

**Cd(II) removal by Fe(II) surface chemical modification Layered double
hydroxides-Graphene oxide: Performance and mechanism**

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Preparation of GO: A suspension containing graphite powder (1.0 g), NaNO_3 (1.0 g) and concentrated H_2SO_4 (40 mL) was stirred in an ice bath for 2 h. Then, KMnO_4 (6 g) was slowly added and stirred for 30 min. This suspension was then transferred to a 35 °C water bath and stirred for a further 2 h. To it, double-distilled water (80 mL) was added and stirred for 30 min at 98 °C. H_2O_2 (20 mL) was added slowly and the mixture stirred for 1 h. Another 150 mL of double distilled water was then added to the mixture, with constant stirring for 1 h at 25 °C. The precipitate was filter and rinsed many times with double-distilled water. The precipitate was then dried in a vacuum oven at 65 °C for 48 h to obtain GO.

Spectrophotometric method for Cd(II) measurement: Transfer a certain amount of Cd(II)-containing solution to a 25 mL volumetric flask, add 5 mL buffer solution with a pH of 9.0, 5 mL 10% (V/V) OP, 1 mL 1.0 g/L PAN ethanol solution, mix and bring to volume by distilled water. The absorption of the complex compound of cadmium is measured at 555 nm after standing for 1 h.

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Fig.S3. The SEM of (a) H-LDH-GO and (b) LDH-GO@Fe(II)₁₀; and EDS of (c) H-LDH-GO and (d) LDH-GO@Fe(II)₁₀ after adsorption of Cd(II).

Fig.S4 (a) Cd 3d and (b) Fe 2p XPS spectra of the samples after removal of Cd(II).

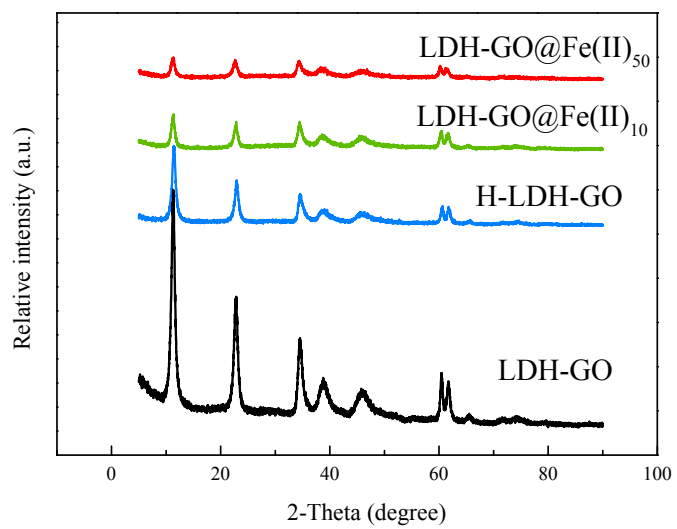


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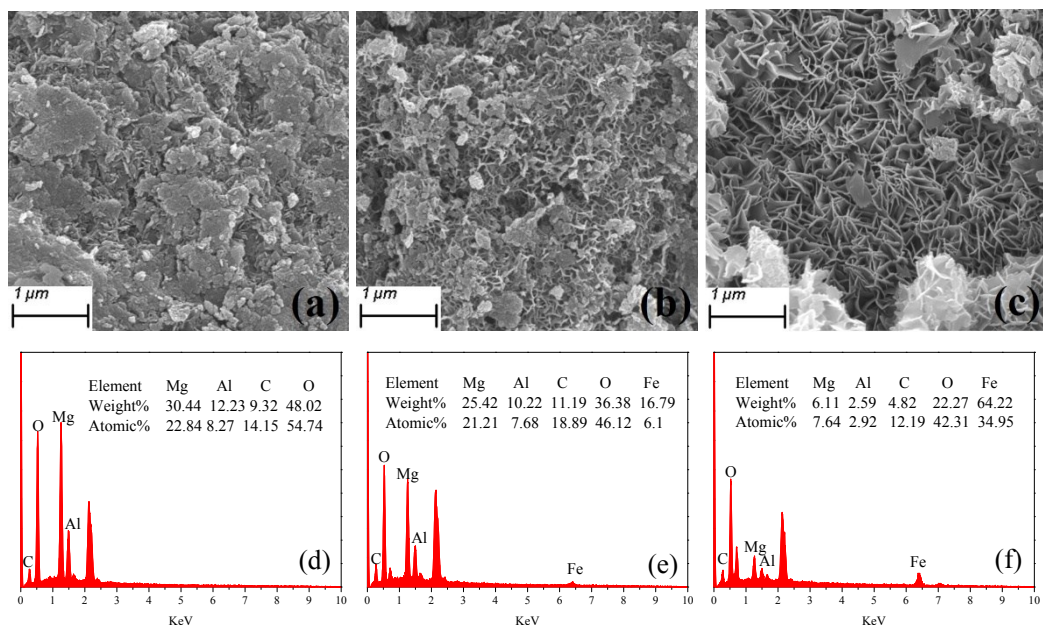


Fig.S2 The SEM of (a) H-LDH-GO; (b) LDH-GO@Fe(II)₁₀; (c) LDH-GO@Fe(II)₅₀ and EDS of (d) H-LDH-GO; (e) LDH-GO@Fe(II)₁₀; (f) LDH-GO@Fe(II)₅₀.

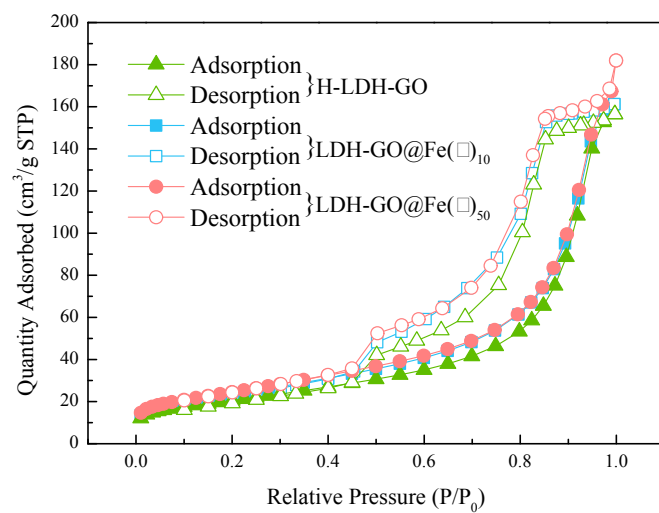


Fig.S3 Isotherm curve of N₂ adsorption–desorption

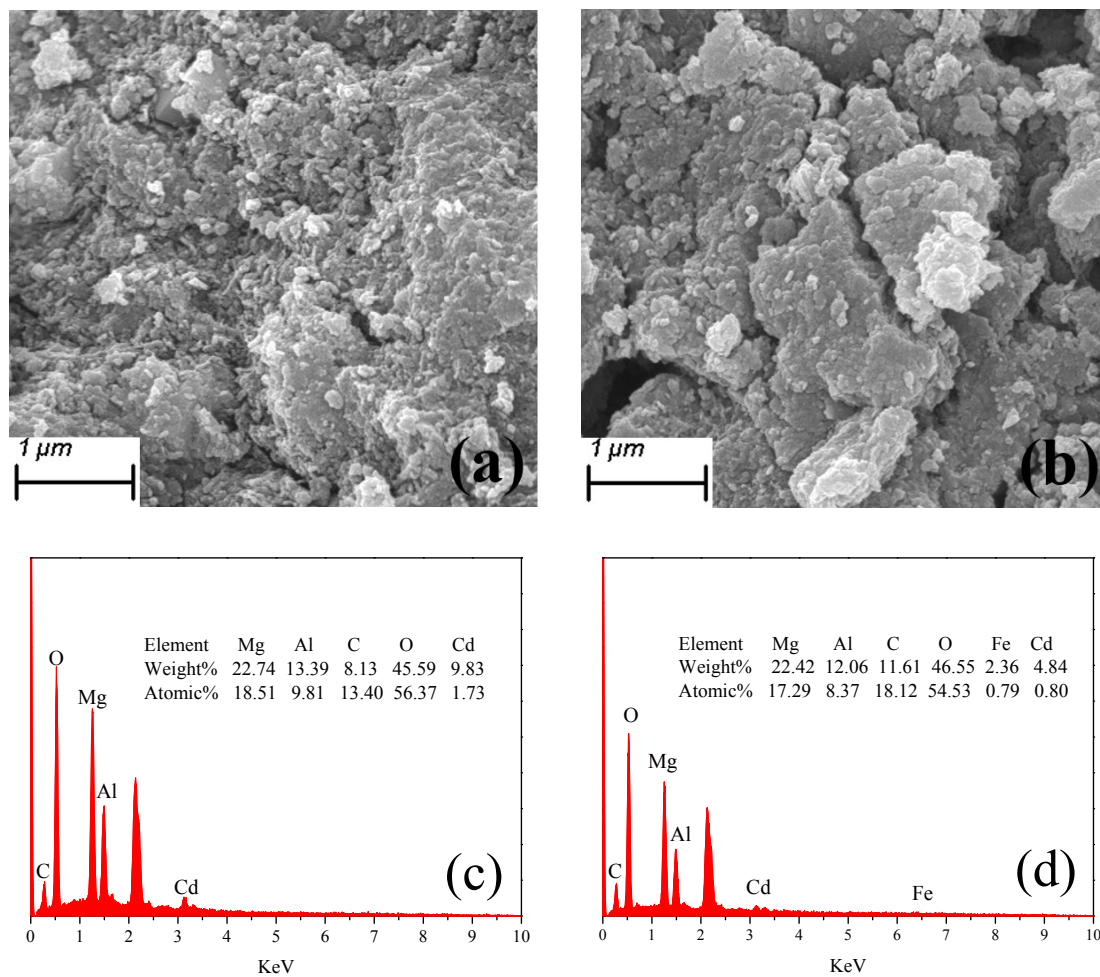


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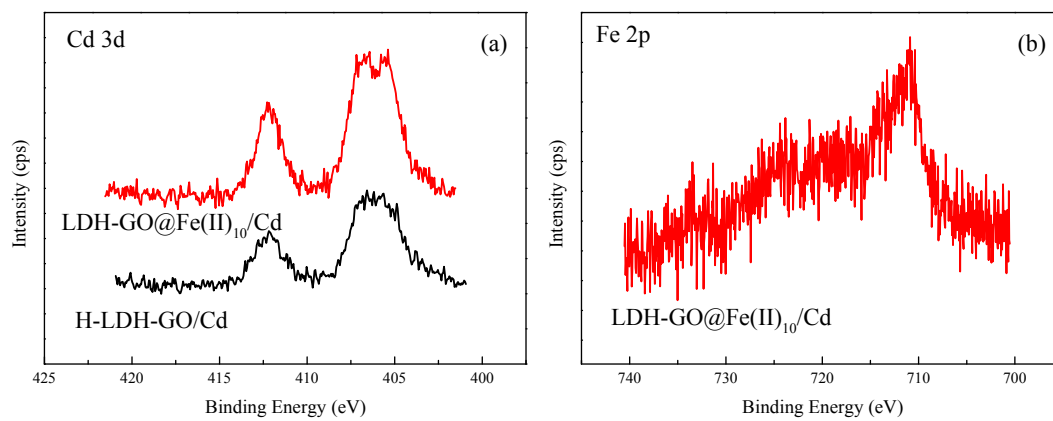


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