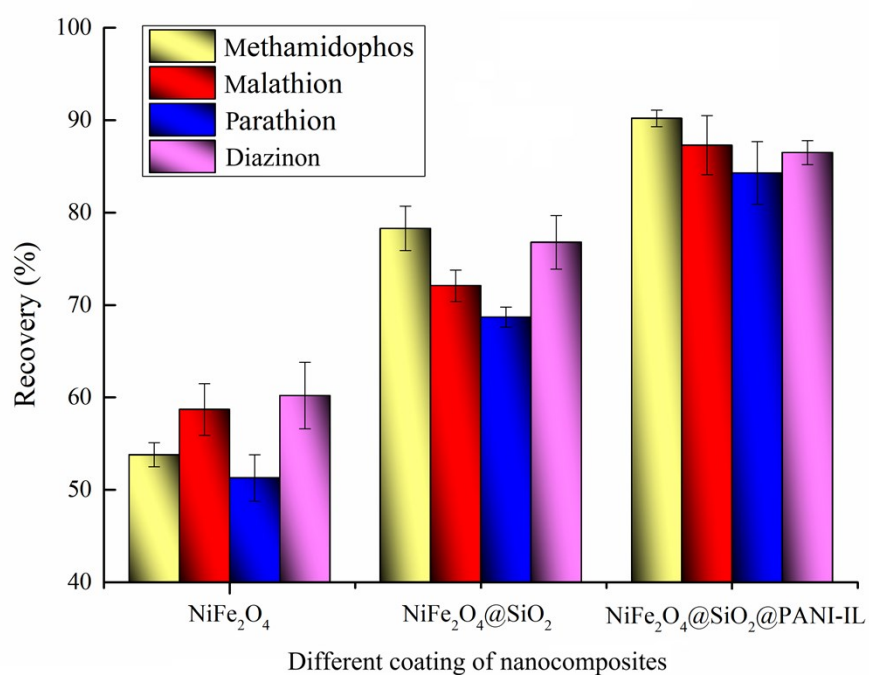
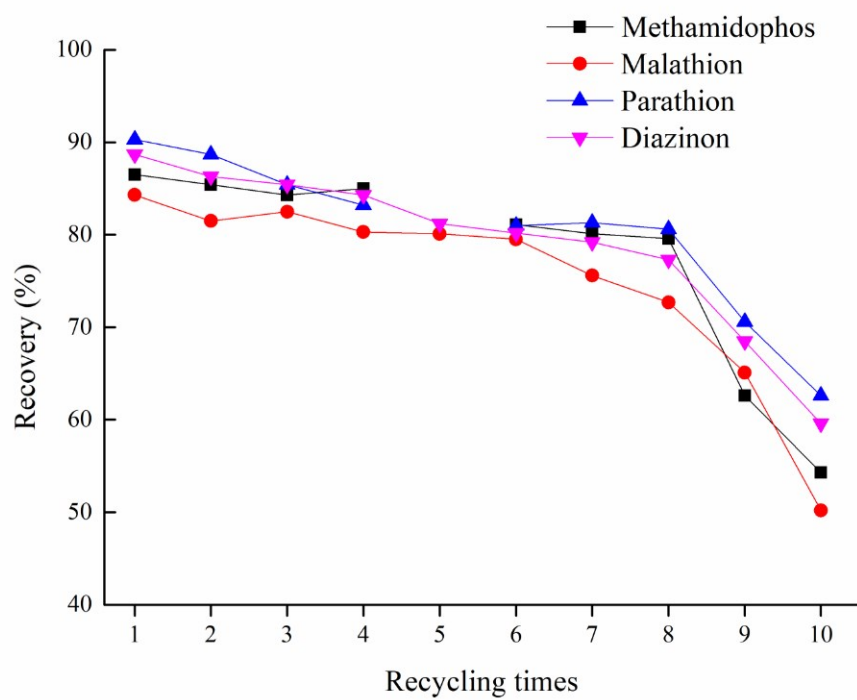


### Supplementary figures



**Supplementary Fig. 1.** Comparison of the extraction efficiency for OPPs by the different coating of nanocomposites



**Supplementary Fig. 2.** Recycling of the as-synthesized nanocomposites

**Supplementary Table 1.** Surface element percentages of NiFe<sub>2</sub>O<sub>4</sub>, NiFe<sub>2</sub>O<sub>4</sub>@SiO<sub>2</sub> and NiFe<sub>2</sub>O<sub>4</sub>@SiO<sub>2</sub>@PANI-IL

Materials	O (atom %)	Fe (atom %)	Ni (atom %)	Si (atom %)	C (atom %)	N (atom %)
NiFe <sub>2</sub> O <sub>4</sub>	53.13	22.47	14.03	—	—	—
NiFe <sub>2</sub> O <sub>4</sub> @SiO <sub>2</sub>	60.07	8.39	4.48	19.49	—	—
NiFe <sub>2</sub> O <sub>4</sub> @SiO <sub>2</sub> @PAN I-IL	16.60	2.51	1.21	3.41	65.60	6.69

**Supplementary Table 2.** Pore size distribution and crystalline properties of as-prepared nanomaterials

Materials	Surface area (m <sup>2</sup> /g)	Pore size (nm)	Pore volume (cm <sup>3</sup> /g)
NiFe <sub>2</sub> O <sub>4</sub>	104.53	13.74	0.302
NiFe <sub>2</sub> O <sub>4</sub> @SiO <sub>2</sub>	173.13	14.11	0.059
NiFe <sub>2</sub> O <sub>4</sub> @SiO <sub>2</sub> @PANI-IL	81.12	17.94	0.136