Electronic Supplementary Information (ESI) for

Promoting desulfurization capacity and separation efficiency simultaneously by the novel magnetic Fe_3O_4@PAA@MOF-199

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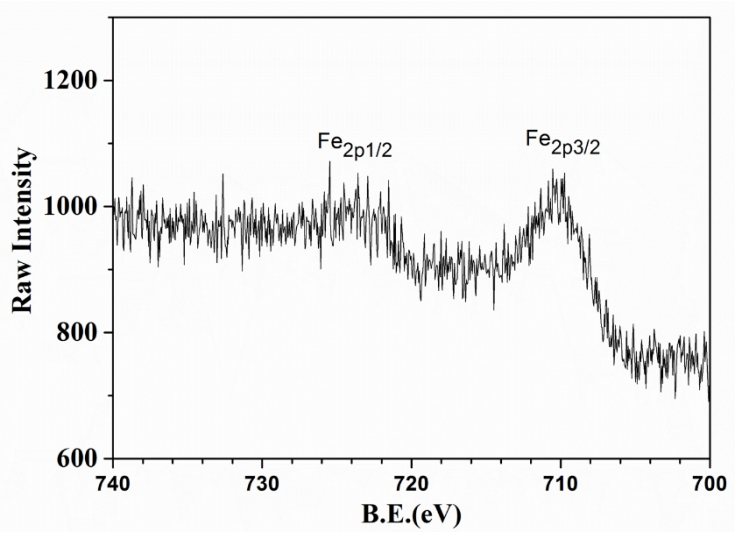

Figure S1. XPS spectrum of Fe_3O_4@PAA

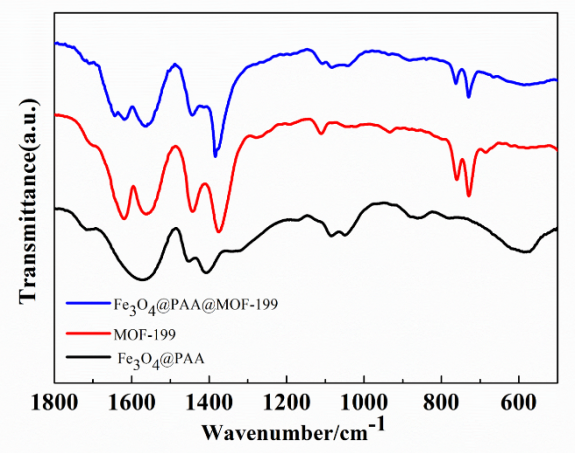

Figure S2. The FTIR spectrum of Fe_3O_4@PAA (black), MOF-199 (red) and Fe_3O_4@PAA@MOF-199 (blue)

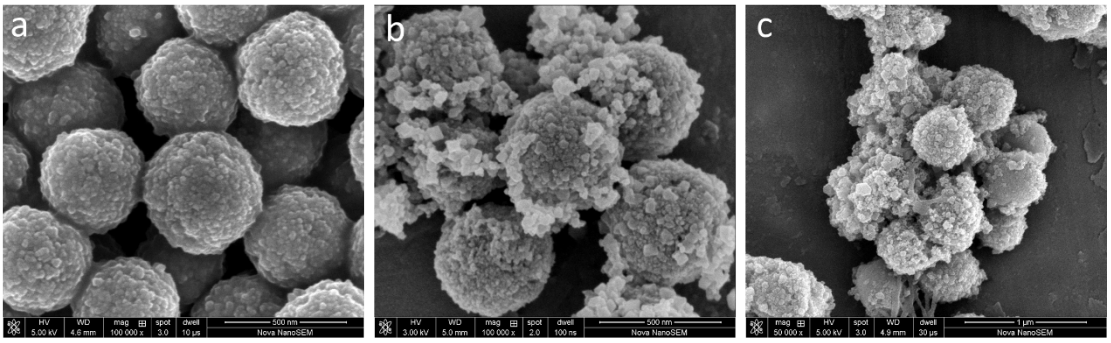

Figure S3. SEM images of Fe_3O_4@PAA@MOF-199 through 'Layer by Layer' (LBL) method (alternately stirring in the solutions of copper acetate and 1,3,5-benzenetricarboxylic acid, respectively, and rising with ethanol in the interval). (a) pristine Fe_3O_4@PAA, (b) 5 cycles through LBL method and (c) 10 cycles through LBL method

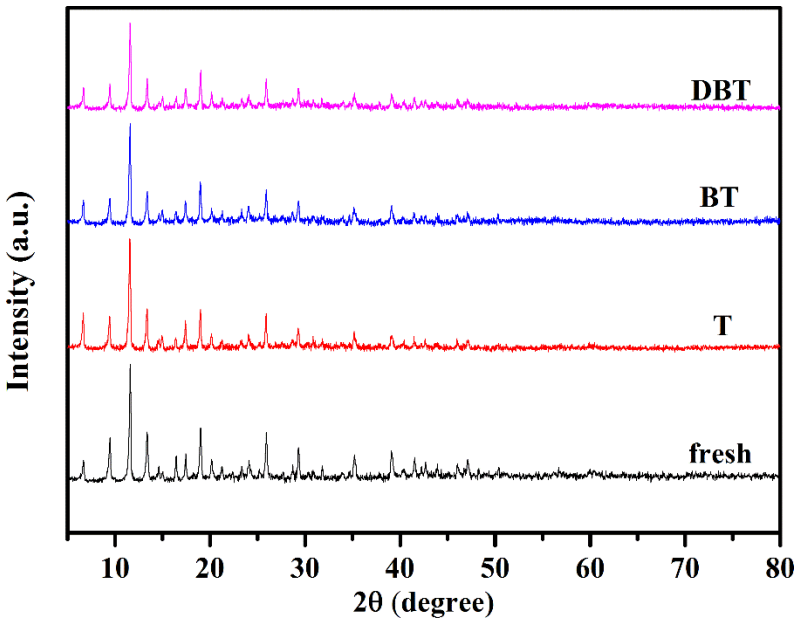

Figure S4. X-ray diffraction pattern of fresh Fe_3O_4@PAA@MOF-199 (H) before desulfurization (fresh) and regenerated Fe_3O_4@PAA@MOF-199 (H) after adsorption for 6 h in model oil containing 500 mg/L thiophene, BT and DBT, respectively

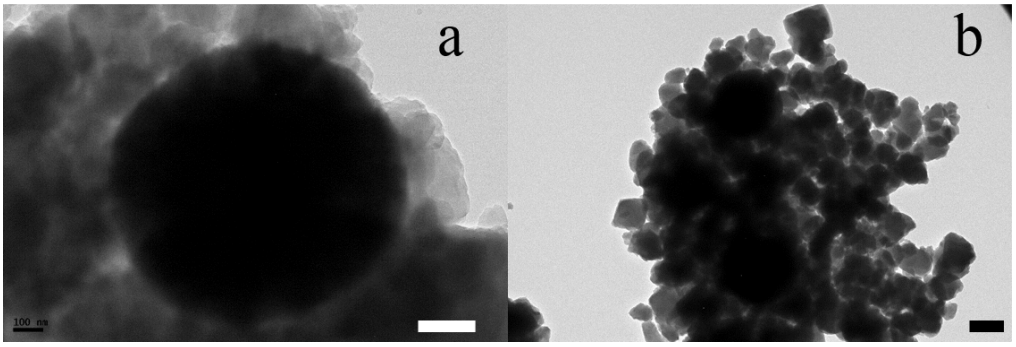

Figure S5. TEM images of Fe_3O_4@PAA@MOF-199 after the desulfurization of DBT, scale bar: 200 nm

Table S1. Copper (II) content in Fe_3O_4 and Fe_3O_4@PAA (the samples were stirred in 30 g/L ethanol solution of copper nitrate overnight and then washed with ethanol for 3 times before drying and digestion with HCl and HNO_3)

Samples	Mass (g)	Total volume of HCl and HNO_3 (mL)	ICP-AES (mg/L)	Copper (II) content (mg/g)
Fe_3O_4	0.04	20	0.43	0.22
Fe_3O_4@PAA	0.03	20	120	80

Table S2. Textural parameters of Fe_3O_4@PAA@MOF-199 before and after the desulfurization of DBT

Sample	S_{BET} ($m^2 g^{-1}$)	S_{micro} ($m^2 g^{-1}$)	V_{total} ($cm^3 g^{-1}$)	V_{micro} ($cm^3 g^{-1}$)
Fe_3O_4@PAA@MOF-199 (L)	863	764	0.47	0.37
DBT adsorbed Fe_3O_4@PAA@MOF-199 (L)	792	715	0.41	0.35
Regenerated Fe_3O_4@PAA@MOF-199 (L)	844	743	0.45	0.36
Fe_3O_4@PAA@MOF-199 (H)	824	702	0.50	0.34
MOF-199	1286	1081	0.53	0.70