Supporting Information

Multifunctional and Redox-responsive Self-assembled Magnetic Nanovectors for Protein Delivery and Dual-Modal Imaging

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Synthesis of superparamagnetic iron oxide nanoparticles (SPIONs)

SPIONs-capped oleic acid (OA) with an average diameter of ~ 4 nm were firstly synthesized using the previously Sun et al.'s reported procedure with slight modification. Briefly, 0.7 g of $Fe(acac)_3$ (2 mmol), 1.7 g of oleic acid (6 mmol), 1.6 g of oleylamine (6 mmol) and 2.58 g of 1,2-hexadecanediol (10 mmol) were dissolved in 20 mL of phenyl ether. The mixture was rapidly heated to 260 ℃ at a constant heating rate of 20 ℃ min^{-1} and then kept at this for 40 min under a nitrogen flow. After the reaction, the mixture containing SPIONs was cooled room temperature and treated by adding 20 mL of ethanol to precipitate the SPIONs. The crude SPIONs were purified by centrifuging at 12000 rpm for 15 min to remove undispersed residue and solvent, and redispersed in chloroform at a concentration of 10 mg mL^{-1}.

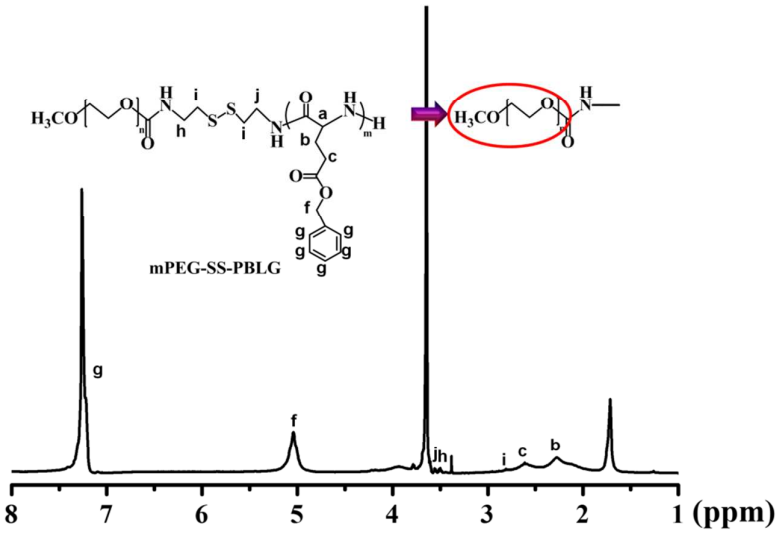

Figure S1. ^{1}H NMR spectra collected from mPEG-SS-PBLG polymer ligand backbone in $CDCl_3$.

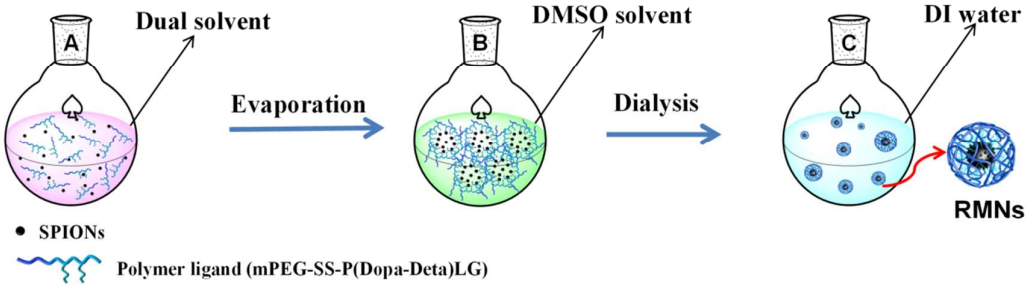

Figure S2. Schemaic illustration of self-assembly process of SPIONs and mPEG-SS-P(Dopa-Deta)LG polymer ligand. (A). mPEG-SS-P(Dopa-Deta)LG polymer ligand and SPIONs are initially dispersed in mixture solvent of chloroform and DMSO. (B). Chloroform is gradually removed by evaporation at 40 °C. (C). Induce the self-assembly colloidal of SPIONs and mPEG-SS-P(Dopa-Deta)LG by dialysis method using DI water (pH 7.0).

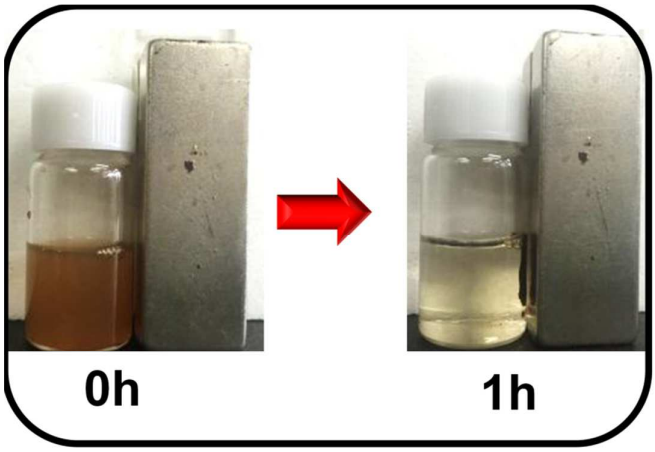

Figure S3. photographs of the RMNs dispersed in aqueous solution with applied magnetic field at 0 h and 1h.

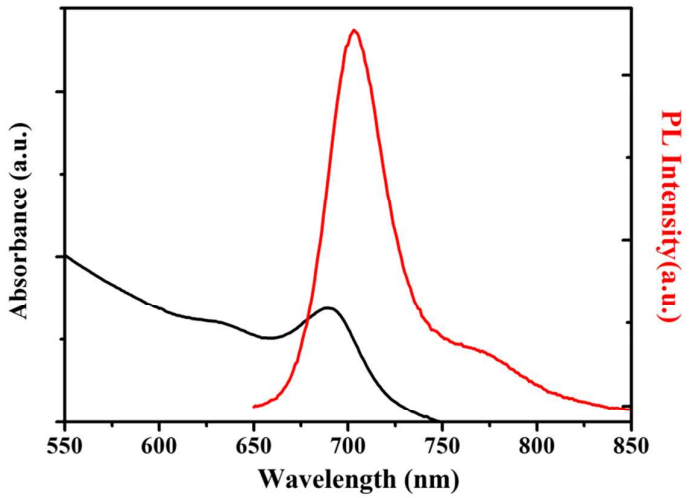

Figure S4. UV−vis absorption and fluorescence spectrum of the RMNs-HSA-Cy5.5.