	254.86	1.1694	
11	24.50	3.6304	341.45	1.5448	
12	24.90	3.5730	644.39	0.5981	B
13	26.64	3.3435	738.84	0.3938	C,E
14	28.22	3.1598	248.02	0.3687	
15	28.62	3.1165	643.20	0.3435	D
16	29.90	2.9859	120.66	0.3209	E
17	31.24	2.8608	211.36	0.4535	E
18	33.22	2.6947	336.28	1.0660	A
19	34.80	2.5759	333.30	1.0660	A,D
20	35.84	2.5035	525.12	1.0660	A,B,D,E
21	36.62	2.4519	979.91	0.9692	A,C,D,E
22	40.04	2.2500	221.03	2.1518	A,C,D,E
23	41.06	2.1965	196.90	2.3400	A,B,D,E
24	48.20	1.8865	84.96	0.8000	A,D
25	50.18	1.8166	98.96	0.7651	C,D
26	53.36	1.7156	368.72	1.3760	A,D
27	59.06	1.5629	163.43	1.9069	A,B,D
28	60.10	1.5383	160.38	1.9422	B,C,D
29	61.44	1.5079	214.10	1.9776	A,D
30	61.76	1.5009	172.94	2.9553	B,D,E

Integrated Profile Areas

...lated profile

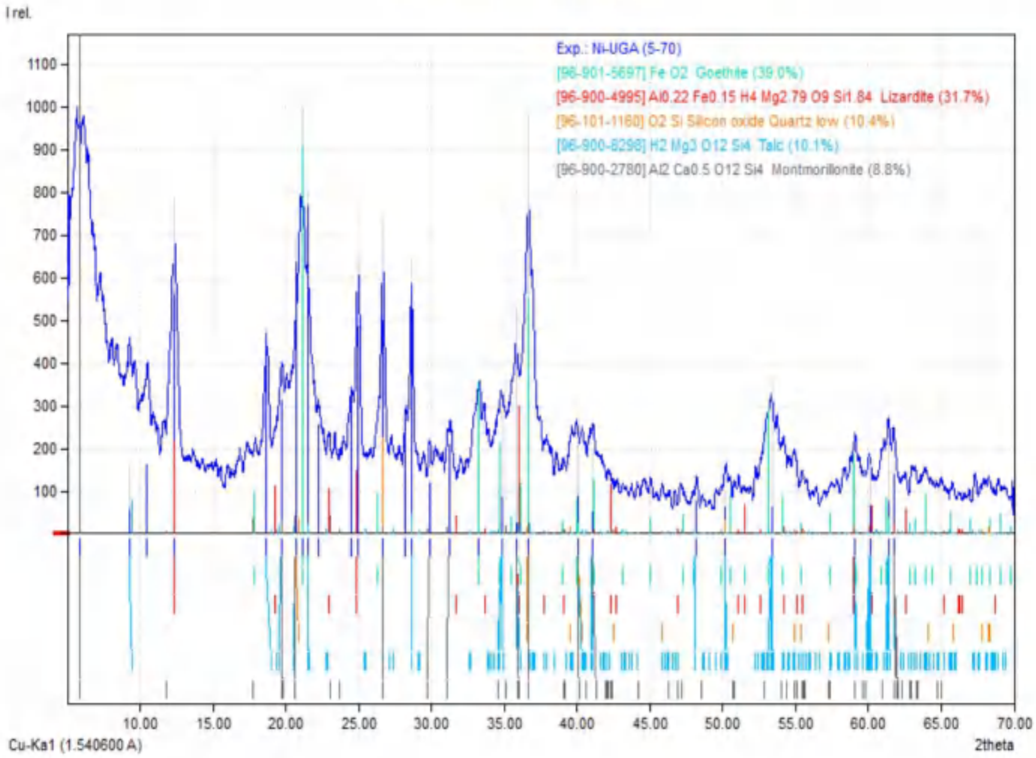
	Counts	Amount

Overall diffraction profile	98810	100.00%
Background radiation	60466	61.19%
Diffraction peaks	38344	38.81%
Peak area belonging to selected phases	30852	31.22%
Peak area of phase A (Goethite)	*16020*	*16.21%*
Peak area of phase B (Lizardite)	*5097*	*5.16%*
Peak area of phase C (Silicon oxide Quartz low)	*1707*	*1.73%*
Peak area of phase D (Talc)	*2154*	*2.18%*
Peak area of phase E (Montmorillonite)	*5874*	*5.94%*
Unidentified peak area	7492	7.58%

Peak Residuals

Peak data	***Counts***	***Amount***
Overall peak intensity	1433	100.00%
Peak intensity belonging to selected phases	453	31.60%
Unidentified peak intensity	980	68.40%

Diffraction Pattern Graphics



2. Sampel 30 menit, 10% reduktor

Match! Phase Analysis Report

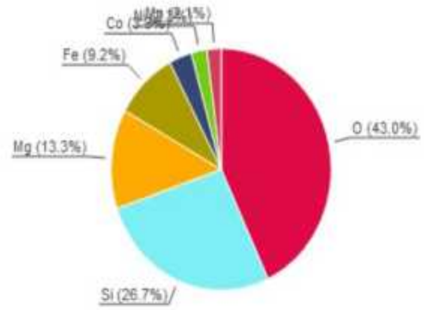
Sample: UGA-XRD-30-10

Sample Data	
File name	UGA-XRD-30-10.txt
File path	E:/PROPOSAL KP DAN TA/ANALISIS XRD/ugga/UGA-XRD-30-10
Data collected	May 2, 2024 02:27:50
Data range	5.000° - 70.000°
Original data range	5.000° - 70.000°
Number of points	3251
Step size	0.020
Rietveld refinement converged	No
Alpha2 subtracted	No
Background subtr.	No
Data smoothed	Yes
Radiation	X-rays
Wavelength	1.541874 Å

Analysis Results

Phase composition (Weight %)

Elemental composition (Weight %)



Index	Amount (%)	Name	Formula sum
A	2.9	Wuestite	Fe0.99 O
B	4.5	Tetrataenite	Fe Ni
C	24.0	Quartz	O2 Si
D	4.0	Magnetite	Fe3 O4
E	18.3	Forsterite	Fe0.278 Mg1.722 O4 Si
F	46.3	Enstatite	Co0.132 Mg0.781 Mn0.087 O3 Si
	12.7	*Unidentified peak area*	

Amounts calculated by RIR (Reference Intensity Ratio) method

Element	Amount (weight %)
O	*43.0%(*)*
Si	26.7%
Mg	13.3%
Fe	9.2%
Co	3.3%
Ni	2.3%
Mn	2.1%
**LE (sum)*	*43.0%*

Details of identified phases

A: Wuestite (2.9 %) *	
Formula sum	Fe0.99 O
Entry number	96-900-2670
Figure-of-Merit (FoM)	0.531301 *
Total number of peaks	102
Peaks in range	18
	16
...actor	0.11 *
	C 1 2/m 1
	monoclinic
	a= 5.2615 Å b= 3.0334 Å c= 3.0602 Å β= 124.649 °
	3.86
	5.892 g/cm³

Reference	Fjellvag H., Hauback B. C., Vogt T., Stolen S., "Monoclinic nearly stoichiometric wustite at low temperaturesSample: BNL, T = 10 K", American Mineralogist **87**, 347-349 (2002)

B: Tetrataenite (4.5 %)*

Formula sum	Fe Ni
Entry number	96-901-0018
Figure-of-Merit (FoM)	0.690444*
Total number of peaks	58
Peaks in range	14
Peaks matched	10
Intensity scale factor	0.46*
Space group	P 4/m m m
Crystal system	tetragonal
Unit cell	a= 2.5330 Å c= 3.5820 Å
I/Ic	10.38
Calc. density	8.276 g/cm³
Reference	Clarke R. S., Scott E. R. D., "Tetrataenite - ordered FeNi, a new mineral in meteorites", American Mineralogist **65**, 624-630 (1980)

C: Quartz (24.0 %)*

Formula sum	O2 Si
Entry number	96-901-0145
Figure-of-Merit (FoM)	0.793883*
Total number of peaks	140
Peaks in range	36
Peaks matched	34
Intensity scale factor	0.67*
Space group	P 32 2 1 S
Crystal system	trigonal (hexagonal axes)
Unit cell	a= 4.9230 Å c= 5.4090 Å
I/Ic	2.86
Calc. density	2.636 g/cm³
Reference	Ikuta D., Kawame N., Banno S., Hirajima T., Ito K., Rakovan J. F., Downs R. T., Tamada O., "First in situ X-ray diffraction identification of coesite and retrogradequartz on a glass thin section of an ultrahigh-pressure metamorphic rock andtheir crystal structure details Locality: Yangkou meta-igneous complex in themiddle part of the Sulu UHP terrain, eastern China Note: Sample is on a thinsection", American Mineralogist **92**, 57-63 (2007)

D: Magnetite (4.0 %)*

Formula sum	Fe3 O4
Entry number	96-900-5839
Figure-of-Merit (FoM)	0.592068*
Total number of peaks	72
Peaks in range	22
Peaks matched	12
Intensity scale factor	0.22*
Space group	F d -3 m
Crystal system	cubic
Unit cell	a= 8.3740 Å
I/Ic	5.70
Calc. density	5.238 g/cm³
Reference	Nakagiri N., Manghnani M. H., Ming L. C., Kimura S., "Crystal structure of magnetite under pressureSample: P = 1.55 GPa", Physics and Chemistry of Minerals **13**, 238-244 (1986)

E: Forsterite (18.3 %)*

Formula sum	Fe0.278 Mg1.722 O4 Si
Entry number	96-900-4325
Figure-of-Merit (FoM)	0.711412*
Total number of peaks	726
Peaks in range	150
Peaks matched	105
Intensity scale factor	0.21*
Space group	P b n m
Crystal system	orthorhombic
Unit cell	a= 4.7673 Å b= 10.2490 Å c= 5.9996 Å
I/Ic	1.15
Calc. density	3.387 g/cm³
Reference	Liang J., Hawthorne F. C., "Characterization of fine-grained mixtures of rock-forming minerals byRietveld structure refinement: olivine + pyroxene Sample: P1 Rietveld, 9.9%olivine", The Canadian Mineralogist **32**, 541-552 (1994)

.3 %)*

	Co0.132 Mg0.781 Mn0.087 O3 Si
	96-900-4119
(FoM)	0.663038*
peaks	1000
	358

Peaks matched	222
Intensity scale factor	0.25*
Space group	P b c a
Crystal system	orthorhombic
Unit cell	a= 18.2460 Å b= 8.8390 Å c= 5.1960 Å
I/Ic	0.55
Calc. density	3.412 g/cm³
Reference	Hawthorne F. C., Ito J., "Synthesis and crystal-structure refinement of transition-metalorthopyroxenes I: Orthoenstatite and (Mg, Mn, Co) orthopyroxene", The Canadian Mineralogist **15**, 321-338 (1977)

(*)2theta values have been shifted internally for the calculation of the amounts, the intensity scaling factors as well as the figure-of-merit (FoM), due to the active search-match option 'Automatic zero point adaption'.

Candidates

Name	*Formula*	*Entry No.*	*FoM*
Iron	Fe	96-901-3475	0.6917
(Cr0.8 Ni0.2)	Cr0.8 Ni0.2	96-152-5377	0.6890
Iron	Fe	96-901-3474	0.6889
(Cr0.7 Fe0.3)	Cr0.7 Fe0.3	96-152-4270	0.6877
	Fe0.9 Ge0.05 Si0.05	96-152-5413	0.6876
	Fe	96-411-3932	0.6875
Iron	Fe	96-900-6602	0.6871
	Fe	96-411-3942	0.6867
	Cr	96-151-2503	0.6865
	Fe0.95 Mn0.05	96-152-3953	0.6862
(Fe0.7 Ni0.3)	Fe0.7 Ni0.3	96-152-4200	0.6849
(Fe0.984 W0.016)	Fe0.984 W0.016	96-152-3765	0.6848
Iron	Fe	96-900-6596	0.6847
	Ce0.0045 Fe0.9955	96-152-4835	0.6845
Iron	Fe	96-900-6588	0.6845
(Fe0.96 Ni0.03 Sb0.01)	Fe0.96 Ni0.03 Sb0.01	96-152-2492	0.6844
(Cr0.053 Fe0.947)	Cr0.053 Fe0.947	96-152-3983	0.6844
Iron	Fe	96-901-3473	0.6844
Iron	Fe	96-900-6589	0.6843
Iron	Fe	96-900-0658	0.6842
Steinhardtite	Al	96-901-7776	0.6841
(Cr0.2 Fe0.8)	Cr0.2 Fe0.8	96-152-3984	0.6840
Iron-alpha	Fe	96-900-8537	0.6840
alfa-Fe	Fe	96-110-0109	0.6839
(Cu.003 Fe.997)	Cu0.003 Fe0.997	96-152-3952	0.6839
	Fe	96-411-3937	0.6839
(Fe.9988 Zr.0012)	Fe0.9988 Zr0.0012	96-152-3166	0.6838
(Co0.75 Si0.125 Sn0.125)	Co0.75 Si0.125 Sn0.125	96-152-5219	0.6838
Miersite	Ag I	96-901-1700	0.6722
	Cl K0.2 Na0.8	96-900-3290	0.6679
(Co0.5 Ni0.5) Ga	Co0.5 Ga Ni0.5	96-152-5424	0.6648
	Cl K0.2 Na0.8	96-900-3292	0.6643
	Cl K0.2 Na0.8	96-900-3279	0.6593
(Al0.5 Ga0.5) Co	Al0.5 Co Ga0.5	96-152-3898	0.6592
	Al Ni	96-900-8803	0.6583
	Cl K0.2 Na0.8	96-900-3289	0.6576
Y Se	Se Y	96-152-7463	0.6575
Halite	Cl Na	96-900-6383	0.6572
Halite	Cl Na	96-900-6382	0.6566
	Cl K0.2 Na0.8	96-900-3293	0.6557
Halite	Cl Na	96-900-3313	0.6547
	Cl K0.2 Na0.8	96-900-3298	0.6517
	Ag Br	96-150-9152	0.6502
	Co Ga	96-154-0152	0.6488
Halite	Cl Na	96-900-6384	0.6482
	Ag Sb Se2	96-150-9533	0.6478
	Co2 Fe Ga	96-152-4169	0.6421
	Ag Er Se2	96-150-9310	0.6401
	Cl K0.2 Na0.8	96-900-3267	0.6362
	Cl K0.2 Na0.8	96-900-3275	0.6348
	Cl K0.2 Na0.8	96-900-3266	0.6341
(Tm5 Se4 Te)0.8	Se3.2 Te0.8 Tm4	96-722-2908	0.6339

and 450 others...

Search-Match

Settings

Reference database used	COD-Inorg 2023.06.06
Automatic zeropoint adaptation	Yes
...ntries with low scaling factors	Yes
...e-of-merit (FoM)	0.60
... for peak corr.	0.30 deg.
...nt. for peak corr.	0
...uence 2theta	0.50
...uence intensities	0.50

Parameter multiple/single phase(s) 0.50

Criteria for entries added by user

Reference:

Entry number: 96-154-4616;96-154-4617;96-900-0167;96-900-0168;96-900-0268;96-900-0315;96-900-0316;96-900-0317;96-900-0318;96-900-0319;96-900-0320;96-900-0321;96-900-0322;96-900-0323;96-900-0324;96-900-0325;96-900-0326;96-900-0327;96-900-0535;96-900-0536;96-900-0537;96-900-0538;96-900-0539;96-900-0540;96-900-0541;96-900-0542;96-900-0788;96-900-1065;96-900-1667;96-900-1668;96-900-1669;96-900-1670;96-900-1671;96-900-4323;96-900-4324;96-900-4325;96-900-4326;96-900-4327;96-900-4328;96-900-4329;96-900-4330;96-900-4331;96-900-4332;96-900-4333;96-900-7378;96-901-0755;96-901-0756;96-901-0757;96-901-0758;96-901-0759;96-901-0760;96-901-0761;96-901-0762;96-901-0763;96-901-0764;96-901-0765;96-901-0766;96-901-0776;96-901-0777;96-901-0778;96-901-0779;96-901-0780;96-901-0781;96-901-1462;96-901-1463;96-901-1464;96-901-1465;96-901-1466;96-901-1467;96-901-1468;96-901-3094;96-901-3095;96-901-3096;96-901-3097;96-901-3098;96-901-3099;96-901-3100;96-901-3101;96-901-3102;96-901-3640;96-901-3641;96-901-3642;96-901-4298;96-901-5075;96-901-5346;96-901-5659;96-901-6386;96-901-6992;96-901-7491;96-901-7492;96-901-7493;96-901-7786;96-901-7787;96-901-7788;96-901-7789;96-901-7790;96-901-7791;96-901-7792;96-901-7793;96-901-7794;96-101-1033;96-101-1085;96-153-9748;96-722-8111;96-900-0927;96-900-0928;96-900-0929;96-900-0930;96-900-0931;96-900-0932;96-900-0933;96-900-0934;96-900-0935;96-900-2317;96-900-2318;96-900-2319;96-900-2320;96-900-2321;96-900-2322;96-900-2323;96-900-2324;96-900-2325;96-900-2326;96-900-2327;96-900-2328;96-900-2329;96-900-2330;96-900-2331;96-900-2332;96-900-2333;96-900-2674;96-900-2675;96-900-4088;96-900-4156;96-900-4157;96-900-5813;96-900-5814;96-900-5815;96-900-5816;96-900-5817;96-900-5837;96-900-5838;96-900-5839;96-900-5840;96-900-5841;96-900-5842;96-900-5843;96-900-6185;96-900-6190;96-900-6195;96-900-6200;96-900-6243;96-900-6248;96-900-6253;96-900-6266;96-900-6921;96-900-6922;96-900-6923;96-900-7645;96-900-7707;96-900-7708;96-900-9769;96-900-9770;96-901-0940;96-901-0941;96-901-0942;96-901-3530;96-901-3531;96-901-3532;96-901-3533;96-901-3534;96-901-3535;96-901-3536;96-901-6802;96-901-6803;96-901-6804;96-901-6805;96-901-6806;96-901-6807;96-901-6808;96-901-6809;96-901-6810;96-901-6811;96-901-6812;96-901-6813;96-901-6814;96-901-6815;96-901-6816;96-901-6817;96-901-6818;96-901-7087;96-901-7088;96-100-0048;96-101-1019;96-154-5543;96-154-8550;96-154-8551;96-154-8552;96-156-6758;96-900-1179;96-900-1221;96-900-1594;96-900-1595;96-900-1596;96-900-1597;96-900-1598;96-900-1599;96-900-1600;96-900-1601;96-900-1602;96-900-1642;96-900-1643;96-900-1644;96-900-1645;96-900-1646;96-900-1700;96-900-1701;96-900-2711;96-900-2712;96-900-2713;96-900-2714;96-900-2715;96-900-2716;96-900-2717;96-900-4030;96-900-4031;96-900-4032;96-900-4033;96-900-4034;96-900-4118;96-900-4119;96-900-4957;96-900-4958;96-900-5542;96-900-5543;96-900-5544;96-900-5545;96-900-5589;96-900-5590;96-900-5776;96-900-5777;96-900-6338;96-900-6339;96-900-6340;96-900-6341;96-900-6342;96-900-6343;96-900-6428;96-900-6429;96-900-6430;96-900-6431;96-900-6432;96-900-6433;96-900-6434;96-900-6435;96-900-6436;96-900-6437;96-900-6438;96-900-6439;96-900-6440;96-900-6441;96-900-6442;96-900-6443;96-900-8078;96-900-8165;96-901-0242;96-901-0872;96-901-0873;96-901-0874;96-901-0888;96-901-0889;96-901-0890;96-901-0891;96-901-0892;96-901-0893;96-901-0894;96-901-0895;96-901-0896;96-901-0897;96-901-0898;96-901-0899;96-901-1582;96-901-3659;96-901-4118;96-901-4448;96-901-4536;96-901-4861;96-901-4978;96-901-4984;96-901-5810;96-901-6053;96-901-6154;96-901-6258;96-901-6266;96-901-6573;96-901-6943;96-901-6944;96-901-6945;96-901-6946;96-101-1241;96-101-1268;96-210-1168;96-210-1169;96-210-8028;96-210-8029;96-591-0083;96-900-0140;96-900-2161;96-900-2162;96-900-2163;96-900-9783;96-901-4881;96-901-5066;96-901-5504;96-901-5965;96-901-6458;96-901-7091;96-901-7519;96-101-1164;96-101-1165;96-101-1166;96-101-1167;96-101-1168;96-101-1169;96-101-1170;96-101-1199;96-900-2670;96-900-2671;96-900-6043;96-900-6044;96-900-6045;96-900-6046;96-900-6047;96-900-6048;96-900-6049;96-900-6050;96-900-6051;96-900-6052;96-900-6053;96-900-6054;96-900-6055;96-900-6056;96-900-6057;96-900-6058;96-900-6059;96-900-6060;96-900-6061;96-900-6062;96-900-6063;96-900-6064;96-900-6065;96-900-6066;96-900-6067;96-900-6068;96-900-6069;96-900-6070;96-900-6071;96-900-6072;96-900-6073;96-900-6074;96-900-6075;96-900-6076;96-900-6077;96-900-6078;96-900-6079;96-900-6080;96-900-6081;96-900-6082;96-900-6083;96-900-6084;96-900-6085;96-900-6086;96-900-6087;96-900-6088;96-900-6089;96-900-6090;96-900-6091;96-900-6092;96-900-6093;96-900-6094;96-900-6095;96-900-6096;96-900-6097;96-900-6098;96-900-6099;96-900-6100;96-900-6101;96-900-6102;96-900-6103;96-900-6104;96-900-8637;96-900-9767;96-900-9768;96-900-9771;96-900-9772

Peak List

No.	*2theta [°]*	*d [Å]*	*I/I0 (peak height)*	*Counts (peak area)*	*FWHM*	*Matched*
1	18.72	4.7363	22.93	1.59	0.1600	
2	20.26	4.3796	37.22	1.94	0.1200	F
3	20.46	4.3373	35.66	2.47	0.1600	E,F
4	20.82	4.2631	130.84	20.42	0.3600	C
5	22.82	3.8938	38.28	3.98	0.2400	E
6	23.00	3.8637	22.98	1.59	0.1600	
7	23.60	3.7668	29.98	1.04	0.0800	E
8	25.34	3.5120	35.96	1.87	0.1200	E
9	26.14	3.4063	25.02	0.87	0.0800	
10	26.64	3.3435	820.51	99.62	0.2800	C,F
11	27.82	3.2043	44.86	6.22	0.3200	F
12	28.10	3.1730	98.66	17.11	0.4000	F
13	28.24	3.1576	43.62	7.57	0.4000	F
14	29.36	3.0396	35.95	1.87	0.1200	F
15	29.70	3.0056	37.97	13.83	0.8400	E
16	30.46	2.9323	111.66	15.49	0.3200	D,F
17	31.10	2.8734	1000.00	69.38	0.1600	F
[illegible]	[illegible]2.18	2.7794	49.92	6.06	0.2800	E,F
[illegible]	[illegible]2.36	2.7643	25.20	1.75	0.1600	E
[illegible]	[illegible]3.22	2.6947	50.47	3.50	0.1600	F

21	35.50	2.5267	135.36	21.13	0.3600	B,D,E,F
22	35.72	2.5116	83.53	18.84	0.5200	A,D,E,F
23	36.48	2.4610	207.59	39.61	0.4400	A,C,E,F
24	38.26	2.3505	22.82	1.19	0.1200	E,F
25	39.52	2.2784	82.17	11.40	0.3200	C,E,F
26	40.22	2.2404	34.50	7.18	0.4800	C,E,F
27	41.64	2.1672	26.13	1.81	0.1600	A,E,F
28	41.88	2.1553	23.51	4.08	0.4000	A,E,F
29	42.38	2.1311	56.71	9.84	0.4000	C,F
30	42.80	2.1111	46.15	26.41	1.3200	E,F
31	43.70	2.0697	678.97	82.44	0.2800	B,F
32	44.62	2.0291	320.28	33.33	0.2400	E,F
33	45.12	2.0078	54.90	3.81	0.1600	F
34	45.74	1.9820	39.03	4.06	0.2400	C,F
35	45.90	1.9755	31.54	2.19	0.1600	C,F
36	46.46	1.9530	97.09	6.74	0.1600	E,F
37	50.22	1.8167	121.94	14.81	0.2800	C,E,F
38	50.84	1.7960	237.45	45.74	0.4442	C,E,F
39	50.96	1.7921	7.03	1.71	0.5600	B,E,F
40	52.24	1.7497	49.23	7.69	0.3600	E
41	54.88	1.6716	43.44	3.01	0.1600	C,E,F
42	55.06	1.6665	34.61	2.40	0.1600	F
43	55.48	1.6549	28.78	1.00	0.0800	C,F
44	56.76	1.6206	28.42	3.94	0.3200	E,F
45	57.26	1.6076	27.62	2.87	0.2400	B,C,D,E,F
46	58.92	1.5662	23.24	1.61	0.1600	E,F
47	59.96	1.5415	84.34	5.85	0.1600	A,C,E,F
48	60.62	1.5263	28.10	4.87	0.4000	A,E,F
49	60.90	1.5200	48.94	7.64	0.3600	A,E,F
50	61.98	1.4961	31.32	2.72	0.2000	E,F
51	62.52	1.4844	100.74	6.99	0.1600	D,E,F
52	62.98	1.4747	39.79	2.76	0.1600	D,E,F
53	63.42	1.4655	65.98	5.72	0.2000	B,E,F
54	64.72	1.4392	30.85	4.28	0.3200	E,F
55	65.02	1.4333	26.11	5.89	0.5200	E,F
56	65.92	1.4159	34.66	3.01	0.2000	C,D,E,F
57	66.82	1.3990	28.34	1.97	0.1600	D,E,F
58	67.28	1.3905	39.03	4.74	0.2800	D,E,F
59	67.50	1.3865	28.08	8.28	0.6800	C,E,F
60	67.84	1.3804	40.20	15.34	0.8800	C,E,F
61	68.18	1.3743	44.24	6.14	0.3200	C,E,F
62	69.60	1.3497	28.40	1.48	0.1200	E,F

Integrated Profile Areas

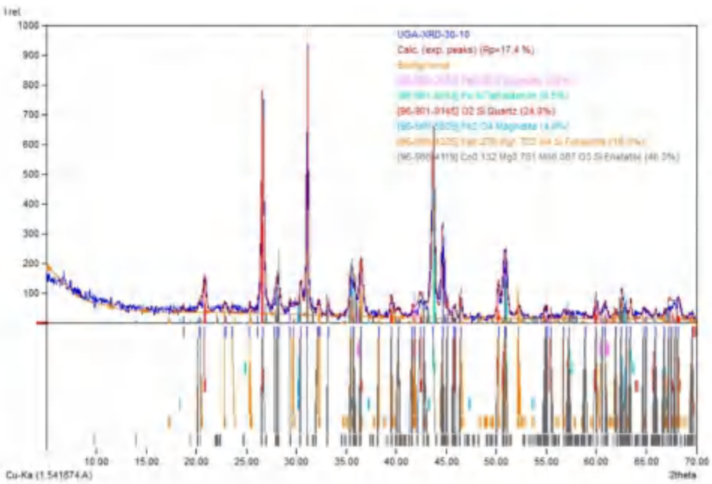
Based on calculated profile

Profile area	*Counts*	*Amount*
Overall diffraction profile	77616	100.00%
Background radiation	37456	48.26%
Diffraction peaks	40159	51.74%
Peak area belonging to selected phases	30327	39.07%
Peak area of phase A (Wuestite)	*878*	*1.13%*
Peak area of phase B (Tetrataenite)	*4268*	*5.50%*
Peak area of phase C (Quartz)	*7286*	*9.39%*
Peak area of phase D (Magnetite)	*1440*	*1.86%*
Peak area of phase E (Forsterite)	*4669*	*6.02%*
Peak area of phase F (Enstatite)	*11786*	*15.18%*
Unidentified peak area	9832	12.67%

Peak Residuals

Peak data	*Counts*	*Amount*
Overall peak intensity	725	100.00%
Peak intensity belonging to selected phases	685	94.46%
Unidentified peak intensity	40	5.54%

Diffraction Pattern Graphics



.3. Sampel 60 menit, 10% reduktor

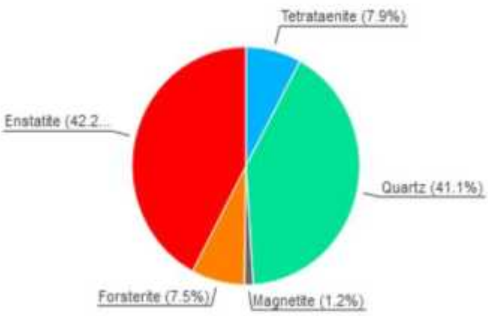
Match! Phase Analysis Report

Sample: UGGA-60-10

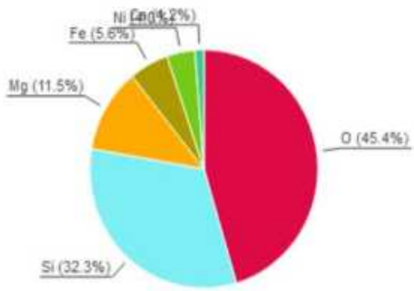
Sample Data	
File name	UGGA-60-10.txt
File path	E:/PROPOSAL KP DAN TA/ANALISIS XRD/UGGA-60-10
Data collected	Mar 22, 2024 14:19:55
Data range	5.000° - 70.000°
Original data range	5.000° - 70.000°
Number of points	3251
Step size	0.020
Rietveld refinement converged	No
Alpha2 subtracted	No
Background subtr.	No
Data smoothed	Yes
Radiation	X-rays
Wavelength	1.541874 Å

Analysis Results

Phase composition (Weight %)



Elemental composition (Weight %)



Index	***Amount (%)***	***Name***	***Formula sum***
A	7.9	Tetrataenite	Fe0.507 Ni0.493
B	41.1	Quartz	O2 Si
C	1.2	Magnetite	Fe3 O4
D	7.5	Forsterite	Fe0.278 Mg1.722 O4 Si
E	42.2	Enstatite	Ca0.15 Mg1.85 O6 Si2
	10.9	*Unidentified peak area*	

Amounts calculated by RIR (Reference Intensity Ratio) method

Element	***Amount (weight %)***
O	*45.4%(*)*
Si	32.3%
Mg	11.5%
Fe	5.6%
Ni	4.0%
Ca	1.2%
**LE (sum)*	*45.4%*

Details of identified phases

A: Tetrataenite (7.9 %)*	
Formula sum	Fe0.507 Ni0.493
Entry number	96-901-1507
Figure-of-Merit (FoM)	0.610342*
Total number of peaks	238
Peaks in range	238
Peaks matched	18
Intensity scale factor	0.24*
Space group	P 1 m 1
Crystal system	monoclinic
Unit cell	a= 3.5810 Å b= 3.5820 Å c= 3.5870 Å β= 90.040 °
	5.47
nsity	8.264 g/cm³
ce	Tagai T., Takeda H., "Superstructure of tetrataenite from the Saint Severin meteorite", Zeitschrift fur

Kristallographie **210**, 14-18 (1995)

B: Quartz (41.1 %)*

Formula sum	O2 Si
Entry number	96-901-0145
Figure-of-Merit (FoM)	0.796560*
Total number of peaks	140
Peaks in range	140
Peaks matched	23
Intensity scale factor	0.66*
Space group	P 32 2 1 S
Crystal system	trigonal (hexagonal axes)
Unit cell	a= 4.9230 Å c= 5.4090 Å
I/Ic	2.86
Calc. density	2.636 g/cm³
Reference	Ikuta D., Kawame N., Banno S., Hirajima T., Ito K., Rakovan J. F., Downs R. T., Tamada O., "First in situ X-ray diffraction identification of coesite and retrogradequartz on a glass thin section of an ultrahigh-pressure metamorphic rock andtheir crystal structure details Locality: Yangkou meta-igneous complex in themiddle part of the Sulu UHP terrain, eastern China Note: Sample is on a thinsection", American Mineralogist **92**, 57-63 (2007)

C: Magnetite (1.2 %)*

Formula sum	Fe3 O4
Entry number	96-900-2320
Figure-of-Merit (FoM)	0.497410*
Total number of peaks	72
Peaks in range	72
Peaks matched	6
Intensity scale factor	0.04*
Space group	F d -3 m
Crystal system	cubic
Unit cell	a= 8.3517 Å
I/Ic	5.66
Calc. density	5.280 g/cm³
Reference	Haavik C., Stolen S., Fjellvag H., Hanfland M., Hausermann D., "Equation of state of magnetite and its high-pressure modification:Thermodynamics of the Fe-O system at high pressureSample at P = 3.4 GPa", American Mineralogist **85**, 514-523 (2000)

D: Forsterite (7.5 %)*

Formula sum	Fe0.278 Mg1.722 O4 Si
Entry number	96-900-4325
Figure-of-Merit (FoM)	0.618262*
Total number of peaks	726
Peaks in range	726
Peaks matched	49
Intensity scale factor	0.05*
Space group	P b n m
Crystal system	orthorhombic
Unit cell	a= 4.7673 Å b= 10.2490 Å c= 5.9996 Å
I/Ic	1.15
Calc. density	3.387 g/cm³
Reference	Liang J., Hawthorne F. C., "Characterization of fine-grained mixtures of rock-forming minerals byRietveld structure refinement: olivine + pyroxene Sample: P1 Rietveld, 9.9%olivine", The Canadian Mineralogist **32**, 541-552 (1994)

E: Enstatite (42.2 %)*

Formula sum	Ca0.15 Mg1.85 O6 Si2
Entry number	96-900-5542
Figure-of-Merit (FoM)	0.612270*
Total number of peaks	998
Peaks in range	998
Peaks matched	93
Intensity scale factor	0.21*
Space group	P 1 21/c 1
Crystal system	monoclinic
Unit cell	a= 9.6540 Å b= 8.8450 Å c= 5.2030 Å β= 108.370 °
I/Ic	0.89
Calc. density	3.200 g/cm³
Reference	Tribaudino M., Nestola F., "Average and local structure in P2_1/c clinopyroxenes along thejoin diopside-enstatite (CaMgSi2O6-Mg2Si2O6)Sample: Di15En85 (non-split model)Note: x-coordinate for SITA altered by Tribaudino, Sept 2003", European Journal of Mineralogy **14**, 549-555 (2002)

(*) 2theta values have been shifted internally for the calculation of the amounts, the intensity scaling factors as well as the figure-of-merit (FoM), due to the active search-match option 'Automatic zero point adaption'.

Candidates

	Formula	Entry No.	FoM
...yrite	Ag Br	96-901-1683	0.6609

	Ba Nb Ni0.33 O3	96-230-0136	0.6474
	Ba Nb Ni0.33 O3	96-230-0140	0.6466
	Cd4 Cs Se18 Tb9	96-703-8424	0.6414
	Cd4 Cs Dy9 Se18	96-703-8421	0.6378
	Na Nd S2	96-153-9165	0.6335
PST-Ba	Ba0.23 O3 Pb0.77 Sc0.5 Ta0.5	96-210-4729	0.6302
PST	O3 Pb Sc0.5 Ta0.5	96-210-4718	0.6292
	Bi Na2 S4 Sb	96-705-8490	0.6278
	Cu1.8 Se	96-210-2501	0.6267
	Co2 Mg O4	96-591-0201	0.6254
	O Pb Sc Ta	96-230-0057	0.6237
(Ag Bi) (S Se)	Ag Bi S Se	96-150-9240	0.6233
Sr V13 O18	O18 Sr V13	96-153-2605	0.6231
Dibarium tantalum cobalt(III) oxide	Ba Co0.5 O3 Ta0.5	96-100-1055	0.6218
	Se U	96-900-8763	0.6218
PST	O3 Pb Sc0.5 Ta0.5	96-210-4717	0.6214
U Se	Se U	96-153-8958	0.6203
PST-Ba	Ba0.23 O3 Pb0.77 Sc0.5 Ta0.5	96-210-4728	0.6199
PST	O3 Pb Sc0.5 Ta0.5	96-210-4716	0.6194
Ba (Co0.5 Nb0.5) O3	Ba Co0.5 Nb0.5 O3	96-152-2300	0.6181
U Se	Se U	96-230-0552	0.6175
	Pu Se	96-153-7642	0.6173
Calaverite	Au Te2	96-901-1288	0.6086
	As U	96-900-8755	0.6024
Sr2 (In0.97 W0.03) (In0.37 W0.63) O6	In1.34 O6 Sr2 W0.66	96-152-8676	0.6016
Sr2 Yb Re O6	O6 Re Sr2 Yb	96-153-4236	0.6012
Sr (In0.667 W0.333) O3	In0.667 O3 Sr W0.333	96-153-1323	0.6001
Barium nickel diyttrium oxide	Ba Ni O5 Y2	96-200-2506	0.5336
Barium nickel diholmium oxide	Ba Ho2 Ni O5	96-200-2385	0.5265
Barium nickel dierbium oxide	Ba Er2 Ni O5	96-200-2386	0.5188
Barium nickel didysprosium oxide	Ba Dy2 Ni O5	96-200-2128	0.5179
Caesium nickel chloride	Cl5 Cs3 Ni	96-200-7346	0.5119
Barium nickel diterbium oxide	Ba Ni O5 Tb2	96-200-2503	0.5035
Nickel iodide	I2 Ni	96-101-0057	0.4983
Dilanthanum nickel oxide	La2 Ni O4	96-200-2187	0.4683
Barium nickel digadolinium pentaoxide	Ba Gd2 Ni O5	96-200-2384	0.4498
pentanickel tetratin zinc	Ni3.17 Sn2.67 Zn0.67	96-201-8418	0.4239
rubidium nickel silicon oxide	Ni O12 Rb2 Si5	96-224-1525	0.4082
Lanthanum nickel cobalt deuteride (1/4/1/6.1)	Co D6.12 La Ni4	96-100-6078	0.3825
Lanthanum nickel manganese aluminium cobalt deuteride(1/3.6/0.4/0.3/0.8/5.6)	Al0.3 Co0.749 D5.56 La Mn0.4 Ni3.548	96-100-6079	0.3801
Lanthanum nickel deuteride (1/5/7)	D7 La Ni5	96-100-0157	0.3766
Lanthanum nickel deuteride (1/5/5.9)-\b	D5.9 La Ni5	96-100-8334	0.3757
Lanthanum nickel deuteride (1/5/7)	D7 La Ni5	96-100-0156	0.3731
Lanthanum nickel deuteride (1/5/6.4) - \b	D6.4 La Ni5	96-100-8333	0.3533
Lanthanum nickel deuteride (1/5/6.7) - \b	D6.7 La Ni5	96-100-8332	0.3486
Magnetite	Fe3 O4	96-153-9748	0.3097
Iron silicate - \a (Fayalite)	Fe2 O4 Si	96-100-0065	0.0000
Nickel divanadium oxide	Ni O6 V2	96-100-0095	0.0000
Hexaamminechromium hexaaquanickel chloride ammonium chloride(1/1/5/.5/.5)	Cl5.5 Cr H32 N6.5 Ni O6	96-100-0097	0.0000
Disodium nickel chromium fluoride	Cr F7 Na2 Ni	96-100-0238	0.0000
Lanthanum nickel oxide (1.9/1/3.9)	La1.9 Ni O3.93	96-100-0251	0.0000

and 801 others...

Search-Match

Settings

Reference database used	COD-Inorg 2023.06.06
Automatic zeropoint adaptation	Yes
Downgrade entries with low scaling factors	Yes
Minimum figure-of-merit (FoM)	0.60
2theta window for peak corr.	0.30 deg.
Minimum rel. int. for peak corr.	0
Parameter/influence 2theta	0.50
Parameter/influence intensities	0.50
Parameter multiple/single phase(s)	0.50

Criteria for entries added by user

Reference:

Entry number: 96-154-4616;96-154-4617;96-900-0167;96-900-0168;96-900-0268;96-900-0315;96-900-0316;96-900-0317;96-900-0318;96-900-0319;96-900-0320;96-900-0321;96-900-0322;96-900-0323;96-900-0324;96-900-0325;96-900-0326;96-900-0327;96-900-0535;96-900-0536;96-900-0537;96-900-0538;96-900-0539;96-900-0540;96-900-0541;96-900-0542;96-900-0788;96-900-1065;96-900-1667;96-900-1668;96-900-1669;96-900-1670;96-900-1671;96-900-4323;96-900-4324;96-900-4325;96-900-4326;96-900-4327;96-900-4328;96-900-4329;96-900-4330;96-900-4331;96-900-4332;96-900-4333;96-900-7378;96-901-0755;96-901-0756;96-901-0757;96-901-0758;96-901-0759;96-901-0760;96-901-0761;96-901-0762;96-901-0763;96-901-0764;96-901-0765;96-901-0766;96-901-0776;96-901-0777;96-901-0778;96-901-0779;96-901-0780;96-901-0781;96-901-1462;96-901-1463;96-901-1464;96-901-1465;96-901-1466;96-901-1467;96-901-1468;96-901-3094;96-901-3095;96-901-3096;96-901-3097;96-901-3098;96-901-3099;96-901-3100;96-901-3101;96-901-3102;96-901-3640;96-901-3641;96-901-3642;96-901-4298;96-901-5075;96-901-5346;96-901-5659;96-901-6386;96-901-

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Peak List

No.	2theta [°]	d [Å]	I/I0 (peak height)	Counts (peak area)	FWHM	Matched
1	18.52	4.7910	29.50	3.45	0.3843	C
2	20.88	4.2545	179.09	19.30	0.3539	B,D,E
3	22.90	3.8836	36.82	5.39	0.4807	D
4	26.66	3.3438	1000.00	85.38	0.2803	B,E
5	28.16	3.1690	272.57	27.35	0.3294	E
6	29.74	3.0041	50.79	22.31	1.4419	D,E
7	31.12	2.8740	446.49	42.15	0.3099	E
8	32.36	2.7666	56.28	6.11	0.3561	D,E
9	35.64	2.5192	139.51	26.90	0.6331	A,C,D,E
10	36.48	2.4631	245.43	27.98	0.3744	B,D,E
11	39.56	2.2781	108.59	8.81	0.2664	B,D,E
12	42.46	2.1290	74.12	7.75	0.3432	B,E
13	43.70	2.0714	763.56	80.83	0.3476	A,C,E
14	44.64	2.0300	492.96	64.10	0.4269	D,E
15	45.82	1.9804	66.75	7.28	0.3579	B,E
16	46.44	1.9554	34.79	2.54	0.2400	D,E
17	50.18	1.8181	133.05	11.90	0.2936	B,D,E
18	50.92	1.7934	297.22	36.45	0.4027	A,B,D,E
19	52.28	1.7499	70.48	6.11	0.2848	D,E
20	54.92	1.6718	33.46	2.36	0.2315	B,D,E
21	59.96	1.5428	91.88	7.61	0.2718	B,D,E
22	60.90	1.5212	181.50	15.75	0.2850	D,E
23	62.62	1.4835	102.29	10.05	0.3226	C,D,E
24	64.96	1.4356	37.89	6.13	0.5315	D,E
25	68.20	1.3751	77.34	16.17	0.6864	B,D,E

Integrated Profile Areas

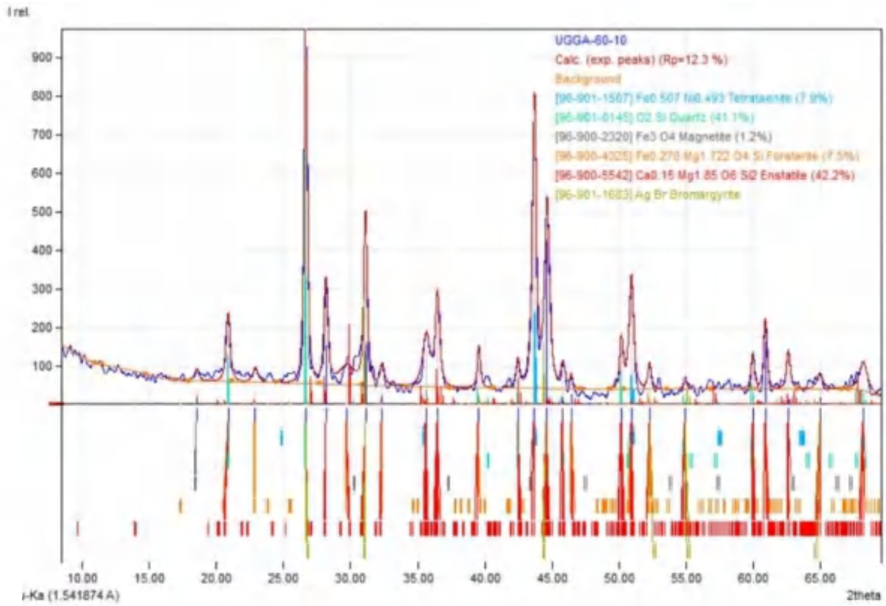
Based on calculated profile

Profile area	*Counts*	*Amount*
Overall diffraction profile	74095	100.00%
Background radiation	45848	61.88%
Diffraction peaks	28247	38.12%
Peak area belonging to selected phases	20136	27.18%
Peak area of phase A (Tetrataenite)	*4611*	*6.22%*
Peak area of phase B (Quartz)	*6663*	*8.99%*
Peak area of phase C (Magnetite)	*451*	*0.61%*
Peak area of phase D (Forsterite)	*1636*	*2.21%*
Peak area of phase E (Enstatite)	*6774*	*9.14%*
Unidentified peak area	8111	10.95%

Peak Residuals

Peak data	*Counts*	*Amount*
Overall peak intensity	550	100.00%
Peak intensity belonging to selected phases	494	89.73%
Unidentified peak intensity	56	10.27%

Diffraction Pattern Graphics



4. Sampel 90 menit, 10% reduktor

Match! Phase Analysis Report

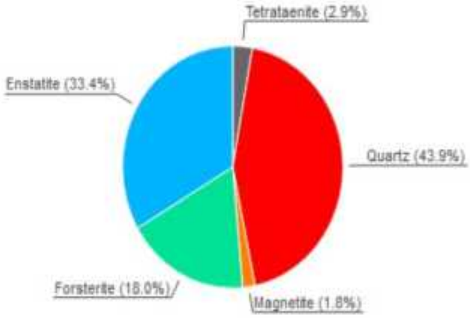
Sample: UGA-XRD-90-10

Sample Data

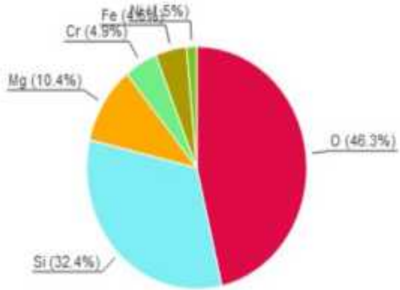
File name	UGA-XRD-90-10.txt
File path	E:/PROPOSAL KP DAN TA/ANALISIS XRD/ugga/UGA-XRD-90-10
Data collected	May 2, 2024 02:27:50
Data range	5.000° - 70.000°
Original data range	5.000° - 70.000°
Number of points	3251
Step size	0.020
Rietveld refinement converged	No
Alpha2 subtracted	No
Background subtr.	No
Data smoothed	Yes
Radiation	X-rays
Wavelength	1.541874 Å

Analysis Results

Phase composition (Weight %)



Elemental composition (Weight %)



Index	Amount (%)	Name	Formula sum
A	2.9	Tetrataenite	Fe Ni
B	43.9	Quartz	O2 Si
C	1.8	Magnetite	Fe3 O4
D	18.0	Forsterite	Fe0.278 Mg1.722 O4 Si
E	33.4	Enstatite	Cr0.306 Mg0.712 O3 Si0.982
	14.4	*Unidentified peak area*	

Element	Amount (weight %)
O	46.3%(*)
Si	32.4%
Mg	10.4%
Cr	4.9%
Fe	4.6%
Ni	1.5%
*LE (sum)	46.3%

Amounts calculated by RIR (Reference Intensity Ratio) method

Details of identified phases

A: Tetrataenite (2.9 %)*

Formula sum	Fe Ni
Entry number	96-901-0018
Figure-of-Merit (FoM)	0.674798*
Total number of peaks	58
Peaks in range	14
Peaks matched	8
actor	0.15*
	P 4/m m m
	tetragonal
	a= 2.5330 Å c= 3.5820 Å
	10.38
	8.276 g/cm³
	Clarke R. S., Scott E. R. D., "Tetrataenite - ordered FeNi, a new mineral in meteorites", American Mineralogist

65, 624-630 (1980)

B: Quartz (43.9 %)*

Formula sum	O2 Si
Entry number	96-900-5020
Figure-of-Merit (FoM)	0.784493*
Total number of peaks	140
Peaks in range	36
Peaks matched	26
Intensity scale factor	0.66*
Space group	P 32 2 1 S
Crystal system	trigonal (hexagonal axes)
Unit cell	a= 4.9297 Å c= 5.4151 Å
I/Ic	2.90
Calc. density	2.626 g/cm³
Reference	Kihara K., "An X-ray study of the temperature dependence of the quartz structureSample: at T = 498 K", European Journal of Mineralogy **2**, 63-77 (1990)

C: Magnetite (1.8 %)*

Formula sum	Fe3 O4
Entry number	96-900-5814
Figure-of-Merit (FoM)	0.537770*
Total number of peaks	72
Peaks in range	22
Peaks matched	9
Intensity scale factor	0.05*
Space group	F d -3 m
Crystal system	cubic
Unit cell	a= 8.3578 Å
I/Ic	5.82
Calc. density	5.268 g/cm³
Reference	Finger L. W., Hazen R. M., Hofmeister A. M., "High-pressure crystal chemistry of spinel (MgAl2O4)and magnetite (Fe3O4): comparisons with silicate spinelsSample: P = 13 kbar", Physics and Chemistry of Minerals **13**, 215-220 (1986)

D: Forsterite (18.0 %)*

Formula sum	Fe0.278 Mg1.722 O4 Si
Entry number	96-900-4325
Figure-of-Merit (FoM)	0.649345*
Total number of peaks	726
Peaks in range	141
Peaks matched	60
Intensity scale factor	0.11*
Space group	P b n m
Crystal system	orthorhombic
Unit cell	a= 4.7673 Å b= 10.2490 Å c= 5.9996 Å
I/Ic	1.15
Calc. density	3.387 g/cm³
Reference	Liang J., Hawthorne F. C., "Characterization of fine-grained mixtures of rock-forming minerals byRietveld structure refinement: olivine + pyroxene Sample: P1 Rietveld, 9.9%olivine", The Canadian Mineralogist **32**, 541-552 (1994)

E: Enstatite (33.4 %)*

Formula sum	Cr0.306 Mg0.712 O3 Si0.982
Entry number	96-900-1221
Figure-of-Merit (FoM)	0.640575*
Total number of peaks	998
Peaks in range	344
Peaks matched	134
Intensity scale factor	0.17*
Space group	P 1 21/c 1
Crystal system	monoclinic
Unit cell	a= 9.7130 Å b= 8.9100 Å c= 5.2380 Å β= 109.410 °
I/Ic	0.98
Calc. density	3.380 g/cm³
Reference	Angel R. J., Gasparik T., Finger L. W., "Crystal structure of a Cr-bearing pyroxeneSample: Mg1.4Cr.6Si2O6", American Mineralogist **74**, 599-603 (1989)

(*)2theta values have been shifted internally for the calculation of the amounts, the intensity scaling factors as well as the figure-of-merit (FoM), due to the active search-match option 'Automatic zero point adaption'.

Candidates

Name	*Formula*	*Entry No.*	*FoM*
	Cu1.8 Se	96-210-2501	0.6770
	Al0.14 Ca0.012 Fe0.24 Mg1.66 O6 Si1.94	96-900-6437	0.4588
	Co0.132 Mg0.781 Mn0.087 O3 Si	96-900-4119	0.4565
	Al0.14 Ca0.012 Fe0.24 Mg1.66 O6	96-900-6439	0.4543

	Si1.94		
Enstatite	Ca0.07 Mg1.93 O6 Si2	96-900-4031	0.4480
Enstatite	Mg O3 Si	96-901-4861	0.4415
Enstatite	Fe0.249 Mg0.751 O3 Si	96-900-1642	0.4395
Enstatite	Fe0.296 Mg0.704 O3 Si	96-901-6944	0.4343
Enstatite	Fe0.296 Mg0.704 O3 Si	96-901-6946	0.4343
Enstatite	Fe0.292 Mg0.709 O3 Si	96-901-6943	0.4323
Enstatite	Fe0.292 Mg0.709 O3 Si	96-901-6945	0.4322
Enstatite	Mg O3 Si	96-900-1596	0.4253
Enstatite	Ca0.043 Fe0.807 Mg1.15 O6 Si2	96-900-1700	0.4167
Enstatite	Ca0.043 Fe0.802 Mg1.155 O6 Si2	96-900-1701	0.4155
h-Magnetite	Al0.22 Cr0.3 Fe2.15 Mg0.26 O4 Si0.08	96-901-7087	0.3487
Enstatite	Mg O3 Si	96-901-1582	0.3431
h-Magnetite	Al0.22 Cr0.3 Fe2.15 Mg0.26 O4 Si0.08	96-901-7088	0.3415
Dimagnesium catena-disilicate (Enstatite)	Mg2 O6 Si2	96-100-0048	0.0000
Magnesium iron silicate * (Enstatite ferroan)	Fe0.155 Mg0.845 O3 Si	96-101-1019	0.0000
Iron diiron(III) oxide (Magnetite)	Fe3 O4	96-101-1033	0.0000
Iron diiron(III) oxide (Magnetite)	Fe3 O4	96-101-1085	0.0000
Magnetite	Fe3 O4	96-153-9748	0.0000
hydrous forsterite (Mg1.985Si0.993H0.06O4 hydrous forsterite)	H0.06 Mg1.985 O4 Si0.993	96-154-4616	0.0000
Mg1.85Fe0.14Si0.99H0.06O4 Fe-bearing hydrous forsterite (Iron-bearing hydrous forsterite)	Fe0.14 H0.06 Mg1.85 O4 Si0.99	96-154-4617	0.0000
MgSiO3 (protoenstatite at 1100 C)	Mg O3 Si	96-154-5543	0.0000
MgSiO3 protoenstatite (protoenstatite)	Mg O3 Si	96-154-8550	0.0000
dft optimized protoenstatite (protoenstatite)	Mg O3 Si	96-154-8551	0.0000
MgSiO3 low-clinoenstatite (low-clinoenstatite)	Mg O3 Si	96-154-8552	0.0000
Magnesium iron aluminium catena-alumosilicate (Enstatite)	Al0.067 Fe0.067 Mg1.94 O6 Si1.93	96-156-6758	0.0000
Iron diiron(III) oxide (Magnetite)	Fe3 O4	96-722-8111	0.0000
Forsterite	Fe0.2 Mg1.8 O4 Si	96-900-0167	0.0000
Forsterite	Ca0.004 Fe0.912 Mg1.07 Mn0.012 O4 Si	96-900-0168	0.0000
Forsterite	Mg2 O4 Si	96-900-0268	0.0000
Forsterite	Ca0.01 Fe0.35 Mg1.64 O4 Si	96-900-0315	0.0000
Forsterite	Fe0.58 Mg1.42 O4 Si	96-900-0316	0.0000
Forsterite	Ca0.01 Fe0.61 Mg1.38 O4 Si	96-900-0317	0.0000
Forsterite	Ca0.01 Fe0.61 Mg1.38 O4 Si	96-900-0318	0.0000
Forsterite	Ca0.01 Fe0.61 Mg1.38 O4 Si	96-900-0319	0.0000
Forsterite	Mg2 O4 Si	96-900-0320	0.0000
Forsterite	Mg2 O4 Si	96-900-0321	0.0000
Forsterite	Mg2 O4 Si	96-900-0322	0.0000
Forsterite	Mg2 O4 Si	96-900-0323	0.0000
Forsterite	Fe1.1 Mg0.75 Mn0.15 O4 Si	96-900-0324	0.0000
Forsterite	Fe1.1 Mg0.75 Mn0.15 O4 Si	96-900-0325	0.0000
Forsterite	Fe1.1 Mg0.75 Mn0.15 O4 Si	96-900-0326	0.0000
Forsterite	Fe1.1 Mg0.75 Mn0.15 O4 Si	96-900-0327	0.0000
Forsterite	Mg2 O4 Si	96-900-0535	0.0000
Forsterite	Mg2 O4 Si	96-900-0536	0.0000
Forsterite	Mg2 O4 Si	96-900-0537	0.0000
Forsterite	Mg2 O4 Si	96-900-0538	0.0000
Forsterite	Mg2 O4 Si	96-900-0539	0.0000
Forsterite	Mg2 O4 Si	96-900-0540	0.0000

and 252 others...

Search-Match

Settings

Reference database used	COD-Inorg 2023.06.06
Automatic zeropoint adaptation	Yes
Downgrade entries with low scaling factors	Yes
Minimum figure-of-merit (FoM)	0.60
2theta window for peak corr.	0.30 deg.
Minimum rel. int. for peak corr.	0
Parameter/influence 2theta	0.50
Parameter/influence intensities	0.50
Parameter multiple/single phase(s)	0.50

Criteria for entries added by user

Reference:

Entry number: 96-101-1033;96-101-1085;96-153-9748;96-722-8111;96-900-0927;96-900-0928;96-900-0929;96-900-0930;96-900-0931;96-900-0932;96-900-0933;96-900-0934;96-900-0935;96-900-2317;96-900-2318;96-900-2319;96-900-2320;96-900-2321;96-900-2322;96-900-2323;96-900-2324;96-900-2325;96-900-2326;96-900-2327;96-900-2328;96-900-2329;96-900-2330;96-900-2331;96-900-2332;96-900-2333;96-900-2674;96-900-2675;96-900-4088;96-900-4156;96-900-4157;96-900-5813;96-900-5814;96-900-5815;96-900-5816;96-900-5817;96-900-5837;96-900-5838;96-900-5839;96-900-5840;96-900-5841;96-900-5842;96-900-5843;96-900-6185;96-900-6190;96-900-6195;96-900-6200;96-900-6243;96-900-6248;96-900-6253;96-900-6266;96-900-6921;96-900-6922;96-900-6923;96-900-7645;96-900-7707;96-900-7708;96-900-9769;96-900-9770;96-901-0940;96-901-0941;96-901-0942;96-901-3530;96-901-3531;96-901-3532;96-901-3533;96-901-3534;96-901-

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Peak List

No.	*2theta [°]*	*d [Å]*	*I/I0 (peak height)*	*Counts (peak area)*	*FWHM*	*Matched*
1	20.26	4.3796	41.57	4.77	0.2800	D,E
2	20.86	4.2550	145.89	21.54	0.3600	B,D,E
3	22.82	3.8938	34.92	4.01	0.2800	D
4	25.38	3.5065	71.51	12.91	0.4400	D,E
5	26.66	3.3410	1000.00	131.27	0.3200	B,E
6	28.20	3.1620	270.06	35.45	0.3200	E
7	29.72	3.0036	72.31	27.29	0.9200	D,E
8	30.52	2.9267	80.18	27.63	0.8400	C,E
9	31.12	2.8716	423.68	55.61	0.3200	E
10	31.68	2.8221	34.17	5.05	0.3600	E
11	32.10	2.7861	81.23	18.66	0.5600	D,E
12	33.22	2.6969	38.70	4.68	0.2951	
13	35.52	2.5253	185.47	33.48	0.4400	A,C,D,E
14	36.48	2.4610	274.75	58.61	0.5200	B,D,E
15	39.56	2.2762	122.60	20.12	0.4000	B,D,E
16	40.02	2.2511	89.80	11.79	0.3200	B,D,E
17	42.46	2.1272	84.17	22.10	0.6400	B,E
18	43.28	2.0888	42.23	5.54	0.3200	C,E
19	43.78	2.0661	234.57	38.49	0.4000	A,E
20	44.20	2.0474	57.61	36.86	1.5600	E
21	44.60	2.0300	93.91	20.03	0.5200	D,E
22	45.82	1.9788	47.04	6.17	0.3200	B,E
23	46.48	1.9522	36.50	4.79	0.3200	D,E
24	50.16	1.8172	136.57	17.93	0.3200	B,D,E
25	51.08	1.7867	122.84	22.17	0.4400	A,D,E
26	51.68	1.7673	34.13	26.88	1.9200	E
27	52.18	1.7515	47.88	12.57	0.6400	D,E
28	54.90	1.6710	52.64	7.77	0.3600	B,D,E
29	59.94	1.5420	84.74	11.12	0.3200	B,D,E
30	60.94	1.5191	158.23	20.77	0.3200	D,E
31	62.20	1.4913	37.53	17.24	1.1200	D,E
32	62.56	1.4836	65.22	8.56	0.3200	C,D,E
33	67.26	1.3909	53.07	7.84	0.3600	B,C,D,E
34	67.82	1.3807	53.90	7.96	0.3600	B,D,E
35	68.18	1.3743	77.79	20.42	0.6400	B,D,E

Integrated Profile Areas

Based on calculated profile

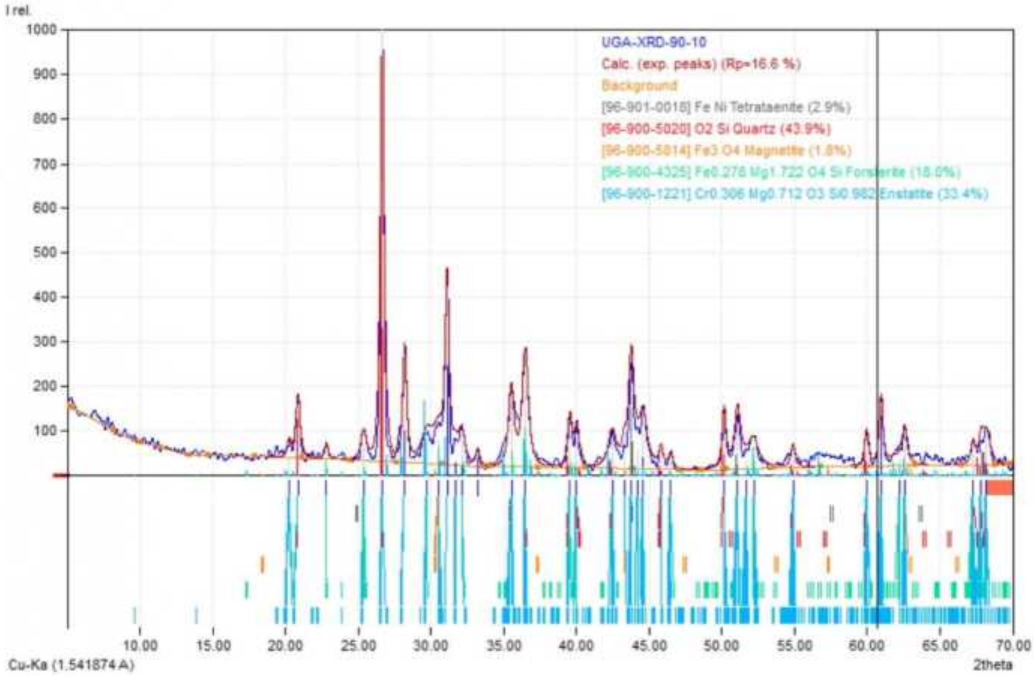
Profile area	*Counts*	*Amount*
Overall diffraction profile	74198	100.00%
liation	36171	48.75%
s	38027	51.25%
ıging to selected phases	27307	36.80%
ıase A (Tetrataenite)	*2119*	*2.86%*
ıase B (Quartz)	*8959*	*12.07%*
ıase C (Magnetite)	*1158*	*1.56%*

Peak area of phase D (Forsterite)	*5437*	*7.33%*
Peak area of phase E (Enstatite)	*9634*	*12.98%*
Unidentified peak area	10720	14.45%

Peak Residuals

Peak data	*Counts*	*Amount*
Overall peak intensity	788	100.00%
Peak intensity belonging to selected phases	742	94.13%
Unidentified peak intensity	46	5.87%

Diffraction Pattern Graphics



5. Sampel 120 menit, 10% reduktor

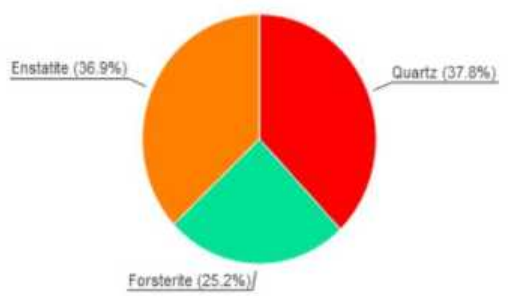
Match! Phase Analysis Report

Sample: UGA-XRD-120-10 (5-70)

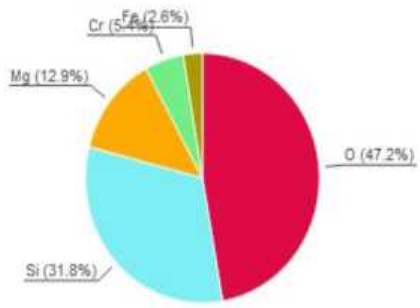
Sample Data	
File name	UGA-XRD-120-10.RAW
File path	E:/PROPOSAL KP DAN TA/ANALISIS XRD/ugga/UGA-XRD-120-10
Data collected	May 2, 2024 02:27:50
Data range	5.000° - 70.000°
Original data range	5.000° - 70.000°
Number of points	3251
Step size	0.020
Rietveld refinement converged	No
Alpha2 subtracted	No
Background subtr.	No
Data smoothed	Yes
Radiation	X-rays
Wavelength	1.540600 Å

Analysis Results

Phase composition (Weight %)



Elemental composition (Weight %)



Index	Amount (%)	Name	Formula sum
A	37.8	Quartz	O2 Si
B	25.2	Forsterite	Fe0.278 Mg1.722 O4 Si
C	36.9	Enstatite	Cr0.306 Mg0.712 O3 Si0.982
	13.4	*Unidentified peak area*	

Amounts calculated by RIR (Reference Intensity Ratio) method

Element	Amount (weight %)
O	47.2%(*)
Si	31.8%
Mg	12.9%
Cr	5.4%
Fe	2.6%
*LE (sum)	47.2%

Details of identified phases

A: Quartz (37.8 %)*

Formula sum	O2 Si
Entry number	96-900-5018
Figure-of-Merit (FoM)	0.828212*
Total number of peaks	70
Peaks in range	18
Peaks matched	13
Intensity scale factor	0.98*
	P 32 2 1 S
	trigonal (hexagonal axes)
	a= 4.9137 Å c= 5.4047 Å
	2.96
	2.649 g/cm³
	Kihara K., "An X-ray study of the temperature dependence of the quartz structureSample: at T = 298 K", European Journal of Mineralogy **2**, 63-77 (1990)

B: Forsterite (25.2 %)*

Formula sum	Fe0.278 Mg1.722 O4 Si
Entry number	96-900-4325
Figure-of-Merit (FoM)	0.765456*
Total number of peaks	363
Peaks in range	71
Peaks matched	42
Intensity scale factor	0.25*
Space group	P b n m
Crystal system	orthorhombic
Unit cell	a= 4.7673 Å b= 10.2490 Å c= 5.9996 Å
I/Ic	1.15
Calc. density	3.387 g/cm³
Reference	Liang J., Hawthorne F. C., "Characterization of fine-grained mixtures of rock-forming minerals byRietveld structure refinement: olivine + pyroxene Sample: P1 Rietveld, 9.9%olivine", The Canadian Mineralogist **32**, 541-552 (1994)

C: Enstatite (36.9 %)*

Formula sum	Cr0.306 Mg0.712 O3 Si0.982
Entry number	96-900-1221
Figure-of-Merit (FoM)	0.684153*
Total number of peaks	499
Peaks in range	172
Peaks matched	85
Intensity scale factor	0.32*
Space group	P 1 21/c 1
Crystal system	monoclinic
Unit cell	a= 9.7130 Å b= 8.9100 Å c= 5.2380 Å β= 109.410 °
I/Ic	0.98
Calc. density	3.380 g/cm³
Reference	Angel R. J., Gasparik T., Finger L. W., "Crystal structure of a Cr-bearing pyroxeneSample: Mg1.4Cr.6Si2O6", American Mineralogist **74**, 599-603 (1989)

(*)2theta values have been shifted internally for the calculation of the amounts, the intensity scaling factors as well as the figure-of-merit (FoM), due to the active search-match option 'Automatic zero point adaption'.

Candidates

Name	***Formula***	***Entry No.***	***FoM***
	Cl K0.4 Na0.6	96-900-3248	0.6340
	Cl K0.4 Na0.6	96-900-3235	0.6336
	Cl K0.4 Na0.6	96-900-3251	0.6336
	Cl K0.4 Na0.6	96-900-3230	0.6329
	Cl K0.4 Na0.6	96-900-3244	0.6322
	Cl K0.4 Na0.6	96-900-3225	0.6320
	Cl K0.4 Na0.6	96-900-3241	0.6313
	Cl K0.1 Na0.9	96-900-3307	0.6306
	Cl K0.2 Na0.8	96-900-3265	0.6260
	Cl K0.2 Na0.8	96-900-3302	0.6251
(Mo0.09 Ni0.91)	Mo0.09 Ni0.91	96-152-2538	0.6238
	Cl K0.4 Na0.6	96-900-3234	0.6235
	Cl K0.4 Na0.6	96-900-3239	0.6235
	Cl K0.4 Na0.6	96-900-3247	0.6235
Halite	Cl Na	96-900-6386	0.6228
	Cl K0.4 Na0.6	96-900-3255	0.6224
	Cl K0.4 Na0.6	96-900-3240	0.6217
Halite	Cl Na	96-900-3315	0.6187
(Ni19 Sn)0.2	Ni3.8 Sn0.2	96-153-8977	0.6184
	Cl K0.4 Na0.6	96-900-3238	0.6184
Neon	Ne	96-901-1706	0.6184
(Ni0.92 Pd0.08)	Ni0.92 Pd0.08	96-152-3344	0.6183
(Ni23 Pt2)0.16	Ni3.68 Pt0.32	96-153-7975	0.6183
(Cu Ni)	Cu Ni	96-152-4233	0.6149
(Nb3 Ni97)0.04	Nb0.12 Ni3.88	96-153-8886	0.6146
	Cl K0.2 Na0.8	96-900-3285	0.6144
	Ag14.814 Cu1.186 S11 Sb2	96-210-0486	0.6138
Polybasite	Ag29.629 Cu2.371 S22 Sb4	96-901-1313	0.6138
	Ag0.5 Sb0.5 Se	96-901-1029	0.6133
	Nd Se	96-900-8692	0.6132
	As Y	96-900-8768	0.6123
	Ni	96-210-2288	0.6110
	Cl K0.4 Na0.6	96-900-3229	0.6103
	Ag0.5 Bi0.5 Se	96-901-1022	0.6094
Calcium selenide	Ca Se	96-101-0881	0.6090
Nickel	Ni	96-901-3029	0.6082
	Cu Ga Te2	96-152-4747	0.6069
[illegible]308 Ti0.048)	Cr0.144 Ni0.808 Ti0.048	96-152-5378	0.6050
	Co	96-900-8467	0.6050
	Ca Se	96-900-8608	0.6045
	Ni	96-901-3004	0.6038

	Nd Se	96-153-9310	0.6021
Enstatite	Fe0.47 Li0.2 Mg1.33 O6 Si2	96-901-0872	0.4987
Enstatite	Al0.14 Ca0.012 Fe0.24 Mg1.66 O6 Si1.94	96-900-6439	0.4978
Enstatite	Al0.14 Ca0.012 Fe0.24 Mg1.66 O6 Si1.94	96-900-6437	0.4939
Magnesium iron silicate * (Enstatite ferroan)	Fe0.155 Mg0.845 O3 Si	96-101-1019	0.4929
Enstatite	Co0.132 Mg0.781 Mn0.087 O3 Si	96-900-4119	0.4728
Enstatite	Fe0.249 Mg0.751 O3 Si	96-900-1642	0.4672
Enstatite	Fe0.296 Mg0.704 O3 Si	96-901-6944	0.4602
Enstatite	Fe0.296 Mg0.704 O3 Si	96-901-6946	0.4602
Enstatite	Fe0.292 Mg0.709 O3 Si	96-901-6943	0.4577
Enstatite	Fe0.292 Mg0.709 O3 Si	96-901-6945	0.4577

and 193 others...

Search-Match

Settings

Reference database used	COD-Inorg 2023.06.06
Automatic zeropoint adaptation	Yes
Downgrade entries with low scaling factors	Yes
Minimum figure-of-merit (FoM)	0.60
2theta window for peak corr.	0.30 deg.
Minimum rel. int. for peak corr.	0
Parameter/influence 2theta	0.50
Parameter/influence intensities	0.50
Parameter multiple/single phase(s)	0.50

Criteria for entries added by user

Reference:

Entry number: 96-101-1033;96-101-1085;96-153-9748;96-722-8111;96-900-0927;96-900-0928;96-900-0929;96-900-0930;96-900-0931;96-900-0932;96-900-0933;96-900-0934;96-900-0935;96-900-2317;96-900-2318;96-900-2319;96-900-2320;96-900-2321;96-900-2322;96-900-2323;96-900-2324;96-900-2325;96-900-2326;96-900-2327;96-900-2328;96-900-2329;96-900-2330;96-900-2331;96-900-2332;96-900-2333;96-900-2674;96-900-2675;96-900-4088;96-900-4156;96-900-4157;96-900-5813;96-900-5814;96-900-5815;96-900-5816;96-900-5817;96-900-5837;96-900-5838;96-900-5839;96-900-5840;96-900-5841;96-900-5842;96-900-5843;96-900-6185;96-900-6190;96-900-6195;96-900-6200;96-900-6243;96-900-6248;96-900-6253;96-900-6266;96-900-6921;96-900-6922;96-900-6923;96-900-7645;96-900-7707;96-900-7708;96-900-9769;96-900-9770;96-901-0940;96-901-0941;96-901-0942;96-901-3530;96-901-3531;96-901-3532;96-901-3533;96-901-3534;96-901-3535;96-901-3536;96-901-6802;96-901-6803;96-901-6804;96-901-6805;96-901-6806;96-901-6807;96-901-6808;96-901-6809;96-901-6810;96-901-6811;96-901-6812;96-901-6813;96-901-6814;96-901-6815;96-901-6816;96-901-6817;96-901-6818;96-901-7087;96-901-7088;96-901-0018;96-901-1507;96-100-0048;96-101-1019;96-154-5543;96-154-8550;96-154-8551;96-154-8552;96-156-6758;96-900-1179;96-900-1221;96-900-1594;96-900-1595;96-900-1596;96-900-1597;96-900-1598;96-900-1599;96-900-1600;96-900-1601;96-900-1602;96-900-1642;96-900-1643;96-900-1644;96-900-1645;96-900-1646;96-900-1700;96-900-1701;96-900-2711;96-900-2712;96-900-2713;96-900-2714;96-900-2715;96-900-2716;96-900-2717;96-900-4030;96-900-4031;96-900-4032;96-900-4033;96-900-4034;96-900-4118;96-900-4119;96-900-4957;96-900-4958;96-900-5542;96-900-5543;96-900-5544;96-900-5545;96-900-5589;96-900-5590;96-900-5776;96-900-5777;96-900-6338;96-900-6339;96-900-6340;96-900-6341;96-900-6342;96-900-6343;96-900-6428;96-900-6429;96-900-6430;96-900-6431;96-900-6432;96-900-6433;96-900-6434;96-900-6435;96-900-6436;96-900-6437;96-900-6438;96-900-6439;96-900-6440;96-900-6441;96-900-6442;96-900-6443;96-900-8078;96-900-8165;96-901-0242;96-901-0872;96-901-0873;96-901-0874;96-901-0888;96-901-0889;96-901-0890;96-901-0891;96-901-0892;96-901-0893;96-901-0894;96-901-0895;96-901-0896;96-901-0897;96-901-0898;96-901-0899;96-901-1582;96-901-3659;96-901-4118;96-901-4448;96-901-4536;96-901-4861;96-901-4978;96-901-4984;96-901-5810;96-901-6053;96-901-6154;96-901-6258;96-901-6266;96-901-6573;96-901-6943;96-901-6944;96-901-6945;96-901-6946

Peak List

No.	2theta [°]	d [Å]	I/I0 (peak height)	Counts (peak area)	FWHM	Matched
1	13.88	6.3751	32.42	3.15	0.2800	C
2	19.38	4.5765	41.39	4.60	0.3200	C
3	20.12	4.4098	46.01	8.31	0.5200	C
4	20.88	4.2510	152.71	23.34	0.4400	A
5	22.86	3.8871	52.90	8.08	0.4400	B
6	25.36	3.5092	117.54	16.33	0.4000	B,C
7	26.66	3.3410	1000.00	111.15	0.3200	A,C
8	28.18	3.1642	244.96	30.63	0.3600	C
9	29.68	3.0076	97.64	12.21	0.3600	B,C
10	30.10	2.9666	55.15	29.88	1.5600	
11	30.54	2.9248	93.92	20.88	0.6400	C
12	31.12	2.8716	548.30	60.94	0.3200	C
	.80	2.8117	69.63	8.71	0.3600	C
	.10	2.7861	109.47	21.29	0.5600	B,C
	.20	2.6963	43.16	3.60	0.2400	
	.58	2.5212	210.89	55.67	0.7600	B,C
	.48	2.4610	337.36	60.93	0.5200	A,B,C
	.54	2.2773	108.49	13.57	0.3600	A,B,C
	.94	2.2555	45.39	17.66	1.1200	B,C
	.68	2.1652	34.29	10.48	0.8800	B,C

21	42.50	2.1253	66.38	14.76	0.6400	A,B,C
22	43.28	2.0888	40.53	3.38	0.2400	C
23	44.22	2.0466	98.64	17.82	0.5200	C
24	44.50	2.0343	39.22	5.45	0.4000	B,C
25	45.82	1.9788	55.54	5.40	0.2800	A,C
26	46.44	1.9538	34.70	2.41	0.2000	B,C
27	50.18	1.8166	153.56	17.07	0.3200	A,B,C
28	51.20	1.7827	78.95	14.26	0.5200	C
29	52.04	1.7559	113.13	40.87	1.0400	B
30	52.32	1.7472	31.49	5.69	0.5200	B,C
31	54.94	1.6699	66.08	11.02	0.4800	A,B,C
32	56.66	1.6232	52.58	11.69	0.6400	B,C
33	58.20	1.5839	51.92	7.21	0.4000	B,C
34	58.90	1.5667	39.29	3.82	0.2800	B,C
35	60.02	1.5401	94.81	11.86	0.3600	A,B,C
36	60.88	1.5204	75.68	9.46	0.3600	B,C
37	61.86	1.4987	31.91	11.08	1.0000	B,C
38	62.58	1.4831	91.86	14.04	0.4400	B,C
39	63.28	1.4684	32.78	8.65	0.7600	B,C
40	64.06	1.4524	35.09	3.90	0.3200	A,C
41	66.54	1.4042	32.65	17.24	1.5200	B,C
42	66.90	1.3975	52.96	5.15	0.2800	B,C
43	67.18	1.3923	42.15	7.03	0.4800	B,C
44	67.80	1.3811	58.18	8.08	0.4000	A,B,C
45	68.20	1.3740	82.62	17.22	0.6000	A,B,C

Integrated Profile Areas

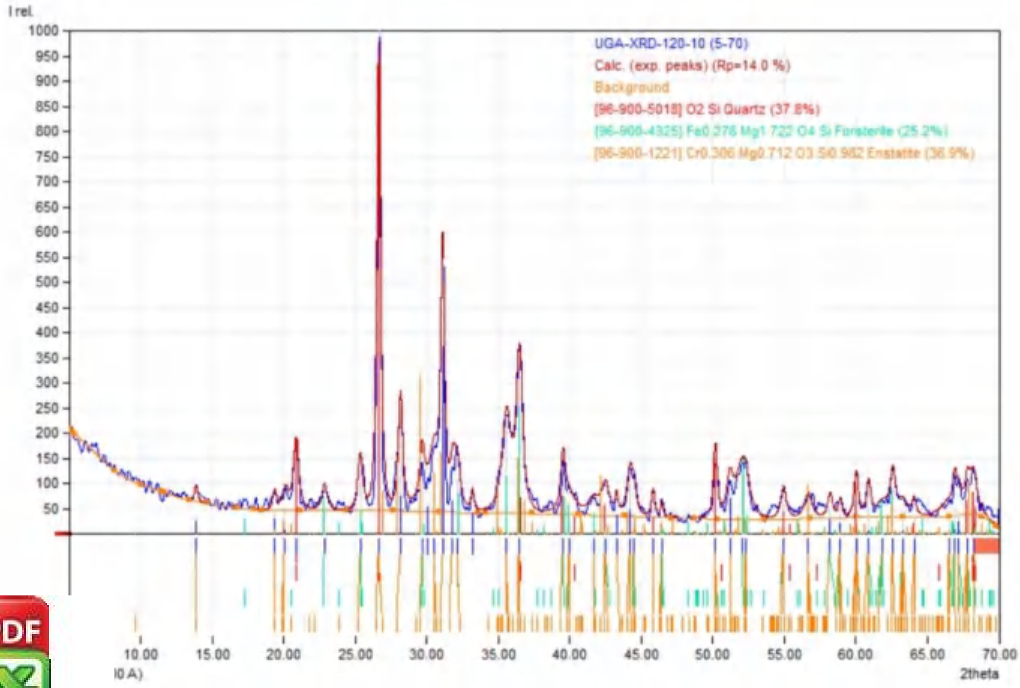
Based on calculated profile

Profile area	*Counts*	*Amount*
Overall diffraction profile	83321	100.00%
Background radiation	46057	55.28%
Diffraction peaks	37265	44.72%
Peak area belonging to selected phases	26067	31.28%
Peak area of phase A (Quartz)	*8641*	*10.37%*
Peak area of phase B (Forsterite)	*7474*	*8.97%*
Peak area of phase C (Enstatite)	*9952*	*11.94%*
Unidentified peak area	11198	13.44%

Peak Residuals

Peak data	*Counts*	*Amount*
Overall peak intensity	796	100.00%
Peak intensity belonging to selected phases	734	92.16%
Unidentified peak intensity	62	7.84%

Diffraction Pattern Graphics



Lampiran 3 Hasil Analisis XRF

	Ni	Fe	Fe_2O_3	SiO_2	MgO	Al_2O_3	SiO_2/MgO
SA	1,90	17,22	24,67	23,73	21,14	8,20	1,12
As35	1,81	14,81	21,22	26,49	21,81	7,03	1,21
As310	1,81	15,12	21,66	26,60	21,29	7,46	1,25
As315	1,87	15,40	22,06	26,76	21,17	7,65	1,26
As320	1,78	14,42	20,66	25,84	20,60	6,77	1,25
As65	1,78	14,73	21,11	25,48	21,67	7,12	1,18
As610	1,95	16,02	22,95	26,81	20,69	7,48	1,30
As615	1,91	15,31	21,93	30,34	22,11	7,75	1,37
As620	1,77	14,50	20,77	28,89	21,88	7,22	1,32
As95	1,68	13,61	19,50	27,78	21,60	6,76	1,29
As910	1,88	14,81	21,22	29,34	21,70	7,05	1,35
As915	1,91	16,20	23,22	25,77	20,66	6,75	1,25
As920	1,73	15,35	21,99	25,69	21,70	7,64	1,18
As125	1,68	13,96	20,00	31,50	21,34	6,85	1,48
As1210	1,63	13,58	19,46	31,05	20,20	6,30	1,54
As1215	1,84	14,97	21,45	36,92	21,77	7,47	1,70
As1220	1,71	14,45	20,70	33,98	21,33	7,00	1,59

Lampiran B 10

Kartu Konsultasi Tugas Akhir

JUDUL: Studi Transformasi Mineralogi dan Komposisi Kimia Bijih Saprolit dengan Metode Pemanggangan Tereduksi Menggunakan Arang Tongkol Jagung.

(Konsultasi minimal 8 kali)

TANGGAL	MATERI KONSULTASI	PARAF DOSEN
14/03/2024	- Tujuan Penelitian - Bab 4 : sistematika Penulisan - Latar Belakang	
27/03/2024	- Penjelasan mengenai komposisi kimia - Abstrak - Bagan Alir	
1/04/2024	- Grafik dan tabel komposisi kimia - Perbaikan abstrak - kesimpulan	
19/04/2024	- Reaksi Perubahan mineralogi ditambah - kenampakan mineral pada analisis mikroskop	
26/04/2024	- Penambahan sampel untuk analisis XRD - Perubahan komposisi kimia	
29/04/2024	- Perbaikan Jurnal Ilmiah - Poster	
7/05/2024	- Poster - kesimpulan	

TANGGAL	MATERI KONSULTASI	PARAF DOSEN
8/05/2024	Acc untuk Seminar Hasil	