Electronic Supplementary Information

Hydrothermal synthesis of functionalized magnetic MIL-101 for magnetic enrichment of estrogens in environmental water samples †

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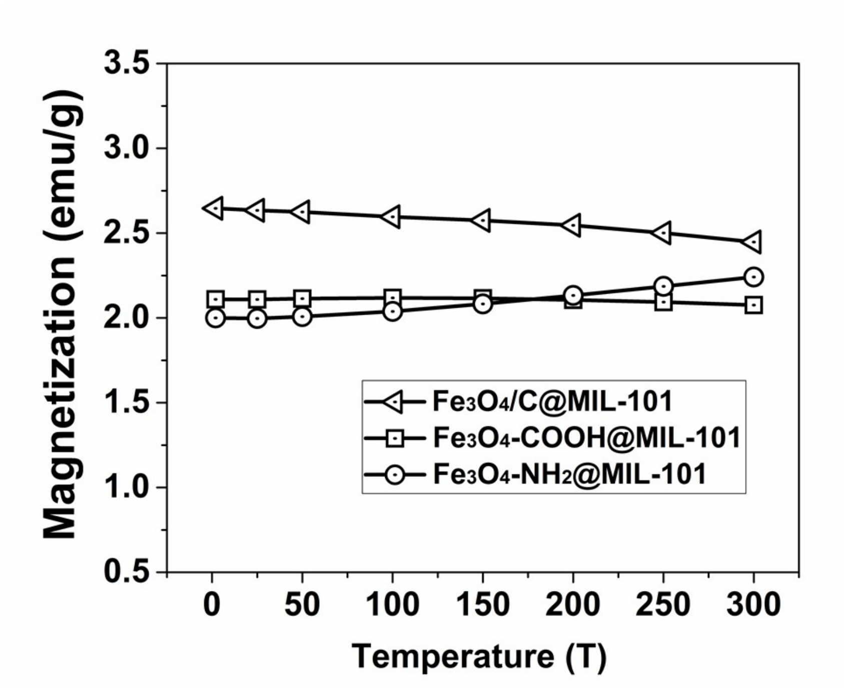

Fig.S1. Temperature dependence of magnetizations curves for samples Fe_3O_4-NH_2@MIL-101, Fe_3O_4-COOH@MIL-101, and Fe_3O_4/C@MIL-101 from 300 to 0 K with an applied field of 100 Oe.

In the high-resolution XPS spectrum (Fig. S2-5 (b)), the C 1s spectrum displays two peaks centering at about 285.0 and 288.9 eV. They can be ascribed to the carbon components on the benzene ring and the carboxylate (O─C═O) groups of the BDC linkers, respectively.

The O 1s could be fitted by two peaks at binding energies of around 532.2 and 530.2 eV, which are attributed to the oxygen components in the BDC linkers and the Cr−O bonds, respectively (Fig. S3-5 (c)).

The binding energies of about 577.5 and 587.3 eV are characteristic of Cr^{3+} in MIL-101 (Fig. S3-5 (d)).

Observation of the Fe 2p spectrum (Fig. S3-5(e)), the binding energies of around 711 and 724.6 eV are typical of magnetite.

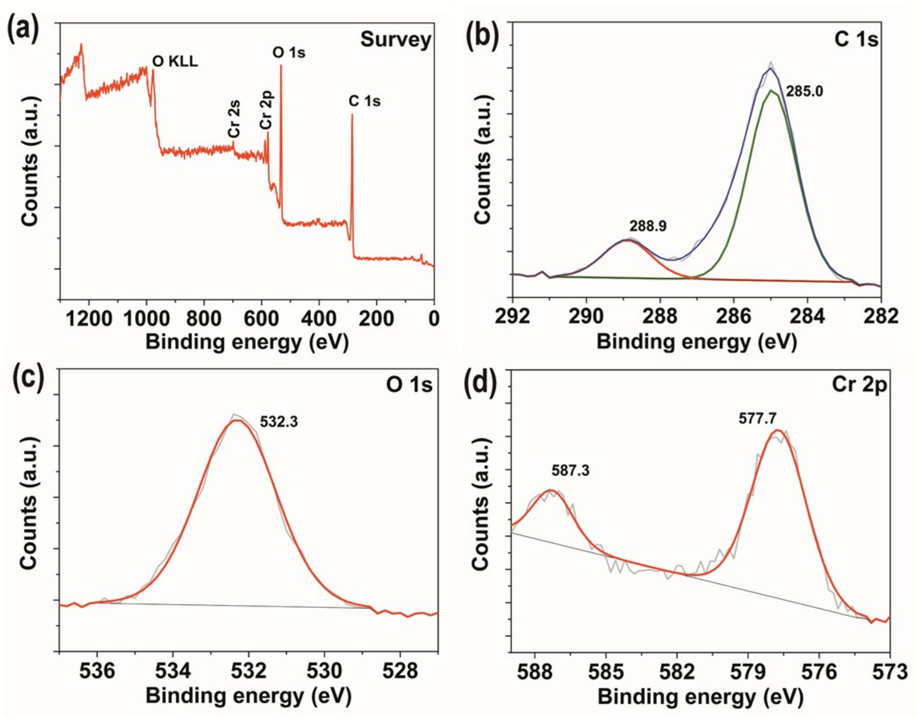

Fig.S2. The XPS spectra of MIL-101: (a) survey scan, (b) C 1s, (c) O 1s, (d) Cr 2p.

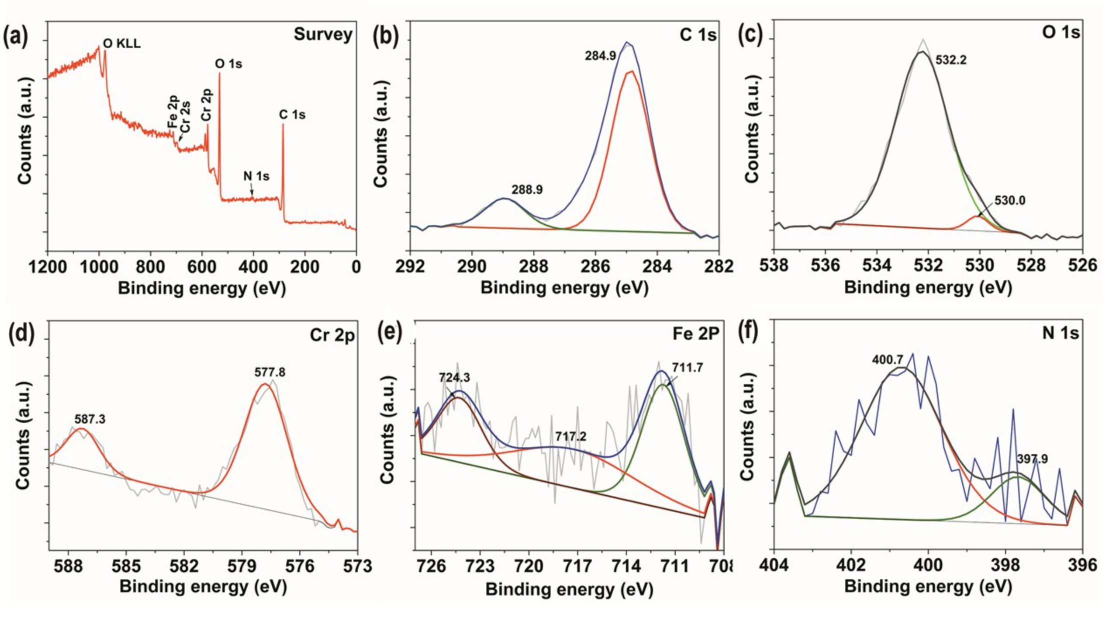

Fig.S3. The XPS spectra of Fe_3O_4-NH_2@MIL-101: (a) survey scan, (b) C 1s, (c) O 1s, (d) Cr 2p, (c) Fe 2p, (d) N 1s.

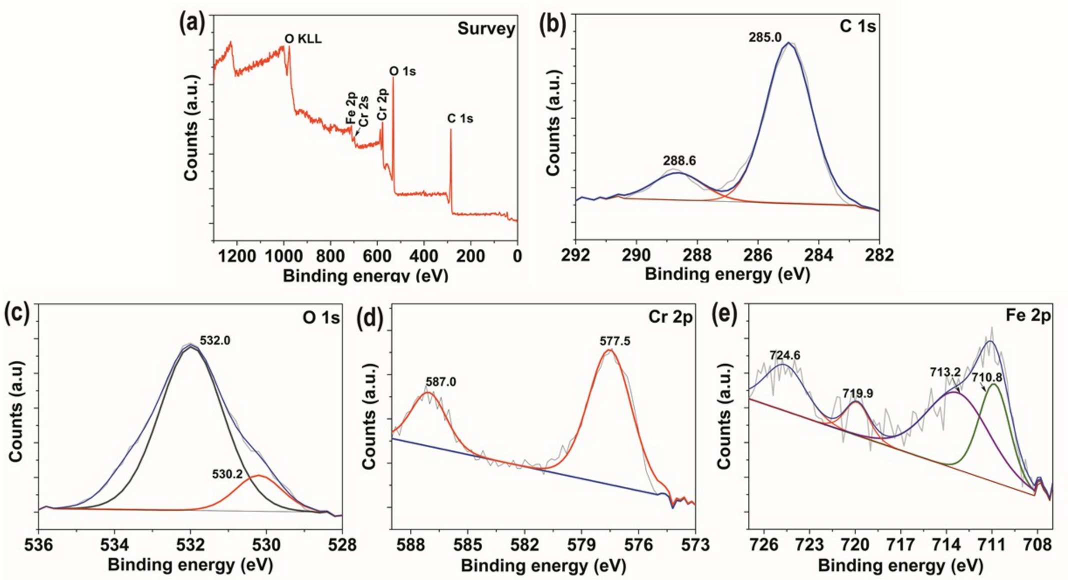

Fig. S4. The XPS spectra of Fe_3O_4-COOH@MIL-101: (a) survey scan, (b) C 1s, (c) O 1s, (d) Cr 2p, (c) Fe 2p, (d) N 1s.

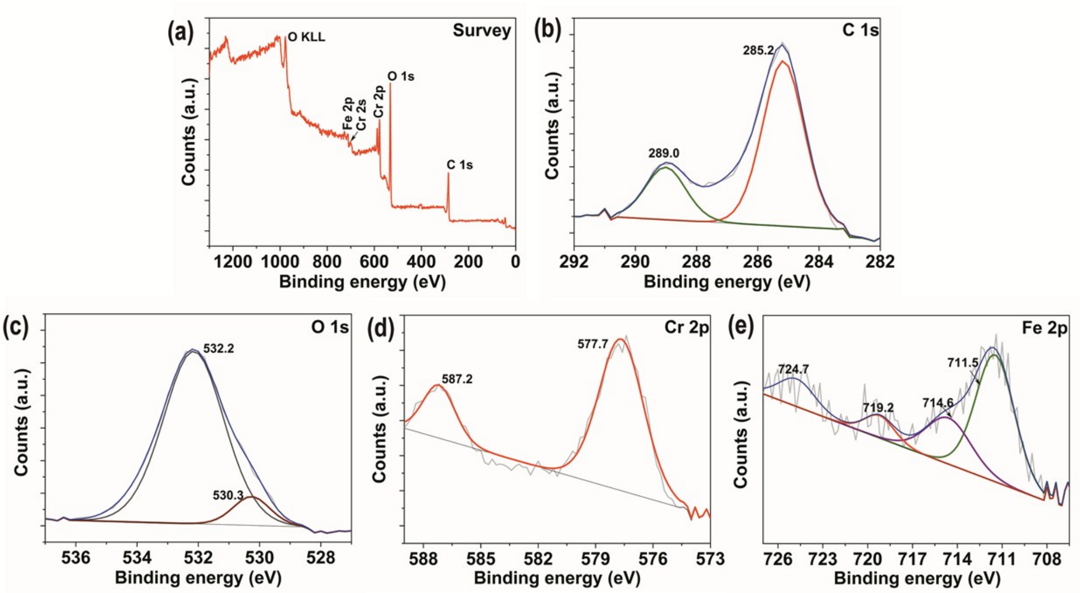

Fig.S5. The XPS spectra of Fe_3O_4/C@MIL-101: (a) survey scan, (b) C 1s, (c) O 1s, (d) Cr 2p, (c) Fe 2p.

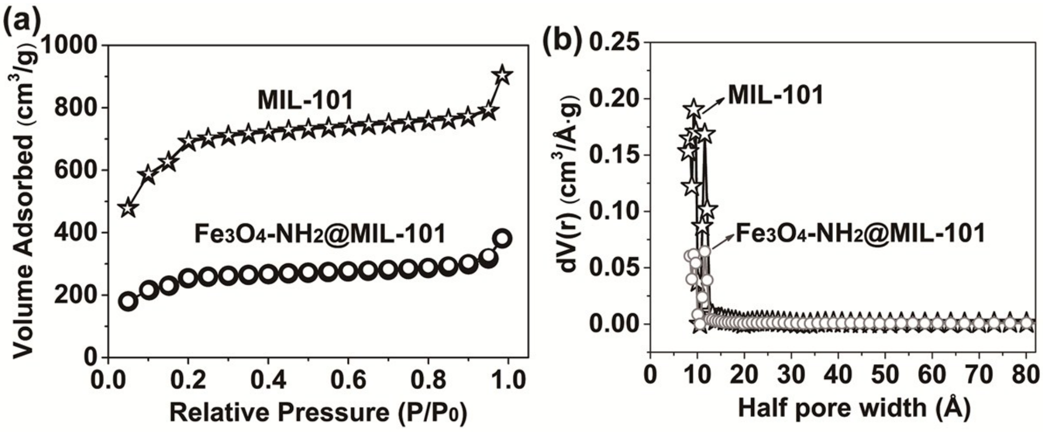

Fig. S6. (A) N_2 adsorption–desorption isotherms and (B) the pore size distribution of MIL-101 and Fe_3O_4-NH_2@MIL-101.

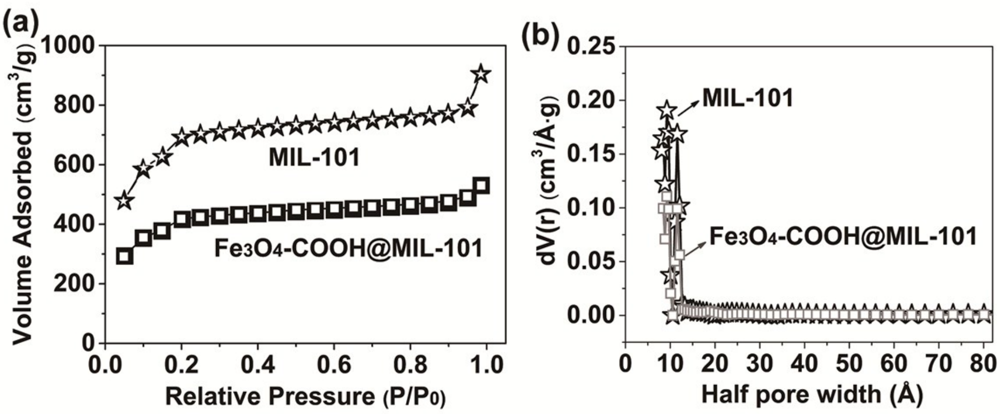

Fig. S7. (A) N_2 adsorption–desorption isotherms and (B) the pore size distribution of MIL-101 and Fe_3O_4-COOH@MIL-101.

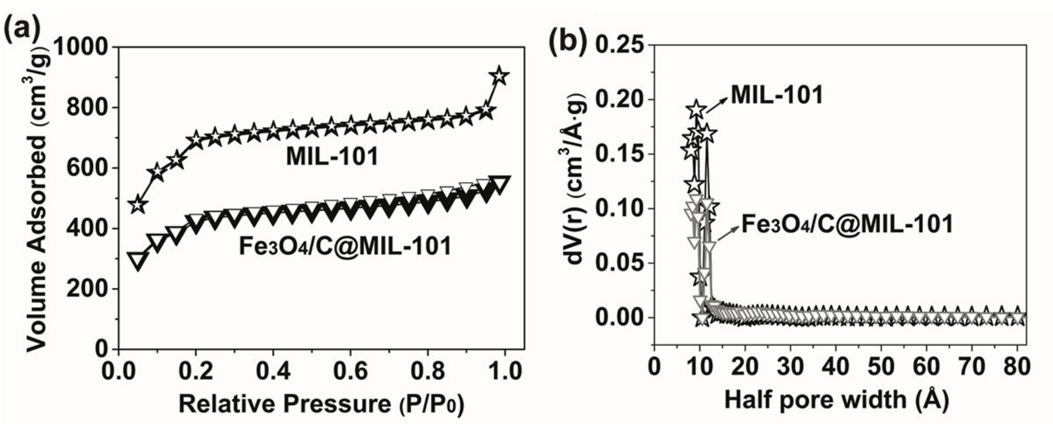

Fig. S8. (A) N_2 adsorption–desorption isotherms and (B) the pore size distribution of MIL-101 and Fe_3O_4/C@MIL-101.

TableS1. The BET surface area and total pore volume of the materials.

Materials	BET surface area (m^2/g)	Total pore volume (cm^3/g)
MIL-101	2521.916	1.398
Fe_3O_4-NH_2@MIL-101	923.549	0.59
Fe_3O_4-COOH@MIL-101	1513.137	0.8203
Fe_3O_4/C@MIL-101	1535.457	0.8547