Ultrathin Cu-TCPP MOF nanosheets: a new theragnostic nanoplatform with magnetic resonance/near-infrared thermal imaging for synergistic phototherapy of cancers

*Bo Li, Xiaoya Wang, Lei Chen, Yanling Zhou, Wentao Dang, Jiang Chang, Chengtie Wu**

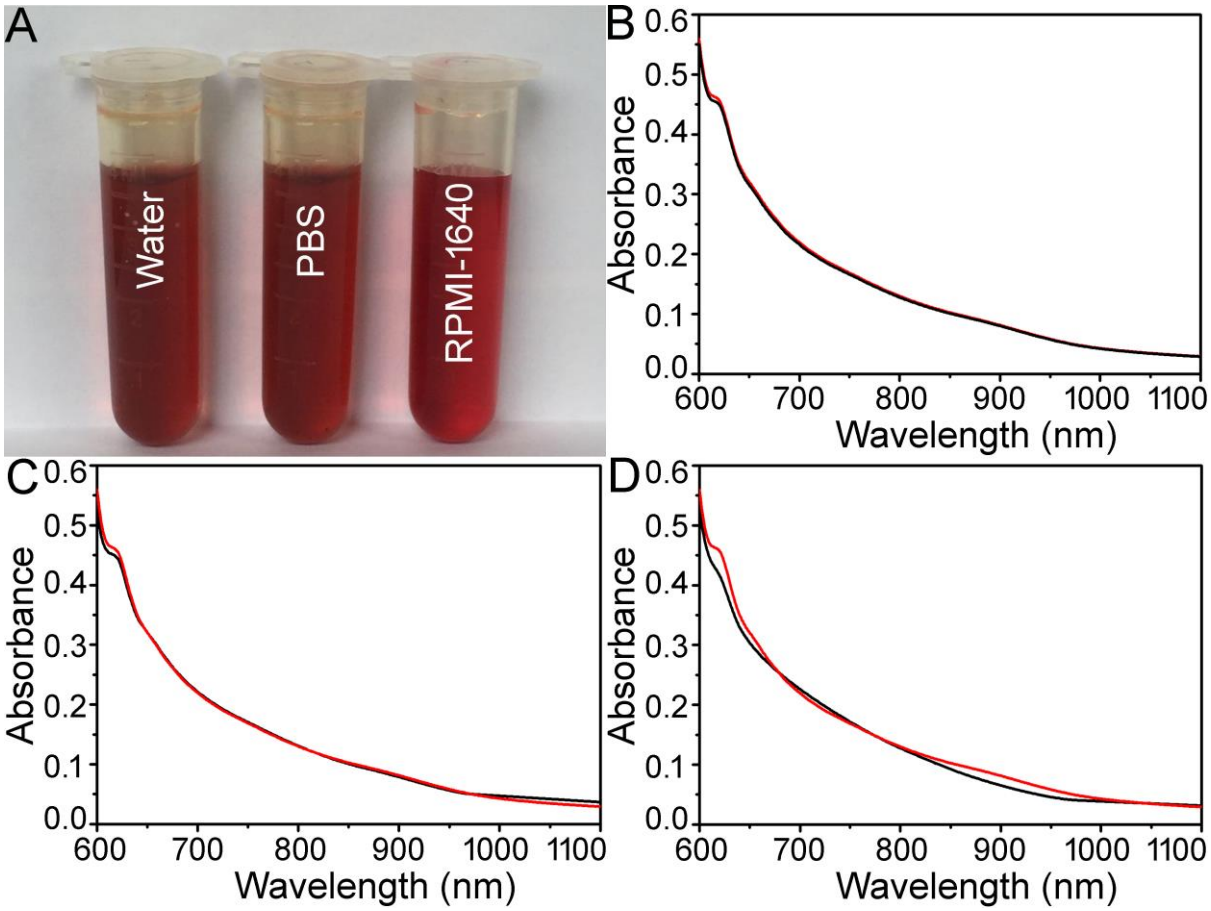

Figure S1. (A) A digital camera picture of the Cu-TCPP MOF nanosheets dispersed in water, PBS, and RPMI-1640 culture medium for a week, showing the good dispersion of nanosheets. UV-vis spectra of the freshly prepared (red line) Cu-TCPP MOF nanosheets and the Cu-TCPP MOF nanosheets stocked (black line) in (B) water, (C) PBS, and (D) RPMI-1640 culture medium under ambient conditions for a week.

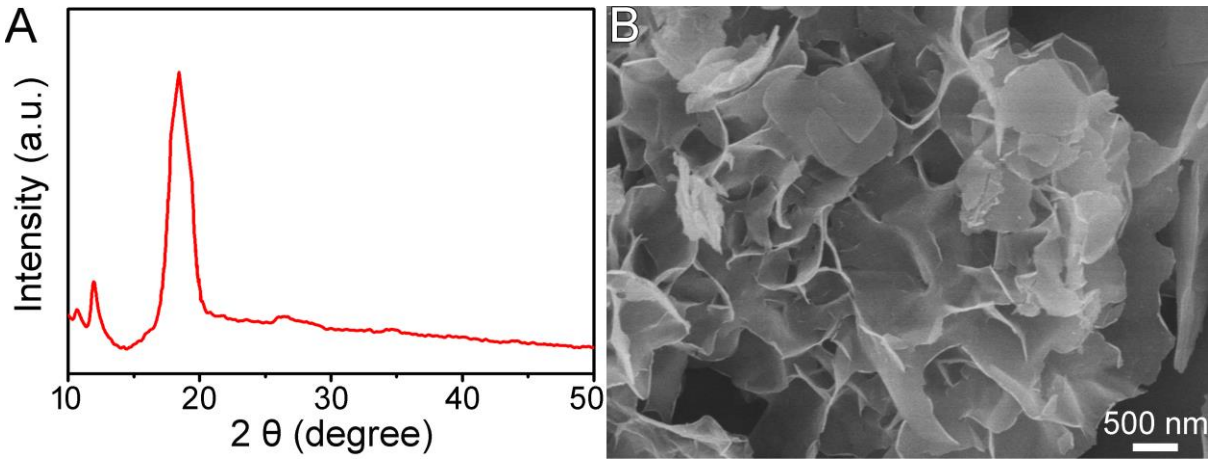

Figure S2. (A) XRD patterns and (B) SEM image of the Cu-TCPP MOF nanosheets.

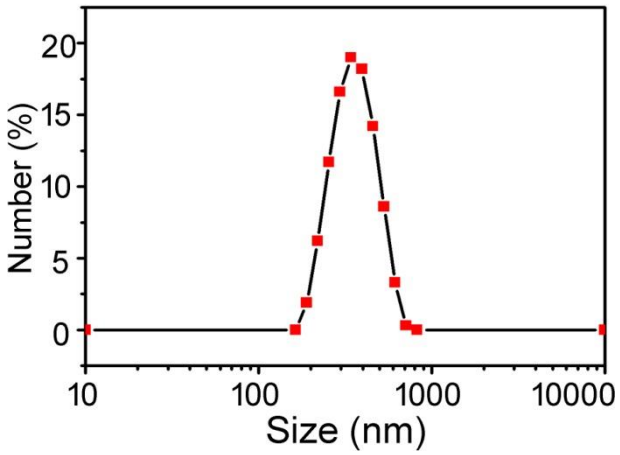

Figure S3. Dynamic light scattering (DLS) data of Cu-TCPP MOF nanosheets in water.

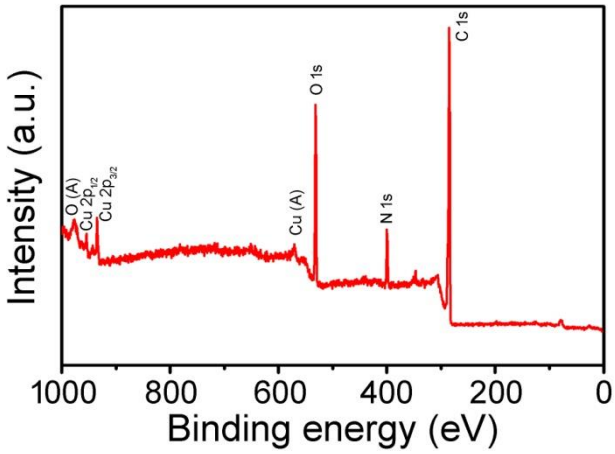

Figure S4 XPS spectra of the Cu-TCPP MOF nanosheets.

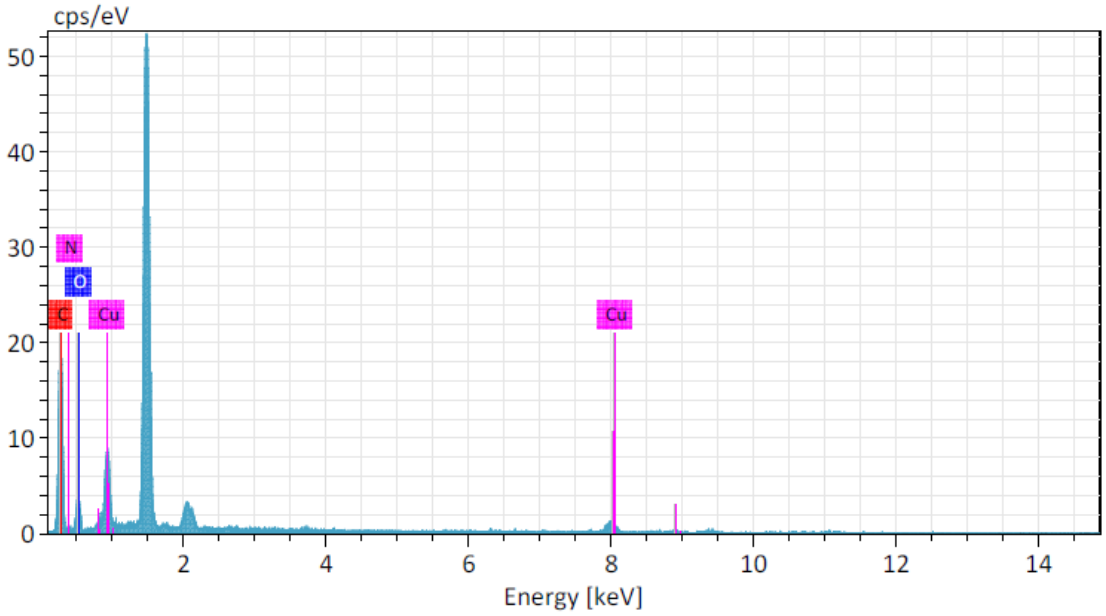

Figure S5. EDS patterns of Cu-TCPP MOF nanosheets. The results confirmed that there were only Cu, C, O and N elements in the sample; Al element (1.45 keV and 2.05 keV) was from the aluminum foil substrate.

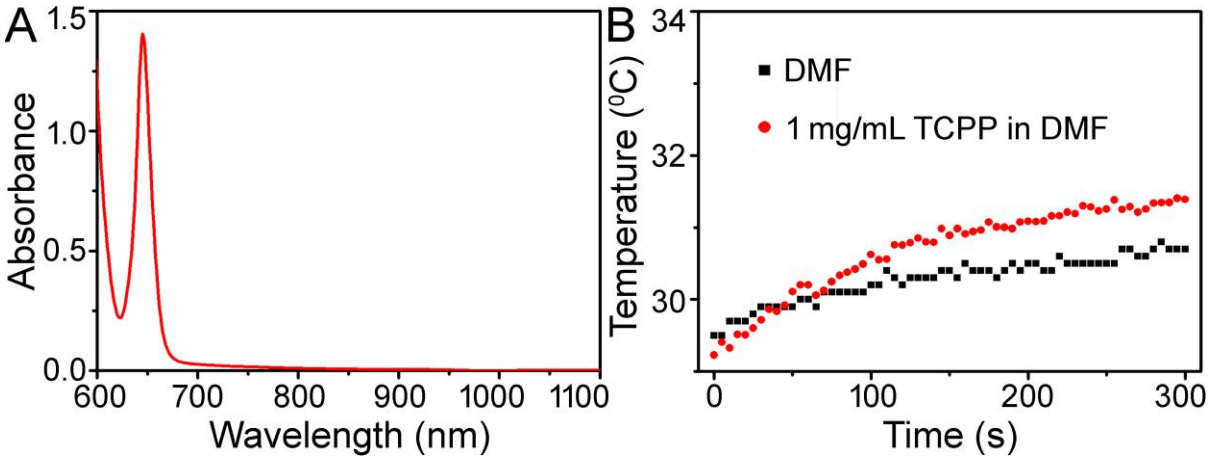

Figure S6. (A) UV-vis absorbance spectra for the TCPP dispersed in DMF. (B) Temperature elevation of the pure DMF and TCPP solution dispersed in DMF under the irradiation of an 808 nm laser at a power density of 1.0 W cm^{-2} as a function of irradiation time (0-300 s).

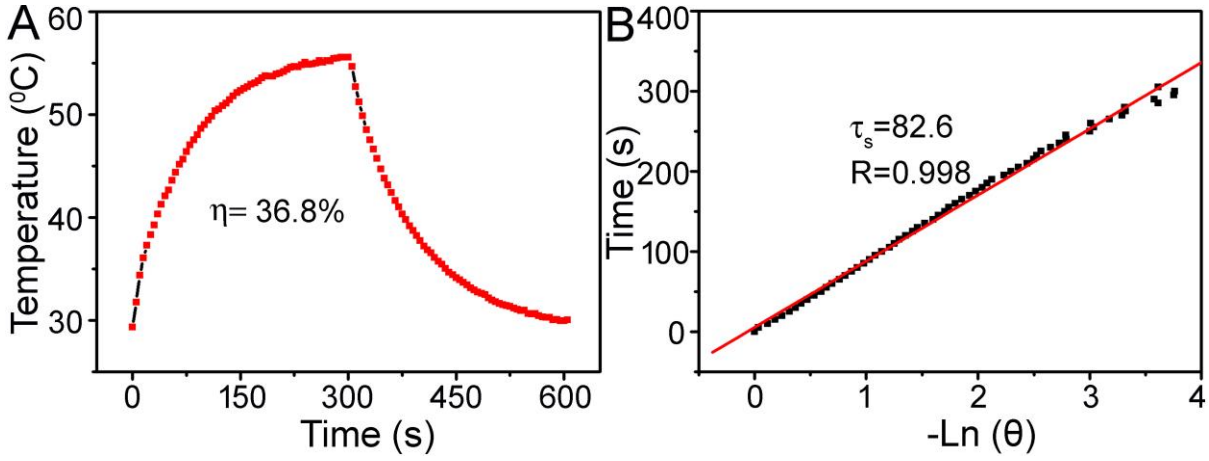

Figure S7. (A) Photothermal effect of the Cu-TCPP MOF nanosheets upon being irradiated (808 nm, 1.0 W cm^{-2}) for 300 s and shutting off the laser; (B) Time constant for heat transfer from the system is determined to be τ_s = 82.6 s by applying the linear time data from the cooling period of panel (A) versus negative natural logarithm of driving force temperature.

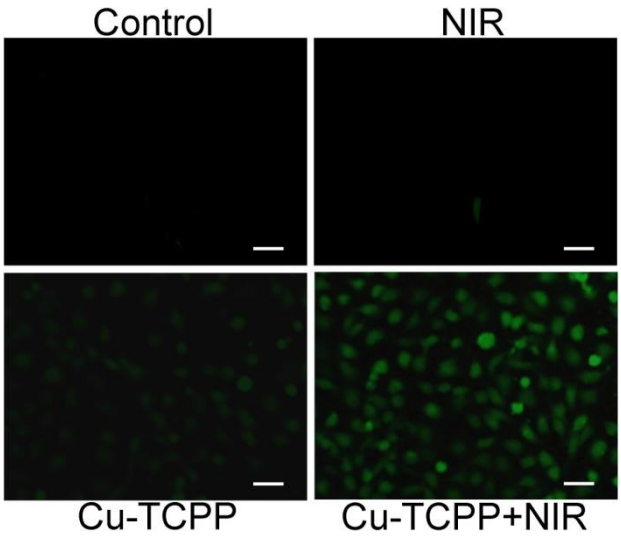

Figure S8. ROS generation staining of Saos-2 cells after the co-incubated with or without Cu-TCPP nanosheets for 6 h at different groups: control groups, NIR groups (660 nm, 10 mW cm^{-2}, 15 min), Cu-TCPP (0.5 mg mL^{-1}) groups, and Cu-TCPP +NIR groups (0.5 mg mL^{-1}, 660 nm, 10 mW cm^{-2}, 15 min), respectively. Scale bar: 20 μm.

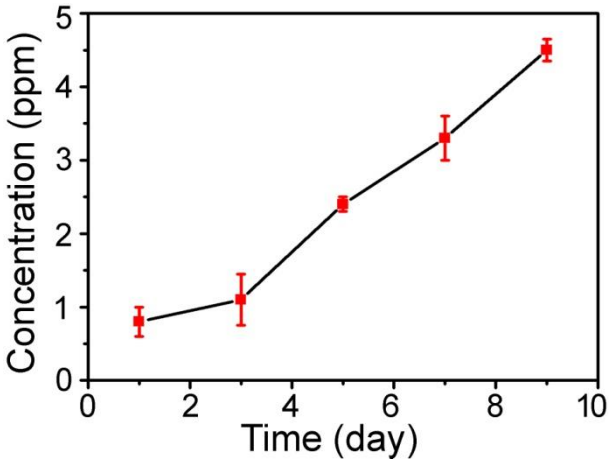

Figure S9. The Cu^{2+} release of Cu-TCPP MOF nanosheets (2 mg/mL) in PBS.

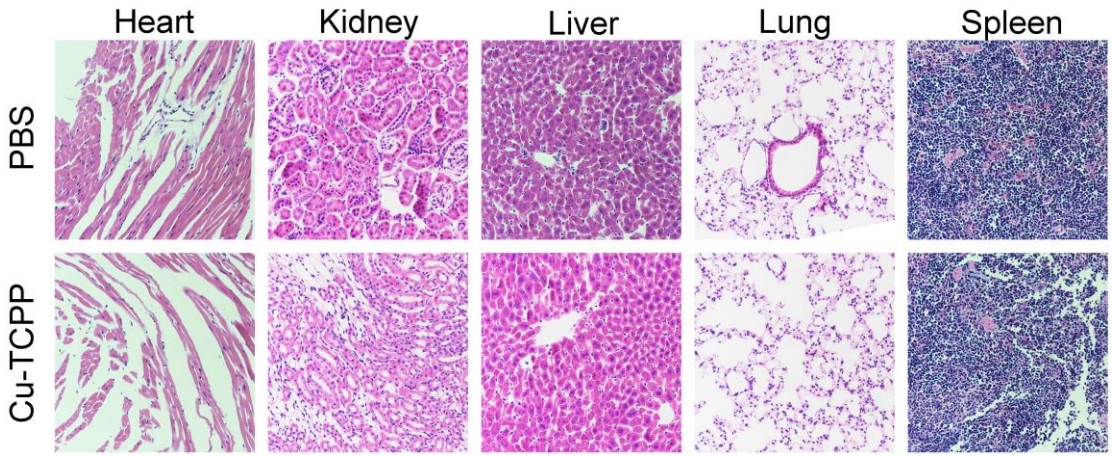

Figure S10. The representative H&E stained histological images of the tissue sections from the mice to monitor the histological changes in heart, kidney, liver, lung, and spleen of the mice one month after a single intravenous injection of the Cu-TCPP MOF nanosheets at 200× magnifications.

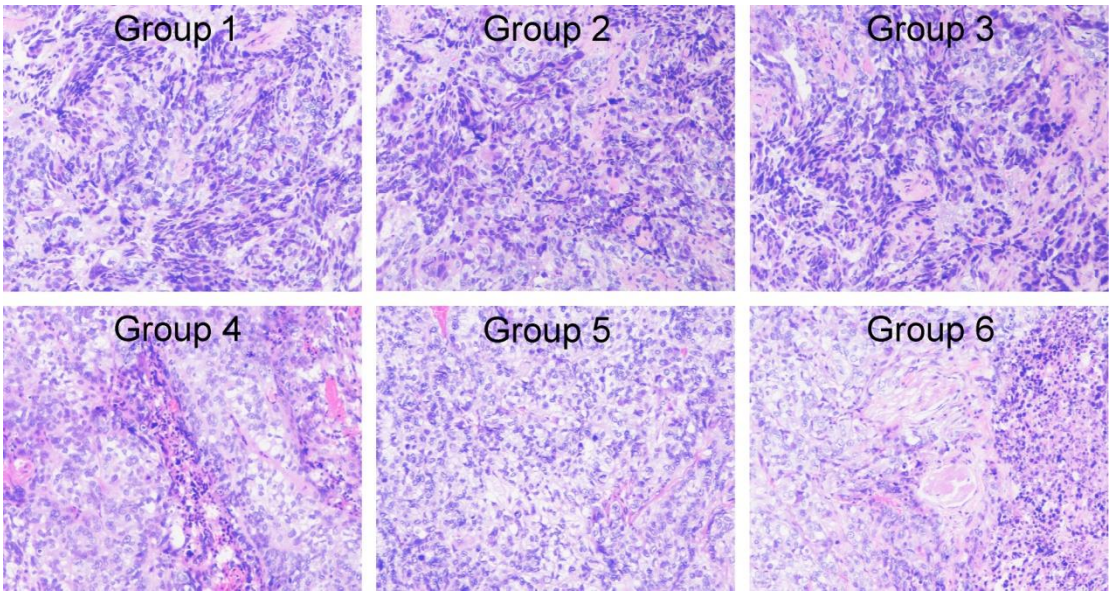

Figure S11. The representative H&E stained histological images of the corresponding *ex vivo* tumor sections collected from different groups of mice at 100× magnifications.