

Supporting Information

The copper peroxide coated upconversion nanoparticle modified with glucose oxidase for H₂O₂ self-supplying starvation-enhanced chemodynamic therapy *in vitro*

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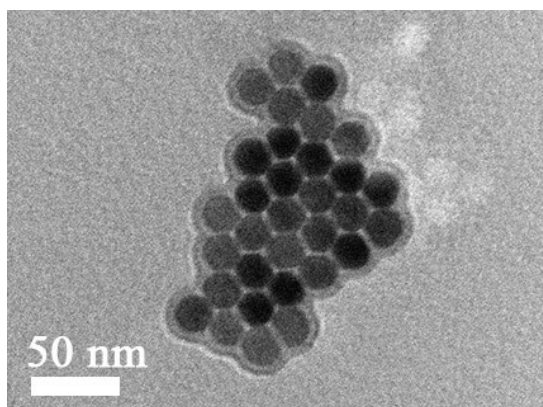


Fig. S1. Transmission electron microscopy (TEM) image of the UCN@CuO₂ (denoted as UCCu).

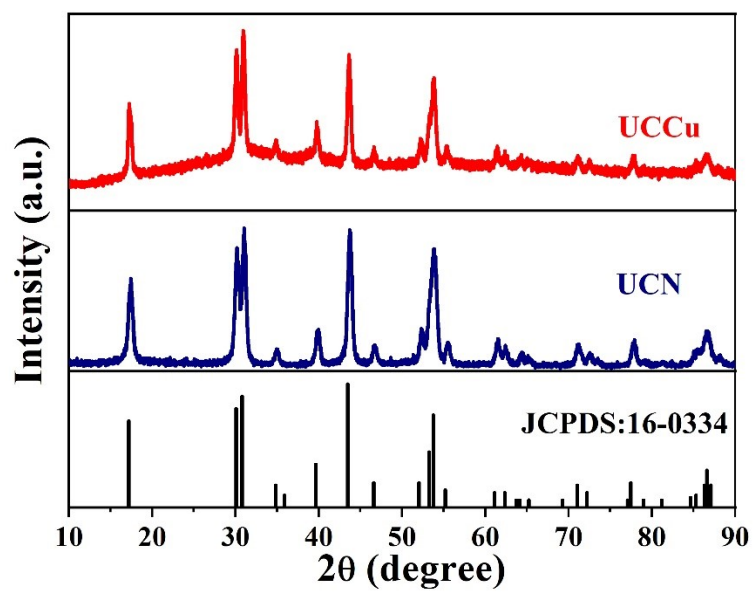


Fig. S2. X-ray diffraction patterns of UCN and UCCu, and standard XRD pattern of NaYF₄ (JCPDS: 16-0334).

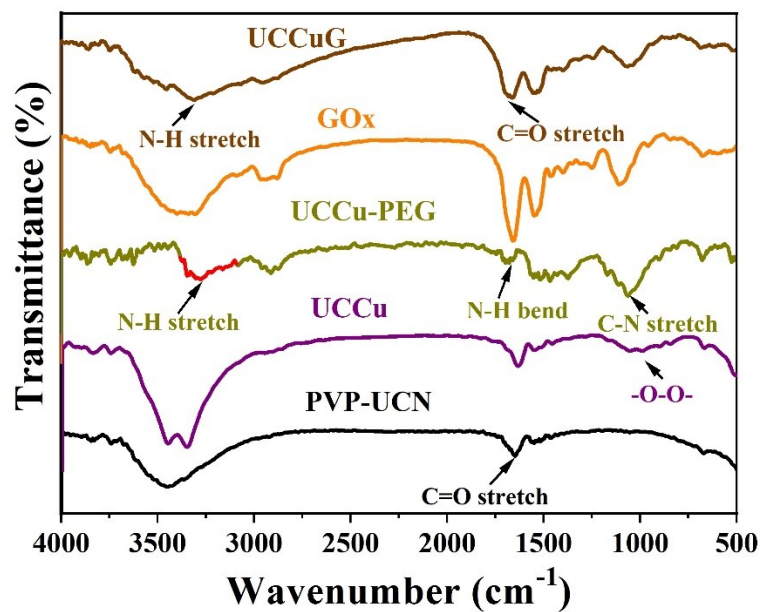


Fig. S3. Fourier transform infrared (FTIR) spectra of PVP-UCN, UCCu, UCCu-PEG, GOx, and UCCuG nanocomposite.

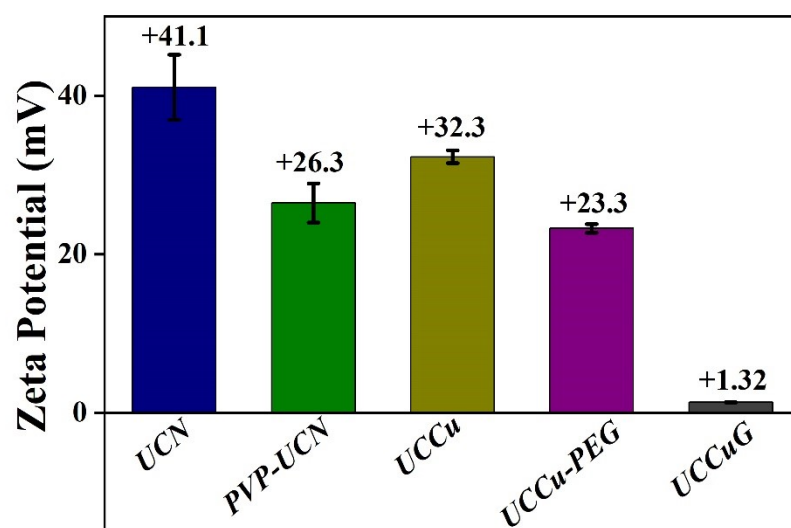


Fig. S4. Zeta potentials of UCN, PVP-UCN, UCCu, UCCu-PEG, and UCCuG nanocomposite.

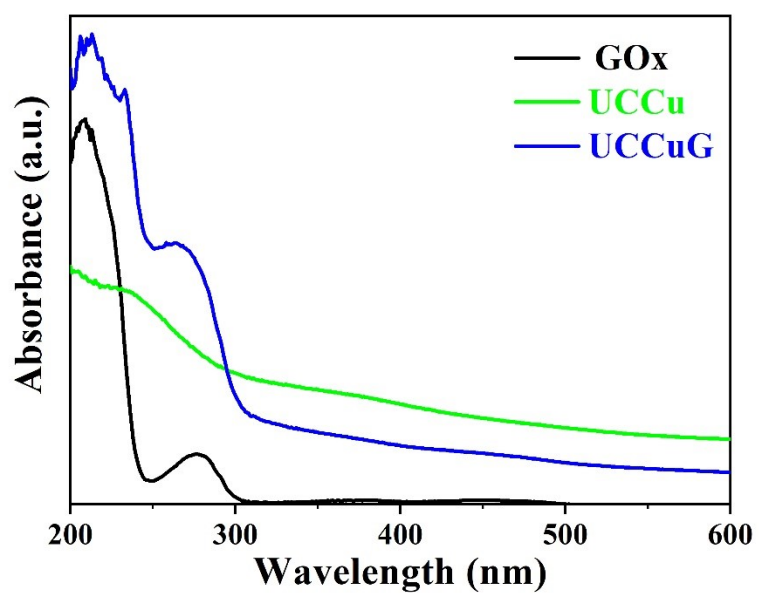


Fig. S5. UV-Vis absorption spectra of GOx, UCCu, and UCCuG nanocomposite.

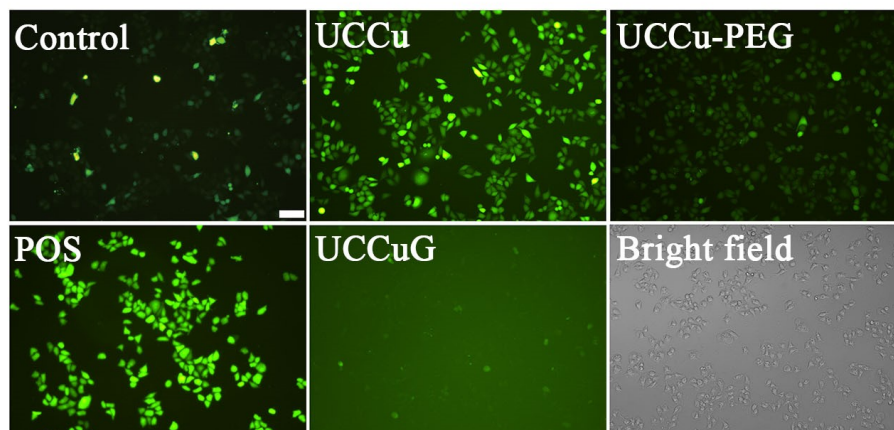


Fig. S6. Fluorescence images of intracellular reactive oxygen species (ROS) production in HeLa cells incubated with different treatments (UCCu, UCCu-PEG, UCCuG nanocomposite, and bright field image of cells treated with UCCuG nanocomposite) with the concentration of 50 $\mu\text{g}/\text{mL}$ for 4 h; the HeLa cells untreated are used as the control group and those treated with 0.15% H_2O_2 for 30 min are used as the positive control (named as POS). Scale bar: 100 μm .

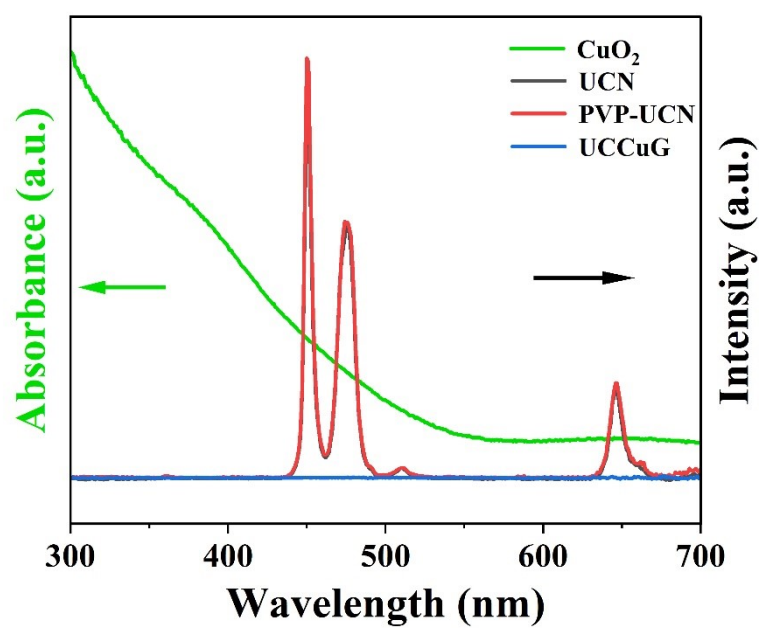


Fig. S7. The UV-Vis absorption spectrum of CuO₂ and the upconversion luminescence spectra of UCN, PVP-UCN, and UCCuG nanocomposite ($\lambda_{\text{ex}} = 980 \text{ nm}$).