(ESI)

# Synergistic TME-manipulation Effects of a Molybdenum-based Polyoxometalate Enhanced the PTT Effects on Cancer Cells

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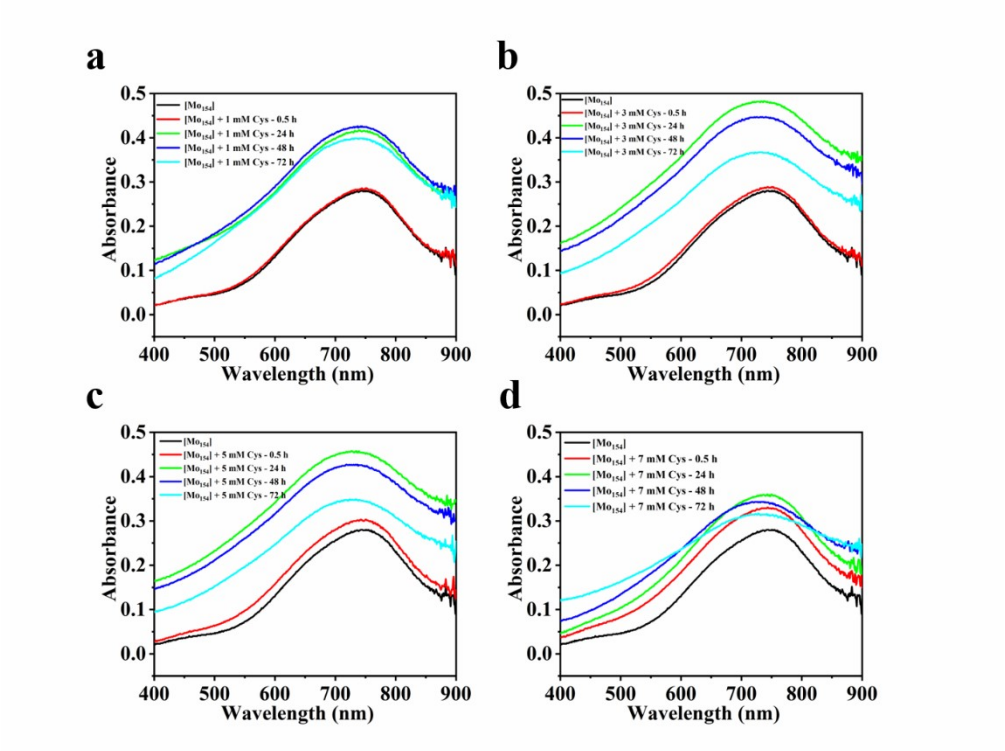


**Fig. S1** Time-dependent UV-vis absorption spectra of [$Mo_{154}$] in the presence of different amounts of Cys between 1-7 mM.

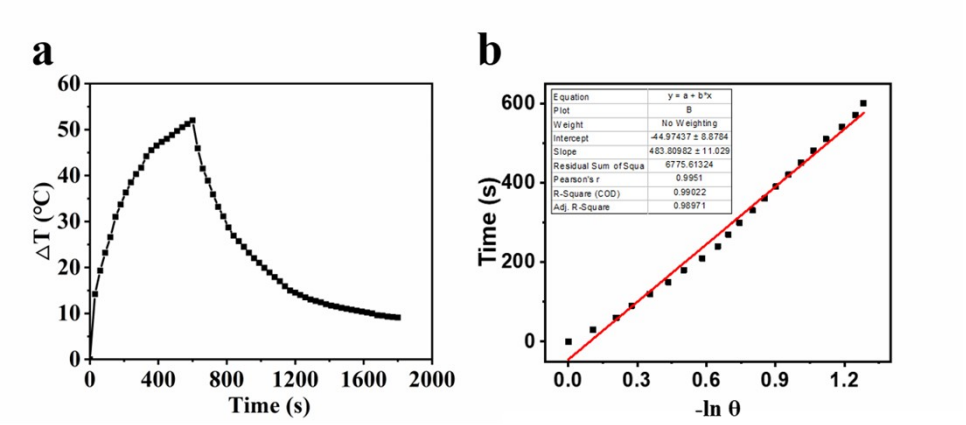


**Fig. S2** (a) The temporal temperature variation of 5 μM [$Mo_{154}$] and 3 mM cysteine after 24 h incubated. The volume of solution is 1 mL. The solution is irradiated for 10 min using a laser of 808 nm (1.4 W/cm$^2$), and then cooled to the room temperature at the ambient environment. (b) Time constant for heat transfer from the system is calculated to be $\tau_s$ = 483.80982 s by applying the linear time data from the cooling period *versus* negative natural logarithm of driving force temperature, which is obtained from Fig. S2a.

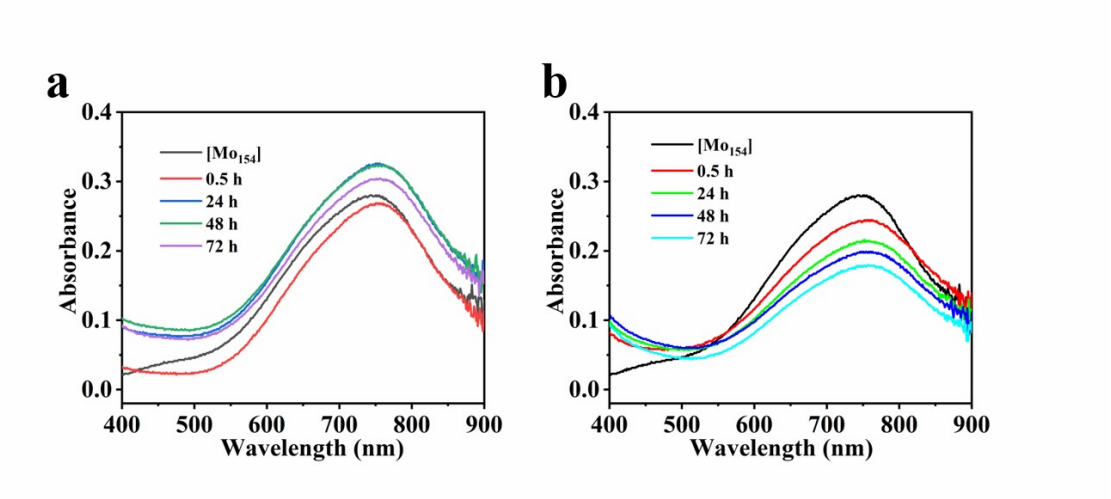


**Fig. S3** UV-vis absorption spectra of 5 μM [$Mo_{154}$] in the presence of 3 mM Cys after incubation for different times (at 4 ℃), at (a) pH 5.0 and (b) 6.0, respectively.

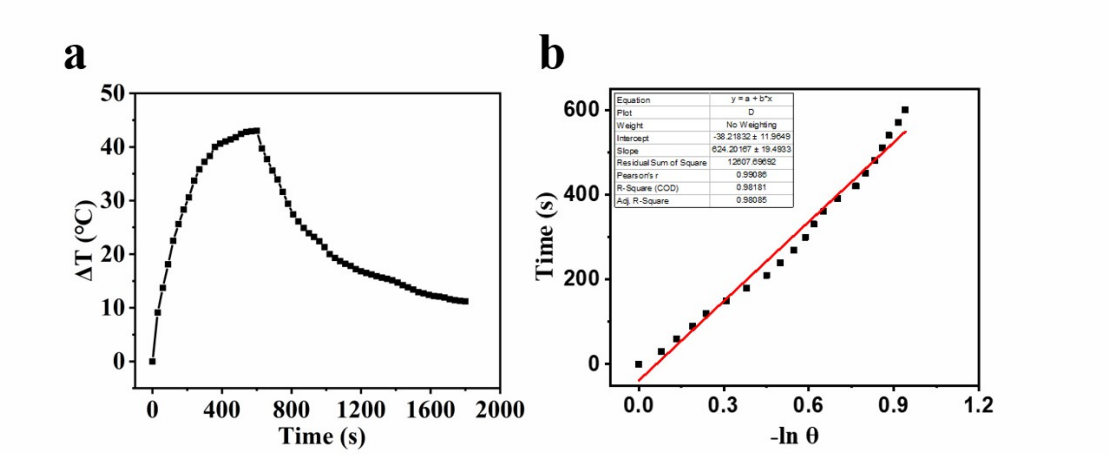


**Fig. S4.** (a) The temporal temperature variation of 5 μM [$Mo_{154}$] and 3 mM Cys after 48 h incubation (pH 5.0). The volume of solution is 1 mL, being irradiated for 10 min (808 nm, 1.4 W/$cm^2$); followed being cooled at ambient environment. (b) Time constant for heat transfer from the system is calculated to be $\tau_s$ = 624.20212 s by applying the linear time from the cooling period *versus* negative natural logarithm of driving force temperature, which is obtained from Fig. S4a.

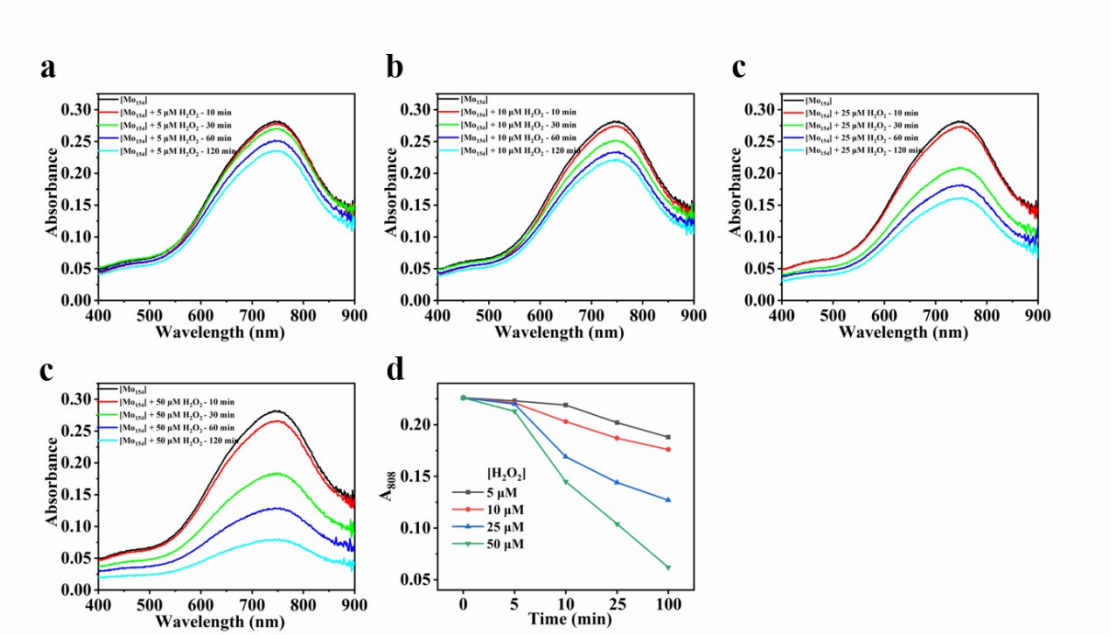


**Fig. S5.** UV-vis absorption spectra of 5 μM [$Mo_{154}$] in the presence of the different amounts of $H_2O_2$, being measured at 120 min after mixing.

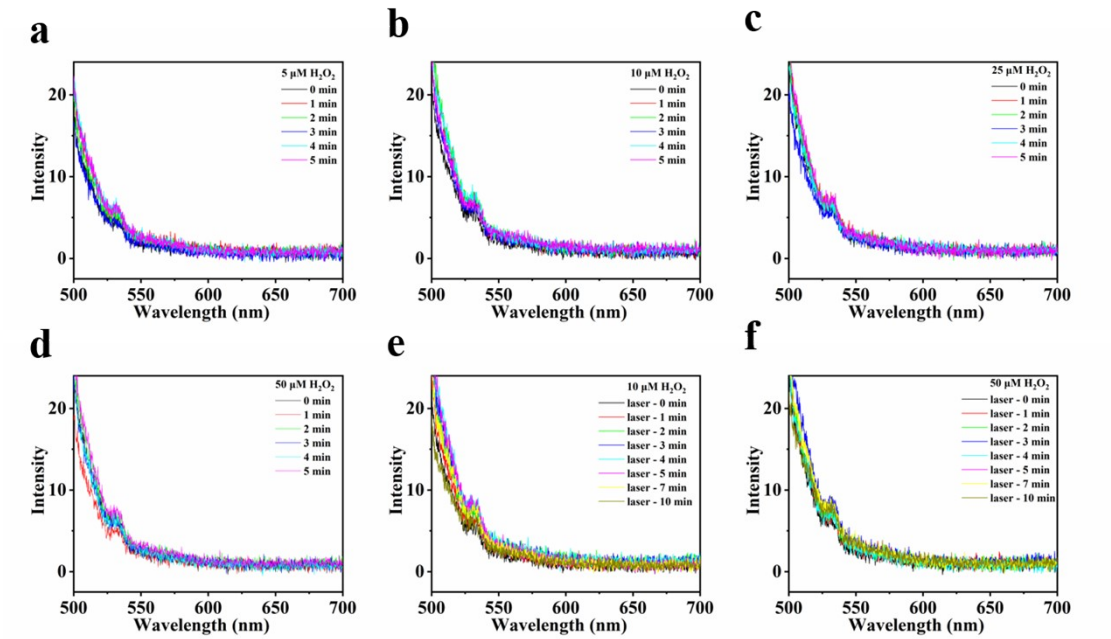


**Fig. S6.** The fluorescence spectra of 5 μM [$Mo_{154}$] in solution after treated with $H_2O_2$ and DCFH-DA, respectively, which shows no fluorescence intensity at 525 nm for DCF, no matter it was irradiated by 808 nm or not.