Supplementary Material (ESI) for Chemical Communications

Electronic Supplementary Information

Environmentally-Friendly Preparation of Water-Dispersible Magnetite Nanoparticles

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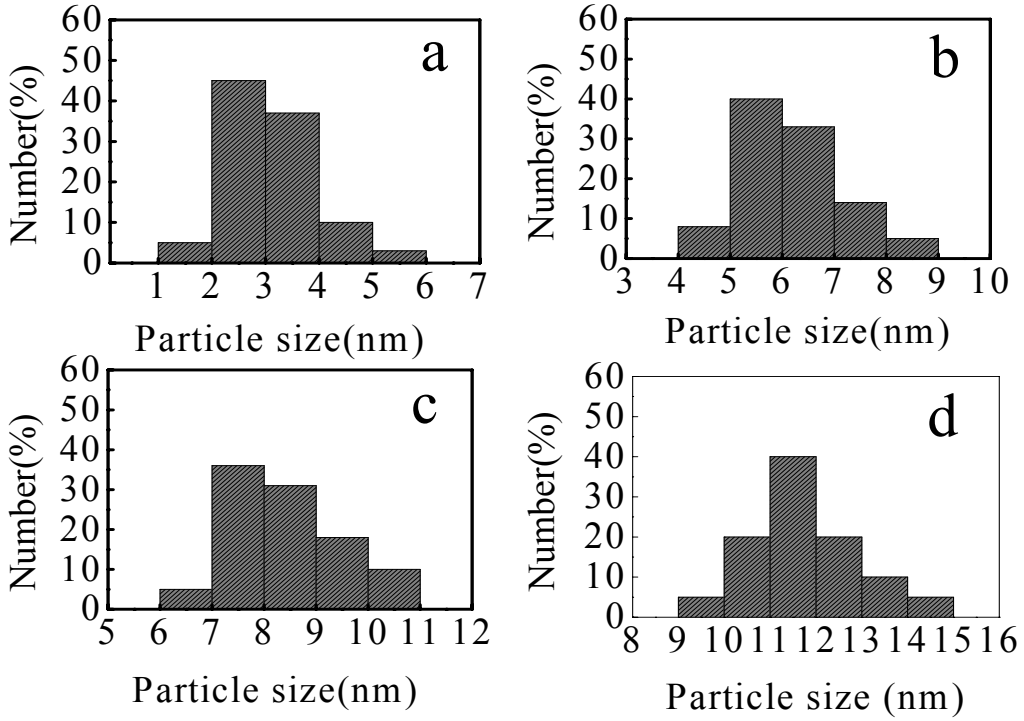
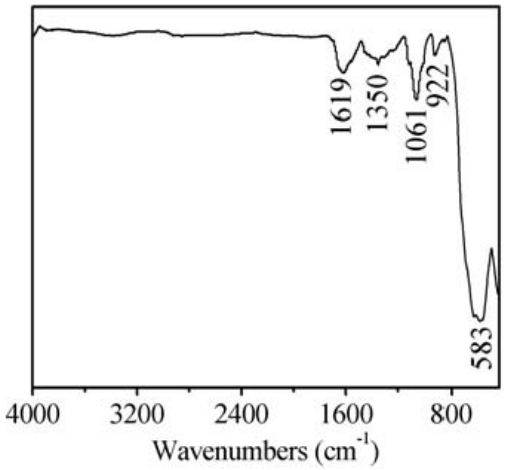
1. **Fig. S1.** Photograph of the aqueous dispersion of 8 nm-Fe_3O_4 nanoparticles.

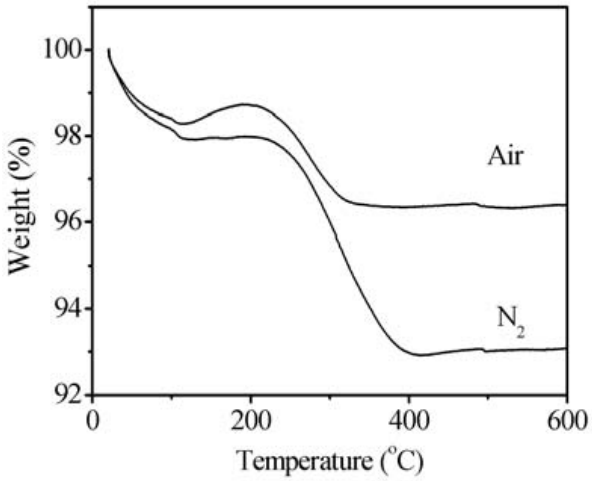
2 **Fig. S2.** Size histogram of Fe_3O_4 nanoparticles, 3 nm (a), 6 nm (b), 8 nm (c) and 11 nm (d).



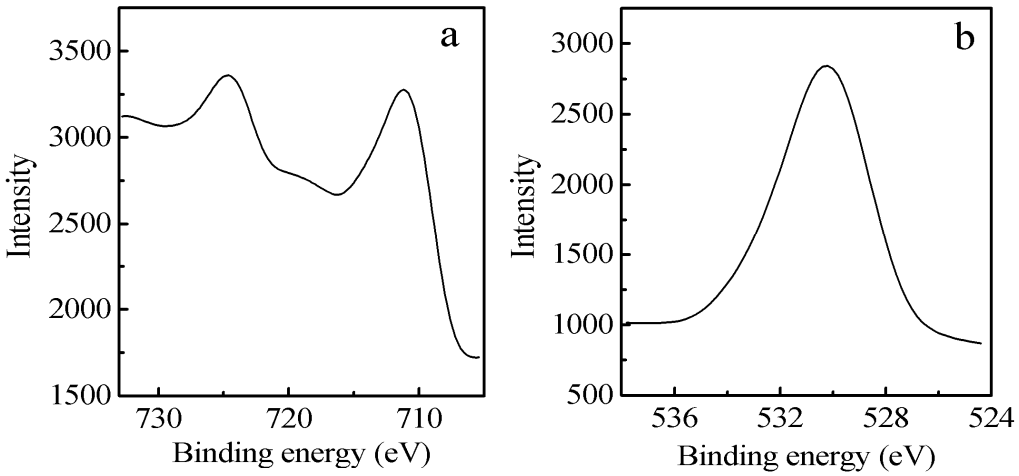
3. **Fig. S3.** IR spectra of 8nm-Fe_3O_4 nanoparticles.



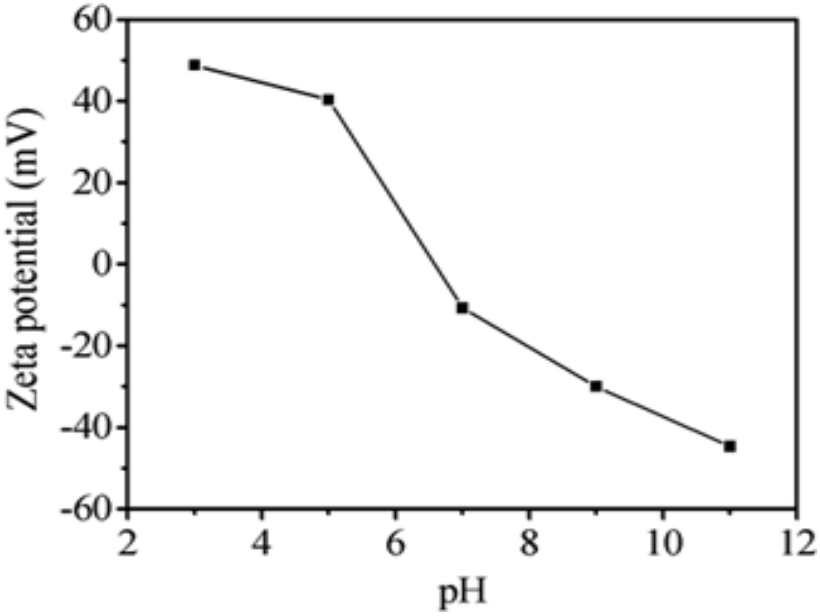
4. **Fig. S4.** TG curves of 8nm-Fe_3O_4 nanoparticles in air and N_2 atomosphere.



5. **Fig. S5.** Fe2p (a) and O1s (b) peaks in XPS spectra of 8nm-Fe_3O_4 nanoparticles.

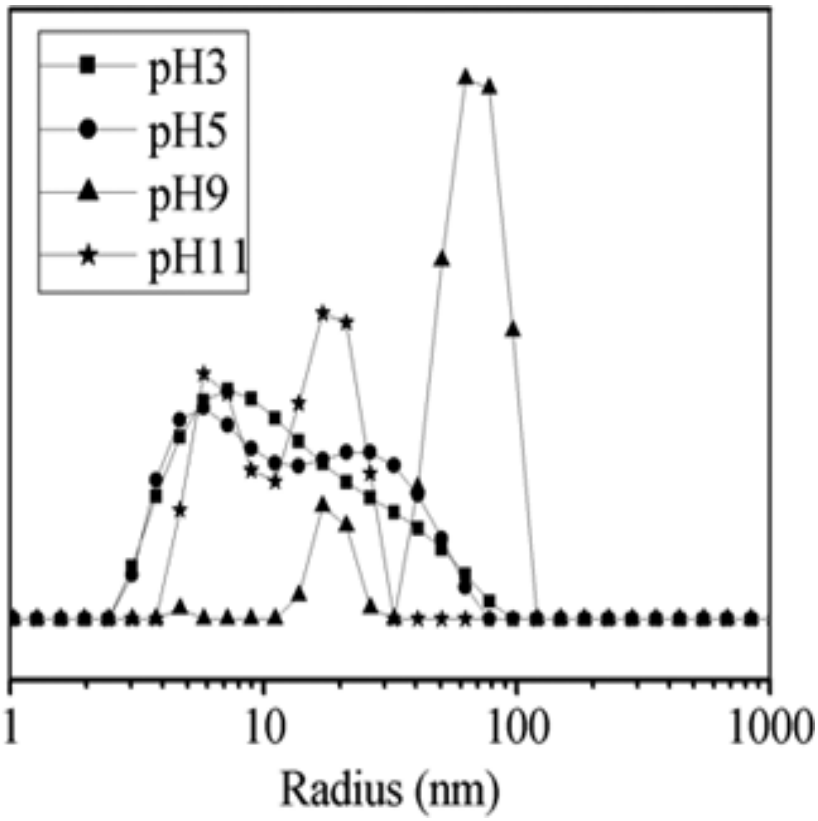


6. **Fig. S6.** Zeta (ζ) potential of 11nm-Fe_3O_4 nanoparticles in solution of different pH values.



7. **Fig. S7.** Photograghs of dilute 11nm-Fe_3O_4 water suspensions with different pH values of 3, 5, 9, 11, and 7 (from left to right).

8. **Fig. S8.** Hydrodynamic radius distributions of 11nm-Fe_3O_4 nanoparticles dispersed in water with pH values of 3, 5, 9, and 11 from DLS.



9. **Cytotoxicity experiment of 8nm-Fe_3O_4 nanoparticles**

To evaluate the cytotoxicity of Fe_3O_4 nanoparticles, the 5-dimethylthiazol-2-yl-2,5-diphenyl- tetra zolium bromide (MTT) assay was performed. The MTT assay is a simple colorimetric assay to measure cell cytotoxicity, proliferation or viability. Metabolically active cells were able to convert this dye into a water-insoluble dark blue formazan which could be dissolved in dimethylsulphoxide (DMSO) and quantified by measuring the absorbance of solution at 570 nm. The resultant value was related to the number of living cells, so the cytotoxicity of Fe_3O_4 nanoparticles could be evaluated by determining the viability of NHFB cells after incubation with the medium containing Fe_3O_4 nanoparticles. The process was described as follows:

NHFB cells were cultured in Dulbecco's modified Eagle's medium (DMEM) supplemented with 10% fetal bovine serum (FBS), 2.0 mmL-glutamine and 50.0 mg/mL gentamicin at 37 °C under a humidified atmosphere of 95% air and 5% CO_2. Cells were seeded at a density of 10^4 cells/well in 96-well plates for 24 h. Then serial dilutions of Fe_3O_4 nanoparticles in the fresh medium were added to the cells with final concentrations ranging from 0.2 to 0.8 mg/mL for 4-48 h. The nanoparticles were sterilized with UV irradiation for 30 mins before use. After incubation, the culture medium from each well was removed, and 90 μL of medium and 10 μL MTT solution (0.5 mg/mL in PBS) was added to each well and allowed incubation for further 4 h. After that 100 μL of dimethylsulfoxide (DMSO) was added to each well to dissolve the formed crystals. The plate was vigorously mixed for 30 mins. The optical absorbance was then read at 570 nm on an ELISA plate reader and the percentage of viability was calculated.