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## **LAMPIRAN**

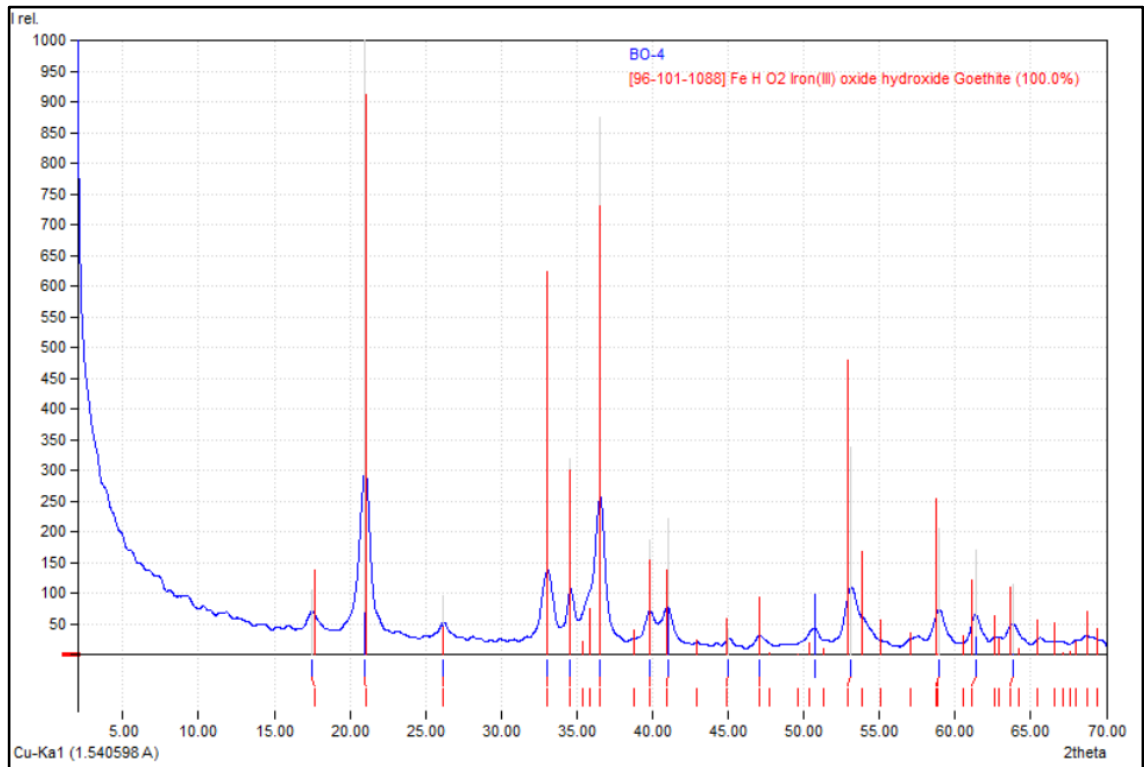
**LAMPIRAN A**  
**HASIL ANALISIS *X-RAY DIFFRACTION* (XRD)**

## Sampel BO-4

### Matched Phases

Index	Amount (%)	Name	Formula Sum
A	100.0	Goethite	Fe H O2
	1.9	Unidentified peak area	

### Diffraction Pattren Graphics





Peak List

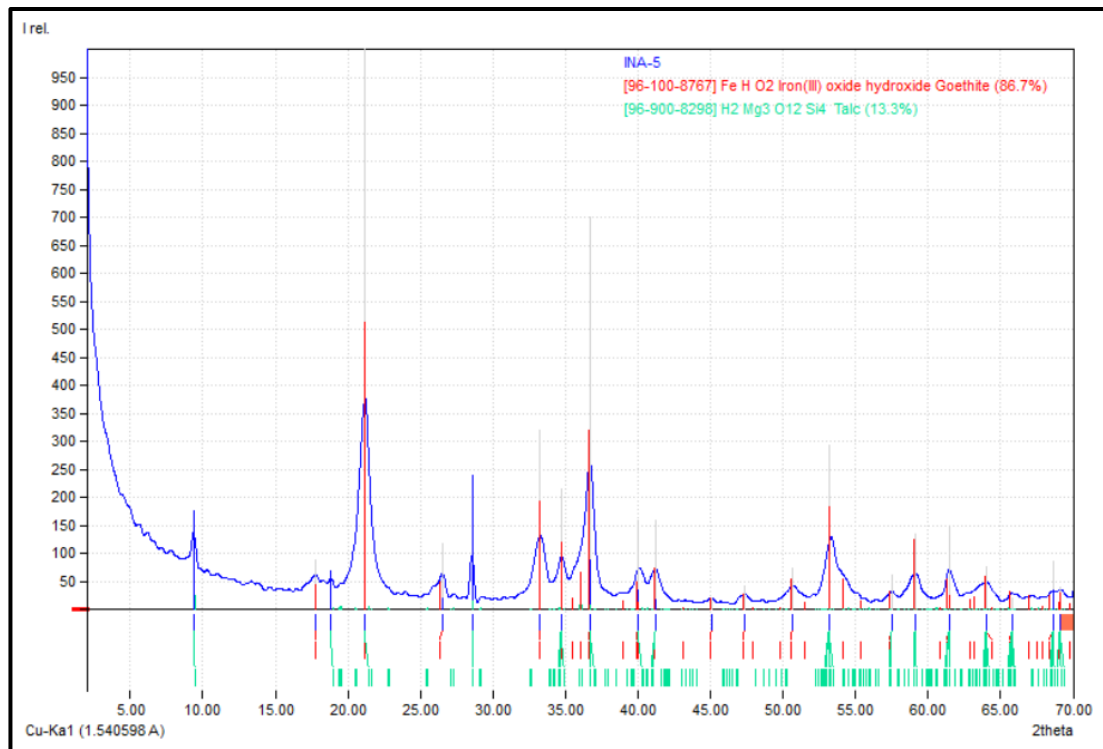
<b>No.</b>	<b>2theta [°]</b>	<b>d [Å]</b>	<b>I/I0</b>	<b>FWHM</b>	<b>Matched</b>
1	17.50	5.0636	106.05	0.7019	A
2	21.02	4.2230	1000.00	0.7416	A
3	26.20	3.3986	96.72	0.7918	A
4	33.06	2.7074	439.11	0.8283	A
5	34.58	2.5918	319.36	0.5600	A
6	36.54	2.4571	874.67	0.7200	A
7	39.80	2.2631	187.31	0.9959	A
8	41.00	2.1996	222.05	0.9959	A
9	45.04	2.0112	42.42	0.3822	A
10	47.08	1.9287	56.50	0.5904	A
11	50.70	1.7991	98.70	0.7836	
12	53.12	1.7227	338.25	0.8800	A
13	58.94	1.5658	204.88	0.7516	A
14	61.34	1.5101	171.28	0.6345	A
15	63.80	1.4577	114.55	0.8149	A

## Sampel INA-5

### Matched Phases

Index	Amount (%)	Name	Formula Sum
A	86.7	Iron(III) oxide hydroxide Goethite	F H O2
B	13.3	Talc	H2 Mg3 O12 Si4
	5.0	Unidentified peak area	

### Diffraction Pattern Graphics



**Peak List**

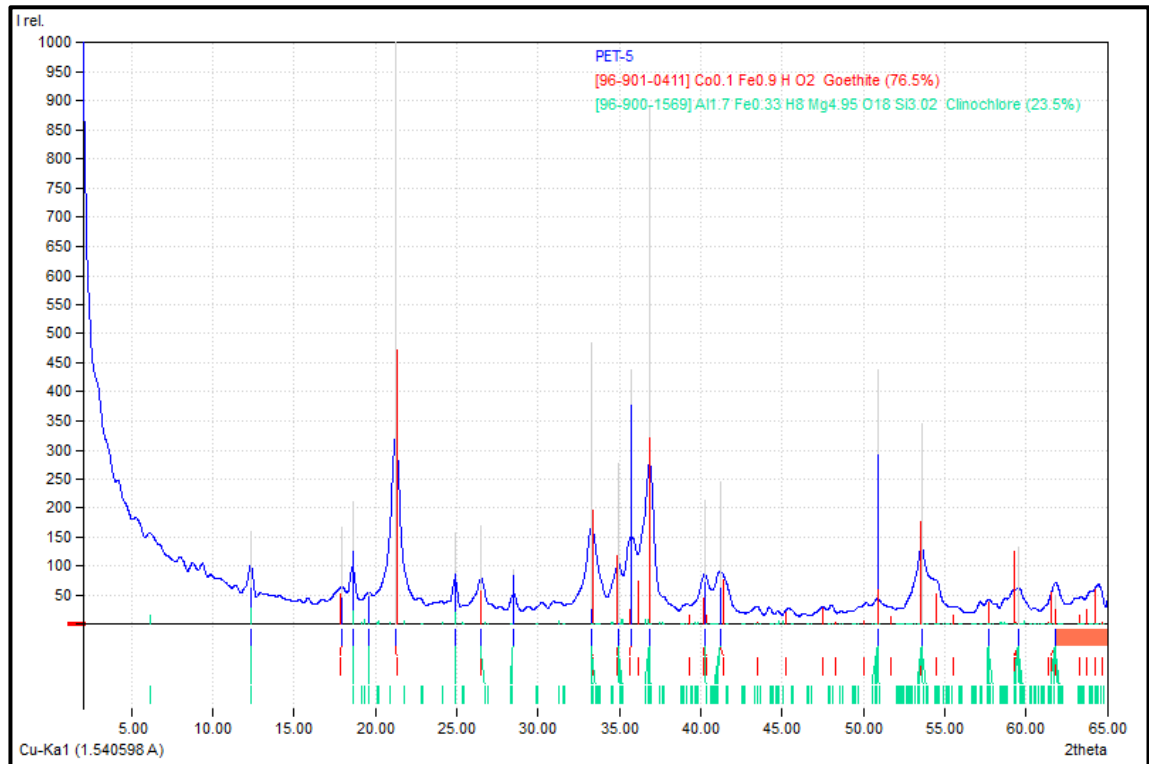
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1	9.38	9.4209	176.70	0.3197	B
2	17.76	4.9901	90.24	0.7713	A
3	18.84	4.7064	69.56	0.7713	B
4	21.20	4.1875	1000.00	0.8328	A,B
5	26.52	3.3583	117.49	0.6387	A
6	28.56	3.1229	239.17	0.2535	B
7	33.26	2.6916	321.08	0.9849	A
8	34.74	2.5802	215.57	0.9849	A,B
9	36.70	2.4468	702.03	0.6800	A,B
10	40.04	2.2500	158.83	0.9738	A,B
11	41.20	2.1893	160.00	0.9738	A,B
12	45.06	2.0103	21.56	0.3118	A
13	47.34	1.9187	41.47	0.8638	A
14	50.64	1.8011	74.30	1.0641	A
15	53.18	1.7209	293.66	1.0641	A,B
16	57.50	1.6015	62.21	0.3800	A,B
17	59.08	1.5624	135.75	0.7977	A,B
18	61.44	1.5079	147.40	0.7977	A,B
19	64.06	1.4524	77.05	1.1043	A,B
20	65.82	1.4178	20.48	1.1043	A,B
21	68.60	1.3669	86.13	0.3800	A,B
22	69.14	1.3576	39.49	0.2686	A,B

## Sampel PET-5

### Matched Phases

Index	Amount (%)	Name	Formula Sum
A	76.5	Goethite	Co <sub>0.1</sub> Fe <sub>0.9</sub> H O <sub>2</sub>
B	23.5	Clinochlore	Al <sub>1.7</sub> Fe <sub>0.33</sub> H <sub>8</sub> Mg <sub>4.95</sub> O <sub>18</sub> Si <sub>3.02</sub>
	6.4	Unidentified peak area	

### Diffraction Pattern Graphics



**Peak List**

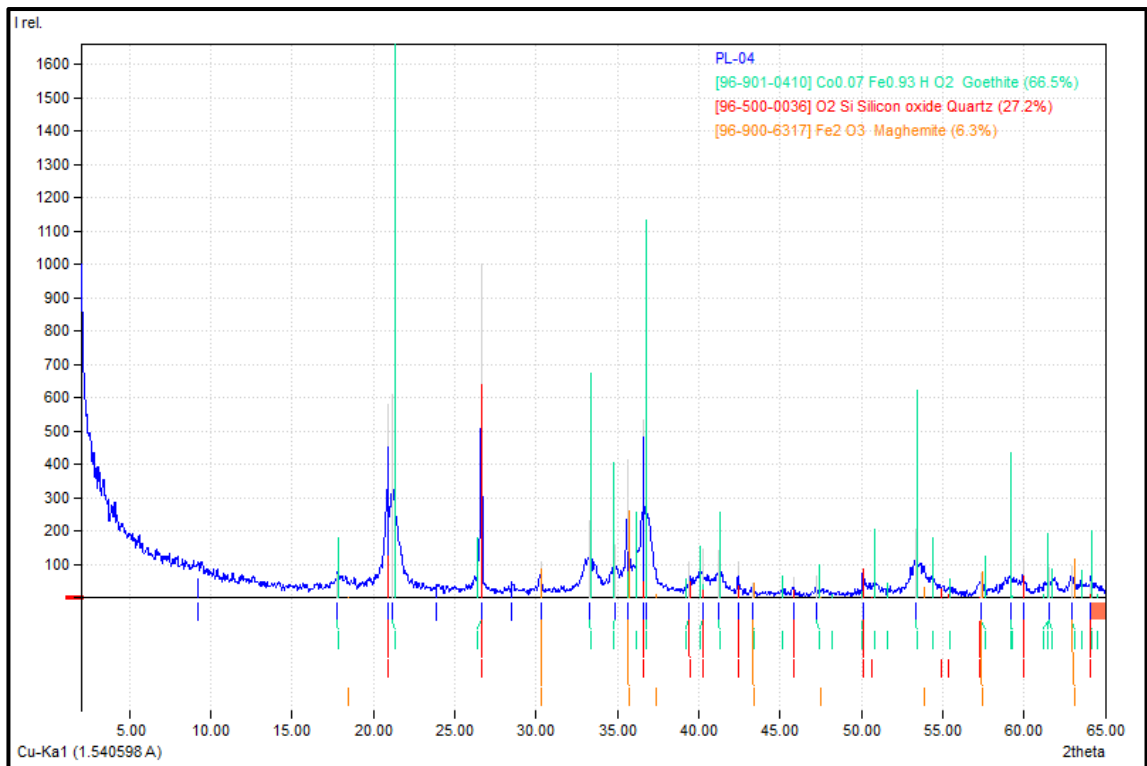
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1	12.32	7.1786	159.46	0.2080	B
2	17.94	4.9404	166.15	0.3000	A
3	18.58	4.7717	210.53	0.2931	B
4	19.60	4.5256	55.29	0.5595	B
5	21.24	4.1797	1000.00	0.6000	A
6	24.88	3.5758	156.94	0.5551	B
7	26.48	3.3633	170.55	0.5101	A,B
8	28.48	3.1315	94.10	0.2726	B
9	33.28	2.6900	485.10	0.8145	A,B
10	34.92	2.5673	277.53	0.8145	A,B
11	35.72	2.5116	438.12	0.8145	A
12	36.84	2.4378	891.65	0.6400	A,B
13	40.24	2.2393	214.52	0.9346	A,B
14	41.20	2.1893	245.98	0.9346	A,B
15	50.88	1.7932	436.61	0.3000	A,B
16	53.58	1.7090	345.72	1.1791	A,B
17	57.70	1.5964	19.99	1.1256	A,B
18	59.56	1.5509	132.99	1.0721	A,B
19	61.82	1.4995	48.29	1.0721	A,B

## Sampel PL-4

### Matched Phases

Index	Amount (%)	Name	Formula Sum
A	66.5	Goethite	Co0.07 Fe0.93 H O2
B	27.2	Silicon oxide Quartz	O2 Si
C	6.3	Maghemite	Fe2O3
	13.0	Unidentified peak area	

### Diffraction Pattern Graphics



**Peak List**

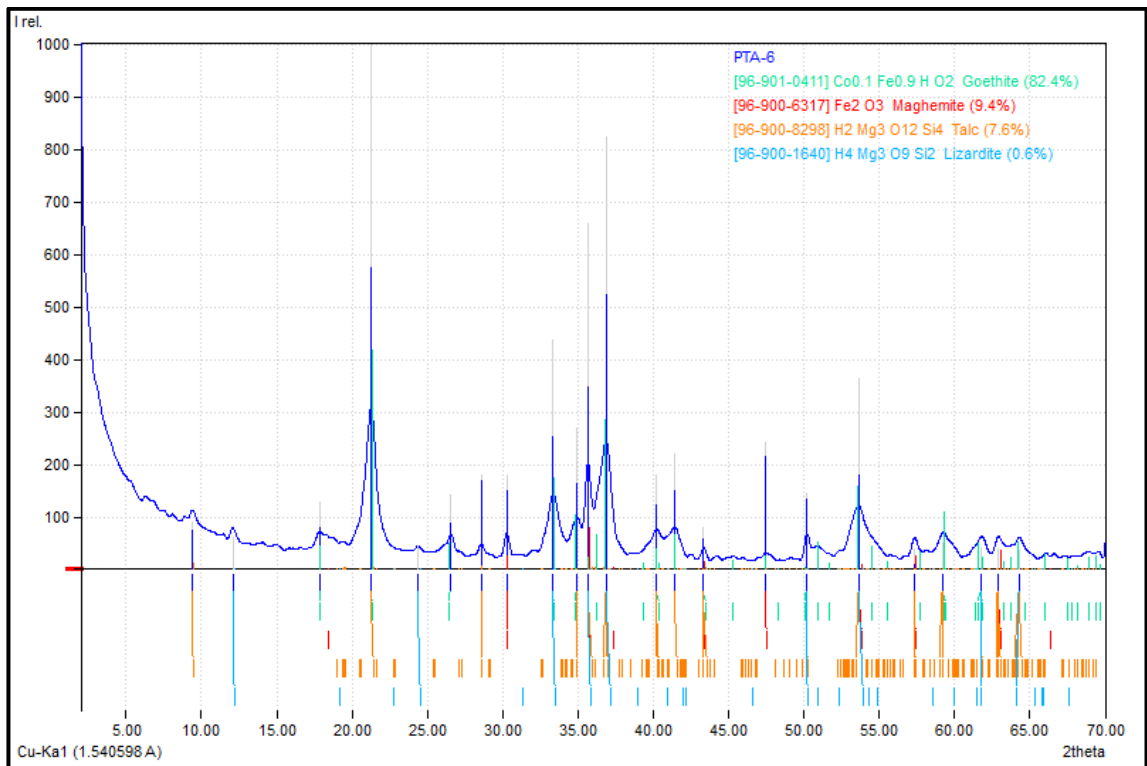
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1	9.22	9.5841	57.03	0.1793	
2	17.78	4.9845	68.72	0.4696	A
3	20.86	4.2550	582.01	0.4000	B
4	21.16	4.1953	611.88	0.8000	A
5	23.90	3.7202	41.80	0.8000	
6	26.64	3.3435	1000.00	0.1493	A,B
7	28.48	3.1315	43.61	0.2358	
8	30.28	2.9493	108.15	0.1920	C
9	33.32	2.6869	230.32	0.5209	A
10	34.86	2.5716	159.19	0.5209	A
11	35.60	2.5198	415.86	0.2754	A,C
12	36.62	2.4519	534.20	0.5200	B
13	36.76	2.4429	531.37	0.7600	A
14	39.42	2.2840	108.09	0.7600	A,B
15	40.24	2.2393	145.41	0.7600	A,B
16	41.26	2.1863	144.25	0.7600	A
17	42.42	2.1291	106.28	0.7600	B
18	43.28	2.0888	45.53	0.7600	A,C
19	45.84	1.9779	59.71	0.7600	B
20	47.24	1.9225	66.06	0.7600	A
21	50.10	1.8193	81.59	0.7446	A,B
22	53.32	1.7168	206.56	0.7446	A
23	57.36	1.6051	72.89	0.4232	A,B,C
24	59.18	1.5600	111.89	0.4232	A
25	59.94	1.5420	114.85	0.4232	B
26	61.54	1.5057	92.52	0.4232	A
27	62.92	1.4759	93.69	0.4781	A,C
28	64.10	1.4516	50.03	0.4781	A,B

## Sampel PTA-6

### Matched Phases

Index	Amount (%)	Name	Formula Sum
A	82.4	Goethite	Co0.1 Fe0.9 H O2
B	9.4	Silicon oxide Quartz	Fe2 O3
C	7.6	Maghemite	H2 Mg3 O12 Si4
D	0.6	Lizardite	H4 Mg3 O9 Si2
	5.5	Unidentified peak area	

### Diffraction Pattern Graphics





**Peak List**

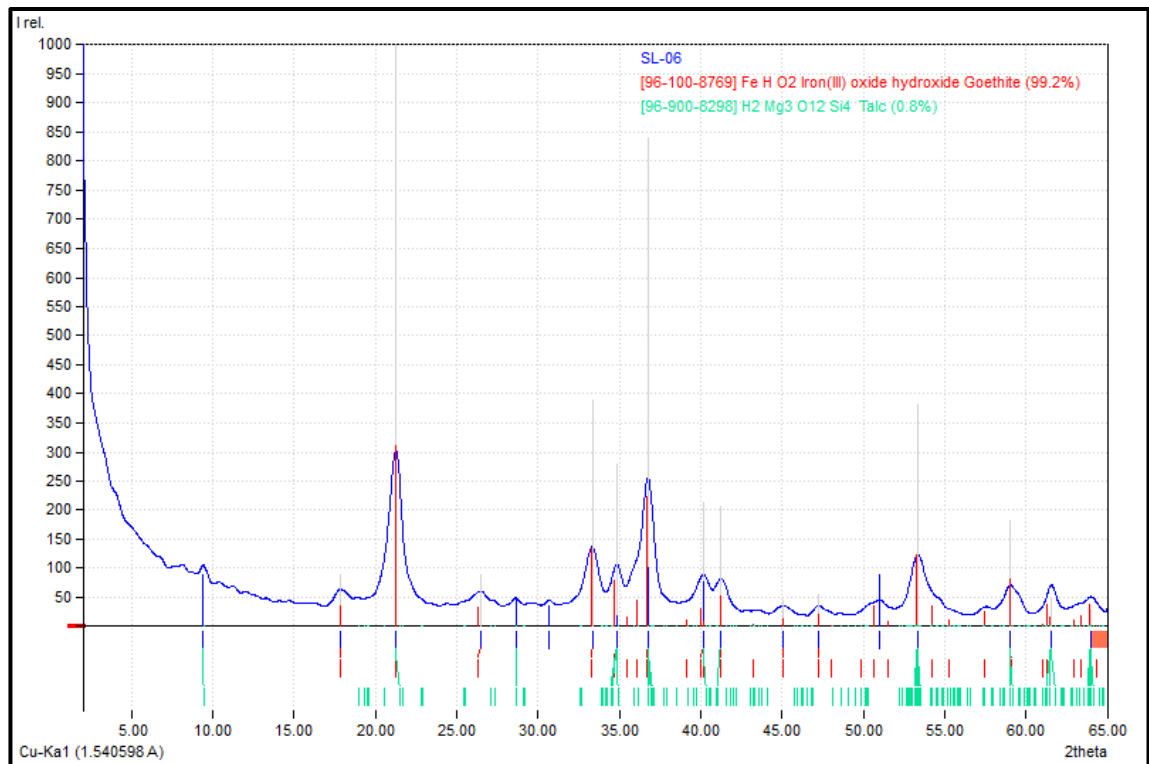
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1	9.42	9.3810	89.37	0.4417	C
2	12.08	7.3207	62.09	0.2239	D
3	17.86	4.9624	127.91	0.7201	A
4	21.28	4.1720	1000.00	0.7961	A,C
5	24.40	3.6451	44.68	0.7515	D
6	26.58	3.3509	141.43	0.7515	A
7	28.58	3.1208	179.68	0.3600	C
8	30.28	2.9493	178.64	0.3411	B
9	33.36	2.6837	436.63	0.8656	A,D
10	34.96	2.5645	270.17	0.8656	A,C
11	35.66	2.5157	657.00	0.4800	A,B,C,D
12	36.86	2.4365	822.66	0.8400	A,C,D
13	40.22	2.2404	179.09	1.7406	A,C
14	41.40	2.1792	221.08	1.7406	A,C
15	43.34	2.0861	80.84	1.7406	A,B,C
16	47.46	1.9141	241.78	0.3600	A,B
17	50.20	1.8159	145.62	0.6985	A,C,D
18	53.64	1.7073	363.87	1.2567	A,B,C,D
19	57.34	1.6056	38.36	1.2567	B,C
20	59.24	1.5585	48.84	1.2567	A,C
21	61.80	1.5000	41.25	1.2567	A,C,D
22	62.92	1.4759	40.21	1.2567	B,C
23	64.28	1.4480	37.79	1.2567	A,C,D

## Sampel SL-6

### Matched Phases

Index	Amount (%)	Name	Formula Sum
A	99.2	Iron(III) oxide hydroxide Goethite	Fe H O2
B	0.8	Talc	H2 Mg3 O12 Si4
	4.4	Unidentified peak area	

### Diffraction Pattren Graphics



**Peak List**

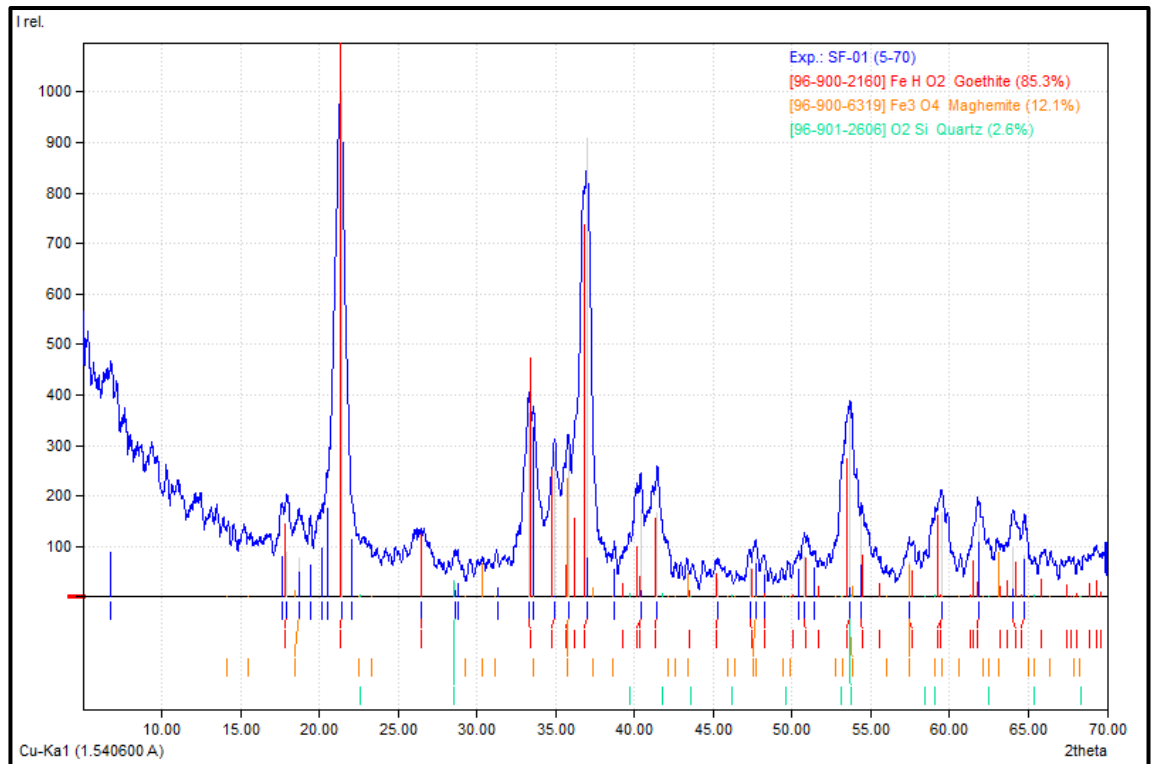
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1	9.40	9.4009	88.38	0.4260	B
2	17.86	4.9624	90.11	0.9320	A
3	21.26	4.1758	1000.00	0.8805	A,B
4	26.48	3.3633	89.09	1.0796	A
5	28.64	3.1144	50.11	1.0796	B
6	30.70	2.9099	35.96	1.0796	
7	33.34	2.6853	387.97	1.0796	A
8	34.84	2.5730	278.87	1.0796	A,B
9	36.76	2.4429	840.44	0.8400	A,B
10	40.18	2.2425	213.28	1.4444	A,B
11	41.24	2.1873	206.95	1.4444	A,B
12	45.10	2.0087	45.76	1.4444	A
13	47.24	1.9225	56.04	1.4444	A
14	50.98	1.7899	88.22	1.4444	
15	53.36	1.7156	381.25	1.4444	A,B
16	59.06	1.5629	182.86	1.0161	A,B
17	61.58	1.5048	48.41	1.0161	A,B
18	64.02	1.4532	27.68	1.0161	A,B

## Sampel SF-01

### Matched Phases

<i>Index</i>	<i>Amount (%)</i>	<i>Name</i>	<i>Formula Sum</i>
A	85.3	<i>Goethite</i>	Fe H O2
B	12.1	<i>Maghemite</i>	Fe3 O4
C	2.6	<i>Quartz</i>	O2 Si
	8.0	<i>Unidentified peak area</i>	

### Diffraction Pattern Graphics



**Peak List**

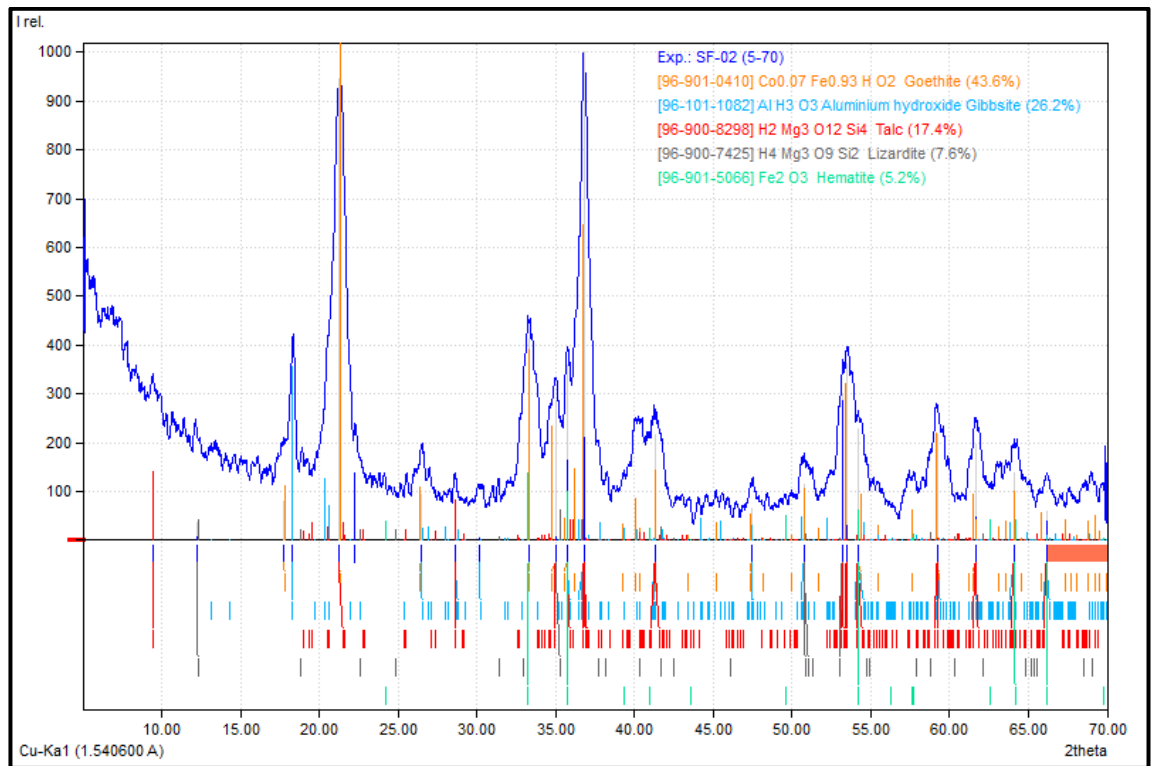
<b>No.</b>	<b>2theta [°]</b>	<b>d [Å]</b>	<b>I/I0</b>	<b>FWHM</b>	<b>Matched</b>
1	6.80	12.9885	89.76	0.7826	
2	17.66	5.0181	78.95	0.6722	
3	17.96	4.9350	89.39	0.7627	A
4	18.70	4.7413	77.93	0.7627	B
5	19.44	4.5625	64.45	0.7627	
6	20.16	4.4011	95.73	0.7627	
7	20.52	4.3247	174.65	0.7638	
8	21.40	4.1488	1000.00	0.7649	A
9	22.08	4.0226	113.99	0.7649	
10	26.46	3.3658	68.90	1.1444	A
11	28.60	3.1186	26.61	1.1444	C
12	28.78	3.0995	25.61	1.1444	
13	31.32	2.8537	18.83	1.1444	
14	33.30	2.6884	363.53	0.9422	A
15	33.60	2.6651	334.39	1.1608	
16	34.96	2.5645	287.08	1.1608	A
17	35.82	2.5049	300.55	1.1608	A,B
18	37.00	2.4276	909.13	0.8163	A
19	38.76	2.3214	55.23	0.8163	
20	40.40	2.2308	173.99	1.9045	A
21	41.44	2.1772	165.88	2.2808	A
22	45.26	2.0019	35.52	0.6801	A
23	47.32	1.9195	58.20	0.9763	A
24	47.68	1.9058	73.27	0.9183	B
25	48.24	1.8850	54.63	0.9183	A
26	50.44	1.8078	55.41	2.2677	
27	50.78	1.7965	81.10	1.1636	A
28	51.38	1.7769	57.45	1.1636	
29	53.68	1.7061	370.08	1.1494	A,B,C
30	54.40	1.6852	158.96	1.1494	A
31	57.48	1.6020	68.93	0.7362	A,B
32	59.54	1.5514	165.86	1.1906	A
33	61.84	1.4991	143.84	0.9126	A
34	64.00	1.4536	96.20	2.4461	A
35	64.74	1.4388	82.38	2.2209	A

## Sampel SF-02

### Matched Phases

Index	Amount (%)	Name	Formula Sum
A	43.6	Goethite	Co <sub>0.07</sub> Fe <sub>0.93</sub> H O <sub>2</sub>
B	26.2	Aluminium hydroxide Gibbsite	Al H <sub>3</sub> O <sub>3</sub>
C	17.4	Talc	H <sub>2</sub> Mg <sub>3</sub> O <sub>12</sub> Si <sub>4</sub>
D	7.6	Lizardite	H <sub>4</sub> Mg <sub>3</sub> O <sub>9</sub> Si <sub>2</sub>
E	5.2	Hematite	Fe <sub>2</sub> O <sub>3</sub>
	1.9	Unidentified peak area	

### Diffraction Pattern Graphics



**Peak List**

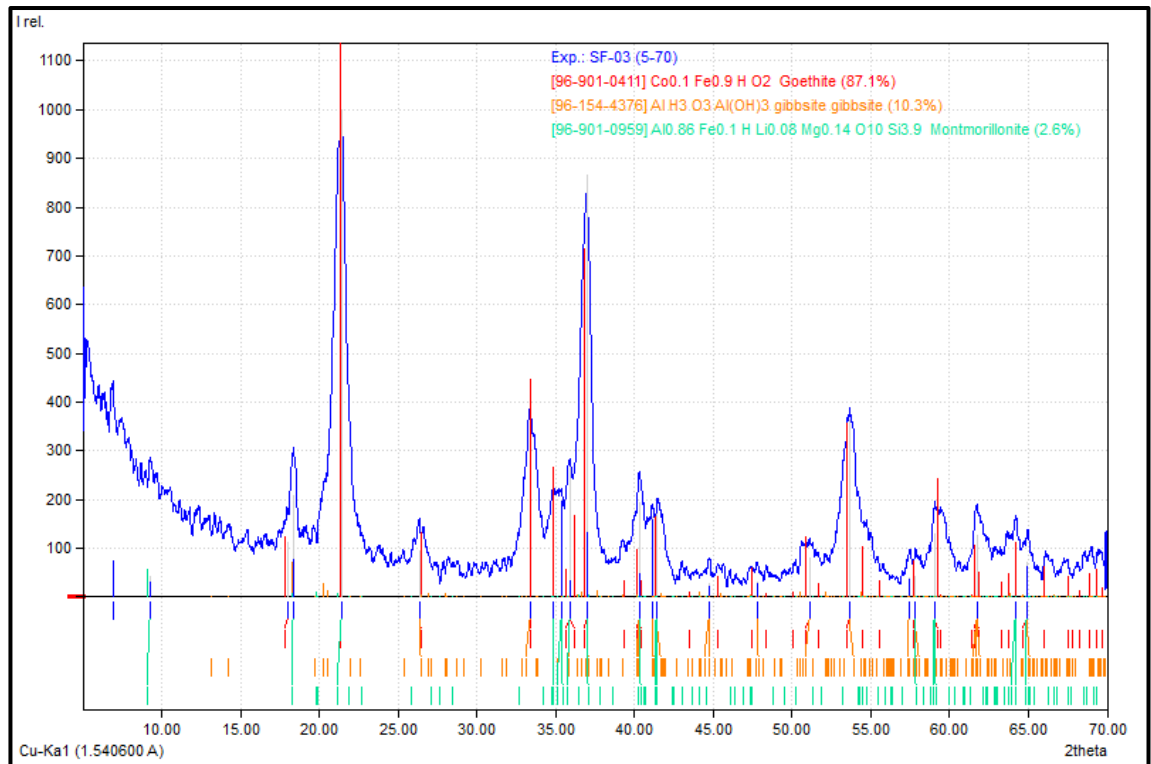
<b>No.</b>	<b>2theta [°]</b>	<b>d [Å]</b>	<b>I/I0</b>	<b>FWHM</b>	<b>Matched</b>
1	9.44	9.3612	51.98	0.7600	C
2	12.22	7.2371	37.62	0.7600	D
3	17.76	4.9901	78.86	0.5754	A
4	18.32	4.8388	317.89	0.3907	B
5	21.24	4.1797	947.36	0.9582	A,C
6	22.28	3.9869	137.81	0.9582	
7	26.48	3.3633	93.14	0.5097	A,B
8	28.62	3.1165	34.73	0.5097	B,C
9	30.20	2.9570	8.64	0.5097	B
10	33.30	2.6884	409.89	1.0645	A,B,E
11	35.04	2.5588	284.84	1.0645	A,C,D
12	35.76	2.5089	358.58	1.0645	A,B,C,E
13	36.78	2.4416	1000.00	0.8389	A,B,C
14	41.30	2.1843	216.92	1.6028	A,B,C
15	47.48	1.9134	64.44	0.5756	A,B
16	50.74	1.7978	116.14	0.9343	A,B,D
17	53.20	1.7203	302.17	1.6962	C,D
18	53.52	1.7108	361.56	1.3724	A,C
19	54.22	1.6904	227.97	3.3796	A,B,C,E
20	59.22	1.5590	216.88	1.0922	A,B,C
21	61.68	1.5026	195.78	0.7872	A,B,C
22	64.14	1.4508	138.08	1.1555	A,B,C,E
23	66.20	1.4105	60.35	0.7226	B,C,E

## Sampel SF-03

### Matched Phases

Index	Amount (%)	Name	Formula Sum
A	87.1	Goethite	Co <sub>0.1</sub> Fe <sub>0.9</sub> H O <sub>2</sub>
B	10.3	Al(OH) <sub>3</sub> gibbsite gibbsite	Al H <sub>3</sub> O <sub>3</sub>
C	2.6	Montmorillonite	Al <sub>0.86</sub> Fe <sub>0.1</sub> H Li <sub>0.08</sub> Mg <sub>0.14</sub> O <sub>10</sub> Si <sub>3.9</sub>
	5.6	Unidentified peak area	

### Diffraction Pattern Graphics





**Peak List**

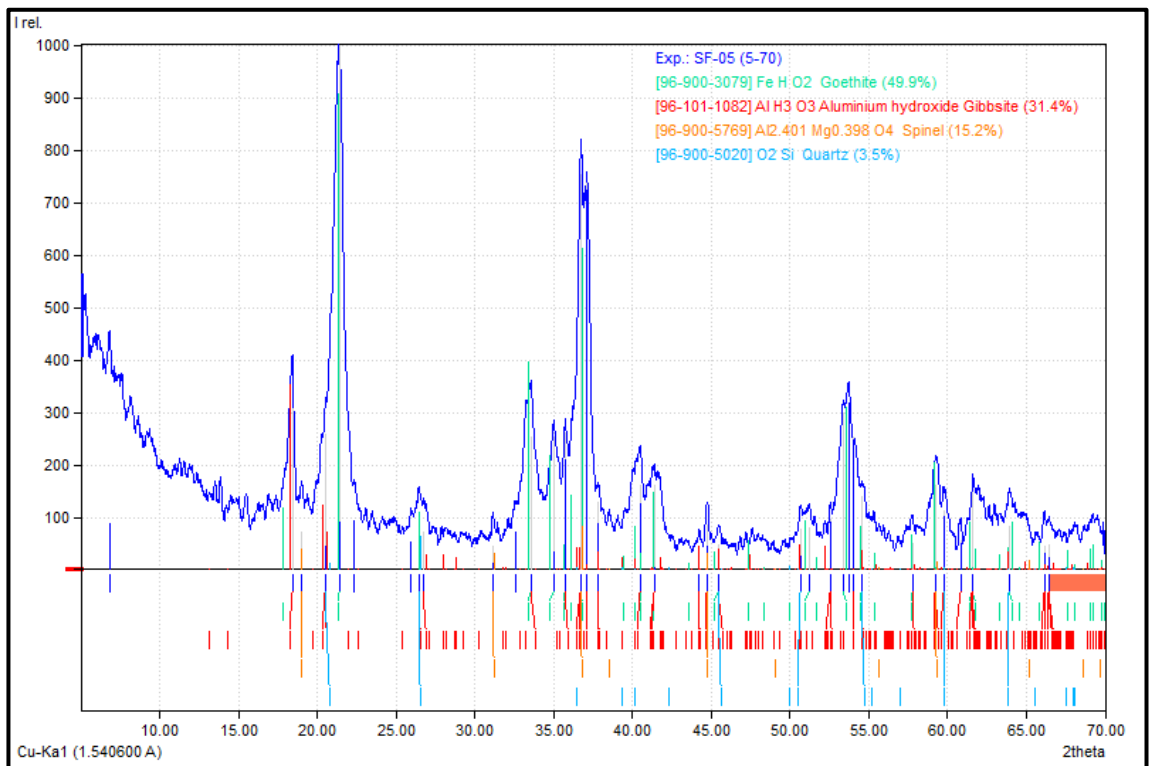
<b>No.</b>	<b>2theta [°]</b>	<b>d [Å]</b>	<b>I/I0</b>	<b>FWHM</b>	<b>Matched</b>
1	6.92	12.7635	73.06	1.4483	
2	9.28	9.5222	43.03	1.0008	C
3	18.00	4.9241	111.69	1.4776	A
4	18.36	4.8284	209.45	0.5532	B,C
5	21.40	4.1488	1000.00	0.8721	A,C
6	26.34	3.3809	93.71	0.7063	A,B
7	33.38	2.6822	362.36	0.9994	A,B
8	34.88	2.5702	199.10	0.9472	A,C
9	35.34	2.5378	198.69	0.9210	C
10	35.90	2.4995	265.69	0.8949	A,B,C
11	36.98	2.4289	866.13	0.7903	A,B,C
12	40.36	2.2329	194.27	1.3686	A,B,C
13	41.12	2.1934	164.30	2.8923	B
14	41.46	2.1762	168.78	1.3903	A,B,C
15	44.74	2.0240	26.23	2.2629	B
16	47.78	1.9021	29.82	1.4045	B
17	51.10	1.7860	79.37	1.6570	A,B
18	53.66	1.7067	363.27	1.2010	A,B
19	57.46	1.6025	40.00	0.9721	B
20	57.82	1.5934	42.45	1.6007	A,B,C
21	59.08	1.5624	130.40	1.4927	A,B,C
22	61.74	1.5013	127.94	1.0692	A,B
23	64.22	1.4492	94.55	2.0420	A,C
24	64.94	1.4348	71.83	1.3663	A,B,C

## Sampel SF-05

### Matched Phases

<i>Index</i>	<i>Amount (%)</i>	<i>Name</i>	<i>Formula Sum</i>
A	49.9	<i>Goethite</i>	Fe H O2
B	31.4	<i>Aluminium hydroxide Gibbsite</i>	Al H3 O3
C	15.2	<i>Spinel</i>	Al2.401 Mg0.398 O4
D	3.5	<i>Quartz</i>	O2 Si
	11.8	<i>Unidentified peak area</i>	

### Diffraction Pattern Graphics



**Peak List**

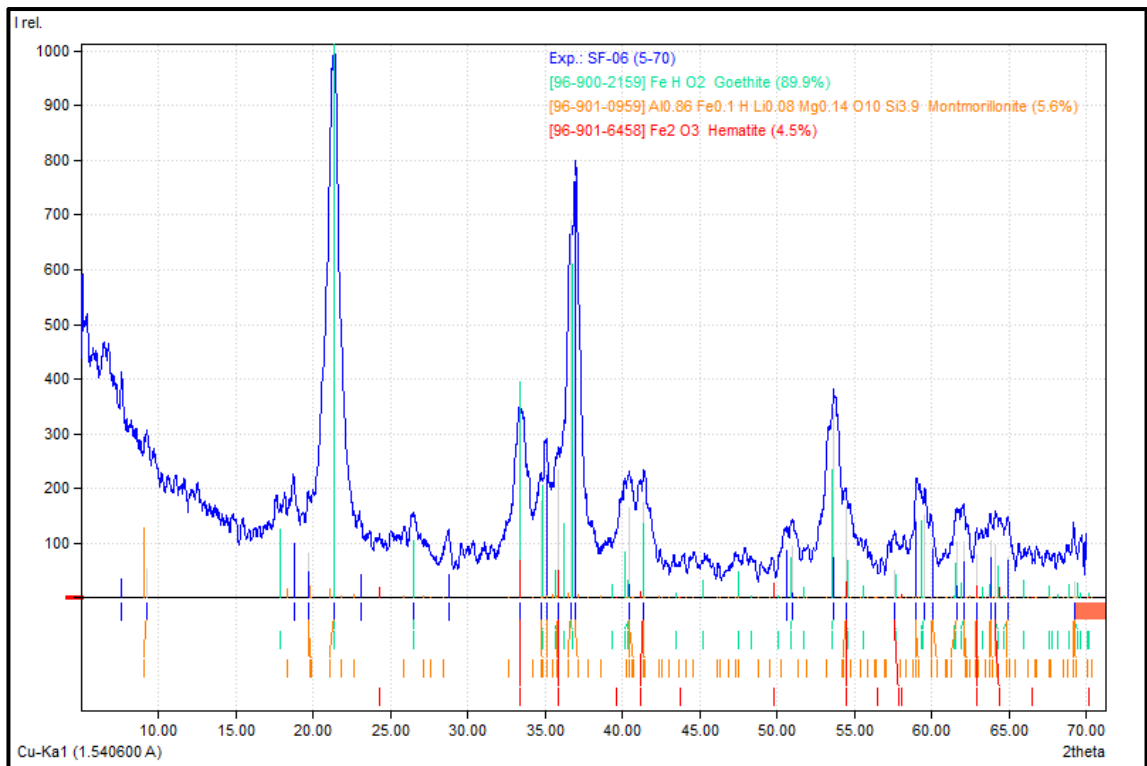
<b>No.</b>	<b>2theta [°]</b>	<b>d [Å]</b>	<b>I/I0</b>	<b>FWHM</b>	<b>Matched</b>
1	6.82	12.9504	87.26	1.0352	
2	18.42	4.8128	307.28	0.4366	B
3	18.98	4.6720	71.87	0.4366	C
4	20.54	4.3206	258.48	0.6043	B,D
5	21.40	4.1488	1000.00	0.7719	A
6	22.34	3.9763	93.56	0.7719	
7	25.96	3.4295	53.38	0.7719	
8	26.48	3.3633	86.15	0.8461	A,B,D
9	26.74	3.3312	72.08	1.0576	B
10	31.18	2.8662	44.77	0.3121	C
11	32.56	2.7478	71.14	1.6856	
12	33.58	2.6666	252.16	1.7714	A,B
13	35.00	2.5616	253.55	1.7714	A
14	35.74	2.5103	260.23	1.7714	A,B
15	36.74	2.4442	752.38	1.1485	A,B,C
16	37.10	2.4213	736.19	1.0656	B
17	37.86	2.3744	127.59	1.0656	B
18	40.52	2.2245	161.62	2.5167	A,B
19	41.38	2.1802	160.93	1.3255	A,B
20	44.24	2.0457	37.99	1.3255	B
21	44.76	2.0231	85.10	0.3388	B,C
22	45.48	1.9928	46.01	0.3568	A,B,D
23	50.66	1.8005	78.26	0.8032	B,D
24	51.20	1.7827	80.82	1.4579	A
25	52.56	1.7398	96.29	1.4628	B
26	53.42	1.7138	298.72	1.4678	A
27	53.72	1.7049	318.69	1.3817	
28	54.06	1.6950	252.78	2.0111	B
29	54.54	1.6812	139.22	0.7200	A,B,D
30	57.80	1.5939	49.23	1.2387	A,B
31	59.24	1.5585	159.67	1.0773	A,B,C
32	59.74	1.5467	111.69	1.8750	B,D
33	60.82	1.5218	55.29	1.8750	B
34	61.60	1.5044	146.44	1.8750	A,B
35	63.92	1.4552	82.86	3.1173	A,B,D
36	66.14	1.4117	44.70	0.9775	B
37	66.44	1.4060	46.92	1.1380	B

## Sampel SF-06

### Matched Phases

Index	Amount (%)	Name	Formula Sum
A	89.9	Goethite	Fe H O2
B	5.6	Montmorillonite	Al0.86 Fe0.1 H Li0.08 Mg0.14 O10 Si3.9
C	4.5	Hematite	Fe2 O3
	8.6	Unidentified peak area	

### Diffraction Pattern Graphics



**Peak List**

<b>No.</b>	<b>2theta [°]</b>	<b>d [Å]</b>	<b>I/I0</b>	<b>FWHM</b>	<b>Matched</b>
1	7.64	11.5622	35.85	0.2256	
2	9.26	9.5428	52.83	0.4081	B
3	18.80	4.7163	100.76	0.6181	
4	19.74	4.4938	81.35	0.6181	B
5	21.40	4.1488	1000.00	0.8979	A,B
6	23.08	3.8505	43.33	0.8979	
7	26.48	3.3633	64.81	0.5800	A
8	28.78	3.0995	42.18	0.5800	
9	33.38	2.6822	309.78	0.9528	A,C
10	34.72	2.5817	178.37	0.9528	A,B
11	35.12	2.5532	232.12	0.9528	B
12	35.86	2.5022	233.56	0.9528	A,B,C
13	36.68	2.4481	690.24	1.2122	A,B
14	36.98	2.4289	771.89	0.9175	B
15	40.44	2.2287	165.18	2.3723	A,B
16	41.38	2.1802	173.88	1.2727	A,B,C
17	50.58	1.8031	86.03	1.3454	
18	50.98	1.7899	95.18	1.2976	A
19	53.66	1.7067	347.10	1.2585	A
20	54.44	1.6841	168.15	1.2585	A,B,C
21	57.62	1.5984	50.95	2.0782	A,C
22	59.00	1.5643	144.27	1.2974	B
23	59.54	1.5514	151.81	1.3037	A
24	60.02	1.5401	94.12	1.3037	B
25	61.58	1.5048	102.00	1.3284	A,B
26	62.06	1.4943	102.02	1.6660	A,B
27	62.92	1.4759	78.50	1.8459	B,C
28	63.78	1.4581	105.98	1.9358	A,B
29	64.12	1.4512	97.89	2.0258	A,B,C
30	64.90	1.4356	73.90	1.2753	A,B
31	69.20	1.3565	30.46	0.7807	A,B