Polypyrrole Based Nanotheranostic Agent for MRI Guided Photothermal-Chemodynamic Synergistic Cancer Therapy

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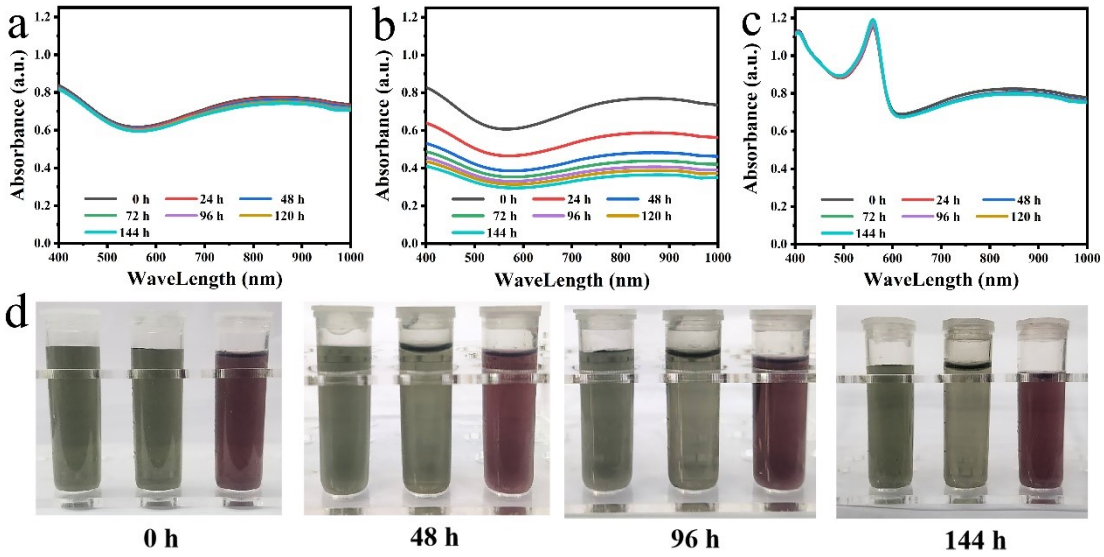

Fig. S1. (a-c) The Vis-NIR spectra of PBM(5) nanoprobes in deionized water, phosphate-buffered saline, and cell culture medium; (d) Photographs of the PBM(5) nanoprobes dispersed in different solvents that from left to right are deionized water, phosphate-buffered saline, and culture medium.

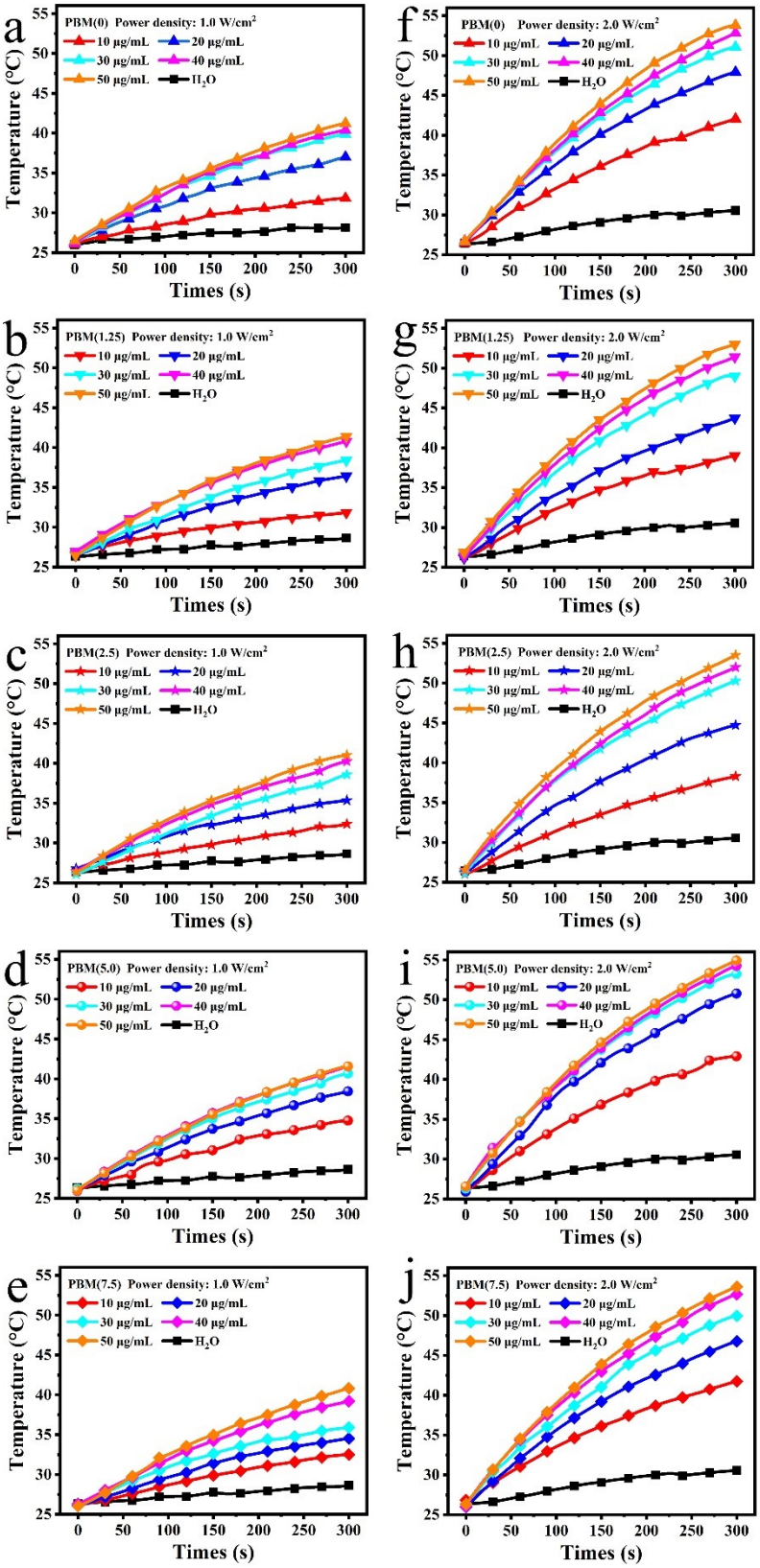

Figure S2. The temperature rise curves of different PBM(n) nanoprobes under irradiation with an 808 nm laser of 1.0 (a, b, c, d, e) and 2.0 (f, g, h, i, j) W cm^{-2} for 5 min.

Samples	τ_s (s)	*hs* (W °C^{-1})	$\Delta T=T_{max}-T_{surr}$ (°C)	Q_{dis} (W)	I (W cm^{-2})	$A_{808\ nm}$	η
PBM(0)	439.9	0.00764	40.89	0.0444	1.0	0.996	**29.80%**
PBM(1.25)	457.6	0.00734	40.02			1.007	**27.66%**
PBM(2.5)	452.2	0.00743	40.09			1.024	**27.99%**
PBM(5.0)	465.3	0.00722	40.1			1.007	**27.19%**
PBM(7.5)	425.3	0.00790	40.02			1.038	**29.93%**

Table S1. The specific values of the τ_s, *hs*, ΔT, Q_{dis}, laser power density, and absorbance at 808 nm are used for calculating the photothermal conversion efficiency of the PBM(n) nanoprobes.

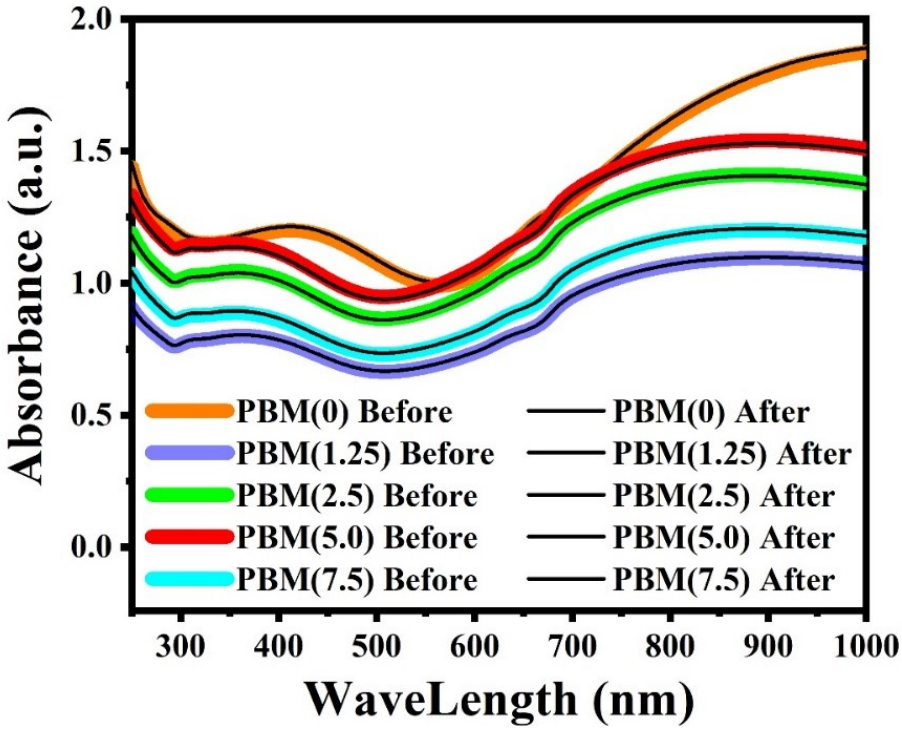

Fig. S3. Absorbance spectra of PBM(n) nanoprobes before and after 5 min of 808 nm laser irradiation (2.0 W cm^{-1}).

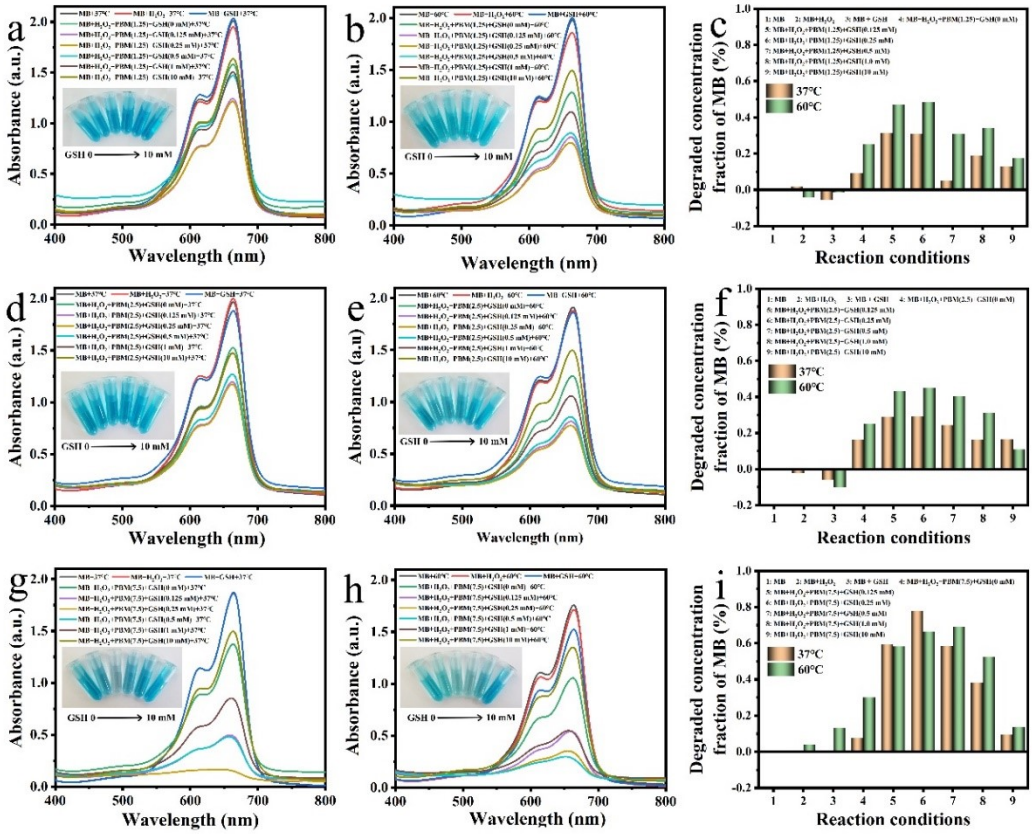

Fig. S4. The *in vitro* Fenton-like reaction of methylene blue degradation by PBM(1.25) (a-c), PBM(2.5) (d-f), and PBM(7.5) (g-i). The UV-Visible absorption spectra, pictures, and degradation rates of methylene blue before and after degradation by PBM(n) mediated Fenton-like reaction under different experimental conditions. Each nanoprobe was evaluated at 37 ℃ and 60 ℃, respectively.

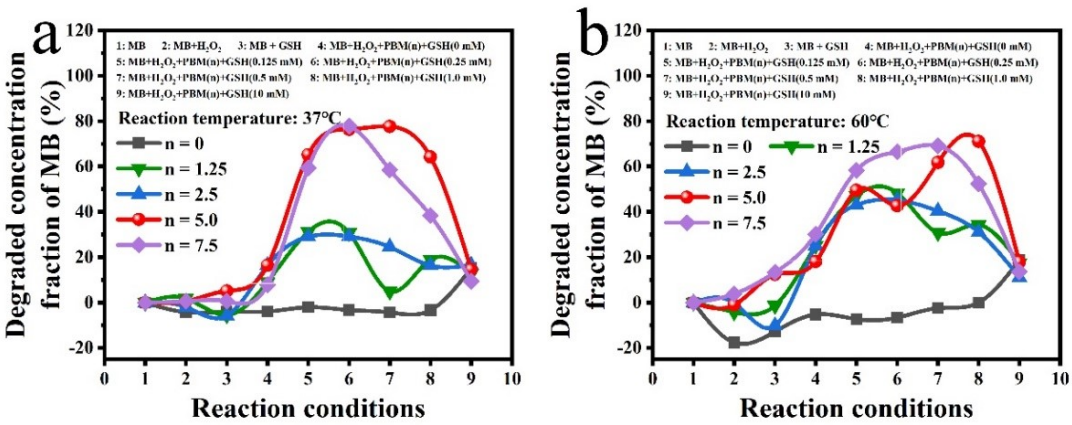

Fig. S5. The degradation rate curves of PBM(n) nanoprobes degraded methylene blue through Fenton-like reaction under 37℃ (a) and 60℃ (b) with different experimental conditions.

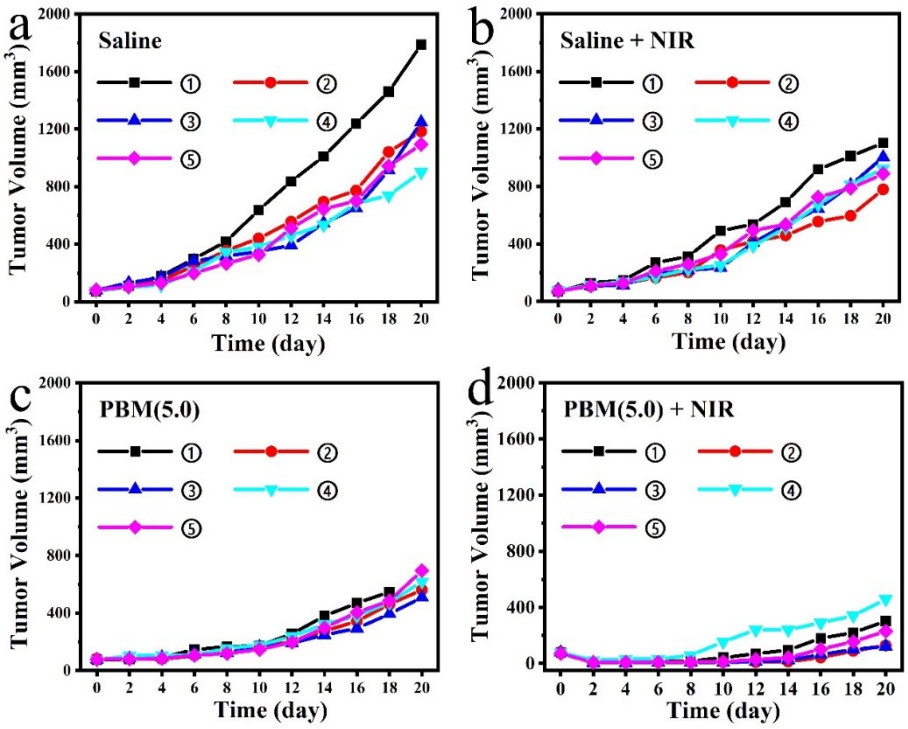

Fig. S6. Tumor growth curves of 808 nm laser irradiated and unirradiated tumors in individual mice treated with saline or PBM(5.0) nanoprobes. (a) Saline, (b) Saline + NIR, (c) PBM(5.0), (d) PBM(5.0) + NIR.

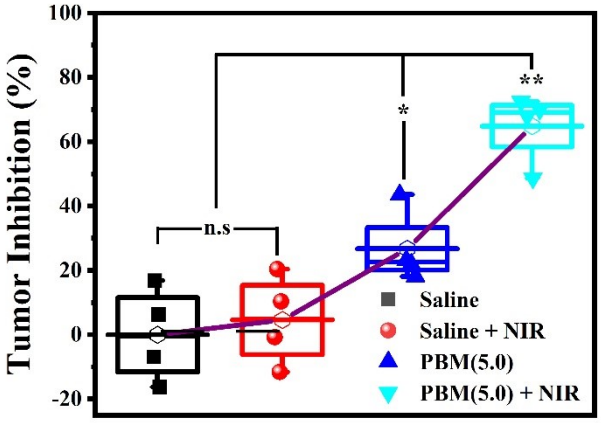

Fig. S7 Tumor inhibitions (%) of mice on the 20th day after different treat groups.

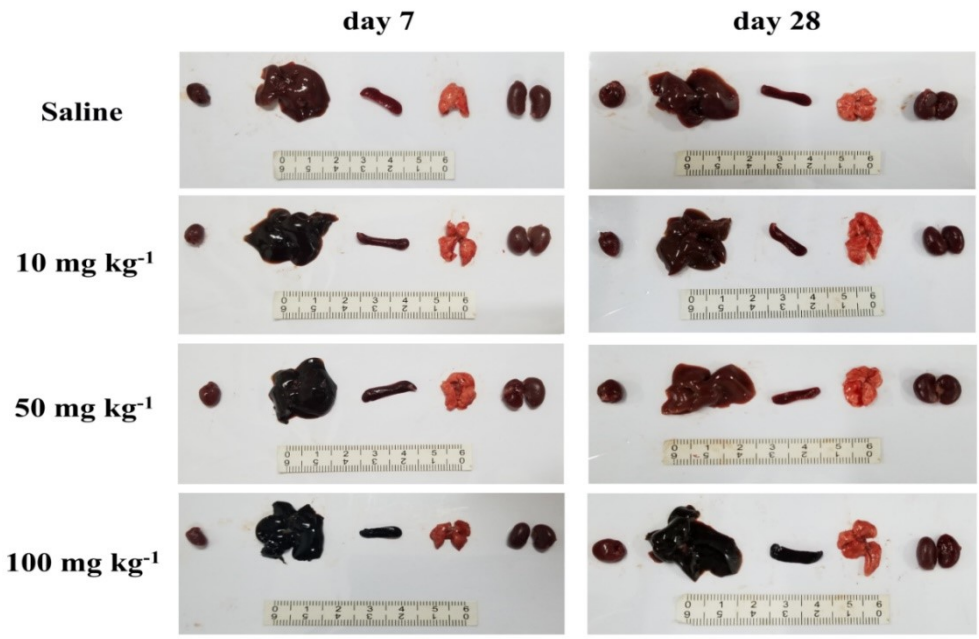

Fig. S8. Main organs photograph of mice treated with different concentrations of PBM(5) nanoprobes. Three mice in each group were sacrificed on day 7 and the rest on day 28. From left to right are the heart, liver, spleen, lung, and kidney.

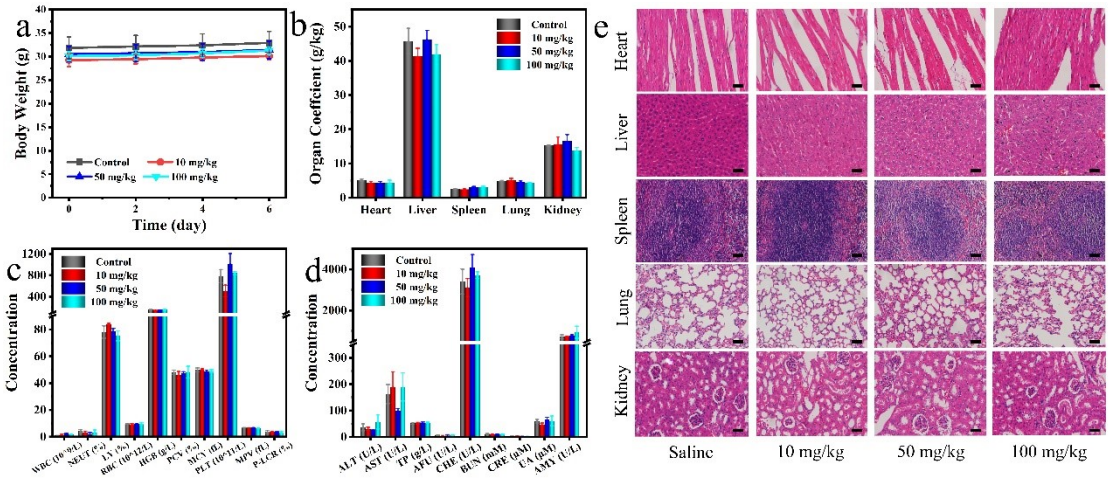

Fig. S9. *In vivo* assessment acute toxicity of tail intravenous administration different doses PBM(5.0) nanoprobes for healthy male ICR mice for 7 days. (a-d) Body weights, vital organs coefficient, main indicators of blood routine, and serum biochemistry of mice after various treatments; (e) Histological analyses of tissue slices (heart, liver, spleen, lung, and kidney) collected from different groups of mice after various treatments. Scale bars: 100 μm.