Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B

Supporting Information

In situ growth of β-FeOOH nanorods on graphene oxide with ultra-high relaxivity for *in vivo* magnetic resonance imaging and cancer therapy

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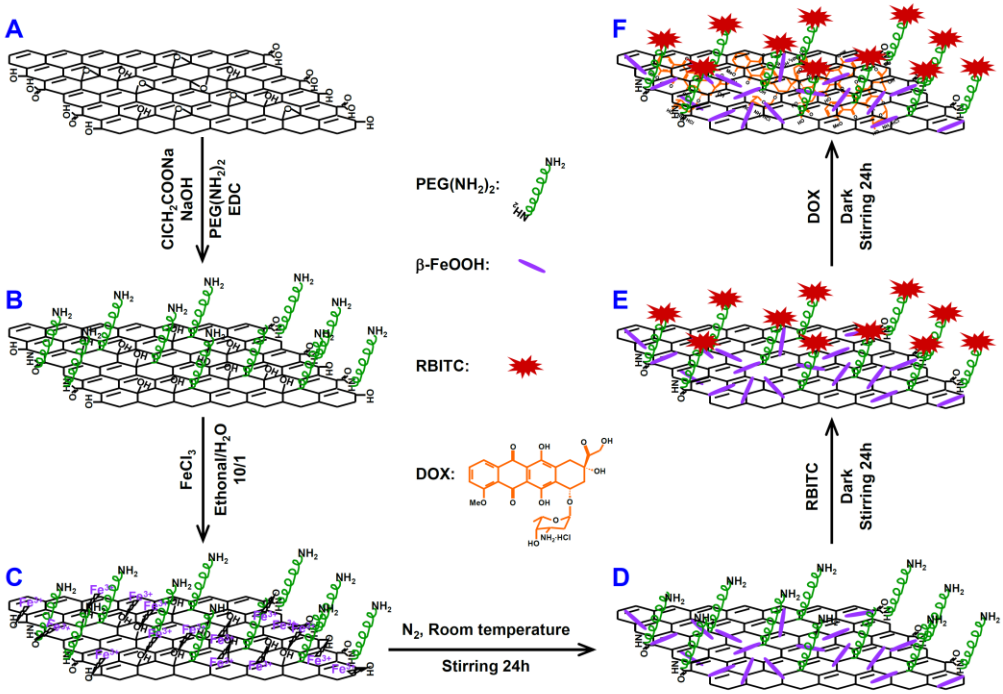

Scheme S1. The preparation of water-dispersible DOX-GO-PEG-β-FeOOH nanocomposites.

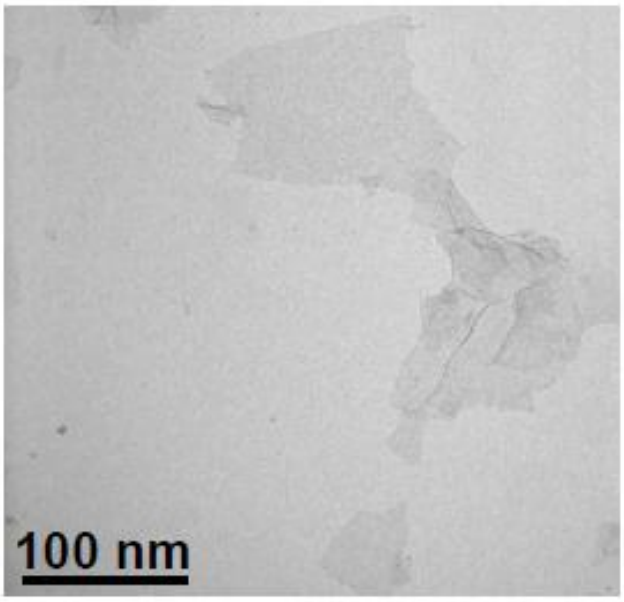

Figure S1. The TEM images of GO-PEG.

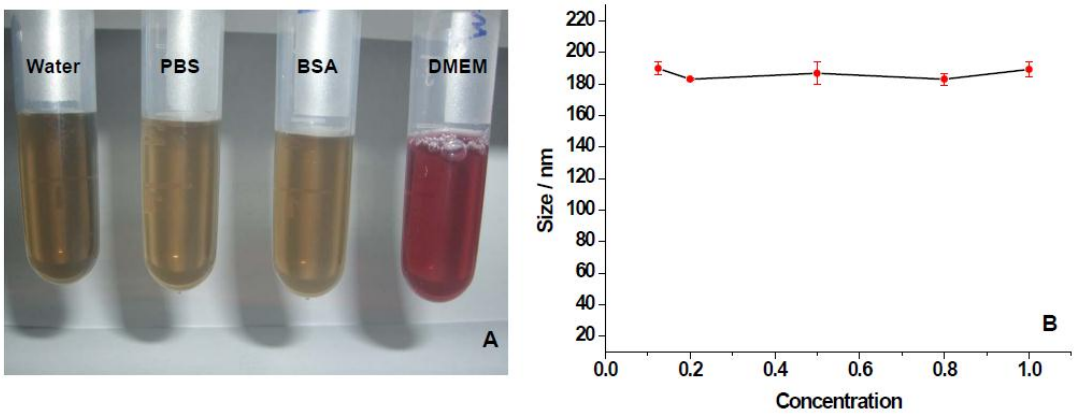

Figure S2. (A) Photographs for the dispersion status of GO-PEG-β-FeOOH in water, PBS, BSA and DMEM (10% serum-containing medium) for 4 h incubation at 37°C. (B) Dependence of particle size of GO-PEG-β-FeOOH on its concentration.

Conjugation of GO-PEG-β-FeOOH with RBITC

The successful conjugation GO-PEG-β-FeOOH with RBITC was checked by UV-vis, FL and FT-IR spectra, respectively. Fig. S3A showed the UV-vis spectra of RBITC, GO-PEG-β-FeOOH and GO-PEG-β-FeOOH. The specific absorption of RBITC is 557 nm, after conjugation with GO-PEG-β-FeOOH slight red-shifts was recorded indicating interactions between RBITC and GO-PEG-β-FeOOH. The fluorescence spectra of GO-PEG-β-FeOOH-RBITC clearly illustrated that the conjugation of GO-PEG-β-FeOOH with RBITC endowed it with excellent fluorescent properties (Fig. S3B). As shown in Fig. S3C, the FT-IR spectrum of GO-PEG-β-FeOOH-RBITC presented a increasing band at 1619 cm^{-1} (N-H virbation) compared with GO-PEG-β-FeOOH, disappeared a band at 2040 cm^{-1} (N=C=S vibration) compared with RBITC due to the formation of the thiourea structure and some new bands loacated at 1560-1400 cm^{-1} can be ascribed to the stretching vibrations of the bennzene skeleton in the rhodamine B groups [1]. In addition, the amine concentration present in GO-PEG-β-FeOOH was determined to be about 21.7 μmol L^{-1} (Table S1). After conjugation with RBITC, the content of the remaining amine groups in GO-PEG-β-FeOOH-RBITC was 0 μmol L^{-1}, which indicated that the all of amine groups on the surface of GO-PEG-β-FeOOH react with RBITC.

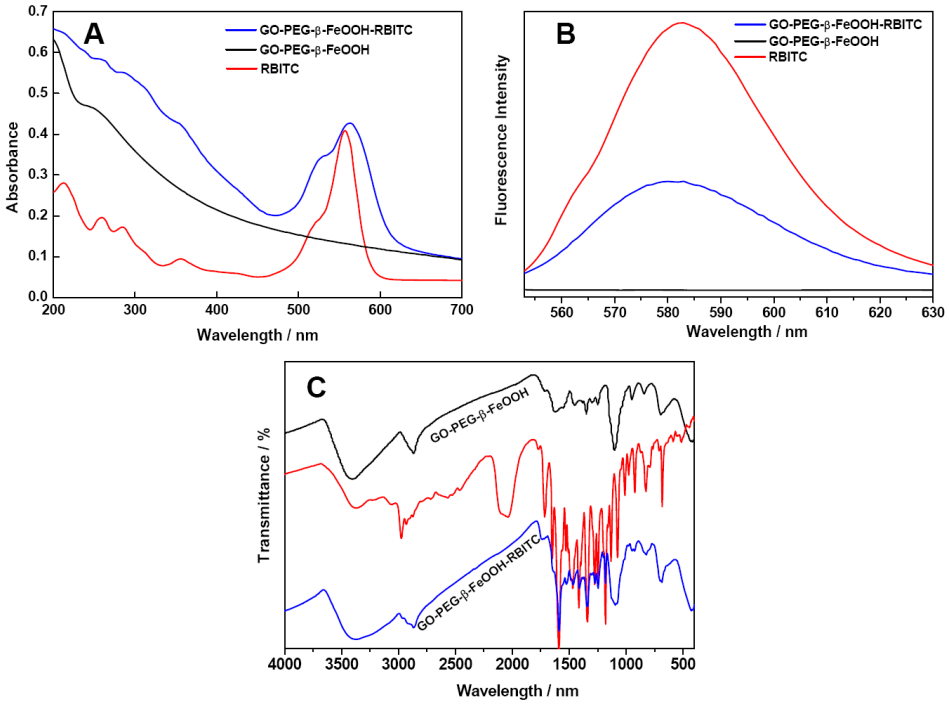

Figure S3. Characterization of GO-PEG-β-FeOOH-RBITC nanocomposites. (A) UV-vis (B) Fluorescence (C) FT-IR spectra of RBITC, GO-PEG-β-FeOOH and GO-PEG-β-FeOOH-RBITC.

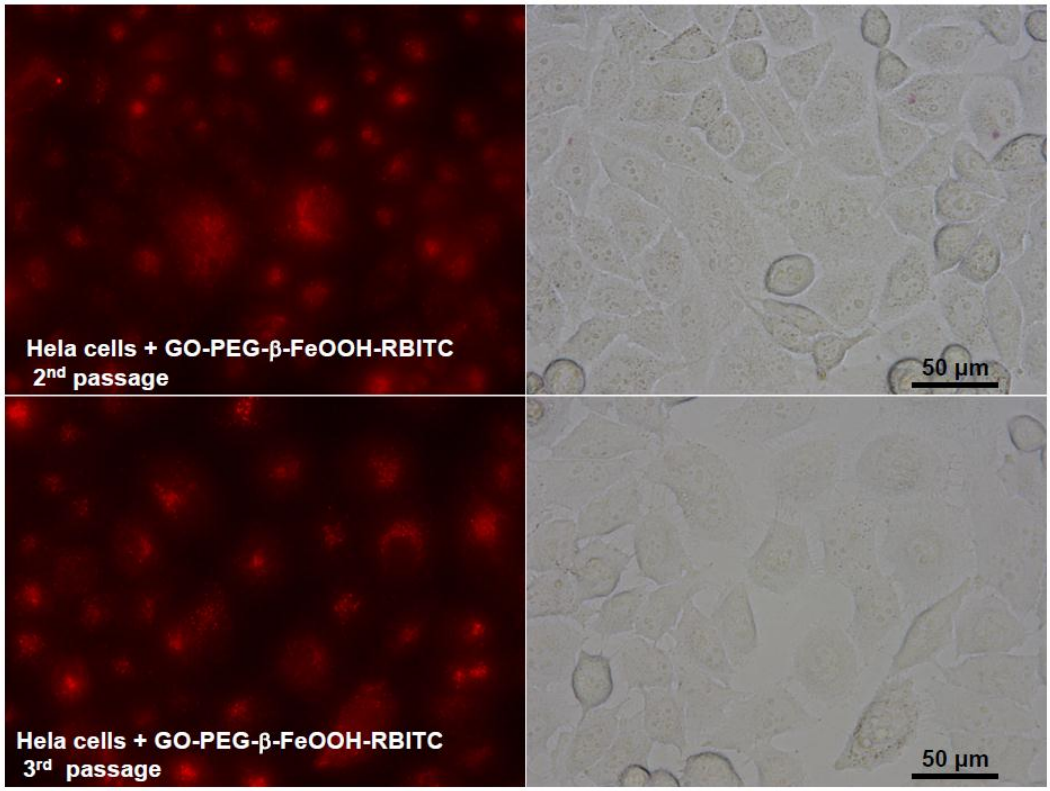

Figure S4. Fluorescence images of 2nd passage and 3rd passage of Hela cells incubated with GO-PEG-β-FeOOH-RBITC (Left: fluorescence images; right: bright-fields images)

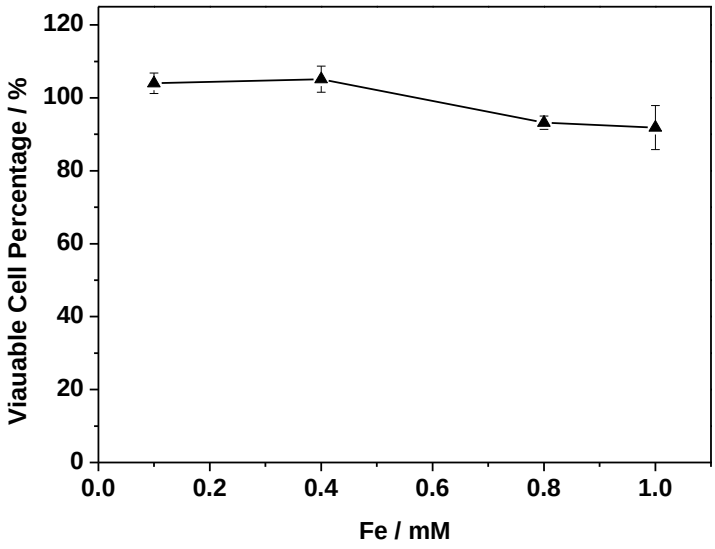

Figure S5. Concentration-dependent survival curves of HEK293 human kidney cells treated by GO-PEG-β-FeOOH nanoparticles for 24 h.

Table S1: The amine concentration of GO-based nanomaterials.

Sample	C_{amine} (μmol L^{-1})
GO-COOH	0
GO-PEG	45
GO-PEG-β-FeOOH	21.7
GO-PEG-β-FeOOH-RBITC	0

References

1. H. Wu, S. Zhang, J. Zhang, G. Liu, J. Shi, L. Zhang, X. Cui, M. Ruan, Q. He and W. Bu, *Advanced Functional Materials*, 2011, **21**, 1850.