Electronic Supplementary Material (ESI) for Biomaterials Science.

pH-responsive doxorubicin-loaded magnetosomes for magnetic resonance-guided focused ultrasound real-time monitoring and ablation of breast cancer

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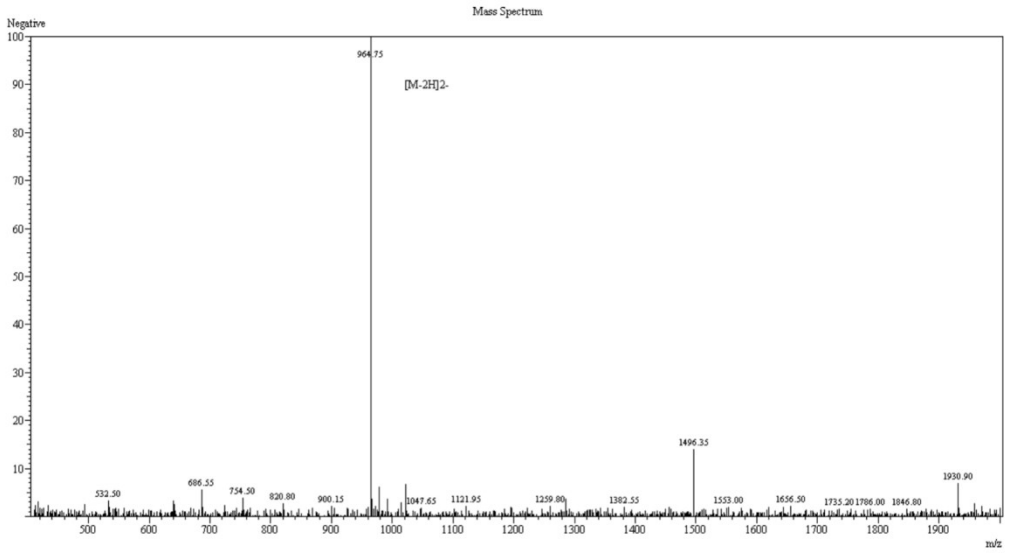

Fig. S1 Molecular weight of SKDEEWHKNNFPLSP, measured with Maldi-Tof-Ms.

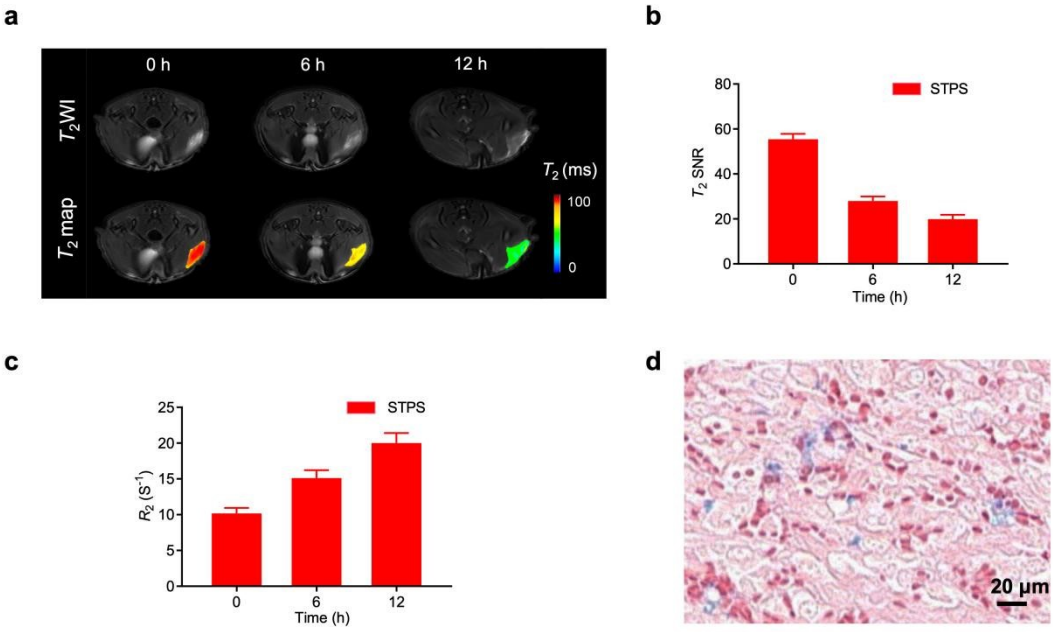

Fig. S2 Non-invasive, in situ tumor monitoring of SPIO accumulation from the STPS nanoparticles by MRI. (a-c) T_2-weighted images, T_2 map (a), T_2 SNR (b) and R_2 values (c) of the tumors of the nude rat with breast cancer before injection, 6 and 12 hours after the STPS nanoparticles. Measure the mean T_2 signal intensity of per tumor. Subsequently, calculating the relative signal-to-noise ratio (SNR = Smean/Standard deviation of noise (NSD) (Standard deviation of the background signal)). Regions of interest (ROIs) are set to about 20-30 mm^2 in each tumor. (d) Prussian blue staining revealed the tumor deposition of STPS. All values are presented in mean±s.d. (n = 3).

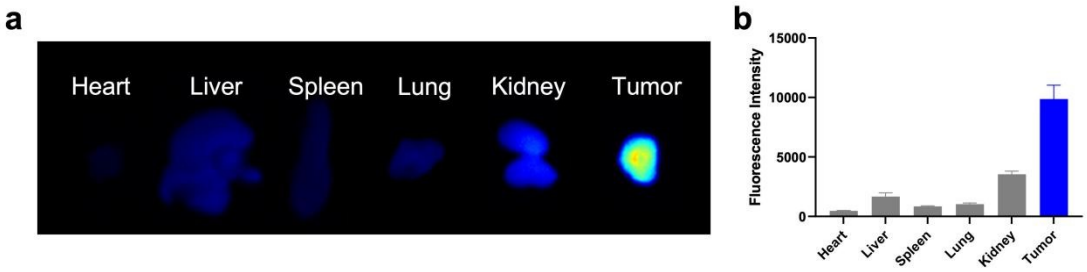

Fig. S3 (a-b) Representative ex vivo fluorescence imaging (a) and quantitative analysis (b) of the heart, liver, spleen, lung, kidney and tumor of the mice injected with the STPSD after 24 h.

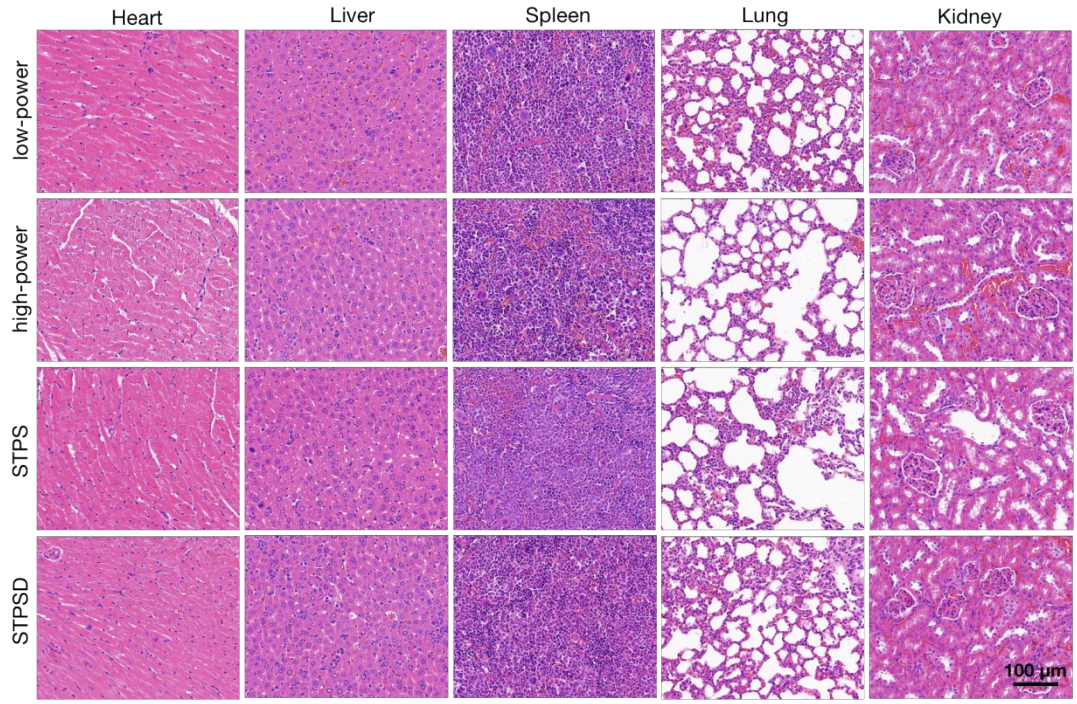

Fig. S4 H&E staining of tissue slices of the main organs taken from mice 24 h after different treatment.

Time (h)	STPS		STPSD	
	T_2 SNR	R_2 (S^{-1})	T_2 SNR	R_2 (S^{-1})
0	55.46 ± 2.39	10.18 ± 0.77	58.69 ± 3.43	10.00 ± 0.86
6	27.93 ± 2.04	15.12 ± 1.09	30.17 ± 2.48	13.66 ± 1.04
12	19.93 ± 1.89	20.00 ± 1.41	21.55 ± 2.59	18.03 ± 1.64

Table.S1 The T_2 SNR, R_2 values of STPS and STPSD nanoparticles.

T_2 SNR and R_2 of tumors were measured before and after injection of STPS and STPSD nanoparticles (1 mg/mL) (Timing: 0, 6, 12 h; n = 3) by tail vein injection (200 μL/mL, 200 μL). Data are represented by mean ± s.d. (n = 3).

Table.S2 Power, treatment time and temperature of the four groups.

Groups/parameter	Negative control	Positive control	STPS	STPSD
Power (w)	53.37 ± 3.13	70.21 ± 3.38	53.44 ± 2.26	52.42 ± 2.73
Treatment time (s)	22.27 ± 1.48	21.94 ± 1.73	22.16 ± 1.63	22.39 ± 0.96
Temperature (°C)	53.22 ± 2.34	67.91 ± 3.49	71.54 ± 3.18	72.45 ± 2.90

Numbers in the table are illustrated by mean ± s.d. (n = 3).