Supporting Materials

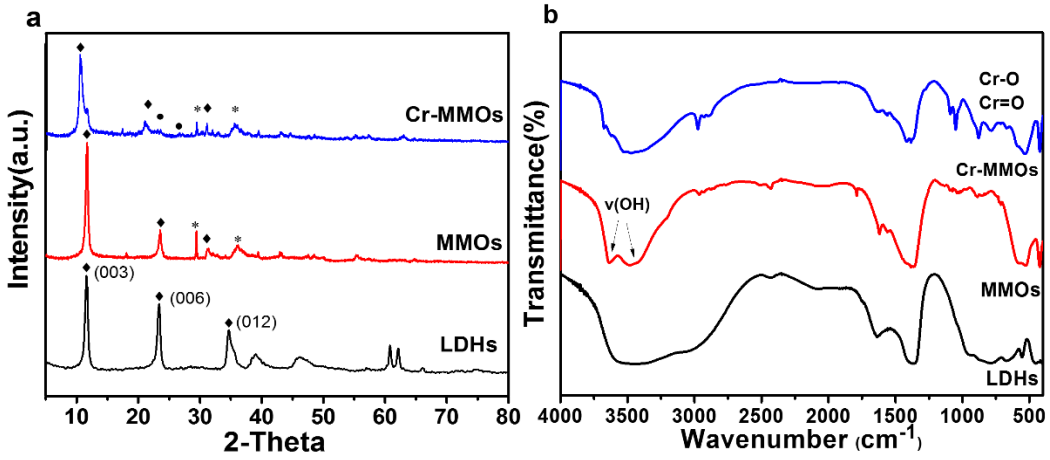

Fig. S1 XRD patterns (a) and FT-IR spectra (b) of precursor LDHs, MMOs and MMOs reacting with Cr (VI). (◆ represents crystal planes of LDHs; ● represents Potassium Chromium Oxide; * represents magnetic Fe_3O_4)

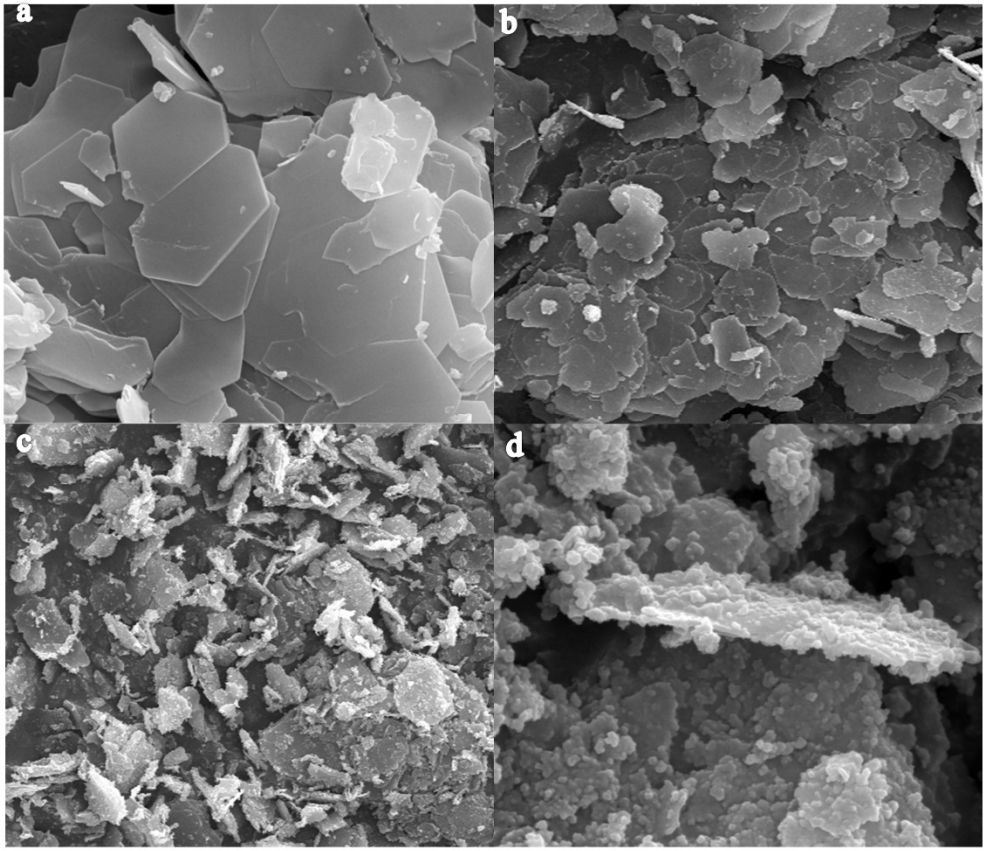

Fig. S2 SEM of precursor LDHs (a), MMOs (b) and reacting with Cr (VI) (c and d)

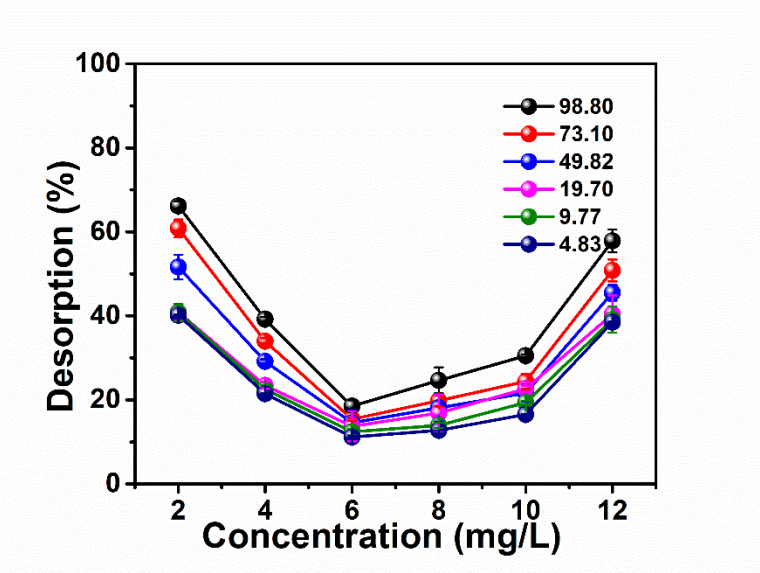

Fig. S3 Desorption of Cr(VI) on MMOs with different Cr(VI) dosage (dose: 0.05 g, react time: 120 min, pH: 2–12, temperature: 25℃)

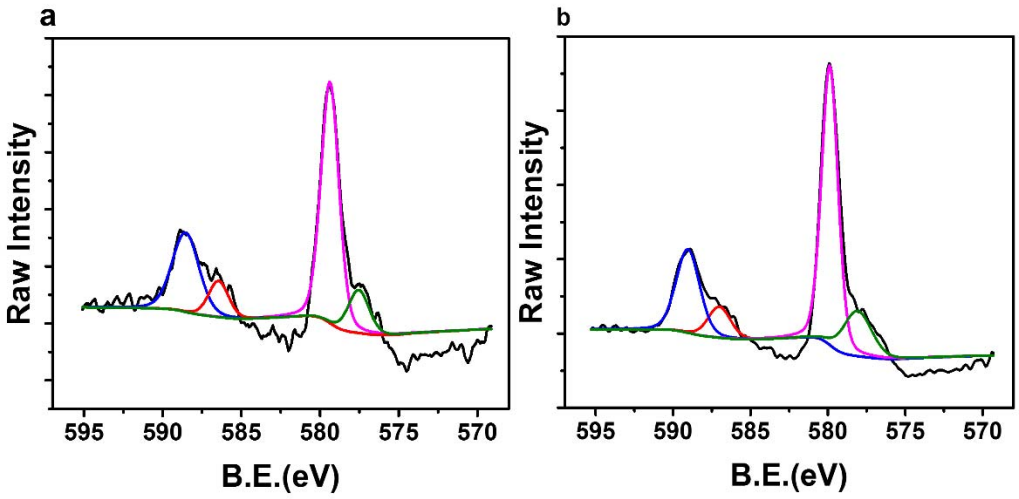

Fig. S4 Cr 2p high resolution XPS spectra of Cr-MMOs before (a) and after (b) inhibition with *E. coli*$_{NDM-1}$

Table S1 Pseudo-first and pseudo-second-order constants and values of R^2 for Cr(VI) adsorption (adsorbent dose: 0.05 g, react time: 0–120 min, pH: 2–12, temperature: 25℃, initial concentrations: 50 mg/L)

pH	Pseudo-first-order			Pseudo-second-order			
	q_e (cal) (mg/g)	k_1 (min^{-1})	R^2	q_e (cal) (mg/g)	K_2 (g/(mg·min))	V_0 (mg/(g·min))	R^2
2	94.916	0.052	0.909	87.642	0.004	30.724	0.997
3	95.912	0.042	0.873	92.251	0.007	59.572	0.995
4	96.934	0.031	0.701	88.496	0.008	62.652	0.998
5	97.754	0.023	0.279	86.430	0.011	82.172	0.999
6	94.902	0.052	0.628	89.366	0.023	183.684	0.991
7	96.471	0.036	0.706	89.847	0.012	96.870	0.998
8	96.223	0.039	0.899	90.253	0.012	97.747	0.999
9	96.019	0.041	0.824	88.652	0.010	78.592	0.999
10	98.244	0.018	0.428	93.985	0.136	1201.313	0.997
11	95.594	0.045	0.833	87.951	0.011	85.089	0.999
12	96.500	0.036	0.865	89.928	0.012	97.045	0.999

Table S2 Desorption performance and Zeta potential of Cr (VI)-MMOs pretreated with different Cr (VI) loading dosage (adsorbent dose: 0.05 g, react time: 120 min, pH: 6, temperature: 25℃)

Cr (VI) loading dosage (mg/g)	**Zeta potential (mV)**
0	23.07
4.83	12.26
9.77	5.32
19.70	1.139
49.82	−3.36
73.10	−7.87
98.80	−15.29