

Supporting Information

Platinum-Ruthenium Hybrid Prodrug with Multi-enzymatic Activities for Chemo-Catalytic Therapy of Hypoxic Tumors

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Supporting Figures and Tables

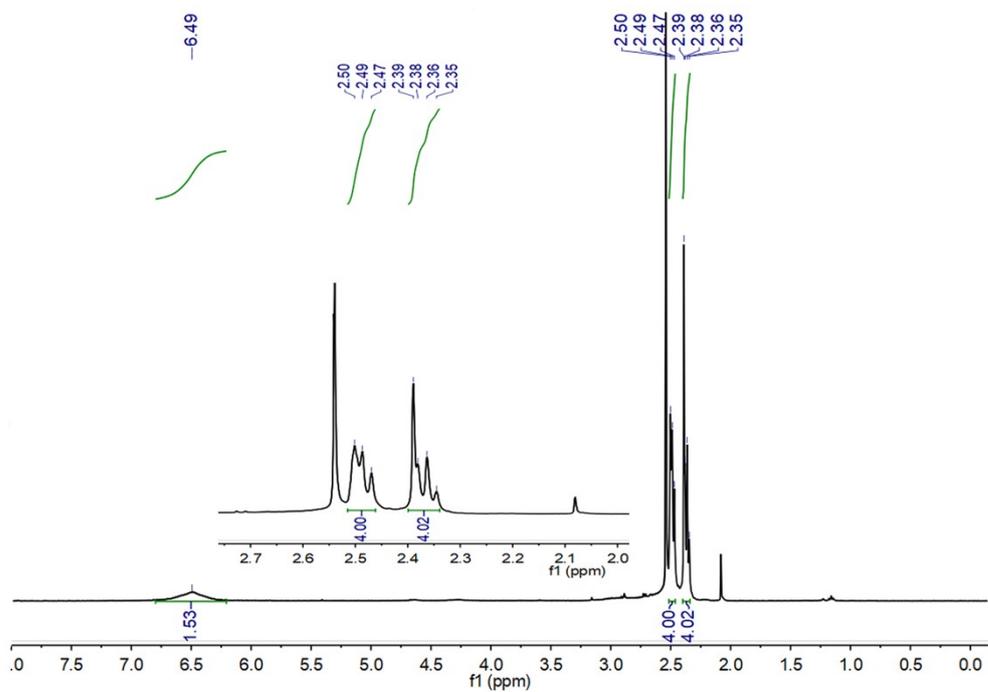


Fig. S1 ^1H NMR spectrum of Pt(IV)-COOH in DMSO- d_6 .

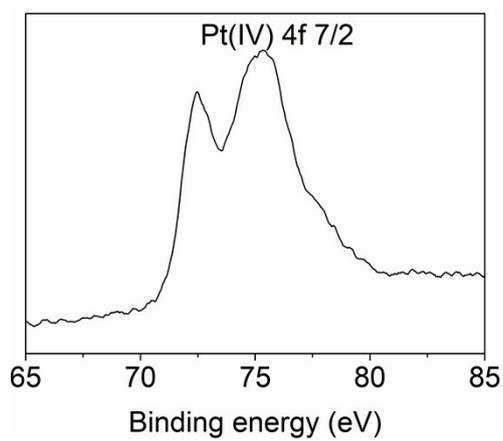


Fig. S2 The XPS survey spectrum of Pt(IV)4f 7/2 spectra.

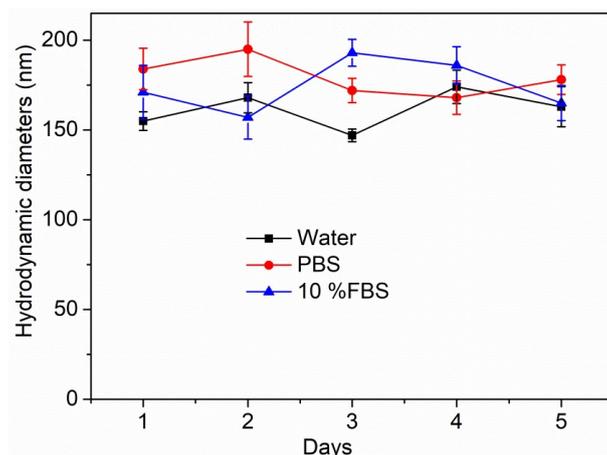


Fig. S3 The DLS diameters of **Pt-Ru** measured in various solvents for 5 days.

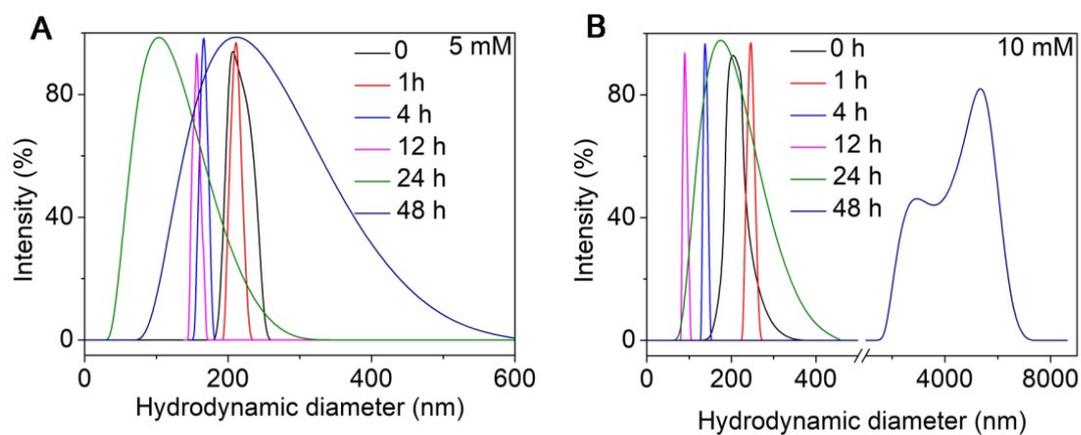


Fig. S4 Hydrodynamic diameters of **Pt-Ru** in aqueous solution containing different concentration of GSH (A) 5 mM; (B) 10 mM.

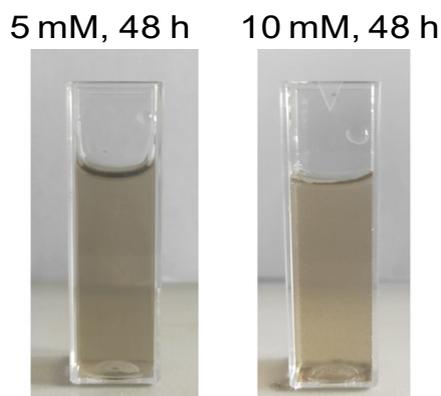


Fig. S5 Photograph of **Pt-Ru** in aqueous solution containing different concentration of GSH after reaction for 48 h.

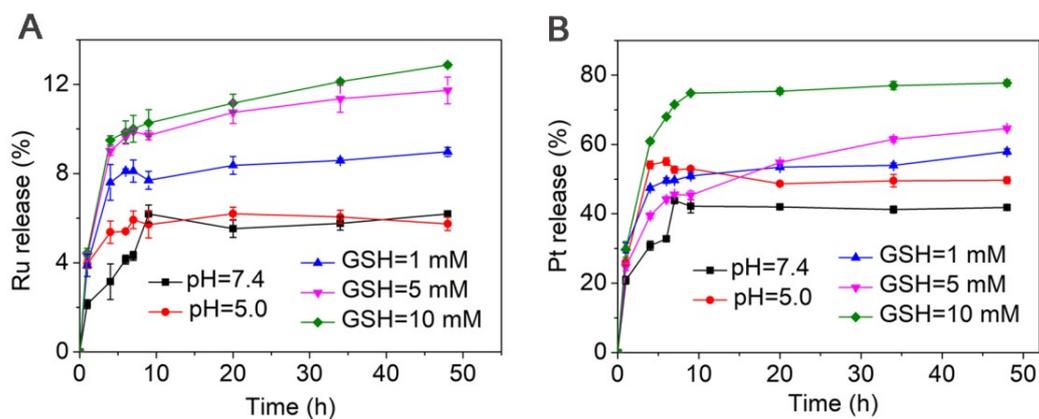


Fig. S6 The release of Ru (A) and Pt (B) elements with time from **Pt-Ru** in aqueous solution under different conditions.

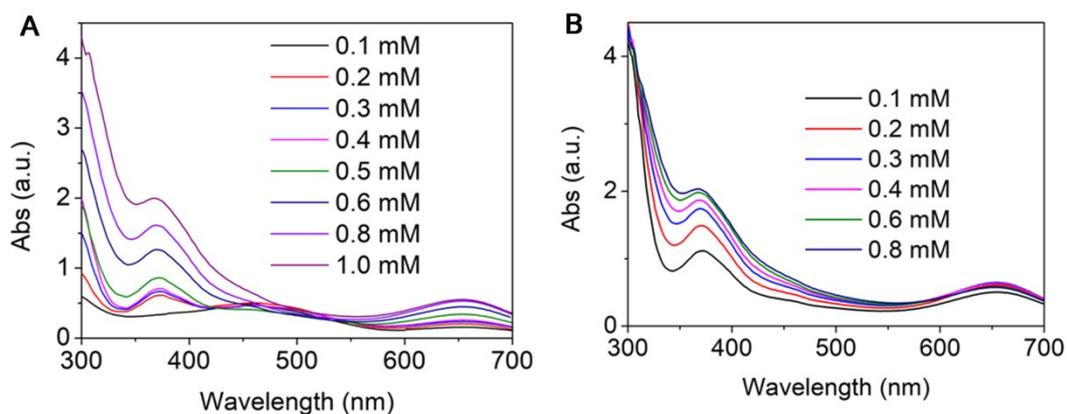


Fig. S7 The UV-vis absorption spectra of TMB degradation catalyzed by **Pt-Ru** ($20 \mu\text{g}\cdot\text{mL}^{-1}$) at different concentrations of (A) TMB and (B) H_2O_2 .

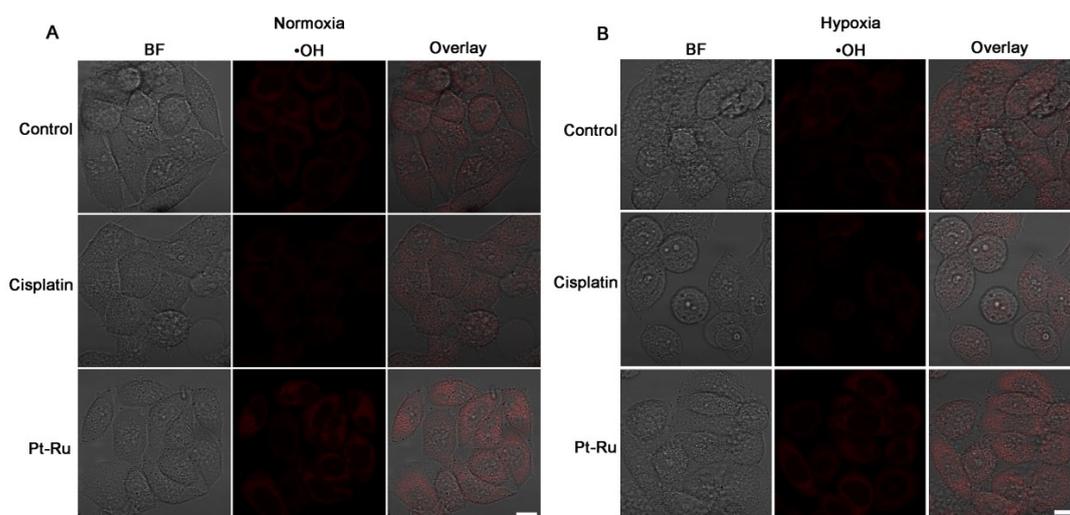


Fig. S8 CLSM images of $\cdot\text{OH}$ production in MCF-7 cells. The cells were pre-treated with NAC for 2 h and then incubated with cisplatin or **Pt-Ru** hybrids for 36 h under normoxia and hypoxia, respectively. scale bar = 10 μm .

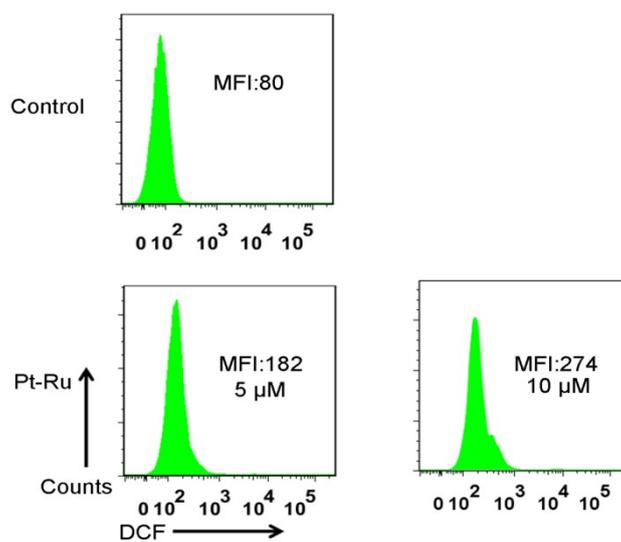


Fig. S9 Flow cytometry of ROS levels detected by 2',7'-dichlorofluorescein diacetate ($\text{H}_2\text{DCF-DA}$) staining with **Pt-Ru** for 36 h.

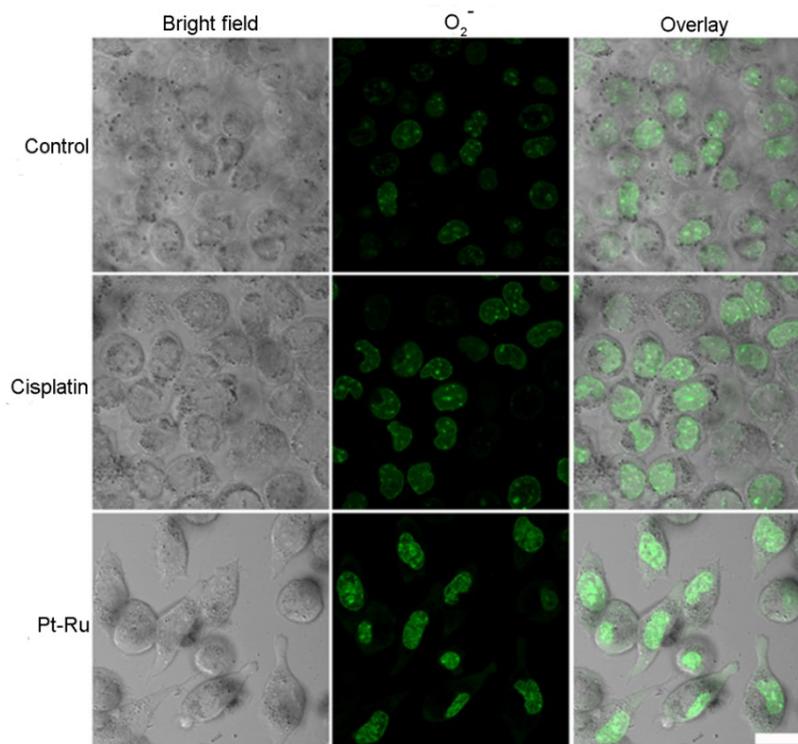


Fig. S10 Confocal microscopic images of intracellular $O_2^{\bullet-}$ levels detected by dihydroethidium (DHE) staining. Scale bar: 20 μm .

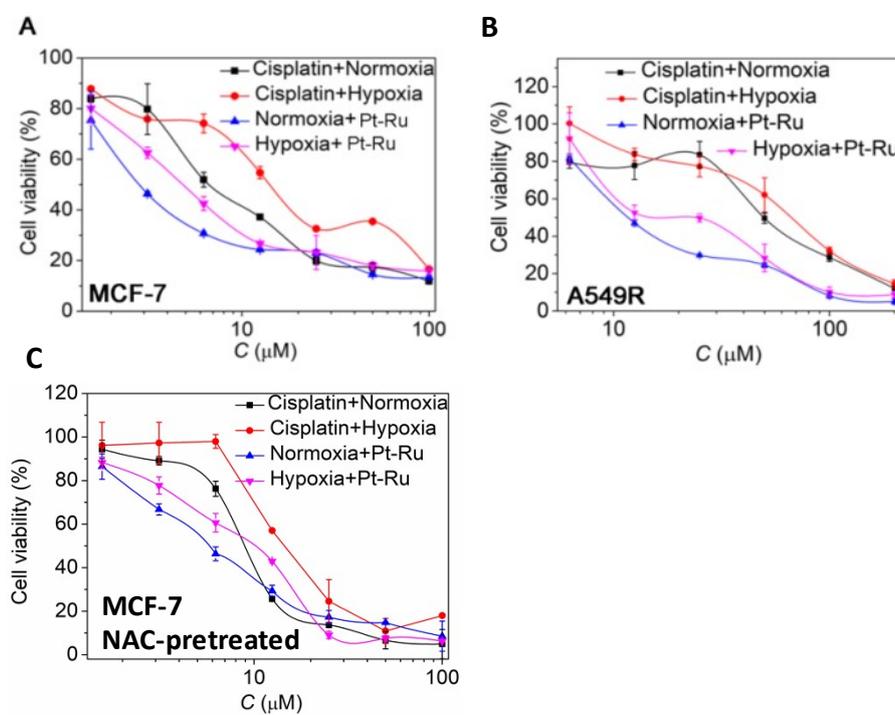


Fig. S11 Relative viability of (A) MCF-7, (B) A549R, (C) NAC-pretreated MCF-7 cells after 48 h drug treatment under normoxia and hypoxia, respectively.

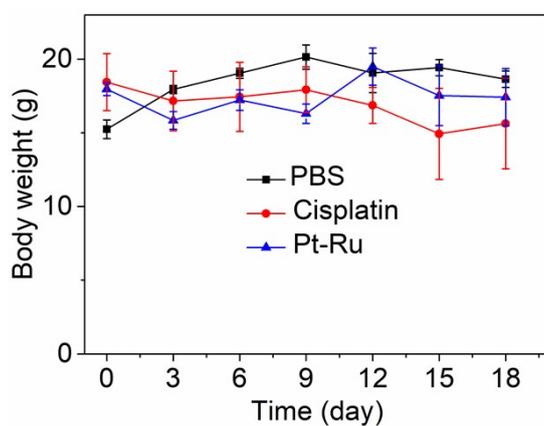


Fig. S12 Body weight changes of the mice.

Table S1 The contents of platinum and ruthenium in **Pt-Ru** were determined by ICP-MS.

Number	Pt ($\mu\text{g/mL}$)	Ru ($\mu\text{g/mL}$)
1	215.91	216.14
2	216.05	211.01
3	212.95	210.76
Average	214.97 ± 1.75	212.63 ± 3.03