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

Supporting Information

Marriage of Artificial Catalase and Black Phosphorus Nanosheets for Reinforced Photodynamic Antitumor Therapy

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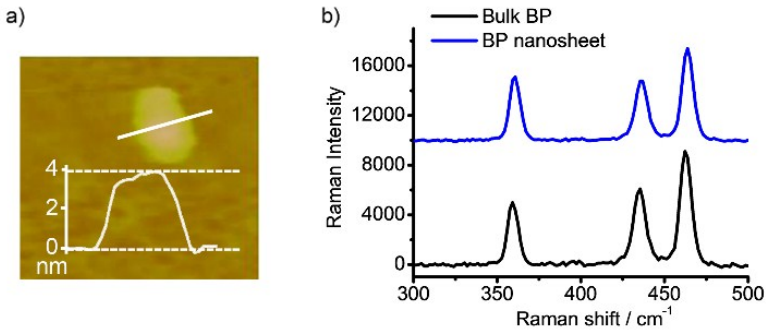

Figure S1. a) AFM image of BP nanosheet (inset: thickness analysis along the white lines); b) Raman spectra of BP crystals and BP nanosheets.

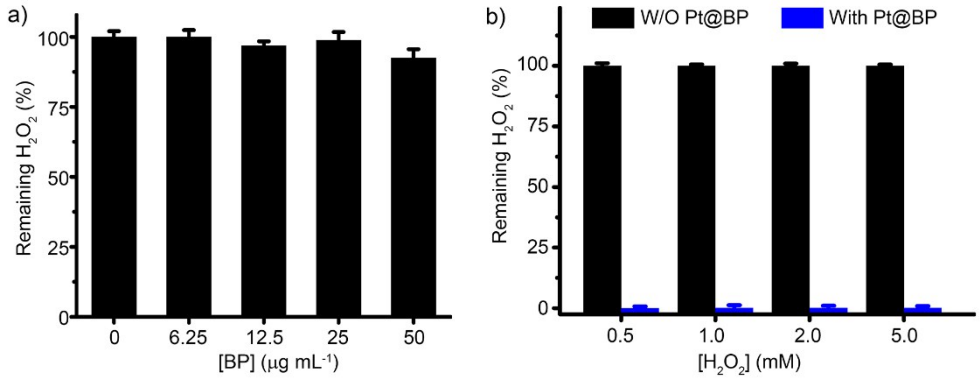

Figure S2. a) Elimination of H_2O_2 by BP nanosheets and b) Pt@BP nanohybrids at various concentration.

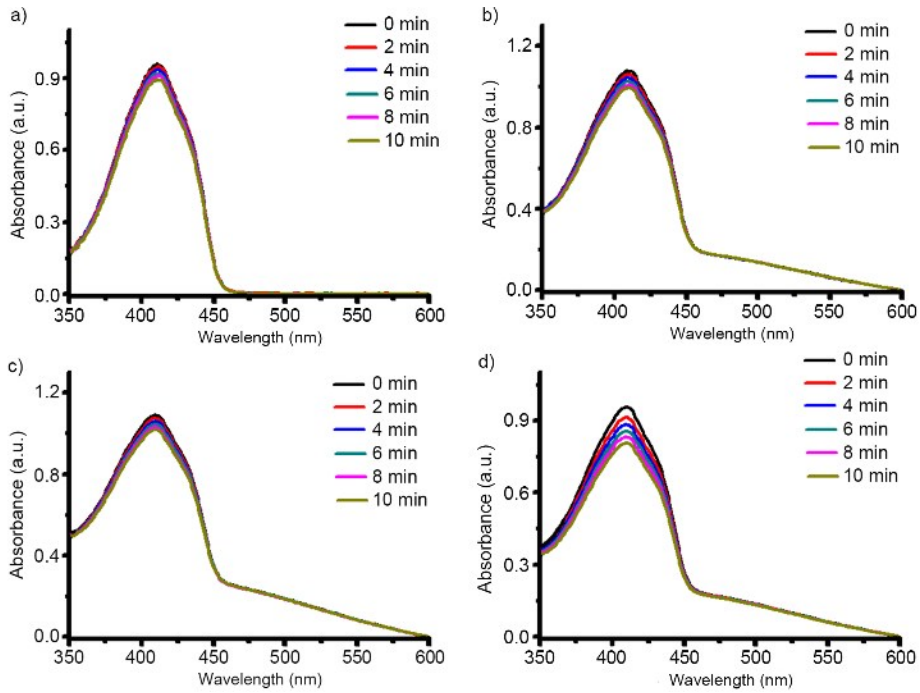

Figure S3. a) Absorption spectra of the DPBF solution under 660nm laser irradiation for different time periods. b) Absorption spectra of the DPBF solution in the presence of BP nanosheets, c) in the presence of Pt@BP nanohybrids or d) in the presence of BP nanosheets and H_2O_2 (1mM) under 660 nm laser irradiation for different time periods.

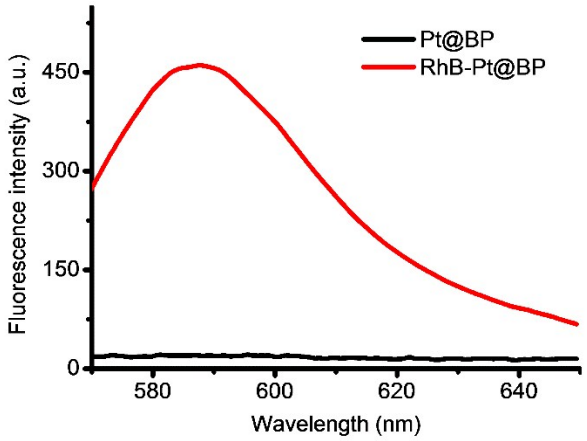

Figure S4. Fluorescence spectra of Pt@BP nanohybrids and RhB-Pt@BP nanohybrids (λex = 530 nm).

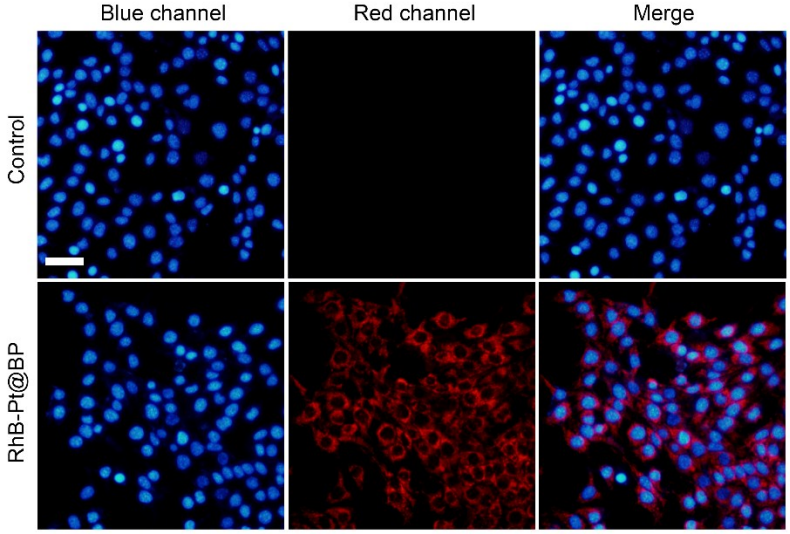

Figure S5. Cellular internalization of RhB-Pt@BP nanohybrids (red). The nuclei were stained by Hoest33342 (blue). Scale bar = 25 μm.

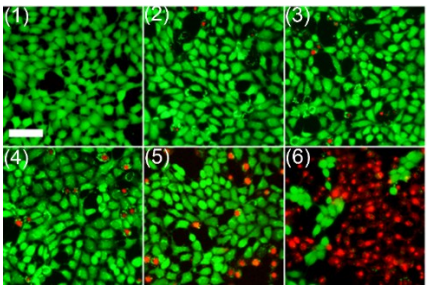

Figure S6. Live/dead staining of 4T1 cells after different treatments: (1) blank control, (2) NIR, (3) BP, (4) Pt@BP, (5) BP + NIR, (6) Pt@BP + NIR (scale bar = 20 μm).

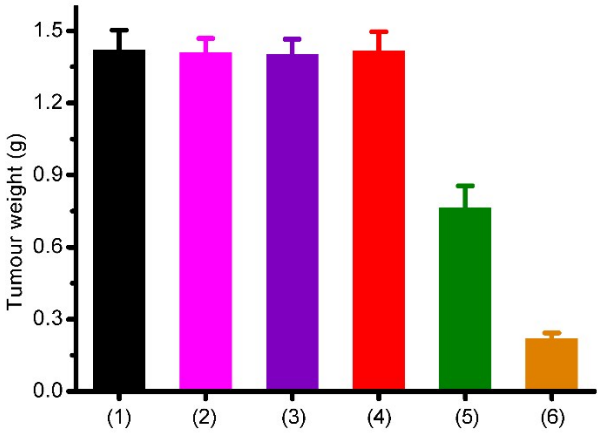

Figure S7. Tumor weight after the treatments: (1) saline, (2) NIR, (3) BP, (4) Pt@BP, (5) BP + NIR, (6) Pt@BP + NIR.

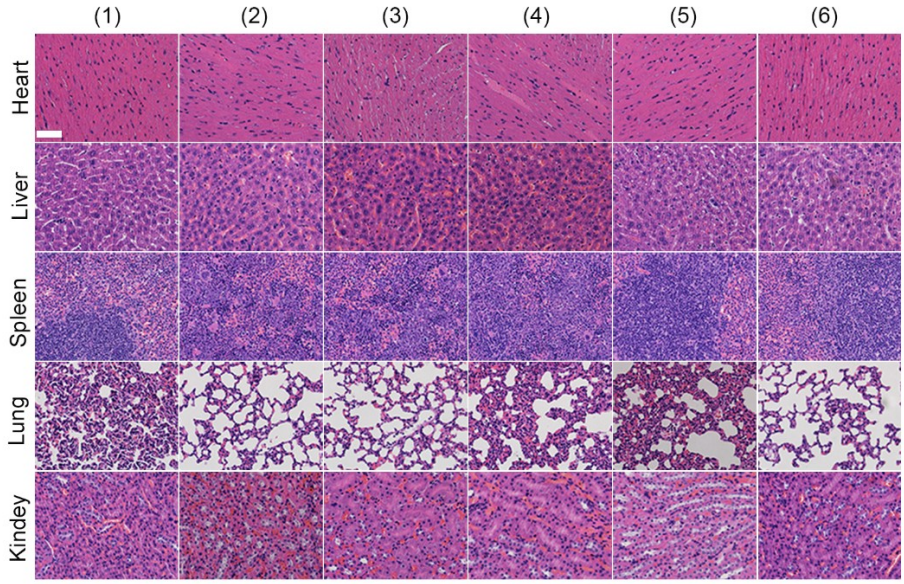

Figure S8. H&E staining of main organs after different treatments: (1) saline, (2) NIR, (3) BP, (4) Pt@BP, (5) BP + NIR, and (6) PT@BP + NIR (scale bar = 50 μm).

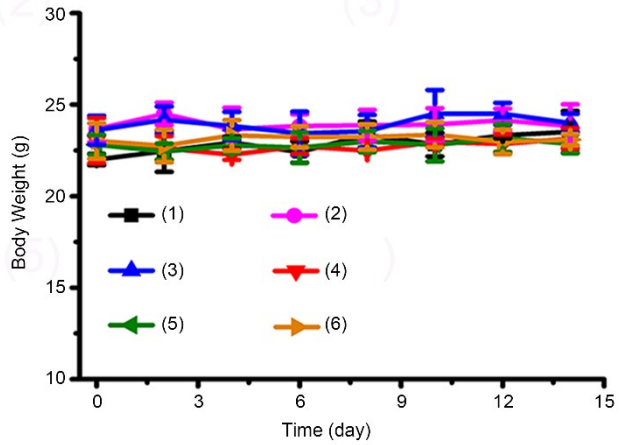

Figure S9. Body weight of mice during the treatments: (1) blank; (2) NIR; (3) BP; (4) Pt@BP; (5) BP + NIR; (6) Pt@BP + NIR

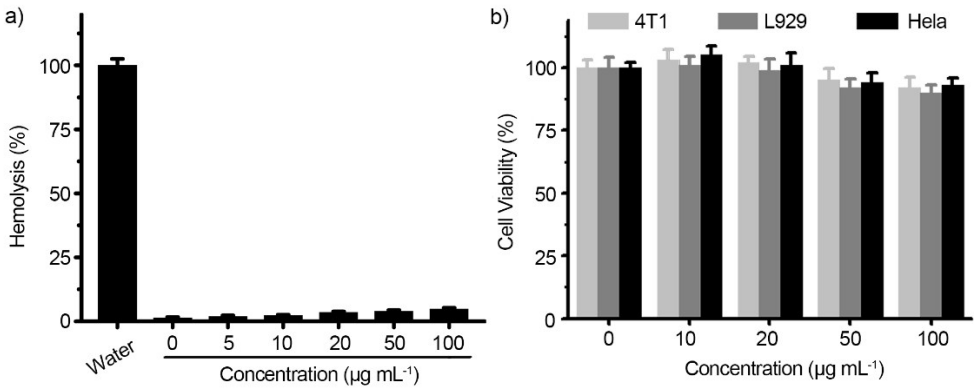

Figure S10. a) Hemolysis quantification of red blood cells at various concentration of Pt@BP nanohybrids. b) The cytotoxicity of Pt@BP nanohybrids against three different cell lines (4T1, L929 and HeLa) at various concentration.

Table S1. Blood biochemistry analysis of mice after injection of Pt@BP nanohybrids.

	Normal Range*	**Control**	**Pt@BP**
WBC ($\times 10^9$)	8.62 − 14.03	9.89 ± 0.88	10.38 ± 0.74
RBC ($\times 10^{12}$)	6.93 − 12.24	10.46 ± 0.32	11.25 ± 0.27
PLT ($\times 10^{12}$)	0.42 − 1.70	1.58 ± 0.11	1.47 ± 0.09
HGB (g L^{-1})	126 − 205	153 ± 14.21	164 ± 11.47
T-Bil (mmol L^{-1})	3.42 − 8.55	5.39 ± 0.71	6.02 ± 0.83
AST (IU L^{-1})	55 − 352	78 ± 7.35	89.32 ± 10.46
Cr (mmol L^{-1})	17.68 − 35.36	28.49 ± 1.26	31.38 ± 0.78
BUN (mmol L^{-1})	2.50 − 9.28	5.9 ± 0.32	5.6 ± 0.39

* Normal ranges of healthy male Balb/c mice were referred to Charles River Laboratories (http://www. criver.com/) and the Jackson Laboratory (https://www.jax.org/).