

Supporting Information

An Ultra-thin Metal-organic Framework Nanosheet for Chemo-photodynamic Synergistic Therapy

Rui Zeng^{‡a}, Tingting He^{‡a}, Lu Lu^a, Ke Li^a, Zhong Luo^{*b}, Kaiyong Cai^{*a}

a. College of Bioengineering, Chongqing University, Chongqing 400044, China.

b. School of Life Science, Chongqing University, Chongqing 400044, China.

[‡] Co-first authors: the authors contributed equally to this work.

* Corresponding author: Prof. Dr. Zhong Luo; Prof. Dr. Kaiyong Cai

College of Bioengineering

Chongqing University,

Chongqing 400044,

China

Tel: +86-23-65111802

Fax: +86-23-65102877

E-mail: kaiyong_cai@cqu.edu.cn

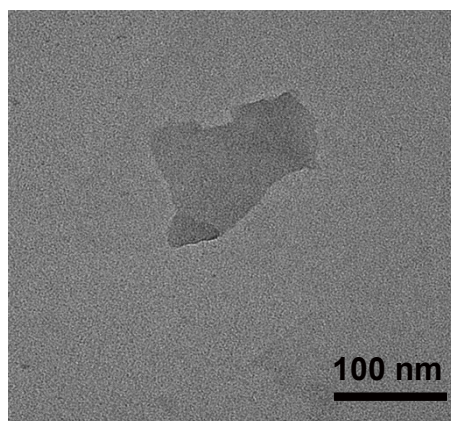
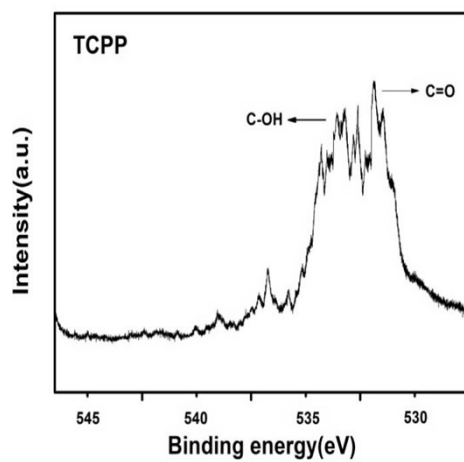


Figure S1. Transmission electron micrograph of DOX@Cu-TCPP nanosheets.

(A)



(B)

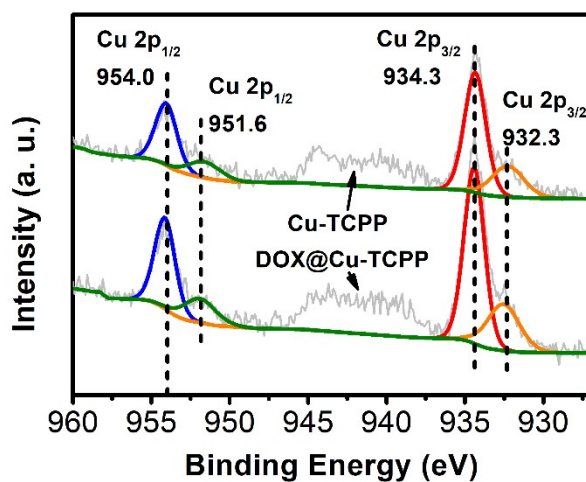


Figure S2. (A) High-resolution O 1s XPS spectra of TCP nanosheets. (B) High-resolution Cu 2p XPS spectra of Cu-TCP nanosheets and DOX@Cu-TCP nanosheets.

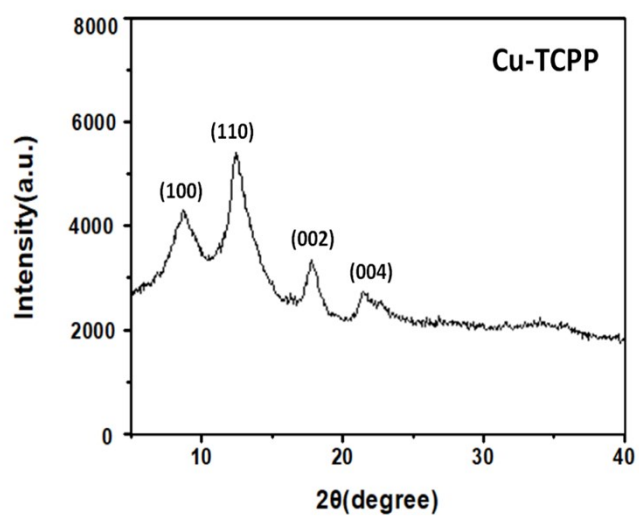


Figure S3. The XRD patterns of Cu-TCPP nanosheets.

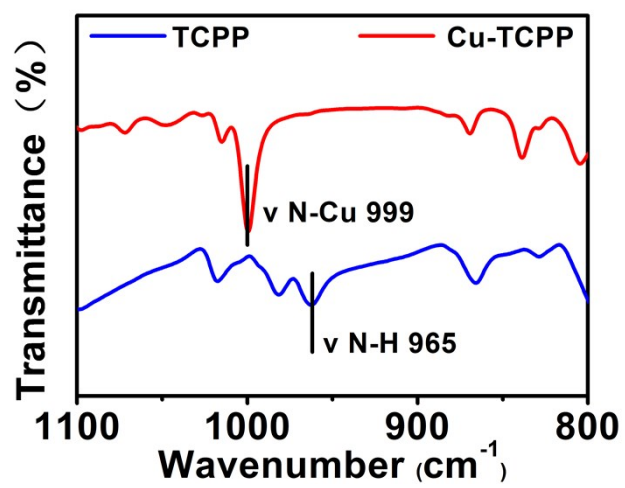


Figure S4. FT-IR spectra of TCPP/Cu-TCPP nanosheets.

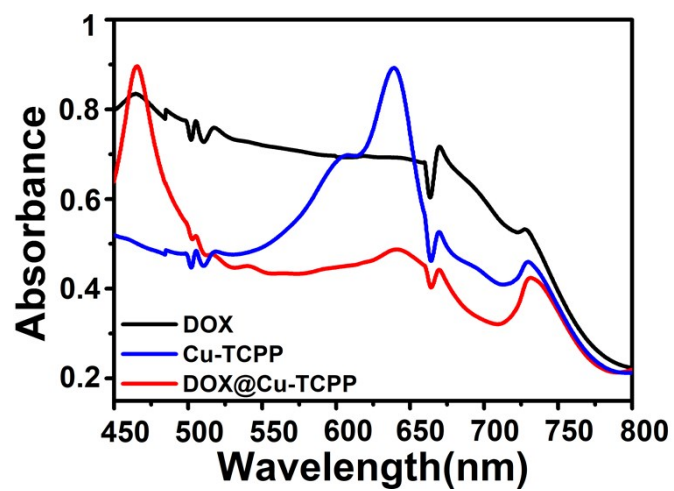
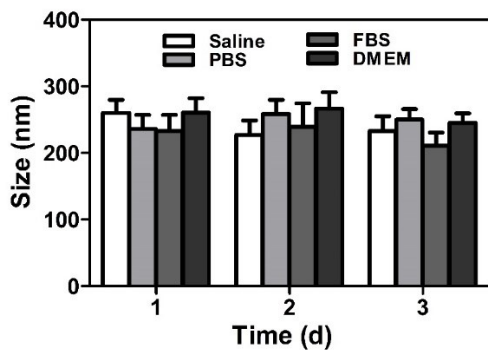
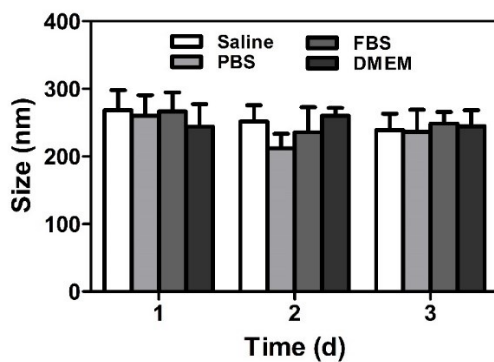


Figure S5. UV-Vis absorption spectrums of DOX, Cu-TCPP, DOX@Cu-TCPP nanosheets.

(A)



(B)



(C)

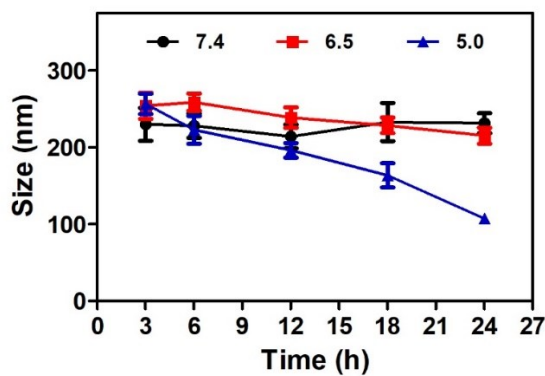


Figure S6. Hydrodynamic diameter of Cu-TCPP (A) and DOX@Cu-TCPP (B) nanosheets in saline, PBS, FBS and DMEM during 3 days, respectively. (C) The degradation of DOX@Cu-TCPP nanosheets under different pH values during 24 hours.

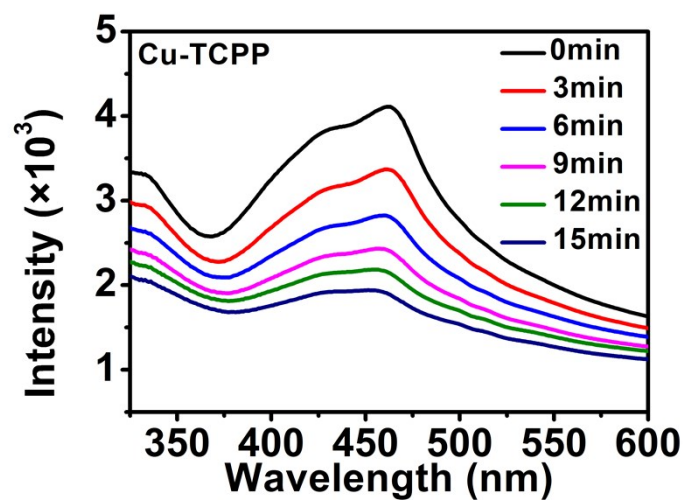


Figure S7. Absorption spectra of DPBF solution in presence of Cu-TCPP nanosheets under laser irradiation for different times.

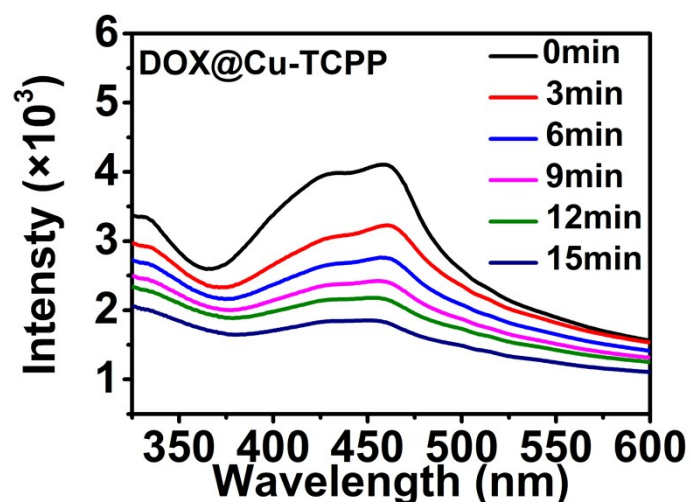


Figure S8. Absorption spectra of DPBF solution in presence of DOX@Cu-TCP nanosheets under laser irradiation for different times.

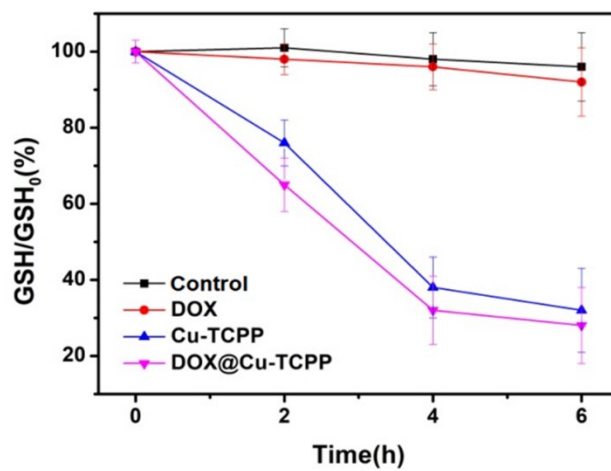


Figure S9. The changes of GSH concentrations in 6 h after incubation of 4T1 cells with DOX (30 $\mu\text{g}/\text{mL}$), Cu-TCPP (60 $\mu\text{g}/\text{mL}$), DOX@Cu-TCPP (90 $\mu\text{g}/\text{mL}$) and blank control.

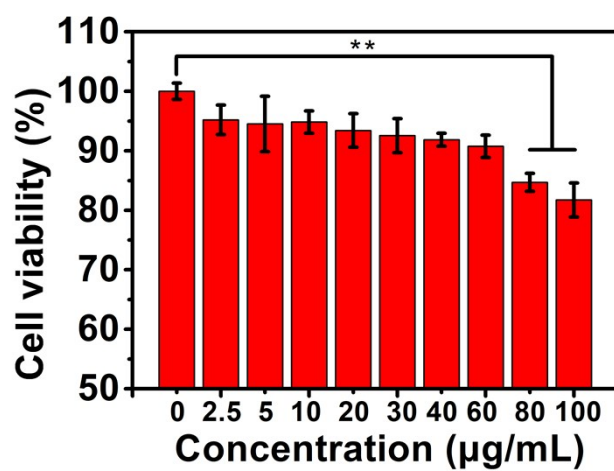


Figure S10. The activity of 4T1 cells after incubation with different concentrations of Cu-TCPP nanosheets for 24 hours. * $p < 0.05$, ** $p < 0.01$.

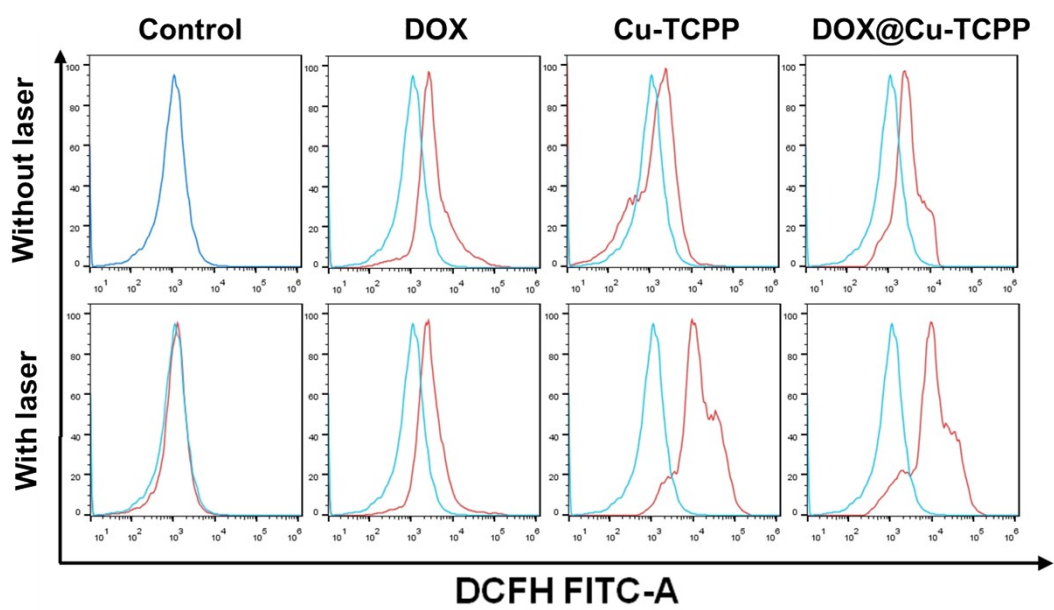
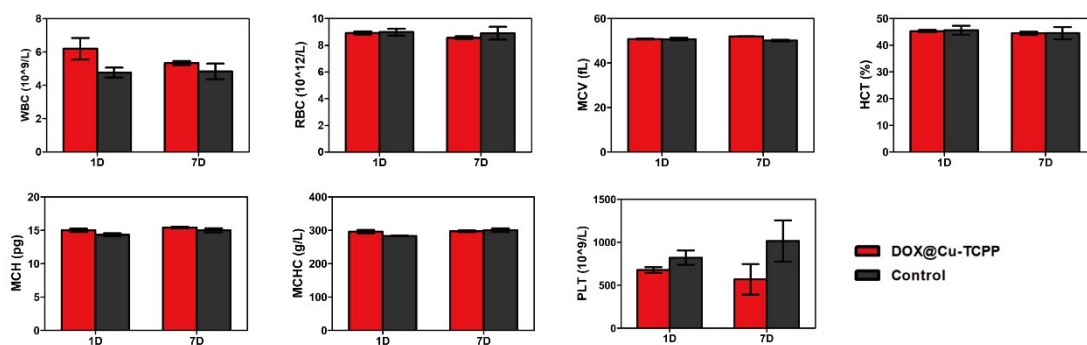


Figure S11. Flow cytometry detection of intracellular ROS in 4T1 cells after the different treatments.

(A)



(B)

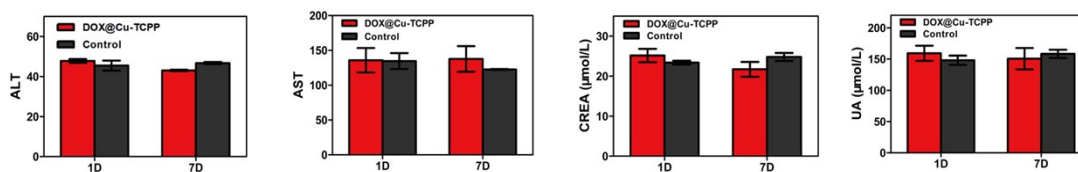


Figure S12. *In vivo* toxicity evaluation. The blood routine assay (A) and blood biochemical parameters (B) of KM mice intravenously injected with PBS or DOX@Cu-TCPP nanosheets for 1 and 7 days.

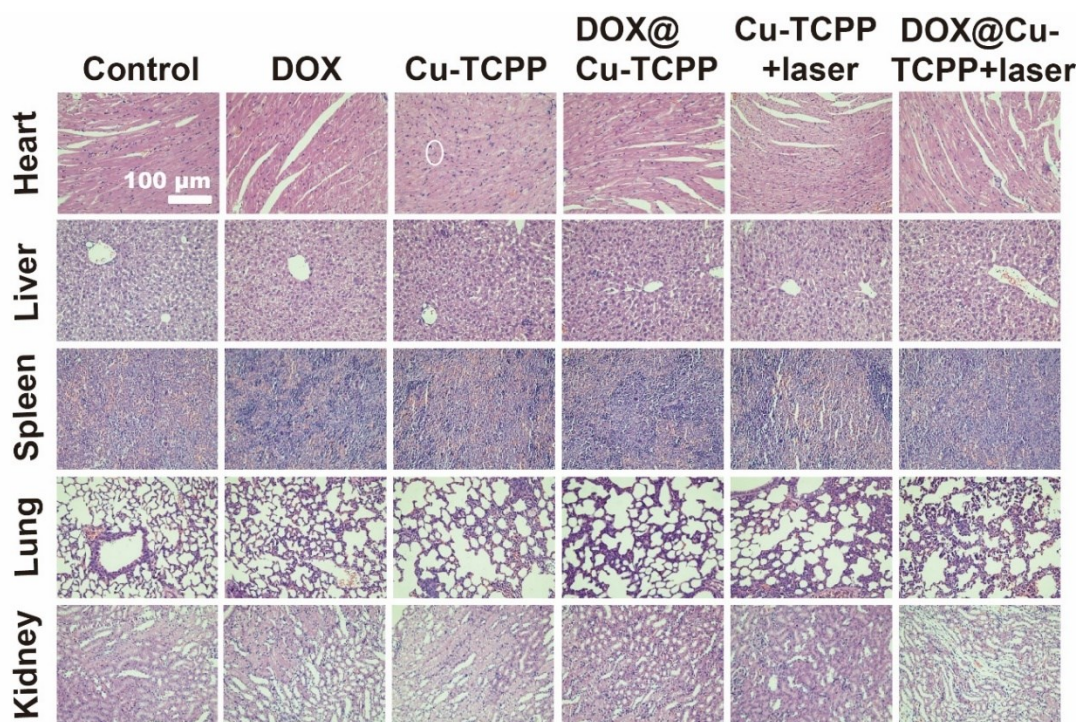


Figure S13. Histological assessments of the tumor and main organs extracted from tumor bearing mice after treatment with TCPS, Free DOX, Cu-TCPP, DOX@Cu-TCPP, Cu-TCPP with laser, DOX@Cu-TCPP with laser. The ovals indicate the tissue damage incurred by DOX, the scale bar is 100 μm .

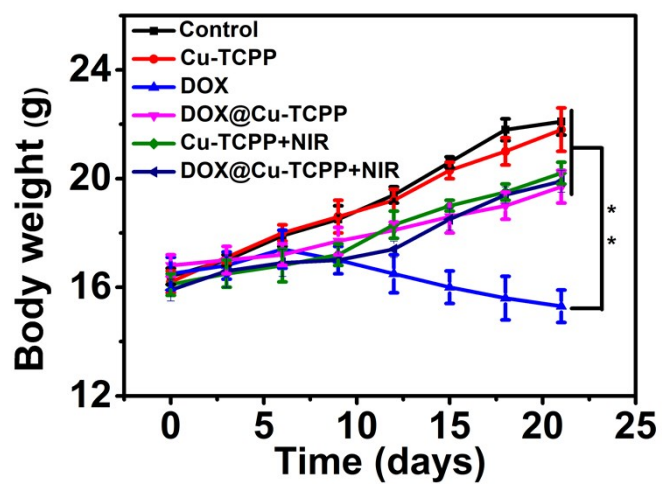


Figure S14. Average body weight changes of tumor-bearing mice along with the different treatments, $n = 6$, $**p < 0.01$.