

Supporting Information

MOF-coated upconversion nanoconstructs for synergetic photo-chemodynamic/oxygen-elevated photodynamic therapy

Huiyuan Chu,^{†a,b} Yameng Li,^{†a} Chaozhan Wang,^a Ji-Wei Shen^{*a} and Yinmao Wei^{*a}

^a Key Laboratory of Synthetic and Natural Functional Molecule of the Ministry of Education, College of Chemistry & Materials Science, Northwest University, Xi'an 710127, P. R. China.

^b Department of Ecology and Resource Engineering, Hetao College, Bayannur, 015000, P. R. China

[†] These authors contributed equally to this work.

^{*} Corresponding authors. E-mail: jiweish@nwu.edu.cn; ymwei@nwu.edu.cn.

List of Abbreviations in This Study

Full Name	Abbreviations
Chlorin e6	Ce6
Triethoxy(1H,1H,2H,2H-nonafluorohexyl)silane	TFS
NaYbF ₄ :Tm/Gd@NaGdF ₄ :Nd/Yb@NaLuF ₄	UC
UC@mSiO ₂	US
UC@Ce6@mSiO ₂	UCS
UC@Ce6/TFS@mSiO ₂	UCTS
UC@Ce6/TFS@mSiO ₂ @MIL-100 (Cu/Fe)	UCTSCF

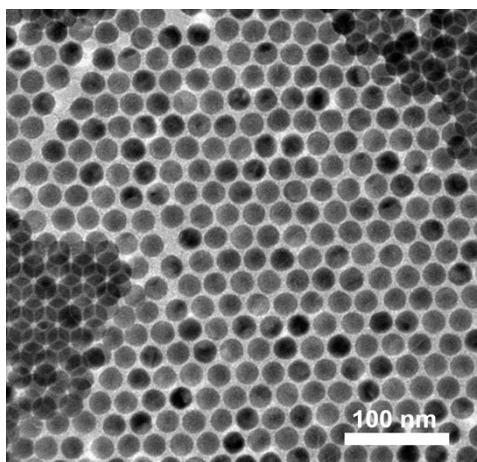


Fig. S1 TEM image of the NaYbF₄:Tm/Gd(1/30%).

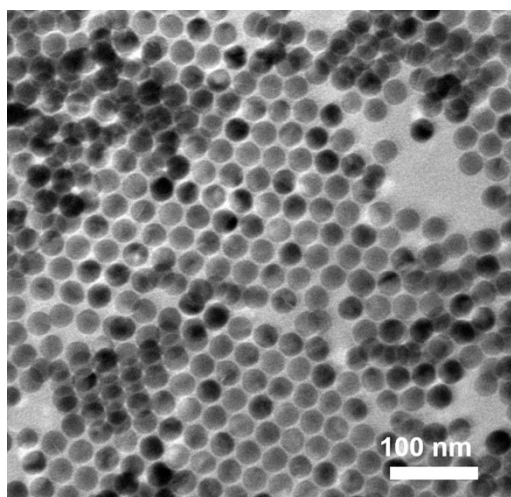


Fig. S2 TEM image of the NaYbF₄:Tm/Gd(1/30%)@NaGdF₄:Nd/Yb(30/10%).

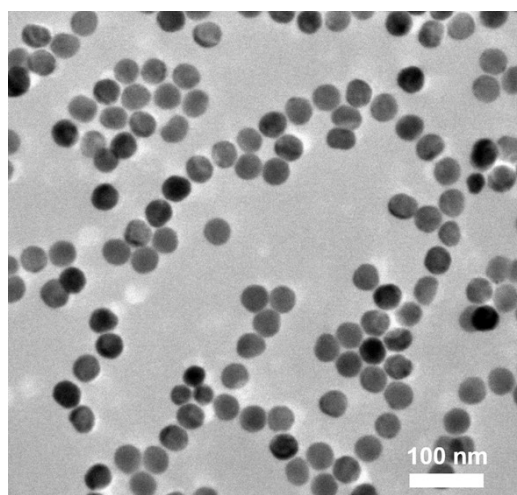


Fig. S3 TEM image of the UC.

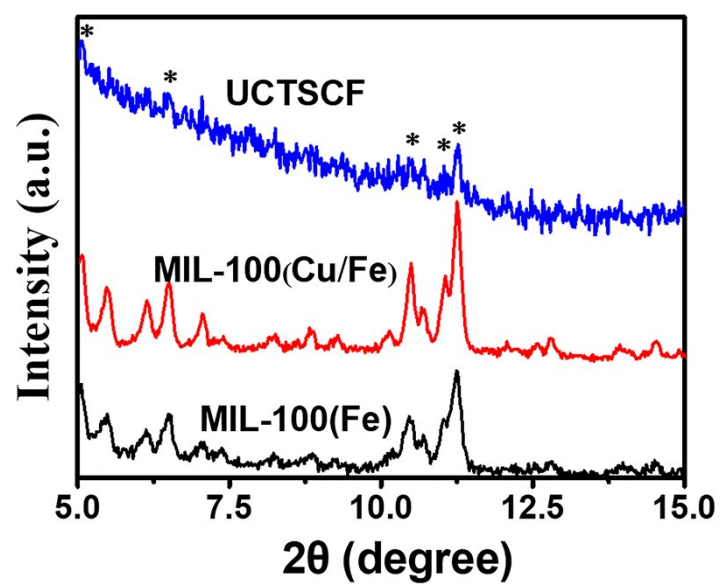


Fig. S4 X-ray diffraction patterns of the MIL-100(Fe), MIL-100(Cu/Fe) and UCTSCF.

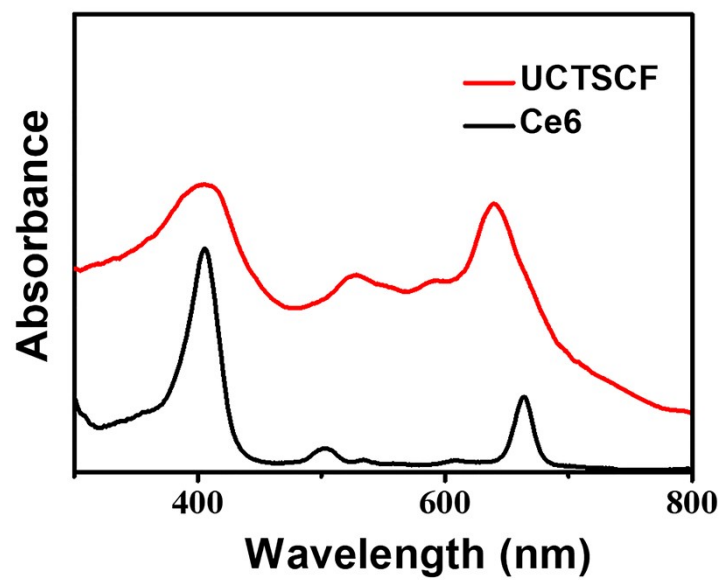


Fig. S5 UV-vis absorption spectra of Ce6 and the UCTSCF.

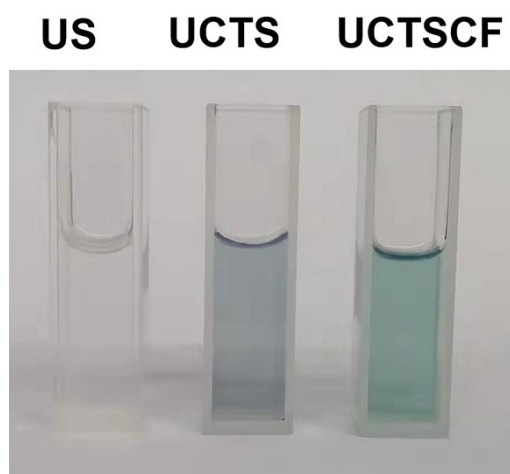


Fig. S6 Digital images of water suspensions of the US, UCTS and UCTSCF.

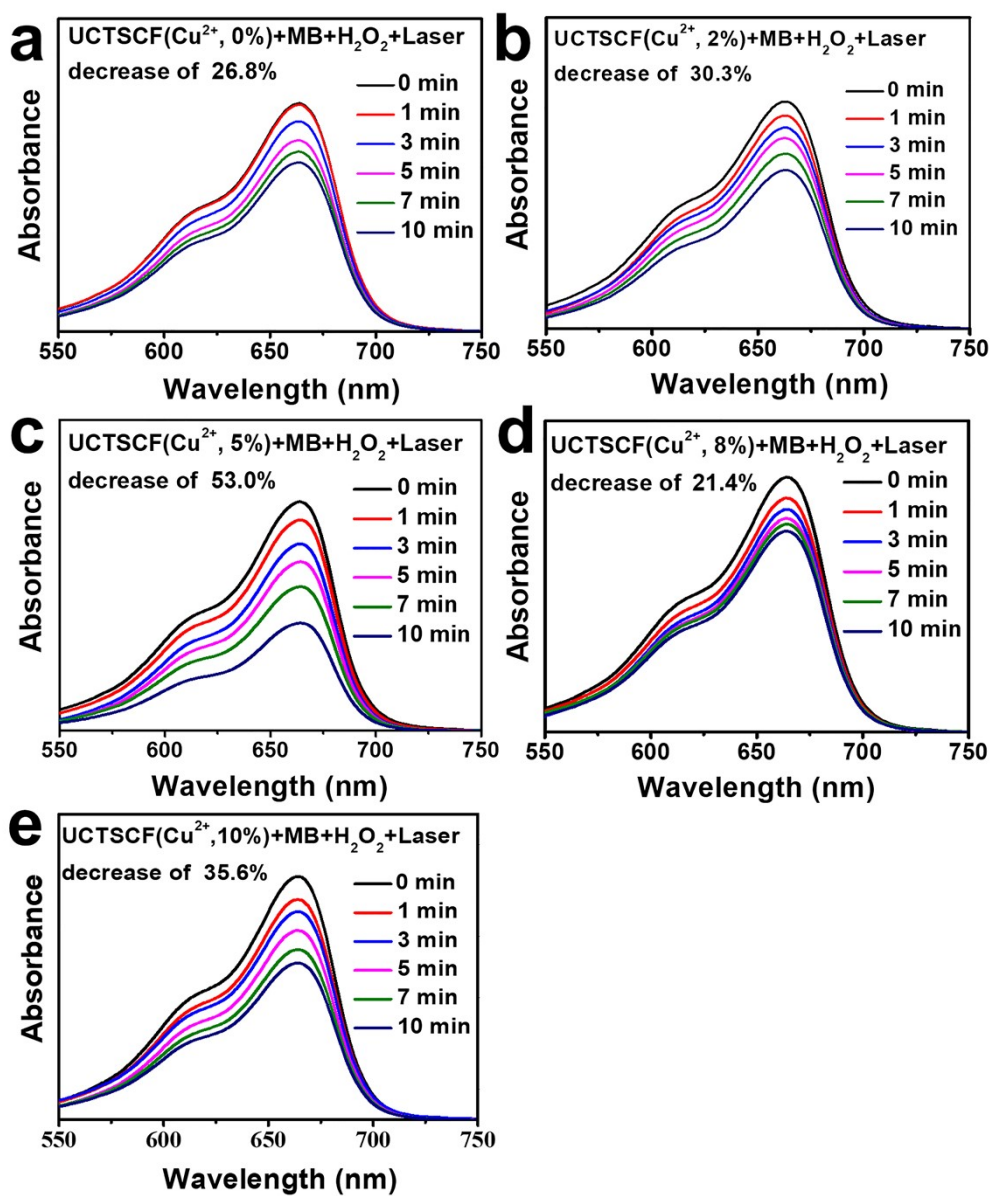


Fig. S7 The effect of UCTSCF's Cu content on their MB depletion capacity at pH 5.5 in the presence of H₂O₂ (100 mM) and 808 nm irradiation.

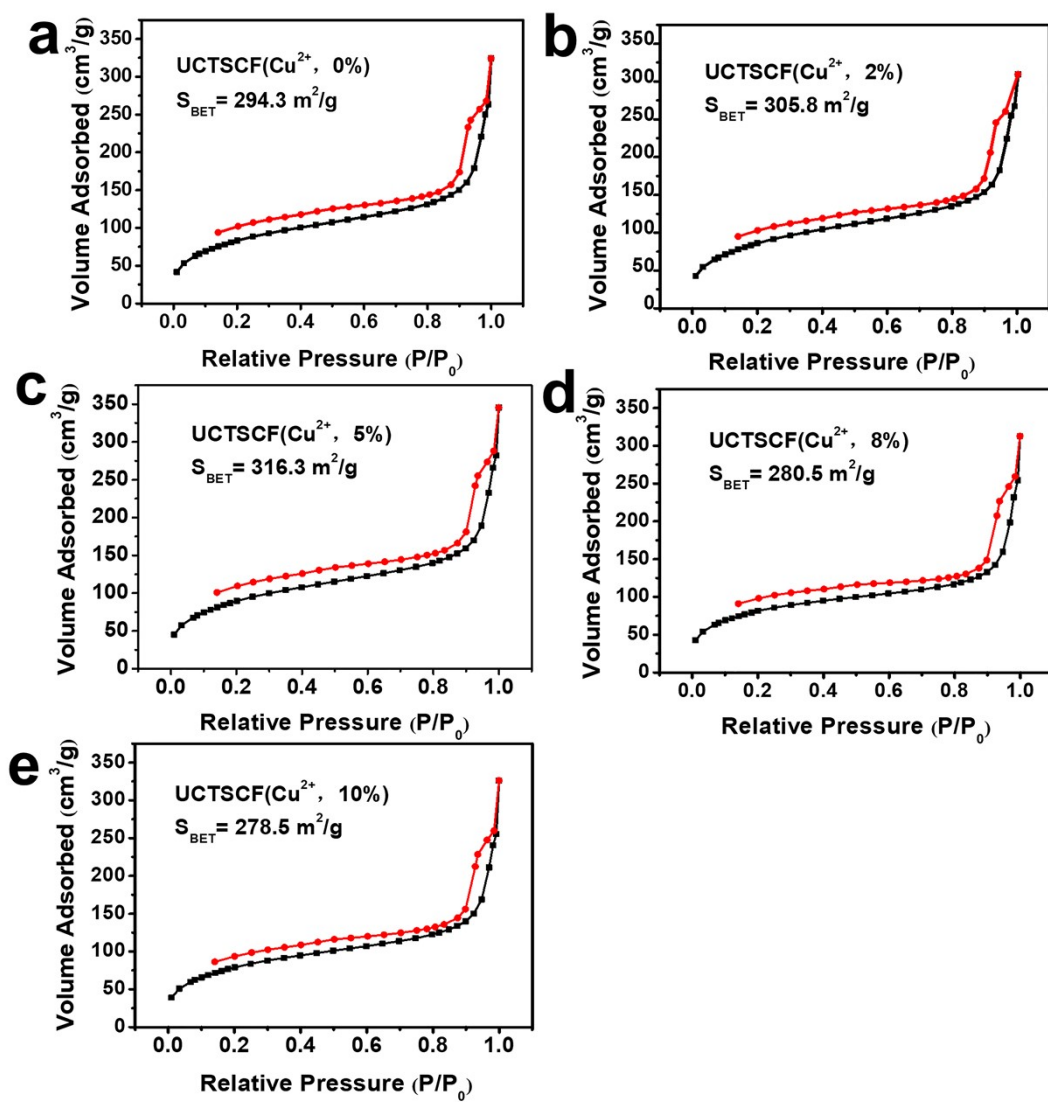


Fig. S8 Surface area of UCTSCF containing different Cu contents.

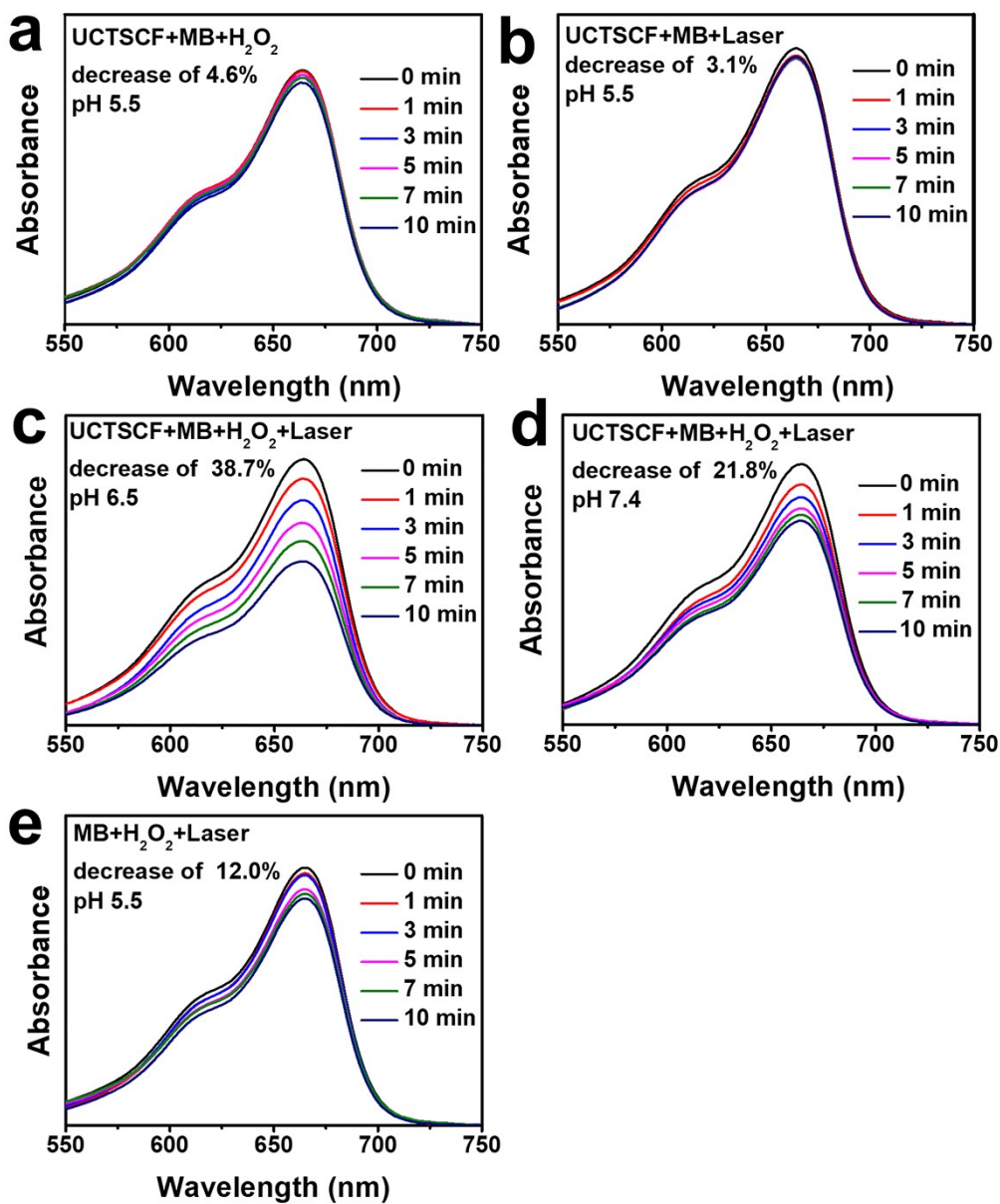


Fig. S9 Depletion of MB by the optimized UCTSCF with H₂O₂ (100 mM) but without 808 nm irradiation (a), with 808 nm irradiation but without H₂O₂ (b), and with both H₂O₂ (100 mM) and 808 nm irradiation at different pH (c-d). (e) Depletion of MB in the absence of UCTSCF.

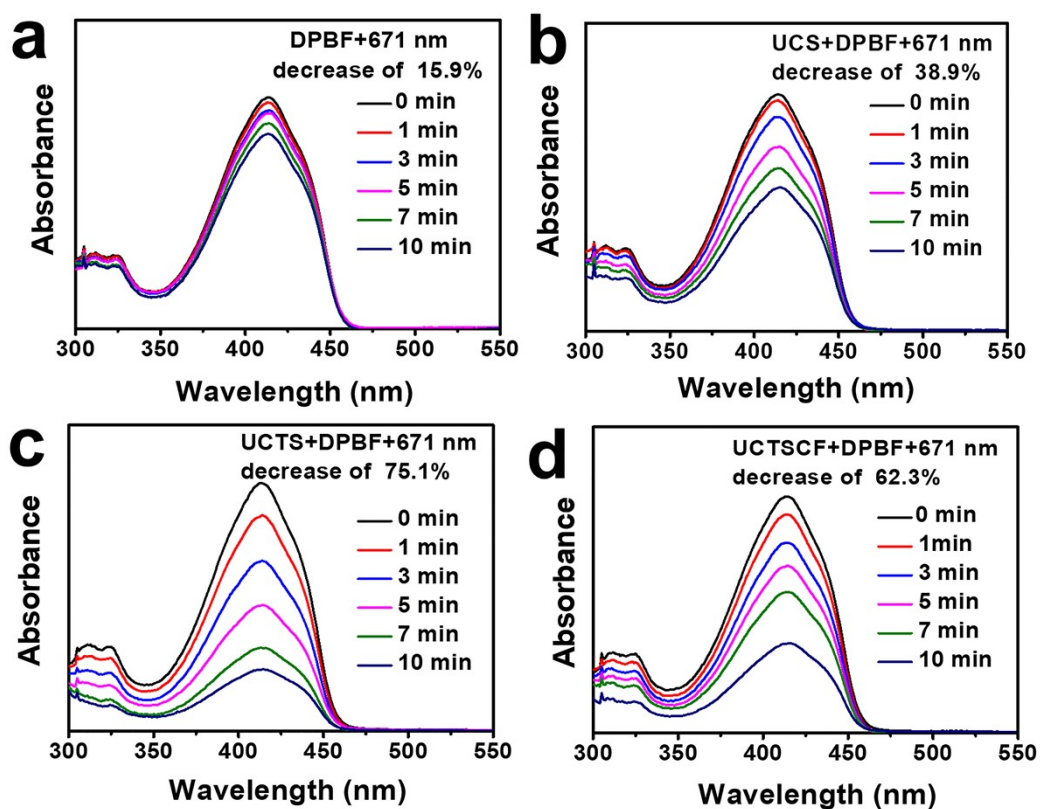


Fig. S10 Depletion of DPBF by single 671 nm irradiation (a), both UCS and the 671 nm irradiation (b), both UCTS and the 671 nm irradiation (c), and both UCTSCF and the 671 nm irradiation (d).

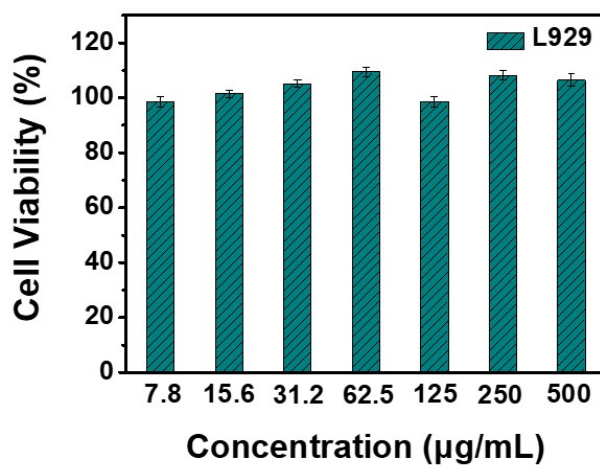


Fig. S11 Cell viability of L929 incubated with UCTSCF (24 h).