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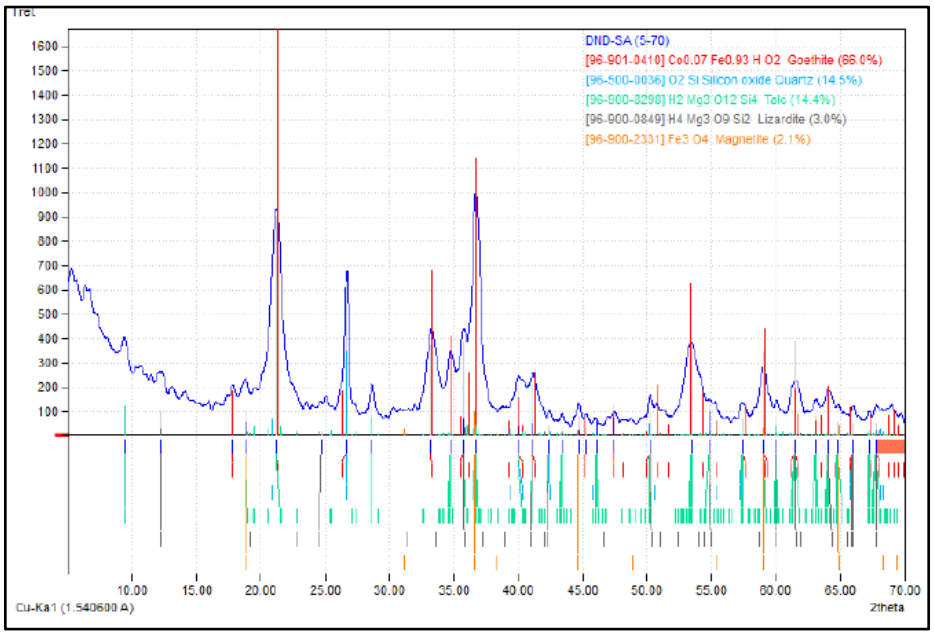
DAFTAR LAMPIRAN

Lampiran A

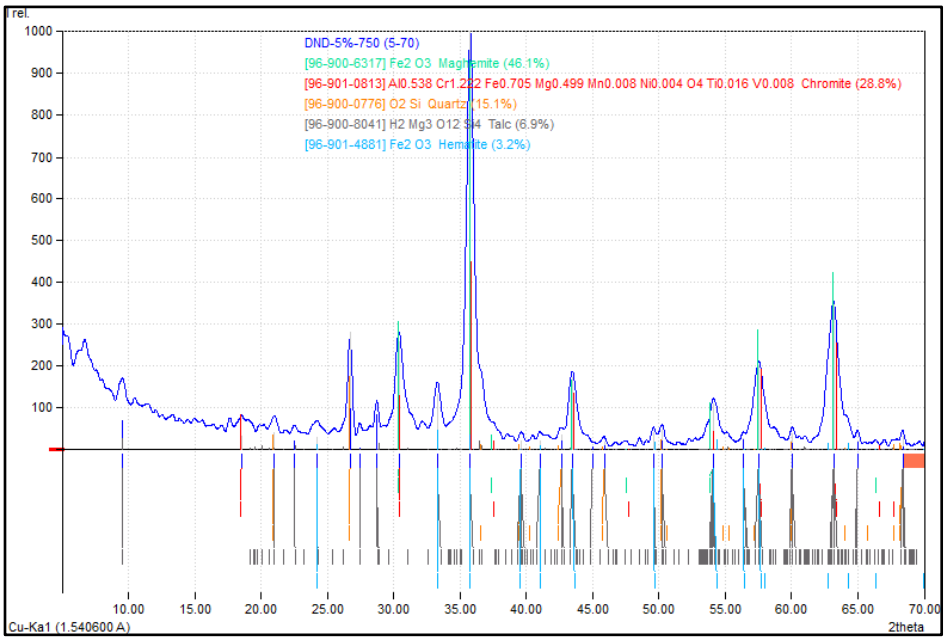
HASIL ANALISIS XRD (*X-RAY DIFFRACTION*)

Sampel Awal



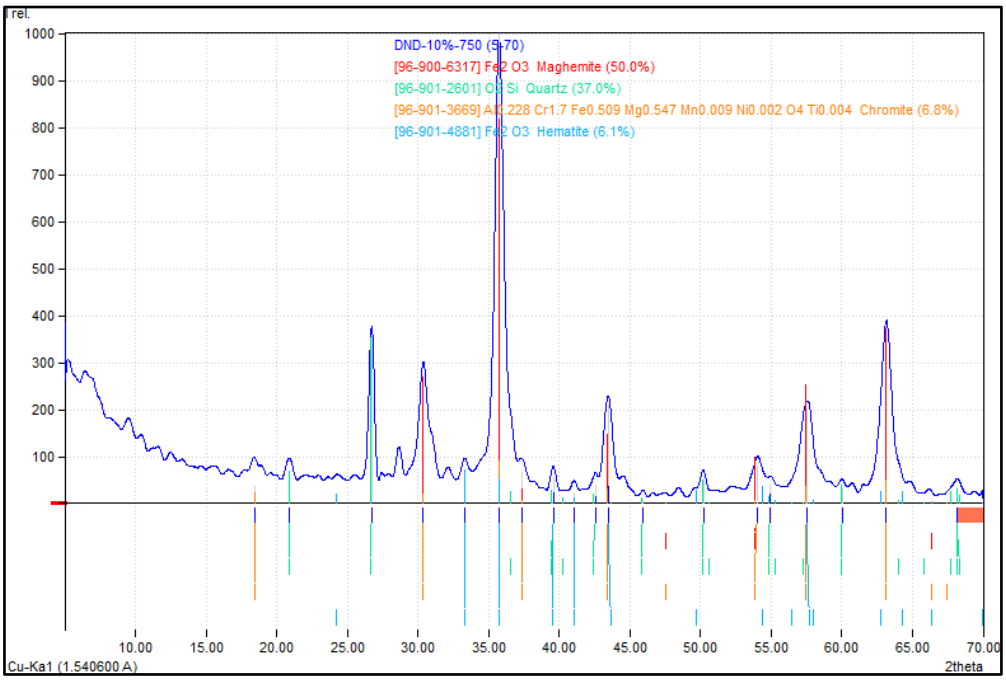
No.	2theta [°]	d [Å]	I/I0 (peak height)	Counts (peak area)	FWHM	Matched
1	9.44	9.3612	123.69	8.41	0.5192	C
2	12.24	7.2253	97.86	4.87	0.3800	D
3	17.84	4.9679	84.47	8.32	0.7520	A
4	18.82	4.7114	102.78	13.28	0.9864	C,E
5	21.22	4.1836	901.98	110.57	0.9361	A,C
6	24.74	3.5958	17.15	1.59	0.7095	D
7	26.68	3.3385	629.62	27.35	0.3318	A,B
8	28.64	3.1144	115.88	4.52	0.2978	C
9	33.26	2.6916	370.17	43.26	0.8924	A
10	34.78	2.5773	281.00	32.84	0.8924	A,C
11	35.76	2.5089	385.12	44.50	0.8824	A,C,D
12	36.70	2.4468	1000.00	94.29	0.7200	A,B,C,E
13	40.02	2.2511	188.32	25.38	1.0292	A,B,C
14	41.18	2.1904	207.28	36.33	1.3385	A,C,D
15	42.44	2.1282	41.68	7.30	1.3385	B,C,D
16	43.40	2.0833	32.95	5.78	1.3385	A,C
17	44.74	2.0240	77.68	13.62	1.3385	E
18	45.32	1.9994	29.59	4.26	1.0989	A
19	46.14	1.9658	65.75	9.46	1.0989	C
20	46.14	1.9658	65.75	7.40	0.8592	
21	47.48	1.9134	131.64	6.55	0.3800	A
22	50.26	1.8139	91.07	9.29	0.7791	A,B,C,D
23	53.46	1.7126	351.88	54.11	1.1744	A,C
24	54.84	1.6727	155.87	7.76	0.3800	B,C,D
25	57.42	1.7126	66.33	4.90	0.5643	A,B,C
26	59.06	1.5629	342.11	17.02	0.3800	A,C,E
27	60.06	1.5392	70.80	2.88	0.3102	B,C,D
28	61.52	1.5061	389.21	19.37	0.3800	A,C,D
29	63.14	1.4713	76.36	5.79	0.5787	A,C
30	64.08	1.4520	122.25	10.45	0.6526	A,B,C,D
31	64.86	1.4364	54.13	5.15	0.7265	C,E
32	66.02	1.4520	49.08	5.62	0.8744	A,B,C,D
33	67.24	1.3912	21.23	2.43	0.8744	A,C
34	67.82	1.3807	47.71	5.46	0.8744	A,B,C,D

750ºC, 5%



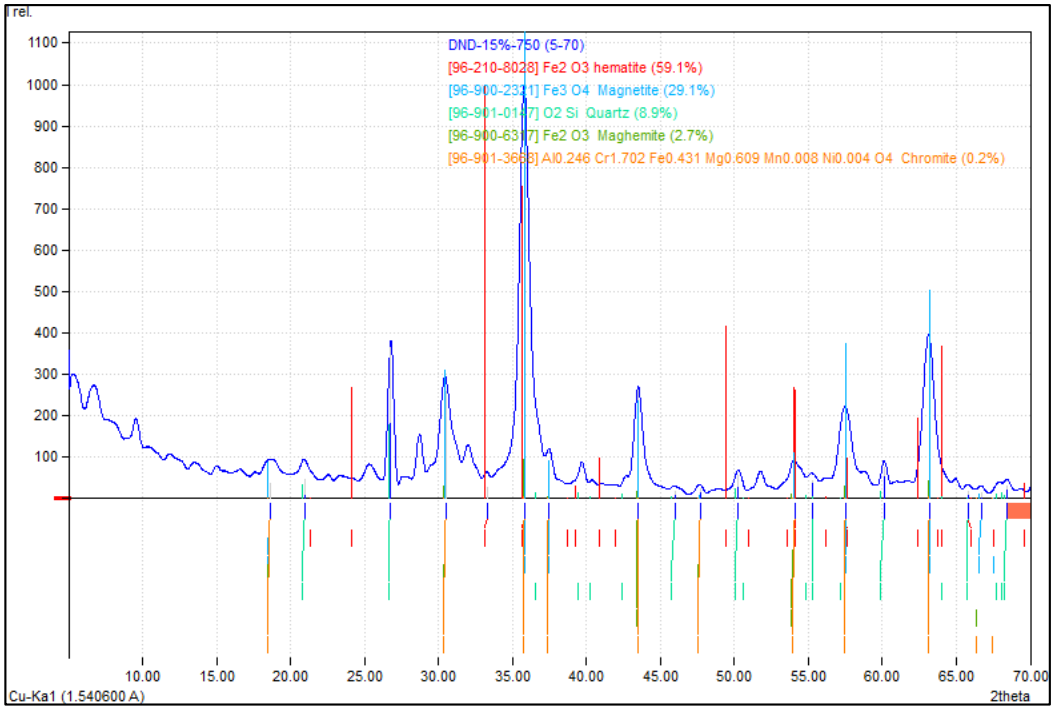
No.	*2theta [º]*	*d [Å]*	*I/I0 (peak height)*	*Counts (peak area)*	*FWHM*	*Matched*
1	9.52	9.2827	69.11	6.00	0.3200	D
2	18.56	4.7768	33.89	6.73	0.7319	A,B
3	21.00	4.2269	40.50	5.16	0.4699	C,D
4	22.52	3.9450	20.02	3.39	0.6243	D
5	24.26	3.6658	31.10	6.57	0.7787	D,E
6	26.72	3.3336	280.07	24.31	0.3200	C
7	27.44	3.2478	3.58	0.10	0.1029	D
8	28.72	3.1059	83.67	8.30	0.3656	D
9	30.40	2.9380	259.27	45.82	0.6515	A,B
10	33.30	2.6884	133.69	25.91	0.6400	D,E
11	35.78	2.5076	1000.00	171.75	0.6331	A,B,D,E
12	39.64	2.2718	21.86	1.59	0.2681	C,D,E
13	41.04	2.1975	22.36	2.71	0.4464	D,E
14	42.66	2.1177	34.60	4.19	0.4464	C,D
15	43.46	2.0806	173.21	30.07	0.6400	A,B,D,E
16	45.04	2.0112	6.63	2.20	1.2215	D
17	45.88	1.9763	19.14	1.66	0.3200	C,D
18	49.62	1.8358	41.05	5.99	0.5376	D,E
19	50.22	1.8152	48.55	7.08	0.5376	C,D
20	54.12	1.6933	110.02	28.75	0.9632	A,B,D,E
21	56.38	1.6306	27.93	7.30	0.9632	D,E
22	57.54	1.6005	199.76	49.86	0.9200	A,B,D,E
23	60.06	1.5392	39.14	9.77	0.9200	C,D
24	63.16	1.4709	346.99	82.84	0.8800	A,B,D
25	64.96	1.4344	19.73	13.66	2.5534	D
26	68.38	1.3708	33.24	2.89	0.3200	C,D

750ºC, 10%



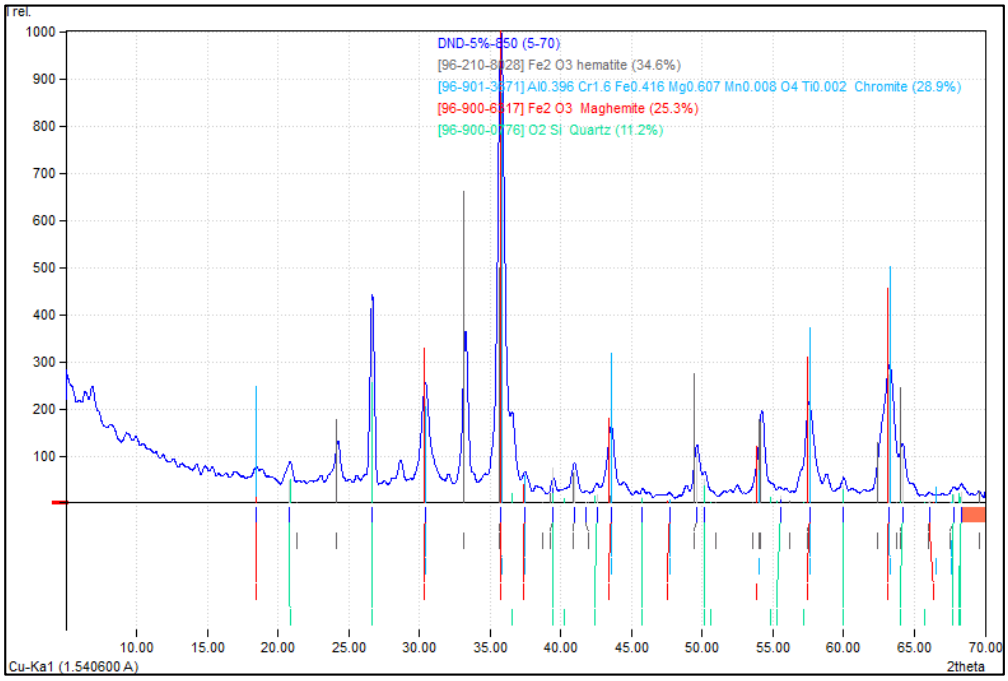
No.	*2theta [º]*	*d [Å]*	*I/I0 (peak height)*	*Counts (peak area)*	*FWHM*	*Matched*
1	18.42	4.8128	36.25	5.45	0.5800	A,C
2	20.88	4.2510	45.81	4.81	0.4052	B
3	26.72	3.3336	354.37	35.91	0.3909	B
4	30.38	2.9398	263.05	49.10	0.7200	A,C
5	33.30	2.6884	56.55	10.39	0.7090	D
6	35.74	2.5103	1000.00	182.83	0.7053	A,C,D
7	37.32	2.4076	65.20	11.92	0.7053	A,C
8	39.58	2.2751	55.71	5.18	0.3585	B,D
9	41.06	2.1965	22.76	3.81	0.6454	D
10	42.56	2.1225	38.99	9.42	0.9323	B
11	43.48	2.0797	210.67	39.32	0.7200	A,C,D
12	45.94	1.9739	8.43	1.57	0.7200	B
13	50.20	1.8159	53.11	6.64	0.4824	B
14	54.04	1.6956	80.10	19.03	0.9164	A,C
15	54.96	1.6693	38.05	9.04	0.9164	B
16	57.56	1.6000	201.61	50.17	0.9600	A,C,D
17	60.02	1.5401	31.39	7.81	0.9600	B
18	63.14	1.4713	378.56	86.36	0.8800	A,C
19	68.18	1.3743	33.15	5.88	0.6840	B

750ºC, 15%



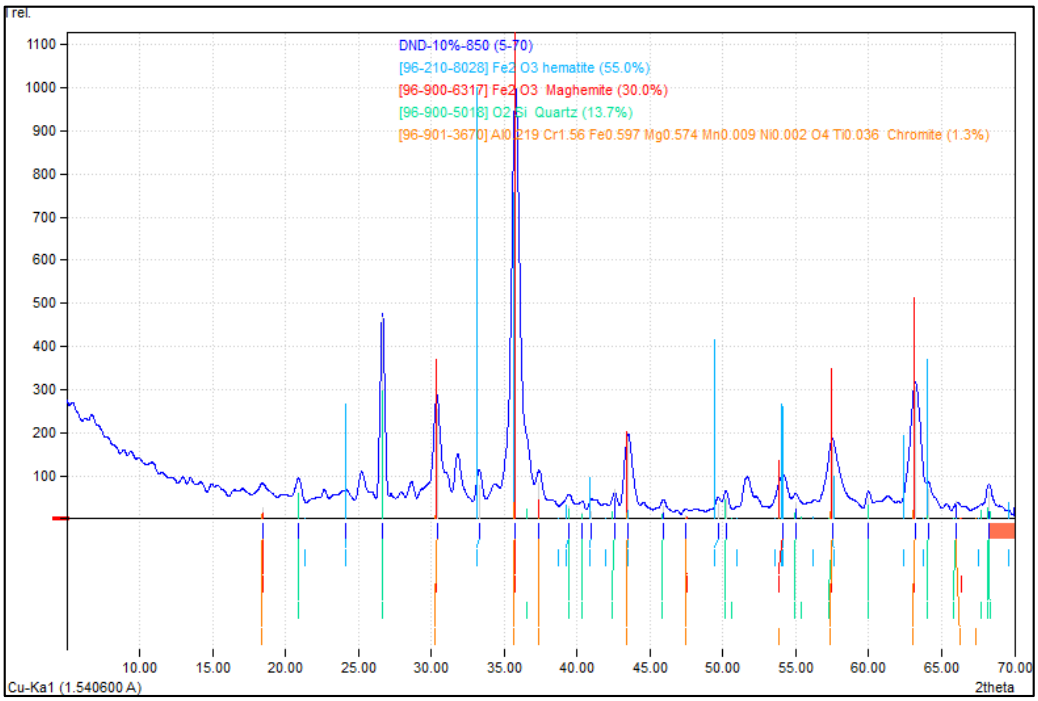
No.	*2theta [º]*	*d [Å]*	*I/I0 (peak height)*	*Counts (peak area)*	*FWHM*	*Matched*
1	18.68	4.7464	36.49	12.91	1.4867	B,D,E
2	20.94	4.2389	46.08	16.30	1.4867	C
3	26.78	3.3263	363.89	33.18	0.3831	C
4	30.48	2.9304	258.34	51.64	0.8400	B,D,E
5	33.28	2.6900	26.30	5.26	0.8400	A
6	35.84	2.5035	1000.00	180.68	0.7593	A,B,D,E
7	37.46	2.3989	91.20	16.48	0.7593	B,D,E
8	43.52	2.0779	263.63	40.66	0.6481	A,B,D,E
9	46.00	1.9714	18.56	4.28	0.9690	C
10	47.70	1.9051	24.09	5.55	0.9690	B,D,E
11	50.26	1.8139	56.17	12.95	0.9690	C
12	54.10	1.6938	75.54	17.42	0.9690	A,B,D,E
13	55.32	1.6593	43.96	10.14	0.9690	C
14	57.50	1.6015	209.51	48.31	0.9690	A,B,D,E
15	60.14	1.5373	74.70	17.23	0.9690	C
16	63.16	1.4709	399.71	80.73	0.8487	B,D,E
17	65.78	1.4185	18.11	3.77	0.8487	A,C
18	66.70	1.4012	15.76	3.28	0.8487	B
19	68.40	1.3704	31.83	6.63	0.8487	C

850ºC, 5%



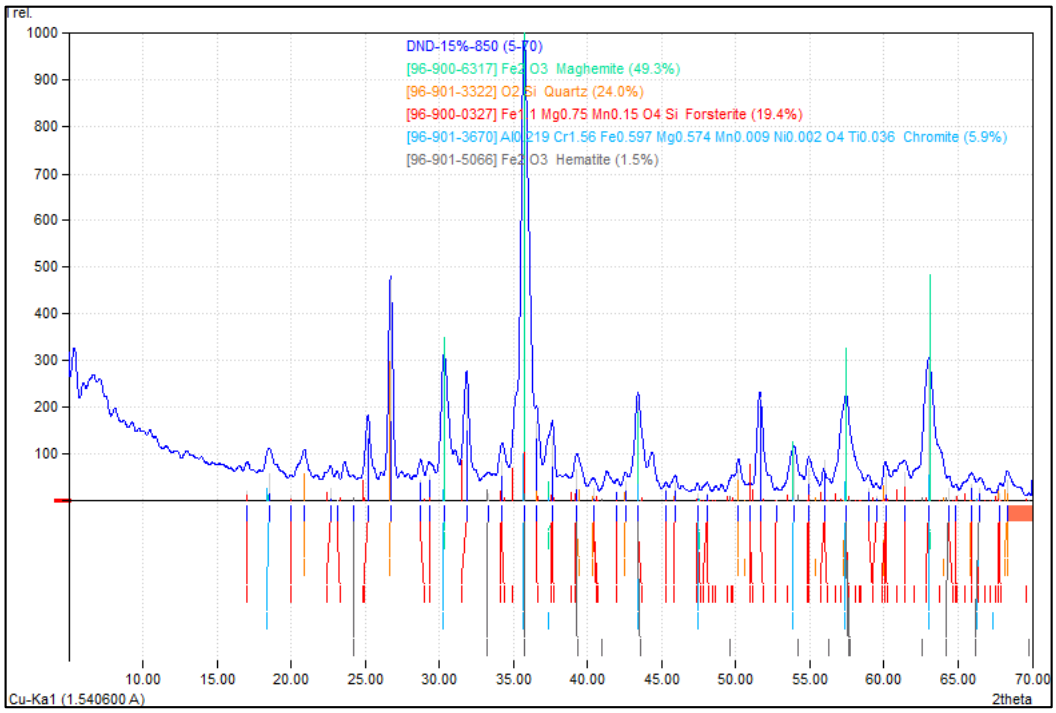
No.	*2theta [º]*	*d [Å]*	*I/I0 (peak height)*	*Counts (peak area)*	*FWHM*	*Matched*
1	18.48	4.7973	26.50	5.30	0.6584	B,C
2	20.84	4.2590	46.68	6.83	0.4815	D
3	26.68	3.3385	429.37	39.62	0.3037	D
4	30.42	2.9361	221.01	42.98	0.6400	B,C
5	35.78	2.5076	1000.00	156.73	0.5157	A,B,C
6	37.46	2.3989	34.54	7.39	0.7037	B,C
7	39.48	2.2807	74.32	5.87	0.2600	A,D
8	40.98	2.2006	65.25	7.69	0.3876	A
9	41.82	2.1583	2.37	0.36	0.4874	A
10	42.58	2.1215	16.83	3.00	0.5872	D
11	43.58	2.0751	146.14	23.09	0.5200	A,B,C
12	45.78	1.9804	13.31	2.10	0.5200	D
13	47.72	1.9043	5.15	0.82	0.5200	B,C
14	49.64	1.8351	107.07	16.92	0.5200	A
15	50.18	1.8166	49.32	7.79	0.5200	D
16	55.52	1.6538	14.74	2.76	0.6083	D
17	57.58	1.5995	196.72	41.94	0.7016	A,B,C
18	59.98	1.5411	36.18	7.71	0.7016	D
19	63.24	1.4692	271.81	84.87	1.0275	B,C
20	64.16	1.4504	111.08	34.68	1.0275	A,D
21	66.06	1.4132	4.62	1.35	0.9475	A,C
22	67.78	1.3815	18.83	5.27	0.9208	A,B,D
23	68.32	1.3718	22.36	5.53	0.8140	D

850ºC, 10%



No.	2theta [º]	d [Å]	I/I0 (peak height)	Counts (peak area)	FWHM	Matched
1	18.42	4.8128	24.52	3.74	0.5325	B,D
2	20.90	4.2469	50.67	4.85	0.3340	C
3	24.16	3.6808	56.16	4.83	0.3000	A
4	26.68	3.3385	467.21	42.93	0.3206	C
5	30.40	2.9380	254.82	40.48	0.5543	B,D
6	33.30	2.6884	77.68	12.34	0.5543	A
7	35.78	2.5076	1000.00	171.96	0.6000	A,B,D
8	37.38	2.4038	82.91	14.26	0.6000	B,D
9	39.46	2.2818	28.78	4.06	0.4923	A,C
10	40.32	2.2351	12.55	1.87	0.5208	C
11	40.98	2.2006	17.75	2.79	0.5492	A
12	42.56	2.1225	67.97	5.84	0.3000	C
13	43.52	2.0779	189.64	28.60	0.5262	A,B,D
14	45.94	1.9739	28.31	4.27	0.5262	C
15	47.46	1.9141	8.40	1.27	0.5262	B,D
16	49.70	1.8330	33.59	5.01	0.5206	A
17	50.24	1.8145	45.80	6.76	0.5150	C
18	54.12	1.6933	85.35	20.40	0.8340	A,B
19	55.00	1.6682	39.26	9.38	0.8340	C
20	57.50	1.6015	166.55	44.91	0.9409	A,B,C,D
21	59.98	1.5411	42.95	11.58	0.9409	C
22	63.20	1.4701	305.03	69.94	0.8000	B,D
23	64.06	1.4524	67.11	15.39	0.8000	A,C
24	66.02	1.4140	42.25	3.63	0.3000	A,C,D
25	68.24	1.3733	61.21	8.48	0.4834	C

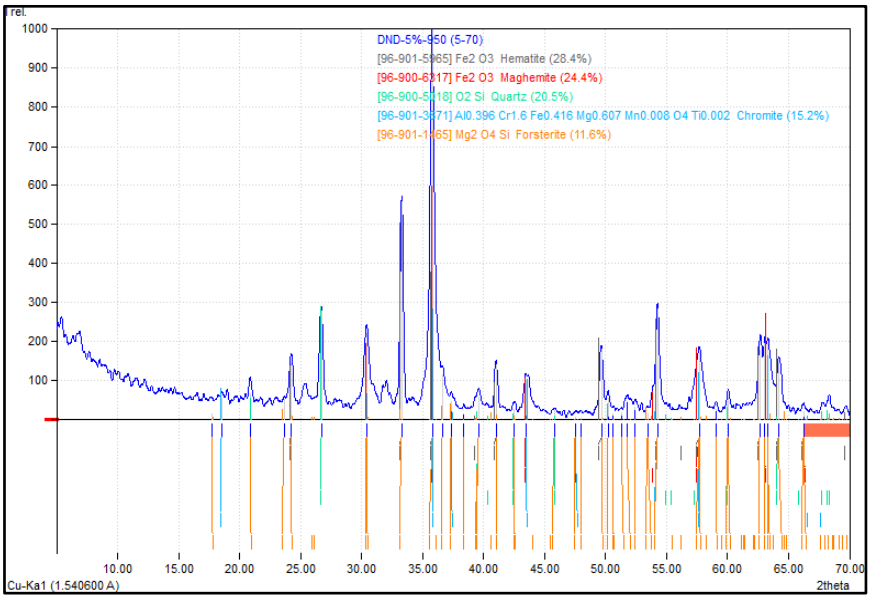
850ºC, 15%



No.	2theta [º]	d [Å]	I/I0 (peak height)	Counts (peak area)	FWHM	Matched
1	17.04	5.1993	21.89	1.33	0.2434	C
2	18.52	4.7870	57.78	8.42	0.5842	A,D
3	19.96	4.4448	9.37	0.61	0.2600	C
4	20.90	4.2469	59.70	7.43	0.4990	B
5	22.66	3.9209	27.25	1.77	0.2600	C
6	23.10	3.8472	1.54	0.10	0.2600	C
7	24.18	3.6778	1.54	0.10	0.2600	E
8	25.18	3.5339	144.52	11.58	0.3211	C
9	26.72	3.3336	472.18	33.49	0.2843	B
10	28.74	3.1038	44.66	2.90	0.2600	C
11	29.32	3.0437	55.45	3.60	0.2600	C
12	30.36	2.9417	291.10	34.40	0.4737	A,D
13	31.84	2.8083	240.54	24.00	0.4000	C
14	33.32	2.6869	15.25	3.10	0.8159	E
15	34.22	2.6182	83.77	17.05	0.8159	C
16	35.74	2.5103	1000.00	129.73	0.5200	A,C,D,E
17	36.54	2.4571	169.49	21.99	0.5200	B,C
18	37.64	2.3878	138.44	17.96	0.5200	A,C
19	39.28	2.2918	66.98	8.73	0.5224	B,C,E
20	40.40	2.2308	27.71	1.80	0.2600	B,C
21	42.00	2.1495	17.33	1.12	0.2600	C
22	42.56	2.1225	41.35	2.68	0.2600	B
23	43.40	2.0833	213.99	25.67	0.4809	A,C,D,E
24	45.28	2.0011	25.83	1.68	0.2600	C
25	45.90	1.9755	37.56	2.44	0.2600	B,C
26	47.44	1.9149	15.46	0.74	0.1917	A,C,D
27	48.08	1.8909	16.76	1.35	0.3233	C
28	50.18	1.8166	67.78	6.43	0.3801	B
29	50.96	1.7906	17.20	1.12	0.2600	C
30	51.66	1.7679	222.05	22.63	0.4086	C
31	52.76	1.7337	0.86	0.06	0.2600	C
32	53.90	1.6996	97.88	13.28	0.5437	A,D
33	54.92	1.6705	68.94	9.35	0.5437	B,C
34	55.96	1.6419	85.94	5.57	0.2600	C
35	57.46	1.6025	207.57	40.91	0.7900	A,B,C,D,E
36	58.96	1.5653	27.25	5.37	0.7900	C

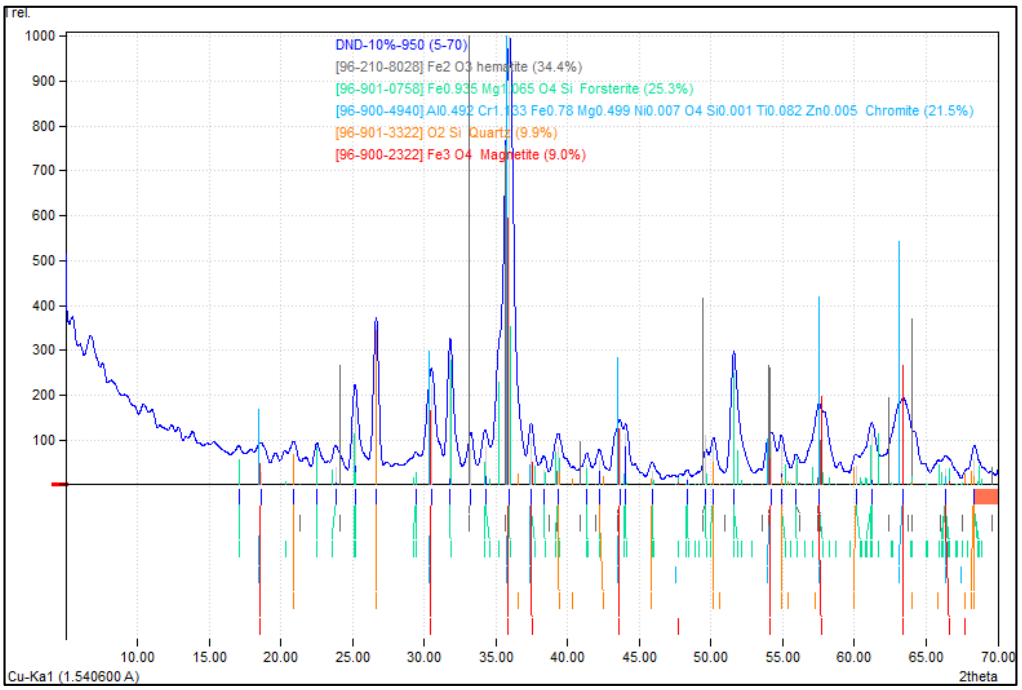
No.	2theta [°]	d [Å]	I/I0 (peak height)	Counts (peak area)	FWHM	Matched
37	59.48	1.5528	9.15	1.80	0.7900	C
38	60.10	1.5383	58.64	11.56	0.7900	B,C
39	61.38	1.5092	62.26	12.27	0.7900	C
40	63.00	1.4743	292.00	52.45	0.7200	A,C,D
41	64.40	1.4456	27.28	4.90	0.7200	C,E
42	64.86	1.4364	9.28	1.67	0.7200	C
43	65.90	1.4162	35.32	6.34	0.7200	B,C
44	66.48	1.4053	26.04	4.68	0.7200	A,C,D,E
45	67.80	1.3811	15.32	2.75	0.7200	B,C
46	68.34	1.3715	43.17	7.76	0.7200	B

950ºC, 5%



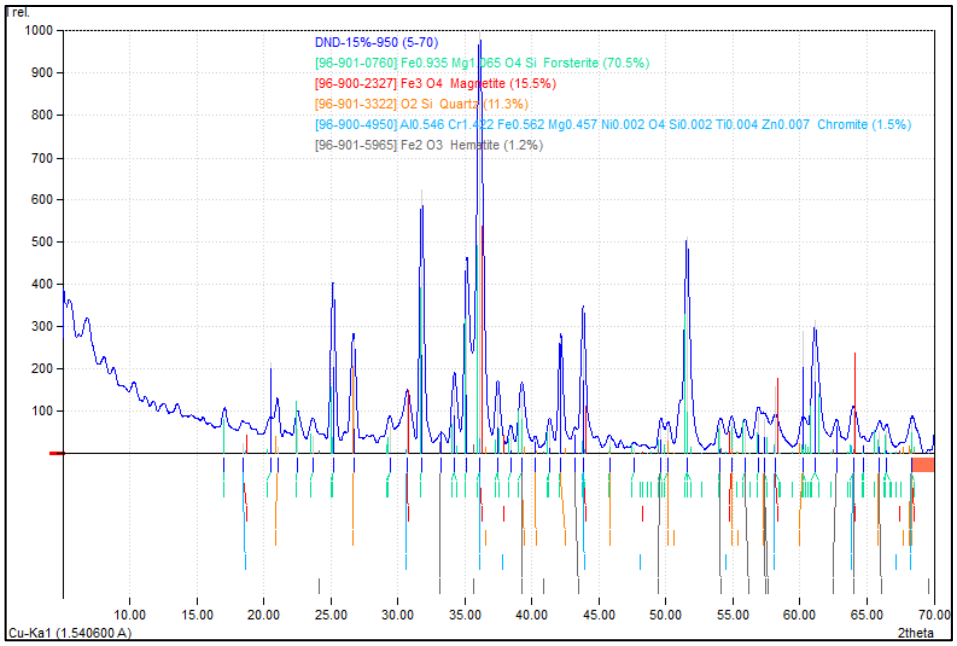
No.	2theta [º]	d [Å]	I/I0 (peak height)	Counts (peak area)	FWHM	Matched
1	17.70	5.0069	16.30	1.03	0.2000	E
2	18.56	4.7768	55.35	3.50	0.2000	B,D
3	20.88	4.2510	67.63	5.51	0.2576	C,E
4	23.66	3.7574	52.31	3.31	0.2000	E
5	24.24	3.6688	143.02	14.55	0.3217	A,E
6	26.70	3.3361	278.18	28.56	0.3245	C
7	30.40	2.9380	220.83	35.55	0.5089	B,D,E
8	33.30	2.6884	557.79	56.46	0.3200	A,E
9	35.80	2.5062	1000.00	132.83	0.4199	A,B,D,E
10	36.60	2.4532	116.26	15.44	0.4199	C,E
11	37.36	2.4051	47.08	6.25	0.4199	B,D,E
12	38.40	2.3423	15.59	2.07	0.4199	E
13	39.60	2.2740	58.88	7.82	0.4199	C,E
14	41.04	2.1975	141.16	12.89	0.2888	A,E
15	42.52	2.1244	28.39	2.60	0.2891	C,E
16	43.48	2.0797	99.66	20.59	0.6532	A,B,D
17	45.82	1.9788	24.40	1.54	0.2000	C,E
18	47.58	1.9096	7.15	0.31	0.1356	B,D,E
19	47.96	1.8953	5.69	0.24	0.1356	E
20	49.66	1.8344	182.44	18.80	0.3257	A,E
21	50.20	1.8159	56.33	5.80	0.3257	C,E
22	50.64	1.8011	15.20	1.57	0.3257	C,E
23	51.32	1.7789	18.19	1.15	0.2000	E
24	51.78	1.7641	47.74	6.62	0.4383	E
25	52.44	1.7435	33.16	4.60	0.4383	E
26	53.48	1.7120	15.82	2.19	0.4383	E
27	54.26	1.6892	285.15	32.47	0.3600	A,D,E
28	57.68	1.5969	171.18	36.82	0.6800	A,B,D,E
29	59.06	1.5629	26.20	5.64	0.6800	E
30	60.04	1.5397	56.67	12.19	0.6800	C,E
31	62.70	1.4806	179.27	53.71	0.9472	A,E
32	63.06	1.4730	196.92	72.26	1.1600	B,E
33	63.30	1.4680	193.51	41.63	0.6800	D,E
34	64.22	1.4492	143.11	23.54	0.5200	A,C,E
35	66.24	1.4098	20.83	2.52	0.3825	A,B,E

950ºC, 10%



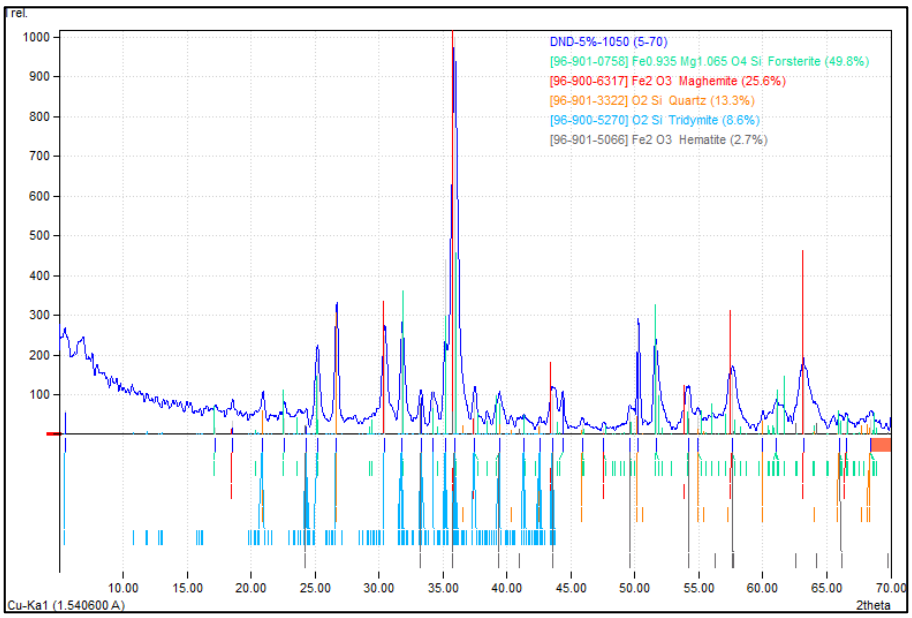
No.	2theta [º]	d [Å]	I/I0 (peak height)	Counts (peak area)	FWHM	Matched
1	17.08	5.1872	16.40	0.93	0.2694	B
2	18.60	4.7666	27.28	2.63	0.4577	C,E
3	20.90	4.2469	38.50	3.28	0.4038	D
4	22.52	3.9450	42.37	2.68	0.3001	B
5	23.82	3.7325	38.52	3.32	0.4087	B
6	25.18	3.5339	185.58	16.44	0.4200	B
7	26.64	3.3435	355.97	26.10	0.3477	D
8	29.44	3.0315	23.93	17.00	3.3676	B
9	30.52	2.9267	222.68	31.93	0.6800	C,E
10	31.82	2.8100	291.65	43.31	0.7042	B
11	33.24	2.6931	79.10	11.95	0.7163	A
12	34.26	2.6153	86.09	13.11	0.7223	B
13	35.94	2.4968	1000.00	153.61	0.7284	B,C,E
14	37.46	2.3989	105.20	16.16	0.7284	B,C,E
15	38.34	2.3458	31.94	4.91	0.7284	B
16	39.36	2.2873	85.05	13.06	0.7284	A,B,D
17	41.36	2.1812	43.85	6.74	0.7284	B
18	42.22	2.1388	52.35	8.04	0.7284	B,D
19	43.64	2.0724	124.08	19.06	0.7284	A,C,E
20	44.04	2.0545	114.28	17.55	0.7284	B
21	45.90	1.9755	30.32	4.66	0.7284	B,D
22	48.32	1.8821	14.64	1.05	0.3400	B
23	49.62	1.8358	111.36	7.99	0.3400	A,B
24	50.16	1.8172	89.58	6.32	0.3345	B,D
25	51.60	1.7699	283.26	32.54	0.5447	B
26	54.20	1.6909	95.66	18.27	0.9057	A,B,C,E
27	54.90	1.6710	88.65	16.93	0.9057	B,D
28	55.94	1.6424	43.93	8.39	0.9057	A,B
29	57.54	1.6005	159.41	30.45	0.9057	A,B,C,E
30	60.12	1.5378	40.91	7.81	0.9057	B,D
31	61.18	1.5137	114.15	21.80	0.9057	B
32	63.40	1.4659	169.31	32.34	0.9057	C,E
33	66.34	1.4079	35.63	7.60	1.0113	B,C,E
34	68.36	1.3711	56.89	12.46	1.0113	B,D

950ºC, 15%



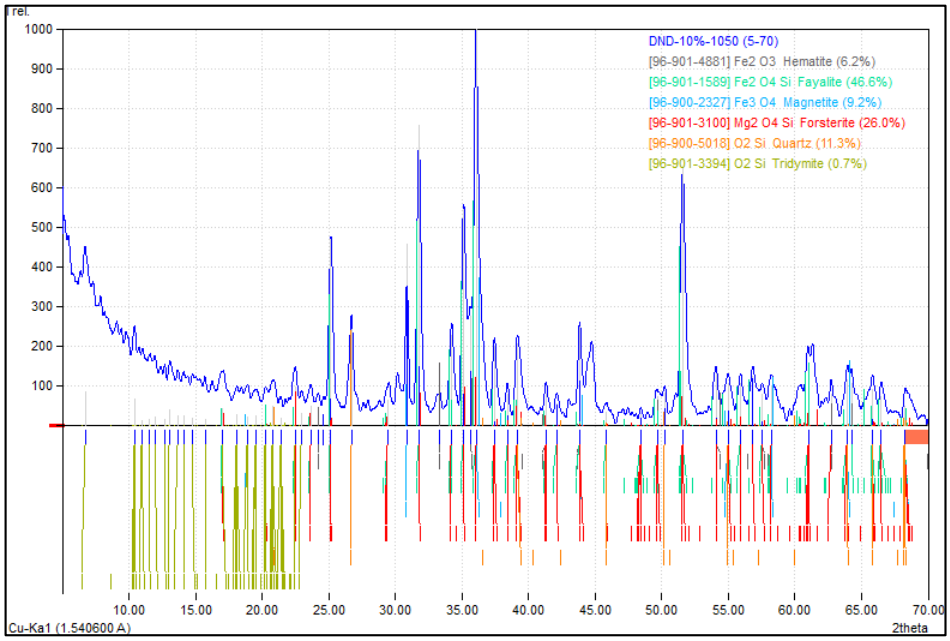
No.	2theta [°]	d [Å]	I/I0 (peak height)	Counts (peak area)	FWHM	Matched
1	17.06	5.1932	55.94	3.30	0.2800	A
2	18.44	4.8076	23.79	1.40	0.2800	B,D
3	20.52	4.3247	214.59	12.65	0.2800	A
4	21.04	4.2190	15.62	0.77	0.2338	C
5	22.52	3.9450	58.68	4.97	0.4021	A
6	23.68	3.7543	41.97	3.55	0.4021	A
7	25.18	3.5339	400.23	29.24	0.3469	A
8	26.70	3.3361	270.17	23.29	0.4095	C
9	29.42	3.0336	64.00	8.20	0.6084	A
10	30.72	2.9081	128.71	16.49	0.6084	B,D
11	31.82	2.8100	624.15	47.06	0.3582	A
12	33.24	2.6931	52.17	3.08	0.2800	E
13	34.22	2.6182	180.28	16.27	0.4287	A
14	35.14	2.5518	456.86	42.32	0.4400	A
15	36.14	2.4834	1000.00	109.48	0.5200	A,B,D
16	37.44	2.4001	155.33	17.01	0.5200	A
17	38.46	2.3388	45.76	5.01	0.5200	A
18	39.26	2.2929	153.81	16.84	0.5200	A,C,E
19	40.28	2.2372	38.59	2.28	0.2800	C
20	41.34	2.1822	68.53	5.60	0.3882	A
21	42.18	2.1407	272.73	22.29	0.3882	A,C
22	43.24	2.0907	45.53	3.72	0.3882	E
23	43.84	2.0634	344.46	29.01	0.4000	A,B,D
24	45.80	1.9796	29.76	3.11	0.4958	A,C
25	47.62	1.9081	13.20	1.38	0.4958	A
26	49.64	1.8351	67.12	8.72	0.6172	A,E
27	50.16	1.8172	62.23	8.09	0.6172	A,C
28	51.58	1.7705	511.71	51.71	0.4800	A
29	54.06	1.6950	71.03	8.50	0.5687	A,E
30	54.92	1.6705	74.14	8.88	0.5687	A,B,C
31	55.90	1.6435	65.94	7.90	0.5687	A,E
32	56.92	1.6164	95.82	11.47	0.5687	A
33	57.32	1.6061	81.42	9.75	0.5687	A,C,E
34	58.18	1.5844	159.29	9.39	0.2800	A,B,D
35	60.26	1.5346	291.13	17.16	0.2800	A,C
36	61.12	1.5150	315.25	31.61	0.4762	A
37	62.74	1.4797	64.83	8.81	0.6457	E
38	63.98	1.4540	98.23	13.35	0.6457	A,B,C,D,E
39	64.72	1.4392	22.35	5.90	1.2039	A
40	65.94	1.4155	52.78	19.58	1.7621	A,C,E
41	66.46	1.4057	53.03	20.48	1.7621	A
42	68.36	1.3711	76.27	29.46	1.7621	A,B,C,D

1050°C, 5%



No.	*2theta [°]*	*d [Å]*	*I/I0 (peak height)*	*Counts (peak area)*	*FWHM*	*Matched*
1	5.46	16.1728	59.35	10.74	0.6234	D
2	17.24	5.1394	15.08	0.44	0.1004	A
3	18.56	4.7768	32.30	0.94	0.1004	B
4	20.90	4.2469	56.32	5.46	0.3342	C,D
5	22.64	3.9243	38.90	2.87	0.2537	A
6	24.32	3.6569	24.85	1.83	0.2537	D,E
7	25.18	3.5339	188.50	21.79	0.3982	A,D
8	26.68	3.3385	304.09	25.39	0.2875	C,D
9	30.44	2.9342	246.92	31.93	0.4454	B,D
10	31.82	2.8100	253.59	27.37	0.3717	A,D
11	33.28	2.6900	93.90	8.18	0.3000	D,E
12	34.24	2.6167	107.34	9.35	0.3000	A,D
13	35.20	2.5475	439.78	38.31	0.3000	A,D
14	35.92	2.4981	1000.00	131.02	0.4513	A,B,D,E
15	37.48	2.3976	97.09	10.44	0.3705	A,B,D
16	39.44	2.2829	76.98	14.77	0.6609	A,C,D,E
17	41.36	2.1812	28.42	5.45	0.6609	A,D
18	42.58	2.1215	22.92	4.50	0.6758	C,D
19	43.54	2.0769	101.03	20.26	0.6906	B,D,E
20	44.36	2.0404	91.17	18.28	0.6906	A
21	45.90	1.9755	25.47	5.11	0.6906	A,C
22	47.56	1.9103	11.82	2.37	0.6906	A,B
23	49.62	1.8358	54.18	10.86	0.6906	A,E
24	50.28	1.8132	273.58	19.06	0.2400	A,C
25	51.64	1.7686	225.62	28.46	0.4344	A
26	54.24	1.6898	96.49	17.61	0.6284	A,E
27	54.92	1.6705	44.49	8.12	0.6284	A,C
28	57.62	1.5984	151.72	35.36	0.8027	A,B,E
29	60.00	1.5406	35.36	8.24	0.8027	C
30	61.08	1.5159	66.16	15.42	0.8027	A
31	63.16	1.4709	168.96	39.38	0.8027	B
32	65.96	1.4151	27.31	6.37	0.8027	A,C,E
33	66.52	1.4045	30.51	7.11	0.8027	A,B
34	68.40	1.3704	35.83	8.35	0.8027	A,C

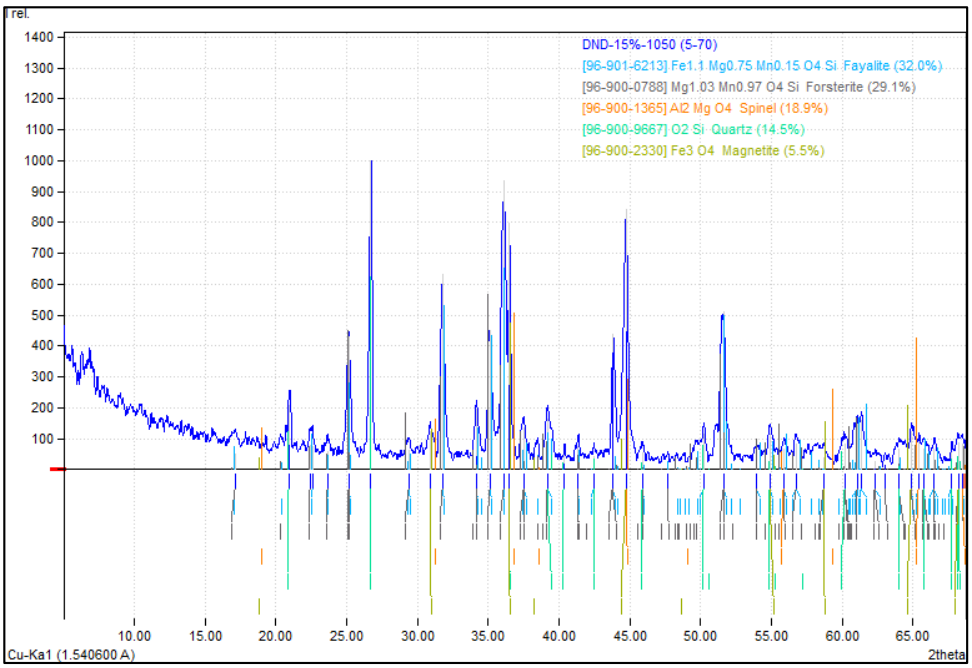
1050°C, 10%



No.	*2theta [°]*	*d [Å]*	*I/I0 (peak height)*	*Counts (peak area)*	*FWHM*	*Matched*
1	6.72	13.1429	85.03	3.22	0.2337	F
2	10.42	8.4829	67.18	1.61	0.1483	F
3	11.02	8.0223	13.47	0.32	0.1483	F
4	11.56	7.6488	15.19	0.37	0.1495	F
5	11.94	7.4062	22.08	0.53	0.1495	F
6	12.70	6.9646	16.20	0.47	0.1800	F
7	13.10	6.7529	42.00	1.14	0.1681	F
8	13.68	6.4678	26.89	0.64	0.1463	F
9	14.12	6.2673	26.64	0.78	0.1800	F
10	14.76	5.9969	19.75	0.47	0.1454	F
11	15.72	5.6328	16.95	0.40	0.1454	F
12	17.06	5.1932	43.94	3.35	0.4712	B,D,F
13	18.12	4.8918	27.60	0.80	0.1800	F
14	18.94	4.6818	23.32	0.54	0.1427	C,F
15	19.52	4.5440	26.19	0.76	0.1800	F
16	20.26	4.3796	28.23	0.87	0.1907	B,D,F
17	20.84	4.2590	49.89	3.92	0.4846	E,F
18	21.40	4.1488	20.07	0.59	0.1800	F
19	22.48	3.9519	98.43	5.30	0.3324	B,D,F
20	22.96	3.8704	30.47	1.64	0.3324	F
21	23.64	3.7605	49.16	2.65	0.3324	B,D
22	24.22	3.6718	47.01	1.37	0.1800	A
23	24.62	3.6130	28.96	0.84	0.1800	
24	25.16	3.5367	471.14	22.09	0.2894	B,D
25	26.70	3.3361	245.43	12.47	0.3137	E
26	29.48	3.0275	64.56	4.67	0.4464	B,D
27	30.88	2.8934	457.64	13.35	0.1800	C
28	31.78	2.8135	759.75	36.57	0.2971	B,D
29	33.32	2.6869	42.58	2.65	0.3848	A
30	34.22	2.6182	230.22	14.35	0.3848	B,D
31	35.14	2.5518	548.41	35.54	0.4000	B,D
32	35.62	2.5185	277.39	17.98	0.4000	A
33	36.10	2.4861	1000.00	64.80	0.4000	B,C,D
34	37.46	2.3989	200.84	10.36	0.3185	B,D
35	38.42	2.3411	79.91	2.95	0.2282	B,D
36	39.18	2.2974	208.35	15.28	0.4525	B,D,E
37	41.32	2.1833	81.55	3.97	0.3007	A,B,D
38	42.12	2.1436	55.31	2.69	0.3007	B,D
39	43.84	2.0634	248.49	12.14	0.3017	A,B,C,D
40	45.82	1.9788	34.23	2.36	0.4257	B,D,E

No.	*2theta [°]*	*d [Å]*	*I/I0 (peak height)*	*Counts (peak area)*	*FWHM*	*Matched*
41	48.44	1.8777	29.65	0.93	0.1933	B,C,D
42	49.66	1.8344	75.67	8.07	0.6584	A,B,D
43	50.24	1.8145	84.09	8.97	0.6584	D,E
44	51.56	1.7711	654.04	42.38	0.4000	B,D
45	54.08	1.6944	131.47	8.56	0.4017	A,D
46	54.98	1.6688	108.51	7.06	0.4017	B,C,D,E
47	55.90	1.6435	107.92	7.02	0.4017	B,D
48	56.84	1.6185	126.30	8.22	0.4017	D
49	57.56	1.6000	78.84	5.13	0.4017	A,B,D
50	58.24	1.5829	101.31	6.59	0.4017	B,C,D
51	61.00	1.5177	159.23	27.65	1.0720	B,D
52	62.74	1.4797	79.11	14.61	1.0720	A,D
53	63.96	1.4544	117.12	21.62	1.0720	B,C,D,E
54	64.24	1.4488	107.44	19.84	1.0720	A,B
55	65.84	1.4174	92.72	17.12	1.0720	B,D,E
56	66.48	1.4053	73.40	13.55	1.0720	A,B,D
57	68.28	1.3726	51.15	9.45	1.0720	B,C,D,E

1050°C, 15%



No.	2theta [°]	d [Å]	I/I0 (peak height)	Counts (peak area)	FWHM	Matched
1	17.10	5.1812	51.17	4.75	0.4728	A,B
2	20.96	4.2349	209.36	10.17	0.2473	D
3	22.42	3.9623	77.05	4.67	0.3086	B
4	22.58	3.9346	73.33	5.33	0.3700	A
5	23.62	3.7637	57.82	4.20	0.3700	A,B
6	25.12	3.5422	431.15	24.33	0.2873	A,B
7	26.66	3.3410	1000.00	49.96	0.2544	D
8	29.38	3.0376	64.16	6.26	0.4968	A,B
9	30.88	2.8934	121.42	11.85	0.4968	E
10	31.76	2.8152	630.95	39.66	0.3200	A,B
11	34.18	2.6212	194.15	11.71	0.3071	A,B
12	35.10	2.5546	450.24	28.30	0.3200	A,B
13	36.10	2.4861	934.77	80.79	0.4400	A,B
14	36.48	2.4610	796.66	31.30	0.2000	D,E
15	37.48	2.3976	136.17	11.08	0.4142	A,B
16	39.18	2.2974	165.29	14.10	0.4343	A,B,D
17	40.38	2.2319	44.73	2.86	0.3251	D
18	41.34	2.1822	75.45	3.20	0.2158	A,B
19	42.46	2.1272	44.30	1.68	0.1925	A,D
20	43.82	2.0643	438.42	22.54	0.2617	A,B
21	44.72	2.0248	843.57	59.65	0.3600	C,E
22	45.86	1.9771	56.35	3.02	0.2729	A,B,D
23	47.68	1.9058	23.39	0.28	0.0615	A,B
24	50.24	1.8145	116.15	6.79	0.2977	A,D
25	51.60	1.7699	511.63	36.18	0.3600	A,B
26	53.94	1.6985	43.00	3.13	0.3712	A,B
27	54.88	1.6716	115.65	8.43	0.3712	A,D,E
28	55.90	1.6435	68.60	5.00	0.3712	A,B,C
29	56.74	1.6211	82.35	6.00	0.3712	A,B
30	58.68	1.5721	36.72	4.09	0.5665	A,B,E
31	60.16	1.5369	83.81	9.33	0.5665	B,D
32	61.06	1.5164	149.08	16.59	0.5665	A,B
33	61.36	1.5097	160.21	17.83	0.5665	A
34	62.34	1.4883	27.28	3.03	0.5665	A,B
35	63.04	1.4734	14.37	1.60	0.5665	B
36	64.02	1.4532	67.61	7.52	0.5665	A,B,D
37	64.90	1.4356	122.86	13.67	0.5665	A,B,E
38	65.44	1.4251	85.96	9.57	0.5665	A,C
39	65.78	1.4185	65.59	7.30	0.5665	A,B,D

No.	*2theta [°]*	*d [Å]*	*I/I0 (peak height)*	*Counts (peak area)*	*FWHM*	*Matched*
40	66.50	1.4049	68.35	7.60	0.5665	A,B
41	67.72	1.3825	55.69	6.20	0.5665	A,D
42	68.20	1.3740	85.71	9.54	0.5665	B,D,E
43	68.48	1.3690	84.10	9.36	0.5665	A,B,C

Lampiran B

HASIL ANALISIS XRF (*X-Ray Fluoresence*)

Hasil XRF Sampel Awal

25-Aug-2022 13:43:26

Results for Ni Ore

Page 1

Nr	Ident	Seq	Time	Pos	Ini wgt	Fin wgt	Ni		Fe2O3		SiO2		Co		Al2O3		CaO		MgO
							C	Unit	C	Unit	C	Unit	C	Unit	C	Unit	C	Unit	C
1	LM IF SH	1/2	21-Aug-2022 12:41:18	4	0,500	10,500	1,439	%	56,748	%	19,704	%	0,119	%	6,434	%	0,194	%	4,051
2	LM IF SH	2/2	21-Aug-2022 12:45:39	4	0,500	10,500	1,449	%	56,734	%	19,828	%	0,121	%	6,322	%	0,190	%	4,089
3	LM IF SH	Ave/2	21-Aug-2022 12:45:39	4			1,444	%	56,741	%	19,766	%	0,120	%	6,378	%	0,192	%	4,070
4	LM IF SH	SDev/2	21-Aug-2022 12:45:39	4			0,007	%	0,0100	%	0,088	%	0,001	%	0,079	%	0,003	%	0,027

Nr	MgO		P2O5		SO3		TiO2		Cr2O3		K2O		MnO		Na2O	
	Unit	C	Unit	C	Unit	C	Unit	C	Unit	C	Unit	C	Unit	C	Unit	C
1	%	0,020	%	0,118	%	0,097	%	1,590	%	0,049	%	0,677	%	0,032	%	
2	%	0,015	%	0,123	%	0,093	%	1,590	%	0,048	%	0,674	%	0,029	%	
3	%	0,018	%	0,121	%	0,095	%	1,590	%	0,049	%	0,675	%	0,030	%	
4	%	0,003	%	0,003	%	0,003	%	0,00007	%	0,0005	%	0,002	%	0,002	%	

Hasil XRF Sampel Hasil Kalsinasi

PT IFISHDECO Tbk.

PT. IFISHDECO Tbk.
Mineral Laboratory Analysis
SITE TINANGGEA, KONAWE SELATAN

REPORT OF ANALYSIS

Date of Report : 11-October-2022
Subject : Analysis Sample Nickel Laterit
Sample Description : Dry Sample
Sample Quantity : -
Tested For : Element Analysis
Date Received : 09-October-2022
Date Analysis : 10-October-2022
Type of Sample Analysis : Press Pellet Samples

No	Sample ID	MC	Fe (%)	Ni (%)		Co (%)	MgO (%)	SiO2 (%)	CaO (%)	Al2O3 (%)	P (%)	Cr2O3 (%)	MnO (%)	TiO2 (%)	SiO2/MgO Ratio
				Results	certificate										
1	STD OREAS 187	NA	13.60	1.38	1.37	0.0636	17.99	46.66	0.341	2.80	0.0000	0.9869	0.4118	0.033	2.59
2	STD OREAS 190	NA	24.82	1.64	1.64	0.0890	6.91	38.22	0.133	6.00	0.0001	1.7260	0.7071	0.064	5.53
3	STD OREAS 192	NA	12.66	1.78	1.77	0.0404	21.32	43.58	0.313	2.76	0.0001	0.9129	0.3395	0.036	2.04
4	STD OREAS 193	NA	13.65	1.94	1.93	0.0495	20.25	42.72	0.362	3.08	0.0000	0.9623	0.3885	0.053	2.11
5	STD OREAS 194	NA	11.52	2.12	2.13	0.0428	22.83	43.02	0.311	2.74	0.0001	0.8191	0.3199	0.035	1.88
1	750°C (5%)	NA	43.68	1.40		0.1500	4.08	19.13	0.23	5.27	0.0000	1.8513	0.9244	0.1054	4.69
2	750°C (10%)	NA	43.20	1.38		0.1466	4.25	19.65	0.21	5.14	0.0008	1.5888	0.9077	0.0942	4.63
3	750°C (15%)	NA	42.10	1.36		0.1474	3.42	19.71	0.19	4.92	0.0044	1.5266	0.9239	0.1149	5.76
4	850°C (5%)	NA	41.47	1.43		0.1527	3.85	22.67	0.16	5.25	0.0060	1.7296	0.9723	0.0948	5.89
5	850°C (10%)	NA	42.27	1.38		0.1534	4.19	23.57	0.21	5.31	0.0090	1.7227	0.9125	0.1127	5.63
6	850°C (15%)	NA	42.34	1.34		0.1457	3.52	24.00	0.18	5.39	0.0157	1.6388	0.9103	0.1072	6.82
7	950°C (5%)	NA	42.02	1.47		0.1511	3.76	20.07	0.21	5.24	0.0027	1.7330	1.0321	0.0923	5.33
8	950°C (10%)	NA	41.30	1.43		0.1562	3.62	21.90	0.20	5.22	0.0060	1.6994	0.9869	0.0855	6.05
9	950°C (15%)	NA	39.07	1.26		0.1442	3.20	22.66	0.21	5.23	0.0141	1.7244	0.9870	0.0830	7.08
10	1050°C (5%)	NA	41.53	1.45		0.1579	4.22	21.21	0.19	5.14	0.0016	1.8394	1.0454	0.0874	5.03
11	1050°C (10%)	NA	40.99	1.27		0.1376	5.23	19.70	0.22	5.33	0.0009	1.8690	0.9516	0.0945	3.77
12	1050°C (15%)	NA	17.86	1.90		0.0654	17.11	30.11	0.41	3.31	0.0008	1.0315	0.3660	0.1175	1.76
	TOTAL AVERAGE	**NA**	**32.59**	**1.42**		**0.1173**	**8.81**	**28.15**	**0.24**	**4.59**	**0.0037**	**1.4801**	**0.7703**	**0.0830**	**3.20**

Analytical Methods:
Chemical Analysis: X-Ray Fluorescence (XRF) analysis. All results reported on percentage of dry basis except stated as ratio (no unit).
Moisture Content (MC): Percentage loss of mass of original sample at 105 oC until constant weight.
NA: Not Available.

Tinanggea, 11 Oktober, 2022

Laboratory Analyst
Muh. Nur Alif

QAQC Department
Diana Sutistna

Lampiran C

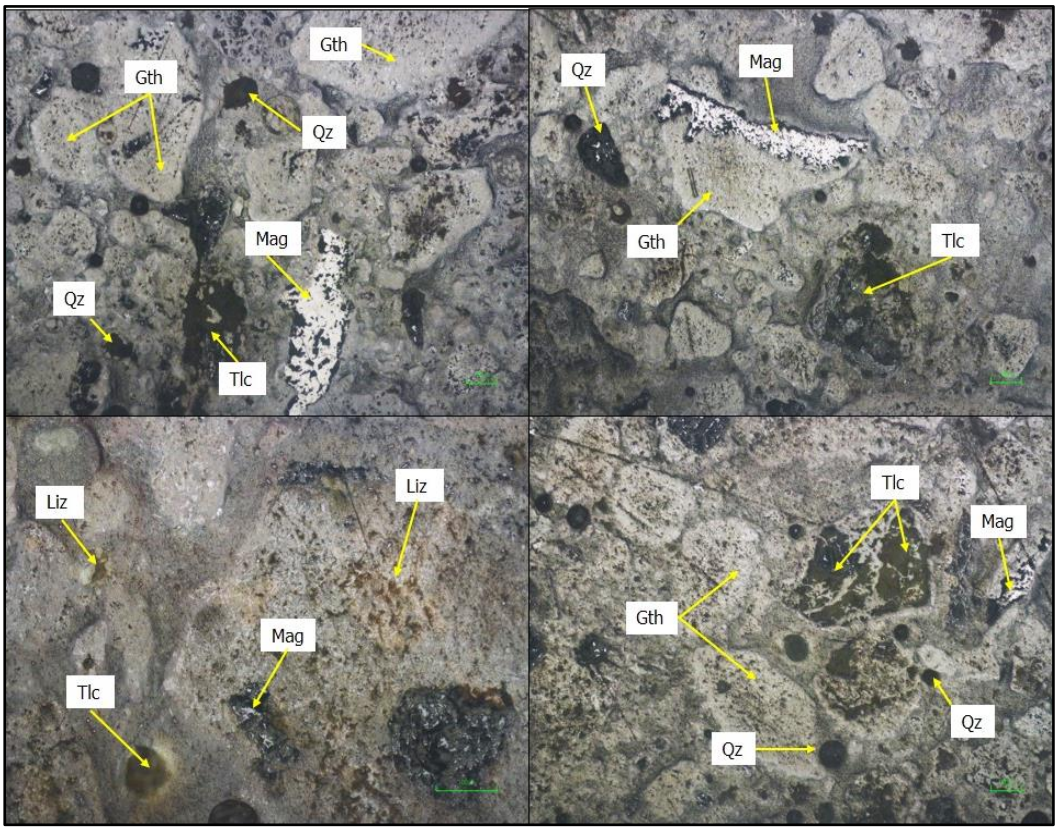
HASIL ANALISIS MIKROSKOPIS

Lokasi sampel	**: PT Ifishdeco**	**Kode Sampel**	**: SA**
Tipe Mineralisasi	**: Tersebar**		
Mineral Bijih	**: goetit, kuarsa, talk, lizardit dan magnetit**		

Deskripsi Mineralogi Bijih

Kenampakan mikroskopis memperlihatkan mineral goetit, kuarsa, talk, lizardit dan magnetit

Foto



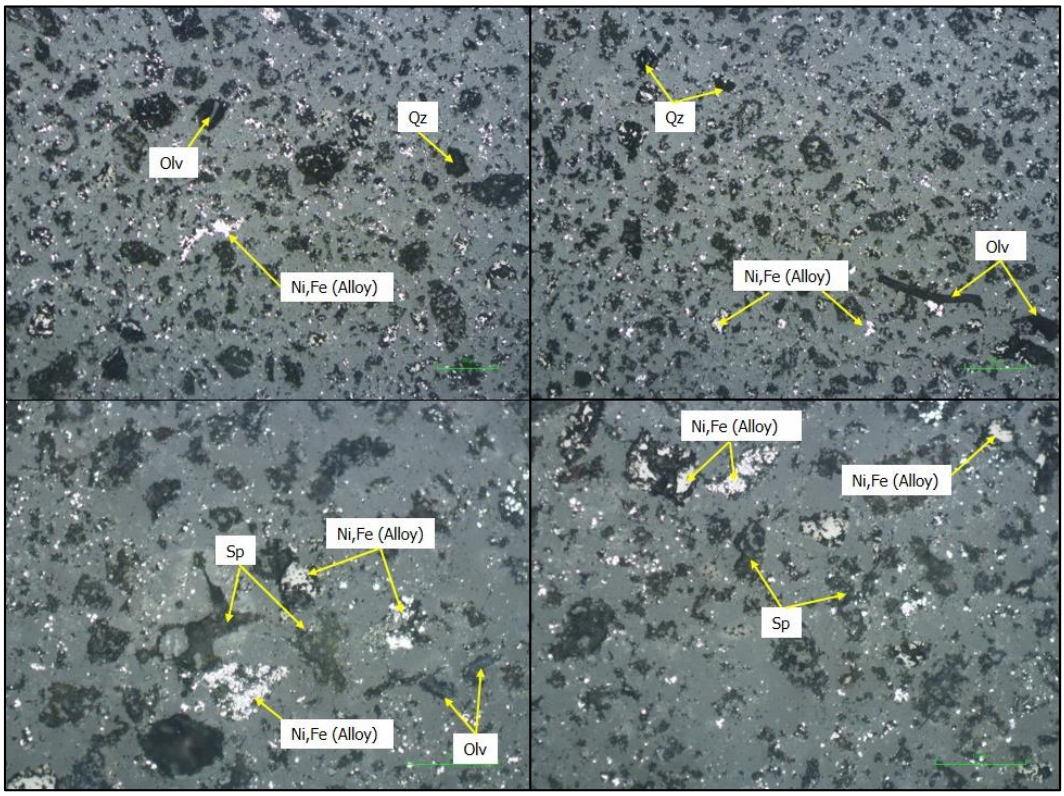
Komposisi Mineral	Jumlah (%)	Keterangan optik mineral
Goetit (Goe)		Sistem kristal ortorombik, berwarna hitam kecoklatan dengan bentuk (*subhedral*), ukuran mineral yang tampak yaitu 50 µm-100 µm.
Talk (Tlc)		Sistem kristal trigonal, berwarna abu-abu kehijauan (*anhedral-subhedral*), ukuran mineral yang tampak yaitu 20 µm-50 µm
Kuarsa (Qz)		Sistem kristal trigonal, putih abu-abu terang dengan bentuk (*anhedral-subhedral*), ukuran mineral yang tampak yaitu 20 µm-50 µm
Lizardit (Liz)		sistem kristal trigonal, berwarna abu-abu terang hingga kuning dengan bentuk (*anhedral-subhedral*). ukuran mineral yang tampak yaitu 20 µm-50 µm
Magnetit (Mag)		Sistem kristal isometrik, berwarna putih keabu-abuan dengan bentuk (*subhedral*), ukuran mineral yang tampak yaitu 20 µm-50 µm

Lokasi sampel	**: PT Ifishdeco**	**Kode Sampel : SA**
Tipe Mineralisasi	**: Tersebar**	
Mineral Bijih	**: fayalit, forsterit, kuarsa, spinel dan magnetit.**	

Deskripsi Mineralogi Bijih

Kenampakan mikroskopis memperlihatkan mineral fayalit, forsterit, kuarsa, spinel dan magnetit. Dan juga memperlhatkan kenampakan logam (Fe,Ni) yang terbentuk

Foto



Komposisi Mineral	Jumlah (%)	Keterangan optik mineral
Olivin (olv)		sistem kristal ortorombik, berwarna kecoklatan hingga hitam dengan bentuk (*subhedral*), ukuran mineral yang tampak yaitu 50 µm-100 µm.
Spinel (sp)		sistem kristal isometrik, berwarna abu-abu terang kehijauan dengan bentuk (*anhedral-subhedral*). ukuran mineral yang tampak yaitu 20 µm-50 µm
Kuarsa (Qz)		Sistem kristal trigonal, putih abu-abu terang dengan bentuk (*anhedral-subhedral*), ukuran mineral yang tampak yaitu 20 µm-50 µm
Magnetit(Mag)		Sistem kristal isometrik, berwarna putih keabu-abuan dengan bentuk (*subhedral*), ukuran mineral yang tampak yaitu 20 µm-50 µm

Lampiran C

HASIL ANALISIS MIKROSKOPIS

Lampiran B 10

Kartu Konsultasi Tugas Akhir

JUDUL: Studi Peningkatan Kadar Unsur Besi Ilmenit melalui Proses Kalsinasi dengan menggunakan Batubara sebagai pereduktor.

(Konsultasi minimal 8 kali)

TANGGAL	MATERI KONSULTASI	PARAF DOSEN
15-11-22	Hasil XRF dan XRD dari sampel awal.	
20-11-22	Perhitungan Berat loss, grafik XRD dan XRF.	
28-11-22	Perhitungan $H_2O \rightarrow N_2$, dan $FeO \rightarrow Fe$.	
10-12-22	Perhitungan S/M ratio.	
16-12-22	Abstrak dan Latarbelakang.	
20-12-22	Perbaikan Poster dan Artikel	
5-1-23	Bab 1-5.	