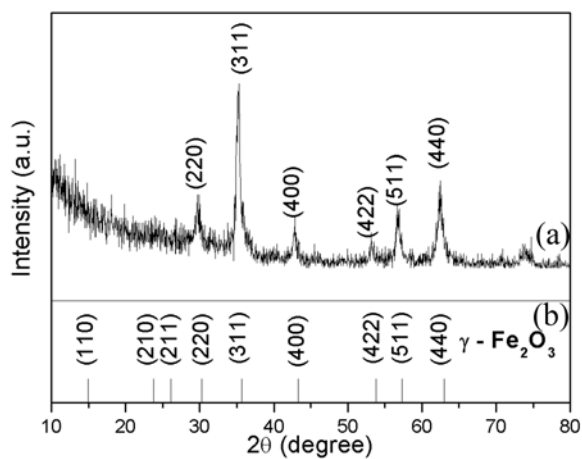


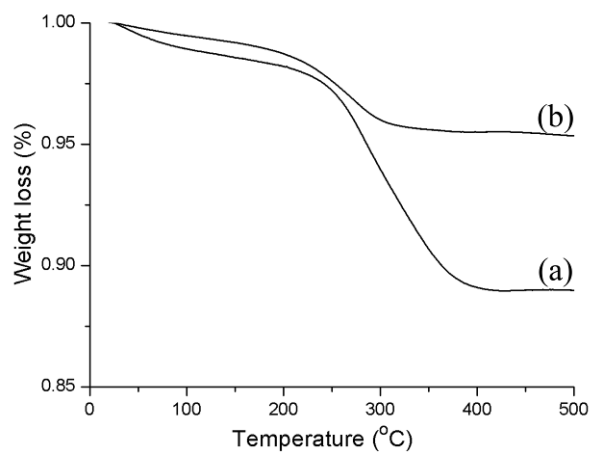
Supporting Information



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Fig. S1 (a) XRD pattern of typical Fe_3O_4 hollow microspheres (scanning time 10 minutes), and (b) the typical XRD pattern of $\gamma\text{-Fe}_2\text{O}_3$ (JCPDS Card No. 39-1346).

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Fig. S2 TG analysis of Fe_3O_4 hollow microspheres synthesized with PAAS (a) and without PAAS (b).

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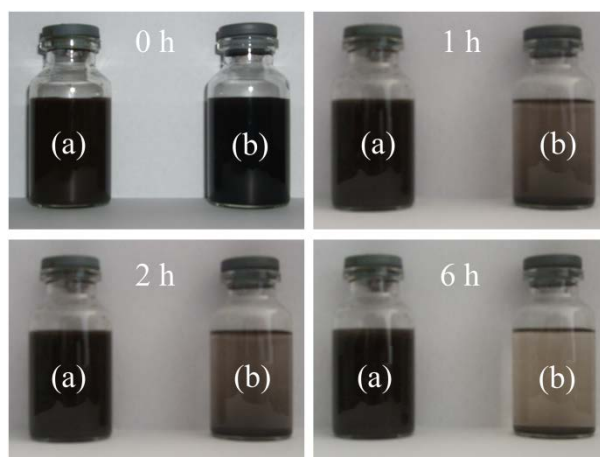


Fig S3. The photos about water-dispersibility of the products synthesized by (a) PAAS and (b) PAM as dispersants at different times.

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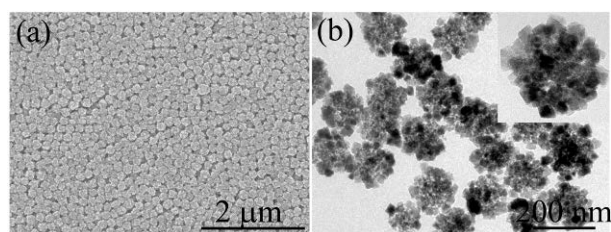


Fig. S4 SEM and TEM images of the product synthesized with PAAS (1.5 g).

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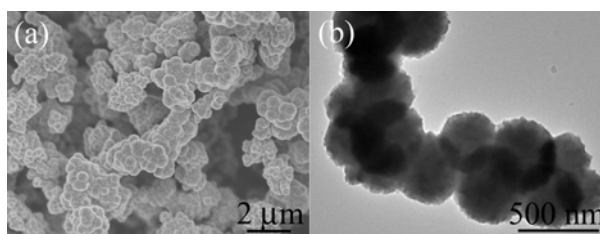


Fig.S5 SEM and TEM images of the product synthesized without PAAS.

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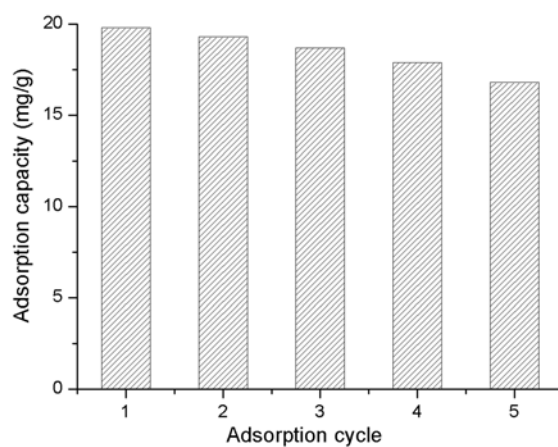


Fig. S6 Adsorption-desorption cycles.

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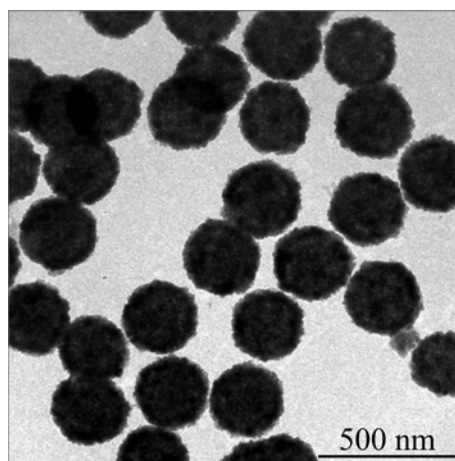


Fig. S7 TEM image of Fe₃O₄ hollow microspheres after five cycles

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Table S1 The relationship between the amount of PAAS and the viscosity of the corresponding solution (20 °C).

PAAS (g)	0	0.2	0.6	1.0	1.5
Viscosity (mPa/s)	1.03	2.92	5.85	11.23	18.96

Table S2 Langmuir and Freundlich isothermal parameters for Pb²⁺ adsorption on Fe₃O₄ hollow microspheres.

Langmuir			Freundlich		
Q _m	b	R ²	k	1/n	R ²
23.8	1.31	0.99	17.6	0.074	0.86

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