

Supplementary information

Size-controlled synthesis of water-dispersible superparamagnetic Fe₃O₄ nanoclusters and their magnetic responsiveness

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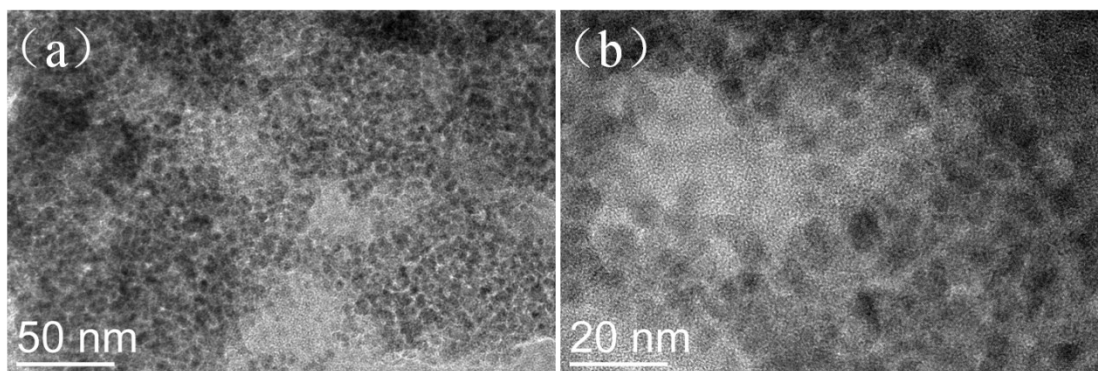


Fig. S1 (a) TEM image at higher magnification and (b) HRTEM image of Fe_3O_4 particles synthesized with 80/0 of $V_{\text{DEG}}/V_{\text{EG}}$.

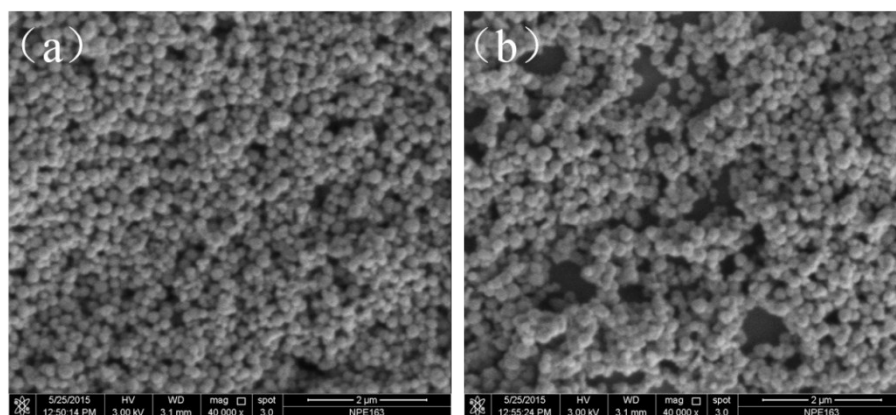


Fig. S2 SEM images of Fe_3O_4 particles which were synthesized (a) without Na_3Cit and (b) with 0.1g Na_3Cit .

Table S1. Hydrodynamic size and PDI at different pHs for Fe_3O_4 nanoclusters synthesized with 1 g Na_3Cit under $V_{\text{DEG}}/V_{\text{EG}}=40/40$.

pH	3	4	5	6	7	8	9	10	11
Z-Average Diameter (nm)	247.9	1473	1161	207.8	219.2	220	210.4	213.9	205.4
PDI	0.112	0.853	0.745	0.163	0.078	0.063	0.065	0.024	0.085

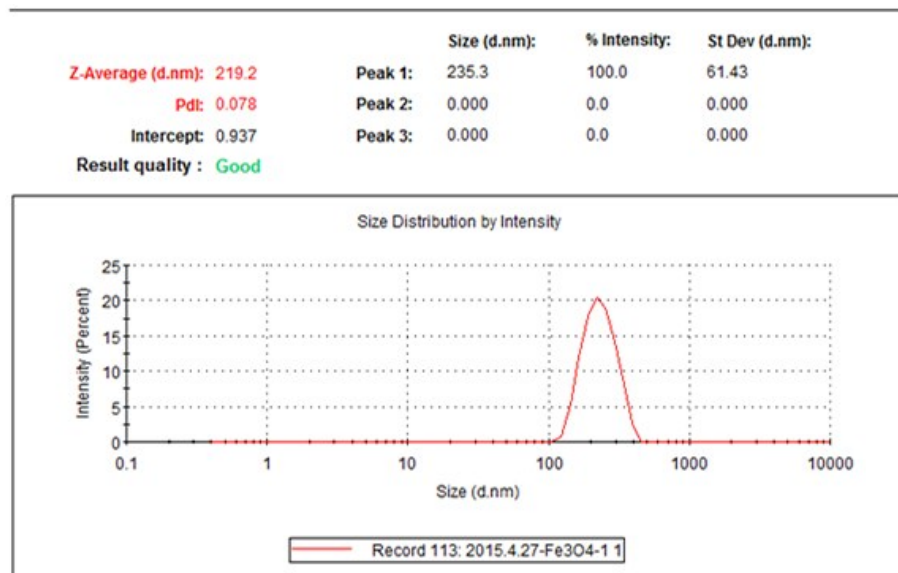


Fig. S3 A typical intensity particle size distribution at pH=7 for Fe_3O_4 nanoclusters synthesized with 1 g Na_3Cit under $V_{\text{DEG}}/V_{\text{EG}}=40/40$.

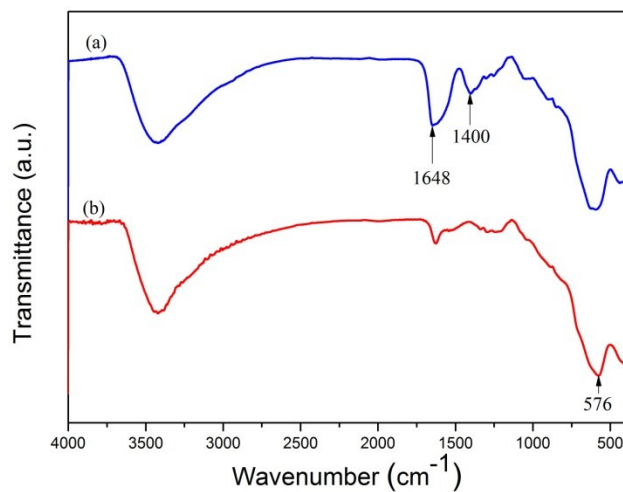


Fig. S4 FTIR spectra of Fe_3O_4 nanoparticles synthesized with 1g Na_3Cit (a) and the uncoated magnetite particles synthesized by co-precipitation (b).

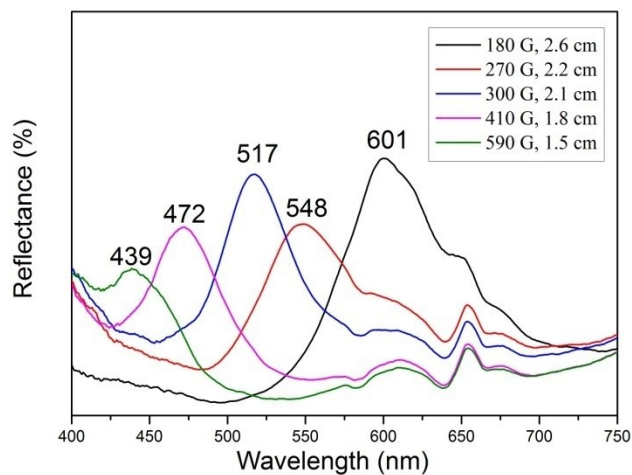


Fig. S5 Reflectance spectra of the 168 nm Fe_3O_4 nanoclusters with water dispersions of about $16.3 \text{ mg}\cdot\text{mL}^{-1}$ as the magnetic field increased from 180 G to 590 G by moving the magnet toward the sample (2.6 cm to 1.5 cm).