Electronic Supporting Information

Synthesis of Different Crystallographic Al_2O_3 Nanomaterials from Solid Waste for Application in Dye Degradation

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This supporting information contains the detailed information on "Table of Powder XRD data for γ-Al_2O_3 and α-Al_2O_3", "Powder XRD data for β-Al_2O_3" "Thermogravimetric (a) TGA (b) DTA analysis of electrochemical sludge of S(Al-100) and S(Al-1000)" "PXD patterns of thermally treated EC alumina sludge at different temperature and different duration", "FE-SEM/EDX elemental dispersion analysis of alpha and beta maximum alumina NMs", "FE-SEM/EDX and elemental dispersion analysis of both alpha and beta mixed alumina NMs." and "AFM analysis of alumina sludge (a) 2-D image of aluminium sludge, (a') 3-D image of aluminium sludge, (b) 2-D image of gamma alumina (b') 3-D image of gamma alumina".

Table S1. Powder XRD data for γ-Al_2O_3 and α-Al_2O_3

γ-Al_2O_3					
h	***k***	***l***	d_{obs}(Å)	d_{obs}(Å)	I_{obs}
2	2	0	2.7850	2.7910	32.13
3	1	1	2.3790	2.3802	37.81
4	0	0	1.9760	1.9760	45.92
5	1	1	1.5200	1.5192	60.95
4	4	0	1.3950	1.3955	67.09
α-Al_2O_3					
0	1	2	3.4810	3.481	25.58
1	0	4	2.5514	2.551	35.17
1	1	0	2.3808	2.380	37.78
0	0	6	2.1658	2.165	41.70
1	1	3	2.0861	2.086	43.37
2	0	2	1.9655	1.964	46.18
0	2	4	1.7406	1.740	52.57
1	1	6	1.6016	1.601	57.54
2	1	1	1.5475	1.547	59.75
0	1	8	1.5110	1.511	61.35
2	1	4	1.4048	1.405	66.56
3	0	0	1.3741	1.374	68.25
2	0	8	1.2756	1.275	74.36
1	0	10	1.2390	1.239	76.95
1	1	9	1.2345	1.234	77.28

Table S2. Powder XRD data for β-Al_2O_3

β-Al_2O_3					
h	***k***	***l***	d_{obs}(Å)	d_{obs}(Å)	I_{obs}
0	0	2	11.3247	11.314	7.80
0	0	4	5.6665	5.6574	15.63
1	0	2	4.4600	4.4548	19.90
1	0	3	4.0789	4.0772	21.78
1	0	6	2.9728	2.9764	30.05
0	0	8	2.8296	2.8287	31.61
1	1	0	2.7979	2.7979	31.98
1	0	7	2.6915	2.6893	33.28
1	1	4	2.5087	2.5080	35.79
2	0	1	2.4100	2.4093	37.31
0	0	10	2.2650	2.2629	39.79
1	1	6	2.2493	1.4050	66.56
2	0	4	2.2298	1.3740	68.25
2	0	5	2.1363	2.1362	42.30
2	0	6	2.0383	2.0386	44.44
2	0	7	1.9409	1.9389	46.80
3	0	2	1.5978	1.5991	57.69
3	0	4	1.5534	1.5533	59.50
3	0	6	1.4844	1.4849	62.57
1	1	14	1.3997	1.3996	66.83
2	2	4	1.3583	1.3580	69.15

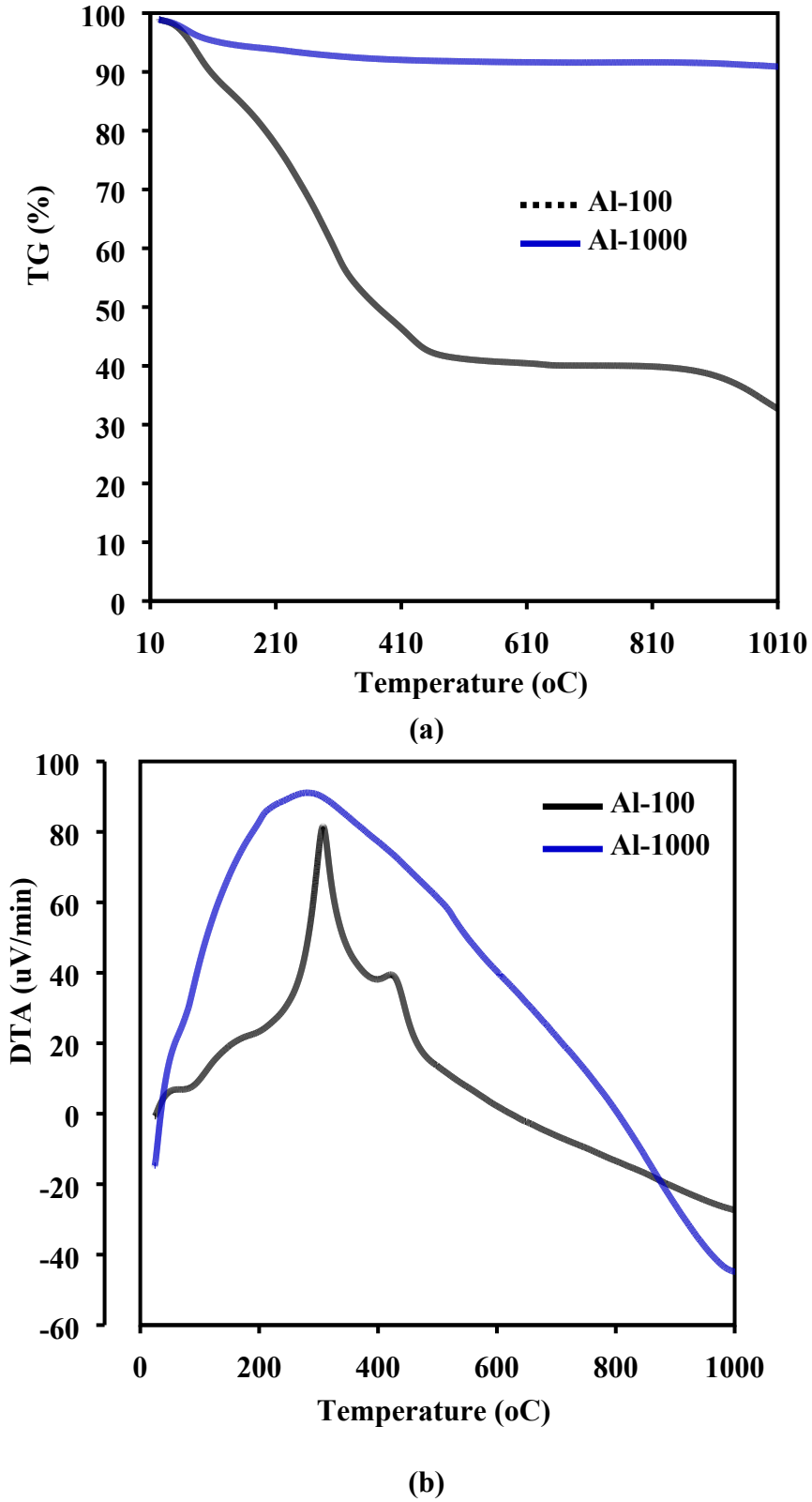

Figure S1: Thermogravimetric (a) TGA (b) DTA analysis of electrochemical sludge of S(Al-100) and S(Al-1000).

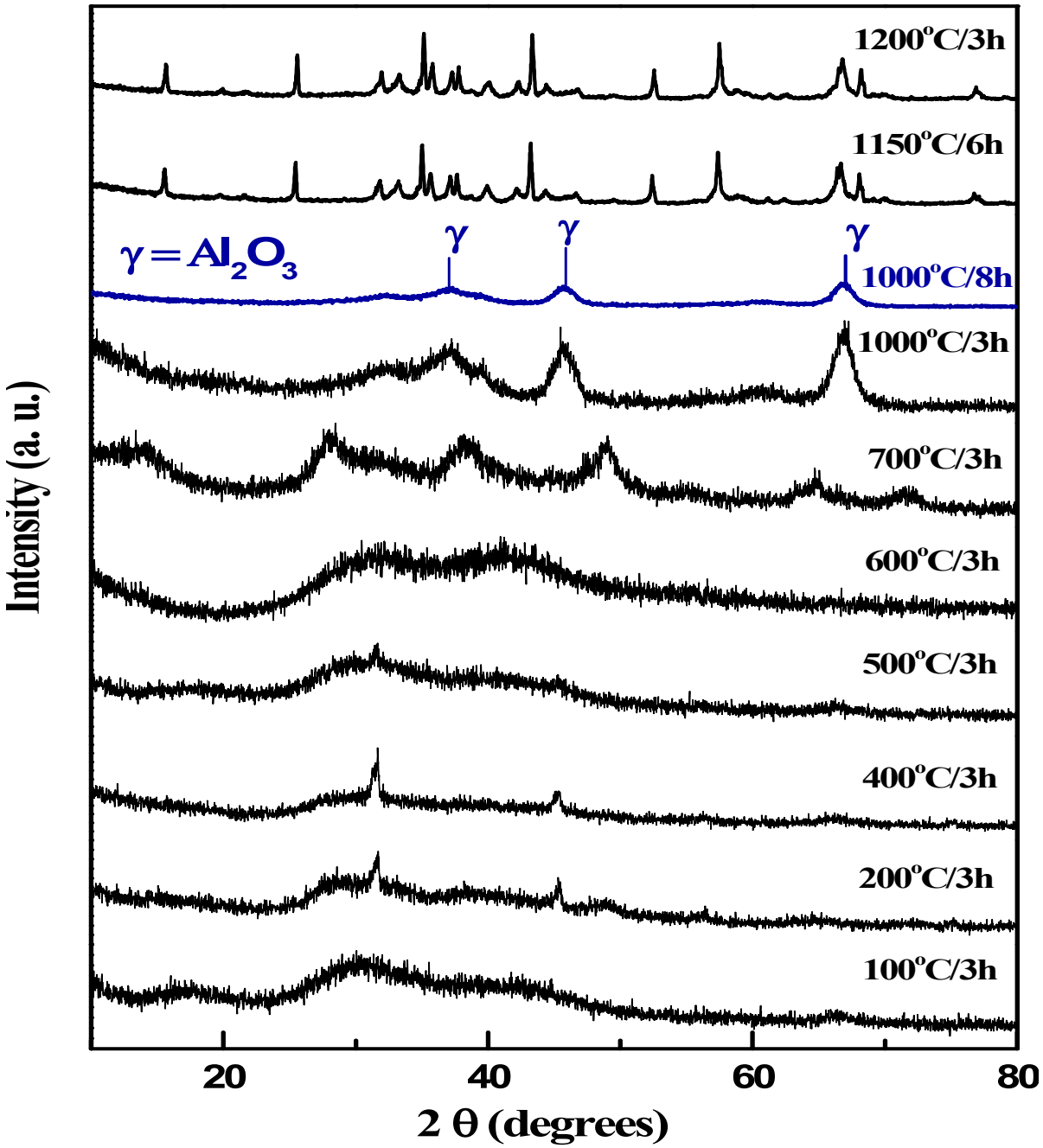

Figure S2. PXD patterns of thermally treated EC alumina sludge at different temperature and different duration.

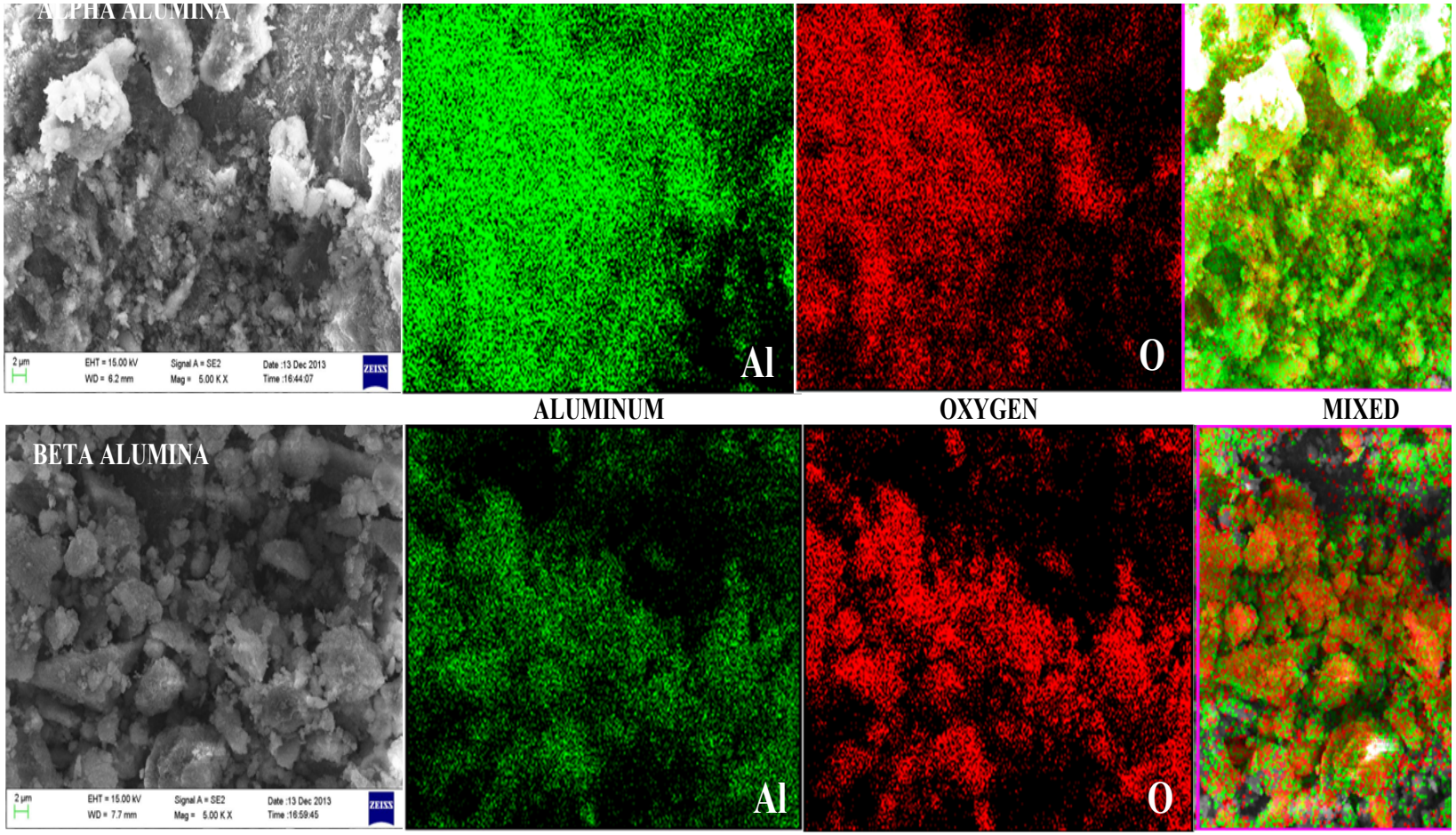

Figure S3. FE-SEM/EDX elemental dispersion analysis of alpha and beta maximum alumina NMs.

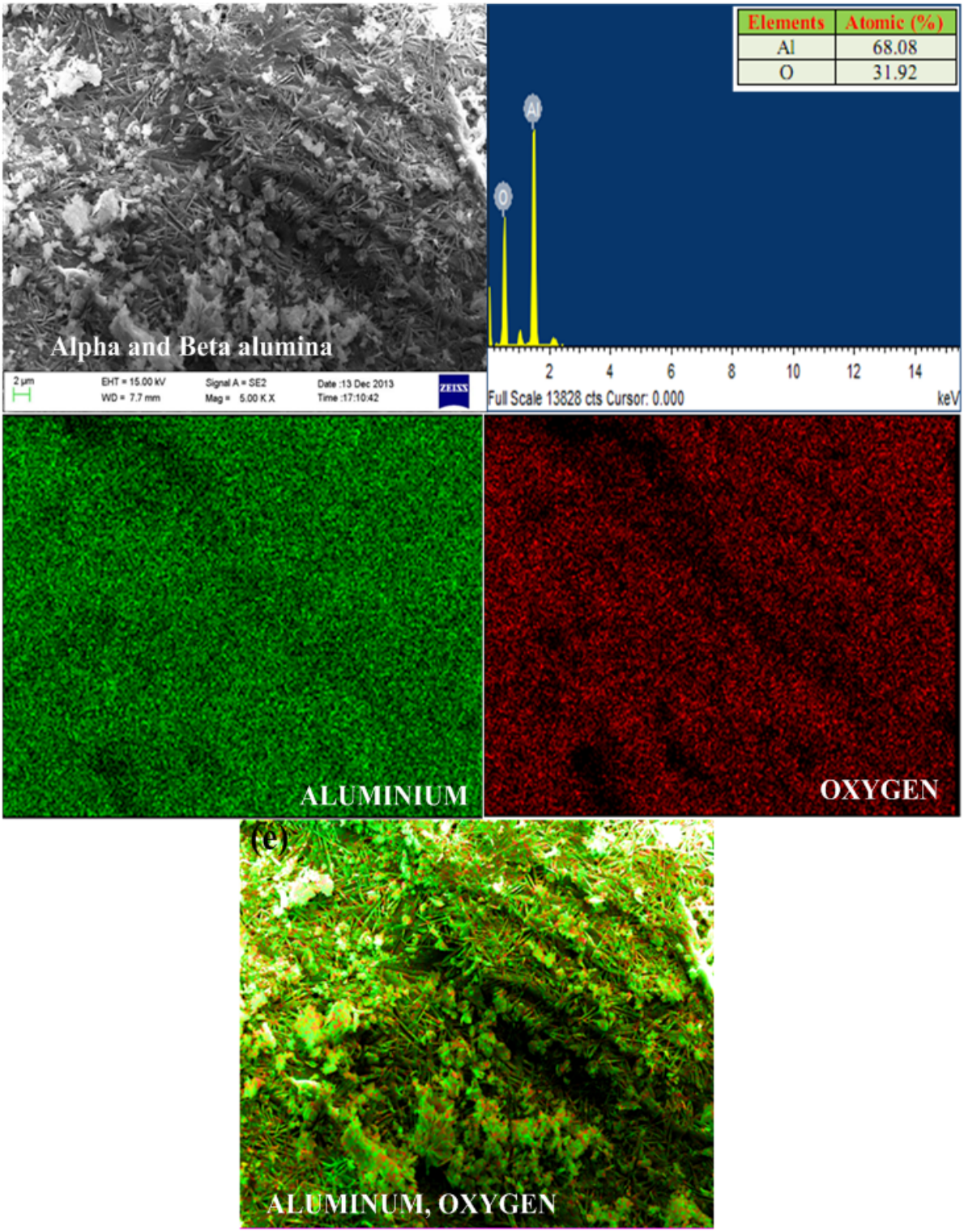

Figure S4. FE-SEM/EDX and elemental dispersion analysis of both alpha and beta mixed alumina NMs.

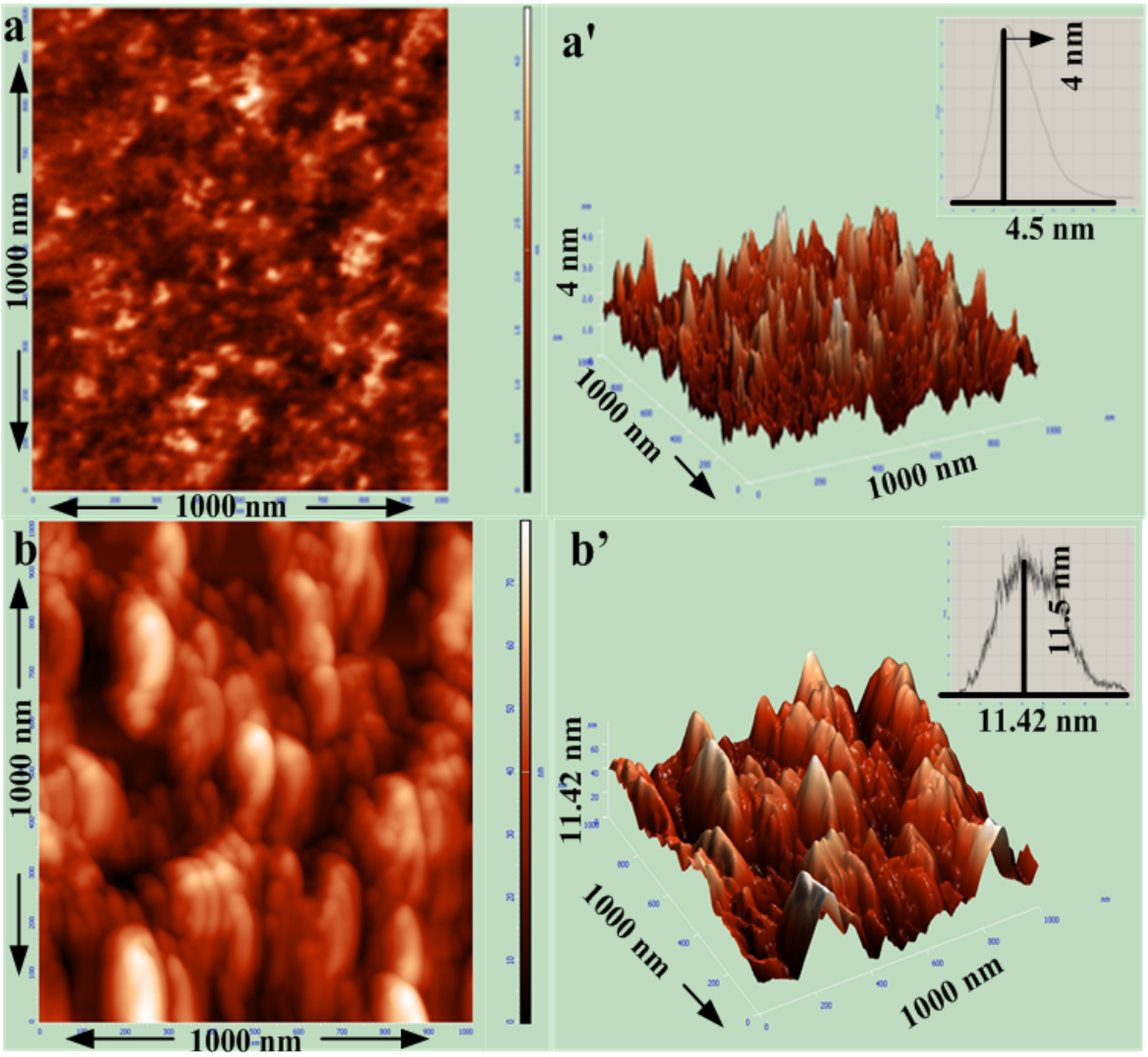

Figure S5. AFM analysis of alumina sludge (a) 2-D image of aluminium sludge, (a') 3-D image of aluminium sludge, (b) 2-D image of gamma alumina (b') 3-D image of gamma alumina.