Electronic Supplementary Material (ESI) for RSC Advances.
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Supplementary Information

for

Amphiphilic Peptide Coated Superparamagnetic Iron Oxide Nanoparticles for *in vivo* MR Tumor Imaging

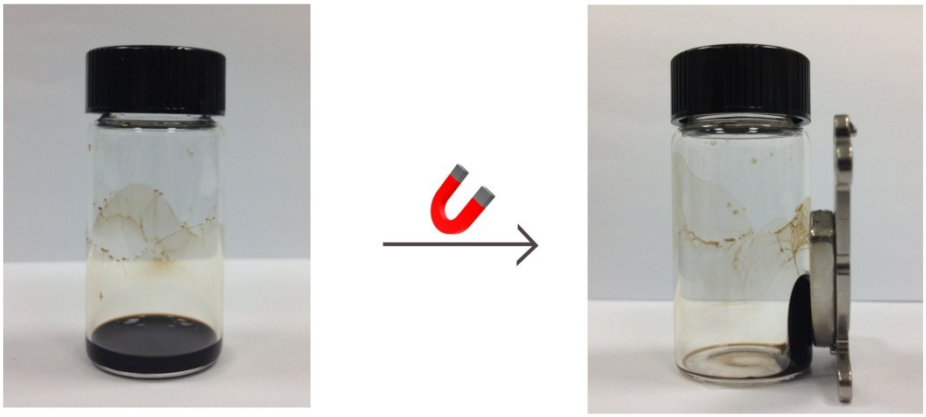

Figure S1. Images of hydrophobic iron oxide nanoparticles in the absence and presence of magnetic field when they are dispersed in hexane (10 mg/mL, concentration based on the iron content)

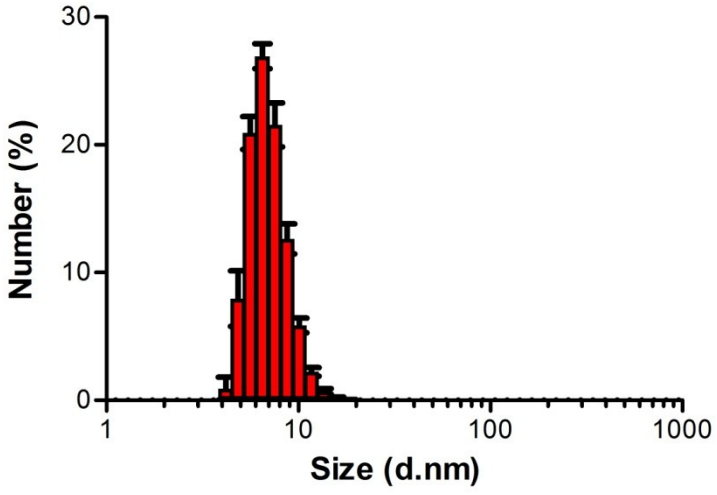

Figure S2. Number distribution of hydrodynamic diameter of the SPIONs dispersed in hexane.

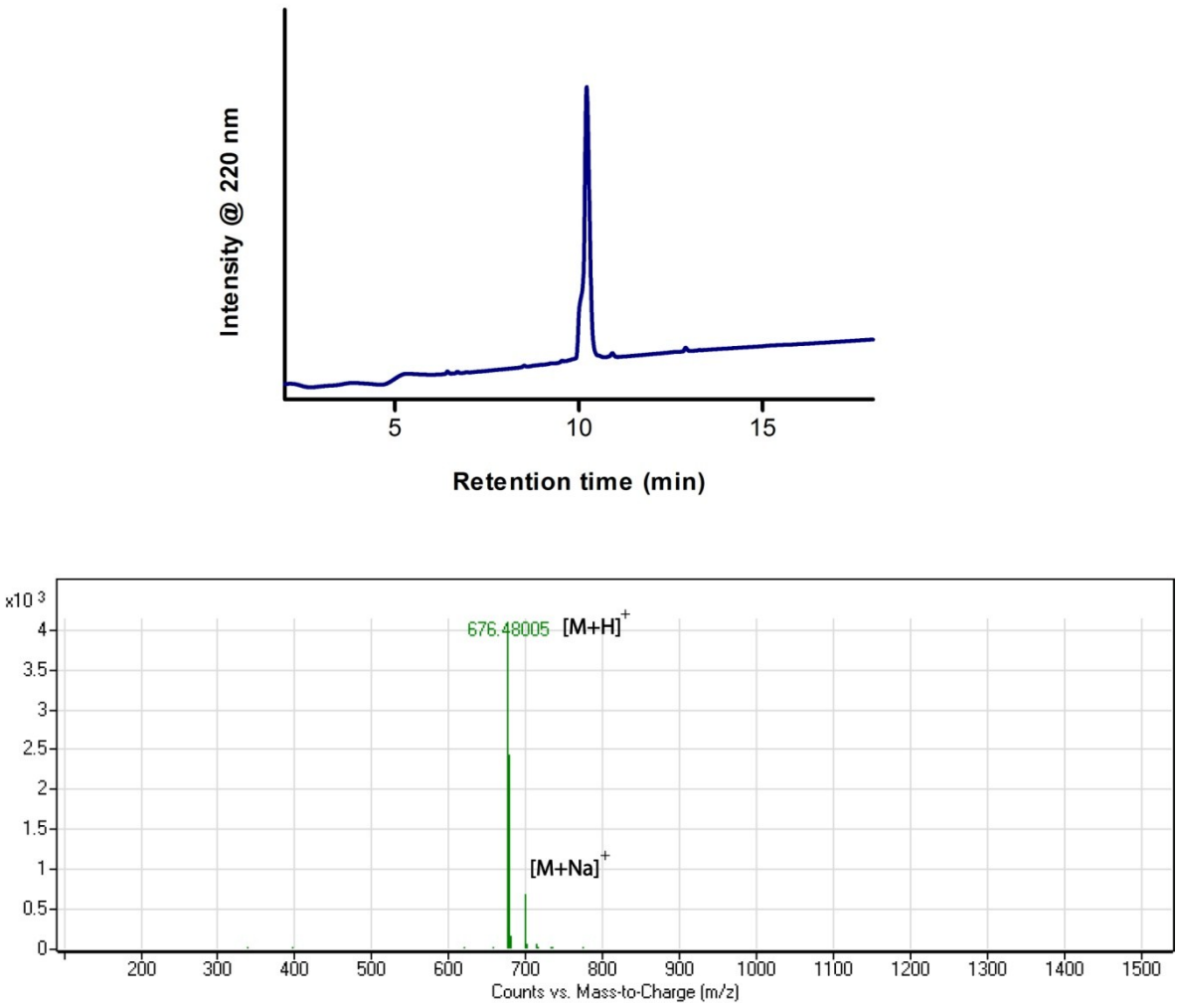

Figure S3. Liquid chromatogram of Lauryl-PPPGK-Am and mass spectrum of corresponding peptide amphiphile molecule. Mass data $[M\text{-}H]^+$ (calculated) = 676.47, $[M\text{-}H]^+$ (observed) = 676.48.

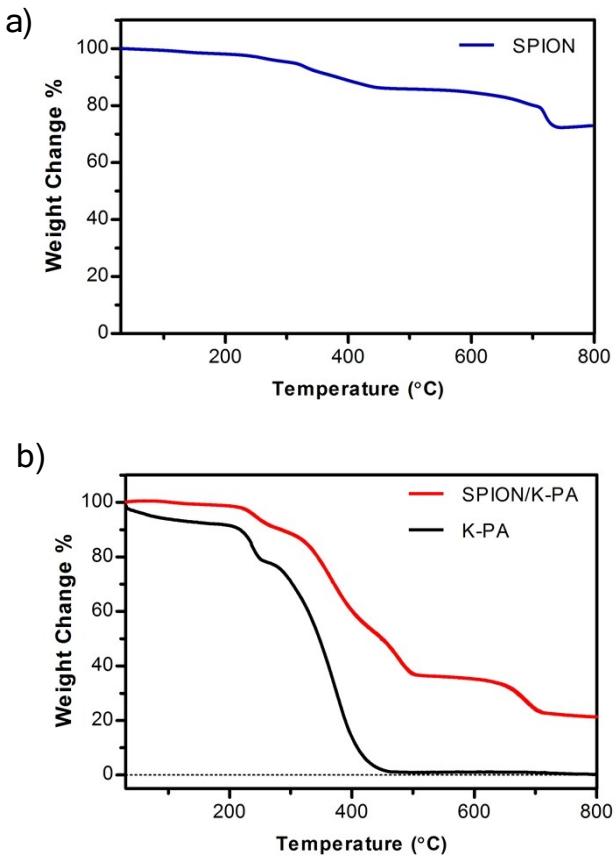

Figure S4. Thermal gravimetric analysis of a) SPIONs before assembly with PA, b) SPION/K-PA and peptide samples.

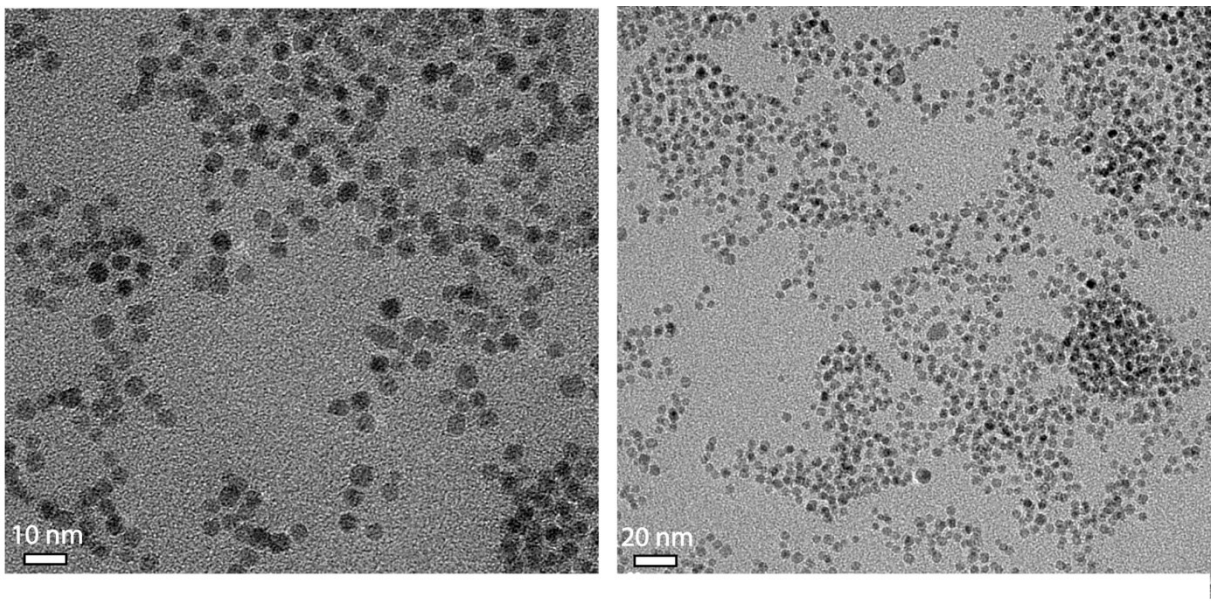

Figure S5. TEM images of peptide coated SPIONs, scale bars: 10 nm and 20 nm, respectively.

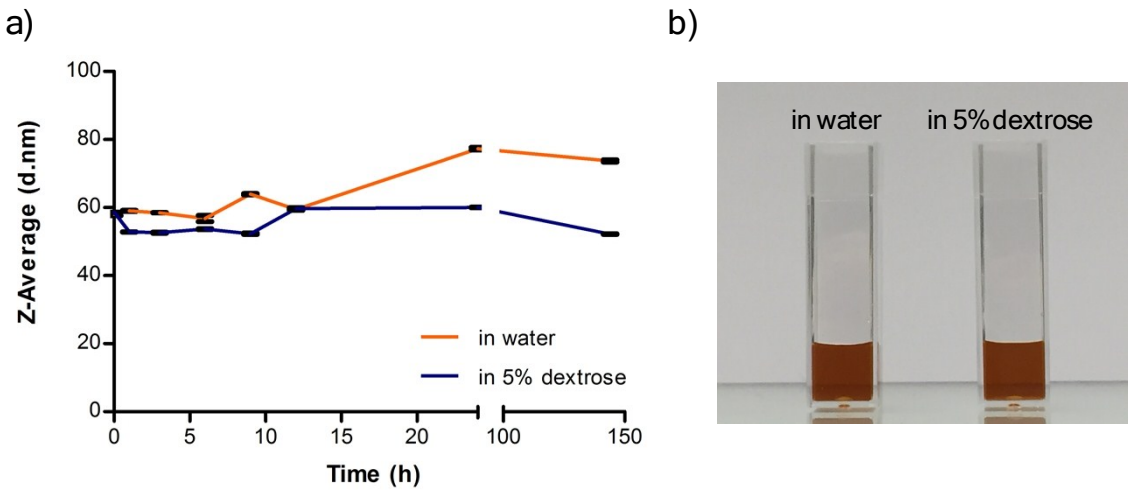

Figure S6. a) Dynamic light scattering (DLS) analysis to determine the dispersion stability of peptide coated SPIONs prepared in two different media, b) photographs taken after a week dispersion in corresponding media.

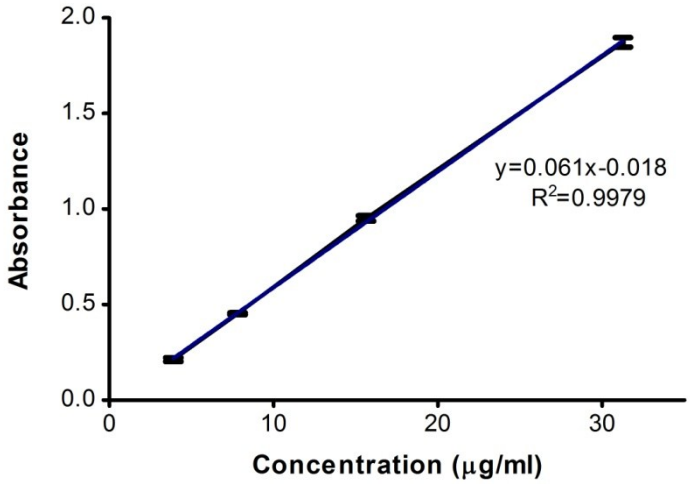

Figure S7. Calibration curve plotted for iron content.

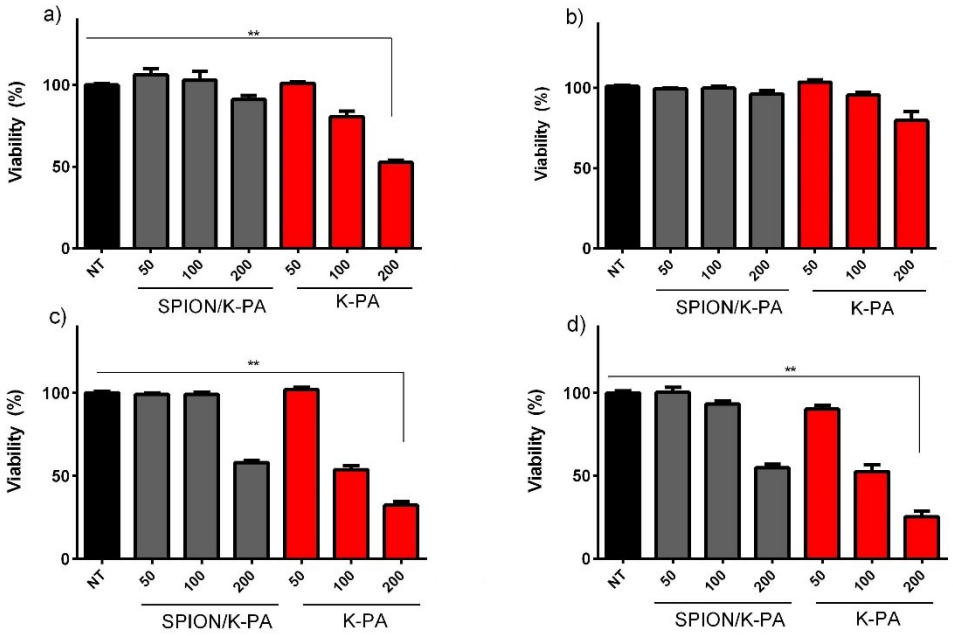

Figure S8. Dose-dependent cytotoxicity profiles of SPION/KPA and K-PA on different cell lines in comparison with the no-treatment group (NT). Cell viability of HUVEC (**a, b**), and MCF-7 cells (**c, d**) treated with K-PA (50-200 µg/mL which is equivalent content of iron assembled with PA) and SPION/K-PA (50-200 µg/mL) at 24 h (left column) or 48 h (right column). Values were compared to those of the untreated controls and are presented as percentages. Data represent means ± standard error of mean (SEM) of a minimum of 3 independent experiments performed in quadruplicates.

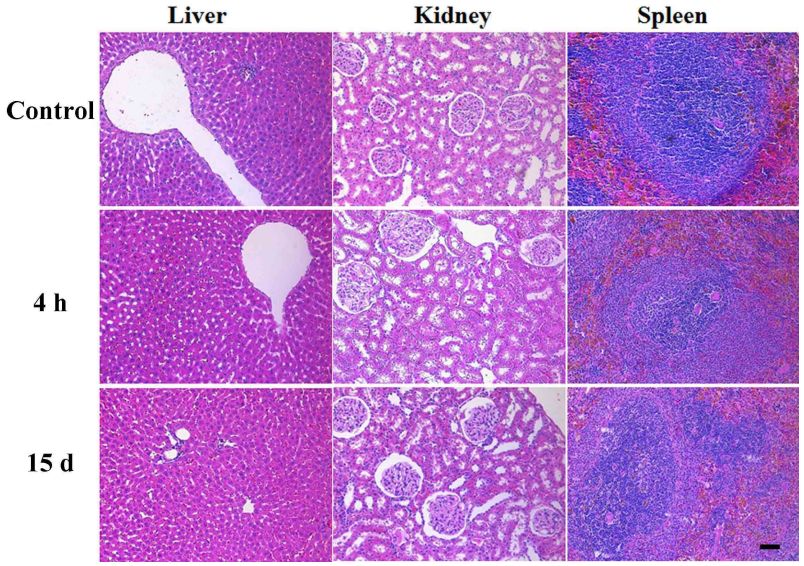

Figure S9. Hematoxylin-eosin staining for the tissue morphology of the kidney, liver and spleen of healthy rats (control) prior to or 4 h and 15 days following the injection of SPION/K-PA (5 mg/kg) (original magnification 200x and scale bar:50 µm).

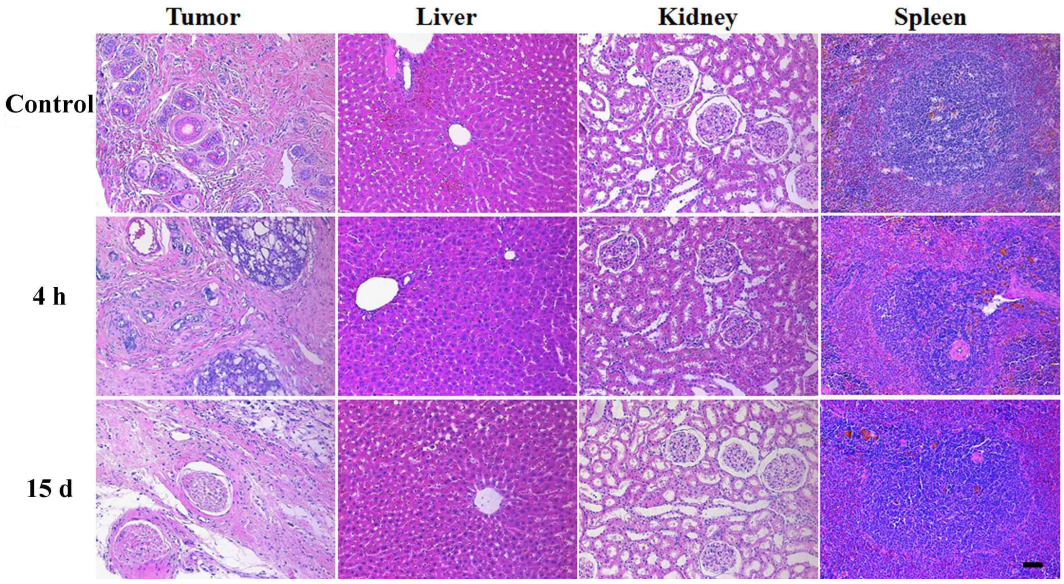

Figure S10. H&E staining for the tissue morphology of the kidney, liver and spleen of tumor bearing rats (control) prior to or 4 h and 15 days following the injection of SPION/K-PA (5 mg/kg). Photographs were taken at 200x magnification.

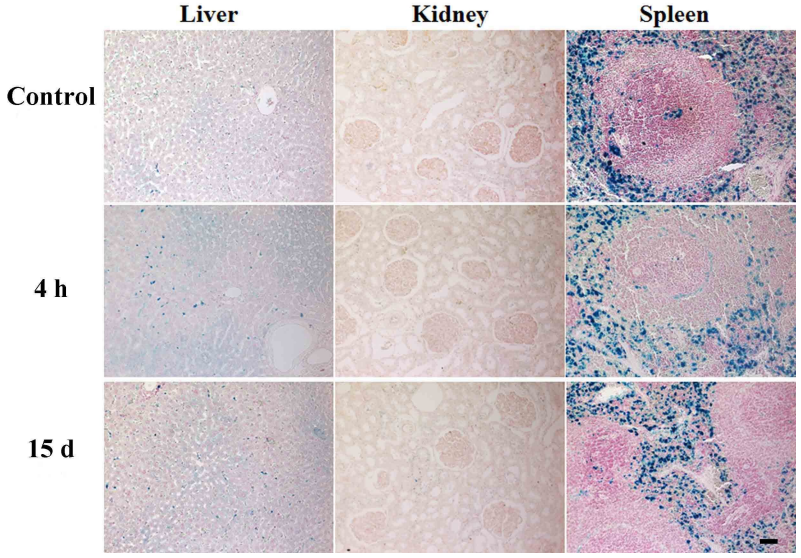

Figure S11. Representative photomicrographs of the liver, kidney and spleen of healthy rats (control) prior to or 4 h and 15 days following the injection of SPION/K-PA (5 mg/kg) stained with Prussian blue for iron accumulation. Positive staining appears in blue dots. (Original magnification 200x. Scale bar: 50 µm).

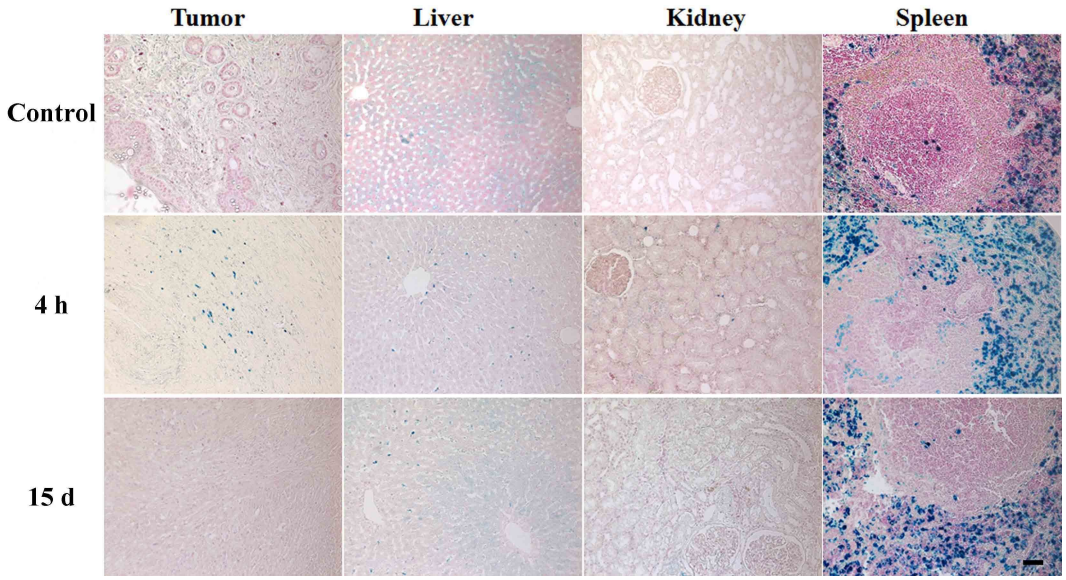

Figure S12. Prussian blue staining for iron accumulation in the tumor, kidney, liver and spleen of tımor baring rats (control) prior to or 4 h and 15 days following the injection of SPION/K-PA (5 mg/kg) (original magnification 200x, scale bar is 50 µm).

Table S1. The d-spacing values (nm) calculated from peak positions in XRD pattern inserted in Figure 2a and standard atomic spacing for magnetite together with respective Miller indices (*hkl*) from the JCPDS card (19-0629).

2 θ (degrees)	Calculated d-spacing (nm)	JCPDS data (nm)	*hkl*
30.02	0.2961	0.2967	220
35.43	0.2524	0.2532	311
43.11	0.2096	0.2099	400
53.31	0.1740	0.1714	422
57.11	0.1610	0.1615	511
62.75	0.1479	0.1484	440

Table S2. Physical properties of fatty acid/amine capped SPIONs and PA functionalized SPIONs (a: in water, b: in 5% dextrose, c: in hexane).

Sample	TEM size (nm)	DLS size (nm)	Zeta potential (mV)
SPION	5.5±0.6	7.1±0.3[c]	N/A
SPION/K-PA[a]	5.3±0.8	58.0±0.7	18.3±1.4
SPION/K-PA[b]	N/A	58.6±0.1	23.7±1.7