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

Supporting Information

Table S1. Characterization of different shaped polymer micelles loaded with DOX.

Sample	Average size (nm)	PDI	Zeta potential(mV)
S_1	109±2.1	0.126±0.010	-19.8±0.2
R_1	224±3.2	0.395±0.019	-20.2±0.1
S_2	136±3.8	0.131±0.023	-23.4±0.2
R_2	341±5.7	0.412±0.021	-24.1±0.3
S_1@DOX	113±1.9	0.119±0.011	-6.4±0.4
R_1@DOX	231±2.7	0.412±0.02	-7.2±0.3
S_2@DOX	141±3.3	0.129±0.022	-7.9±0.5
R_2@DOX	348±6.3	0.432±0.025	-9.1±0.3

Table S2. Characterization of the DOX-loaded different shaped polymer micelles.

Sample	S_1@DOX	R_1@DOX	S_2@DOX	R_2@DOX	R_2@DOX/Fe_3O_4
LC%(UV-vis)	4.9±0.29	7.0±0.42	5.1±0.96	7.3±0.33	4.3±0.21
EE%(UV-vis)	53.4±2.89	74.7±1.26	54.6±1.43	72.4±3.55	49.6±2.11

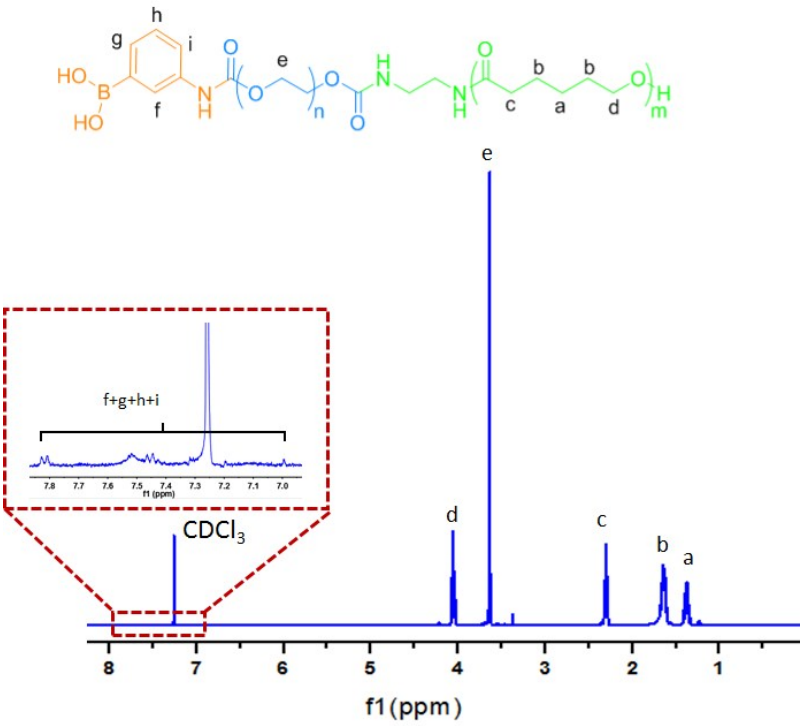

Figure S1. ^{1}HNMR spectrum of the PBA-PEG-PCL copolymer in $CDCl_3$.

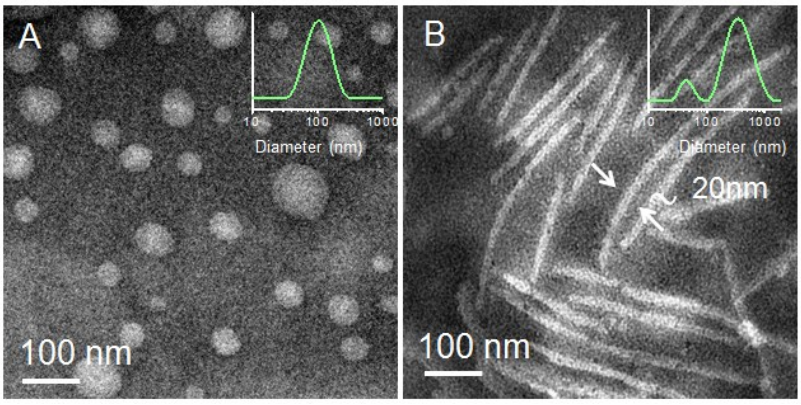

Figure S2. TEM images of micelles with different shapes. (A) mPEG-PCL blank micelles with spherical shape (S_1); (B) mPEG-PCL blank micelles with rod-like shape (R_1). The inserted images are the particle size distribution.

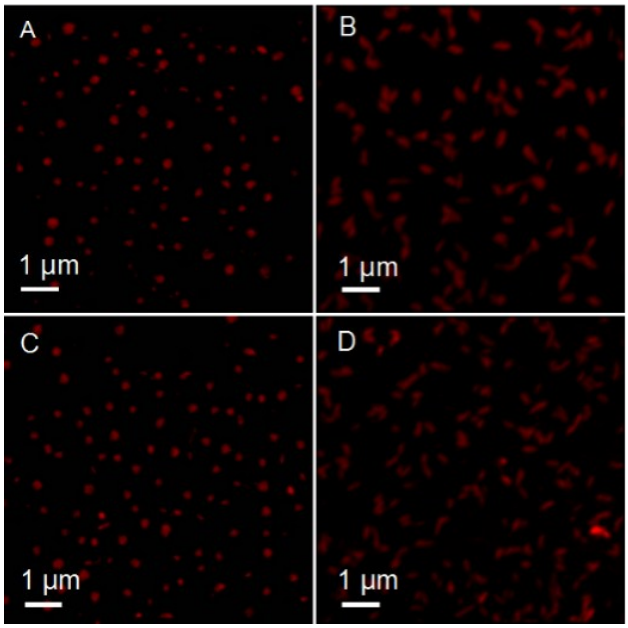

Figure S3. CLSM images of micelles with different drug-loaded morphologies. (A) mPEG-PCL micelles with spherical shape (S_1); (B) mPEG-PCL micelles with rod-like shape (R_1); (C) PBA-PEG-PCL micelles with spherical shape (S_2); (D) PBA-PEG-PCL micelles with rod-like shape (R_2).

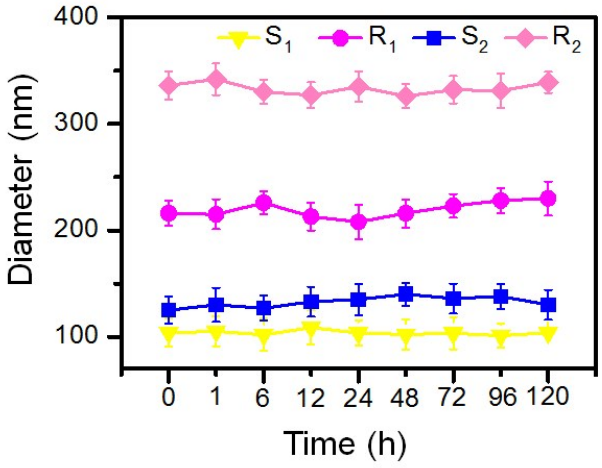

Figure S4. The stability of different shaped micelles at a concentration of 1 mg/mL in 0.9% physiological saline solution over time. S_1: mPEG-PCL micelles with spherical shape; R_1: mPEG-PCL micelles with rod-like shape; S_2: PBA-PEG-PCL micelles with spherical shape; R_2: PBA-PEG-PCL micelles with rod-like shape.

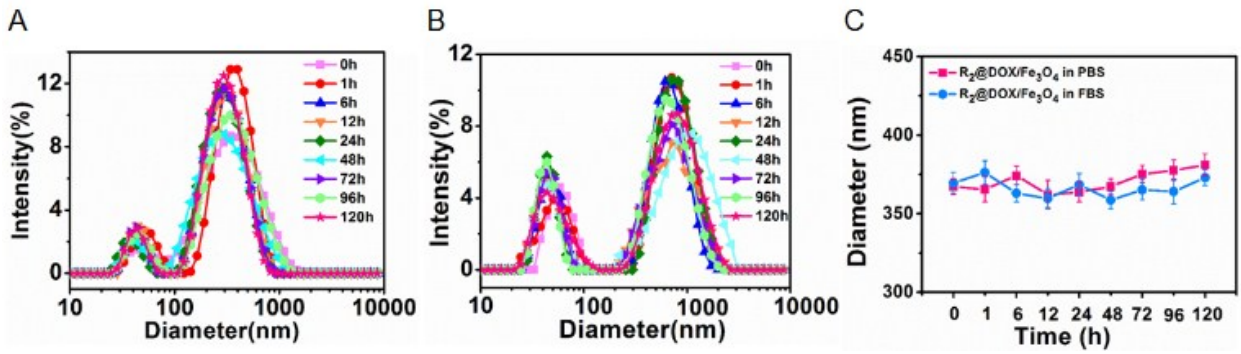

Figure S5. The stability of R_1@DOX/Fe_3O_4 micelles at different dispersed media over time. A)R_1@DOX/Fe_3O_4 micelles in PBS. B) R_1@DOX/Fe_3O_4 micelles in FBS. C) The average size changes of the micelles over time.

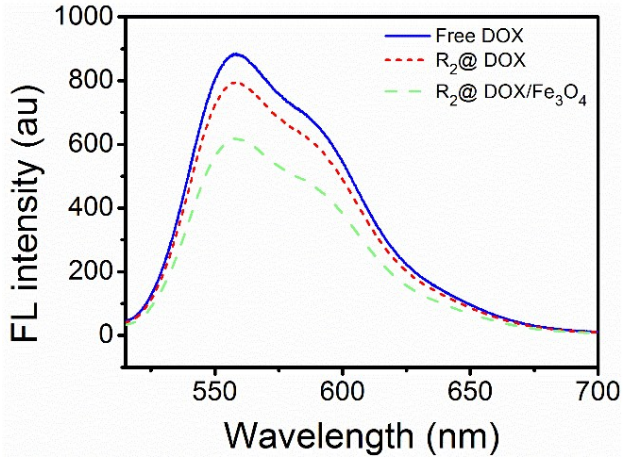

Figure S6. Fluorescence emission spectra of Free DOX, R_2@DOX, R_2@DOX/Fe_3O_4 (DOX dose is 5 μg/mL in all the three groups).

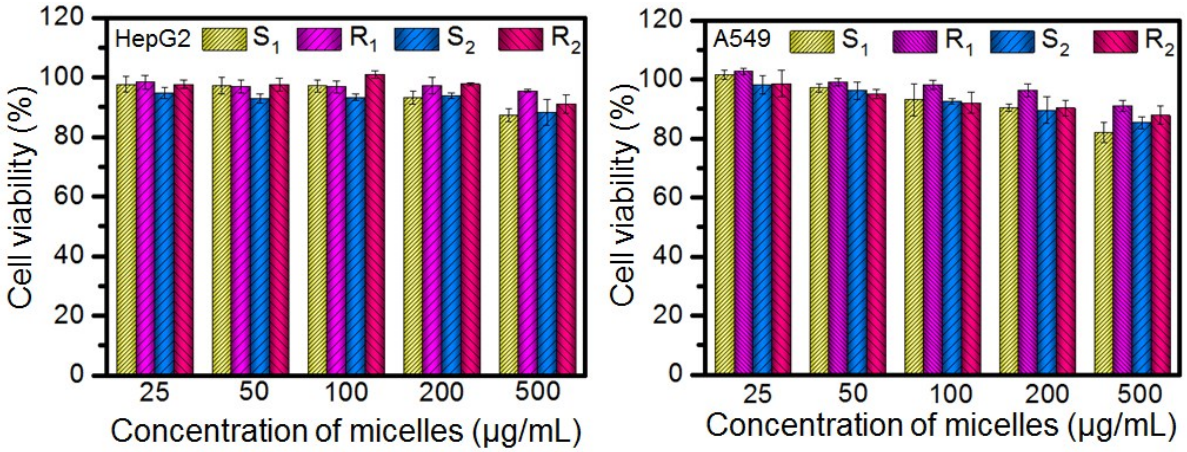

Figure S7. Cell viability of HepG2 cells and A549 cells after incubation with S_1, R_1, S_2 and R_2 at different concentrations for 24 h.

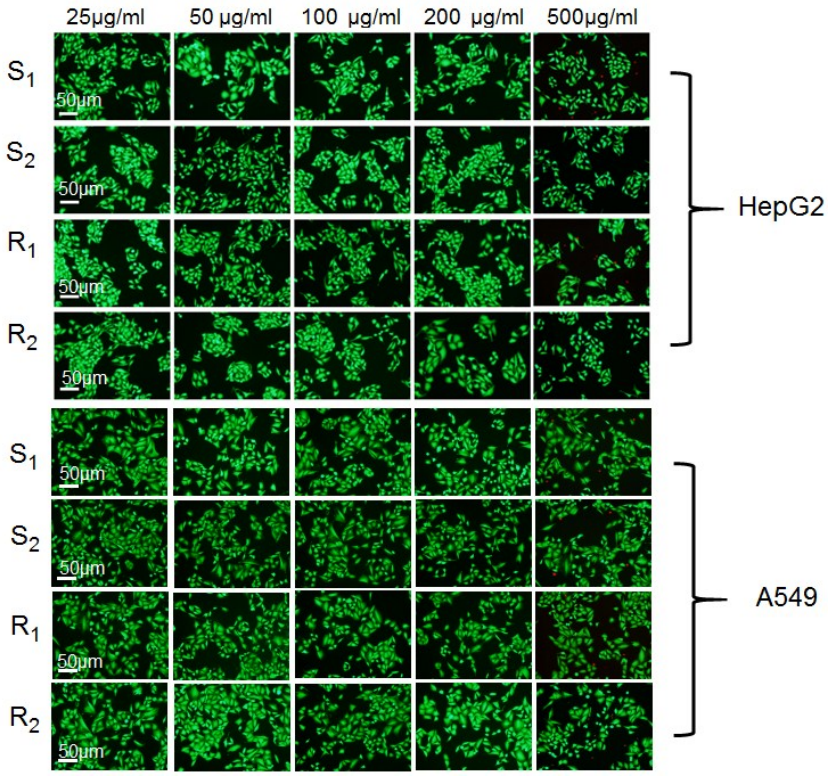

Figure S8. Fluorescence images of HepG2 cells and A549 cells after incubation with S_1, R_1, S_2 and R_2 at different concentrations for 24 h.

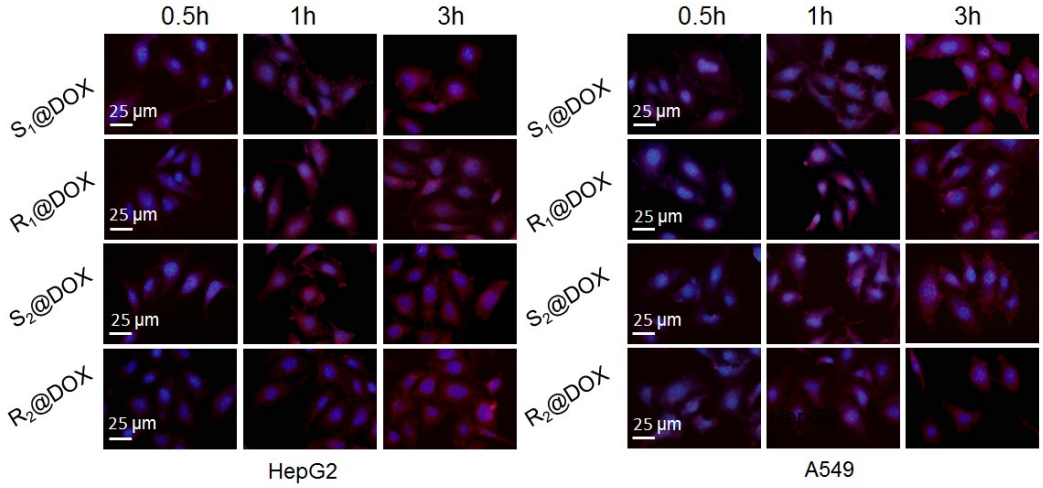

Figure S9. Fluorescence images of cellular uptake of different shaped DOX-loaded micelles after incubation with HepG2 cells and A549 cells for 0.5 h, 1 h and 3 h.

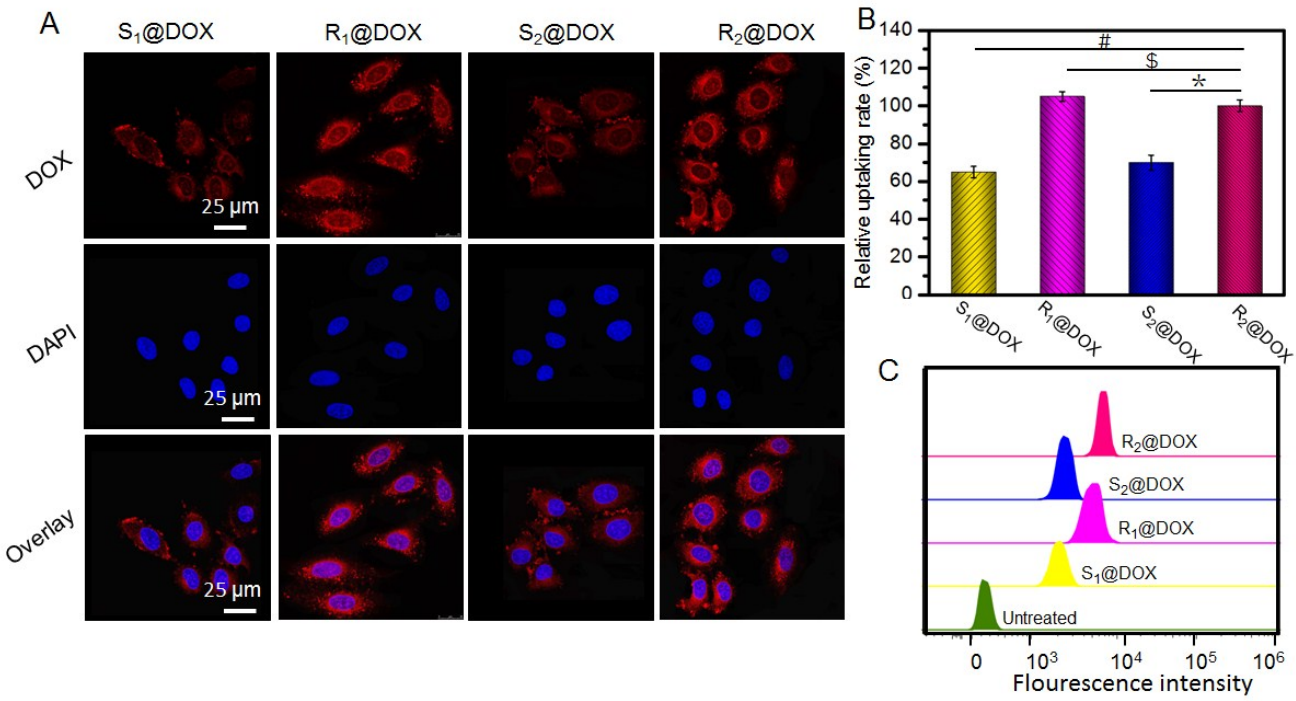

Figure S10. Cellular uptake and intracellular distribution of the DOX-loaded micelles in A549 cells. (A) CLSM image of A549 cells after incubated with S_1@DOX, R_1@DOX, S_2@DOX, R_2@DOX for 3 h. The nuclei were stained with DAPI (blue) and the dose of DOX is 5 μg/mL. (B) Quantitative analysis of DOX in A549 cells through the Image-Pro Plus 6.0. The S_1@DOX, R_1@DOX and S_2@DOX groups were compared with the R_2@DOX group. The data were shown as the mean ± standard (SD) (n = 3). $ (not significant), * ($P<0.05$), # ($P<0.01$). (C) Flow cytometry quantitative analysis of HepG2 cells after incubation with free DOX, S_1@DOX, R_1@DOX, S_2@DOX and R_2@DOX for 3 h (DOX dose: 5 μg/mL).