

Supplementary Information

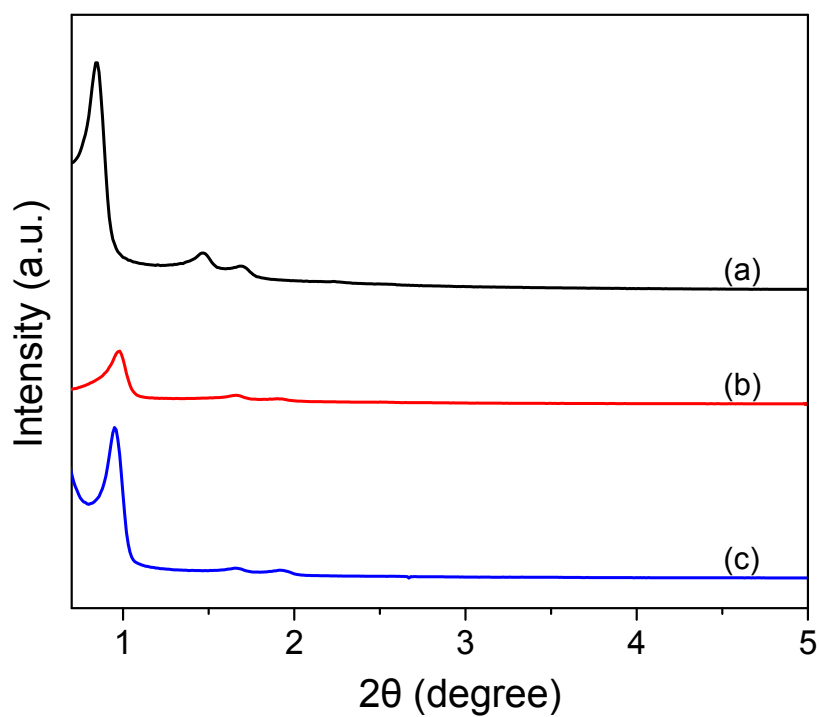


Fig S1. Low-angle XRD patterns of (a) SBA-15, (b) La@SBA-15 and (c) Al-La@SBA-15(0.2)

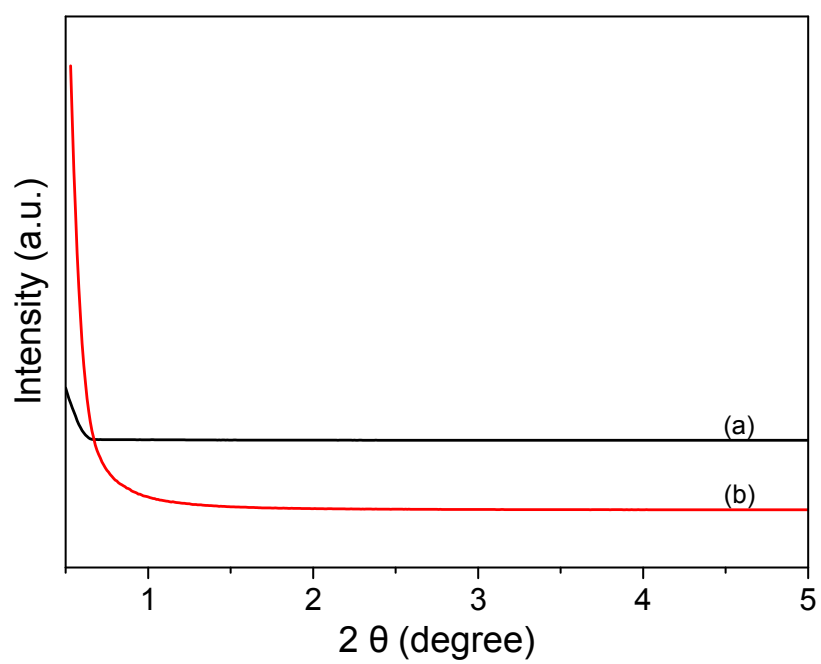


Fig S2. Low-angle XRD patterns of (a) 7.5 wt% $\text{KNO}_3/\text{La}_2\text{O}_3@\text{SBA-15}$ and (b) 7.5 wt% $\text{KF}@\text{SBA-15}$

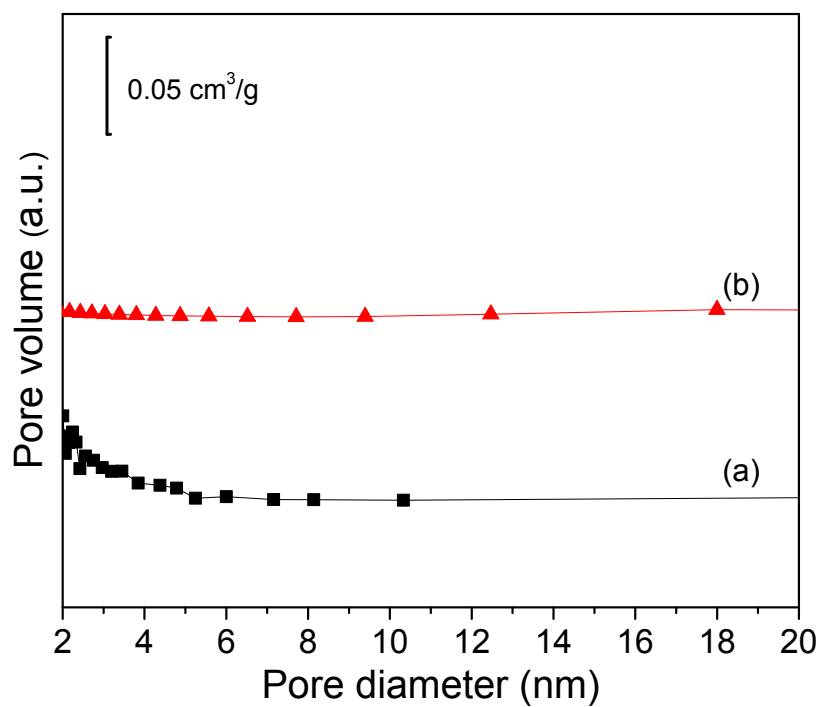
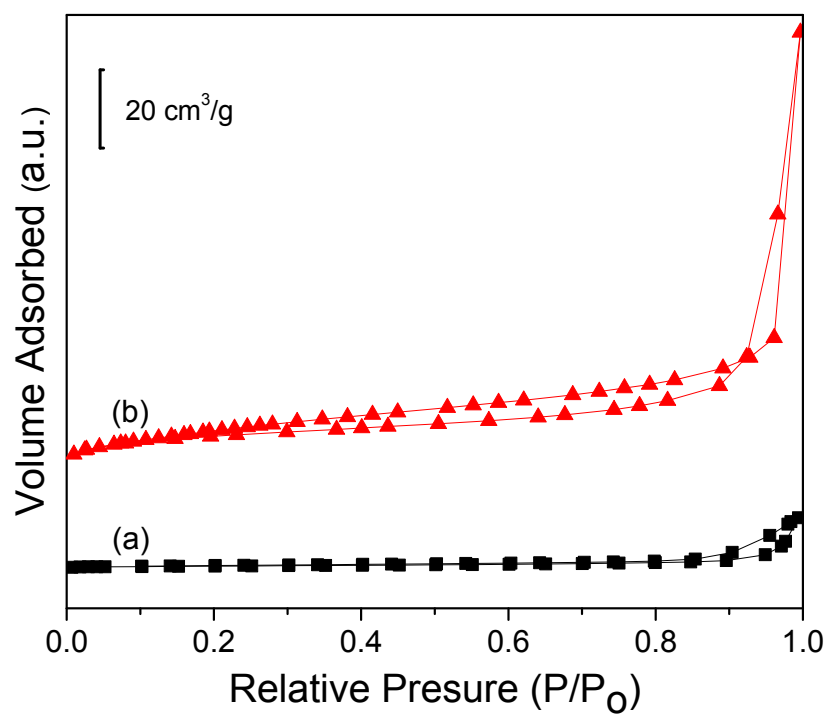


Figure S3. N₂ adsorption-desorption isotherms and corresponding pore size distribution curves of (a) 12 wt% KNO₃/La@SBA-15, 7.5 wt% KF-Al-La@SBA-15 and (c) 7.5 wt% KF@SBA-15

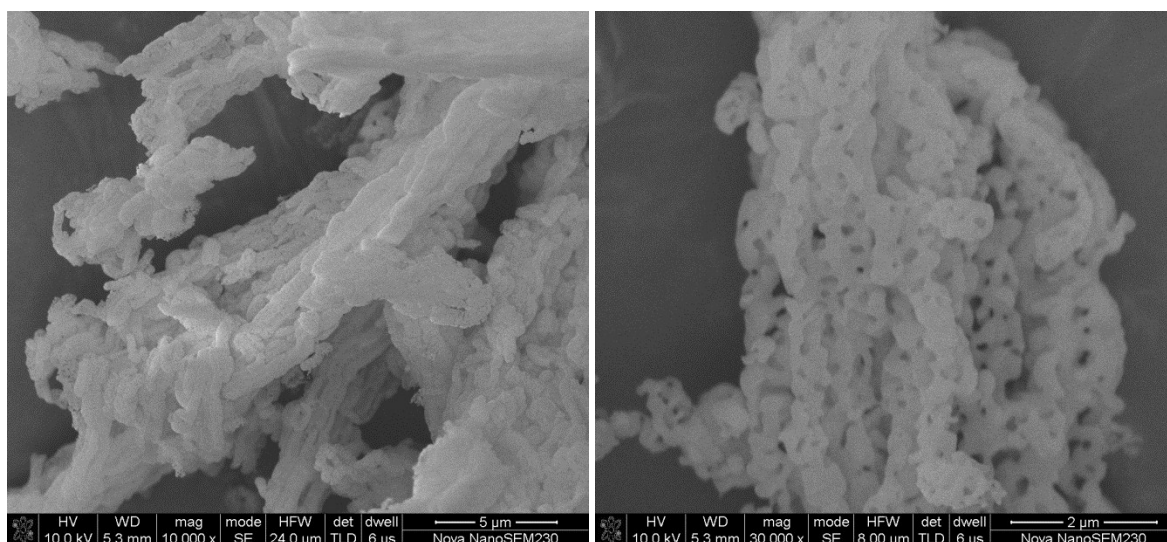


Fig.S4. SEM images of 7.5wt% KF@SBA-15

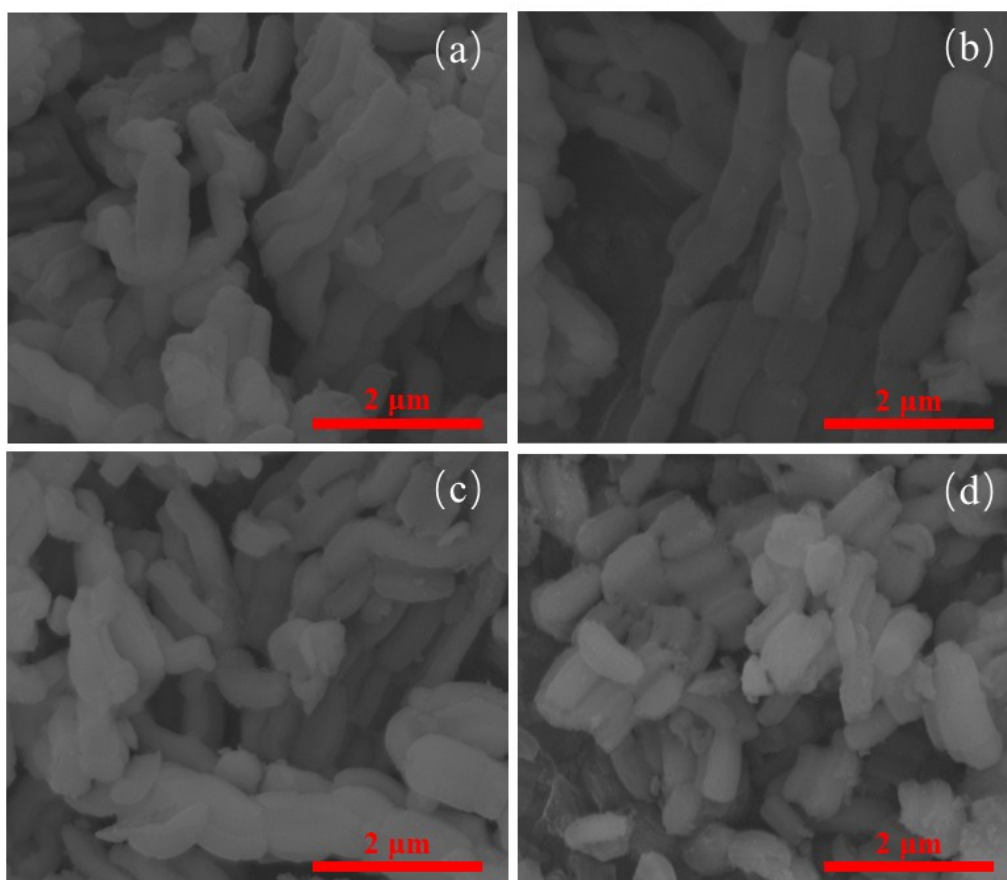


Fig.S5. SEM images of the KF/Al-La@SBA-15 samples with Al molar content of (a) 0, (b) 0.2, (c) 0.4 and (d) 1.0.

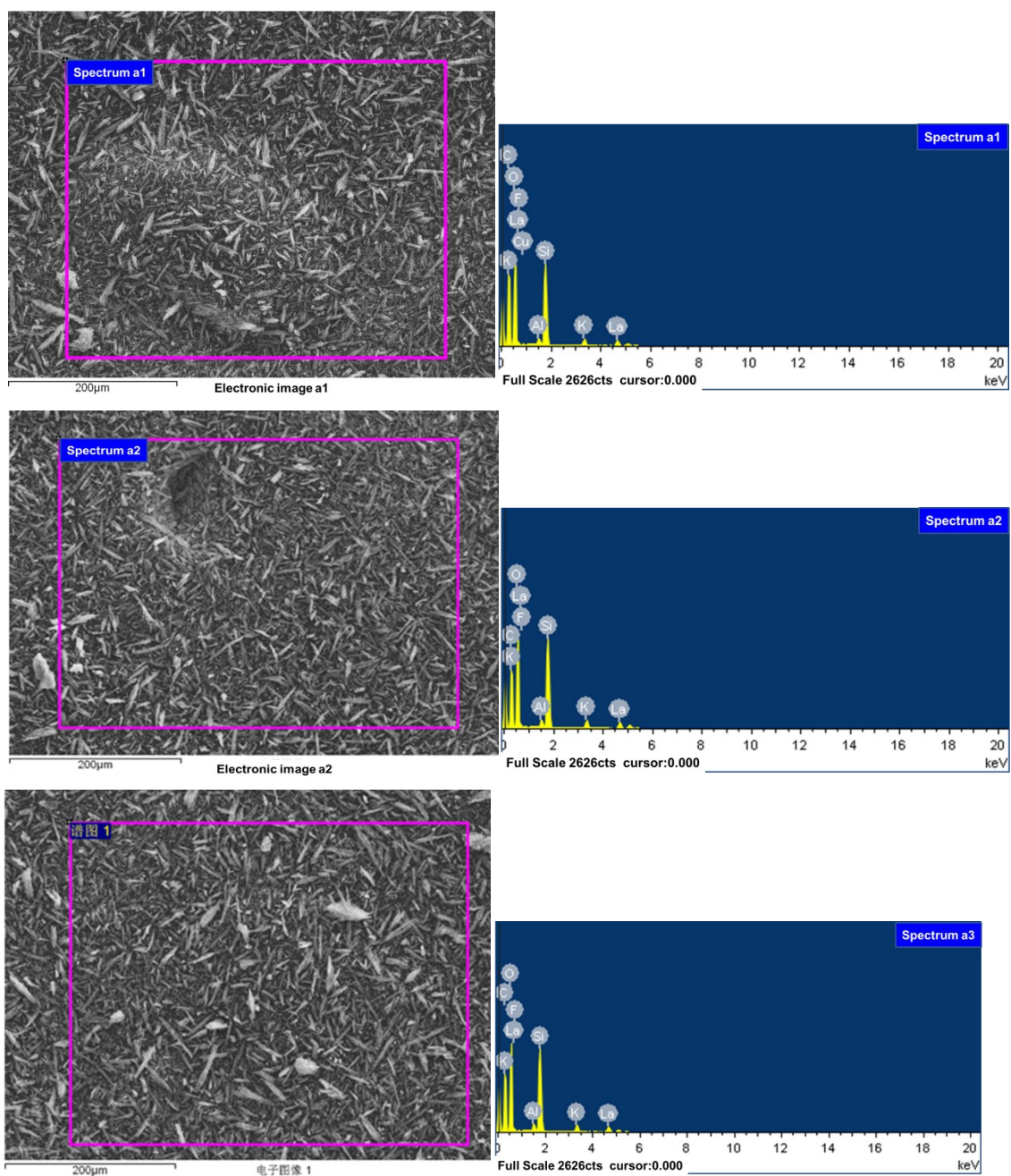


Figure S6(a). SEM images and the corresponding EDS mapping obtained on KF/Al-La@SBA-15(0.2) (a1, a2 and a3)

Table S1(a). The SEM-EDS analysis of element content in atomic percent and weight percent for KF/Al-La@SBA-15(0.2) sample

Elements	Spectrum 1		Spectrum 2		Spectrum 3	
	wt.%	at.%	wt.%	at.%	wt.%	at.%
C	11.14	17.11	8.76	13.70	9.49	14.68
O	55.06	63.46	55.33	64.97	55.75	64.73
F	5.57	5.40	6.21	6.14	5.85	5.72
Si	16.93	11.12	18.18	12.16	18.20	12.04
K	2.12	1.00	2.13	1.02	2.22	1.06
Al	1.09	0.74	1.31	0.92	1.16	0.80
La	7.52	1.00	8.08	1.09	7.34	0.98
Al/La	14.49	74.0	16.21	84.40	15.80	81.63
Al/Si	6.44	0.07	7.21	7.57	6.37	6.64
La/Si	44.42	8.99	44.44	8.96	40.33	8.14
K/Si	12.52	8.99	11.72	8.46	2.20	8.80

wt%: weight percent, at%:atomic percent

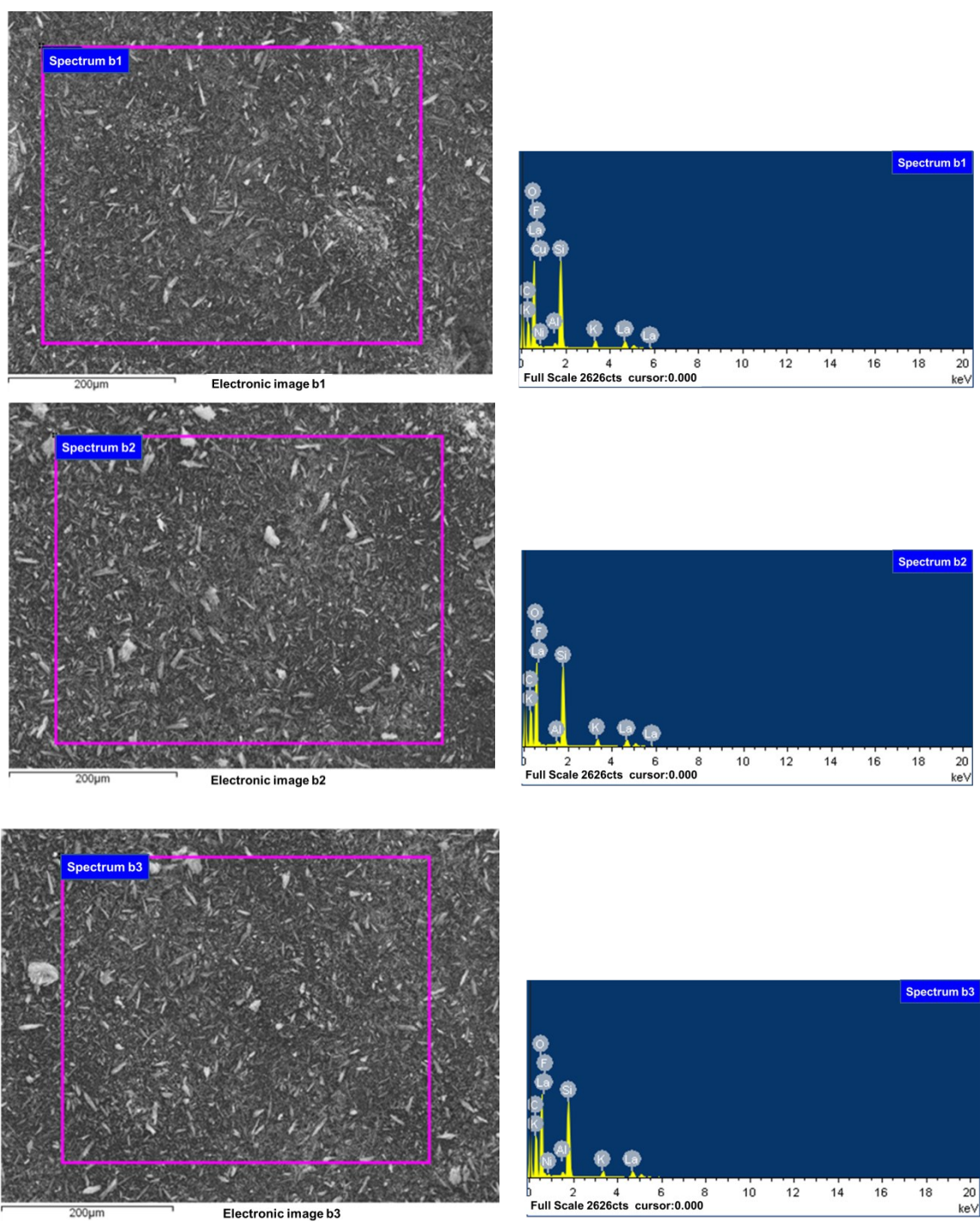


Figure S6(b). SEM images and the corresponding EDS mapping obtained on KF/Al-La@SBA-15 (0.4) (b1, b2 and b3)

Table S1(b). The SEM-EDS analysis of element content in atomic percent and weight percent for KF/Al-La@SBA-15(0.4) sample

Elements	Spectrum 1		Spectrum 2		Spectrum 3	
	wt.%	at.%	wt.%	at.%	wt.%	at.%
C	4.59	7.66	4.60	8.03	7.28	11.69
O	51.22	65.77	48.89	64.04	54.97	66.32
F	7.02	7.42	7.43	8.19	6.21	6.31
Si	20.40	15.58	20.68	15.43	18.54	12.74
K	2.45	1.26	4.00	2.15	2.06	1.02
Al	0.72	0.51	0.68	0.49	0.70	0.50
La	13.54	2.05	14.40	2.17	10.24	1.42
Al/La	5.31	24.88	4.72	22.58	6.84	35.21
Al/Si	3.53	3.27	3.29	3.18	3.78	3.92
La/Si	66.37	13.16	69.63	14.06	55.23	11.15
K/Si	18.72	13.47	19.34	13.93	0.11	0.08

wt%: weight percent, at%:atomic percent