Electronic Supplementary Information

An upconversion nanoplatform for simultaneous photodynamic therapy and Pt chemotherapy to combat cisplatin resistance

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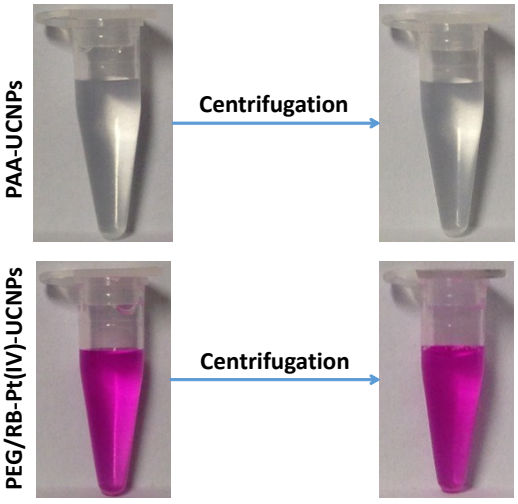


Figure S1. Photographs of PAA-UCNPs and PEG/RB-Pt(IV)-UCNPs (100 μg mL^{-1}) in aqueous solutions before and after centrifugation.

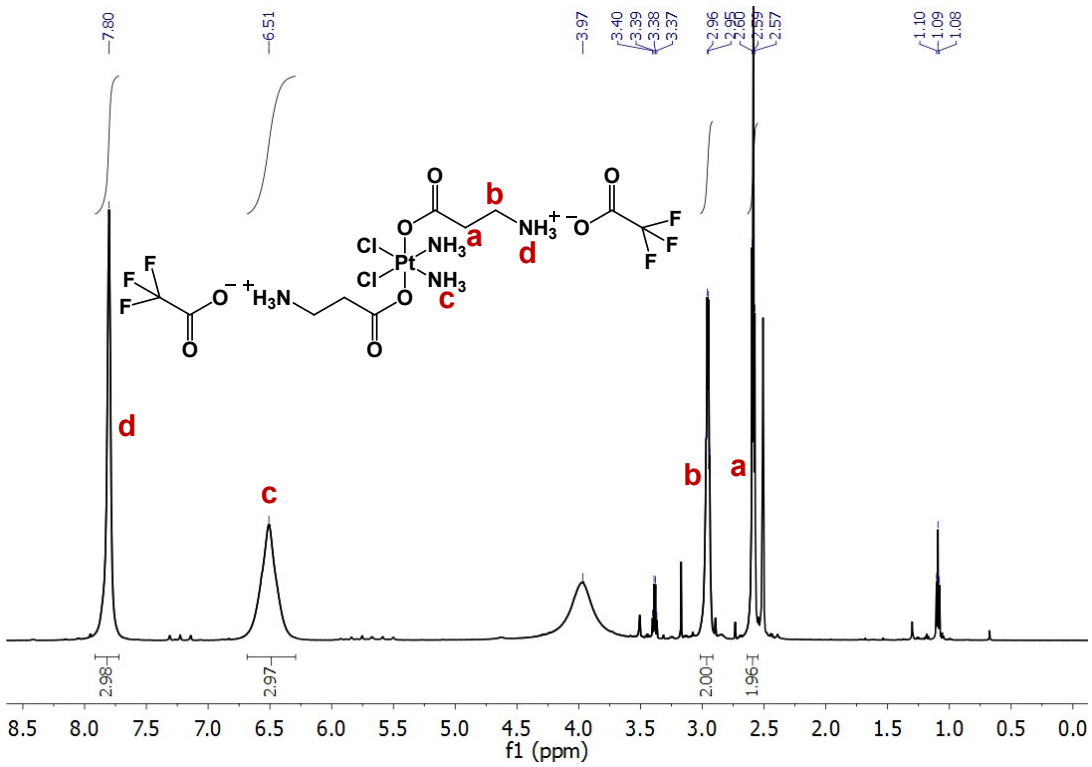


Figure S2. ^{1}H NMR spectrum of *c,c,t*-$[Pt(NH_3)_2Cl_2(OCOCH_2CH_2NH_3)_2]^{2+}\cdot 2CF_3COO^-$ (DMSO-d_6)

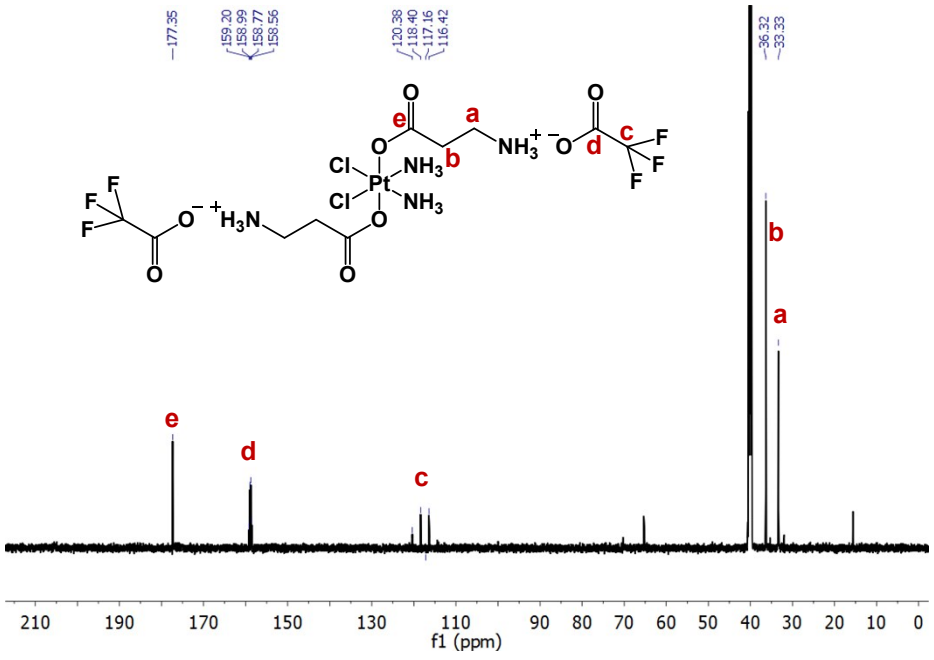


Figure S3. ^{13}C NMR spectrum *c,c,t*-$[Pt(NH_3)_2Cl_2(OCOCH_2CH_2NH_3)_2]^{2+}\cdot 2CF_3COO^-$ (DMSO-d_6)

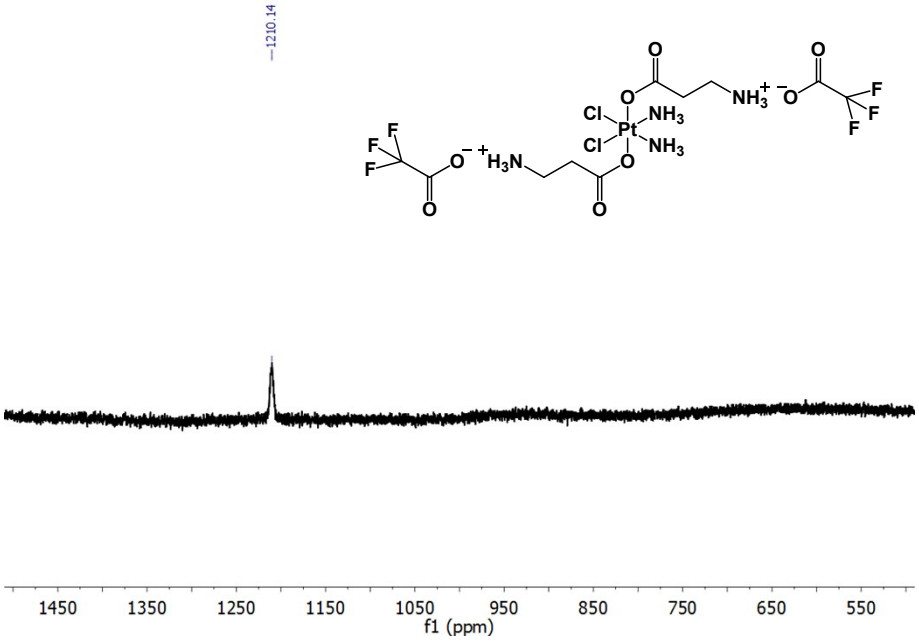


Figure S4. ^{195}Pt NMR spectrum of *c,c,t*-$[Pt(NH_3)_2Cl_2(OCOCH_2CH_2NH_3)_2]^{2+}\cdot 2CF_3COO^-$ (DMSO-d_6)

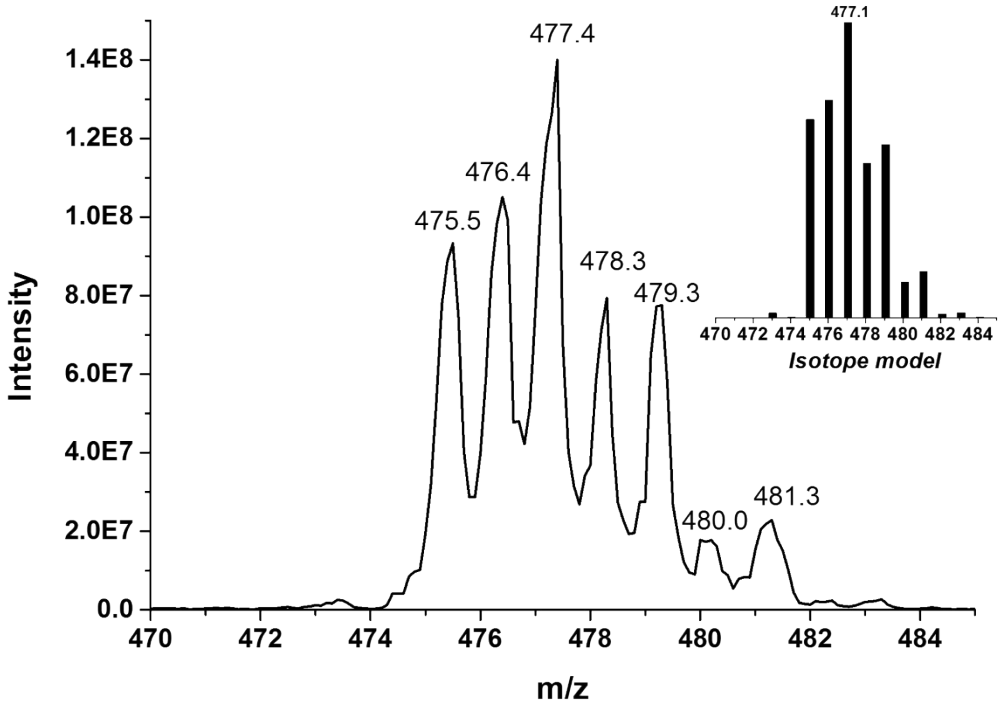


Figure S5. Mass spectrum of {*c,c,t*-[$Pt(NH_3)_2Cl_2(OCOCH_2CH_2NH_2)_2$]+H}$^+$.

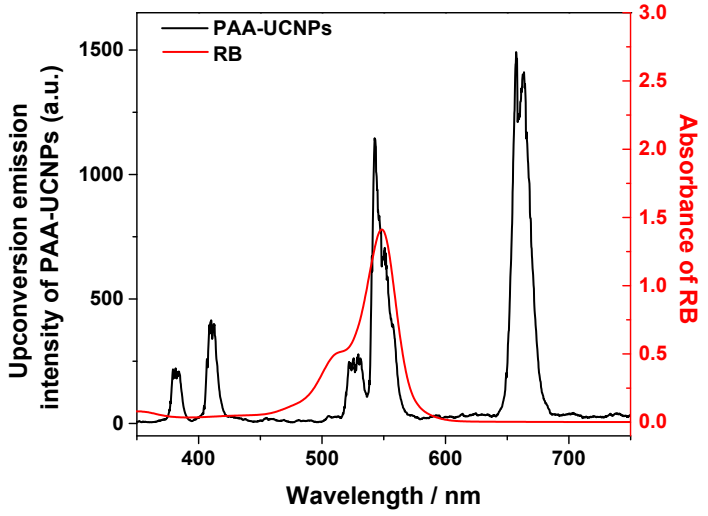


Figure S6. Photoluminescent spectrum of PAA-UCNPs under 808 nm laser irradiation at 6 W/cm^2 (black) and UV-Vis spectrum of RB (red).

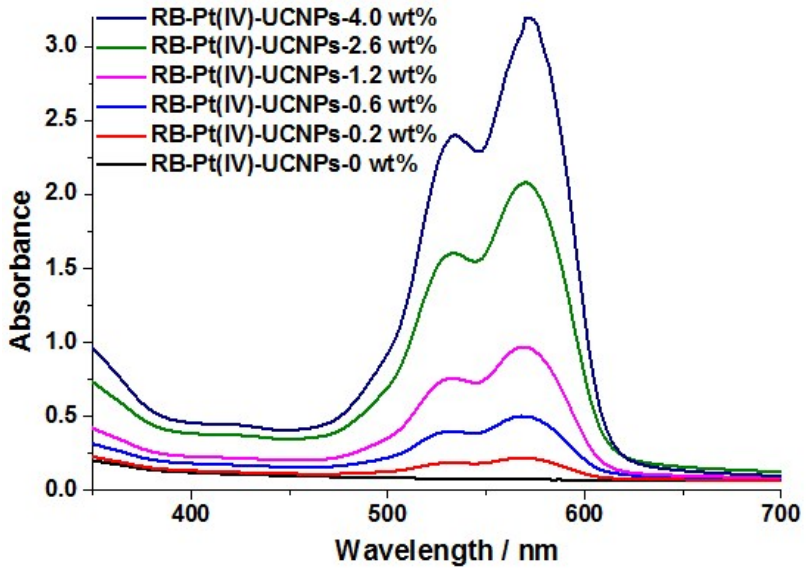


Figure S7. UV-vis spectra of RB-Pt(IV)-UCNPs with different RB loading amount (0, 0.2, 0.6, 1.2, 2.6, 4.0 wt% RB on UCNPs).

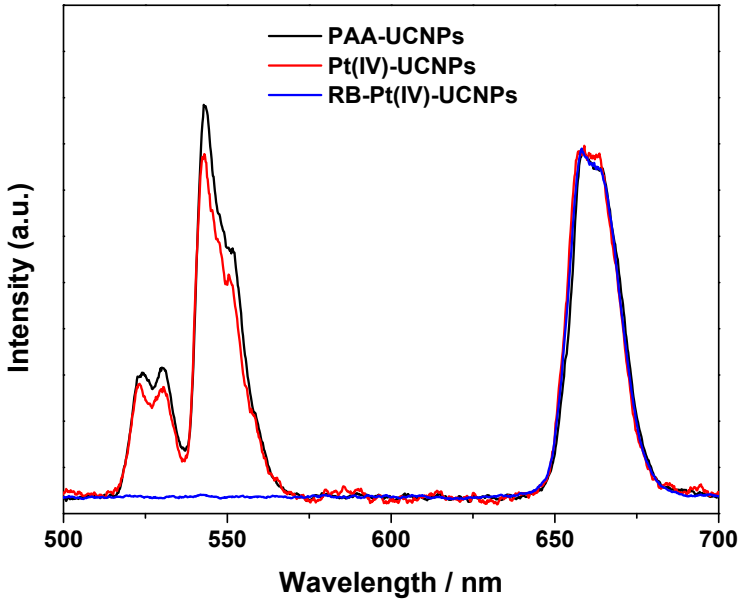


Figure S8. Photoluminescent spectra of PAA-UCNPs, Pt(IV)-UCNPs, and RB-Pt(IV)-UCNPs.

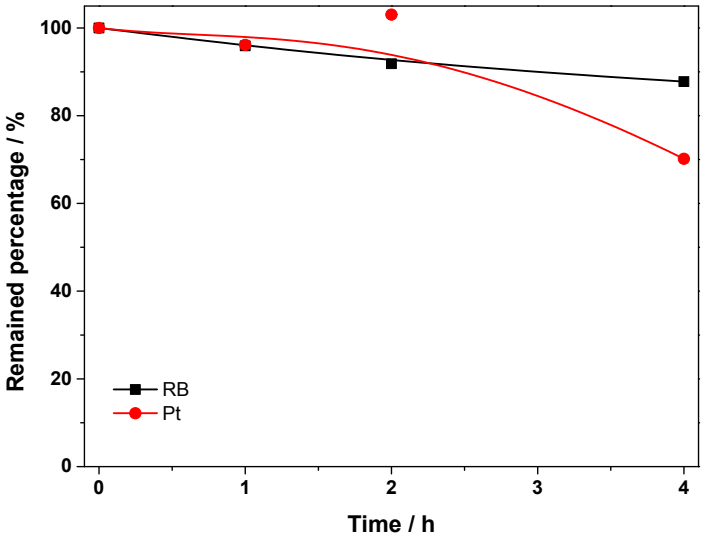


Figure S9. Release of RB and Pt from PEG/RB-Pt(IV)-UCNPs in PBS buffer (120 μg mL^{-1}) at pH 7.4 at r.t.

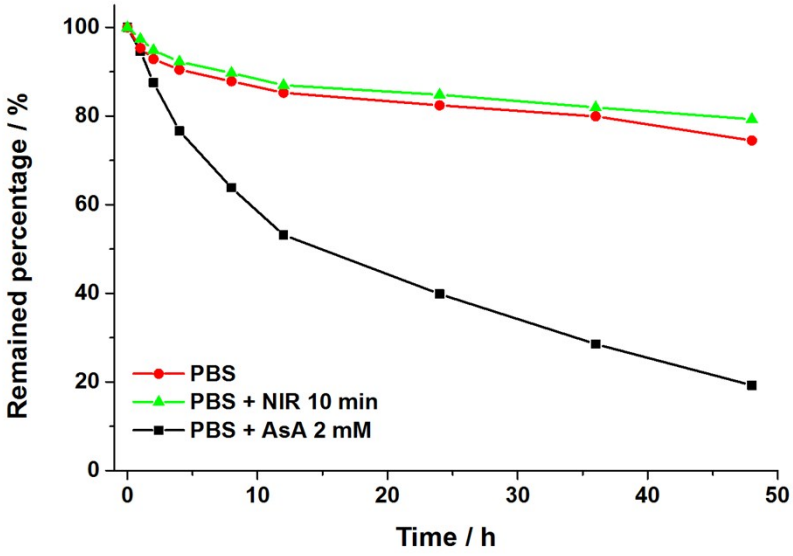


Figure S10. Pt release profile of PEG/RB-Pt(IV)-UCNPs in PBS buffer (400 μg mL^{-1}) in and without the presence of 2 mM ascorbic acid (AsA) at pH 7.4 at 37 °C. One batch of sample was irradiated with an 808 nm laser for 10 min (6 W/cm^2) before the release experiment was carried out.

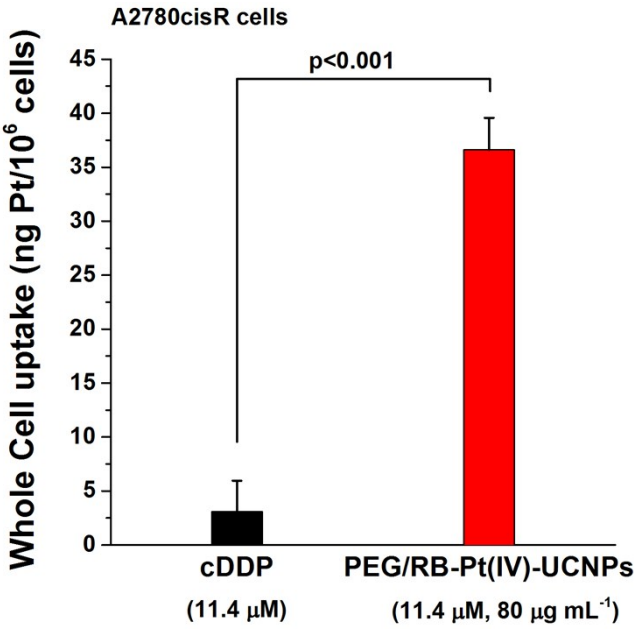


Figure S11. Whole cell uptake of cDDP (11.4 μM) and PEG/RB-Pt(IV)-UCNPs (80 μg mL^{-1}) in A2780cisR cells (n=3).

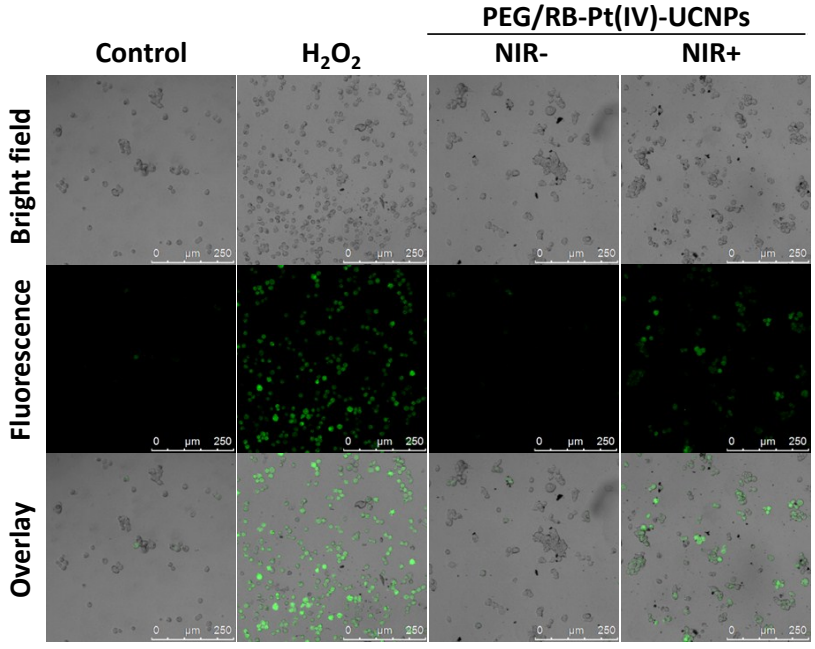
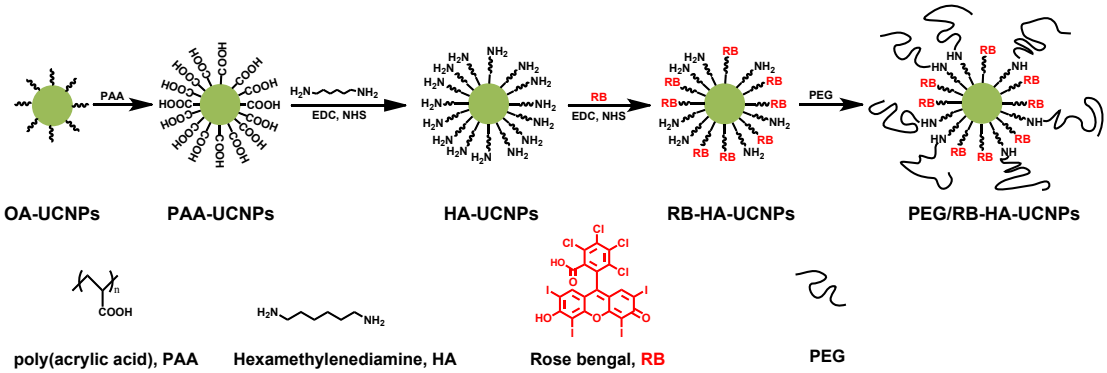


Figure S12. Cellular reactive oxygen species (ROS) of PEG/RB-Pt(IV)-UCNPs (80 μg mL^{-1}) with 808 nm laser irradiation (6 W/cm^2, 10 min) in A2780cisR cells. The PBS treated and PEG/RB-Pt(IV)-UCNPs (80 μg mL^{-1}) without irradiation were also measured to compare. The H_2O_2 (3 mM) treated for 15 min was set as a positive control. Scale bar, 250 μm.



Scheme S1. Synthetic route of PEG/RB-HA-UCNPs for photodynamic therapy alone.