Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B.

Targeting Photonic Hyperthermal and Sonodynamic Nanotherapies of Oral Squamous Cell Carcinoma

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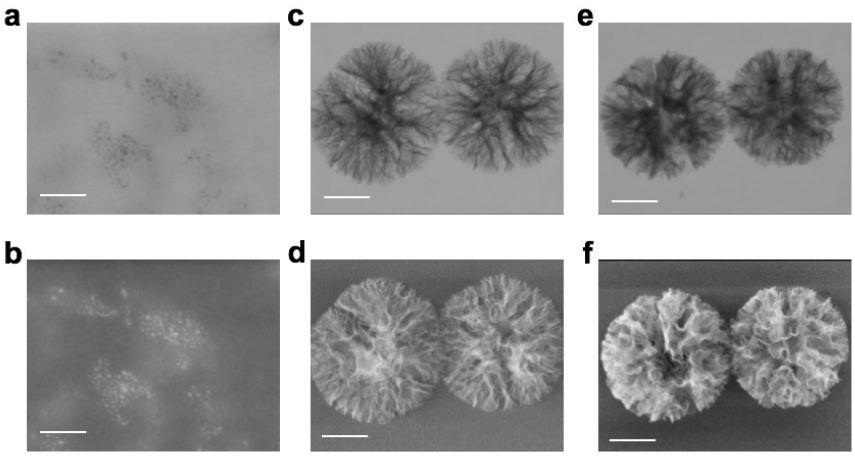

Figure S1. (a) STEM image and **(b)** dark-field images (DFI) of $Cu_{2-x}S$ NPs**, (c)** STEM image and **(d)** SEM image of DMSNs. **(e)** STEM image and **(f)** SEM image of CRDAs. Scale bar: (**a), (b)**: 50 nm;**(c),** (**d), (e)** and **(f)**: 100 nm.

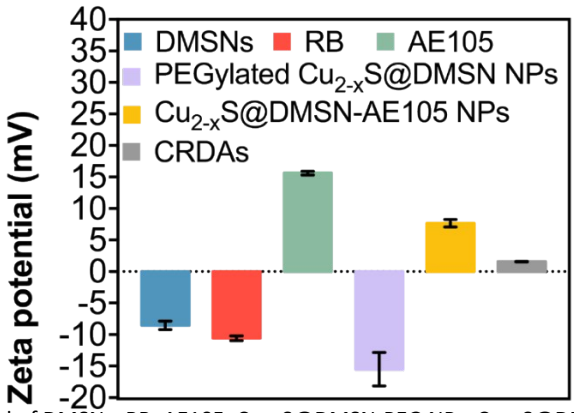

Figure S2. Zeta potential of DMSNs, RB, AE105, $Cu_{2-x}S$@DMSN-PEG NPs, $Cu_{2-x}S$@DMSN-AE105 NPs and CRDAs**.**

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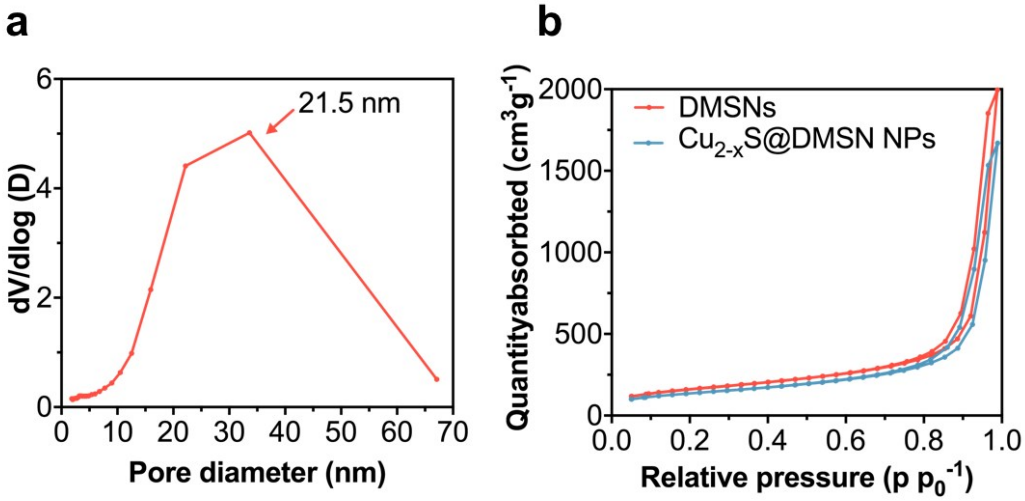

Figure S3. (a) Pore size of DMSNs determined by N_2 adsorption–desorption technique using Barrett–Joyner–Halenda methods. **(b)** SSA of DMSNs and $Cu_{2-x}S$@DMSN NPs are determined by N_2 adsorption–desorption technique using Brunauer–Emmett–Teller methods**.**

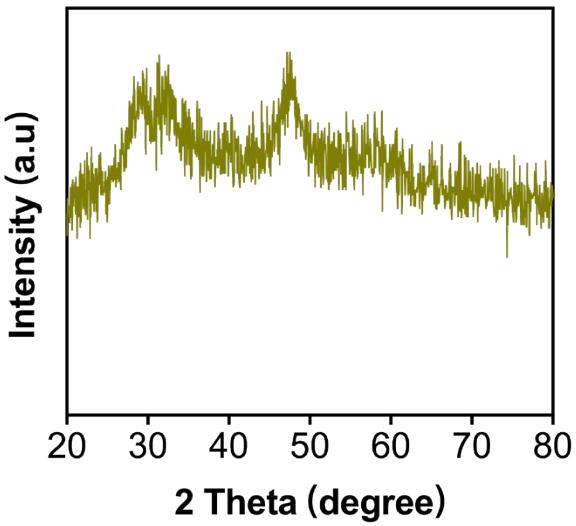

Figure S4. XRD pattern of $Cu_{2-x}S$ NPs.

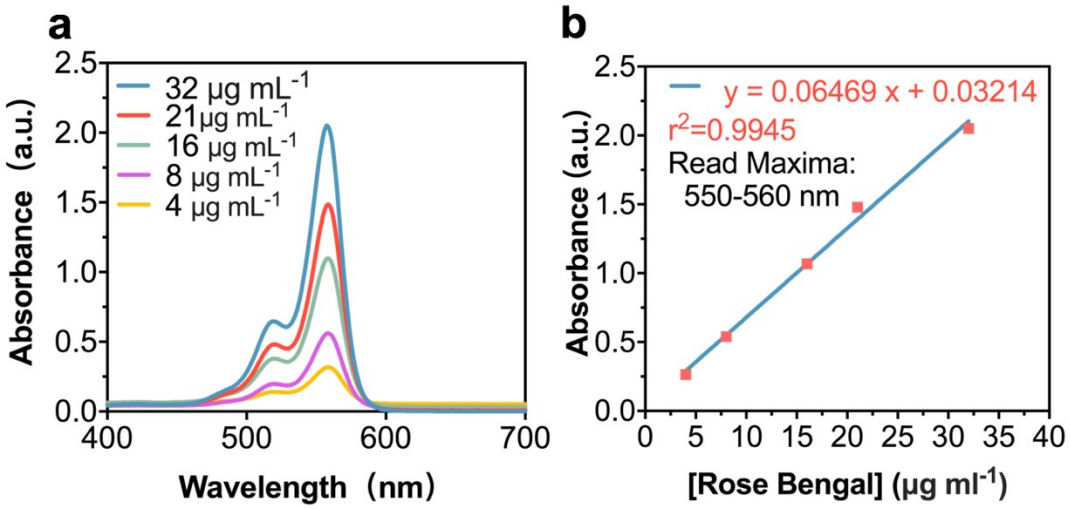

Figure S5. (a) UV-vis absorption spectra of varied RB doses and **(b)** the corresponding standard curve.

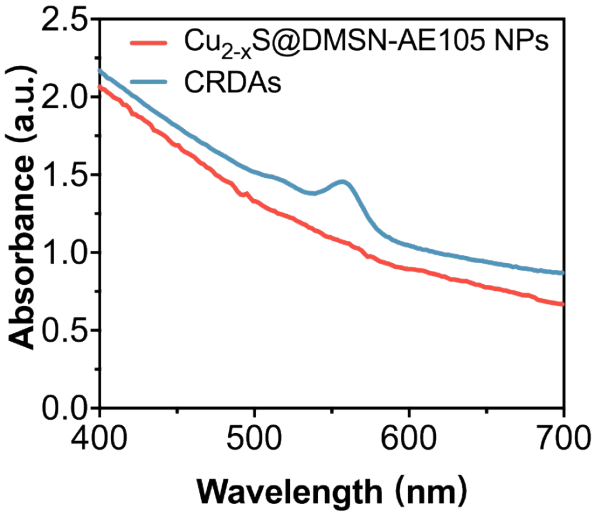

Figure S6. UV-vis absorption spectra of CRDAs and $Cu_{2-x}S$@DMSN-AE105 NPs.

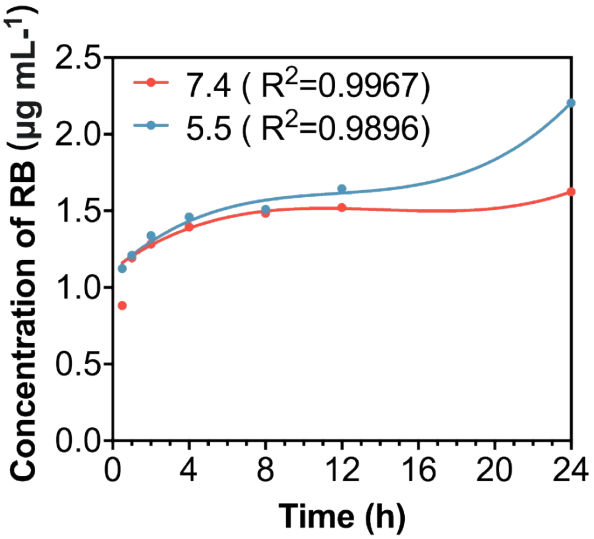

Figure S7. Releasing profile of RB from CRDAs under different pH condition.

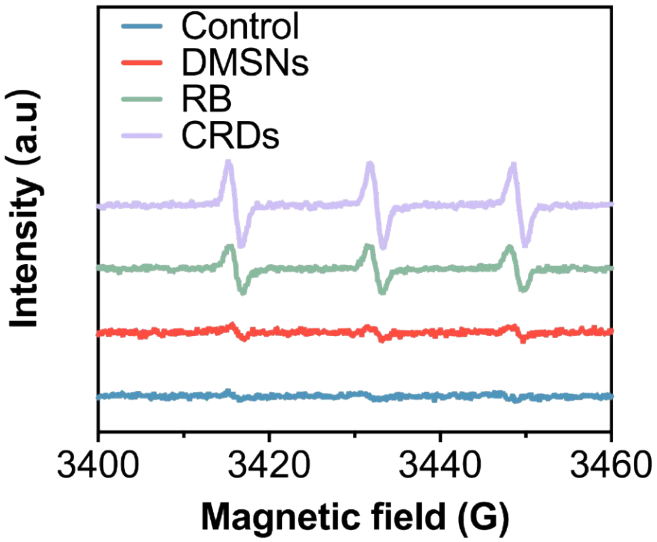

Figure S8. ESR spectra of control, DMSNs, RB and CRDs (RB: 10 μg ml^{-1}). (US: 1.0 MHz, 2.0 Wcm^{-2}, 50% duty cycle, 2 min)

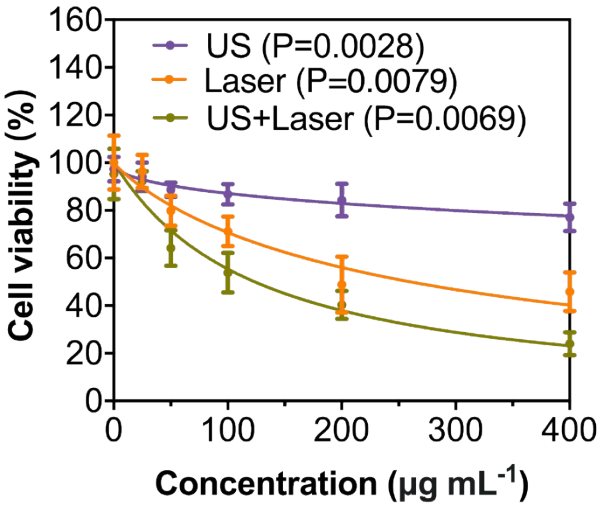

Figure S9. The corresponding dose-viability of cells in US, Laser and US+Laser groups. (US: 1.0 MHz, 2.0 Wcm^{-2}, 50% duty cycle, 2 min; Laser: 1064 nm, 1.5 Wcm^{-2}, 5 min)

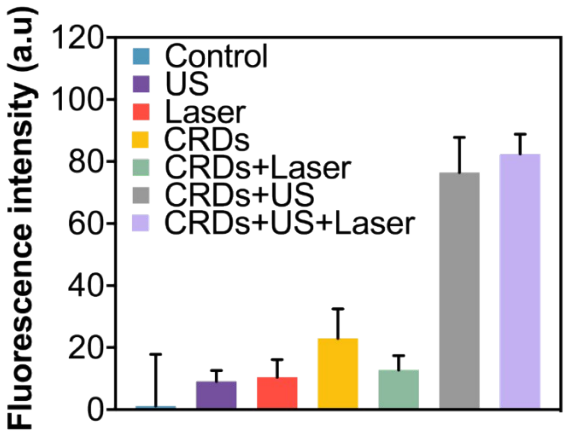

Figure S10. The fluorescence intensity of DCF of cells in different treatment groups**.** (US: 1.0 MHz, 2.0 Wcm^{-2}, 50% duty cycle, 2 min; Laser: 1064 nm, 1.5 Wcm^{-2}, 5 min)

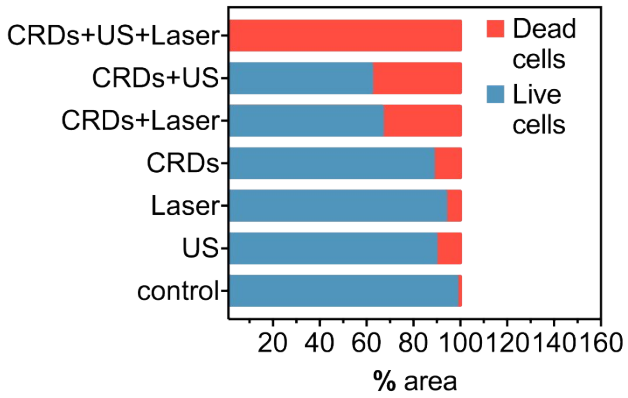

Figure S11. The percentage ratio of live cells and dead cells. (US: 1.0 MHz, 2.0 Wcm^{-2}, 50% duty cycle, 2 min; Laser: 1064 nm, 1.5 Wcm^{-2}, 5 min)

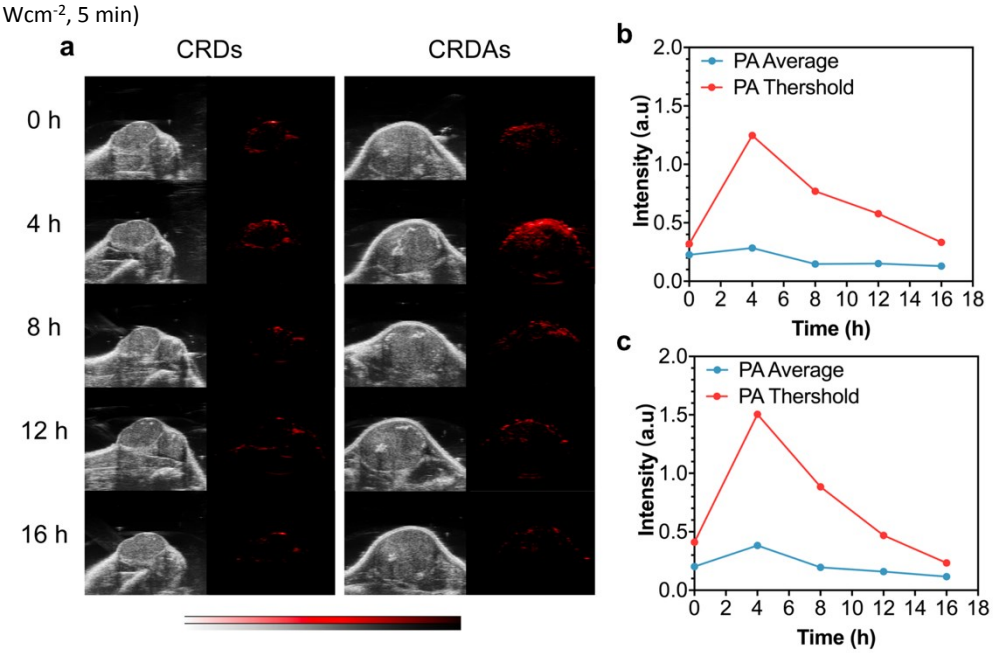

Figure S12. (a) *In vivo* PA value evolution after *i.v.* administration with CRDs or CRDAs respectively. PA images of the tumor region at different time intervals (0, 4, 8, 12, and 16 h) after *i.v.* administration with **(b)** CRDs and **(c)** CRDAs.

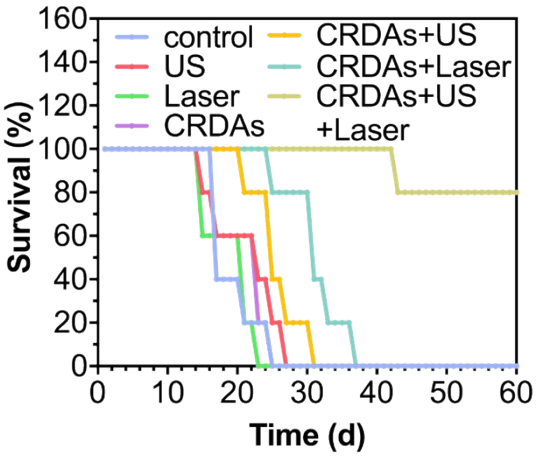

Figure S13. Survival rate of the nude mice upon indicated therapeutic treatments.