

Electronic Supplementary Information

Ionic liquid-coated Fe₃O₄ magnetic nanoparticles as adsorbent of mixed hemimicelles solid-phase extraction for preconcentration of polycyclic aromatic hydrocarbons in environmental samples

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This supporting information contains 3 figures.

1. NMR and MS characterizations of the prepared ILs

The prepared ILs were characterized by NMR (Figure S1) and mass spectrometry (Figure S2). The positive ion mode (ESI+) was used for MS analysis. The ESI/MS conditions were as follows: capillary voltage, 3.5 kV; cone voltage, 30 V; range of mass scan, 100–800; desolvation temperature, 250 °C; source temperature, 105 °C; flow rate of desolvation gas, 350 L h⁻¹, nitrogen; flow rate of cone gas, 50 L h⁻¹, nitrogen.

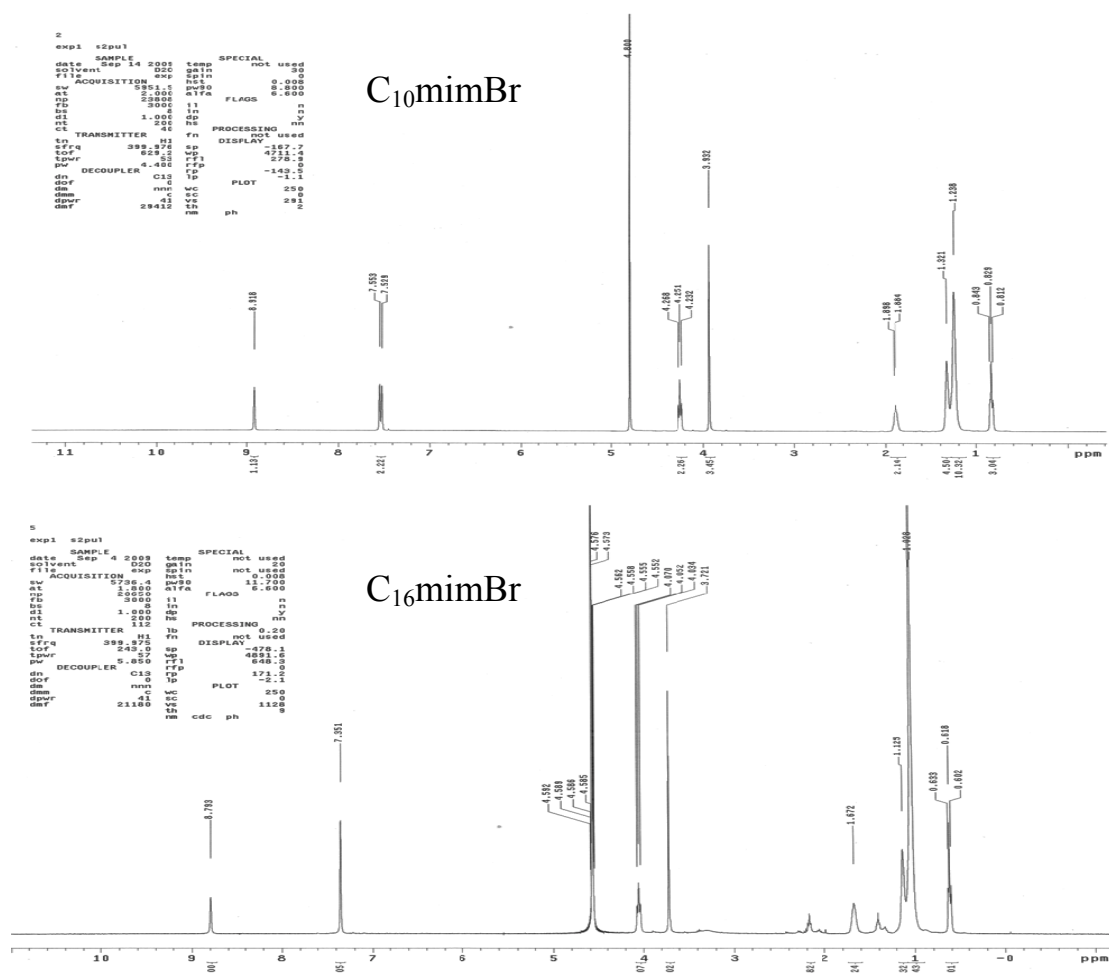


Figure S1. ¹H NMR spectrum of ILs.

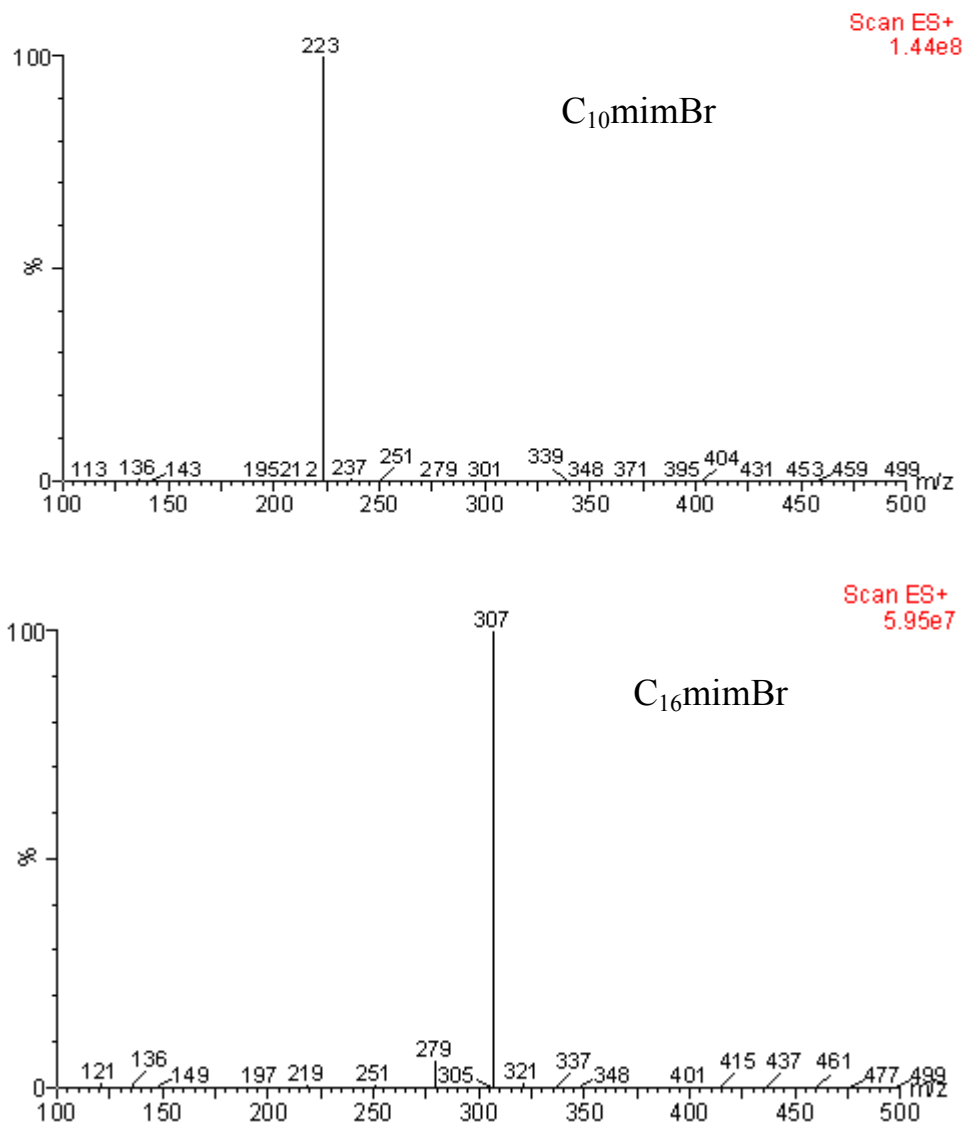


Figure S2. MS data of ILs.

2. IR spectroscopy of IL-coated Fe_3O_4 NPs

IR spectroscopy has been employed to qualitatively examine adsorption of $C_{16}mimBr$ onto Fe_3O_4 NPs surface. Figure S3 displays the IR spectrum of the Fe_3O_4 NPs and the $C_{16}mimBr$ coated Fe_3O_4 NPs. Four characteristic bands can be distinguished in the IR spectrum of $C_{16}mimBr$ coated Fe_3O_4 NPs, while not observed in the Fe_3O_4 NPs IR spectrum. Compared with the standard spectrum, the adsorption

bands at 2921 and 2852 cm^{-1} could be attributed to the stretching vibration of C-H band; the characteristic bands at 1571 and 1469 cm^{-1} indicate the vibration of N-H in imidazole ring. All of these bands revealed that $\text{C}_{16}\text{mimBr}$ was successfully modified on the surface of Fe_3O_4 NPs.

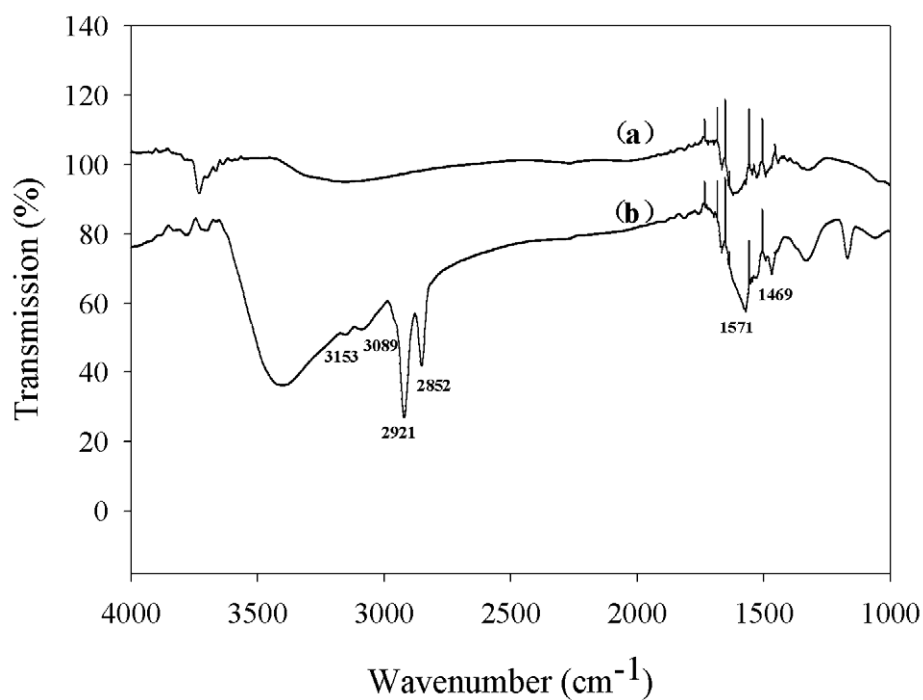


Figure S3. IR spectroscopy of Fe_3O_4 NPs (a) and $\text{C}_{16}\text{mimBr}$ coated Fe_3O_4 NPs (b).