

1 **Magnetic solid-phase extraction based on tetrabenzyl modified Fe₃O₄**
2 **nanoparticles for the analysis of trace polycyclic aromatic**
3 **hydrocarbons in environmental water samples**

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10 **Supplementary Materials**

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12 **2. Experimental**

13 **2.5. HPLC-FLD analysis**

14 Table S-1 Time program of emission and excitation wavelength of fluorescence
15 detection

Time (min)	Emission (nm)	Excitation (nm)	PAH determined
0.0-12.0	340	260	Flu
12.0-15.0	370	250	Ant
15.0-17.5	462	289	FlA
17.5-21.0	380	320	Pyr
21.0-25.0	403	266	BaA
25.0-32.0	430	294	BbF, BkF

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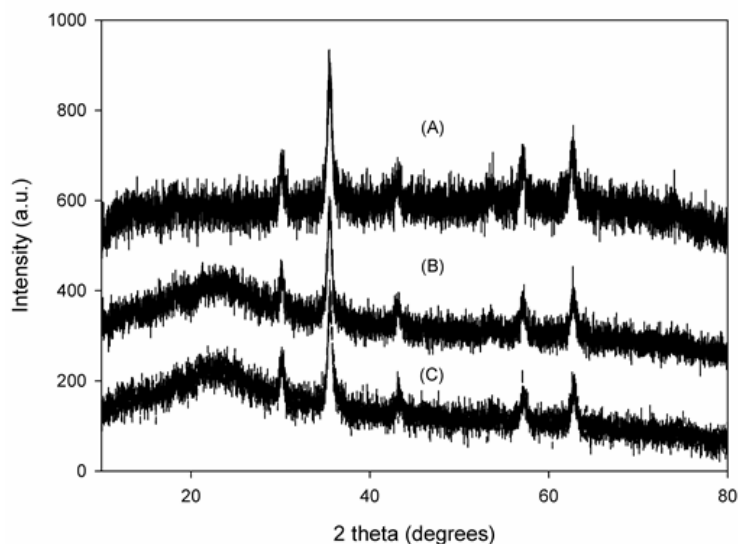
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24 3. Results and Discussion

25 3.1. Characterization of as-synthesized magnetic nanoparticles

26 Figure S-1 XRD spectra of (A) naked Fe_3O_4 , (B) $\text{Fe}_3\text{O}_4/\text{SiO}_2$ and (C)
27 $\text{Fe}_3\text{O}_4/\text{SiO}_2/\text{TBCD}$.

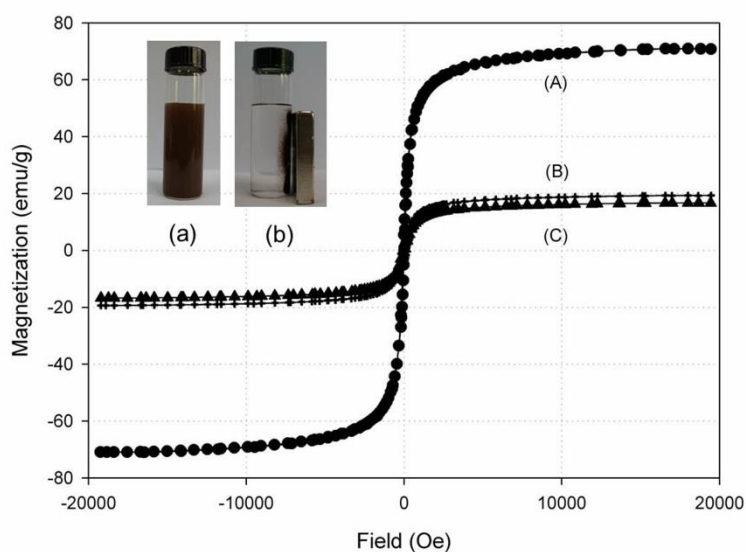


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31 Figure S-2 Magnetization curves of (A) Fe_3O_4 , (B) $\text{Fe}_3\text{O}_4/\text{SiO}_2$ and (C)
32 $\text{Fe}_3\text{O}_4/\text{SiO}_2/\text{TBCD}$. Inset shows the photographs of (a) dispersion and (b) separation
33 process of $\text{Fe}_3\text{O}_4/\text{SiO}_2/\text{TBCD}$.



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36 **3.2. Optimization of MSPE parameters**

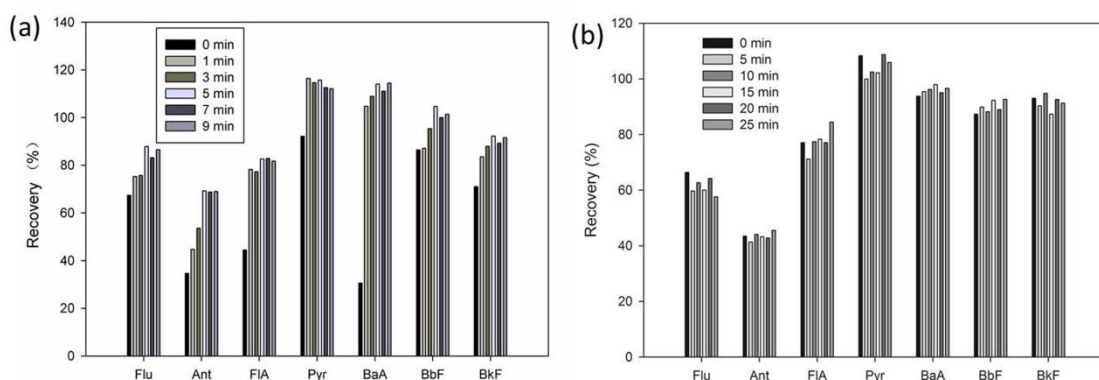
37 **3.2.5. Effect of ultrasonication and standing time**

38 Figure S-3 Effect of (a) ultrasonication and (b) standing time on recoveries of PAHs.

39 Extraction conditions: sample volume, 200 mL; TBCD-functionalized MNPs, 80 mg ;

40 eluting solvent, acetonitrile; eluent volume, 8 mL; water bath temperature during

41 nitrogen blowing: (a) 30 °C, (b) 40 °C.



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45 **3.4. Application to real water samples**

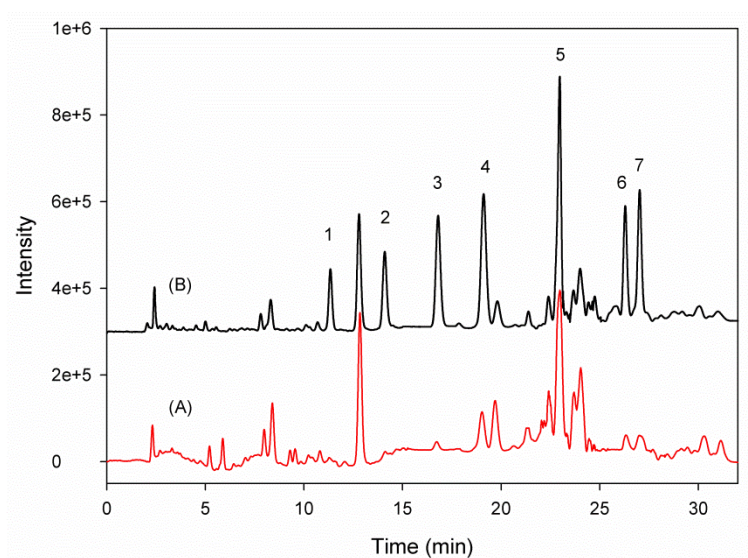
46 Table S-2 Analytical results of seven PAHs in unspiked real water samples (n=3)

Analyte	Tap water		Snow water		River water	
	Detected	RSD	Detected	RSD	Detected	RSD
	concentrations (ng L ⁻¹)		concentrations (ng L ⁻¹)		concentrations (ng L ⁻¹)	
Flu	nd	-	nd	-	nd	-
Ant	nd	-	nd	-	nd	-
FIA	nd	-	nd	-	5.0	3.9
Pyr	nd	-	nd	-	8.9	4.3
BaA	nd	-	1.2	2.3	12.0	2.0
BbF	nd	-	nd	-	2.9	6.9
BkF	nd	-	1.1	7.6	1.0	8.7

47 nd - not detected.

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49 Figure S-4 Chromatograms of PAHs in Xiangjiang river water: (A) unpicked; (B)
50 picked: 112.5 ng L⁻¹ Flu, 300 ng L⁻¹ Ant, 600 ng L⁻¹ FLA, 300 ng L⁻¹ Pyr, 112.5 ng L⁻¹
51 BaA, 112.5 ng L⁻¹ BbF, 30 ng L⁻¹ BkF. Peaks: (1) Flu; (2) Ant; (3) FLA; (4) Pyr; (5)
52 BaA; (6) BbF; (7) BkF.



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