

Supporting Information

Sonochemical Synthesis of Hydrophilic Drug Loaded Multifunctional Bovine Serum Albumin Nanocapsules

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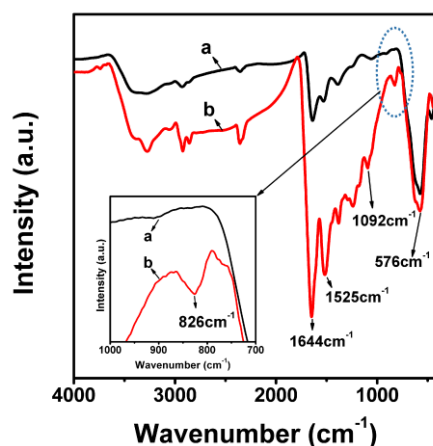


Figure S1. FTIR curves of BSA@Fe₃O₄ MNPs (a) and FA-BSA@Fe₃O₄ MNPs (b).

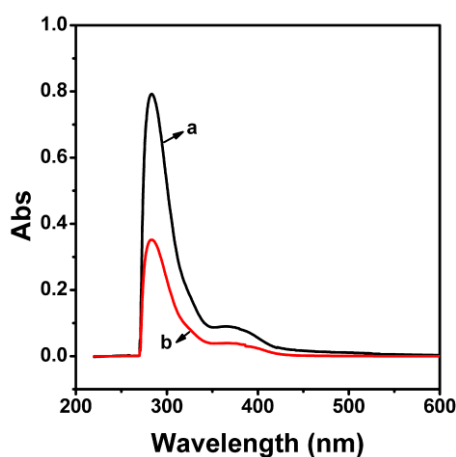


Figure S2. UV-vis spectra of the solution before (a) and after FA conjugated BSA@Fe₃O₄ MNPs (b).

To confirm whether FA was immobilized onto the BSA@Fe₃O₄ MNPs, FTIR spectrum analysis gave us some insights (**Figure S1**). As with BSA@Fe₃O₄ MNPs, FA-BSA@Fe₃O₄ MNPs had strong adsorption peaks at 576 cm⁻¹, 1644 cm⁻¹ and 1525 cm⁻¹ which were characteristic adsorption peaks of Fe₃O₄ and BSA separately.¹⁻³ The new peaks at 1092 cm⁻¹ and 826 cm⁻¹ which were characteristic peaks of FA,^{4, 5} appeared in the FTIR spectrum of FA-BSA@Fe₃O₄ MNPs, revealing directly that BSA@Fe₃O₄ MNPs had been modified with FA. UV-vis spectrum also demonstrated the immobilization of FA (**Figure S2**). In FA molecules, there were two absorption peaks at 360 and 285 nm owing to π - π^* and n - π^* transitions, respectively. After FA conjugated BSA@Fe₃O₄ MNPs, the peak intensity of FA in the solution occurred to decrease, proving that FA molecules had attached to BSA@Fe₃O₄ MNPs.

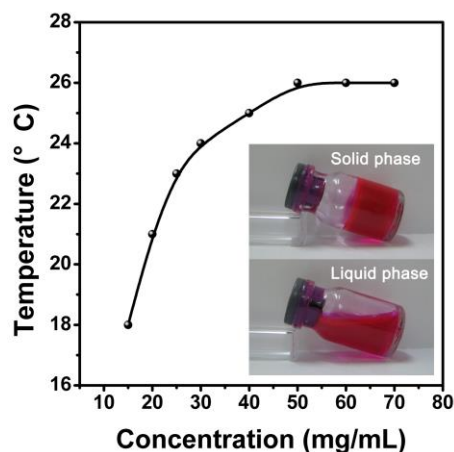


Figure S3. Critical temperature curve of the gelatin hydrogel with the gelatin concentration and RhB-loaded gelatin hydrogel (60 mg/mL) at the liquid phase and solid phase.

Gelatin hydrogel was thermo-responsive and its critical temperature was closely related to the gelatin concentration (**Figure S3**). When the gelatin concentration was less than 50 mg/mL, the critical temperature heightened along with the increment of the gelatin concentration. Higher than 50 mg/mL, the gelatin concentration could not influence the critical temperature any more. Figure S3 also showed us RhB-loaded gelatin hydrogel (60 mg/mL) in the different phases.

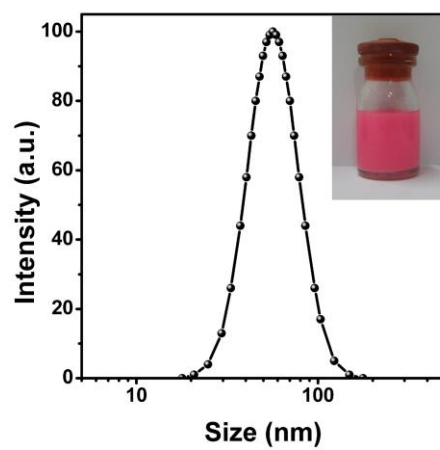


Figure S4. Size distribution of RhB-loaded water/oil emulsion.

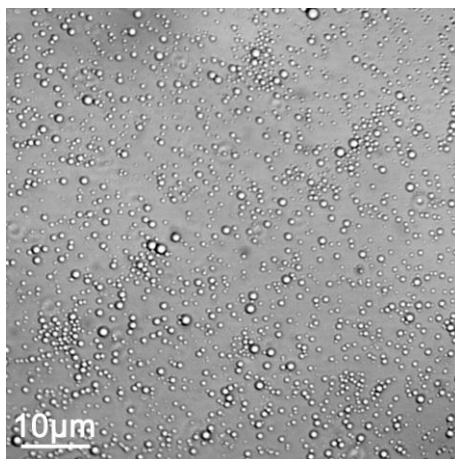


Figure S5. Microphotograph of HD-loaded MBNCs.

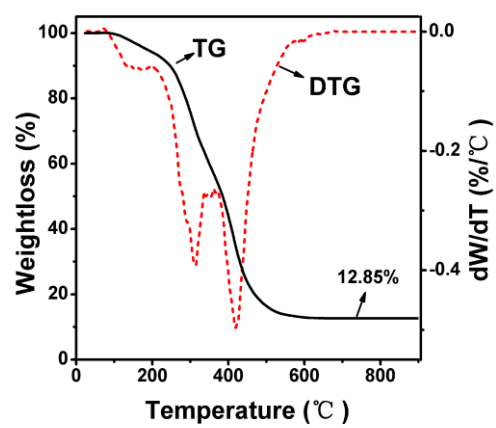


Figure S6. TG curve of HD-loaded MBNCs.

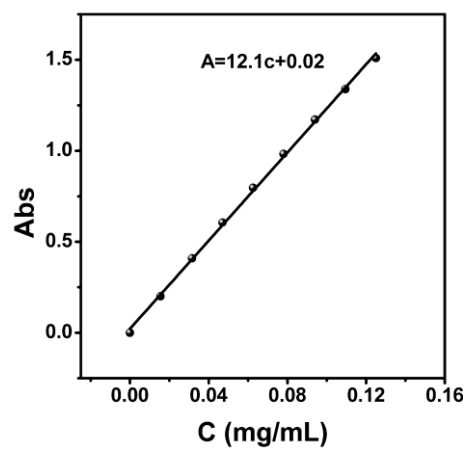


Figure S7. Absorbance-concentration curve of RhB in the water.

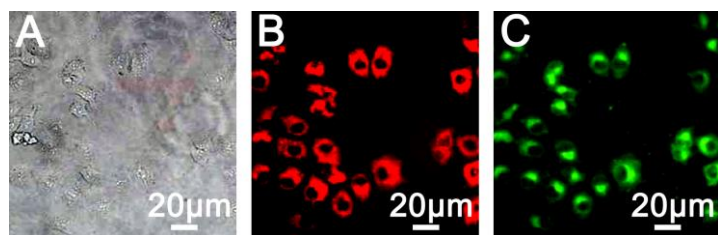


Figure S8. CLSM images of HeLa cells incubated in the serum-free medium with MBNCs with RhB and coumarin 6: (A) transmission mode, (B) red fluorescence mode, and (C) green fluorescence mode.

Reference

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