

Porphyrin-Based Nanoscale Metal–Organic Framework Nanocarriers Entrapping Platinum Nanoparticles and S-Nitrosoglutathione for Sonodynamic Therapy in Hypoxic Tumors

Hongbo Wang, ‡^{a,b} Benchao Zheng, ‡^{a,b} Shiyi Zhai, ^{a,b} Danning Su, ^{a,b} and Kuangda

*Lu ^{*a,b}*

^a Institute of Medical Technology, Peking University Health Science Center, Beijing 100191, P. R. China

^b Institute of Advanced Clinical Medicine, Peking University, Beijing 100191, P. R. China

*E-mail: lukuangda@hsc.pku.edu.cn

‡ Hongbo Wang and ‡ Benchao Zheng contributed equally to this work as first authors.

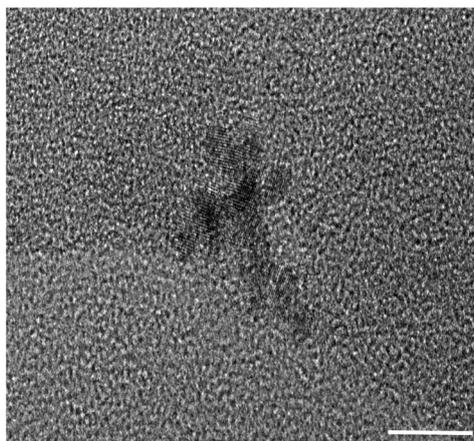


Figure S1. High resolution TEM image of Hf-Pt-G. Scale bar: 5 nm.

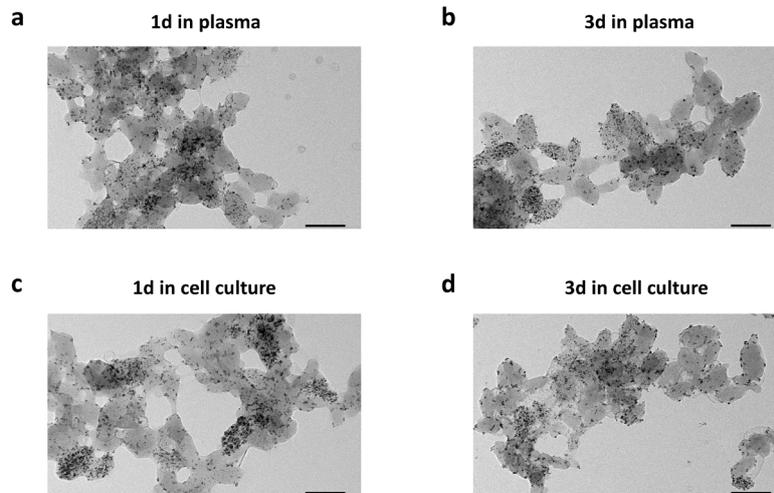


Figure S2. TEM pictures of Hf-Pt-G dispersed in plasma and cell culture for 1 day and 3 days. Scale bar:100 nm.

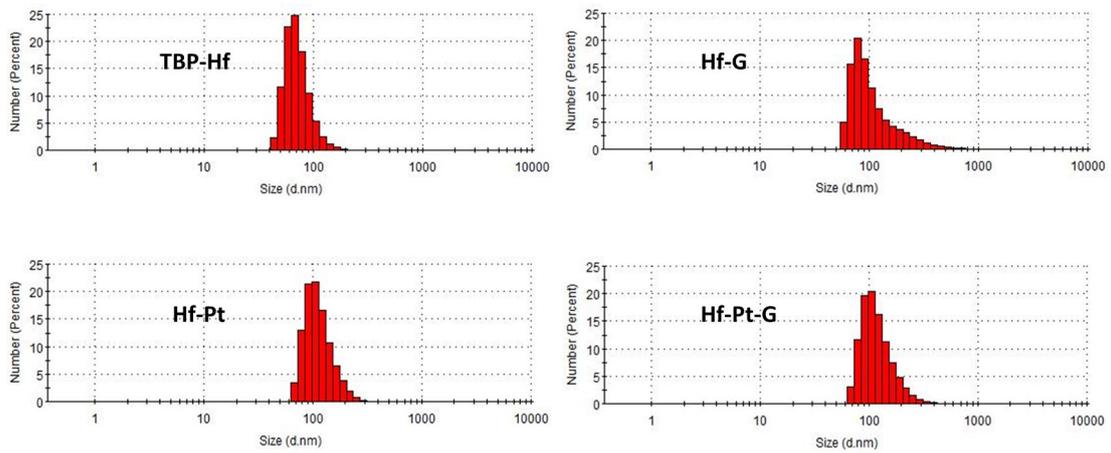


Figure S3. Hydrodynamic diameters of Hf, Hf-G, Hf-Pt and Hf-Pt-G.

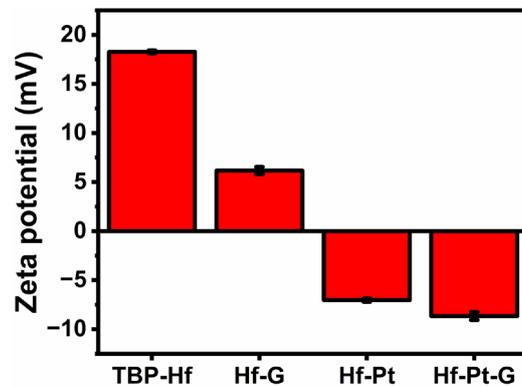


Figure S4. Zeta potential of Hf, Hf-G, Hf-Pt and Hf-Pt-G.

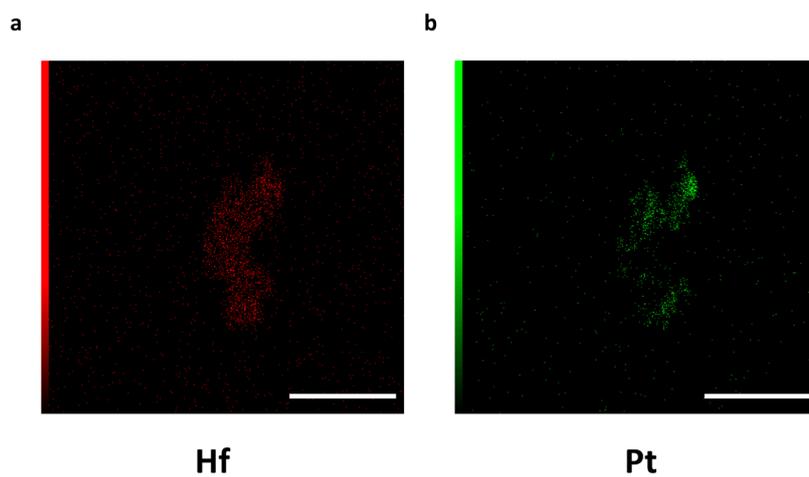


Figure S5. Element mapping images Hf (a) and Pt (b). Scale bar: 100 nm.

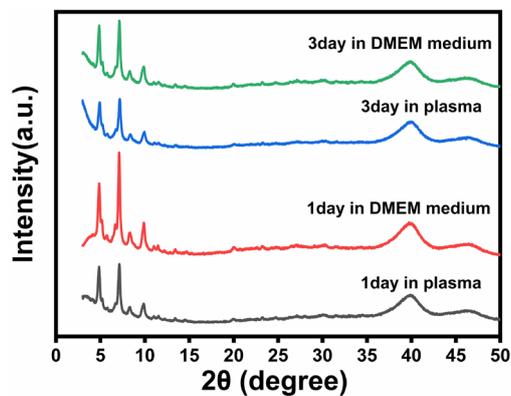


Figure S6. PXRD pattern of Hf-Pt-G dispersion in plasma and cell culture after 1 day and 3 days.

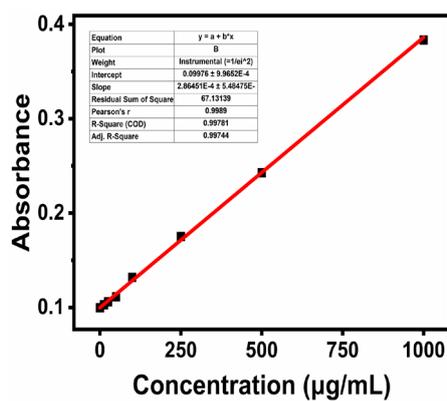


Figure S7. The standard curve of GSNO based on the OD value at 340 nm.

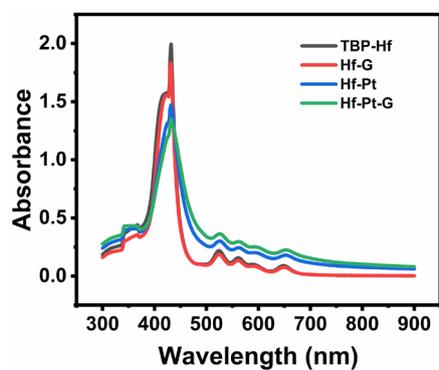


Figure S8. UV/Vis absorption spectra of Hf, Hf-G, Hf-Pt and Hf-Pt-G.

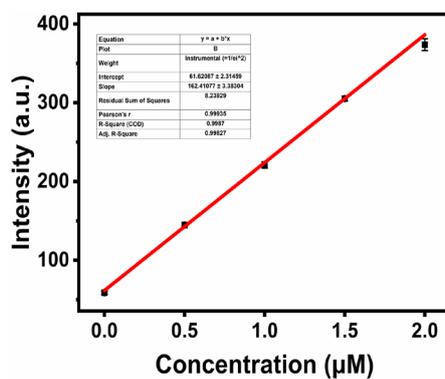


Figure S9. The standard curve of H_2O_2 base on the fluorescence intensity at 585 nm.

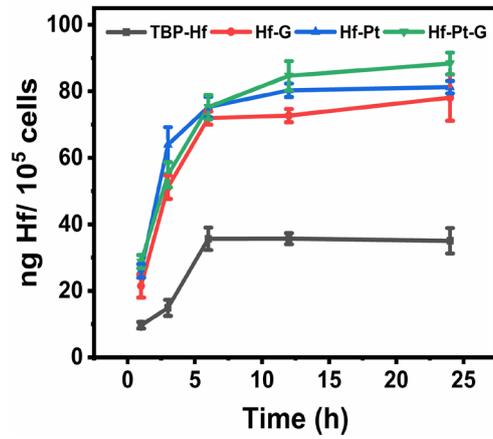


Figure S10. Cellular uptake of different nanoparticles after 1, 3, 6, 12 or 24 h incubation with the same Hf concentrations (n = 3).

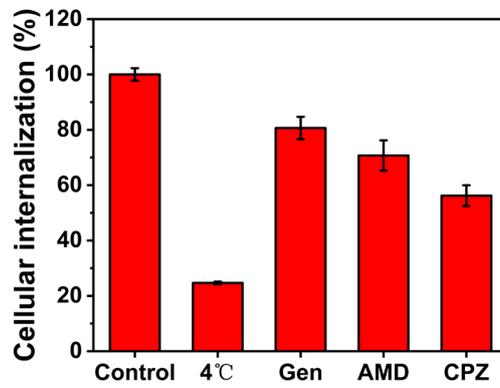


Figure S11. Cellular uptake of Hf-Pt-G in the presence of endocytosis inhibitors (n = 3).

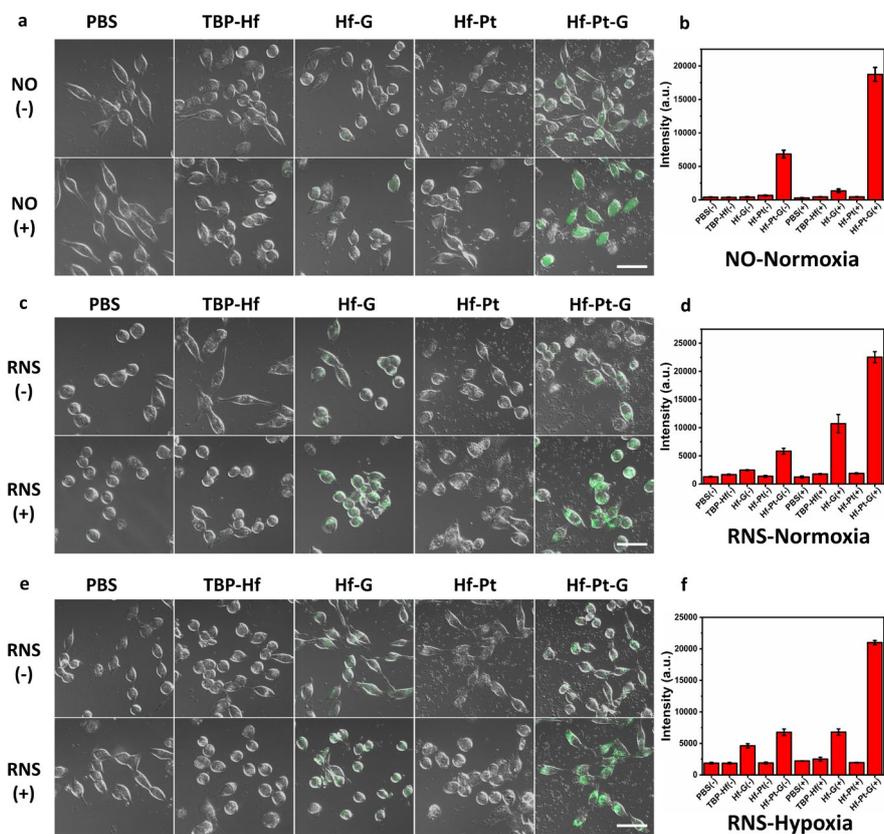


Figure S12. (a) Fluorescence images of cellular NO in normoxic condition induced by SDT detected by the DAF-FM DA probe and (b) the quantitative analysis; scale bars: 40 μm . Fluorescence images (c, e) and the quantitative analysis (d, f) of intracellular ONOO⁻ in normoxic (c, d) and hypoxic (e, f) condition detected by DHR123 probe. Scale bar: 40 μm .

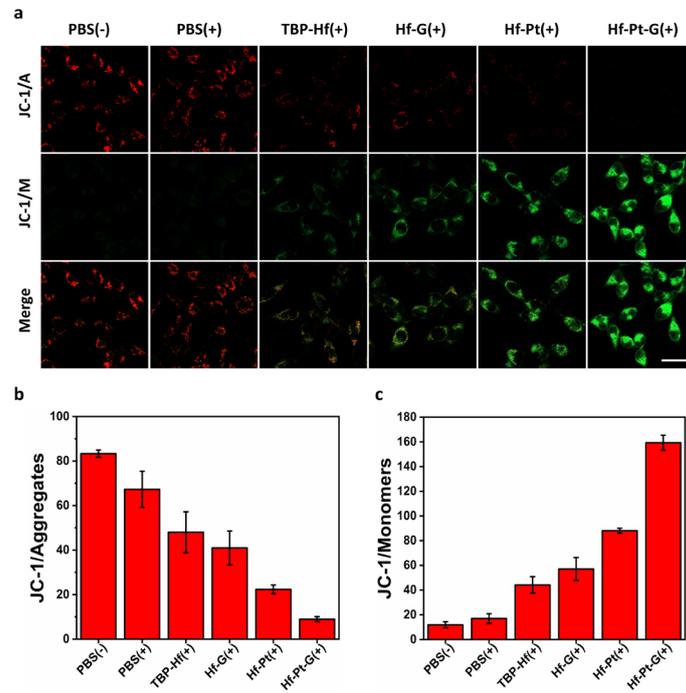


Figure S13. (a) Intracellular MMP detection indicated by JC-1 after different treatments. Scale bar: 40 μ m. (b) Average cellular fluorescence signal of JC-1 aggregates in each group. (c) Average cellular fluorescence signal of JC-1 monomers in each group.

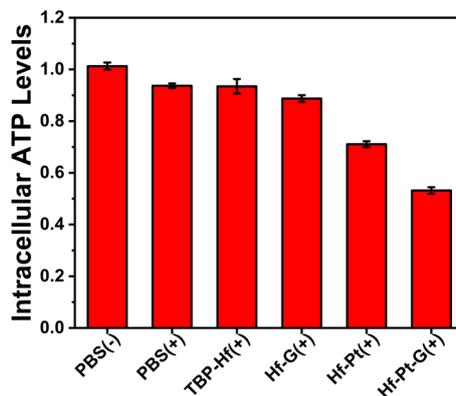


Figure S14. Measurement of intracellular ATP content after different treatment.

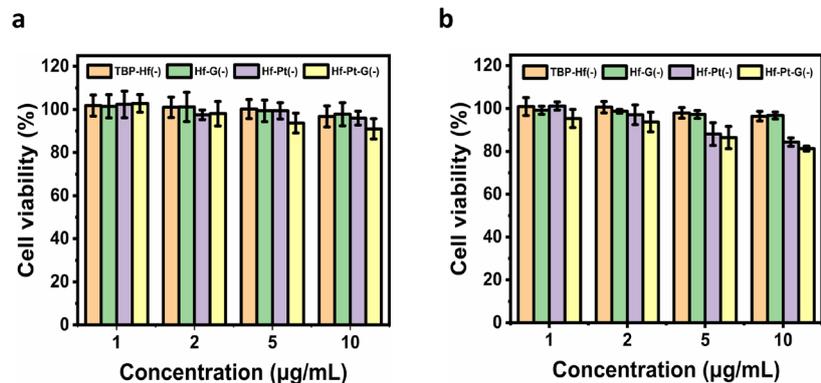


Figure S15. Cell viabilities of 4T1 cells incubated with various nanoparticles in different concentrations without US irradiation in normoxic (a) or hypoxic (b) condition.

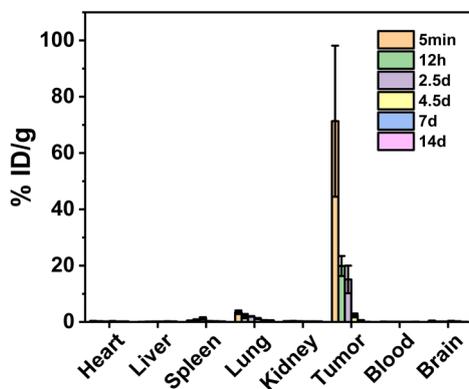


Figure S16. *In vivo* biodistribution profile of Hf element in main organs and tumor tissues after intratumoral injection.

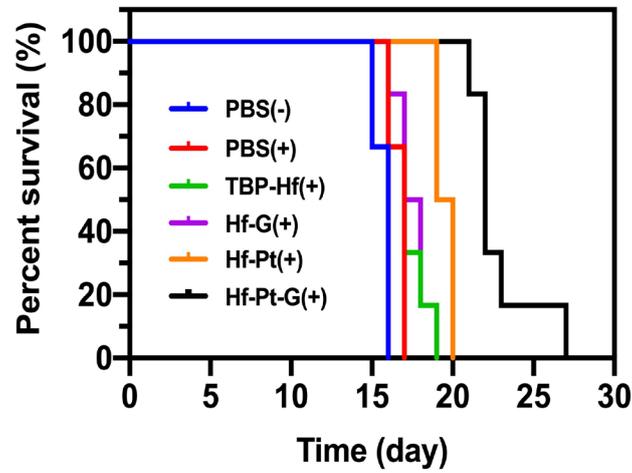


Figure S17. Survival percentage curves of tumor-bearing mice (n=6) after treatment with different nanoparticles.

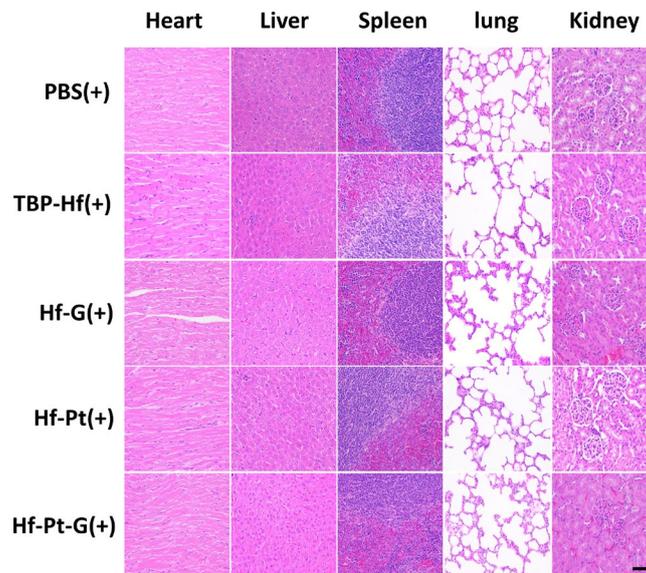


Figure S18. HE staining of the major organ sections at day 15 with US treatments (scale bars: 50 μm).

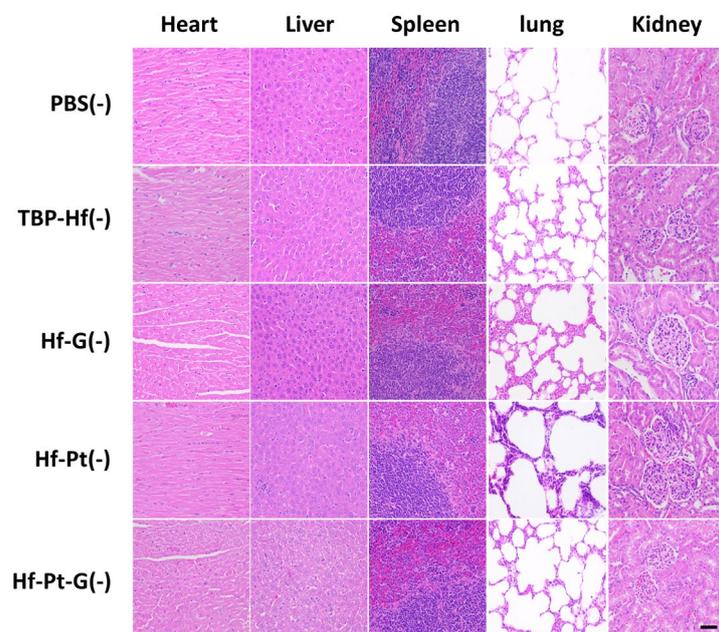


Figure S19. HE staining of the major organ sections at day 15 without US treatments (scale bars: 50 μ m)