

LAMPIRAN



(a)



(b)



(c)



(d)



(e)

Gambar 1. (a) dan (b) Proses pengambilan *bottom ash*, (c) Penjemuran abu dasar batubara, (d) Pengayakan abu dasar, (e) Hasil *bottom ash*.



(a)



(b)



(c)



(d)

Gambar 2. (a) dan (b) Proses penimbangan bahan *electroless plating*, (c) Proses pengadukan, (d) Mengoven bahan setelah tercampur.



(a)



(b)

Gambar 3. (a) Proses pengadukan, (b) *As cast*



(a)



(b)

Gambar 4. (a) dan (b) Proses oven *homogenizing*.

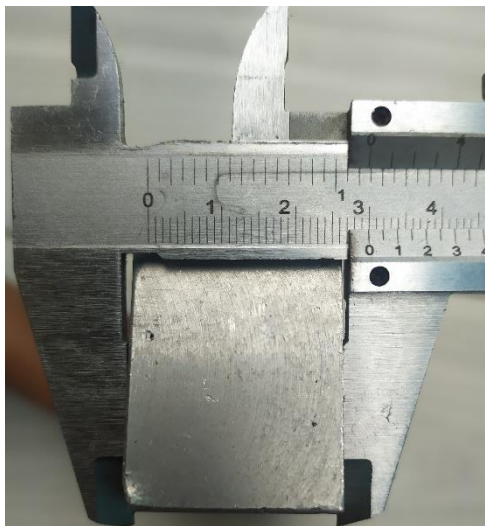


(a)



(b)

Gambar 5. (a) Mesin press, (b) Peninjauan proses pengepressan.



(a)



(b)



(c)



(d)

Gambar 6. (a) Spesimen sebelum pengepressan, (b) Hasil pressing 5%, (c) Hasil pressing 10%, (d) Hasil pressing 15%.



(a)



(b)



(c)

Gambar 7. (a) Proses perlakuan panas T6, (b) Parameter temperatur *solution treatment*, (c) Parameter temperature *ageing*.

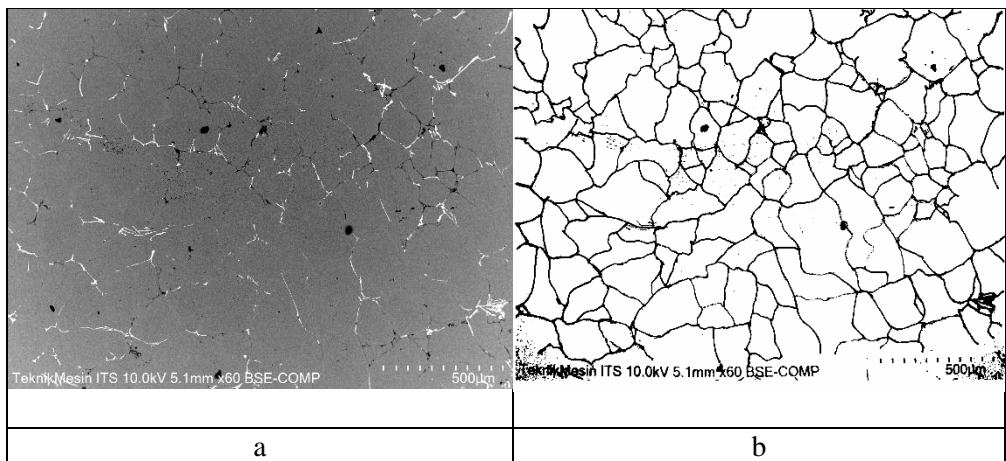


(a)



(b)

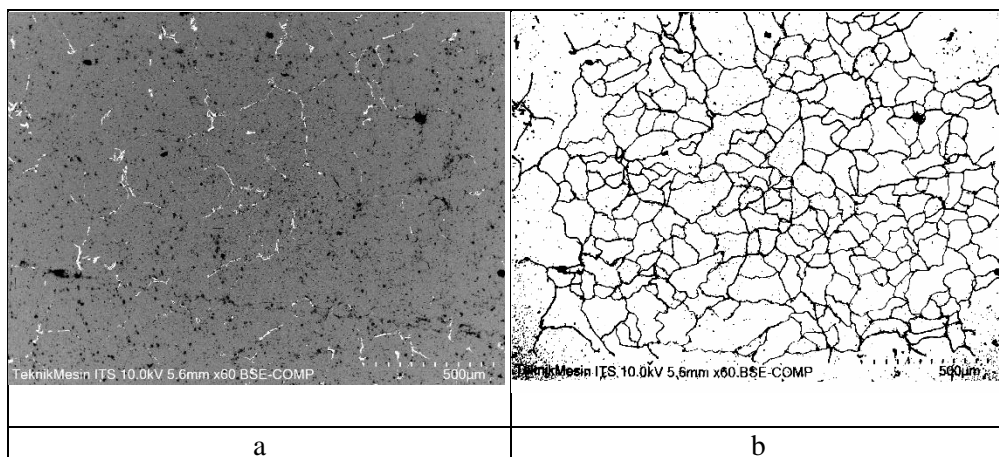
Gambar 8. (a) dan (b) Spesimen pengamatan strukturmiko SEM EDX



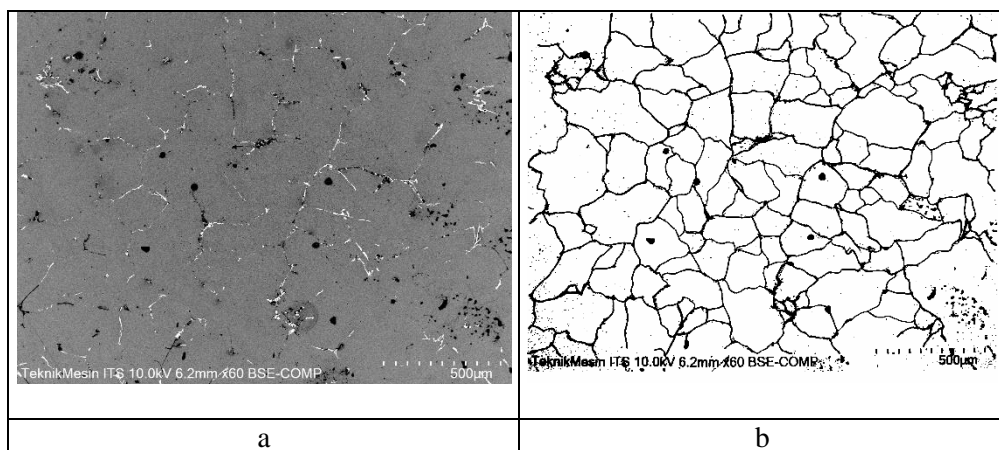
a

b

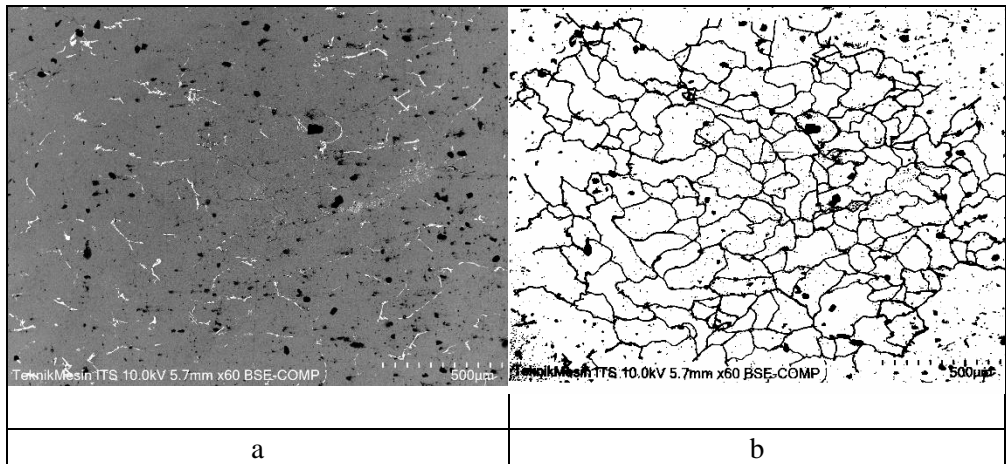
Gambar 9. (a) Mikrostruktur spesimen A1, (b) Hasil ImageJ Threshold specimen A1



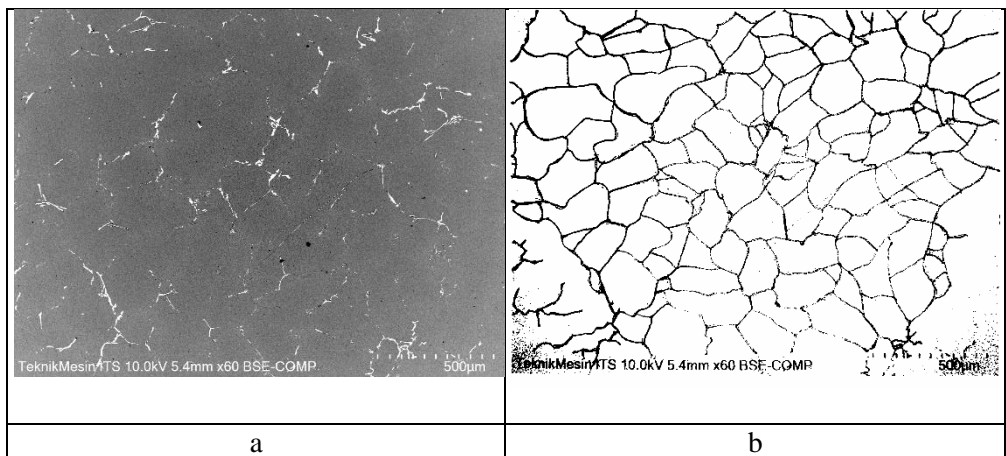
Gambar 10. (a) Mikrostruktur spesimen B3, (b) Hasil ImageJ Threshold specimen B3



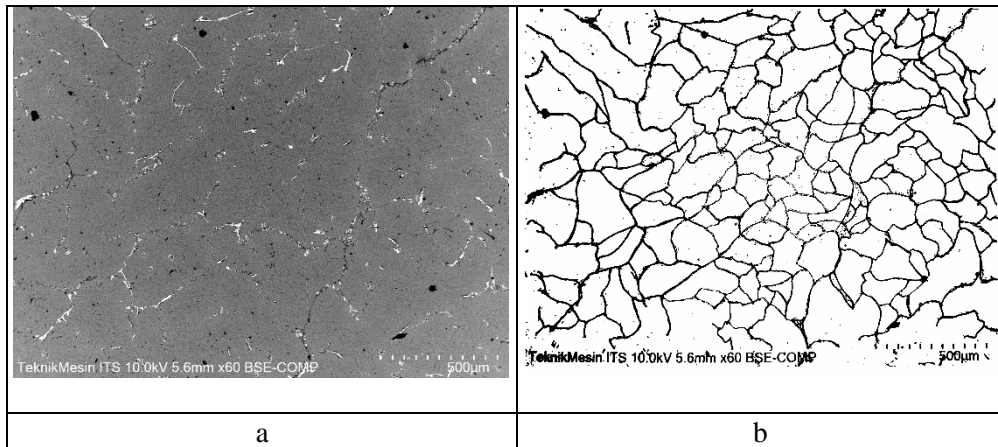
Gambar 11. (a) Mikrostruktur spesimen B6, (b) Hasil ImageJ Threshold specimen B6



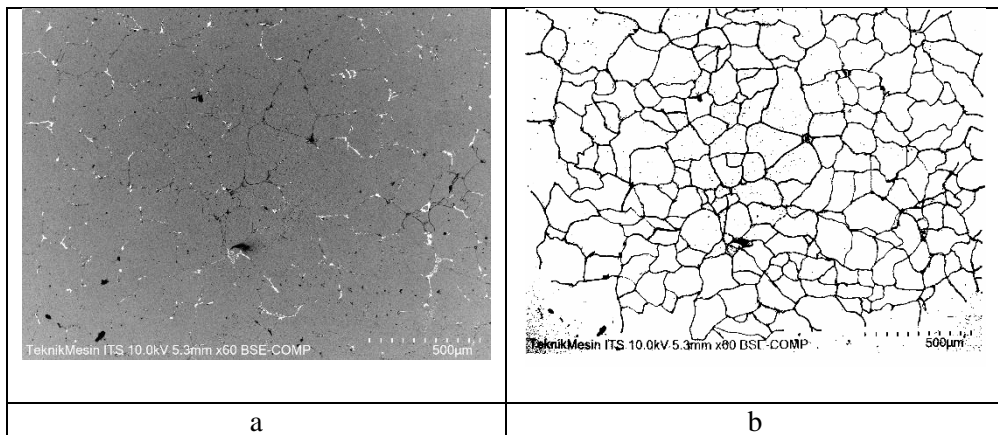
Gambar 12. (a) Mikrostruktur spesimen B9, (b) Hasil ImageJ Threshold specimen B9



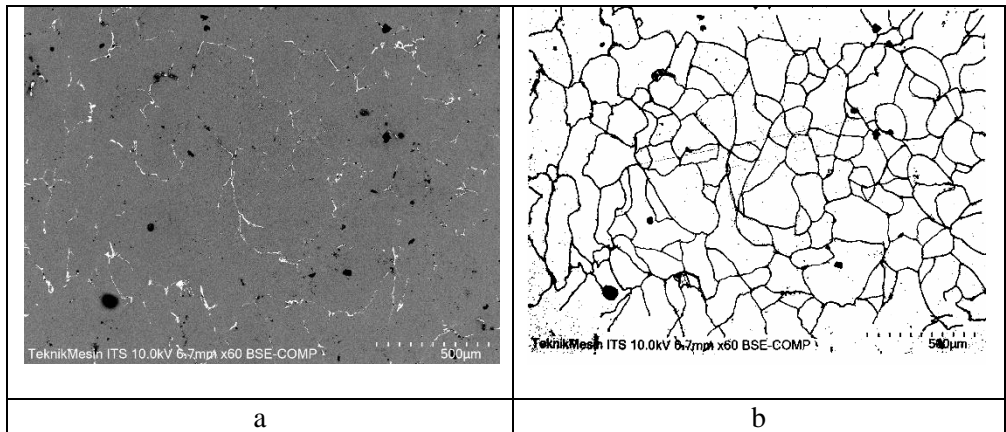
Gambar 13. (a) Mikrostruktur spesimen C1, (b) Hasil ImageJ Threshold specimen C1



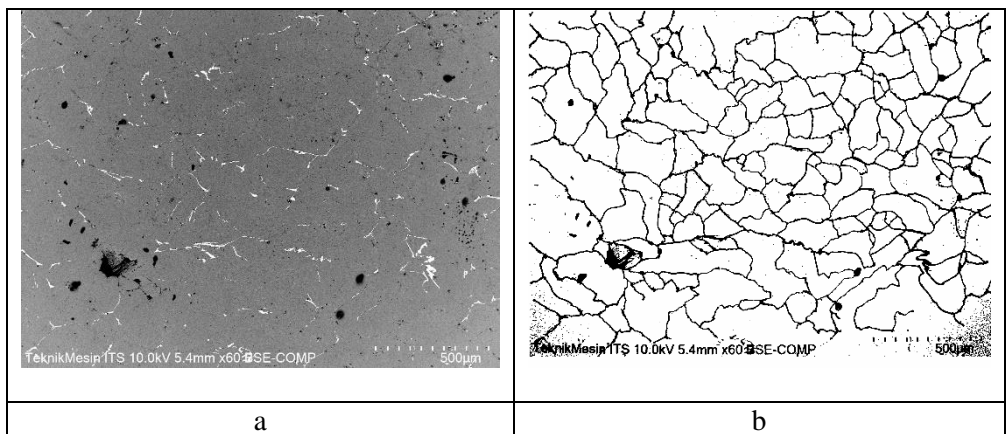
Gambar 14. (a) Mikrostruktur spesimen C2, (b) Hasil ImageJ Threshold specimen C2



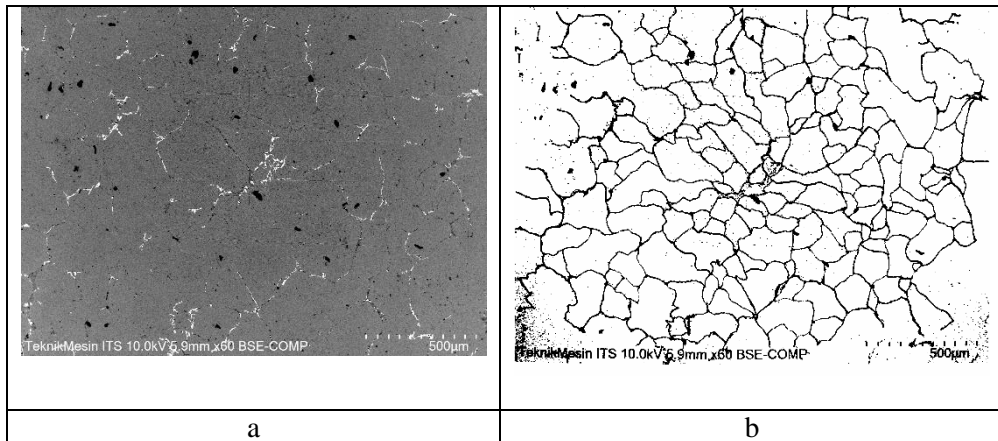
Gambar 15. (a) Mikrostruktur spesimen C3, (b) Hasil ImageJ Threshold specimen C3



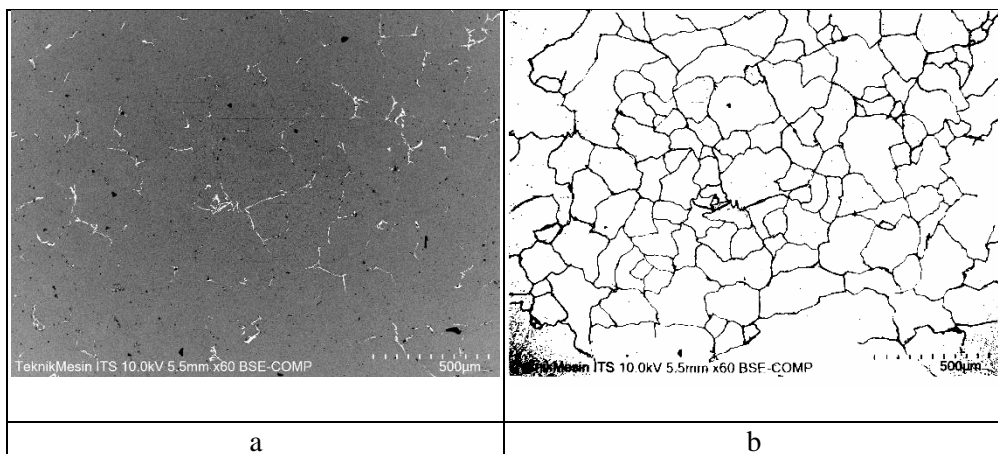
Gambar 16. (a) Mikrostruktur spesimen C4, (b) Hasil ImageJ Threshold specimen C4



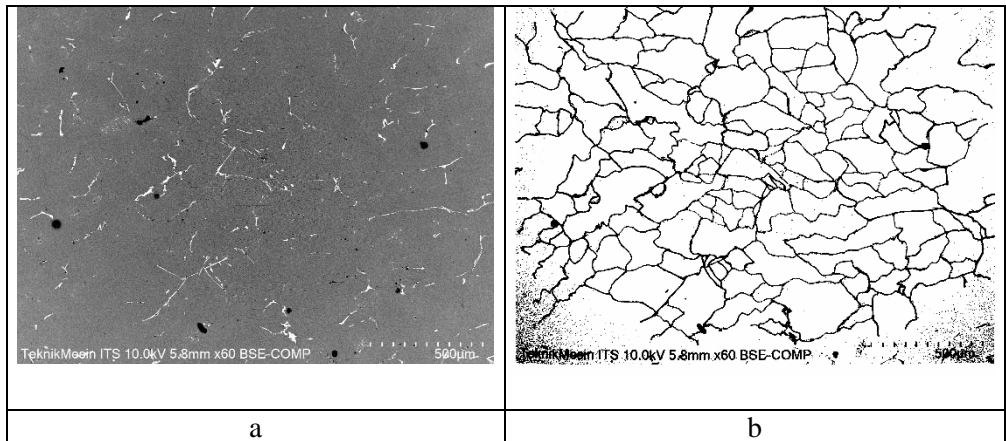
Gambar 17. (a) Mikrostruktur spesimen C5, (b) Hasil ImageJ Threshold specimen C5



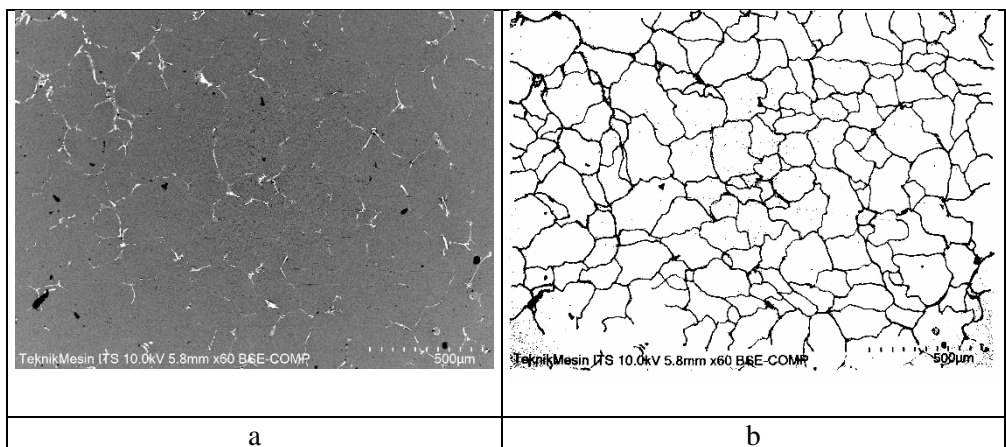
Gambar 18. (a) Mikrostruktur spesimen C6, (b) Hasil ImageJ Threshold specimen C6



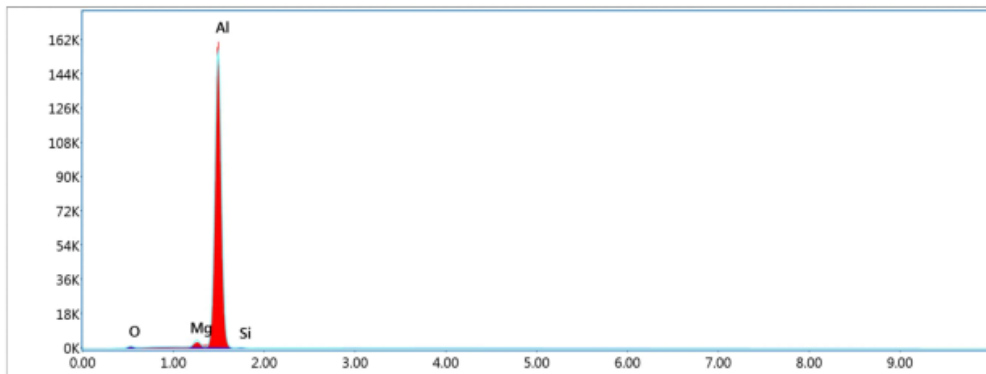
Gambar 19. (a) Mikrostruktur spesimen C7, (b) Hasil ImageJ Threshold specimen C7



Gambar 20. (a) Mikrostruktur spesimen C8, (b) Hasil ImageJ Threshold specimen C8



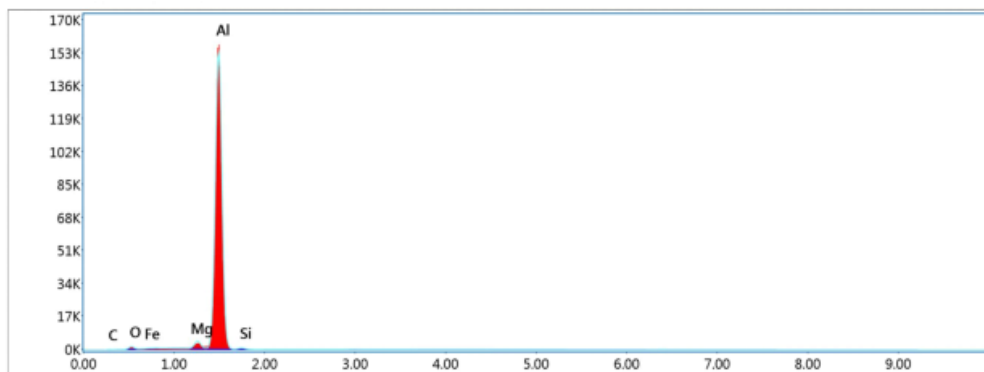
Gambar 21. (a) Mikrostruktur spesimen C9, (b) Hasil ImageJ Threshold specimen C9



Smart Quant Results

Element	Weight %	Atomic %	Net Int.	Error %	Kratio	Z	A	F
O K	1.45	2.41	68.49	10.01	0.0050	1.1283	0.3081	1.0000
MgK	2.15	2.35	316.89	2.86	0.0211	1.0366	0.9355	1.0115
AlK	96.04	94.89	13572.71	1.73	0.9239	0.9971	0.9647	1.0001
SiK	0.36	0.34	23.14	14.74	0.0016	1.0178	0.4346	1.0003

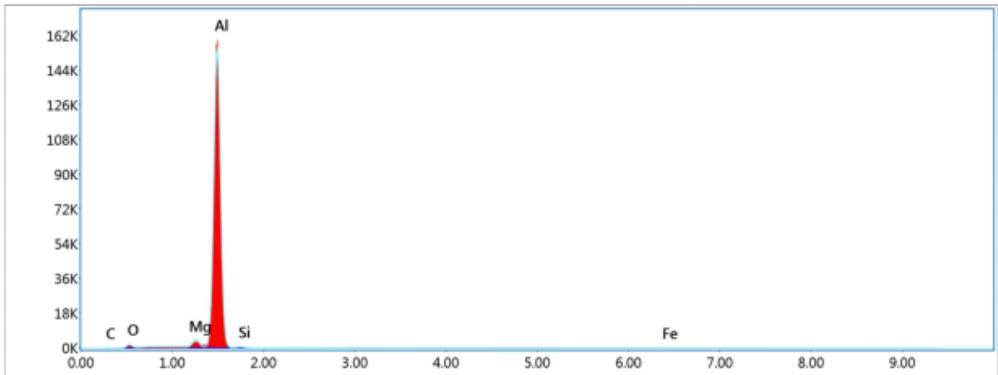
Gambar 22. Grafik hasil karakterisasi EDX spesimen A1



Smart Quant Results

Element	Weight %	Atomic %	Net Int.	Error %	Kratio	Z	A	F
C K	1.24	2.71	10.93	15.46	0.0013	1.1797	0.0863	1.0000
O K	1.90	3.11	89.87	9.86	0.0065	1.1250	0.3048	1.0000
FeL	0.19	0.09	6.41	15.49	0.0016	0.8645	0.9240	1.0000
MgK	2.16	2.33	319.77	2.94	0.0209	1.0336	0.9270	1.0113
AlK	93.55	90.87	13322.87	1.79	0.8921	0.9942	0.9590	1.0002
SiK	0.96	0.90	63.01	10.29	0.0043	1.0148	0.4414	1.0003

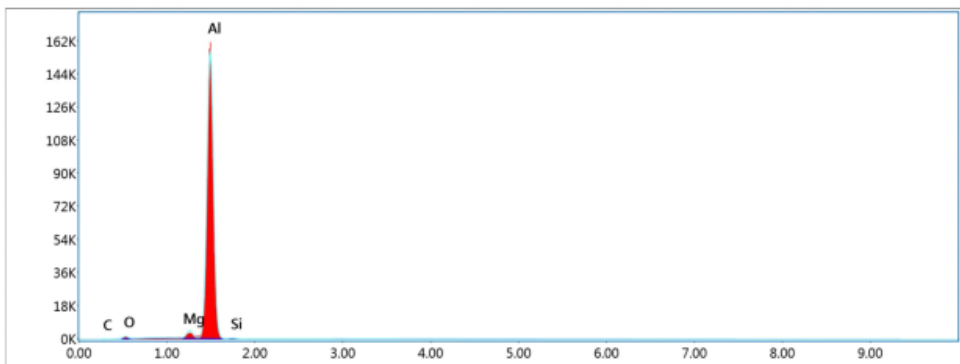
Gambar 23. Grafik hasil karakterisasi EDX specimen B3



Smart Quant Results

Element	Weight %	Atomic %	Net Int.	Error %	Kratio	Z	A	F
C K	1.41	3.07	12.85	14.99	0.0014	1.1794	0.0870	1.0000
O K	2.25	3.68	109.93	9.72	0.0078	1.1247	0.3060	1.0000
MgK	2.22	2.39	333.84	3.01	0.0213	1.0333	0.9186	1.0109
AlK	92.89	89.99	13467.38	1.86	0.8795	0.9939	0.9525	1.0001
SiK	0.64	0.59	42.92	11.55	0.0029	1.0146	0.4421	1.0003
FeK	0.59	0.28	14.59	18.02	0.0053	0.8396	0.9956	1.0690

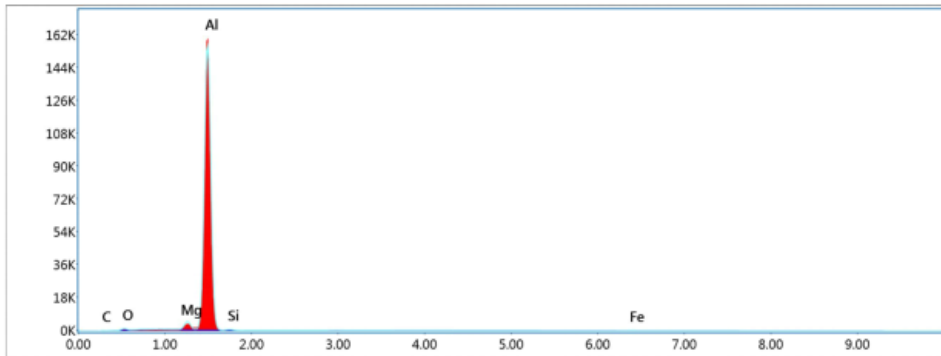
Gambar 24. Grafik hasil karakterisasi EDX specimen B6



Smart Quant Results

Element	Weight %	Atomic %	Net Int.	Error %	Kratio	Z	A	F
C K	1.44	3.14	12.93	15.01	0.0015	1.1791	0.0864	1.0000
O K	1.87	3.05	89.72	9.86	0.0064	1.1244	0.3041	1.0000
MgK	2.28	2.45	344.60	2.89	0.0222	1.0330	0.9302	1.0114
AlK	93.90	90.90	13590.92	1.79	0.8954	0.9936	0.9596	1.0001
SiK	0.50	0.47	33.45	12.79	0.0022	1.0142	0.4403	1.0003

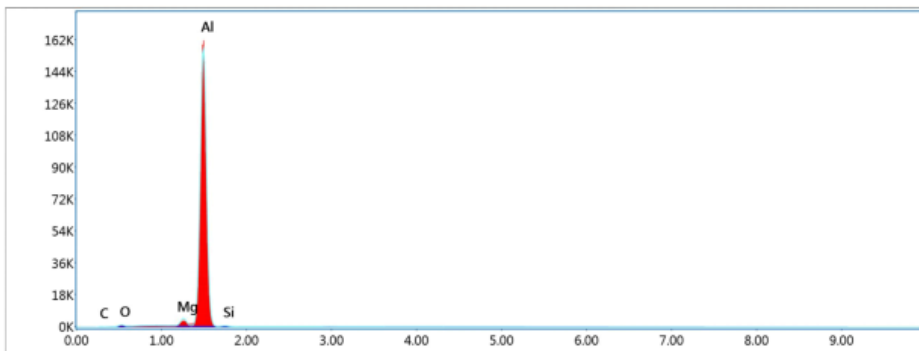
Gambar 25. Grafik hasil karakterisasi EDX specimen B9



Smart Quant Results

Element	Weight %	Atomic %	Net Int.	Error %	Kratio	Z	A	F
C K	1.16	2.55	10.46	15.47	0.0012	1.1815	0.0862	1.0000
O K	1.31	2.16	63.54	10.12	0.0045	1.1267	0.3048	1.0000
MgK	2.41	2.61	363.12	2.94	0.0233	1.0352	0.9234	1.0108
AlK	93.77	91.73	13572.59	1.85	0.8900	0.9958	0.9531	1.0001
SiK	0.65	0.61	43.21	11.37	0.0029	1.0165	0.4394	1.0003
FeK	0.70	0.33	17.24	15.05	0.0062	0.8413	0.9953	1.0680

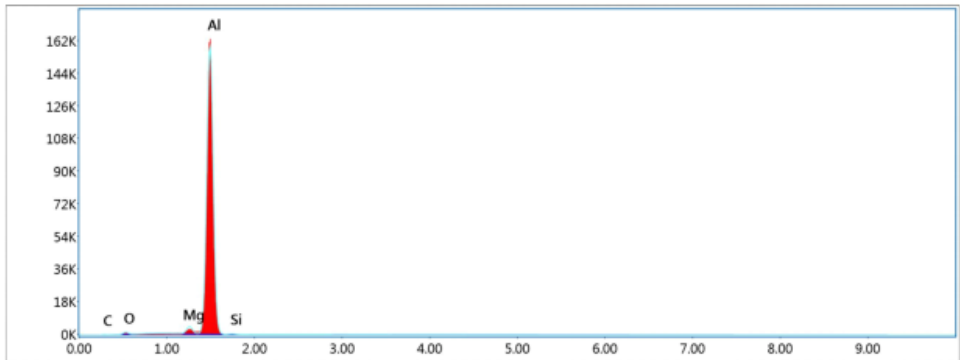
Gambar 26. Grafik hasil karakterisasi EDX specimen C1



Smart Quant Results

Element	Weight %	Atomic %	Net Int.	Error %	Kratio	Z	A	F
C K	1.35	2.94	12.00	15.22	0.0014	1.1800	0.0859	1.0000
O K	1.38	2.26	65.89	10.09	0.0047	1.1253	0.3031	1.0000
MgK	2.31	2.49	349.32	2.85	0.0225	1.0338	0.9334	1.0114
AlK	94.31	91.70	13666.18	1.77	0.9017	0.9944	0.9614	1.0001
SiK	0.66	0.61	43.44	11.77	0.0029	1.0151	0.4393	1.0003

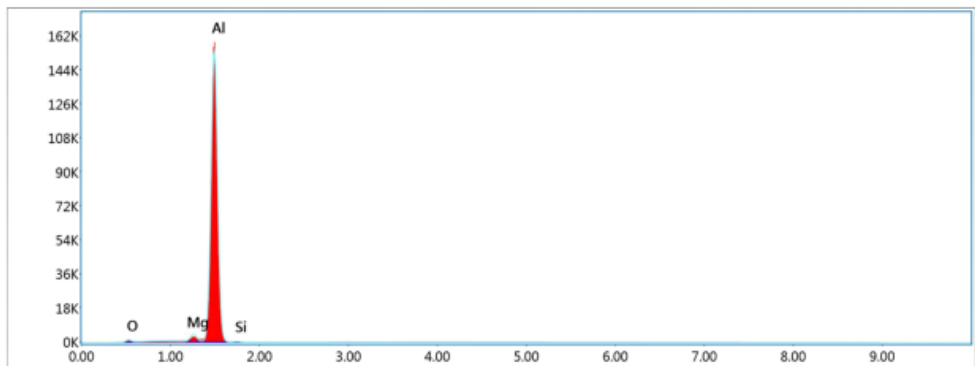
Gambar 27. Grafik hasil karakterisasi EDX specimen C2



Smart Quant Results

Element	Weight %	Atomic %	Net Int.	Error %	Kratio	Z	A	F
C K	1.40	3.05	12.57	15.08	0.0014	1.1796	0.0862	1.0000
O K	1.67	2.73	80.67	9.93	0.0057	1.1249	0.3037	1.0000
MgK	2.08	2.23	315.94	2.90	0.0202	1.0334	0.9315	1.0114
AlK	94.44	91.60	13807.17	1.75	0.9043	0.9940	0.9632	1.0001
SiK	0.42	0.39	27.88	13.86	0.0019	1.0147	0.4393	1.0003

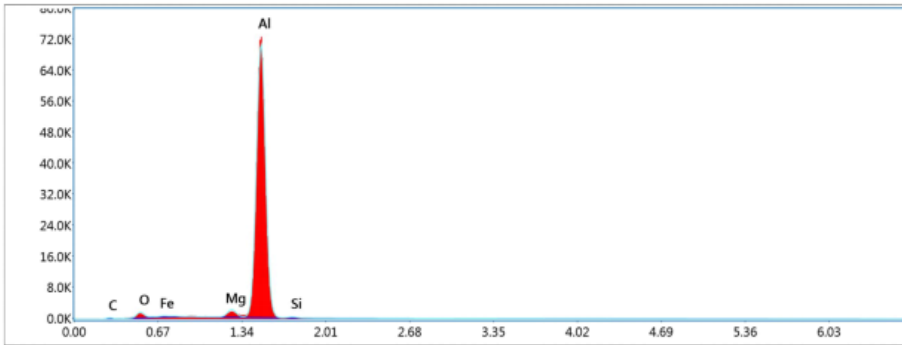
Gambar 28. Grafik hasil karakterisasi EDX specimen C3



Smart Quant Results

Element	Weight %	Atomic %	Net Int.	Error %	Kratio	Z	A	F
O K	1.67	2.77	78.24	9.90	0.0058	1.1279	0.3086	1.0000
MgK	2.11	2.31	308.24	2.89	0.0207	1.0363	0.9340	1.0115
AlK	95.77	94.49	13406.79	1.74	0.9206	0.9968	0.9643	1.0001
SiK	0.45	0.43	28.54	14.39	0.0020	1.0175	0.4354	1.0003

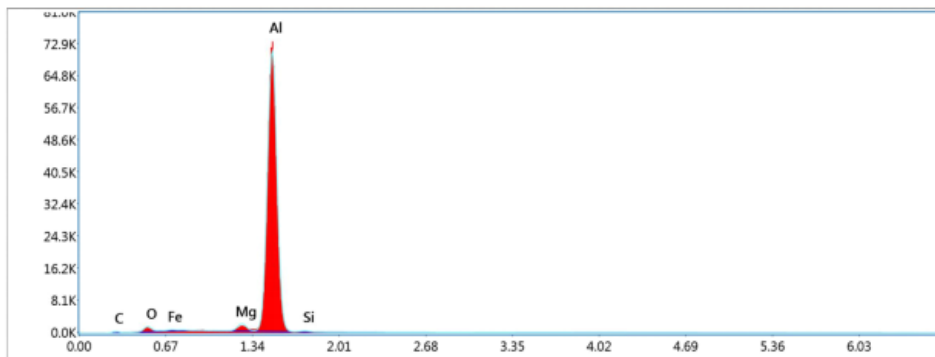
Gambar 29. Grafik hasil karakterisasi EDX specimen C4



Smart Quant Results

Element	Weight %	Atomic %	Net Int.	Error %	Kratio	Z	A	F
C K	1.75	3.79	17.60	14.03	0.0026	1.2018	0.1243	1.0000
O K	2.23	3.63	100.12	8.72	0.0119	1.1374	0.4693	1.0000
FeL	0.46	0.21	11.14	5.49	0.0039	0.8476	0.9999	1.0000
MgK	2.18	2.33	159.72	3.58	0.0218	1.0341	0.9582	1.0110
AlK	92.78	89.47	6133.25	2.38	0.8996	0.9926	0.9768	1.0001
SiK	0.61	0.56	25.13	12.41	0.0039	1.0112	0.6429	1.0003

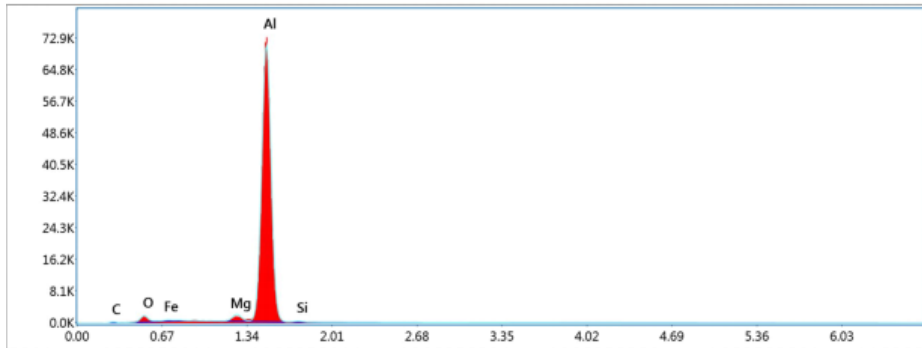
Gambar 30. Grafik hasil karakterisasi EDX specimen C5



Smart Quant Results

Element	Weight %	Atomic %	Net Int.	Error %	Kratio	Z	A	F
C K	2.13	4.60	21.62	13.46	0.0032	1.2013	0.1245	1.0000
O K	2.02	3.28	90.99	8.79	0.0107	1.1369	0.4672	1.0000
FeL	0.49	0.23	11.98	6.20	0.0041	0.8473	1.0007	1.0000
MgK	2.05	2.19	151.16	3.60	0.0205	1.0336	0.9583	1.0111
AlK	92.73	89.17	6177.90	2.37	0.8996	0.9921	0.9777	1.0001
SiK	0.58	0.54	24.37	13.39	0.0038	1.0108	0.6434	1.0003

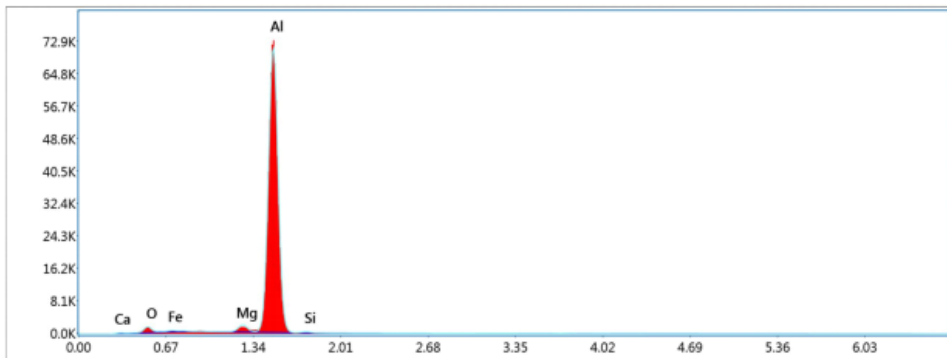
Gambar 31. Grafik hasil karakterisasi EDX specimen C6



Smart Quant Results

Element	Weight %	Atomic %	Net Int.	Error %	Kratio	Z	A	F
C K	1.76	3.80	17.79	14.01	0.0026	1.2015	0.1244	1.0000
O K	2.44	3.96	110.25	8.65	0.0130	1.1371	0.4697	1.0000
FeL	0.43	0.20	10.65	6.34	0.0037	0.8474	0.9970	1.0000
MgK	1.96	2.10	144.62	3.84	0.0197	1.0338	0.9576	1.0111
AlK	92.86	89.44	6184.20	2.37	0.9013	0.9923	0.9779	1.0001
SiK	0.54	0.50	22.72	13.55	0.0035	1.0110	0.6430	1.0003

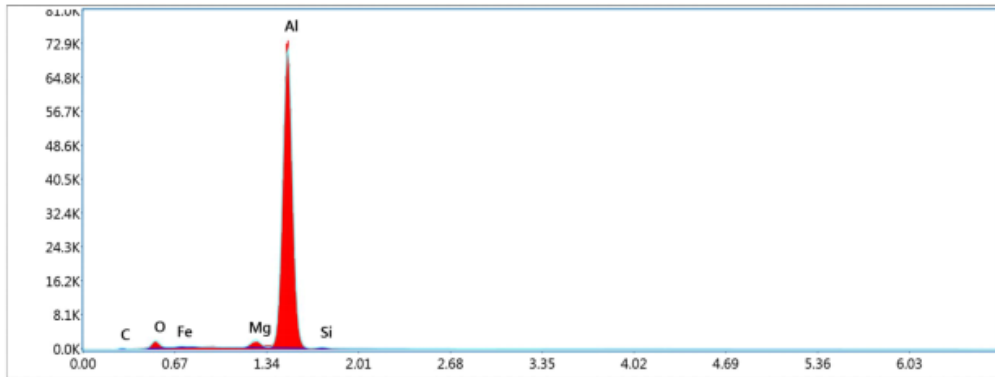
Gambar 32. Grafik hasil karakterisasi EDX specimen C7



Smart Quant Results

Element	Weight %	Atomic %	Net Int.	Error %	Kratio	Z	A	F
CaL	3.56	2.39	3.84	11.62	0.0129	0.9564	0.3789	1.0000
O K	2.31	3.89	101.57	8.97	0.0117	1.1437	0.4440	1.0000
FeL	0.53	0.26	12.89	5.70	0.0043	0.8524	0.9617	1.0000
MgK	1.96	2.16	146.23	3.95	0.0194	1.0401	0.9460	1.0106
AlK	91.08	90.77	6189.62	2.45	0.8825	0.9984	0.9702	1.0003
SiK	0.56	0.54	24.14	13.51	0.0037	1.0172	0.6454	1.0007

Gambar 33. Grafik hasil karakterisasi EDX specimen C8



Smart Quant Results

Element	Weight %	Atomic %	Net Int.	Error %	Kratio	Z	A	F
C K	1.78	3.83	18.27	13.94	0.0027	1.2010	0.1248	1.0000
O K	2.74	4.44	125.45	8.58	0.0146	1.1366	0.4705	1.0000
FeL	0.47	0.22	11.66	6.21	0.0040	0.8470	0.9930	1.0000
MgK	2.01	2.14	149.63	3.84	0.0201	1.0333	0.9563	1.0110
AlK	92.36	88.77	6217.21	2.38	0.8949	0.9918	0.9768	1.0001
SiK	0.64	0.59	27.21	12.41	0.0042	1.0105	0.6441	1.0003

Gambar 34. Grafik hasil karakterisasi EDX specimen C9