Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Supporting Information

Bifunctional NH_2-MIL-88(Fe) metal–organic framework nanooctahedra for highly sensitive detection and efficient removal of arsenate in aqueous media

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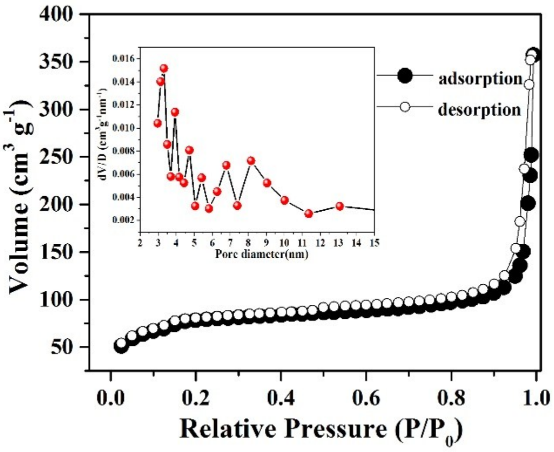

Fig. S1 N_2 adsorption/desorption isotherms and the corresponding pore-size distribution of NH_2-MIL-88(Fe).

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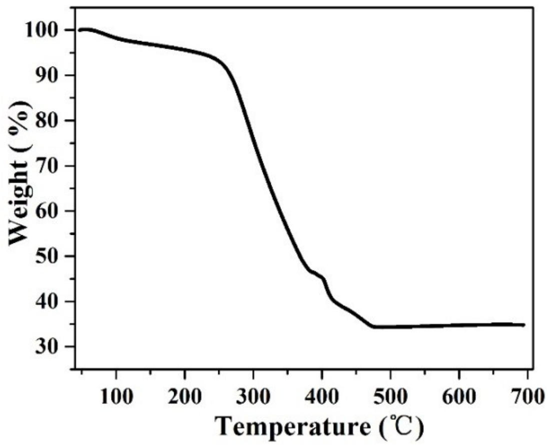

Fig. S2 TGA curve of the as-synthesized NH_2-MIL-88(Fe) nanooctahedra under air atmosphere.

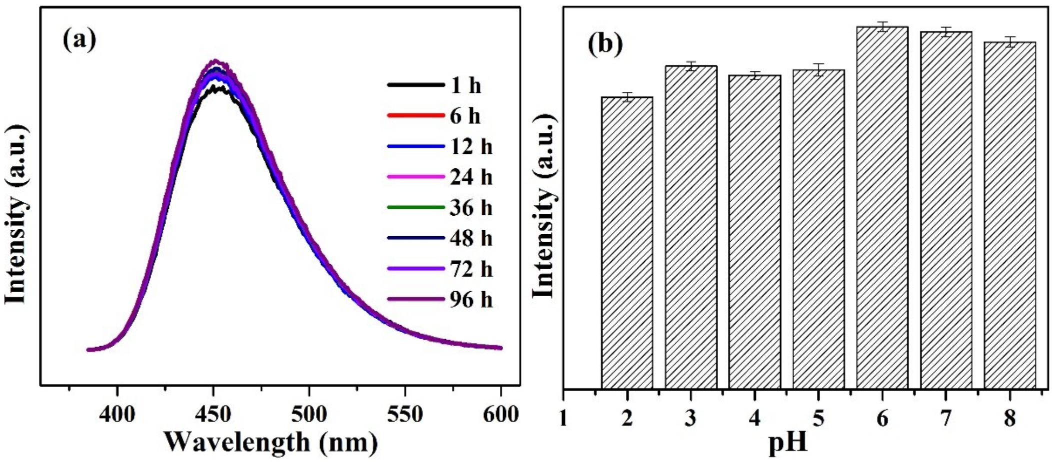

Fig. S3 (a) Evolution of fluorescent intensity of NH_2-MIL-88(Fe) suspension (50 mg/L) with various duration time under excitation at 350 nm. (b) Effect of solution pH on the fluorescence intensity of NH_2-MIL-88(Fe) suspension (50 mg/L).

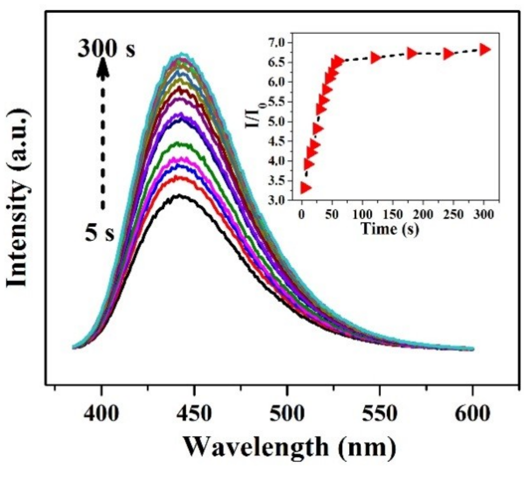

Fig. S4 Time-dependent fluorescence intensity of NH_2-MIL-88(Fe) suspension (50 mg/L) upon the addition of As(V) (6.6 μm) under excitation at 350 nm.

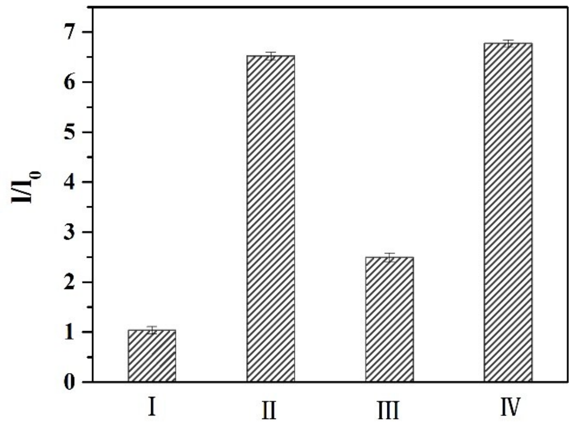

Fig. S5 The fluorescence response of NH_2-MIL-88(Fe) suspension (50 mg/L) in the presence of different anions : Ⅰ. Blank; Ⅱ. As(V); Ⅲ. Ac^-, Cl^-, SO_4^{2-}, NO_3^-, CO_3^{2-} and PO_4^{3-}; Ⅳ. Ac^-, Cl^-, SO_4^{2-}, NO_3^-, CO_3^{2-}, PO_4^{3-} and As(V). (As(V): 6.6 μM; other interfering ions: 33 μM).

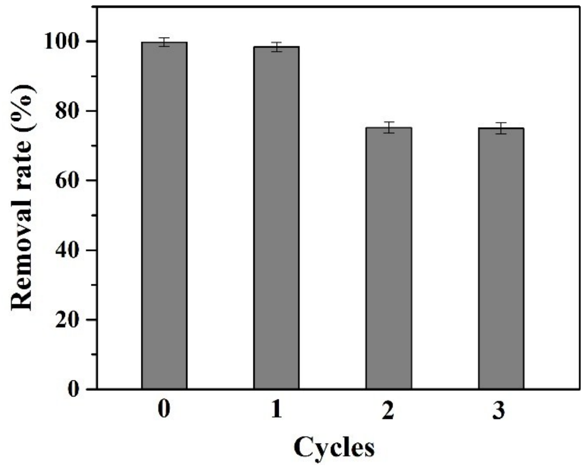

Fig. S6 Removal rate of arsenate on NH_2-MIL-88(Fe) under different regeneration cycles. (Initial As(V) concentration: 5 ppm; adsorbent dose: 0.2 $g \cdot L^{-1}$).

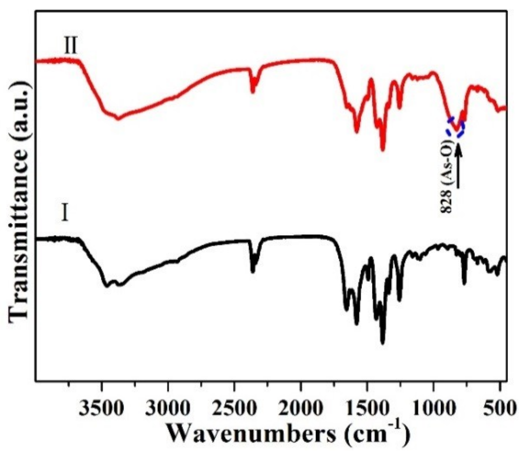

Fig. S7 FT-IR spectra of NH_2-MIL-88(Fe) before (Curve I) and after (Curve II) arsenate sensing.

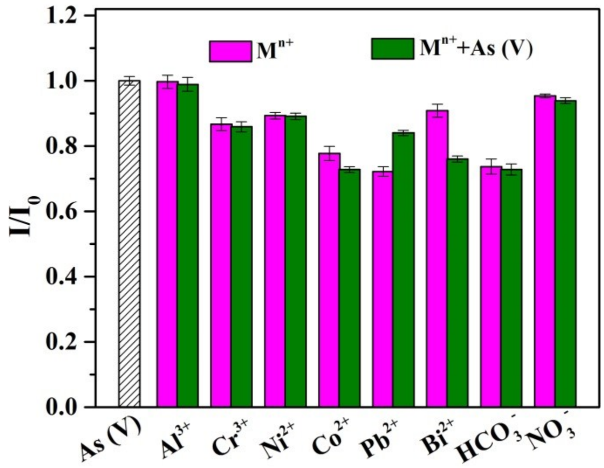

Fig. S8 Fluorescence response of NH_2-BDC towards various ions.

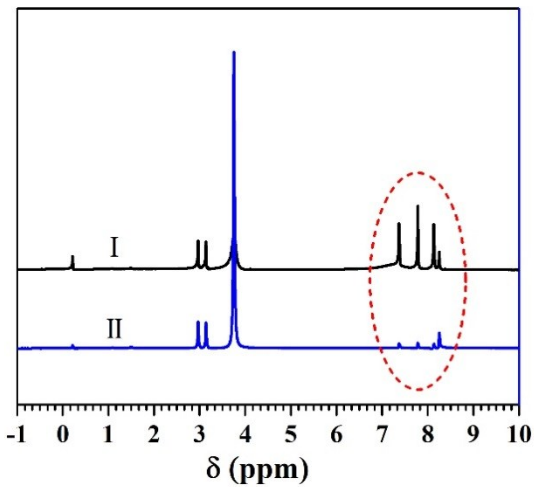

Fig. S9 [1]H-NMR of NH_2-H_2BDC (Curve I) and the extractant of NH_2-MIL-88(Fe) suspension after arsenate sensing (Curve II).

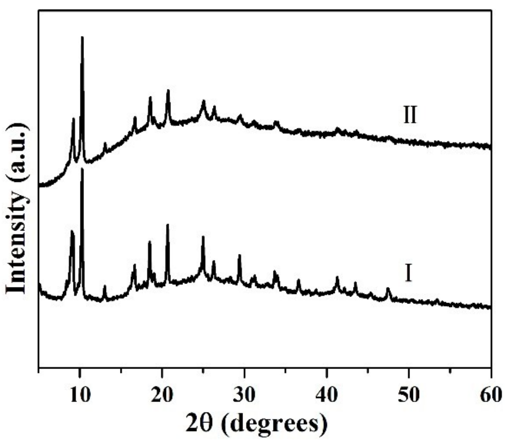

Fig. S10 XRD patterns of NH_2-MIL-88(Fe) before (Curve I) and after (Curve II) arsenate sensing.

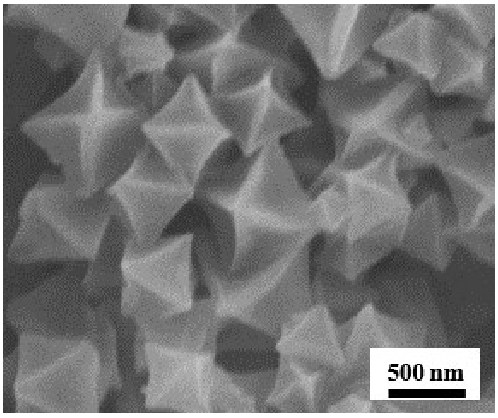

Fig. S11 SEM images of NH_2-MIL-88(Fe) after arsenate sensing.