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Supplementary Information for

Microfluidic synthesis of Ultra-small Magnetic Nanohybrids for Enhanced Magnetic Resonance Imaging

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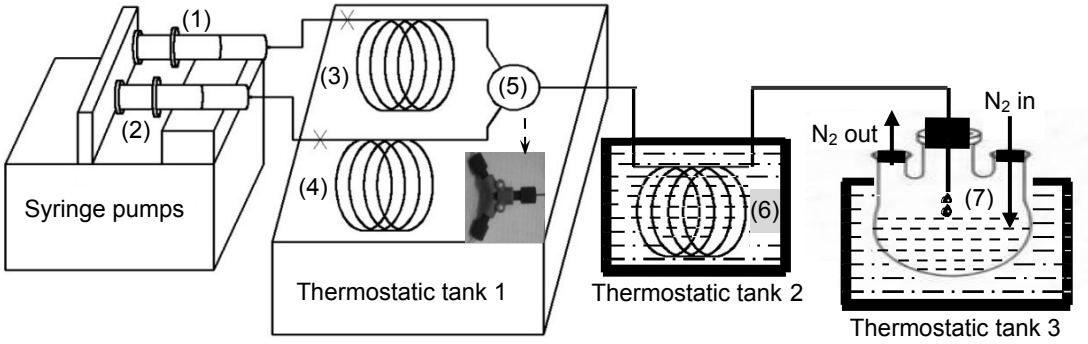

Figure s1 Experiment setup of the simple programmed microfluidic and rapid batch-cooling process：(1) and (2), syringe pumps for the reducing-agent solution and metal-salt solution; (3) and (4), microtubing coils for pre-heating reducing-agent solution and metal-salt solution with the temperature controlled by thermostatic tank 1; (5), three-way mixer for reaction between reducing-agent solution and metal-salt solution; (6), microtubing coil for nucleation and nanoparticle growth with temperature controlled by thermostatic tank 2; (7), nanoparticle collector with temperature controlled by thermostatic tank 3, where the growth is terminated at a designed temperature (e.g., -15~10^{o}C).

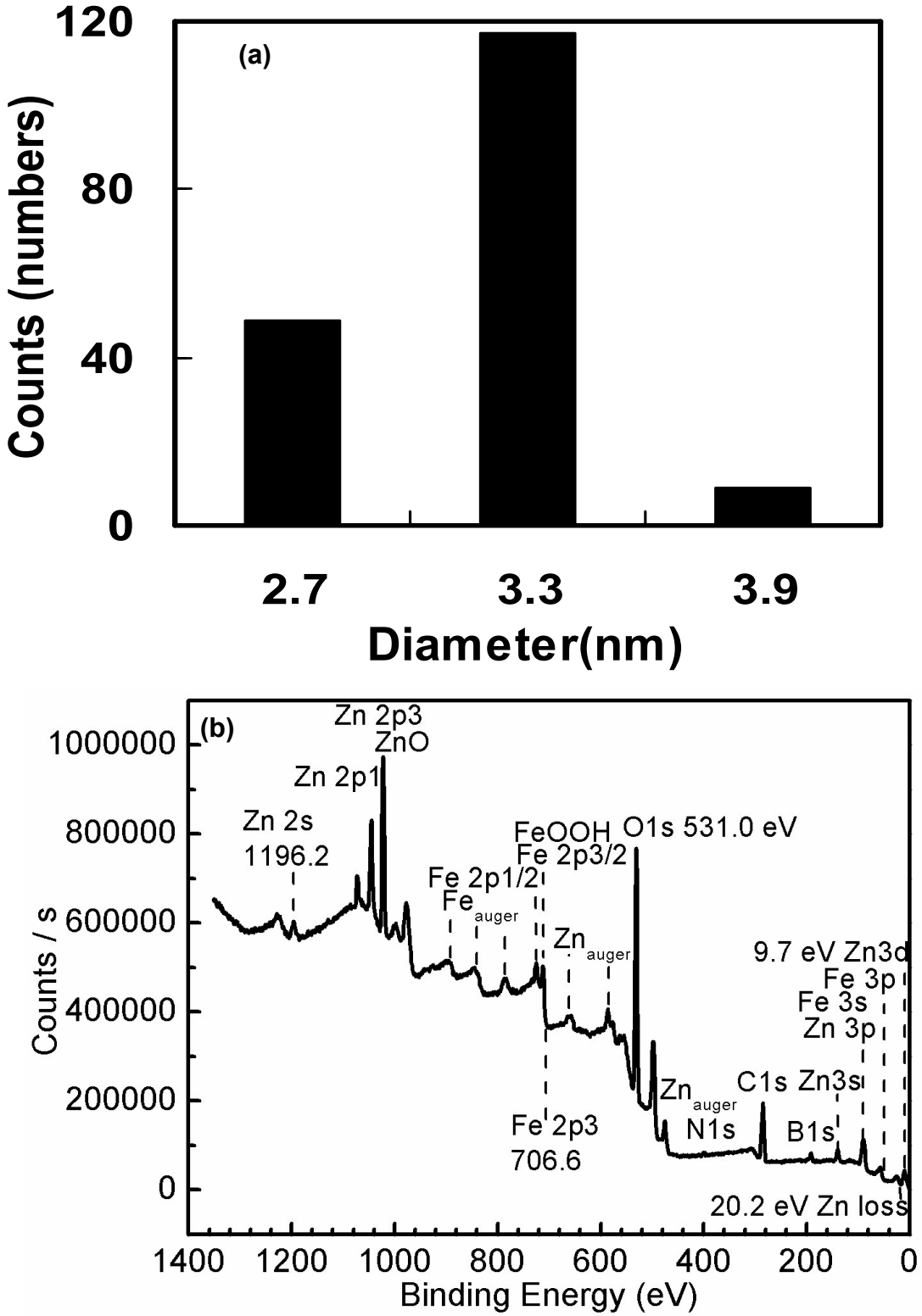

Figure s2 Histogram of size distribution (a) and XPS (b) of $Fe_{(1-x)}Zn_x@Zn_{(1-y)}Fe_yO$-$(OH)_z$ nanohybrids.

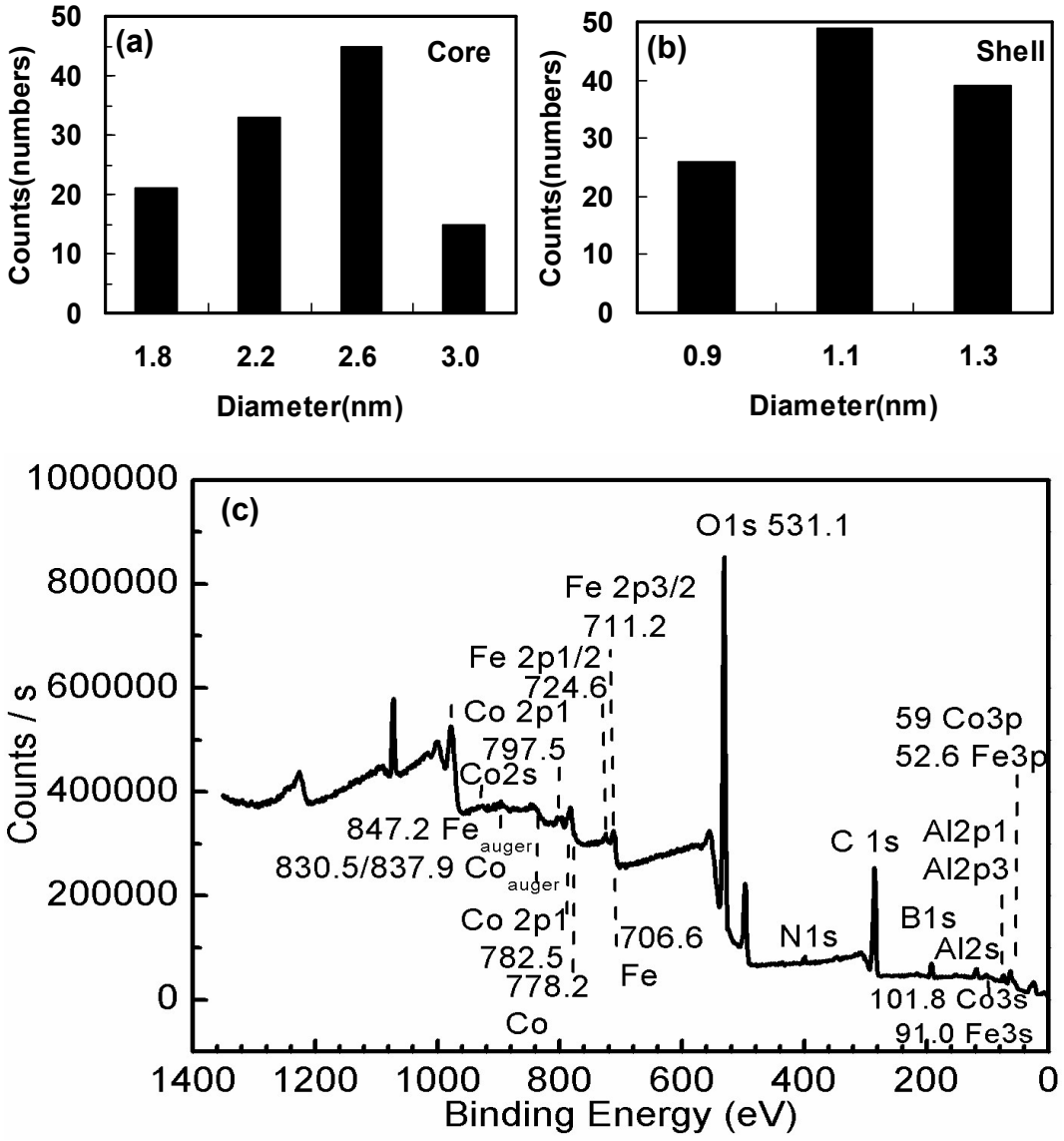

Figure s3 Histogram of size distribution (a: core; b: shell) and XPS (c) of $(CoFe)_{(1-x)}Al_x@Al_{(1-y)}(CoFe)_yO\text{-}(OH)_z$ nanohybrids.

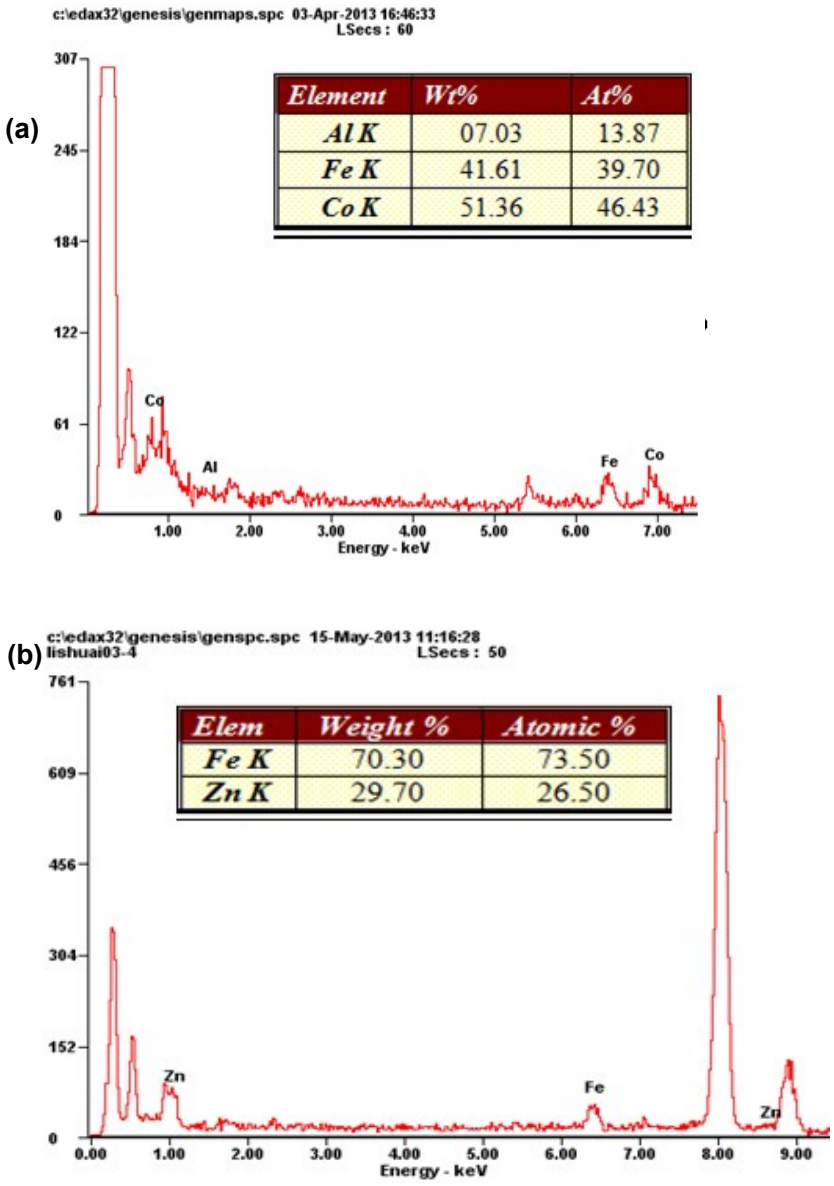

Figure s4 Metal ratios in $(CoFe)_{(1-x)}Al_x@Al_{(1-y)}(CoFe_y)O\text{-}(OH)_z$ nanohybrids (a) and $Fe_{(1-x)}Zn_x@Zn_{(1-y)}Fe_yO\text{-}(OH)_z$ nanohybrids (b) by EDS analysis.

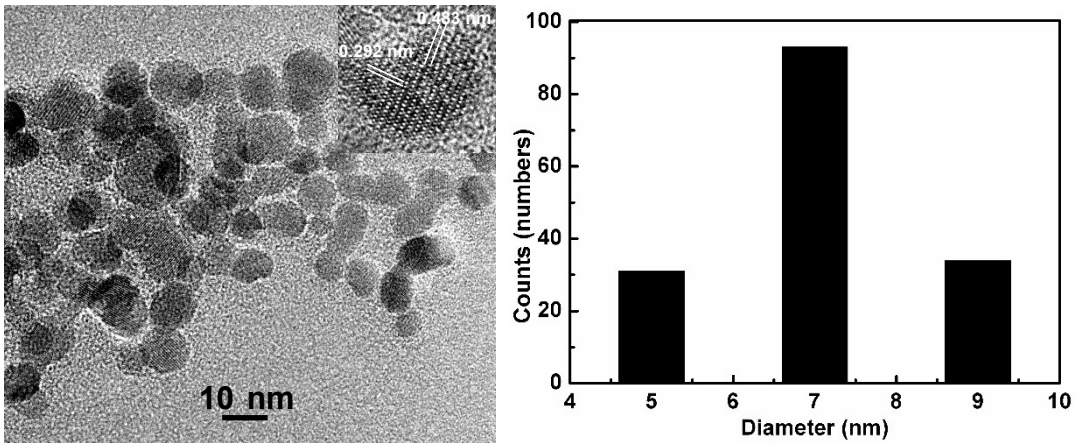

Figure s5 TEM image and size histogram of highly crystalline Fe_3O_4 nanoparticles giving a mean diameter of 7.1 ± 1.2 nm. Lattice distances of 0.483 nm and 0.292nm represent (111) and (220) planes of magnetite spinel Fe_3O_4.