Electronic supplementary information

Sorption of Cr(VI) on Mg–Al–Fe Layered Double Hydroxides Synthesized by Mechanochemical Method

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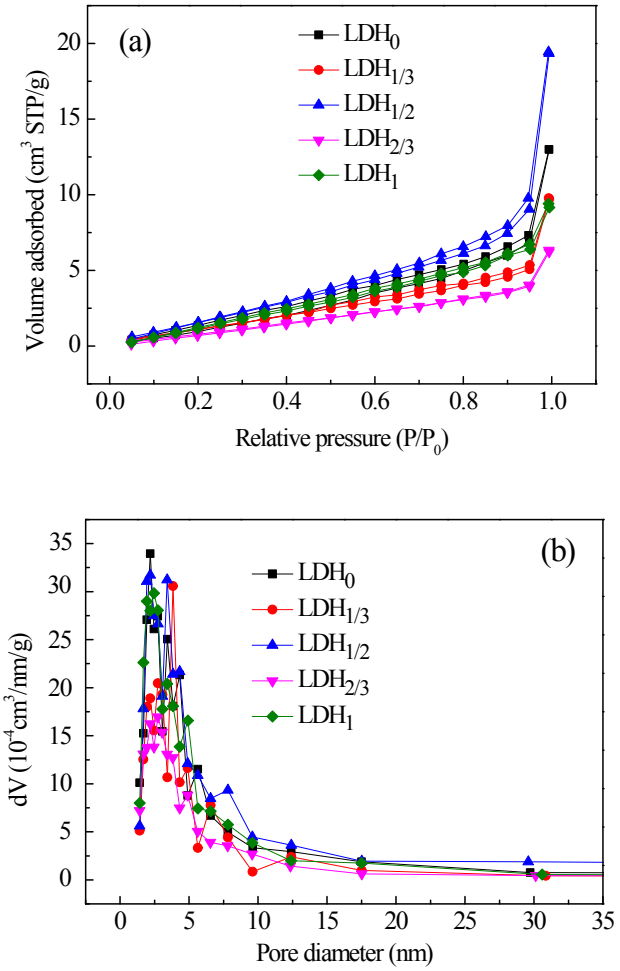

Fig. S1 (a) Nitrogen adsorption-desorption isotherms and (b) pore size distribution curves of Mg-Al-Fe LDHs samples.†

† The N_2 adsorption-desorption isotherms were performed using an Autosorb IQ-MP system (Quantachrome Instruments, USA), and the samples were degassed at 120 °C for 5 h under vacuum prior to measurements. The specific surface area (A_s) and pore volume of the samples were estimated from the isotherms by the Brunauer–Emmett–Teller (BET) and Barrett–Joyner–Halenda (BJH) methods, respectively.

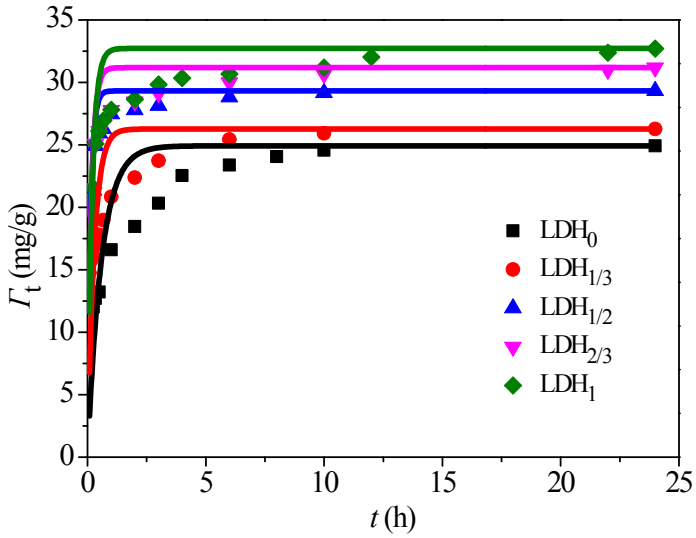

Fig. S2 Nonlinear correlation plots of pseudo first-order kinetics for Cr(VI) sorption onto Mg-Al-Fe LDHs.

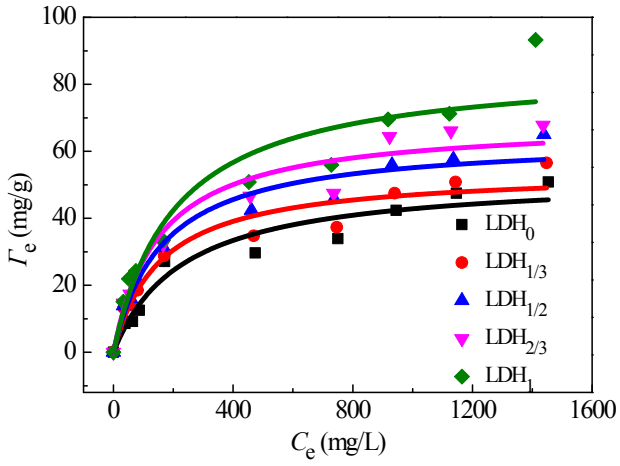

Fig. S3 Nonlinear correlation plots of Langmuir isotherm for Cr(VI) sorption onto Mg-Al-Fe LDHs

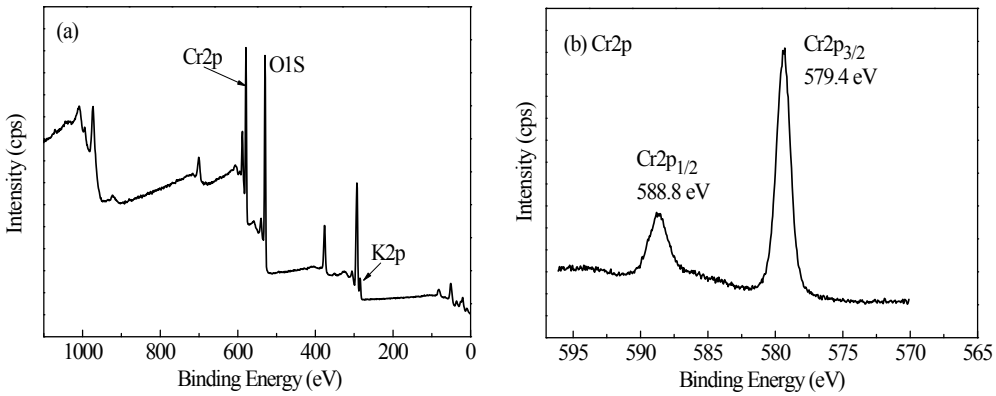

Fig. S4 (a) Survey XPS spectrum of $K_2Cr_2O_7$ and (b) HR-XPS spectrum of Cr2p in $K_2Cr_2O_7$.

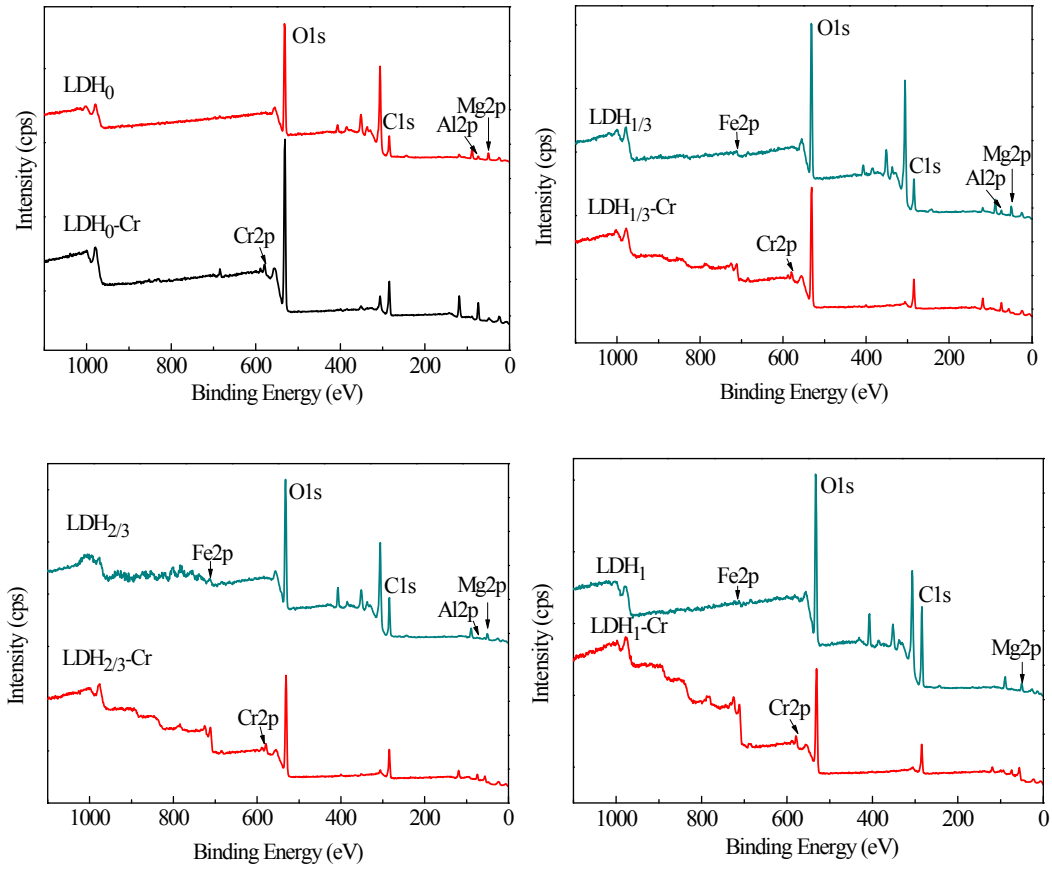

Fig. S5 XPS spectra of LDHs and LDHs-Cr.

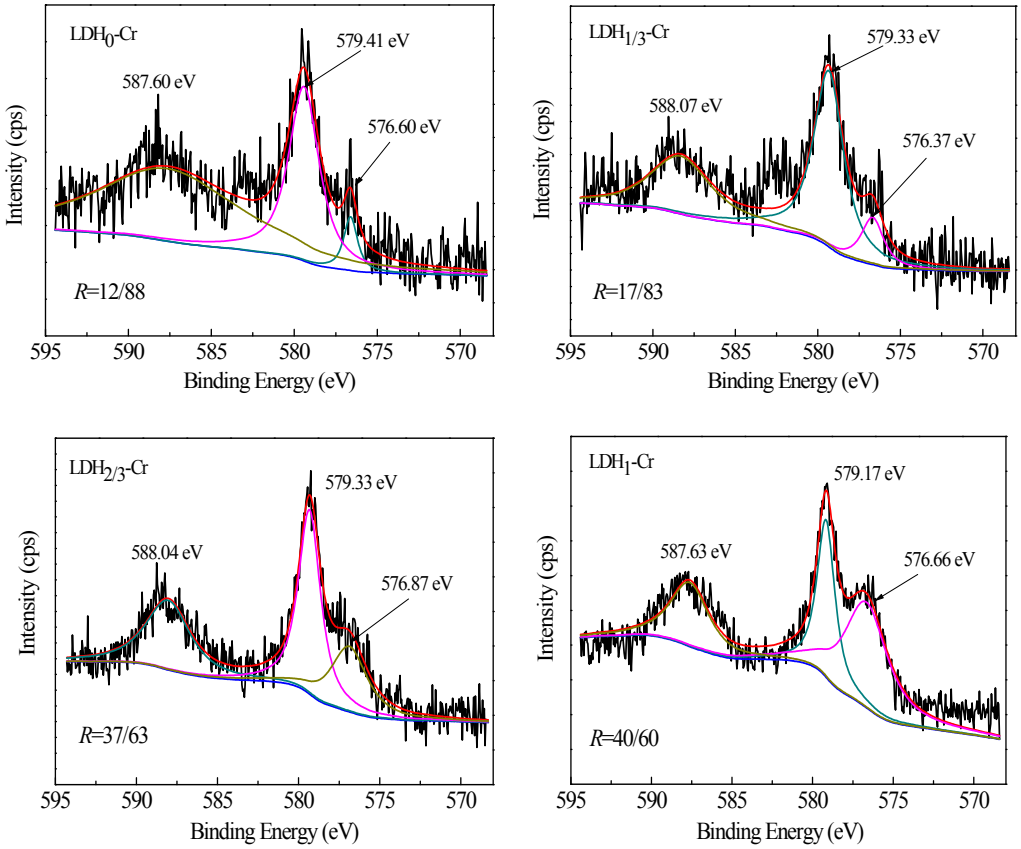

Fig. S6 HR-XPS spectra of Cr 2p for various LDHs-Cr samples. The *R* value in each figure is the area ratio of the peak about at E_B 576 eV to the peak about at E_B 579 eV.

Table S1 Amounts (in mol) of starting materials used in synthetic tests for Mg-Al-Fe LDHs.

Samples	$Mg(OH)_2$	$Al(OH)_3$	$Fe(NO_3)_3 \cdot 9H_2O$	$Mg(NO_3)_2 \cdot 6H_2O$
LDH_0	0.069	0.029	/	0.017
$LDH_{1/3}$	0.117	0.026	0.013	/
$LDH_{1/2}$	0.100	0.017	0.017	/
$LDH_{2/3}$	0.103	0.011	0.022	/
LDH_1	0.086	/	0.029	/