

## DAFTAR PUSTAKA

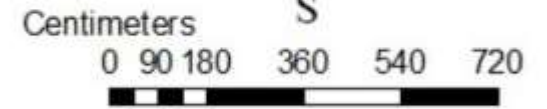
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## **LAMPIRAN**



# PETA LOKASI PENELITIAN



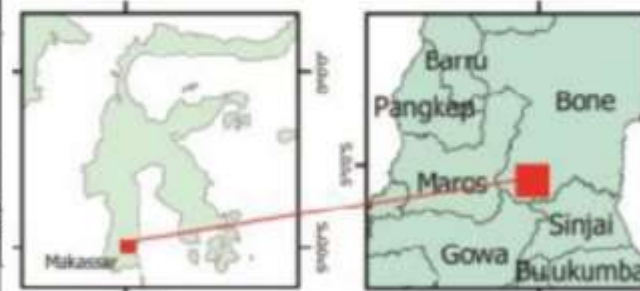
**1: 5.000**  
**SKALA**

## LEGENDA

**● LOKASI PENELITIAN**


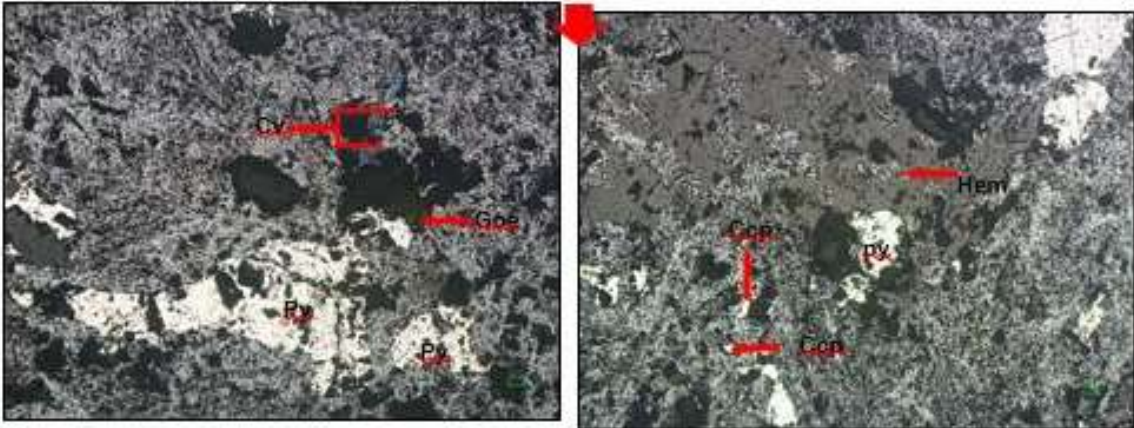
**DIGAMBAR OLEH:**  
Yerry Imanuel Tandirau

**DIPERIKSA OLEH:**  
Dr. SUFRIADIN ST., MT.  
Dr. Ir. Irzal Nur, MT.



**GOWA**  
**2023**

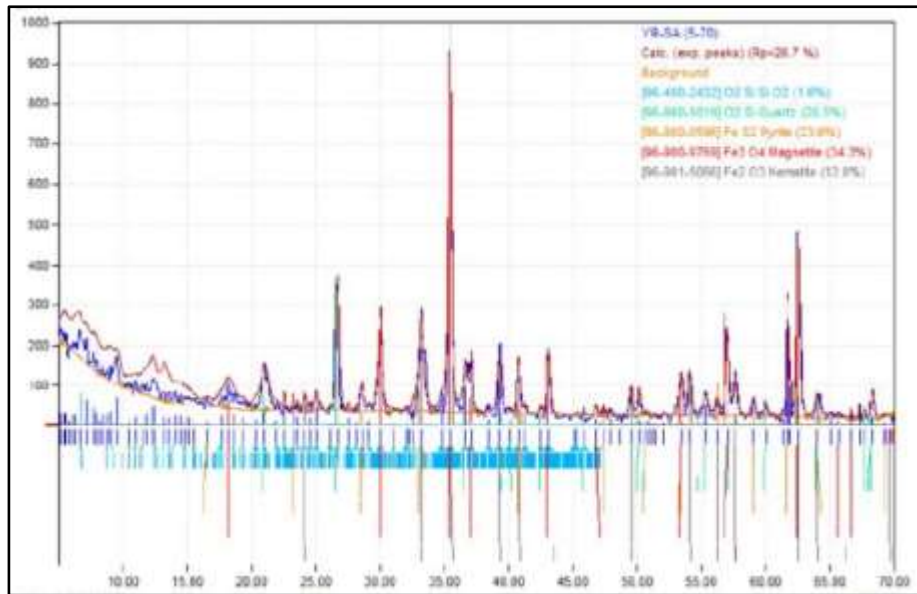
## Lampiran 12 Deskripsi Mineragrafi

<b>No Sampel : 1</b>		
<b>Lokasi : Daerah Tanjung Kecamatan Bontocani</b>		
<b>Tipe Endapan: Skarn</b>		
<b>Mineral Bijih : Goetite, Covelite, Calchopyrite, Pyrite, Hematite</b>		
<b>Referensi : Marshall <i>et al.</i> (2004)</b>		
<b>Deskripsi Mineralogi Bijih (<i>Ore Mineralogy Description</i>)</b>		
<b>Komposisi Mineral <i>Compositon of Mineral</i></b>	<b>Simbol</b>	<b>Keterangan optik mineral <i>Description of Optical Mineralogy</i></b>
<b>Goetite</b>	<b>Mg</b>	Warna coklat kemerahan, bentuk orthorhombic, ukuran mineral 0,03-0,4 mm.
<b>Covelite</b>	<b>Cv</b>	Warna biru, bentuk subhedral-anhedral, tidak memiliki pleokroisme, ukuran mineral 0,005 mm.
<b>Calcopyrite</b>	<b>cp</b>	Warna kuning cerah, bentuk anhedral, anisotropik, tidak ada pleokroisme, ukuran mineral 0,05 mm.
<b>Pyrite</b>	<b>py</b>	Warna putih kekuningan, bentuk subhedral-anhedral, terdapat striasi, anisotropik, tidak memiliki pleokroisme, ukuran mineral 0,1 - 0,3 mm.
<b>Hematite</b>	<b>Hem</b>	warna merah kecoklatan, bentuk trigonal, ukuran mineral 0,02-0,3 mm.
		
		

**LAMPIRAN**

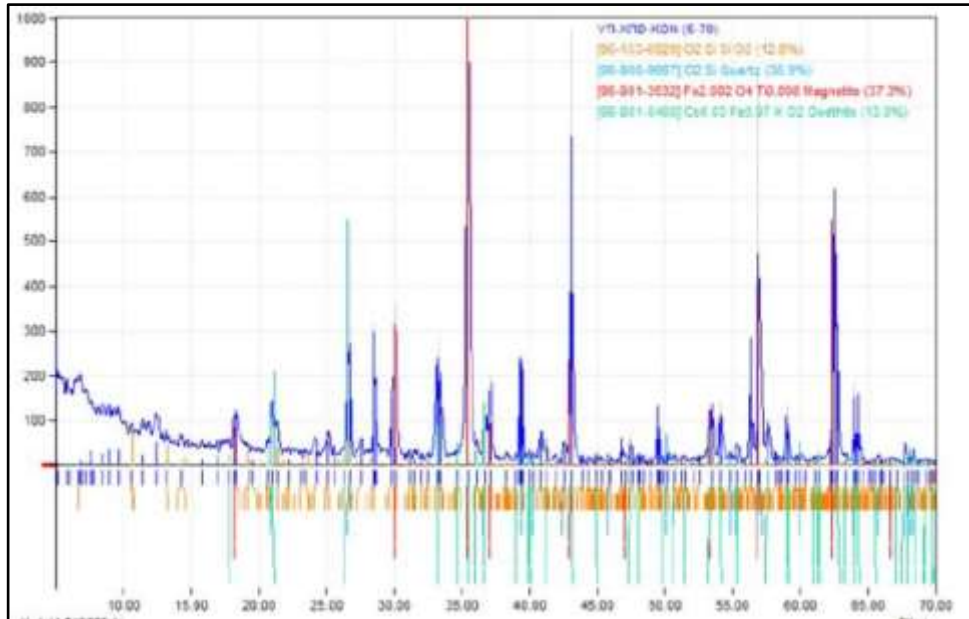
**DATA HASIL ANALISIS XRD DAN XRF**

## Lampiran 13 Hasil XRD sampel awal



No.	Ziheta [°]	d [Å]	I/I0 (peak height)	Counts (peak area)	FWHM	Matched
1	5.18	17.0463	20.71	6.34	0.5686	
2	5.46	16.1728	31.06	6.63	0.5686	
3	5.62	15.7127	28.49	6.08	0.5686	
4	5.86	15.0185	8.95	1.91	0.5686	
5	6.18	14.2901	23.44	5.00	0.5686	
6	6.30	13.8590	24.24	5.19	0.5686	
7	6.64	13.3011	67.34	14.36	0.5686	E
8	7.20	12.2678	62.97	13.43	0.5686	
9	7.76	11.3837	43.02	9.18	0.5686	
10	7.96	11.0081	29.28	6.24	0.5686	
11	8.24	10.7216	9.38	2.00	0.5686	
12	8.50	10.3942	24.27	5.20	0.5686	
13	8.86	9.9727	26.62	5.68	0.5686	E
14	9.08	9.7315	38.57	8.23	0.5686	E
15	9.58	9.2247	69.42	14.81	0.5686	
16	10.50	8.4184	17.19	3.67	0.5686	E
17	11.00	8.0368	27.46	5.86	0.5686	E
18	11.56	7.6488	21.66	4.62	0.5686	E
19	11.84	7.4685	27.11	5.78	0.5686	
20	12.28	7.2019	46.14	9.84	0.5686	
21	12.46	7.0982	50.05	10.67	0.5686	E
22	13.22	6.6918	23.72	5.26	0.5686	
23	13.24	6.6818	24.63	5.50	0.5686	E
24	13.24	6.6818	25.60	5.46	0.5686	
25	13.62	6.4962	24.06	5.20	0.5686	E
26	14.14	6.2584	29.64	6.32	0.5686	E
27	14.50	6.1039	21.85	4.66	0.5686	
28	14.84	5.9648	16.31	3.48	0.5686	E
29	15.16	5.8396	17.80	3.80	0.5686	
30	15.50	5.6831	11.64	2.53	0.5686	E
31	16.58	5.3425	16.60	3.54	0.5686	C,E
32	17.66	5.0181	26.75	5.71	0.5686	E
33	18.22	4.8651	61.07	13.22	0.5686	B,E
34	18.68	4.7464	30.35	6.47	0.5686	E
35	19.42	4.5871	22.42	4.78	0.5686	E
36	20.38	4.3541	16.15	3.44	0.5686	E
37	21.08	4.2111	118.03	25.17	0.5686	D,E
38	21.98	4.0406	14.06	3.00	0.5686	E
39	22.62	3.9278	42.34	1.62	0.1200	E
40	23.28	3.8179	42.37	1.62	0.1200	C,E
41	23.62	3.7637	21.13	0.81	0.1200	E
42	24.18	3.6778	43.60	3.29	0.2363	A,E
43	24.62	3.6130	19.32	1.46	0.2363	E
44	25.10	3.5450	50.24	3.79	0.2363	E
45	26.14	3.4063	8.70	0.26	0.0931	E
46	26.76	3.3287	333.85	24.80	0.2328	D,E
47	27.58	3.2316	18.95	0.45	0.0751	E
48	28.24	3.1578	8.81	0.21	0.0751	E
49	28.64	3.1144	74.57	7.21	0.3030	C,E
50	29.18	3.0580	13.69	1.32	0.3030	E
51	30.08	2.9685	265.10	26.28	0.3108	B,E
52	31.10	2.8734	7.16	0.34	0.1504	E
53	32.12	2.7844	7.42	0.28	0.1200	E
54	32.30	2.7603	2.61	0.10	0.1200	E
55	32.60	2.7445	28.46	1.09	0.1200	E
56	33.26	2.6916	240.41	34.50	0.4337	A,C,E
57	34.88	2.5702	44.22	6.12	0.4337	E
58	35.50	2.5267	1000.00	76.55	0.2400	A,B,E

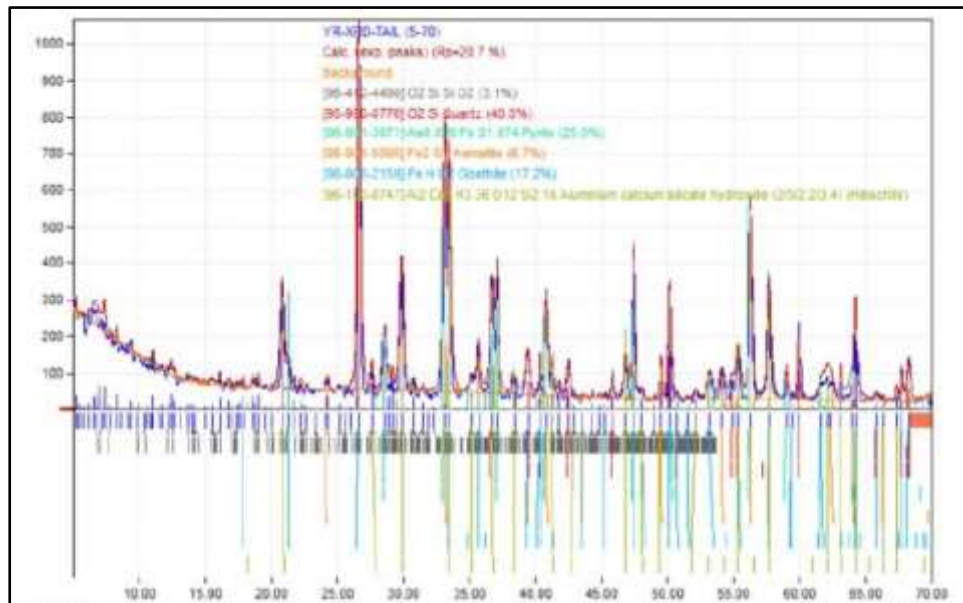
Lampiran 14 Data XRD Sampel Konsentrat



No.	2theta [°]	d [Å]	I/I0 (peak height)	Counts (peak area)	FWHM	Matched
1	5.12	17.2458	0.59	0.10	0.5057	
2	5.84	15.1212	1.07	0.10	0.2800	
3	5.84	15.1212	2.13	0.10	0.1400	
4	6.10	14.4773	2.13	0.10	0.1400	
5	6.70	13.1821	2.13	0.10	0.1400	A
6	6.84	12.9126	12.23	0.57	0.1400	
7	6.88	12.8376	1.07	0.10	0.2800	
8	6.96	12.6903	3.13	0.15	0.1400	
9	7.24	12.2001	2.13	0.10	0.1400	
10	7.26	12.1665	4.32	0.20	0.1400	
11	7.56	11.6844	32.21	1.51	0.1400	
12	7.68	11.5021	2.98	0.10	0.1000	
13	7.68	11.5021	3.15	0.13	0.1200	
14	7.84	11.2677	0.33	0.10	0.8908	
15	8.54	10.3456	25.84	7.55	0.8717	
16	8.94	9.8836	34.77	9.94	0.8526	
17	9.70	9.1109	34.51	9.43	0.8145	
18	10.62	8.3236	4.72	1.17	0.7383	A
19	11.42	7.7422	22.11	4.34	0.5859	
20	12.48	7.0869	49.82	4.70	3.2811	
21	13.20	6.7019	13.10	2.55	0.5806	A
22	14.32	6.1802	13.81	3.38	0.7303	A
23	15.86	5.5834	13.40	3.62	0.9052	
24	16.08	5.2175	19.23	5.68	0.8801	
25	17.76	4.9901	24.46	7.18	0.8747	D
26	18.20	4.8704	67.95	10.81	0.8604	C
27	18.36	4.8284	125.39	22.46	0.5347	A
28	19.28	4.6000	16.76	3.02	0.5371	A
29	19.60	4.5296	12.82	2.31	0.5383	A
30	20.66	4.2957	32.66	5.01	0.5305	A
31	21.00	4.2289	110.39	20.15	0.5442	A,B
32	21.08	4.2111	106.33	13.27	0.3721	D
33	21.40	4.1488	72.25	8.52	0.3517	A
34	22.22	3.9975	15.53	1.78	0.3415	A
35	23.12	3.8439	7.75	0.87	0.3364	A
36	23.46	3.7890	7.53	0.84	0.3338	A
37	24.28	3.6628	36.05	4.01	0.3313	A
38	25.18	3.5339	56.75	5.53	0.2905	A
39	25.56	3.4822	21.52	1.55	0.2152	
40	26.38	3.3758	22.10	1.04	0.1400	A,D
41	26.74	3.3312	1.33	0.10	0.2249	A,B
42	26.74	3.3312	944.56	25.57	0.1400	
43	27.60	3.2293	41.56	2.73	0.1960	A
44	28.54	3.1251	320.33	15.04	0.1400	A
45	28.60	3.1186	0.74	0.10	0.4039	
46	28.70	3.1080	194.13	9.11	0.1400	
47	29.88	2.9879	154.26	14.74	0.2850	A
48	30.16	2.9606	360.52	33.85	0.2800	A,C
49	31.20	2.8644	12.39	0.58	0.1400	A
50	31.54	2.8343	17.98	0.79	0.1310	A
51	32.08	2.7978	8.38	0.56	0.1999	A
52	32.54	2.7495	11.35	1.02	0.2688	A
53	33.22	2.6947	238.34	32.50	0.4066	A
54	33.30	2.6884	280.45	22.57	0.2400	D
55	33.48	2.6744	210.58	4.89	0.0693	A

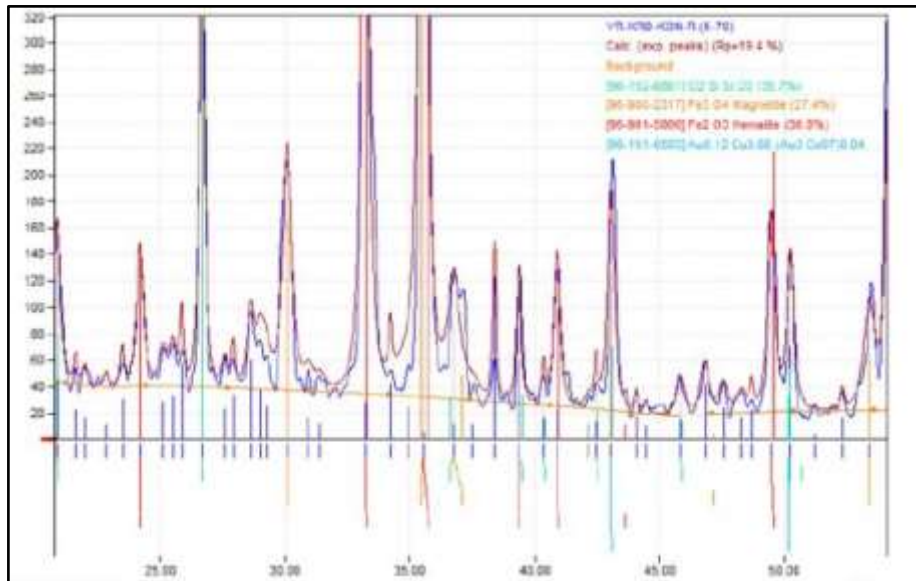


Lampiran 15 Data XRD sampel tailing



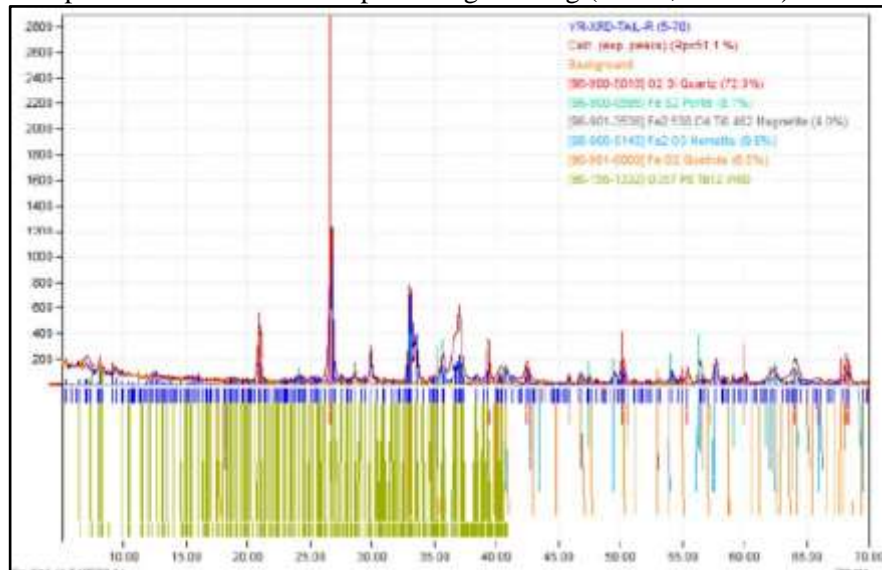
No.	2theta [°]	d [Å]	I/I0 (peak height)	Counts (peak area)	FWHM	Matched
1	5.22	16.9158	38.79	0.87	0.0780	
2	5.50	16.0552	11.49	0.37	0.1104	
3	5.78	15.2761	6.60	0.21	0.1104	
4	6.20	14.2440	15.81	0.43	0.0962	
5	6.56	13.4631	33.13	4.42	0.4637	
6	6.80	12.9885	43.41	5.79	0.4637	A
7	7.20	12.2878	25.00	3.34	0.4637	A
8	7.38	11.9890	64.25	2.59	0.1400	
9	7.88	11.2106	14.56	0.59	0.1400	A
10	8.32	10.6187	40.10	1.62	0.1400	
11	8.72	10.1325	2.48	0.10	0.1400	
12	9.14	9.6678	2.48	0.10	0.1400	
13	9.42	9.3810	22.40	0.90	0.1400	
14	9.88	8.9453	3.60	0.15	0.1400	A
15	10.40	8.4992	2.48	0.10	0.1400	A
16	10.60	8.3392	2.48	0.10	0.1400	
17	10.92	8.0956	2.48	0.10	0.1400	
18	11.08	7.9790	37.57	1.51	0.1400	
19	11.52	7.6752	2.48	0.10	0.1400	
20	11.78	7.5064	10.54	0.10	0.0300	
21	12.20	7.2489	16.89	0.68	0.1400	A
22	12.48	7.0869	40.10	1.62	0.1400	
23	12.68	6.9756	24.91	0.73	0.1012	A
24	13.10	6.7529	8.57	0.25	0.1012	
25	13.70	6.4584	15.68	0.78	0.1695	A
26	14.00	6.3207	16.14	0.79	0.1695	A
27	14.26	6.2060	12.35	0.60	0.1695	A
28	15.00	5.9015	7.60	0.33	0.1516	
29	15.56	5.6903	16.48	1.83	0.3866	A
30	16.10	5.5007	35.30	1.42	0.1400	A
31	16.78	5.2793	22.21	0.81	0.1269	
32	17.08	5.1872	11.35	0.41	0.1269	A
33	17.38	5.0983	13.46	0.49	0.1269	A
34	17.60	5.0351	14.94	0.60	0.1400	
35	17.92	4.9459	30.67	1.24	0.1400	E
36	18.60	4.7666	37.08	1.49	0.1400	
37	18.80	4.7163	20.73	0.84	0.1400	A
38	19.04	4.6574	43.89	1.77	0.1400	A
39	19.62	4.5210	12.58	0.50	0.1369	A
40	20.04	4.4272	10.68	0.42	0.1369	A
41	20.84	4.2590	297.00	26.92	0.3149	A,B
42	21.32	4.1642	81.41	7.38	0.3149	A,E
43	21.80	4.0736	32.32	1.30	0.1400	A
44	22.24	3.9940	31.25	1.28	0.1400	A
45	22.70	3.9141	10.59	0.47	0.1539	A
46	23.44	3.7922	4.79	0.19	0.1400	A
47	24.14	3.6838	30.00	1.25	0.1400	D
48	24.34	3.6539	38.51	1.55	0.1399	A
49	25.20	3.5312	16.17	1.16	0.2489	A
50	25.88	3.4662	10.87	0.44	0.1400	A
51	26.04	3.4191	9.20	0.37	0.1400	A
52	26.68	3.3385	1000.00	72.18	0.2508	A,B,E
53	27.66	3.2224	70.12	3.51	0.1641	A
54	28.62	3.1165	175.43	15.67	0.3103	A,C
55	28.94	3.0828	41.00	1.65	0.1400	A
56	29.22	3.0539	56.49	2.28	0.1400	A
57	29.54	3.0215	29.48	1.19	0.1400	A
58	29.94	2.9820	366.77	30.44	0.2884	A
59	30.38	2.9392	36.63	3.08	0.3864	A

Lampiran 16, Data XRD Sampel Konsentrat roasting (450°C, 60 menit)



No.	2theta [°]	d [Å]	I/I0 (peak height)	Counts (peak area)	FWHM	Matched
1	5.22	16.9158	296.84	13.14	0.1600	
2	5.24	16.8513	2.34	0.10	0.1600	
3	5.76	15.3311	1.17	0.10	0.3200	
4	5.78	15.2781	2.34	0.10	0.1600	
5	6.70	13.1821	28.64	1.09	0.1425	
6	8.24	10.7216	14.12	0.54	0.1425	
7	8.94	9.8836	22.53	0.96	0.1600	
8	9.38	9.4210	51.04	3.66	0.2679	
9	10.32	8.5649	11.64	0.65	0.2085	
10	11.16	7.9220	30.66	1.40	0.1790	
11	11.58	7.6356	15.94	1.04	0.2431	
12	11.90	7.4310	14.37	1.06	0.2748	
13	12.38	7.1439	25.72	2.11	0.3064	
14	13.00	6.8046	9.33	0.40	0.1600	
15	13.28	6.6617	9.81	0.42	0.1600	
16	13.62	6.4962	10.96	0.71	0.2433	
17	14.18	6.2409	18.48	0.79	0.1600	
18	14.78	5.9888	15.53	2.00	0.4807	
19	15.40	5.7491	16.12	1.61	0.3737	
20	16.06	5.5143	23.26	1.66	0.2667	
21	16.52	5.3618	22.59	1.61	0.2667	
22	17.54	5.0522	29.60	3.75	0.4098	
23	18.30	4.8441	52.56	6.60	0.4698	B
24	19.16	4.6285	19.75	2.48	0.4098	
25	20.00	4.4360	10.06	1.26	0.4698	
26	20.04	4.2590	125.77	10.00	0.3229	A
27	21.60	4.1109	22.73	0.97	0.1600	
28	21.96	4.0443	16.06	0.76	0.1772	
29	22.82	3.8938	11.25	0.65	0.2173	
30	23.48	3.7858	30.41	1.30	0.1600	
31	24.18	3.6778	110.54	9.81	0.3317	C
32	25.10	3.5450	28.52	2.53	0.3317	
33	25.50	3.4903	32.72	2.90	0.3317	
34	25.86	3.4425	57.88	2.48	0.1600	
35	26.66	3.3410	363.77	24.02	0.2468	A
36	27.58	3.2316	23.07	1.59	0.2571	
37	27.92	3.1930	33.88	1.45	0.1600	
38	28.62	3.1165	60.40	5.38	0.3331	
39	29.00	3.0765	37.06	3.85	0.3758	
40	29.24	3.0518	25.03	2.75	0.3972	
41	30.08	2.9685	191.78	21.47	0.4186	B
42	30.94	2.8879	16.37	1.83	0.4186	
43	31.40	2.8466	11.54	1.29	0.4186	
44	33.20	2.6963	558.50	52.88	0.3540	C
45	34.22	2.6182	43.00	1.84	0.1600	
46	34.92	2.5673	24.19	8.55	1.3212	
47	35.52	2.5253	1000.00	85.61	0.3200	B,C
48	36.76	2.4429	94.81	14.66	0.5780	A,B
49	37.52	2.3952	11.33	1.75	0.5780	
50	38.40	2.3423	122.62	5.25	0.1600	
51	39.36	2.2873	105.67	6.15	0.2178	A,C
52	40.36	2.2329	32.85	1.41	0.1600	A
53	40.90	2.2047	121.59	9.51	0.2923	C
54	42.14	2.1426	10.60	0.83	0.2923	

Lampiran 17 Data XRD Sampel tailing roasting (450oc,60 menit)

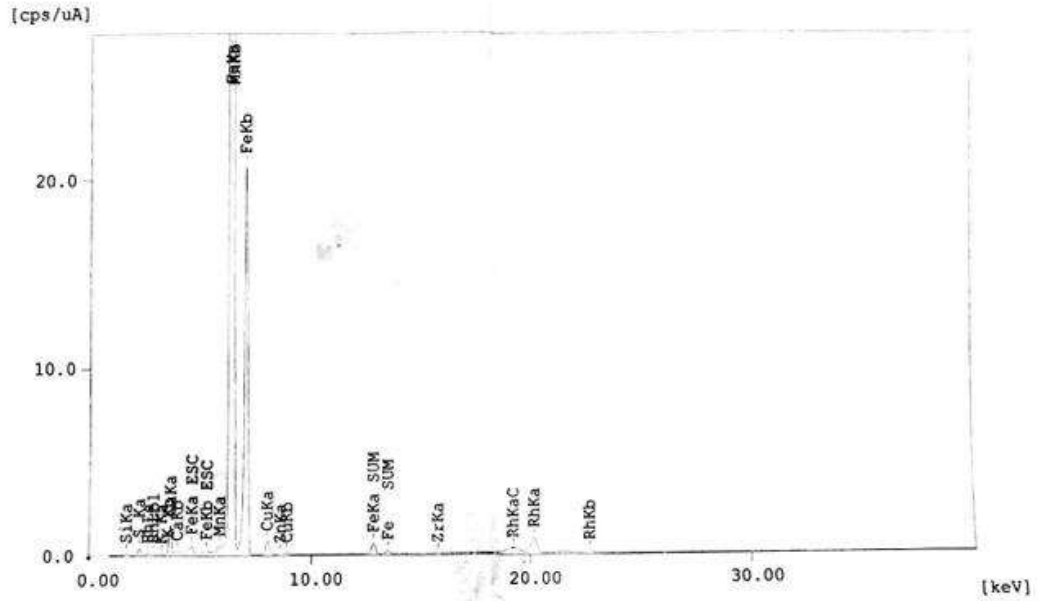


133	33.06	2.7074	392.19	13.88	0.0800	B,D,E
134	33.18	2.6979	699.26	32.42	0.1064	
135	33.54	2.6697	377.21	46.03	0.2800	
136	34.12	2.6257	22.31	0.78	0.0800	
137	34.62	2.5889	30.49	1.06	0.0800	E
138	34.84	2.5730	38.98	1.36	0.0800	
139	34.98	2.5645	18.07	0.63	0.0800	
140	35.10	2.5546	19.32	1.93	0.2290	
141	35.22	2.5461	35.41	3.53	0.2290	C
142	35.30	2.5406	36.02	3.59	0.2290	E
143	35.62	2.5185	138.58	14.50	0.2400	D
144	35.76	2.5089	126.38	13.22	0.2400	E
145	36.56	2.4558	95.15	26.33	0.6349	A,E
146	36.70	2.4468	139.87	38.70	0.6349	
147	36.84	2.4378	165.55	46.18	0.6400	C
148	37.00	2.4276	220.75	11.55	0.1200	
149	37.08	2.4226	203.97	24.89	0.2800	B
150	37.22	2.4138	150.32	7.86	0.1200	
151	37.34	2.4063	53.35	2.79	0.1200	
152	38.40	2.3423	51.95	8.51	0.3757	
153	39.02	2.3065	13.14	2.15	0.3757	E

154	39.38	2.2862	340.26	29.66	0.2000	A,D
155	39.98	2.2598	21.60	0.75	0.0800	E
156	40.06	2.2490	7.91	0.28	0.0800	
157	40.18	2.2425	18.89	3.07	0.3725	
158	40.32	2.2351	63.69	10.34	0.3725	A
159	40.42	2.2298	42.24	6.86	0.3725	
160	40.76	2.2119	109.22	17.73	0.3725	B,D,E
161	41.34	2.1822	44.13	7.17	0.3725	
162	41.74	2.1623	8.23	1.34	0.3725	
163	41.94	2.1524	4.50	0.73	0.3725	
164	42.06	2.1465	4.36	0.71	0.3725	
165	42.42	2.1292	82.45	13.39	0.3725	A
166	42.54	2.1234	101.49	16.48	0.3725	
167	42.78	2.1121	3.15	0.51	0.3725	C
168	42.92	2.1055	5.81	0.94	0.3725	E
169	43.08	2.0980	1.72	0.28	0.3725	
170	43.28	2.0888	1.34	0.22	0.3725	
171	43.60	2.0742	6.47	1.05	0.3725	D
172	43.88	2.0616	13.58	2.20	0.3725	
173	44.40	2.0387	8.72	0.30	0.0800	
174	44.62	2.0291	3.88	0.14	0.0800	
175	44.74	2.0240	6.07	0.21	0.0800	
176	44.94	2.0154	4.88	0.17	0.0800	E
177	45.06	2.0103	8.17	0.28	0.0800	
178	45.30	2.0003	2.02	0.07	0.0800	
179	45.46	1.9936	3.19	0.11	0.0800	
180	45.68	1.9845	12.83	0.45	0.0800	
181	45.82	1.9788	79.93	2.98	0.0854	A
182	45.96	1.9731	43.98	1.64	0.0854	
183	46.68	1.9443	40.59	3.28	0.1853	
184	46.84	1.9380	77.27	6.24	0.1853	C,E
185	47.34	1.9187	41.07	1.43	0.0800	
186	47.48	1.9134	79.14	2.16	0.0626	B
187	47.62	1.9081	31.11	0.85	0.0626	E
188	48.10	1.8902	35.82	1.77	0.1136	
189	48.48	1.8780	1.81	0.08	0.0800	

Lampiran 18 Hasil Analisa XRF Sampel Awal

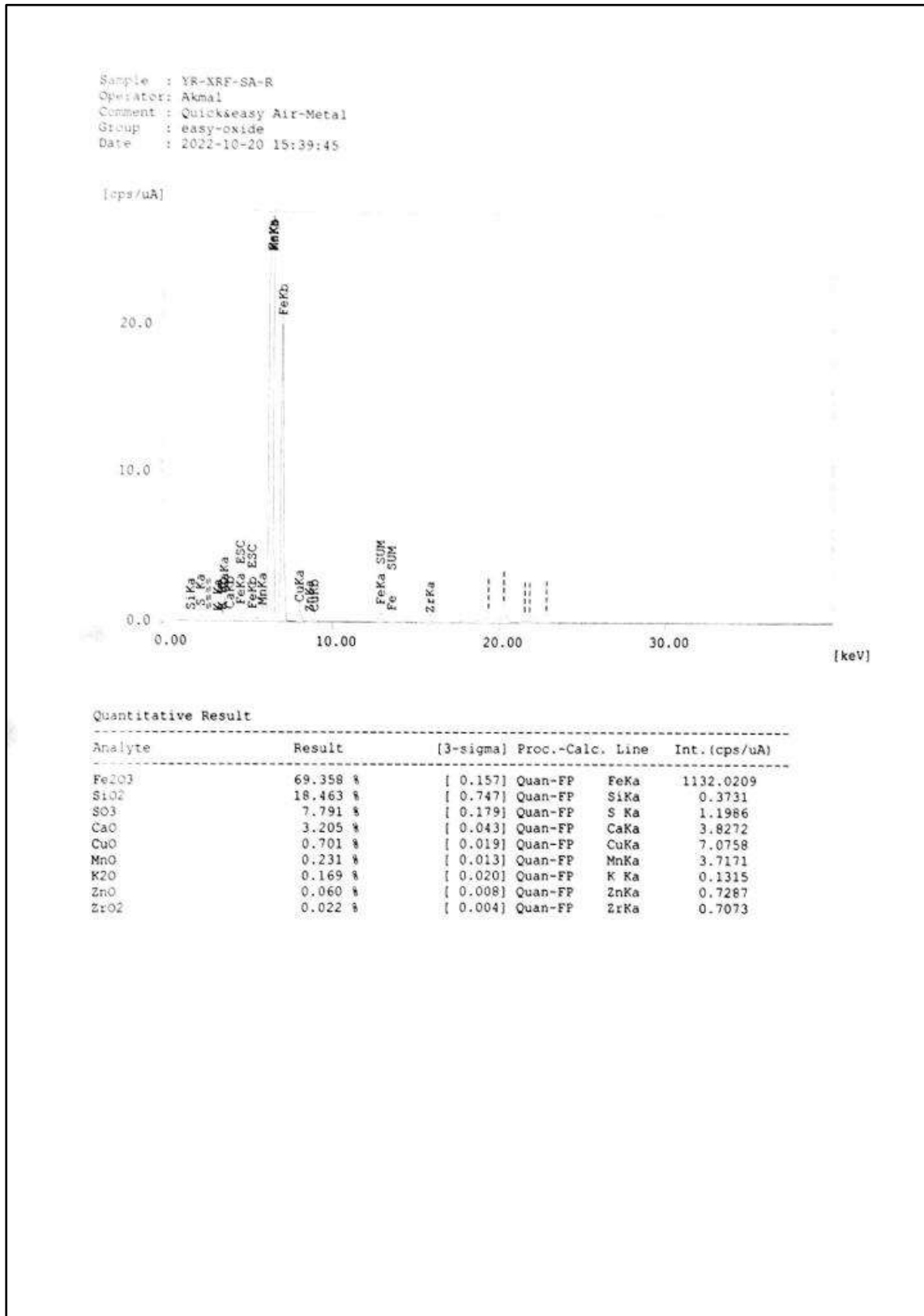
Sample : YR-SA  
 Operator: Akmal  
 Comment : Quick&easy Air-Metal  
 Group : easy-oxide  
 Date : 2022-03-04 14:46:36



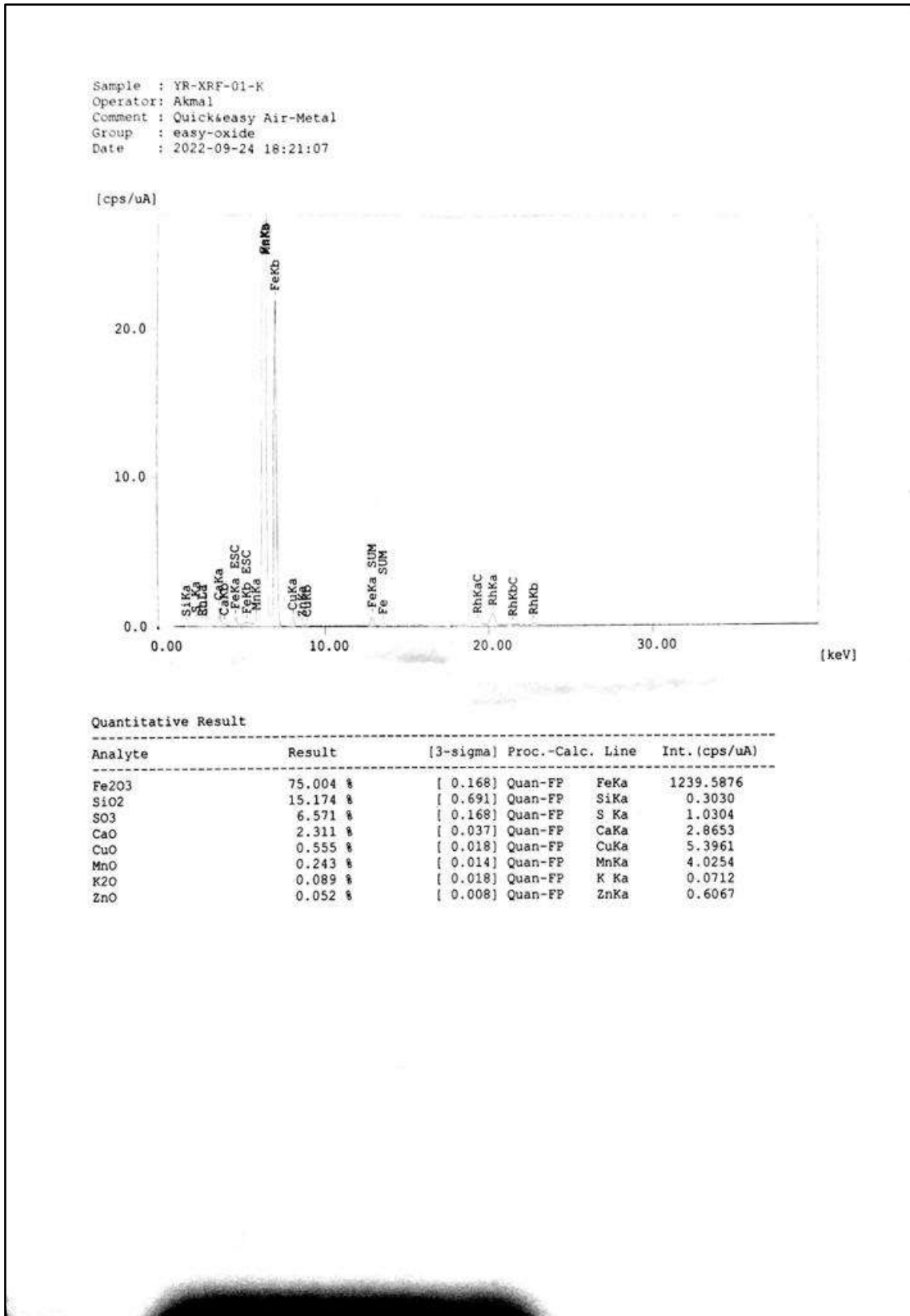
Quantitative Result

Analyte	Result	[3-sigma]	Proc.-Calc.	Line	Int. (cps/uA)
Fe2O3	70.663 %	[ 0.163]	Quan-FP	FeKa	1162.3933
SiO2	17.355 %	[ 0.711]	Quan-FP	SiKa	0.3523
SO3	7.640 %	[ 0.176]	Quan-FP	S Ka	1.1920
CaO	3.183 %	[ 0.042]	Quan-FP	CaKa	3.8626
CuO	0.717 %	[ 0.020]	Quan-FP	CuKa	7.2277
MnO	0.229 %	[ 0.014]	Quan-FP	MnKa	3.7192
K2O	0.143 %	[ 0.019]	Quan-FP	K Ka	0.1129
ZnO	0.052 %	[ 0.008]	Quan-FP	ZnKa	0.6328
ZrO2	0.019 %	[ 0.003]	Quan-FP	ZrKa	0.6042

Lampiran 19 Hasil Analisa XRF Sampel Awal yang telah di roasting

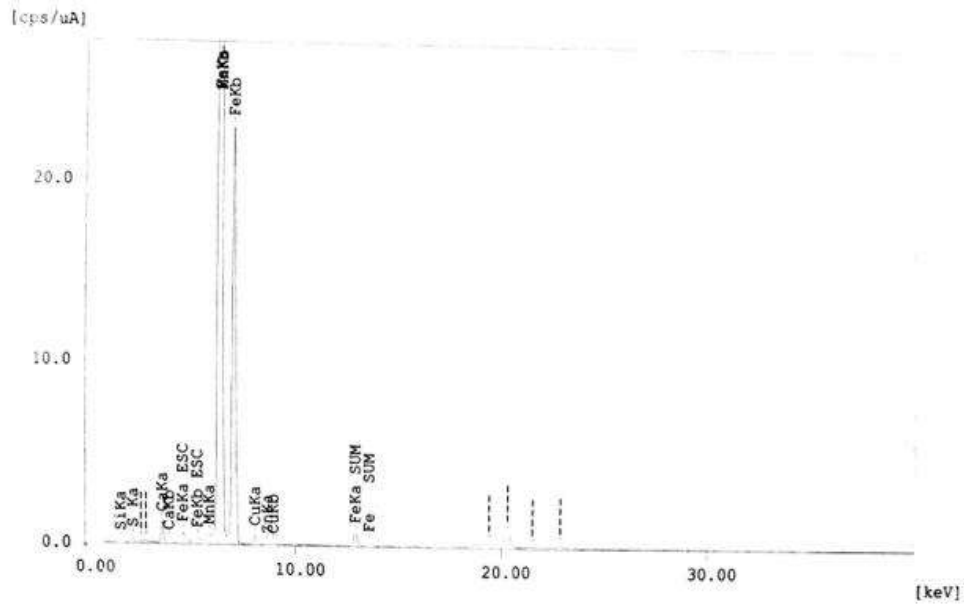


Lampiran 20 Hasil Analisa Sampel Konsentrat dengan ukuran 105 µm



Lampiran 21 Hasil Analisa Sampel Konsentrat ukuran 125  $\mu\text{m}$ 

Sample : YR-XRF-KON-125  
 Operator: Akmal  
 Comment : Quick&easy Air-Metal  
 Group : easy-oxide  
 Date : 2022-10-20 15:55:27

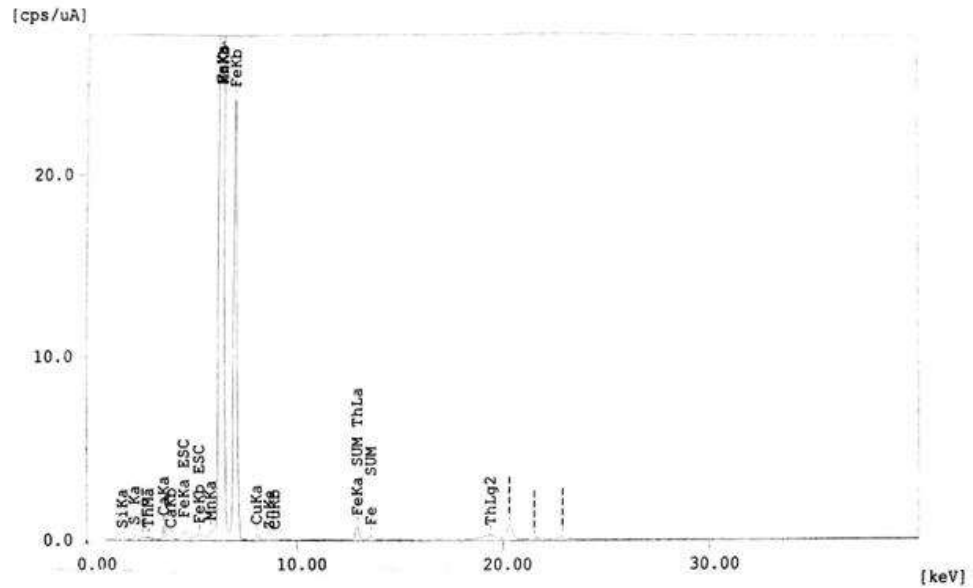


## Quantitative Result

Analyte	Result	[3-sigma]	Proc.-Calc.	Line	Int. (cps/uA)
Fe2O3	77.324 %	[ 0.174]	Quan-FP	FeKa	1312.0758
SiO2	14.532 %	[ 0.693]	Quan-FP	SiKa	0.2955
SO3	5.278 %	[ 0.151]	Quan-FP	S Ka	0.8501
CaO	2.166 %	[ 0.036]	Quan-FP	CaKa	2.7956
CuO	0.474 %	[ 0.017]	Quan-FP	CuKa	4.6427
MnO	0.178 %	[ 0.014]	Quan-FP	MnKa	3.0555
ZnO	0.048 %	[ 0.008]	Quan-FP	ZnKa	0.5675

Lampiran 22 Hasil Analisa Sampel Konsentrat ukuran 150  $\mu\text{m}$ 

Sample : YR-XRF-KON-150  
 Operator: Akmal  
 Comment : Quick&easy Air-Metal  
 Group : easy-oxide  
 Date : 2022-10-20 16:03:07

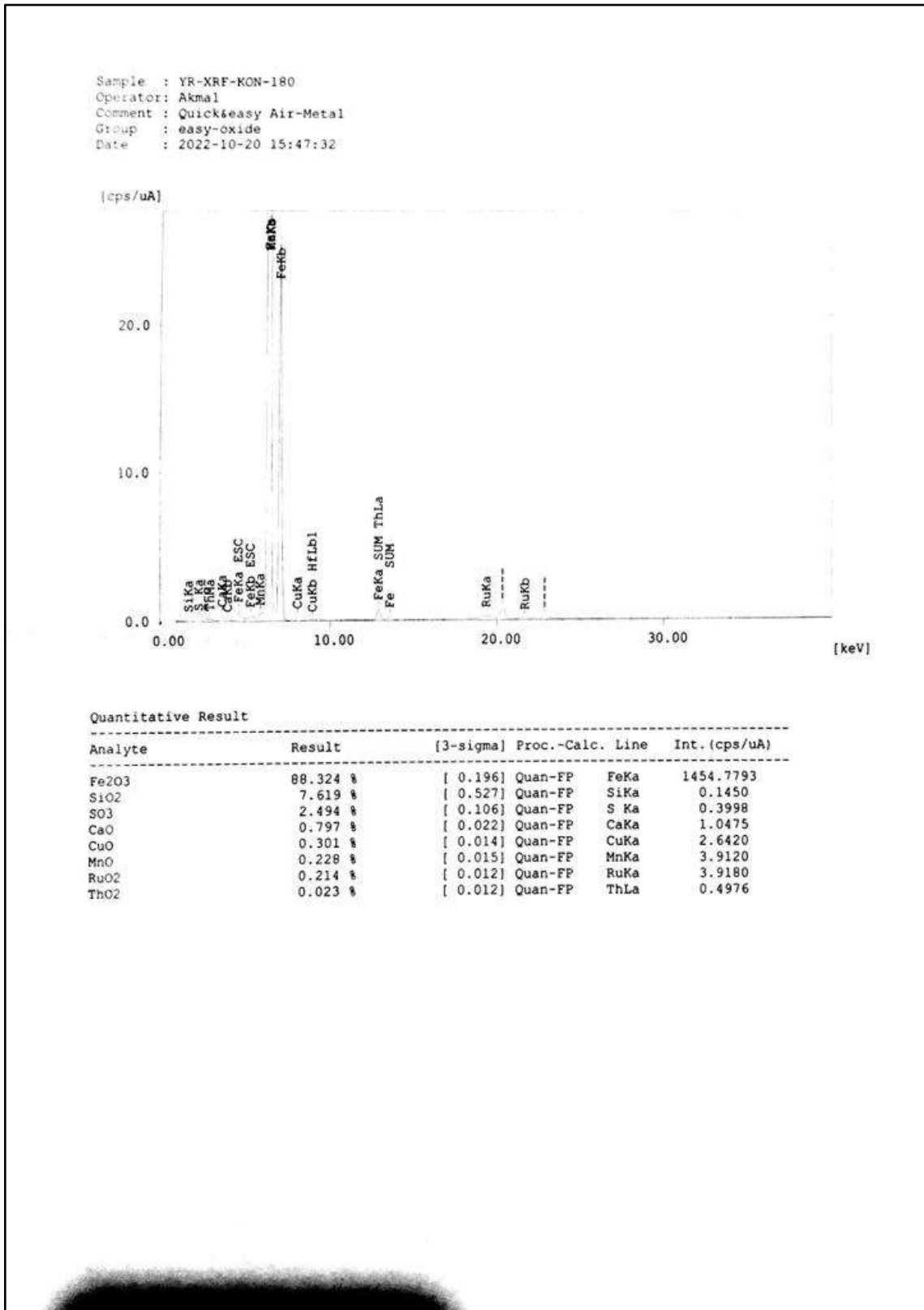


## Quantitative Result

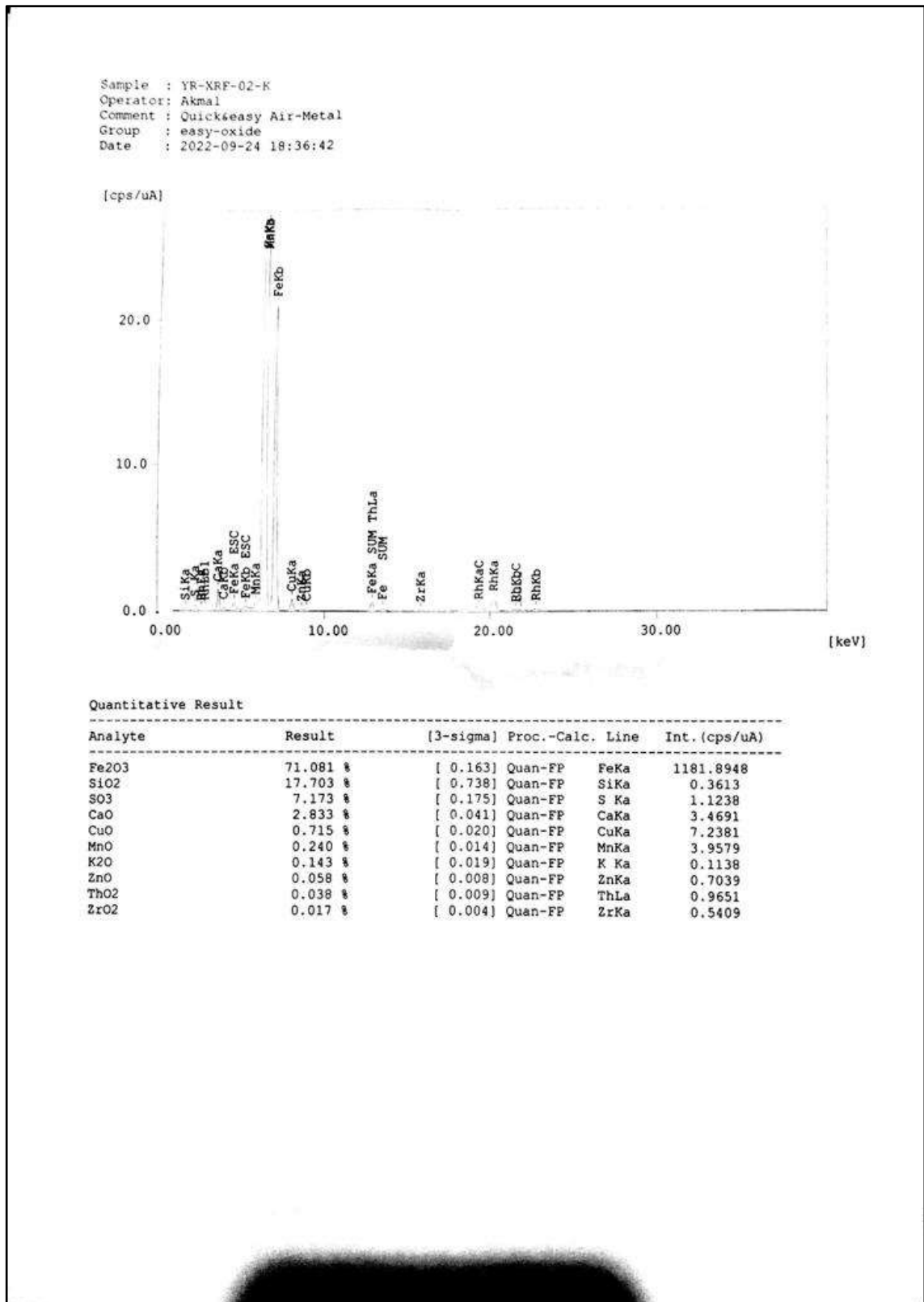
Analyte	Result	[3-sigma]	Proc.-Calc.	Line	Int. (cps/uA)
Fe2O3	83.616 %	[ 0.183]	Quan-FP	FeKa	1388.8616
SiO2	9.702 %	[ 0.566]	Quan-FP	SiKa	0.1892
SO3	4.722 %	[ 0.146]	Quan-FP	S Ka	0.7592
CaO	1.393 %	[ 0.029]	Quan-FP	CaKa	1.8103
CuO	0.326 %	[ 0.014]	Quan-FP	CuKa	2.9838
MnO	0.170 %	[ 0.014]	Quan-FP	MnKa	2.8994
ThO2	0.037 %	[ 0.011]	Quan-FP	ThLa	0.8437
ZnO	0.036 %	[ 0.008]	Quan-FP	ZnKa	0.3916



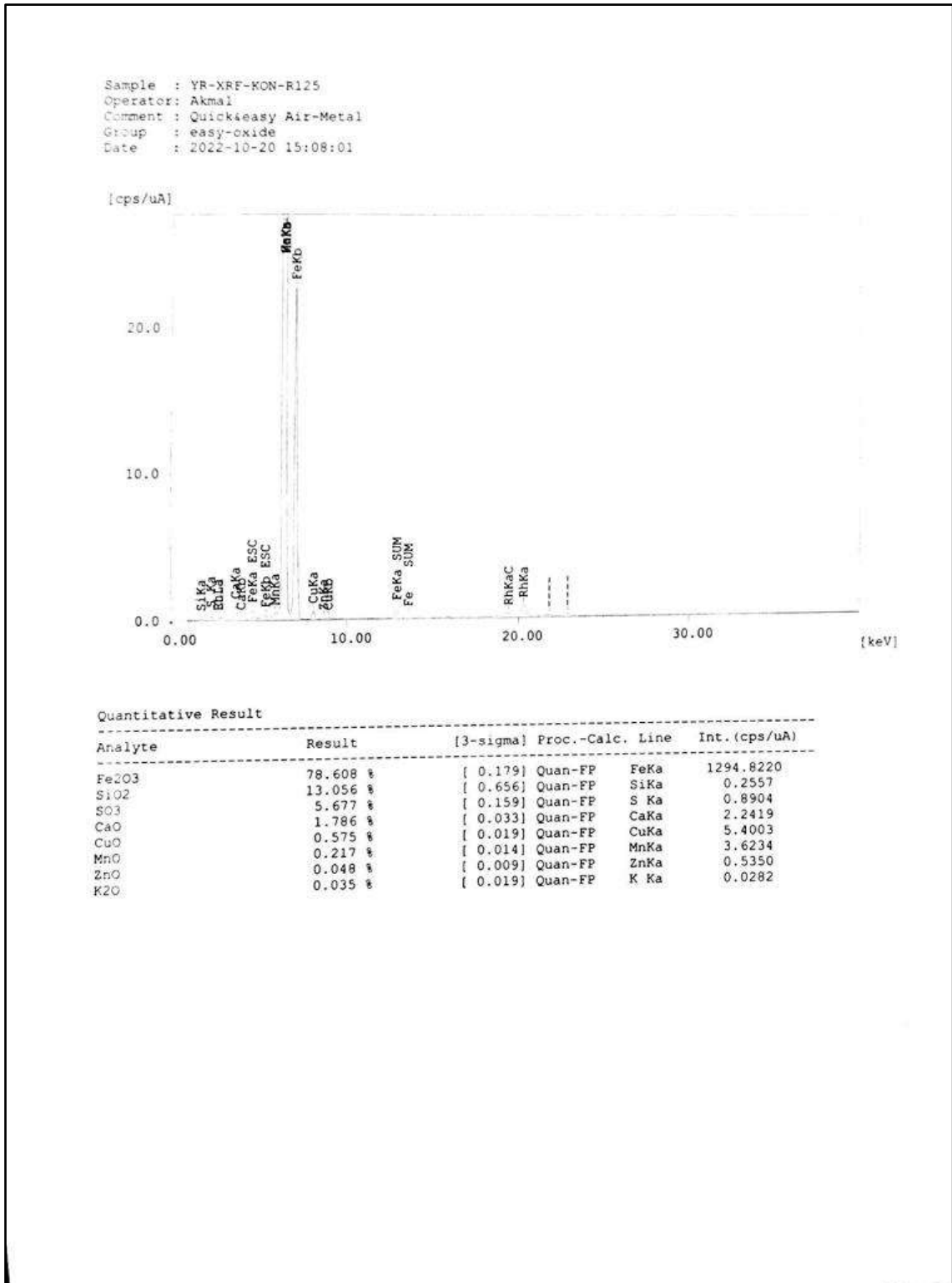
## Lampiran 23 Hasil Analisa Sampel Konsentrat ukuran 180 µm

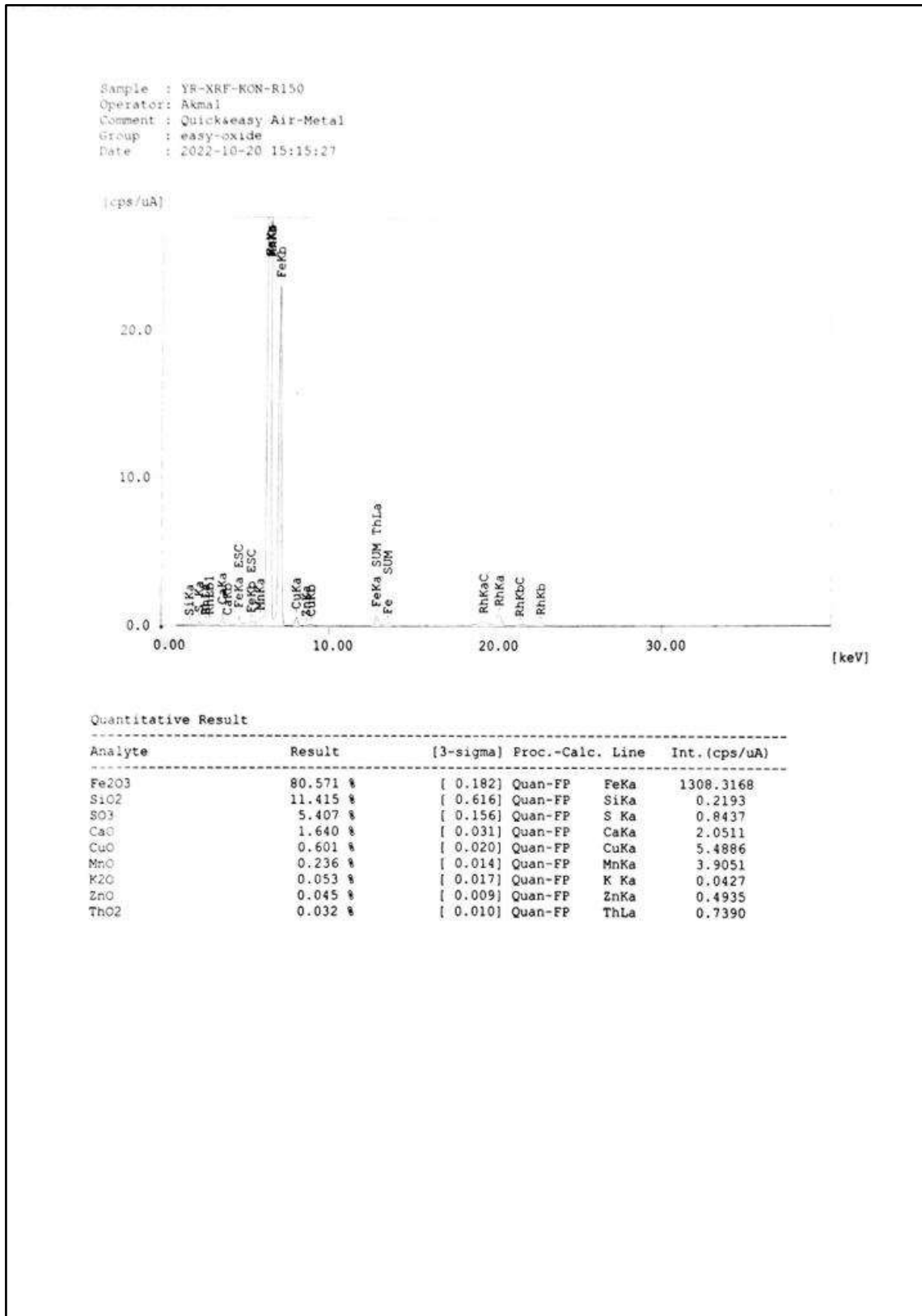


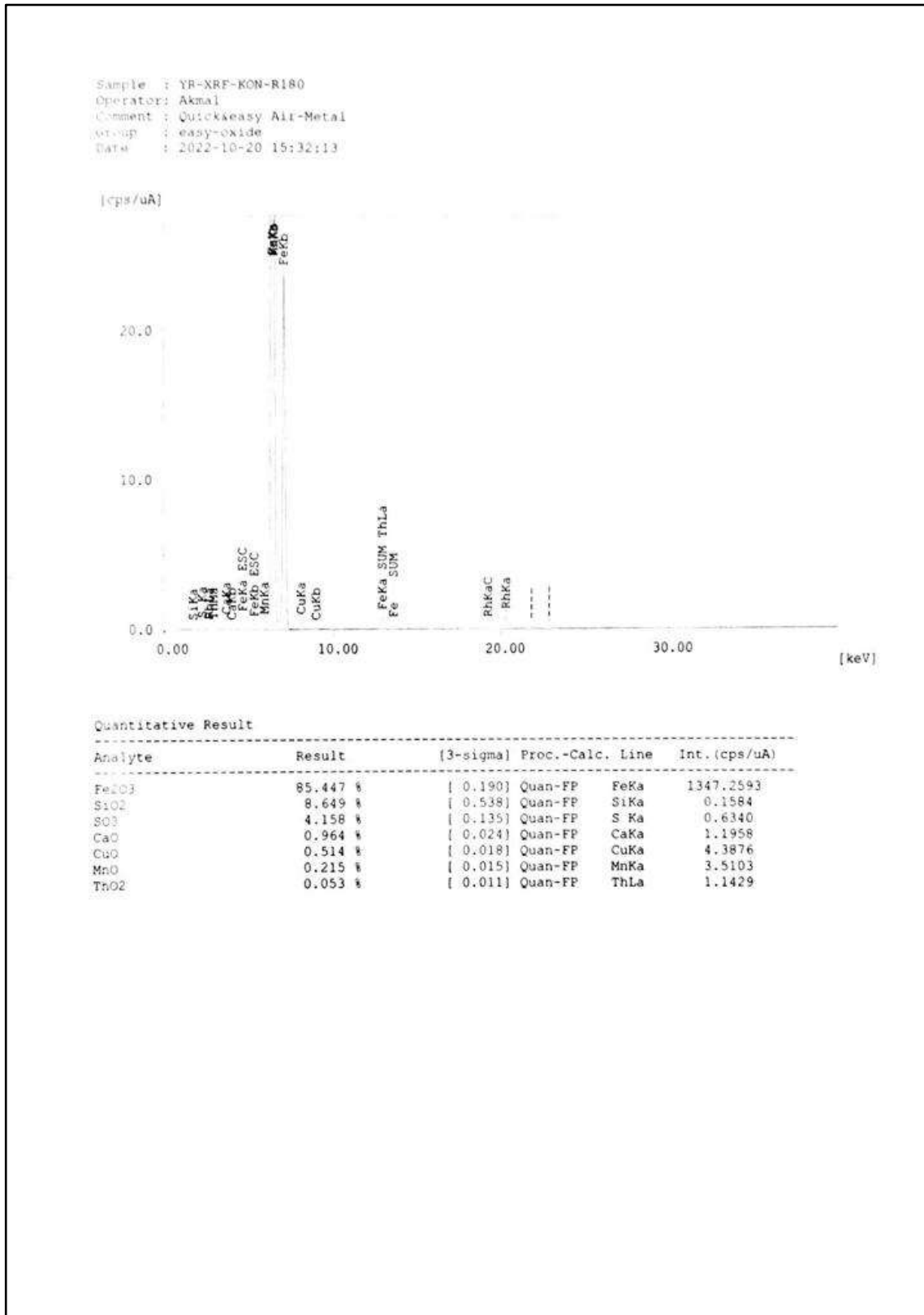
## Lampiran 24 Hasil Analisa Sampel Konsentrat i roasting ukuran 105 µm



## Lampiran 25 Hasil Analisa Sampel Konsentrat roasting ukuran 125 µm



Lampiran 26 Hasil Analisa Sampel Konsentrat roasting ukuran 150  $\mu\text{m}$ 

Lampiran 27 Hasil Analisa Sampel Konsentrat roasting ukuran 180 $\mu$ m

**LAMPIRAN**




**KARTU KONSULTASI TUGAS AKHIR**

## Lampiran 28 Kartu Kontrol Tugas Akhir



## Lampiran B 10

## Kartu Konsultasi Tugas Akhir

JUDUL: *Benefitiasi Bijih Besi Menggunakan Magnetic Separator Di Daerah Topyung Kecamatan Bontocani, Kabupaten Bone, Sulawesi Selatan*  
*(Konsultasi minimal 8 kali)*

TANGGAL	MATERI KONSULTASI	PARAF DOSEN
17/01/2023	<ul style="list-style-type: none"> <li>- Perbaiki Penulisan kata</li> <li>- Perbaiki Tujuan penelitian</li> <li>- Perbaiki gambar dan tabel</li> <li>- Perbaiki Sitasi</li> <li>- Perbaiki Skema bagan alir</li> <li>- Perbaiki BAB IV               <ul style="list-style-type: none"> <li>- Perbaiki grafik</li> <li>- Tambahkan penjelasan data XRD</li> </ul> </li> <li>- Perbaiki Daftar pustaka</li> </ul>	
27/01/2023	<ul style="list-style-type: none"> <li>- Perbaiki penulisan kata</li> <li>- Perbaiki tabel.</li> </ul>	
31/01/2023	<ul style="list-style-type: none"> <li>- Perbaiki daftar isi</li> <li>- Perbaiki daftar pustaka</li> <li>- Perbaiki Abstrak</li> </ul>	

## Lampiran 29 Kartu Kontrol Asistensi

TANGGAL	MATERI KONSULTASI	PARAF DOSEN
3/02/2023	<ul style="list-style-type: none"><li>- Perbaiki Artikel</li><li>- Perbaiki penulisan artikel</li><li>- Perbaiki pada format artikel</li><li>- Port</li></ul>	
9/02/2023	<ul style="list-style-type: none"><li>- Perbaiki kesalahan penulisan pada artikel</li><li>- Perbaiki poster</li></ul>	
17/02/2023	-	