

Hierarchically Porous Calcined Lithium/Aluminum Layered Double Hydroxides: Facile Synthesis and Enhanced Adsorption Towards Fluoride in Water

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Table S1. Unit cell parameters of the Li₃Al-LDH sample

<i>h</i>	<i>k</i>	<i>l</i>	<i>d</i> (Å)	Relative intensity (%)
0	0	3	7.5600	100.0
0	0	6	3.7800	61.2
1	1	2	2.4900	46.3
1	1	5	2.2200	26.9
1	1	8	1.8940	34.1
3	0	0	1.4700	16.3
3	0	3	1.4430	13.3

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Table S2. Pseudo-first-order adsorption kinetic constants of the Li/Al-CLDH samples

Samples	<i>C</i> ₀ (mg/L)	<i>q</i> _{e,exp} (mg/g)	Pseudo-first-order model			S.D. (%)
			<i>q</i> _{e,cal} (mg/g)	<i>K</i> ₁ (1/min)	<i>R</i> ²	
Li ₂ Al-CLDH	200	76.0	16.8	0.014	0.785	45.0
Li ₃ Al-CLDH		97.2	29.4	0.016	0.942	40.3
Li ₄ Al-CLDH		90.3	39.6	0.020	0.966	32.4
Li ₅ Al-CLDH		62.7	25.9	0.016	0.980	33.9

Table S3 Intra-particle diffusion model constants and correlation coefficients for adsorption of fluoride on Li/Al-CLDH samples

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Samples	<i>C</i> ₀ (mg/L)	Intra-particle diffusion model								
		<i>k</i> _{d1} (mg/min ^{1/2} g)	<i>k</i> _{d2} (mg/min ^{1/2} g)	<i>k</i> _{d3} (mg/min ^{1/2} g)	<i>C</i> ₁	<i>C</i> ₂	<i>C</i> ₃	(<i>R</i> ₁) ²	(<i>R</i> ₂) ²	(<i>R</i> ₃) ²
Li ₂ Al-CLDH	200	23.17	7.06	0.113	0	27.91	75.00	1.000	0.798	1.000
Li ₃ Al-CLDH		17.97	8.33	0.452	0	20.16	79.03	1.000	0.986	1.000
Li ₄ Al-CLDH		18.41	8.18	0.339	0	21.69	78.69	1.000	0.962	1.000
Li ₅ Al-CLDH		14.94	6.64	0.113	0	14.38	67.45	1.000	0.945	1.000

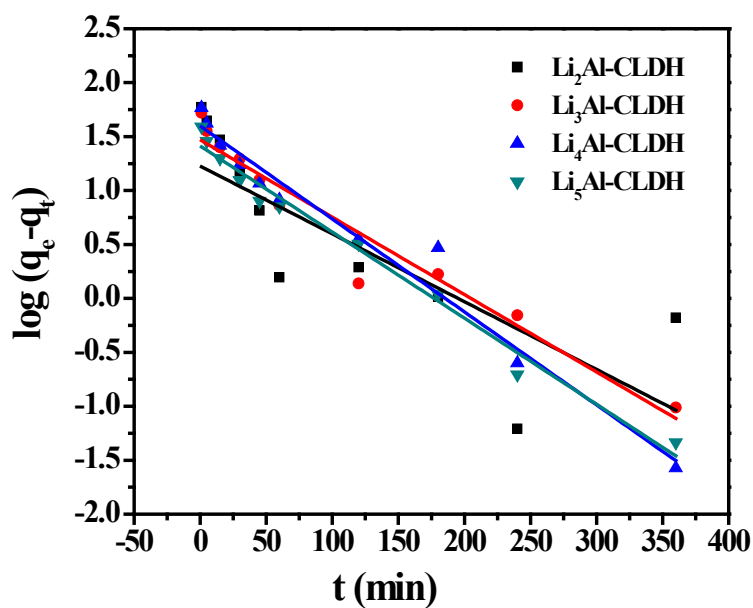


Fig. S1. Pseudo first-order kinetics for adsorption of fluoride on the Li/Al-CLDH samples.

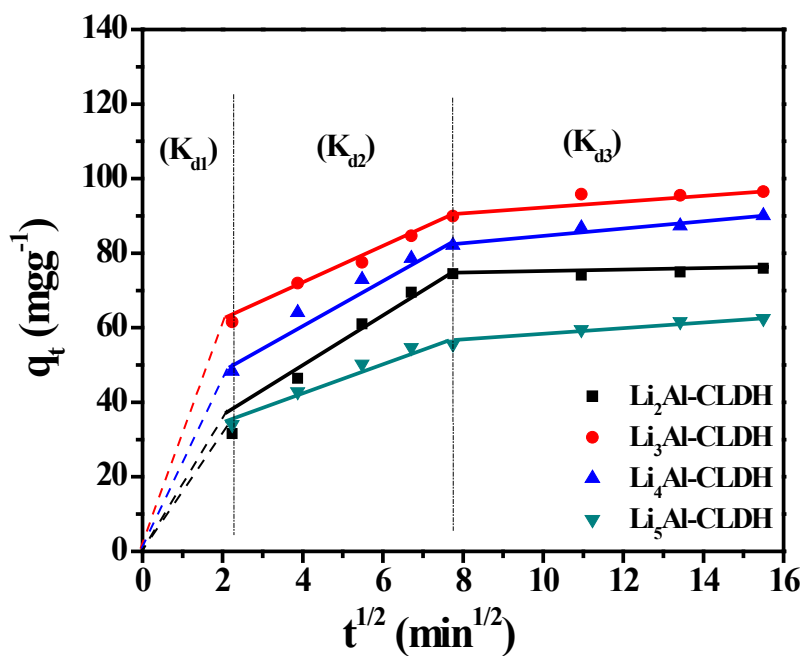


Fig. S2. Intra-particle diffusion kinetics for adsorption of fluoride on the Li/Al-CLDH samples.

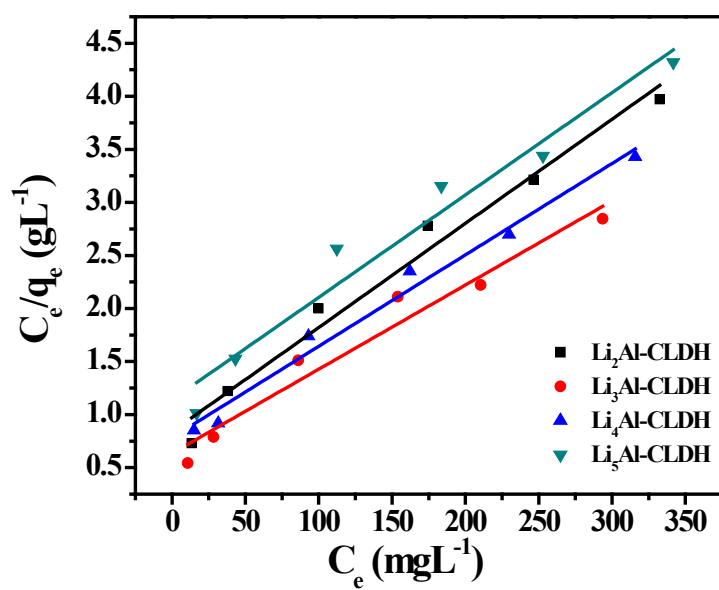


Fig. S3. Langmuir isotherms for fluoride adsorption on the Li/Al-CLDHs samples.