Electronic Supplementary Information:

High quality self-assembly magnetite (Fe_3O_4) chain-like core-shell nanowires with luminescent synthesized by a facile one-pot hydrothermal process

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Characterization: The obtained samples were characterized on an (Philips X'Pert Pro Super) X-Ray powder diffractometer with Cu Ka radiation (λ= 1.541874 Å). The morphology was examined with a JEOL JSM-6700F scanning electron microscope (SEM), and a transmission electron microscope (TEM) performed on a Hitachi (Tokyo, Japan) H-800 transmission electron microscope (TEM) at an accelerating voltage of 200 kV, and high-resolution transmission electron microscope (HRTEM) (JEOL-2010) operated at an acceleration voltage of 200 kV. Photoluminescence emission was performed at room temperature with a Perkin–Elmer LS55 luminescence spectrometer. The magnetic properties of samples were investigated using a superconducting quantum interface device (SQUID) magnetometer (Quantum Design MPMS XL).

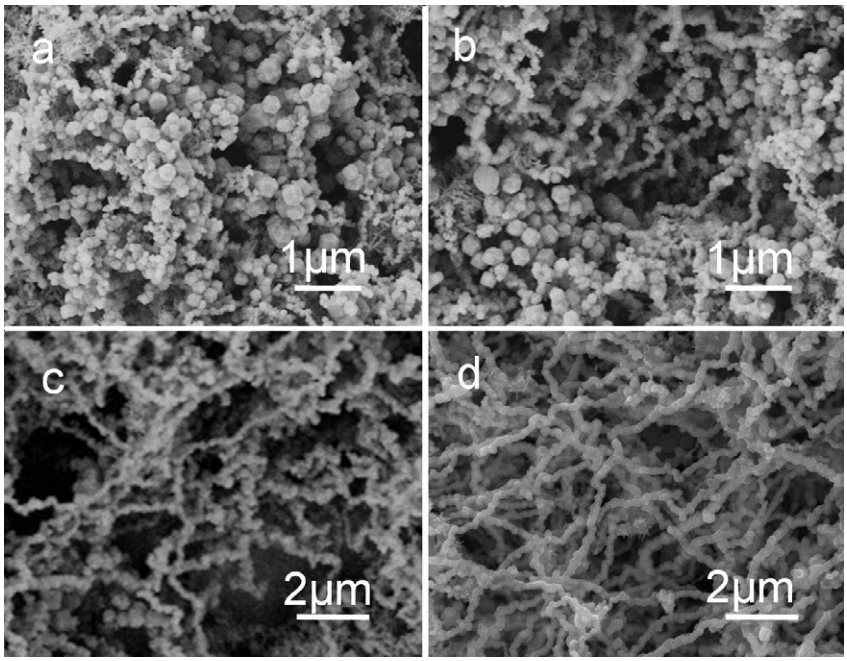

Fig. S1. The influence of reaction time on the shapes and sizes of self-assembly Fe_3O_4@phenol formaldehyde resin core-shell nanowires. SEM images of the samples prepared at 180 ^oC, showing the morphology evolution of the Fe_3O_4 composite. The reaction time was, respectively, (a) 6 hours, (b) 12hours, (c) 36hours and (d) 48hours.

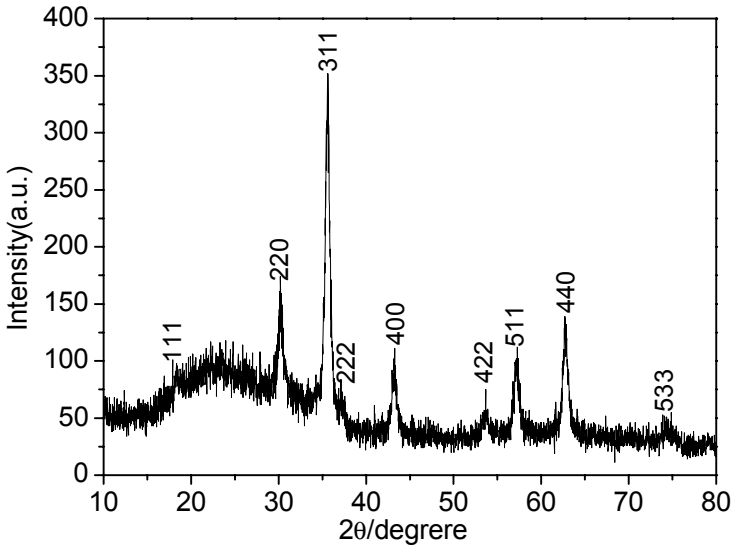

Fig. S2 XRD pattern of the nanowires obtained from reaction sodium at 180 ^{o}C for 6 hours.

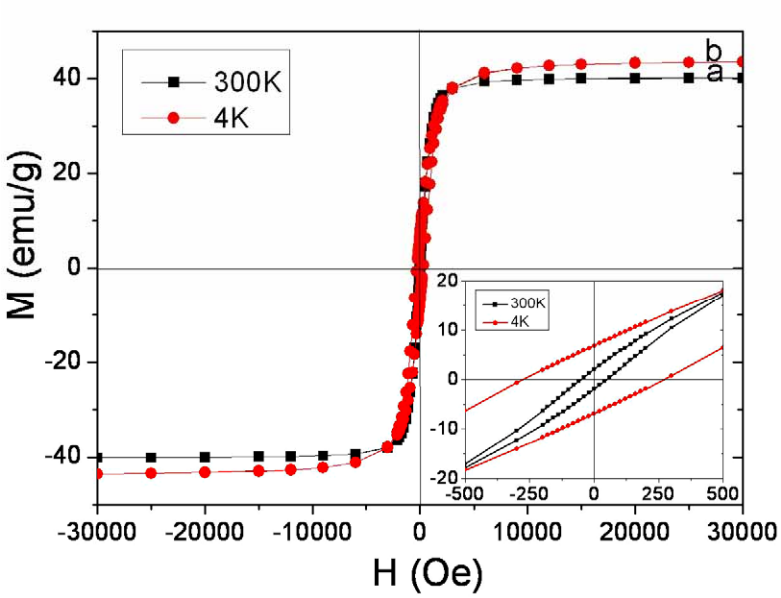

Fig. S3. The hystersis loops for as-synthesized self-assembly Fe_3O_4@phenol formaldehyde resin core-shell nanowires recorded at 300 K (a) and 4 K (b).

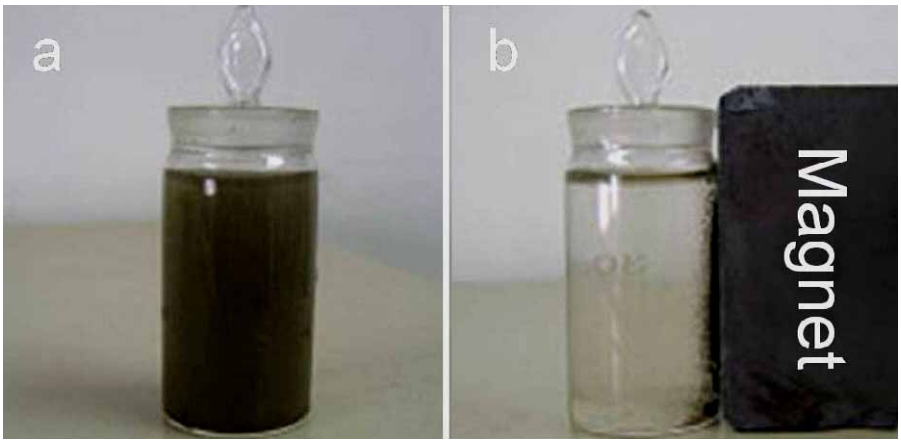

Fig. S4. (a), (b) Photograph of the self-assembly Fe_3O_4@phenol formaldehyde resin core-shell nanowires dispersed in the water and response to external magnetic field.