## Supporting Information

# Tin-doped near-infrared persistent luminescence nanoparticles with considerable improvement of biological window activation for deep tumor photodynamic therapy 

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Figure S1. The hydrodynamic diameter of the ZGS.


Figure S2. NIR PersL images of ZGS acquired at different PersL decay times (3-24 h) after being excited by 659 nm LED for 5 min . The exposure time is 60 s .


Figure S3. Cell viabilities of the A549 and L02 cells incubated with ZGS for 24 h . The data are presented as mean $\pm \operatorname{SD}(\mathrm{n}=3)$.


Figure S4. NIR PerL spectrum of ZGS and absorbance spectrum of $\mathrm{ZnPcS}_{4}$.


Figure S5. FT-IR spectra of $\mathrm{ZGS}^{2}-\mathrm{NH}_{2}, \mathrm{ZGS}_{2} \mathrm{ZnPcS}_{4}$ and $\mathrm{ZnPcS}_{4}$.


Figure S6. NIR PerL emission spectra of ZGS and ZGS-ZnPcS 4 after excitation with the 659 nm LED for 3 min .


Figure S7. The hydrodynamic diameter of the ZGS and ZGS-ZnPcS4.


Figure S8. The quenching of DPBF fluorescence caused by $\mathrm{ZGS}_{-2 \mathrm{ZnPcS}}^{4}$ within 30 min . The $\mathrm{ZGS}-\mathrm{ZnPcS}_{4}$ was pre-excited using the 659 nm LED for 5 min through tissues of different thicknesses.


Figure S9. The body weight growth curves of different groups of mice after different treatments.


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