

Supplementary Materials

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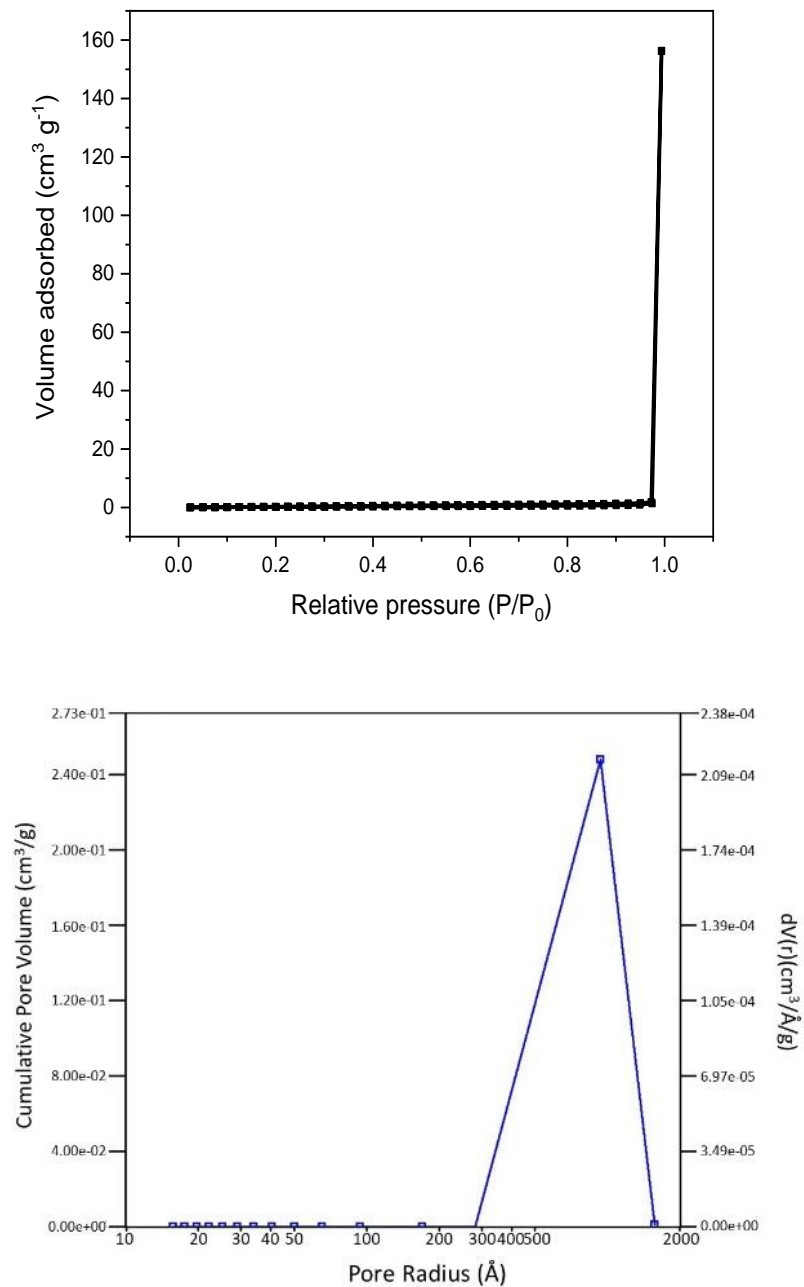


Figure S1. Isothermal data (top) and Pore size distribution (bottom) of pristine **1** after thermal treatment (400°C).

BET-BJH analyses:

Area = 0.780 ± 0.8 m²/g; Pore surface = 5.323 m²/g; Pore volume = 0.248 cm³/g, Pore radius* = Dv(r) 932.335 Å

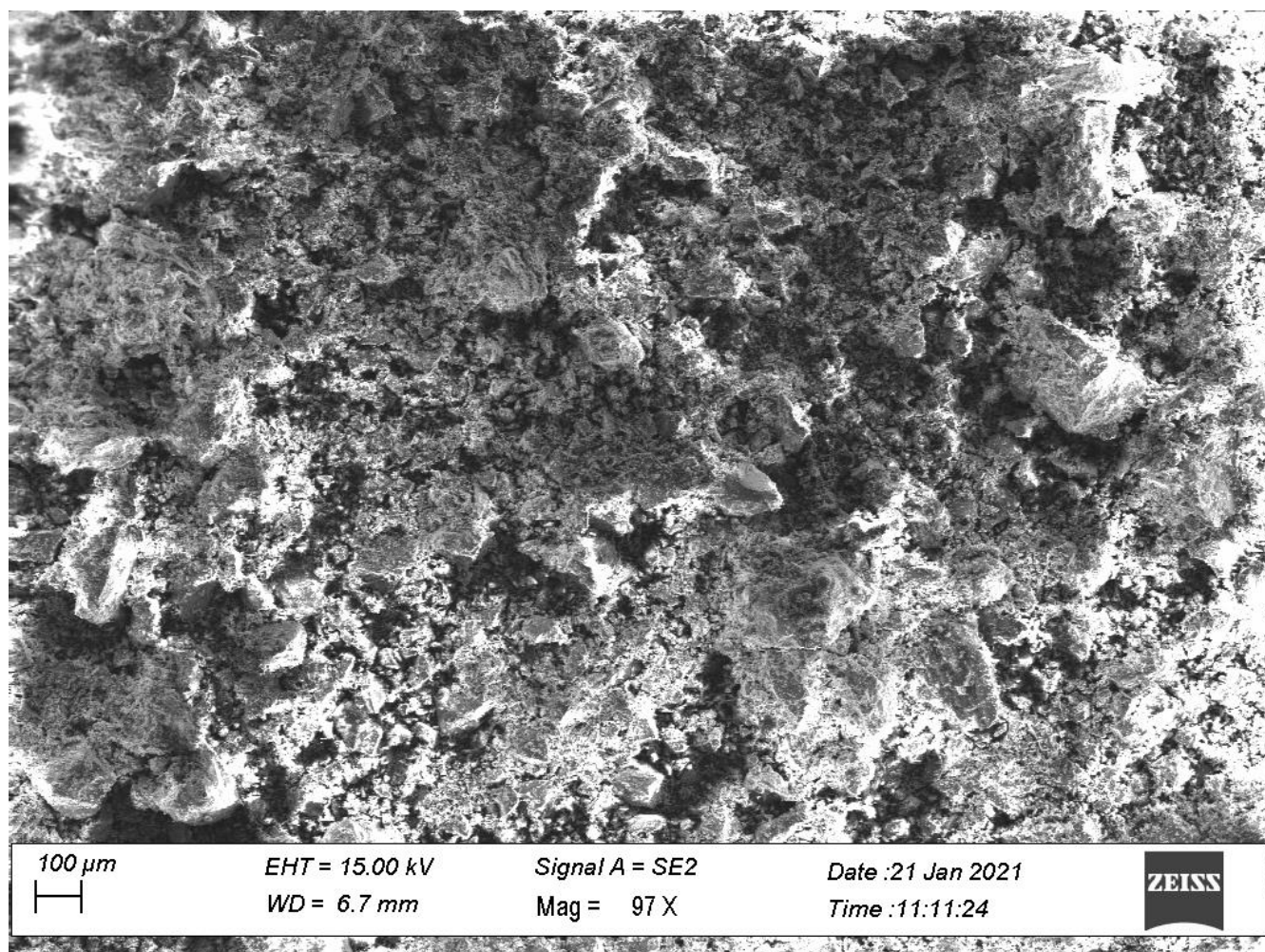


Figure S2. SEM image 100 μm of catalyst 1

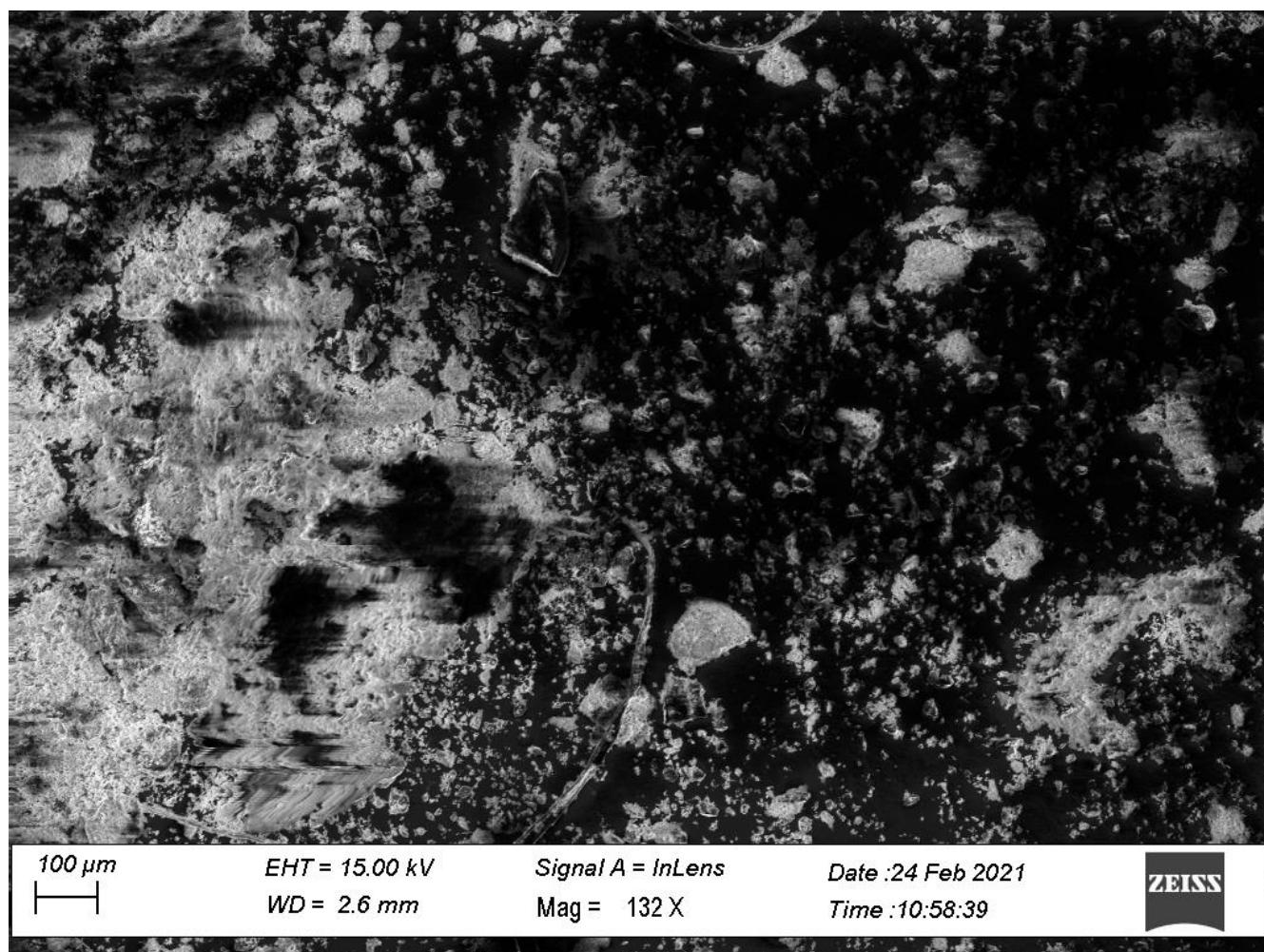


Figure S3. SEM image 100 μm of catalyst 1 after fourth cycle

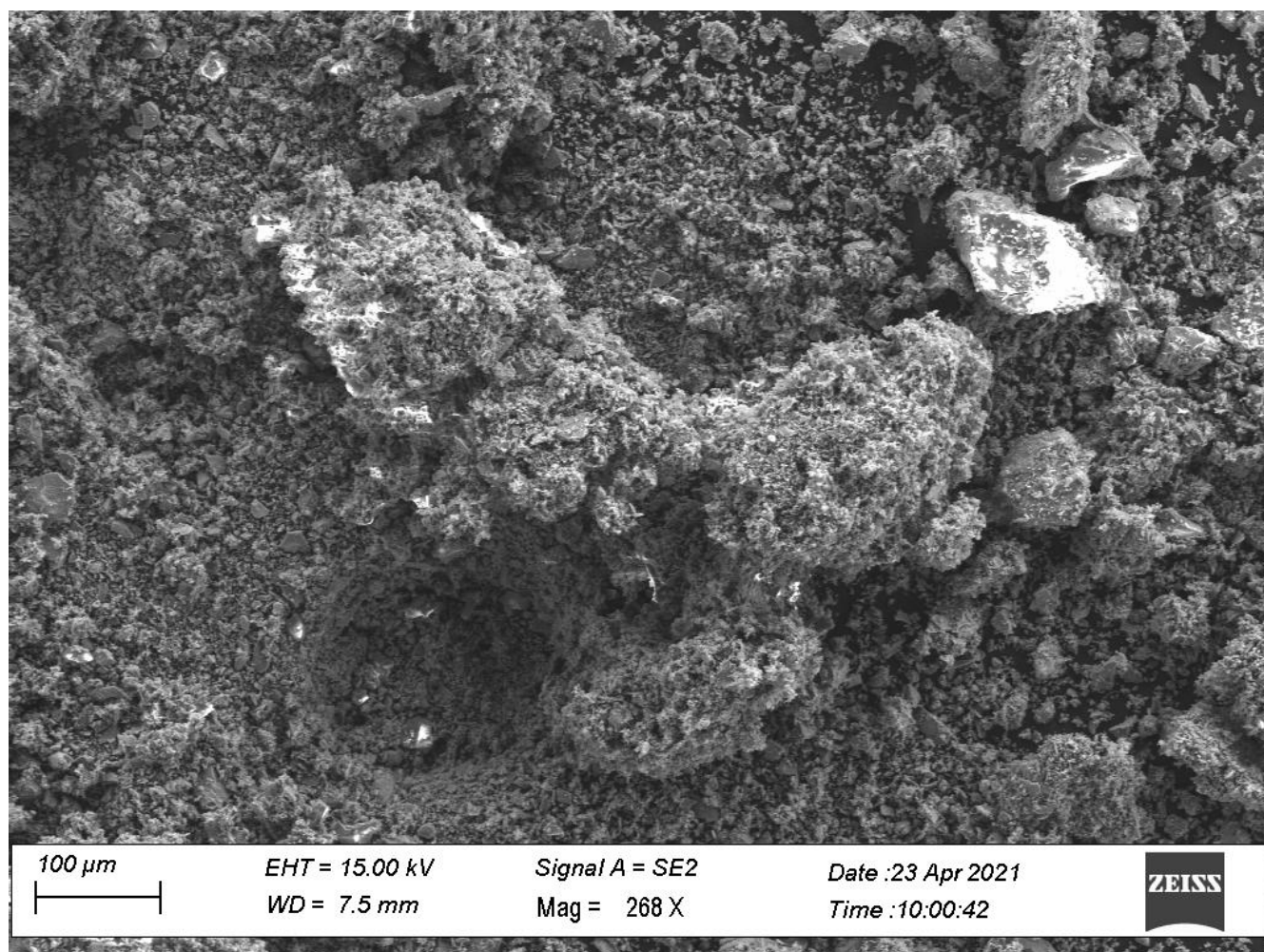
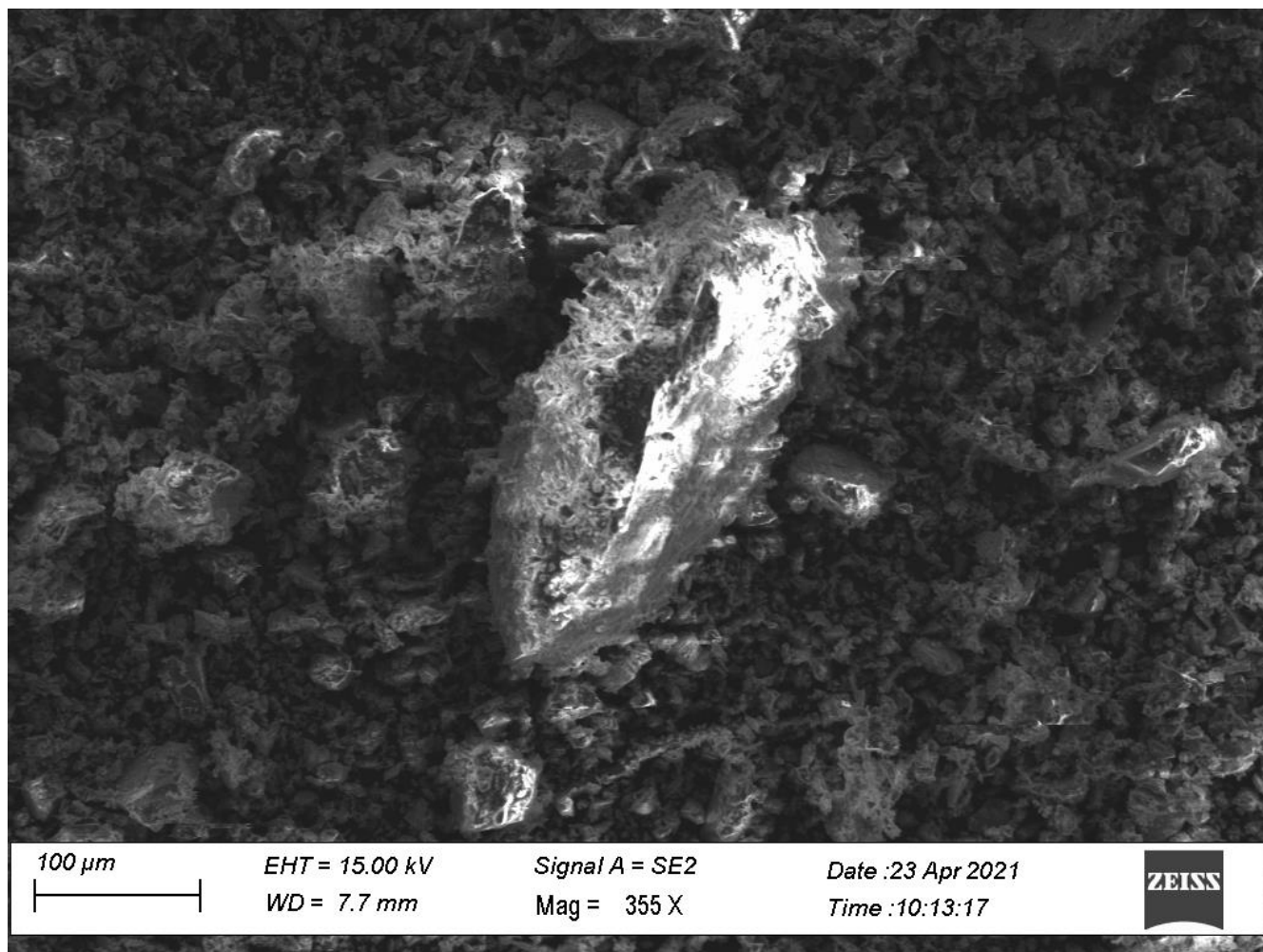
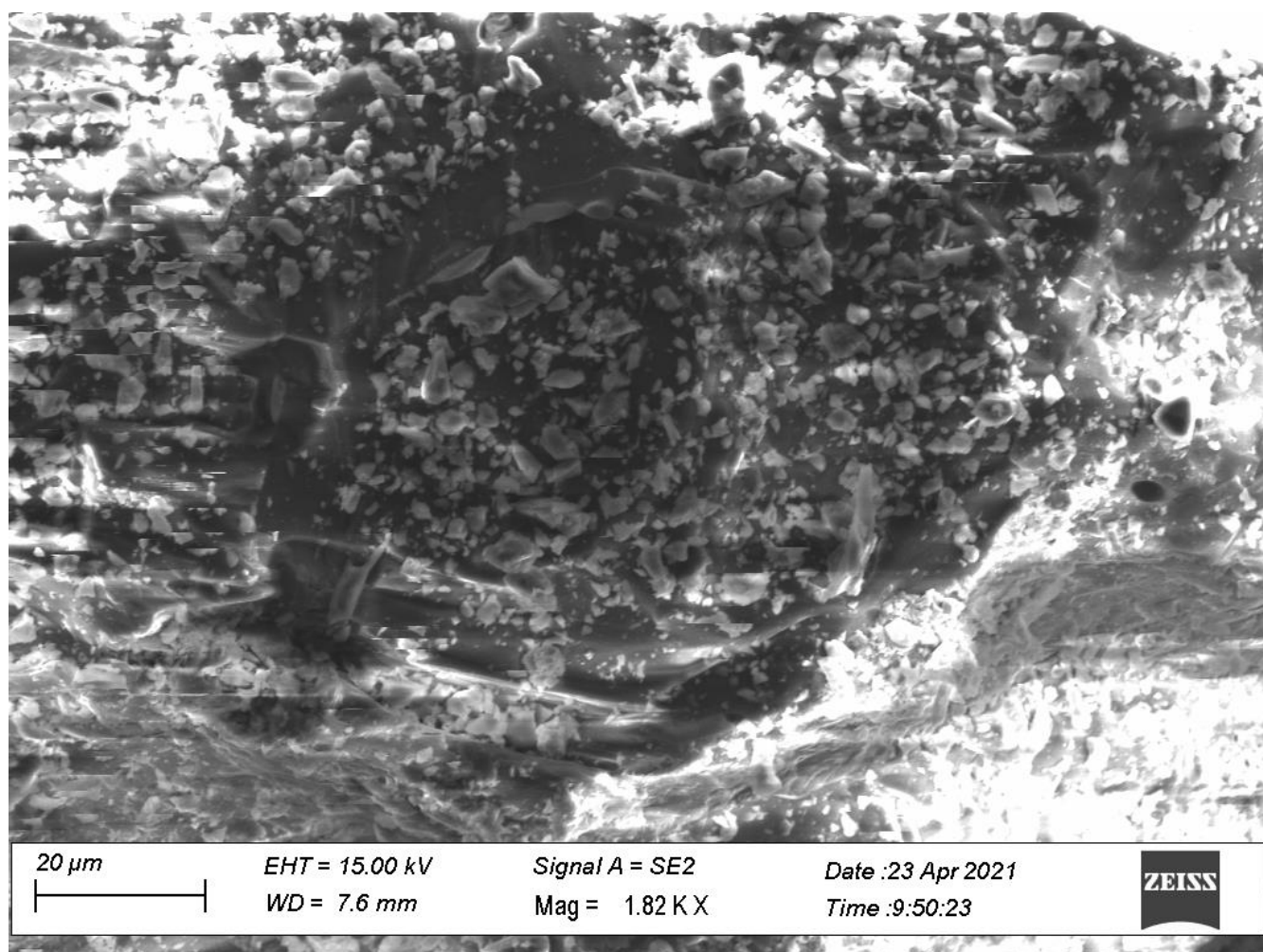


Figure S4. SEM image 100 μm of catalyst I after fourth cycle and thermic treatment at 400°C



*Figure S5. SEM image 100 μm of pristine catalyst **1** after thermic treatment at 400°C*



*Figure S6. SEM image 20 μm of catalyst **1** after first cycle*

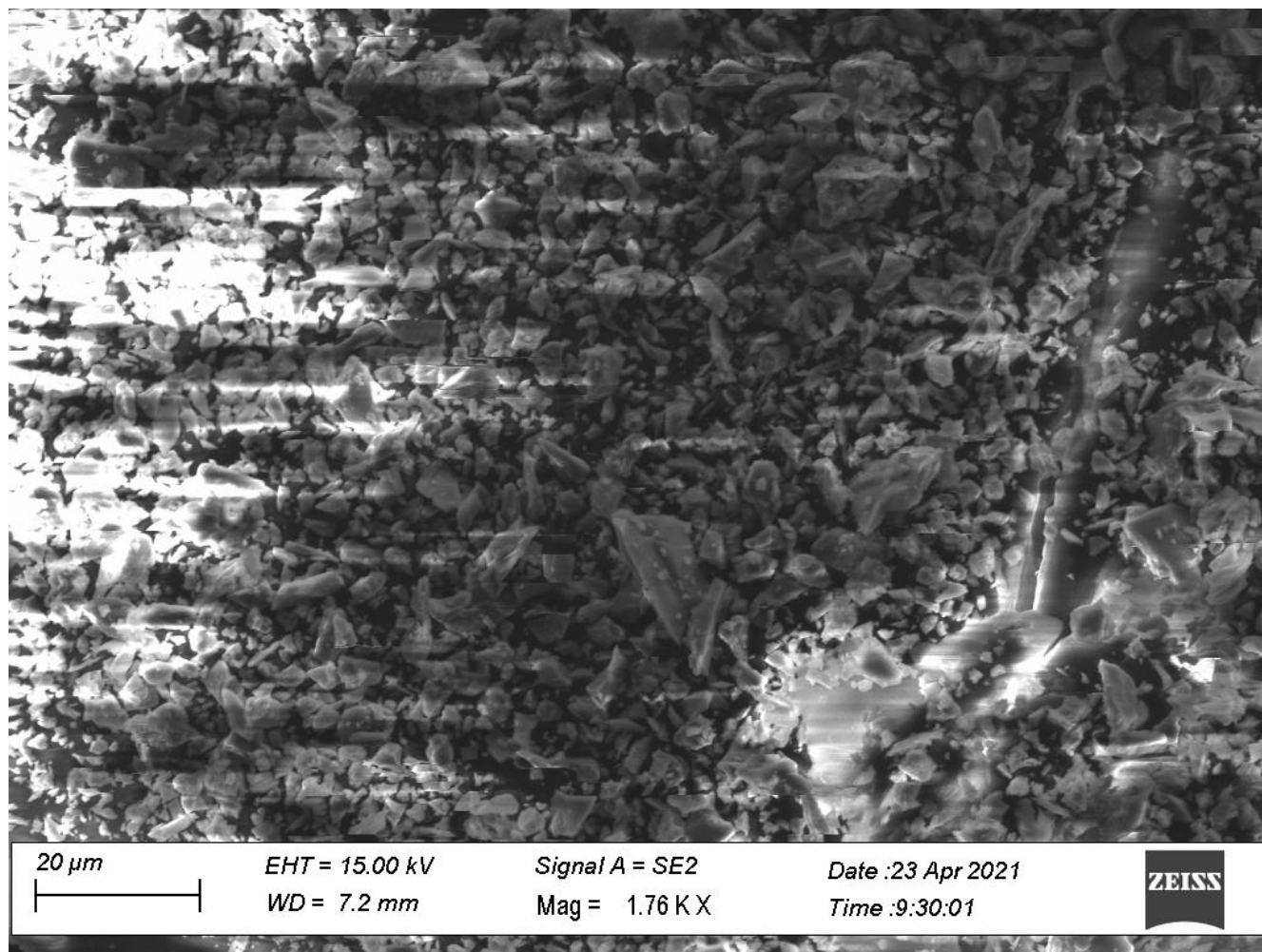


Figure S7. SEM image 20 μm of catalyst 1 after second cycle

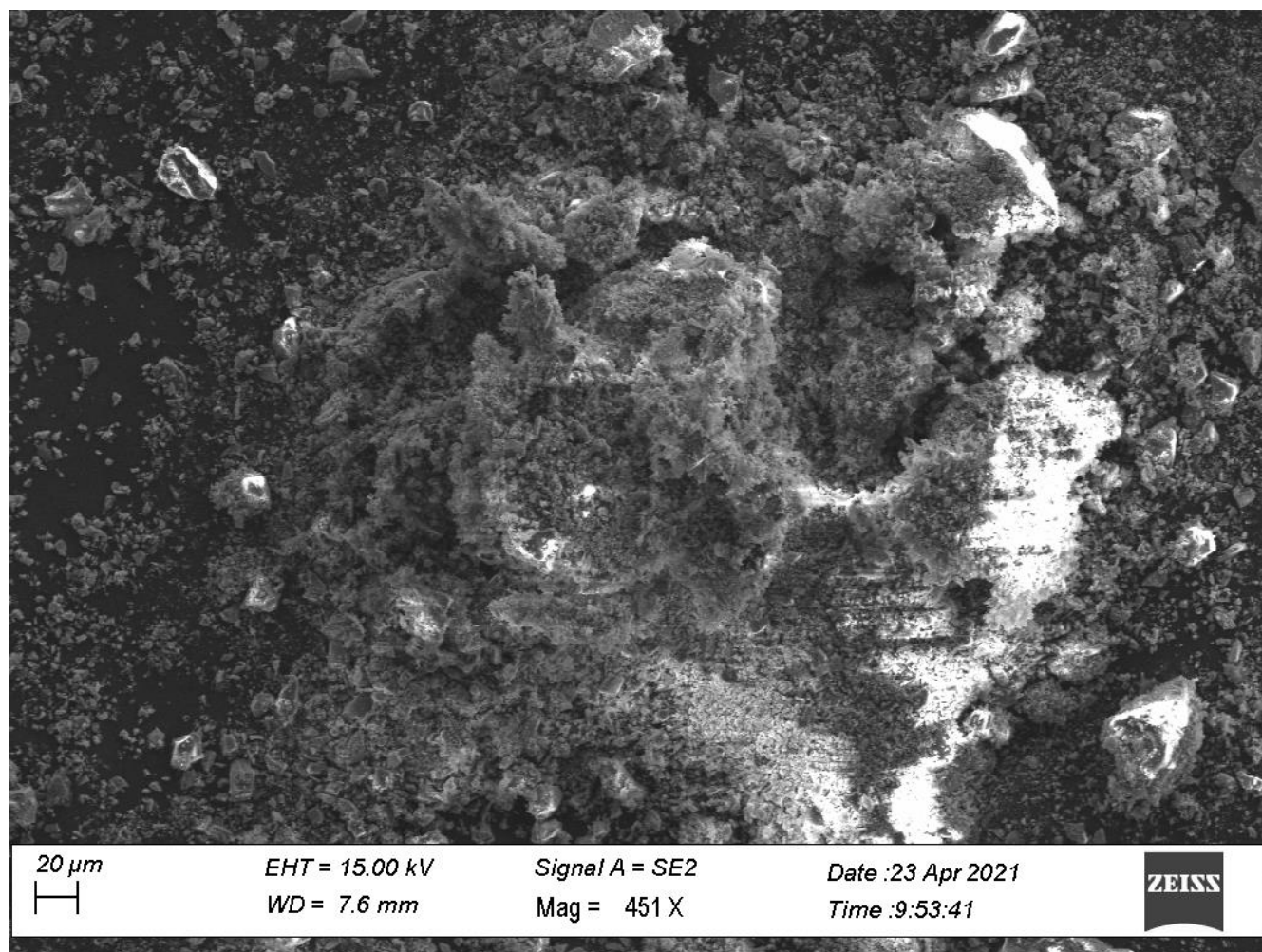
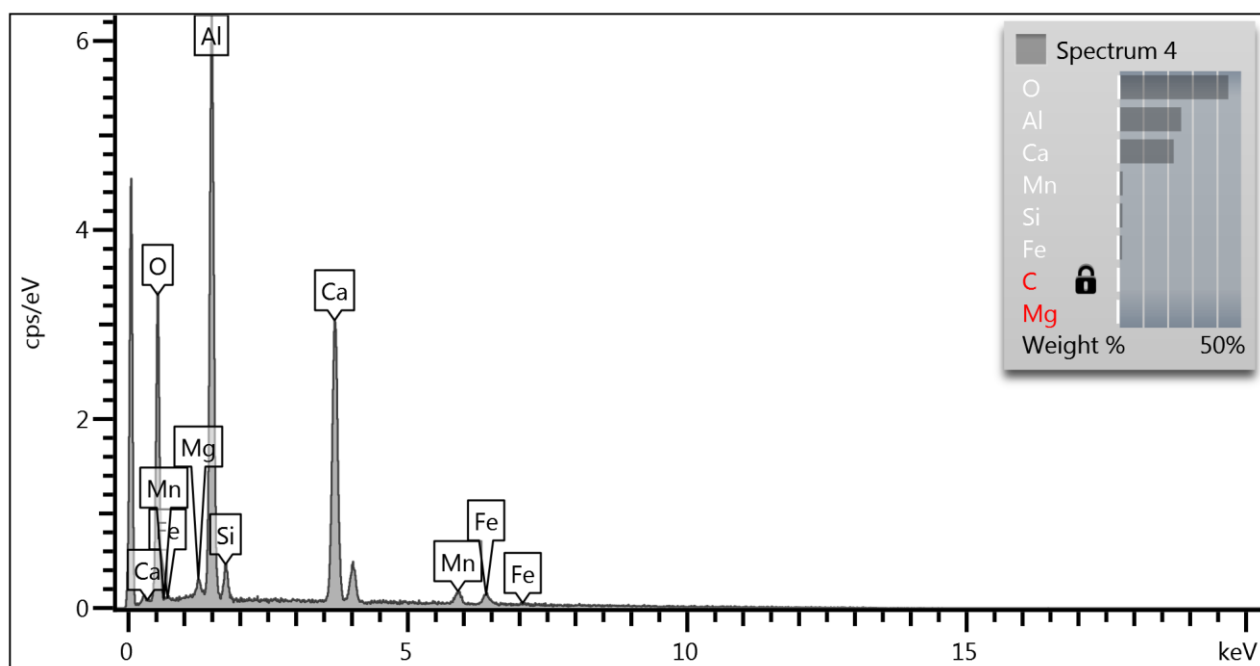
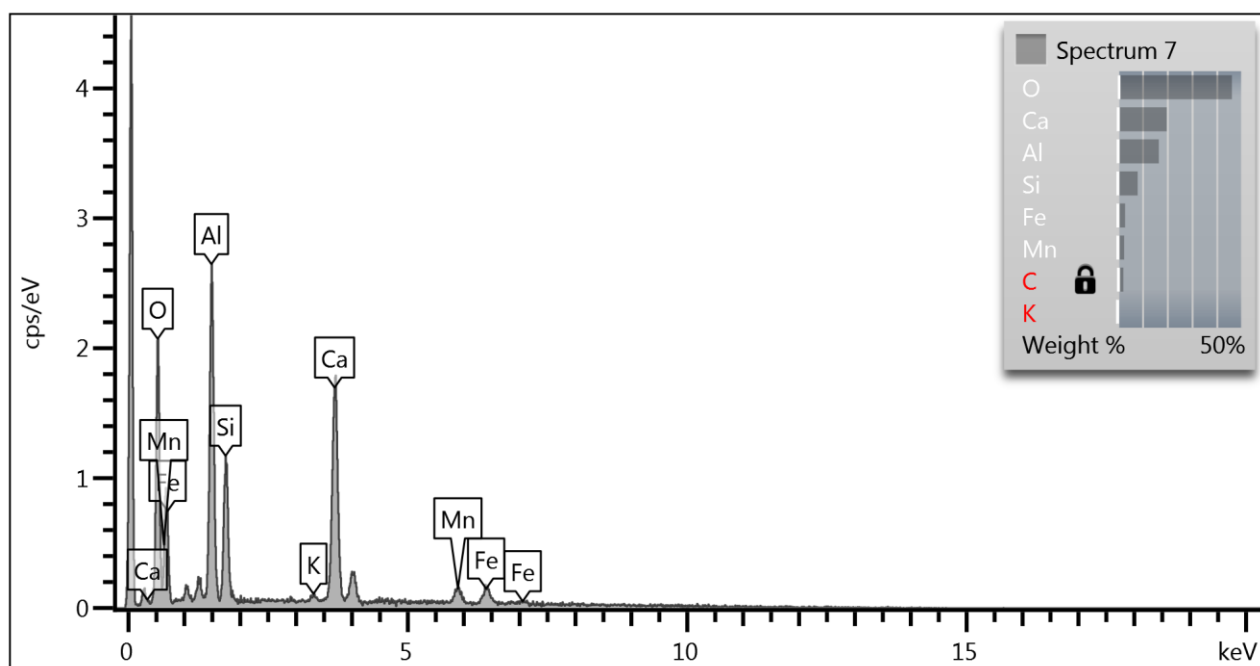


Figure S8. SEM image 20 μm of catalyst 1 after third cycle



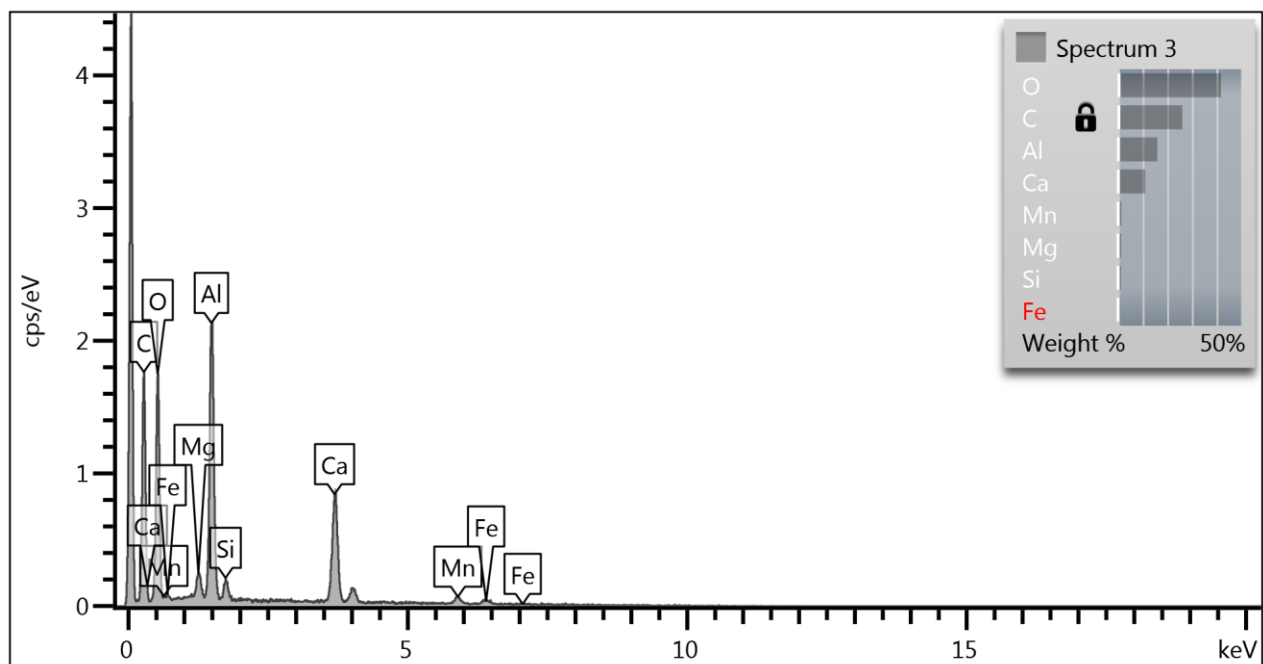
Element	Wt%	Wt% Sigma
C	0.72	0.17
O	44.79	0.42
Mg	0.65	0.08
Al	25.67	0.27
Si	1.84	0.10
Ca	22.66	0.26
Mn	1.96	0.14
Fe	1.70	0.14
Total:	100.00	

Figure S9. EDX analysis of catalyst **1** after first cycle.



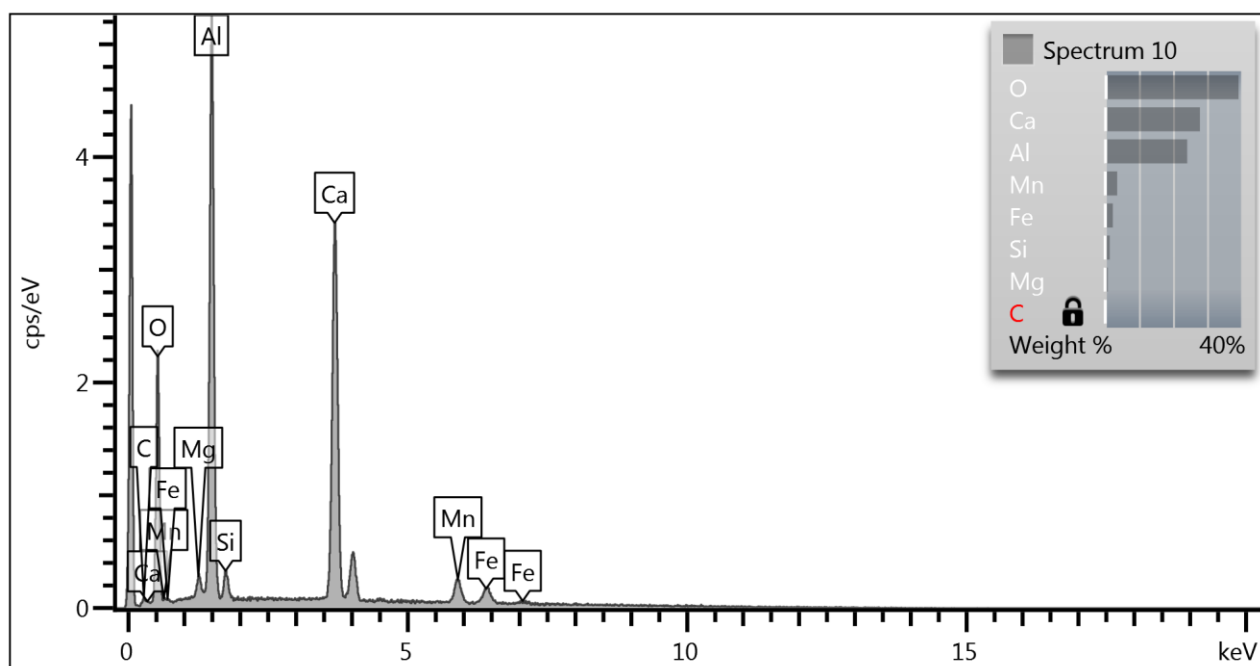
Element	Wt%	Wt% Sigma
C	2.41	0.46
O	46.28	0.66
Al	16.76	0.33
Si	8.22	0.24
K	0.50	0.11
Ca	19.95	0.38
Mn	2.76	0.25
Fe	3.13	0.26
Total:	100.00	

Figure S10. EDX analysis of catalyst **1** after 2nd cycle.



Element	Wt%	Wt% Sigma
C	26.14	0.40
O	41.81	0.48
Mg	1.34	0.09
Al	16.00	0.22
Si	1.27	0.09
Ca	11.13	0.19
Mn	1.40	0.13
Fe	0.91	0.12
Total:	100.00	

Figure S11. EDX analysis of catalyst **1** after 3rd cycle.



Element	Wt%	Wt% Sigma
C	0.52	0.11
O	39.25	0.35
Mg	0.84	0.06
Al	24.16	0.20
Si	1.41	0.07
Ca	27.90	0.23
Mn	3.60	0.14
Fe	2.32	0.13
Total:	100.00	

Figure S12. EDX analysis of pristine catalyst **1** after thermal treatment (400°C).

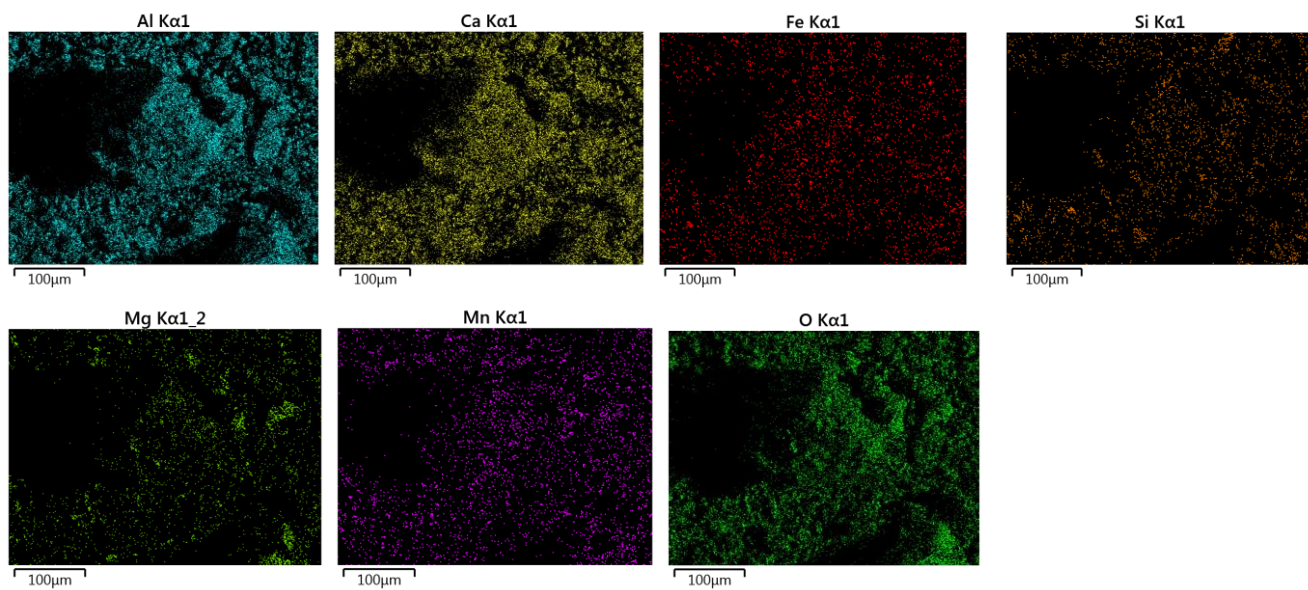


Figure S13. Mapping of pristine catalyst 1.

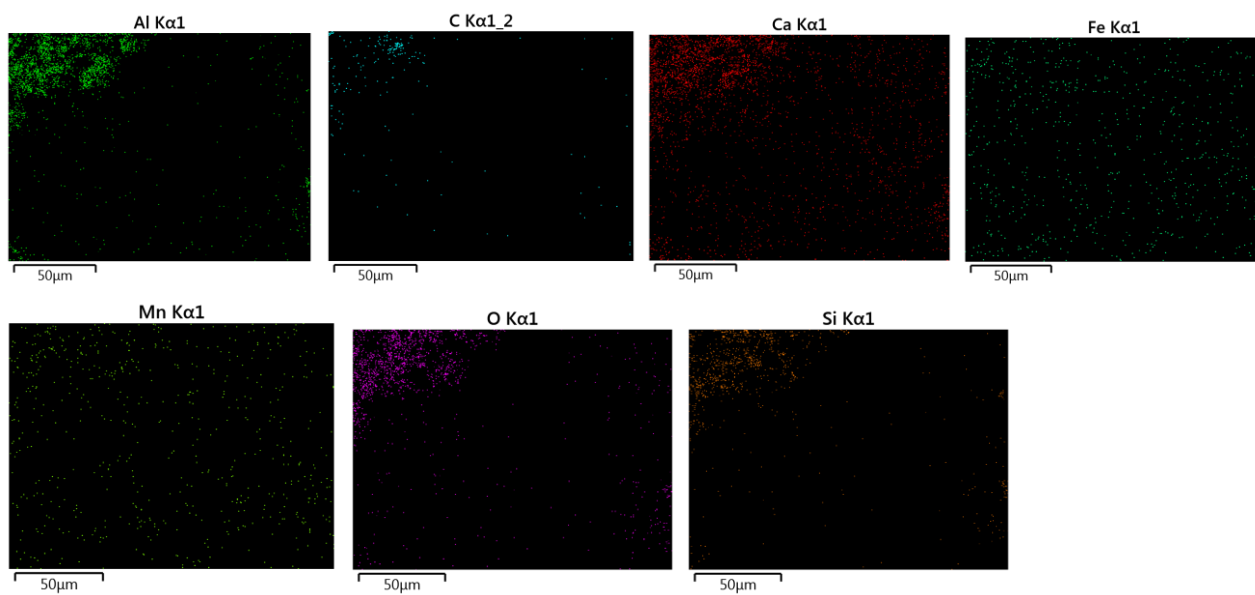


Figure S14. Mapping of catalyst 1 after 1st cycle.

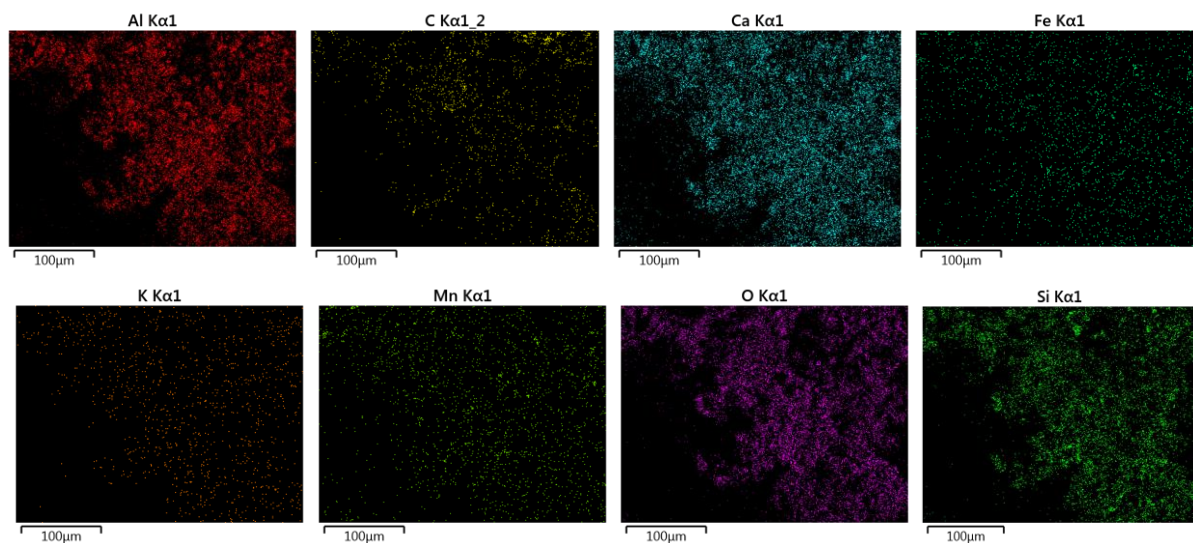


Figure S15. Mapping of catalyst 1 after second cycle.

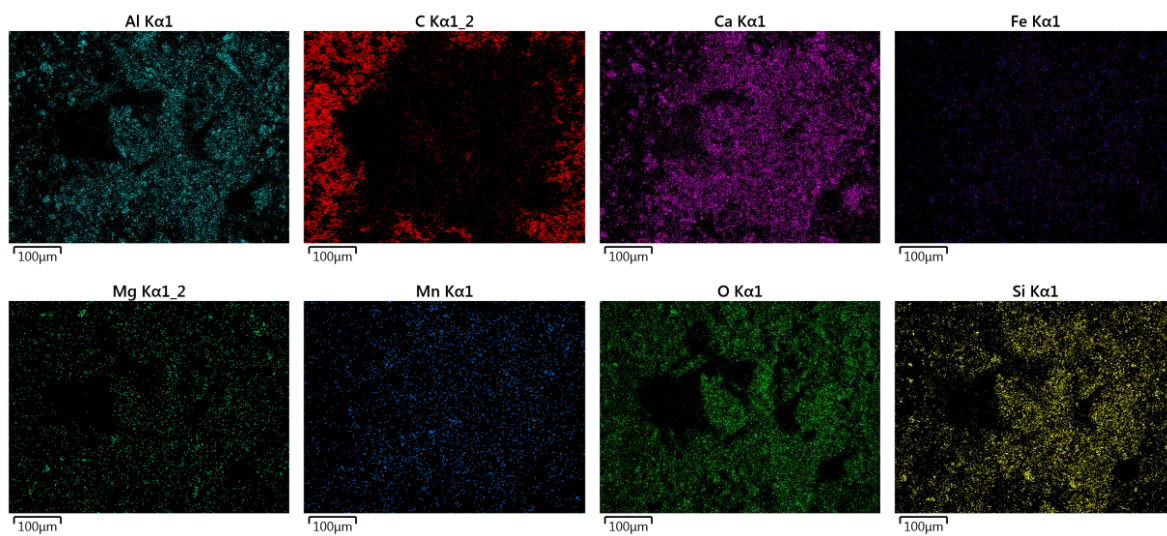
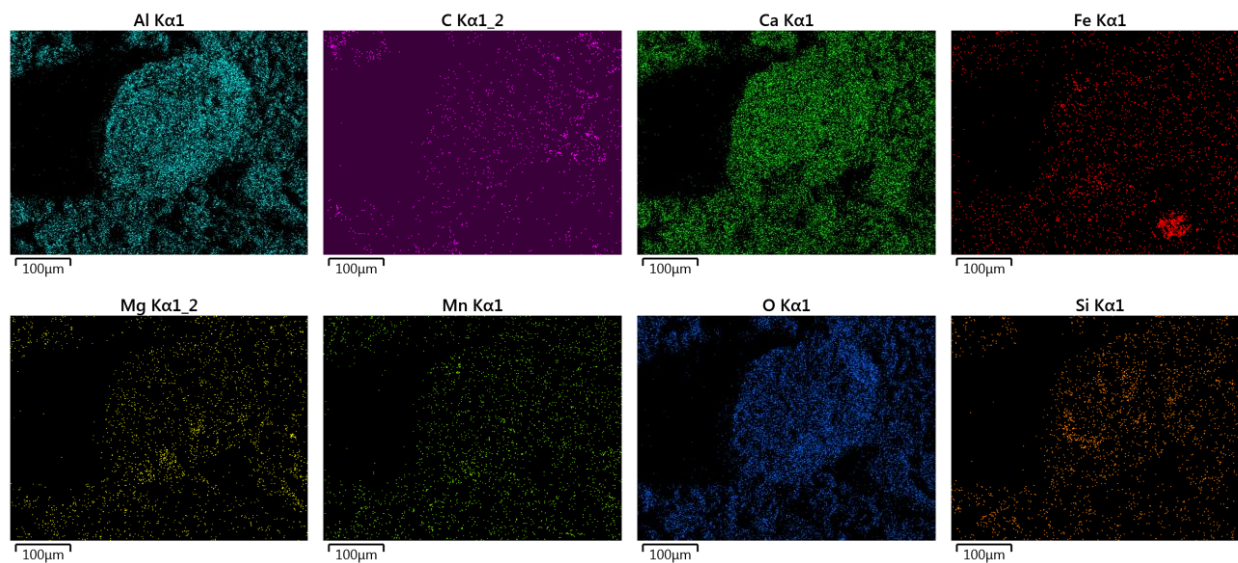
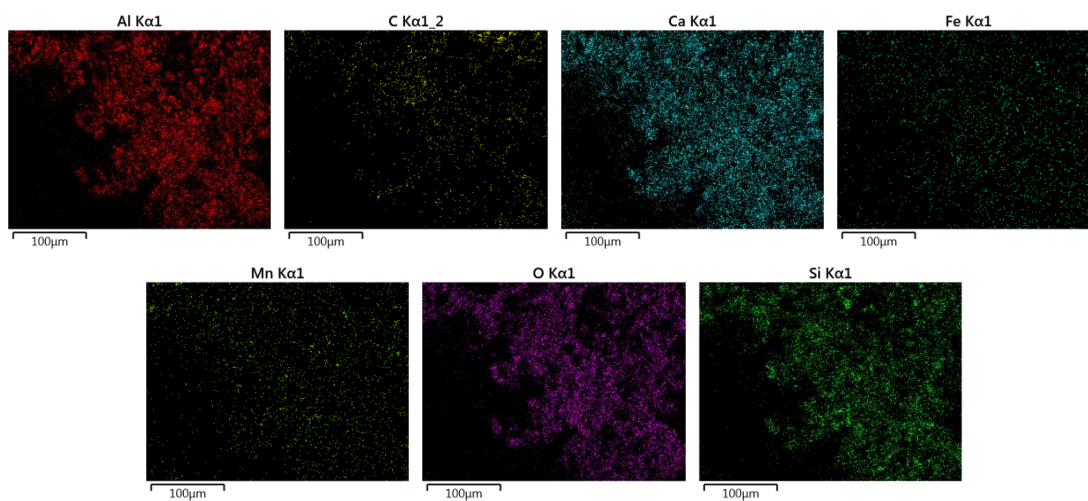


Figure S16. Mapping of catalyst 1 after third cycle.



*Figure S17. Mapping of catalyst **1** after fourth cycle.*



*Figure S18. Mapping of catalyst **1** after fourth cycle and after thermal treatment (400°C).*

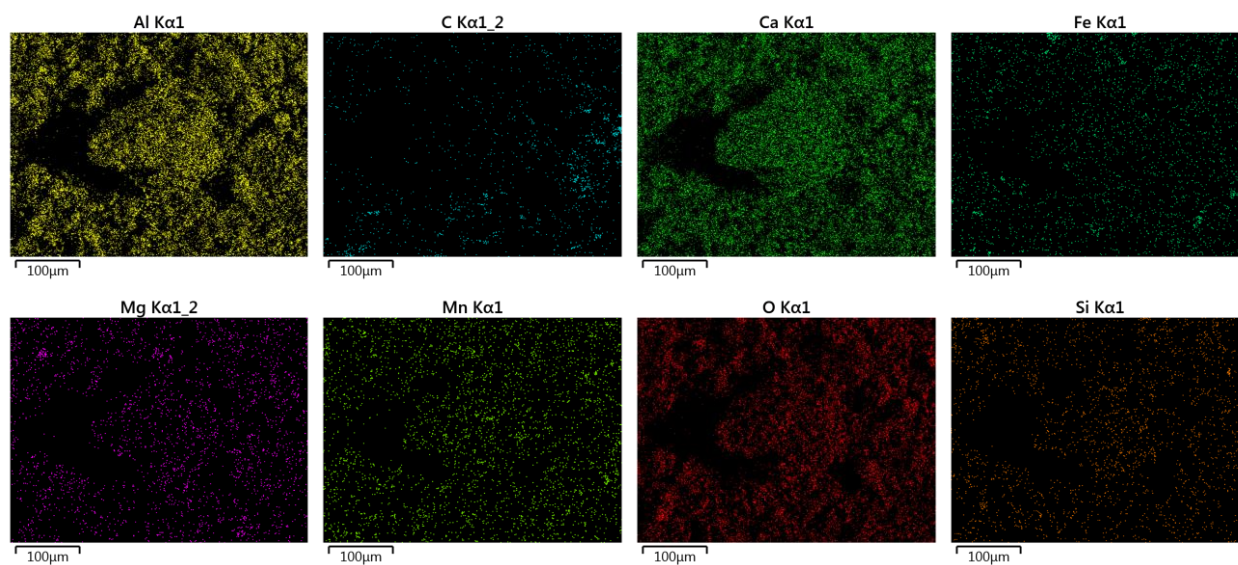


Figure S19. Mapping of pristine catalyst 1 after thermal treatment (400°C).