Electronic Supplementary Information for "Three-dimensional hierarchical flower-like Mg-Al-layered double hydroxides: A highly efficient adsorbents for As(V) and Cr(VI) removal".

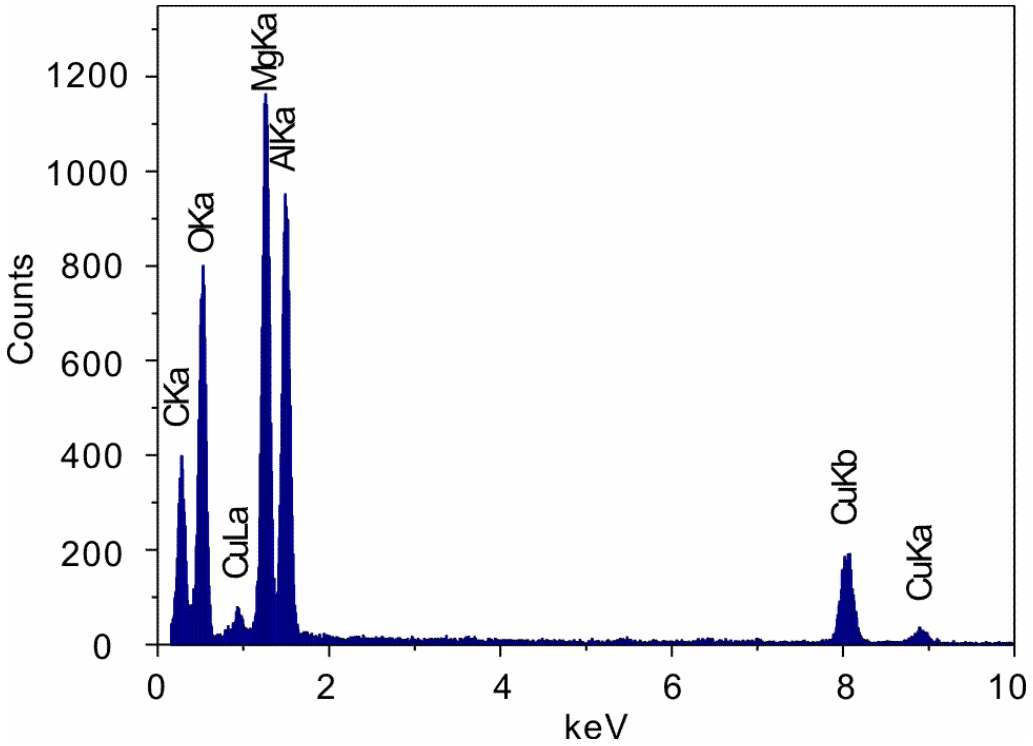

Figure S1. EDS pattern of as-obtained Mg-Al-LDHs.

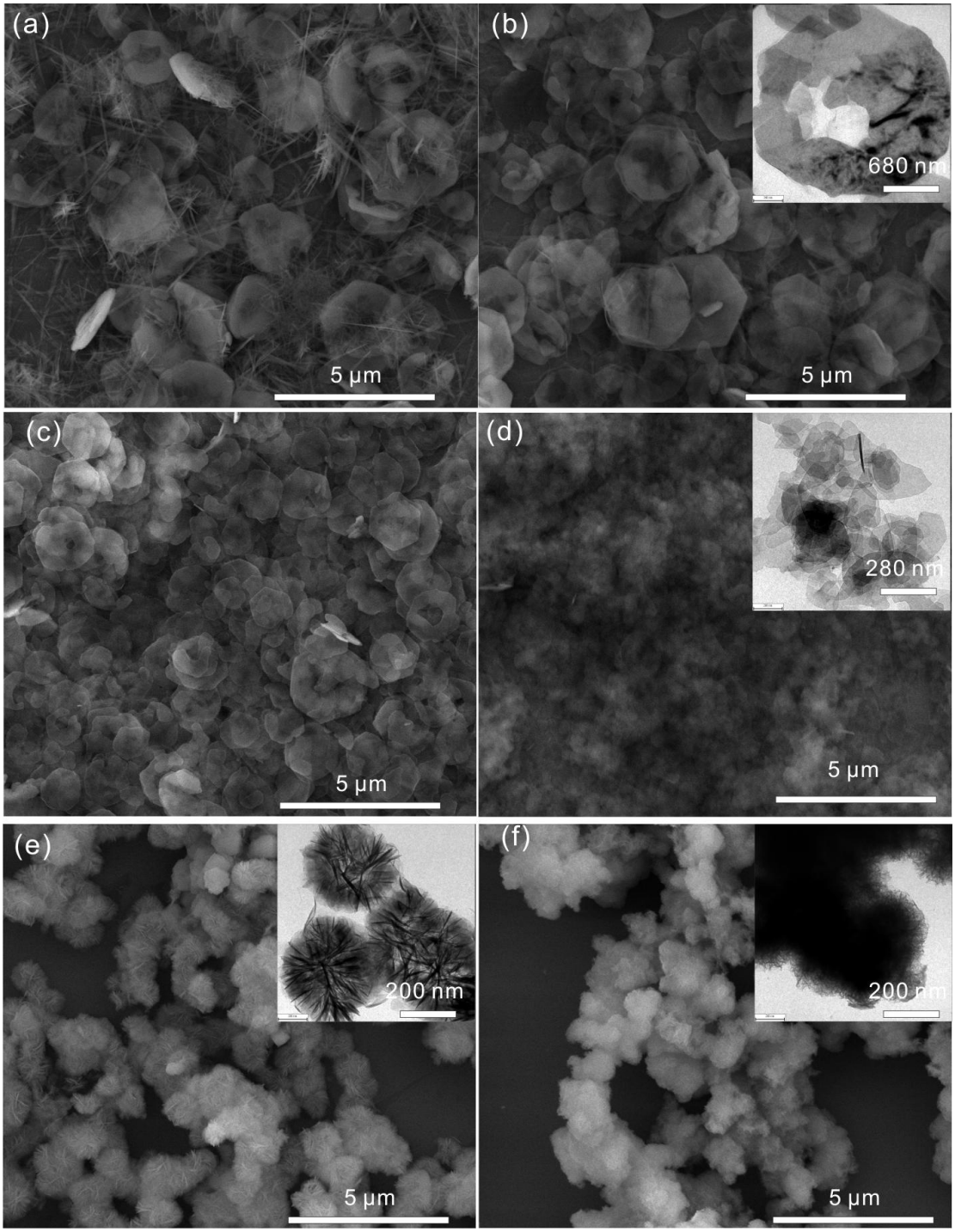

Figure S2. SEM images of Mg-Al-LDHs fabricated under different water/EG volume ratios: (a) pure water; (b) water/EG = 4:1; (c) water/EG = 1:1; (d) water/EG = 1:4; (e) water/EG = 1:9; (f) pure EG. Inset: TEM image. Mg^{2+}:Al^{3+}:urea=2:1:9, T=160 ^{o}C and t=6 h.

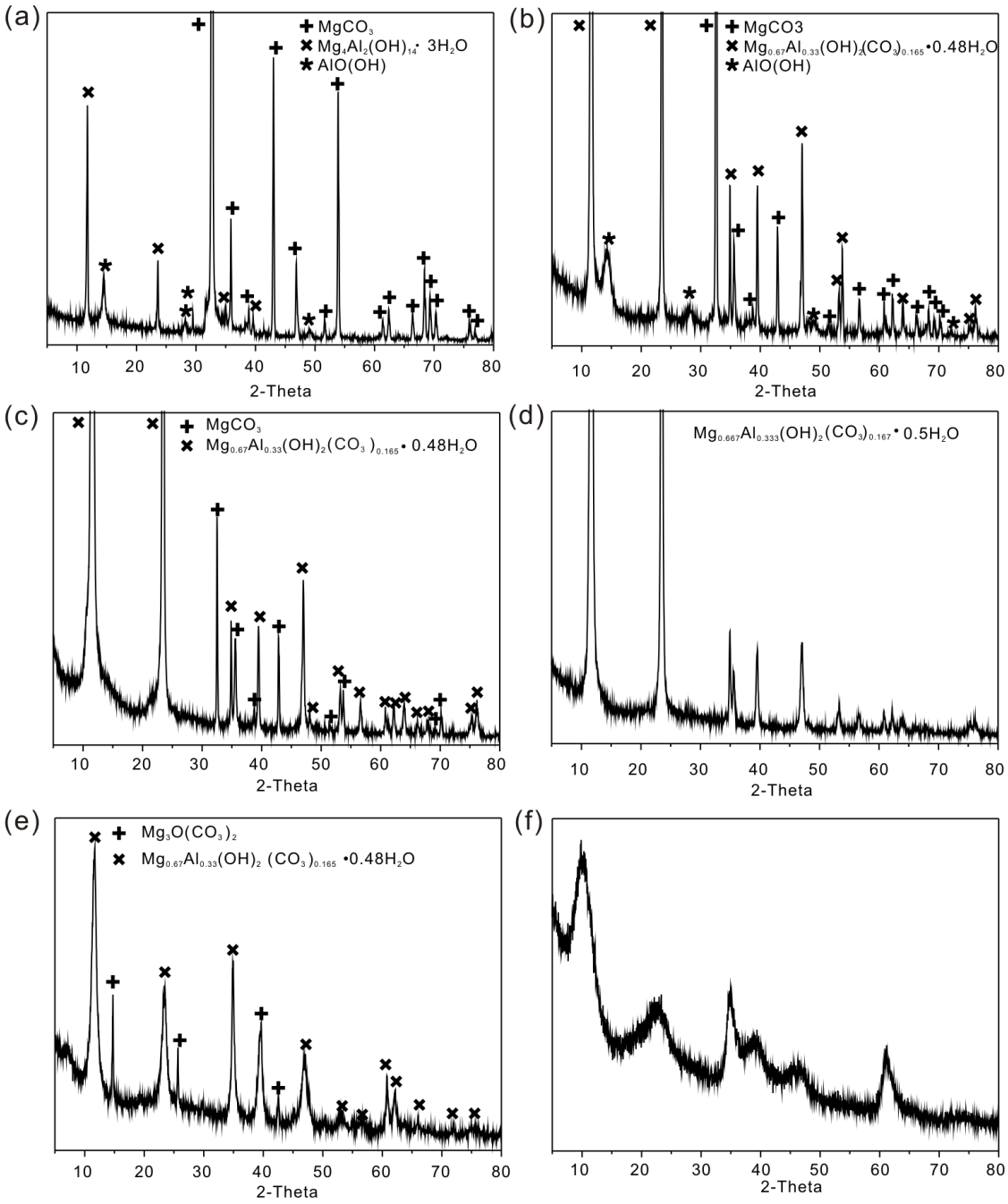

Figure S3. XRD patterns of Mg-Al-LDHs fabricated under different water/EG volume ratios: (a) pure water; (b) water/EG = 4:1; (c) water/EG = 1:1; (d) water/EG = 1:4; (e) water/EG = 1:9; (f) pure EG. Mg^{2+}:Al^{3+}:urea=2:1:9, T=160 ^{o}C and t=6 h.

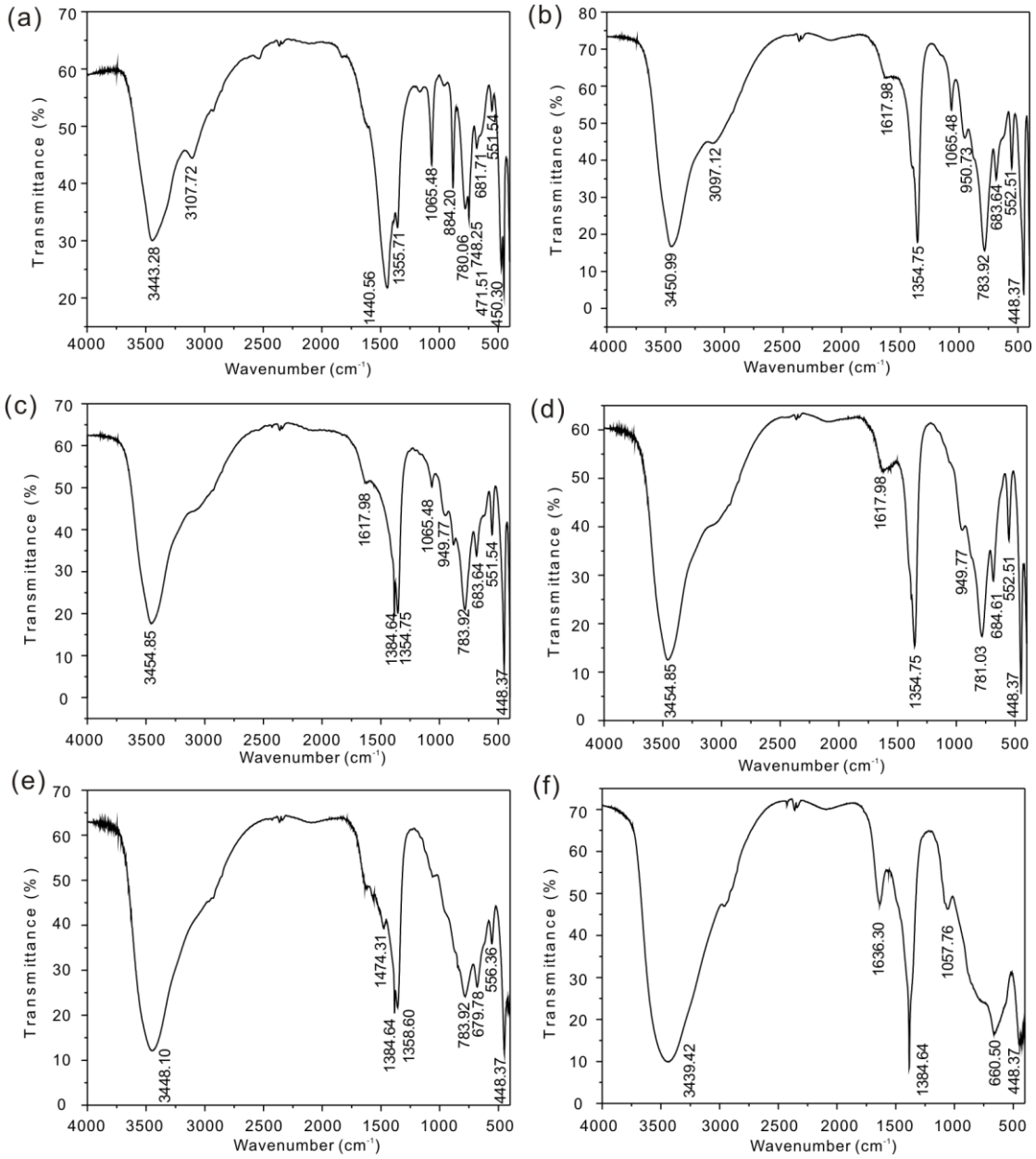

Figure S4. FTIR spectra of Mg-Al-LDHs fabricated under different water/EG volume ratios: (a) pure water; (b) water/EG = 4:1; (c) water/EG = 1:1; (d) water/EG = 1:4; (e) water/EG = 1:9; (f) pure EG. Mg^{2+}:Al^{3+}:urea=2:1:9, T=160 ^{o}C and t=6 h.

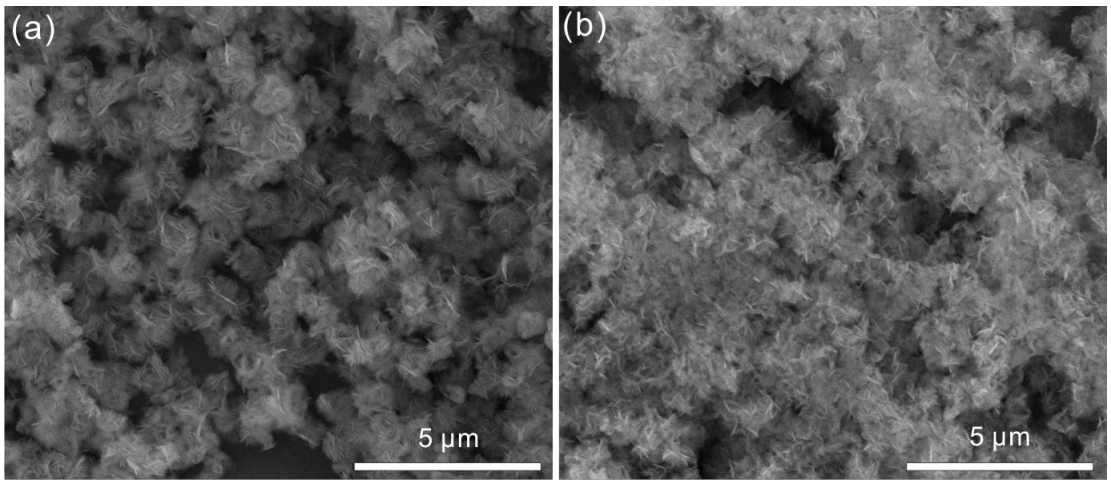

Figure S5. SEM images of the samples with different amounts of urea: (a) Mg/Al/urea=2:1:6; (b) Mg/Al/urea=2:1:18. Water/EG = 1:9, T=160 ^{o}C and t=6 h.

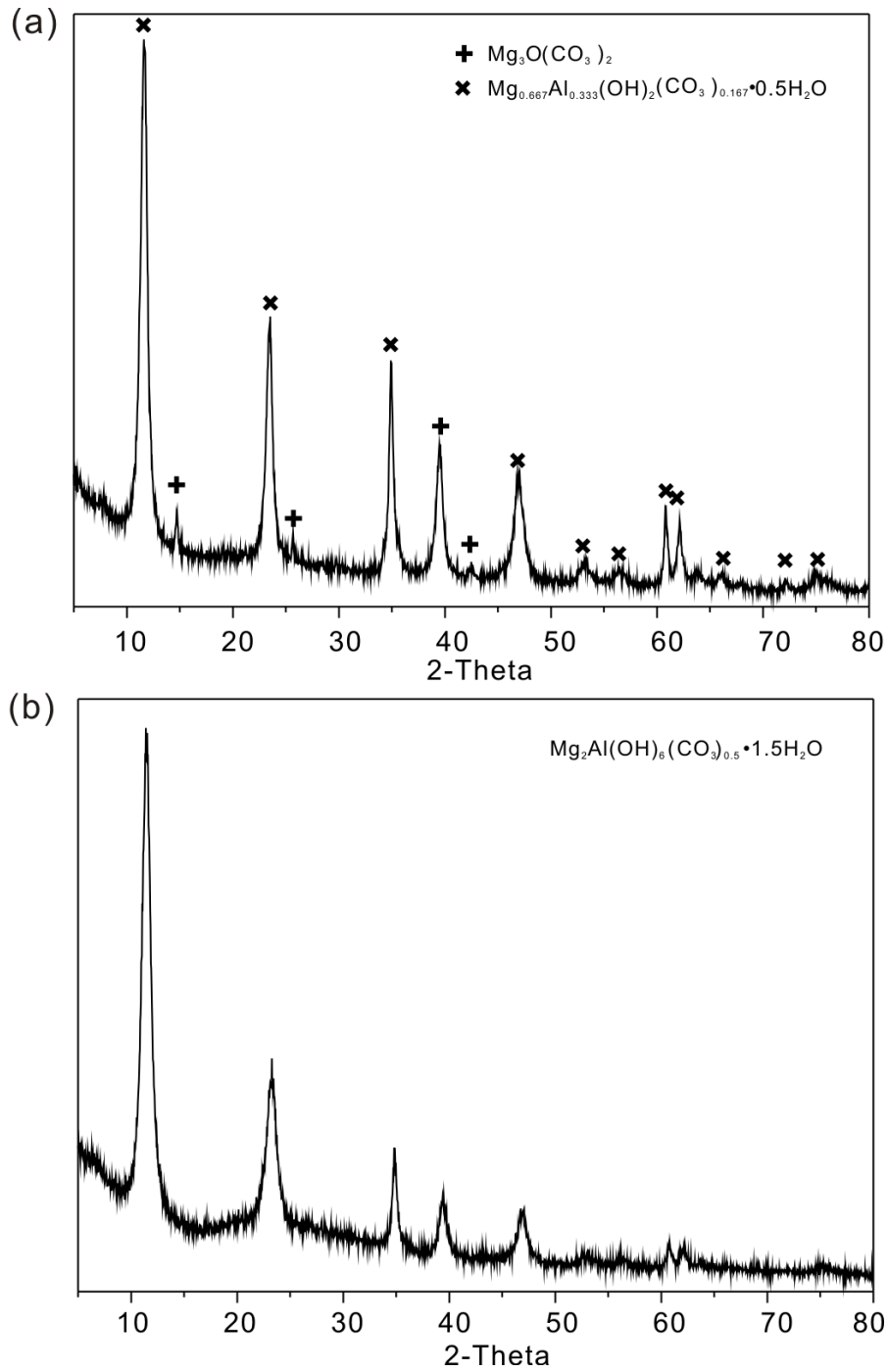

Figure S6. XRD patterns of the samples with different amounts of urea: (a) Mg/Al/urea=2:1:6; (b) Mg/Al/urea=2:1:18. Water/EG = 1:9, T=160 ^{o}C and t=6 h.

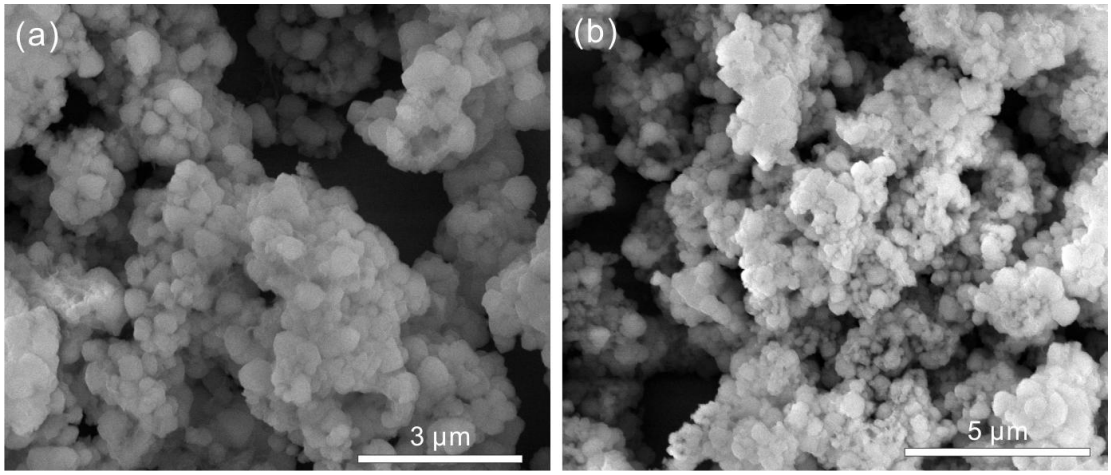

Figure S7. SEM images of the samples with different ratio of Mg to Al: (a) Mg/Al=3:1; (b) Mg/Al=4:1. Water/EG = 1:9, Al^{3+}:urea=1:15, T=160 ^{o}C and t=6 h.

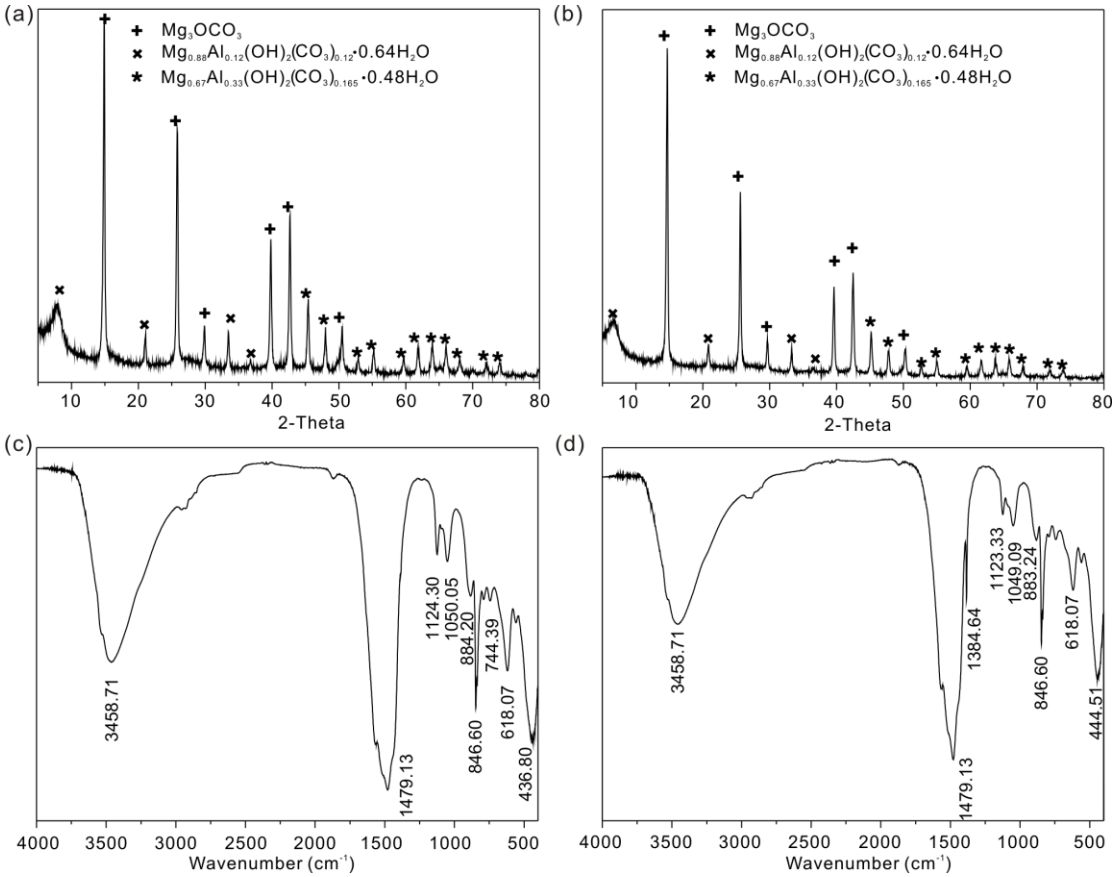

Figure S8. XRD patterns and FTIR spectra of the samples with different ratio of Mg to Al: Mg/Al=3:1 (a) and (c); Mg/Al=4:1 (b) and (d). Water/EG = 1:9, Al^{3+}:urea=1:15, T=160 ^{o}C and t=6 h.

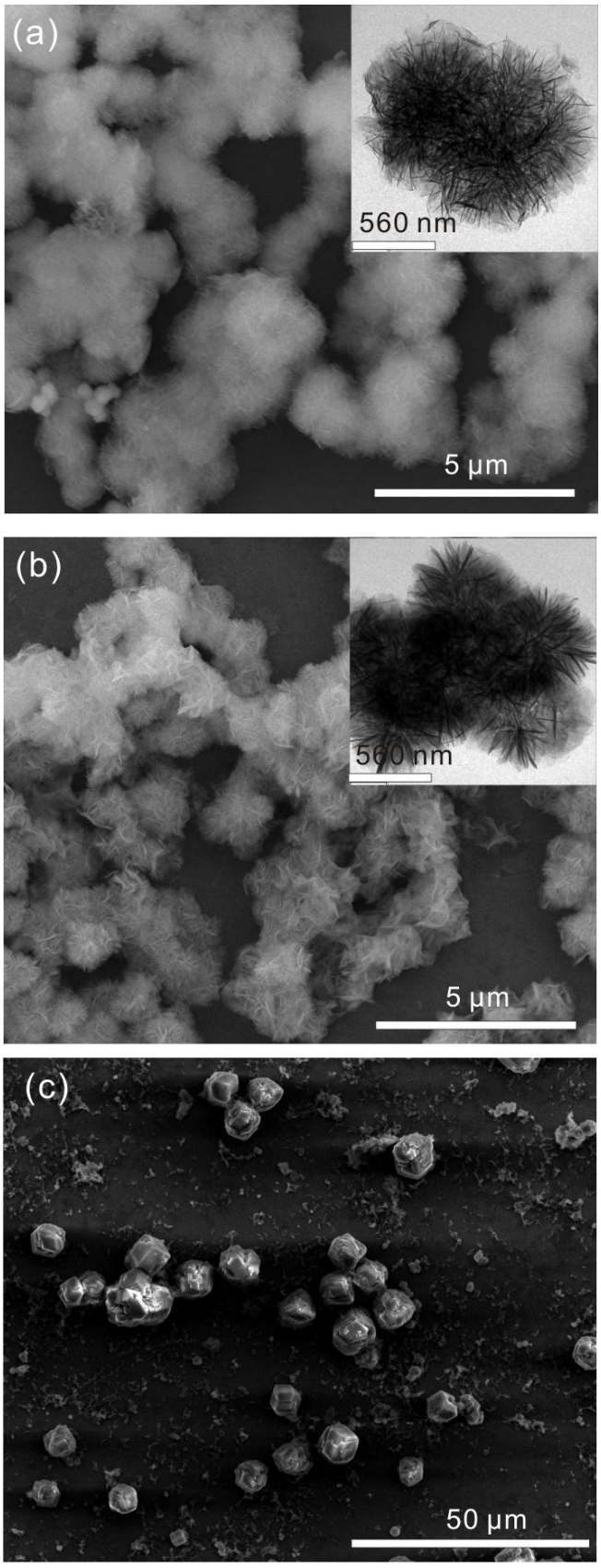

Figure S9. SEM images of the samples prepared at different temperature: (a) 140 ^{o}C; (b) 180 ^{o}C; (b) 200 ^{o}C. Water/EG = 1:9, Mg^{2+}:Al^{3+}:urea=2:1:15 and t=6 h.

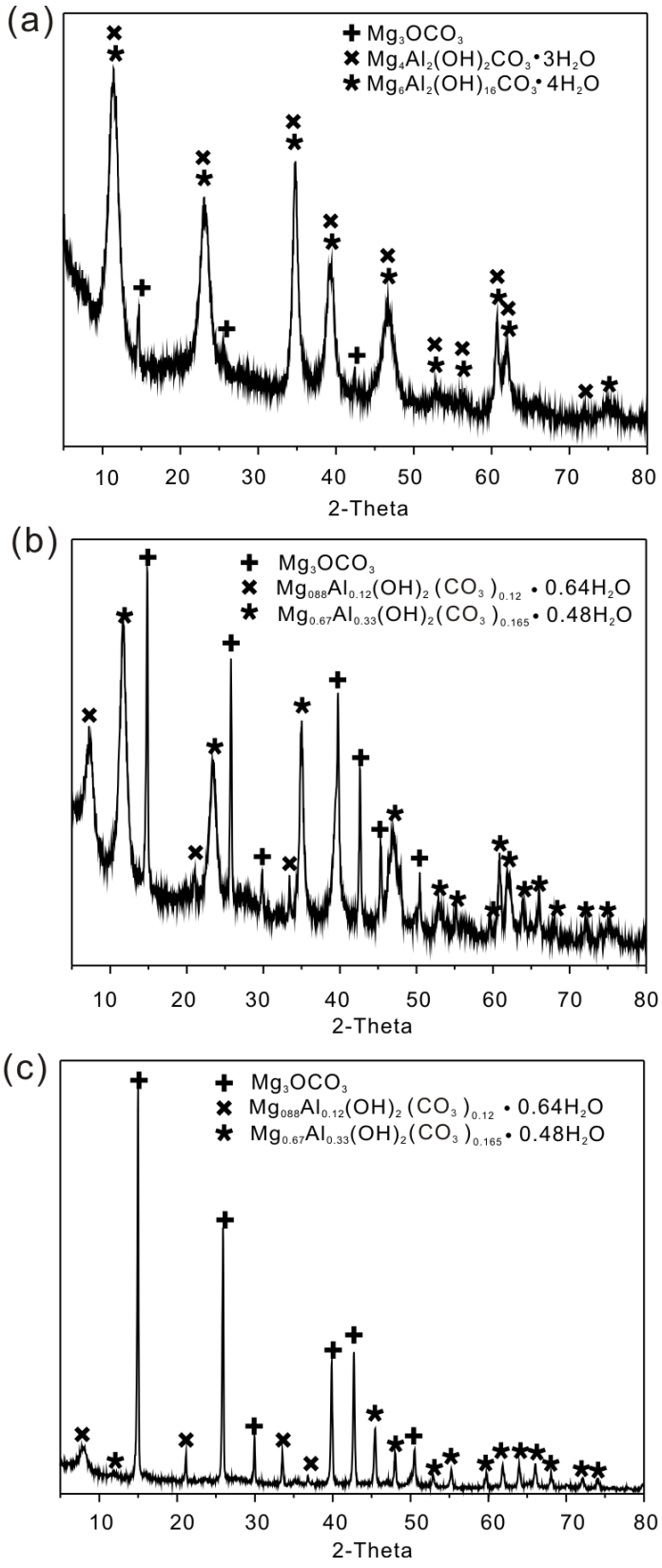

Figure S10. XRD patterns of the samples prepared at different temperature: (a) 140 ^{o}C; (b) 180 ^{o}C; (b) 200 ^{o}C. Water/EG = 1:9, Mg^{2+}:Al^{3+}:urea=2:1:15 and t=6 h.

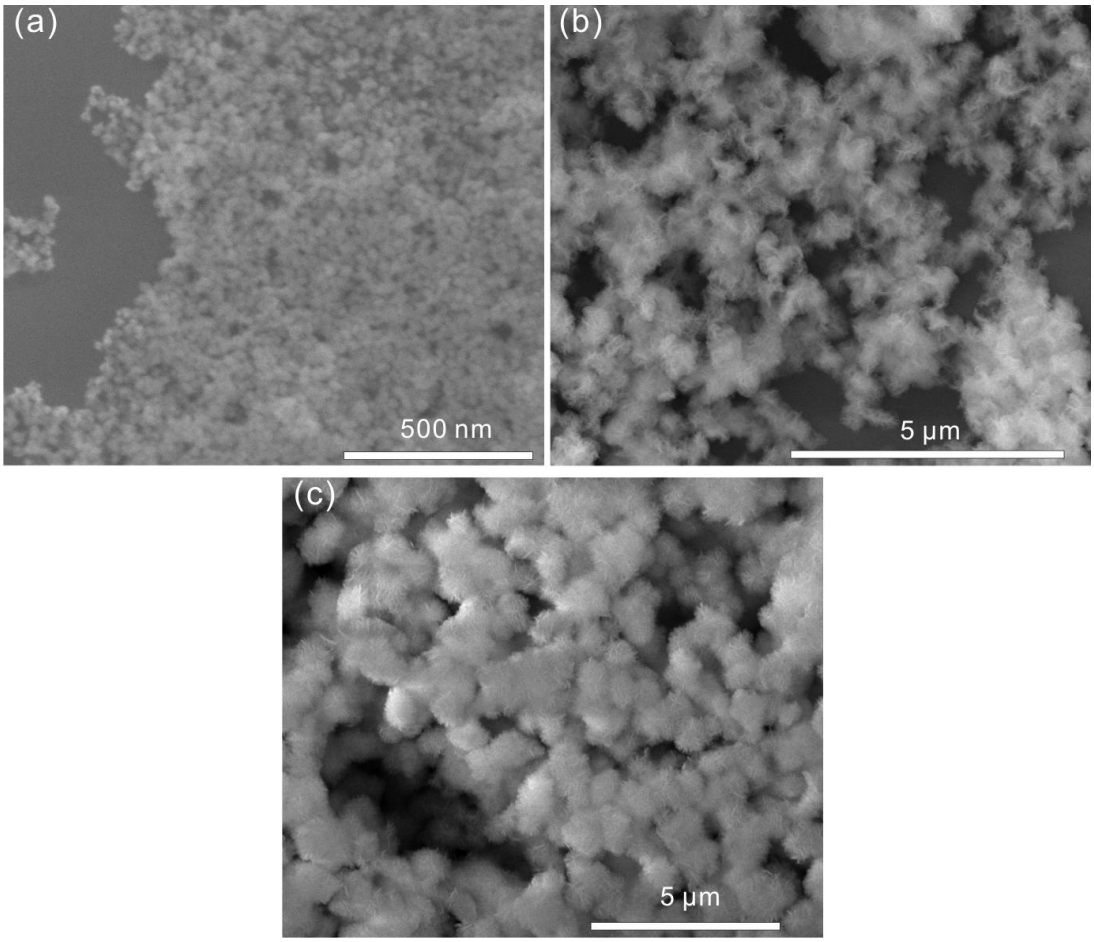

Figure S11. SEM images of the products obtained at different times: (a) 20 min (b) 40 min; (c) 2 h. Water/EG = 1:9, Mg^{2+}:Al^{3+}:urea=2:1:15 and T=160 ^{o}C.

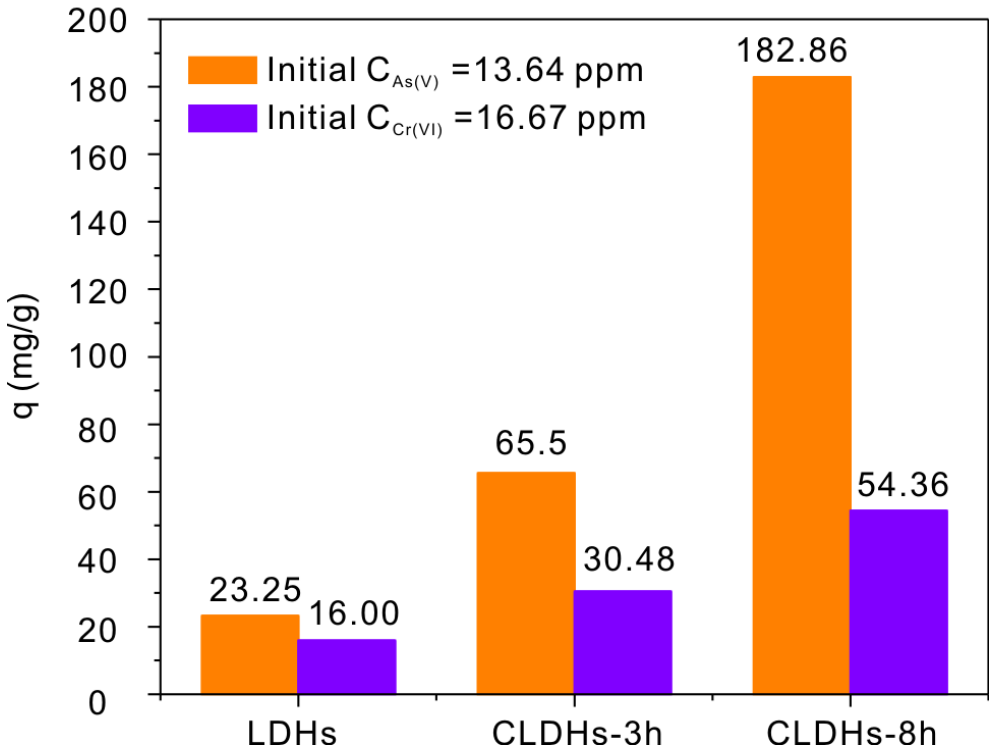

Figure S12. Comparisons of LDHs and CLDHs for removal of As(V) and Cr(VI) in water.

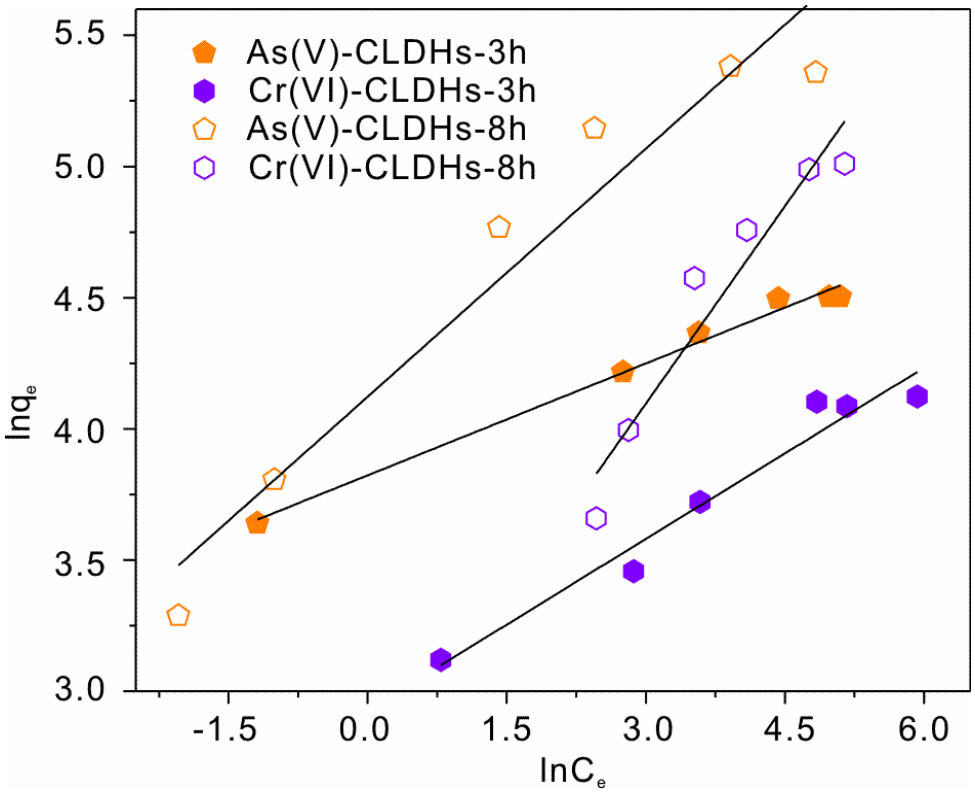

Figure S13. Linearized Freundlich isotherms of As(V) and Cr(VI) onto CLDHs.

Table S1. Equilibrium adsorption isotherm fitting parameters for As(V) and Cr(VI) onto CLDHs.

		As(V)		Cr(VI)	
		CLDHs-3h	CLDHs-8h	CLDHs-3h	CLDHs-8h
Langmuir	q_m (mg/g)	92.51	216.45	65.32	188.32
	K_L	0.27	0.54	0.07	0.03
	R^2	0.9988	0.9990	0.9931	0.9902
Freundlich	n	7.04	3.17	4.60	1.99
	K_F	45.73	61.71	18.68	13.34
	R^2	0.9869	0.9276	0.9496	0.9069

Table S2. Kinetics parameters of As(V) and Cr(VI) adsorption onto CLDHs-8 h.

	K_1 (g·(mg·min)$^{-1}$)	q_e (mg·g^{-1})	R^2
As(V)	0.83	10.09	1
Cr(VI)	0.02	9.51	0.9969