The use of high-pressure CO_2 for concentrating Cr^{VI} from electroplating wastewater by Mg-Al layered double hydroxide

*Xiangying Lv,[†] Zhi Chen,[†] Yongjing Wang,[†] Feng Huang[‡] and Zhang Lin[†,]**

[†]State Key Laboratory of Structural Chemistry, Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences, Fuzhou, Fujian 350002, China

[‡]Key Laboratory of Optoelectronic Materials Chemistry and Physics, Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences, Fuzhou, Fujian 350002, China

CORRESPONDING AUTHOR E-mail: zlin@fjirsm.ac.cn; Tel&Fax: (+086)591-83705474

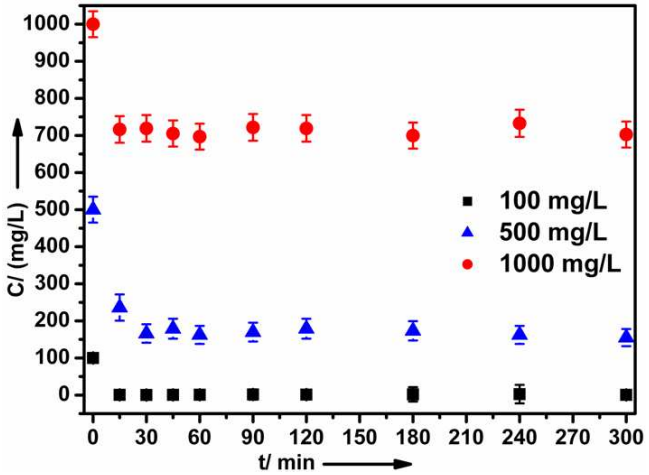

Figure S1. Adsorption behaviors of Cr^{VI} with different initial concentrations (100, 500 and 1000 mg/L). Experimental conditions: LDH =4.0 g/L, pH: 4, time: 300 min.

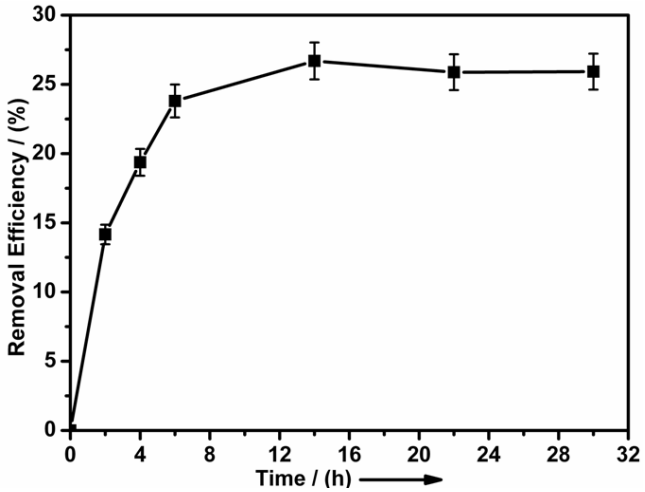

Figure S2. The effect of reaction time on the desorption efficiency.

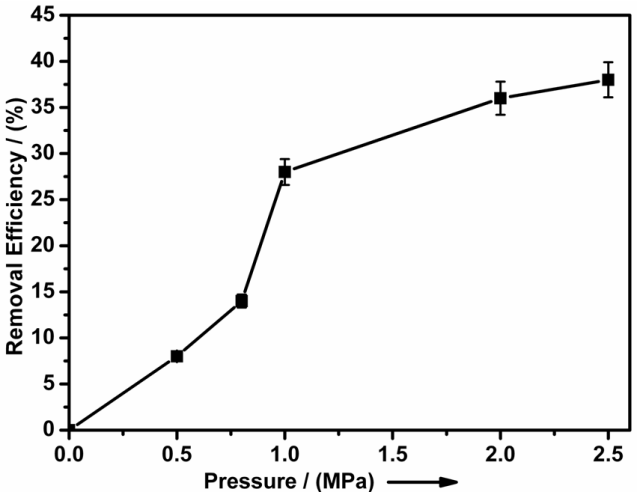

Figure S3. The effect of reaction CO_2 pressure on the desorption efficiency.

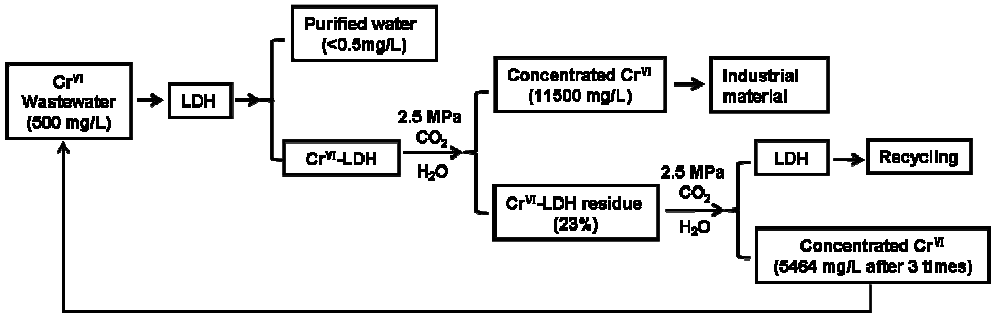

Figure S4. Summary of the Cr^{VI} disposal system by LDH with high-pressure CO_2

Table S1. Cr^{VI} Desorption efficiency and the enrichment multiples after one desorption with high-pressure CO_2.

batch no.	1	2
LDH dosage (g/L)	10	10
initial Cr^{VI} concentration (mg/L)	500	500
LDH adsorption quantity (mg/g)	73	12
desorption ratio (%)	77	60
enriched multiples	22.4	15

Table S2. Cr^{VI} desorption efficiency and the enrichment multiples after desorbing the Cr^{VI}-LDH by CO_2 during the treatment of electroplating wastewater.

batch no.	1	2	3
LDH dosage (g/L)	16	16	16
initial Cr^{VI} concentration (mg/L)	1031	1031	1031
desorption ratio (%) after one cycle	79	77	75
adsorption quantity (mg/g) after four cycles	64.4	63.8	64.6
enriched multiples	9.9	9.6	9.4