Electronic Supplementary Information for

BSA-directed Synthesis of CuS Nanoparticles as a Biocompatible Photothermal Agent for Tumor Ablation in Vivo

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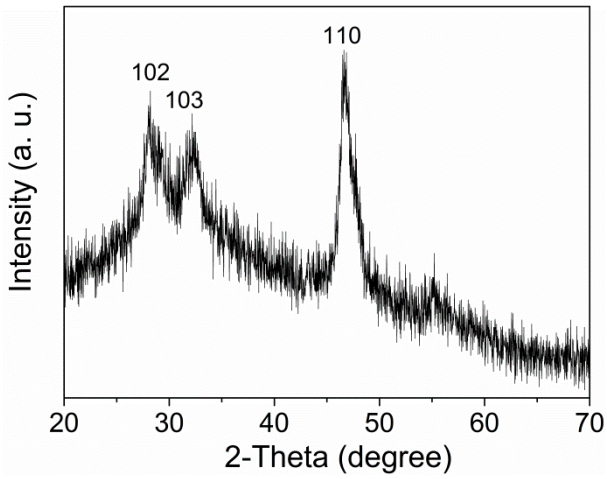

Figure S1. XRD patterns of BSA-CuS nanoparticles. BSA-CuS nanoparticles were treated by trypsin to reduce interference of high contents of BSA before the XRD characterization. Experiment condition: 1 mg/mL trypsin, 5 mM $CaCl_2$, 10 mM Tris-HCl buffer (pH 8.0).

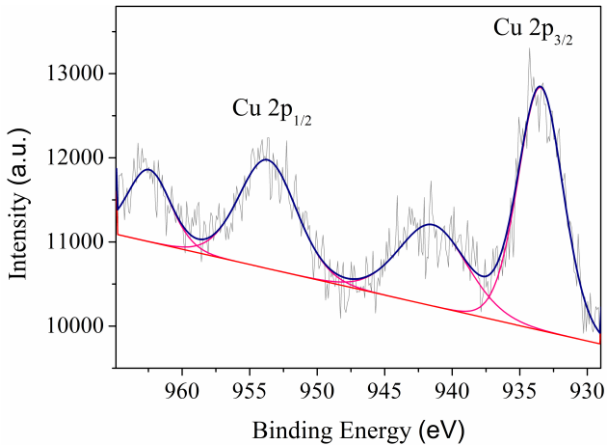

Figure S2. XPS spectra of Cu in the prepared BSA-CuS nanoparticles.

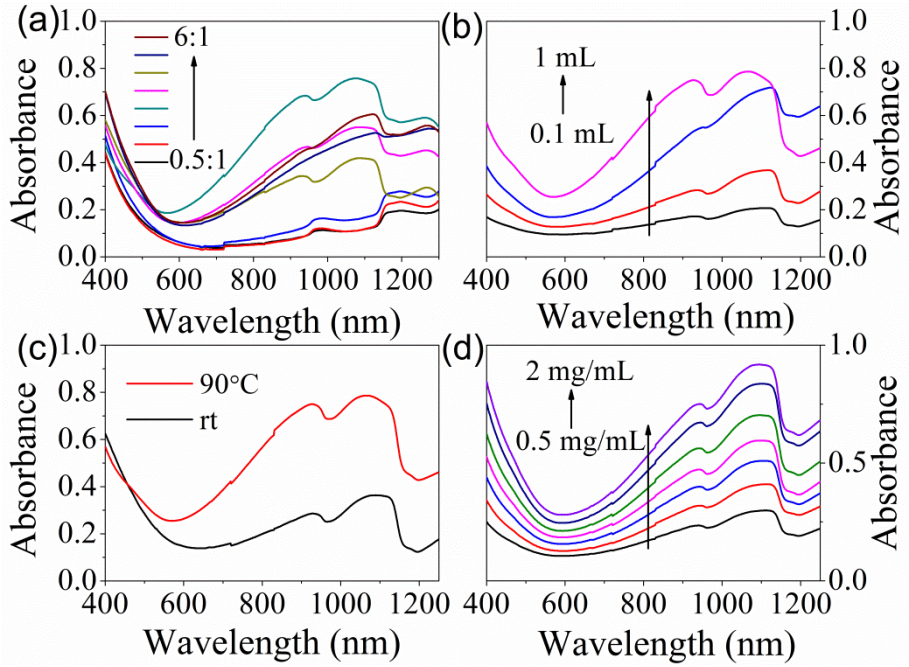

Figure S3. (a) UV-vis-NIR absorption spectra of the BSA-CuS nanoparticles prepared with various ratios of S to Cu (0.5, 0.75, 1, 2, 3, 4, 5, 6). (b) UV-vis-NIR absorption spectra of the BSA-CuS nanoparticles with different dosages of $Cu(NO_3)_2$ solution (0.1, 0.25, 0.5, 1 mL). (c) UV-Vis-NIR absorption spectra of the BSA-CuS nanoparticles obtained at 90 °C and room temperature. (d) UV-vis-NIR absorption spectra of the BSA-CuS nanoparticles preapred under optimal conditions with different concentrations (0.5, 0.75, 1, 1.25, 1.5, 1.75, 2 mg/mL)

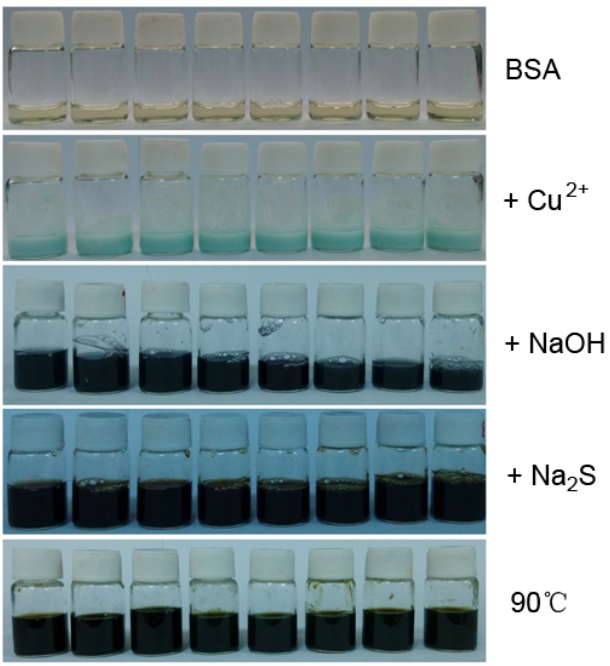

Figure S4. Different stages of optimizing the ratio of Cu to S with the concentration of BSA fixed.

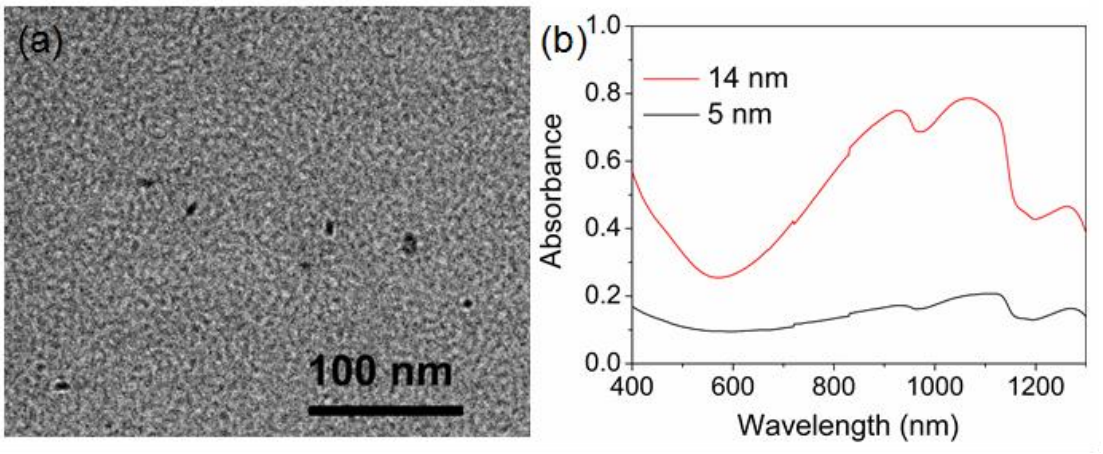

Figure S5. (a) HRTEM of 5 nm BSA-CuS nanoparticles. (b) Absorption spectra of different sizes of BSA-CuS nanoparticles. 5 nm and 14 nm BSA-CuS nanoparticles were obtained using 0.1 mL and 1 mL $Cu(NO_3)_3$ as the precursor, respectively.

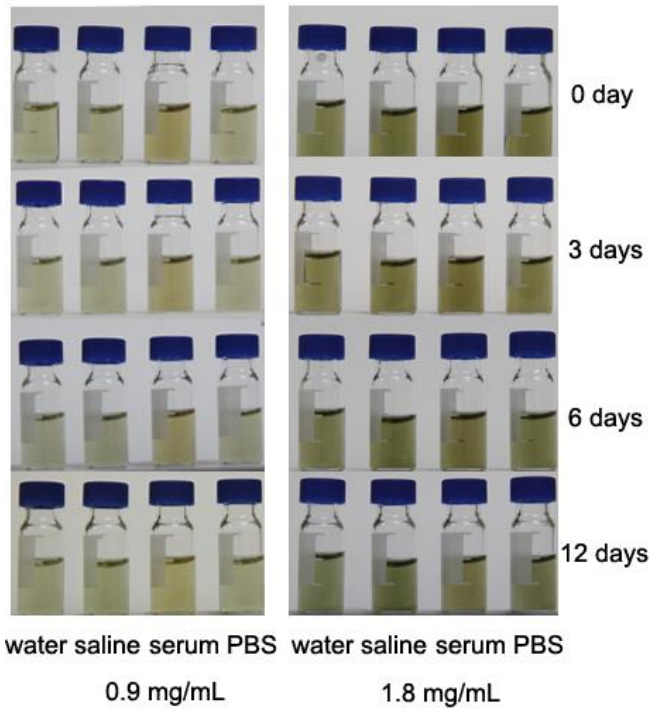

Figure S6. Colloidal stability of different concentrations of BSA-CuS nanoparticles (0.9 mg/mL and 1.8 mg/mL)after incubating with pure water, PBS, normal saline, serum (from left ot right)for 12 days.

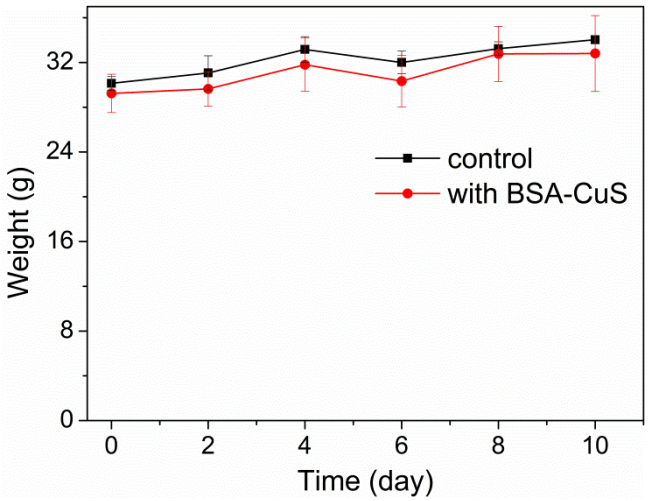

Figure S7. The weight changes of the mice treated with BSA-CuS nanoparticles and without any treatment.

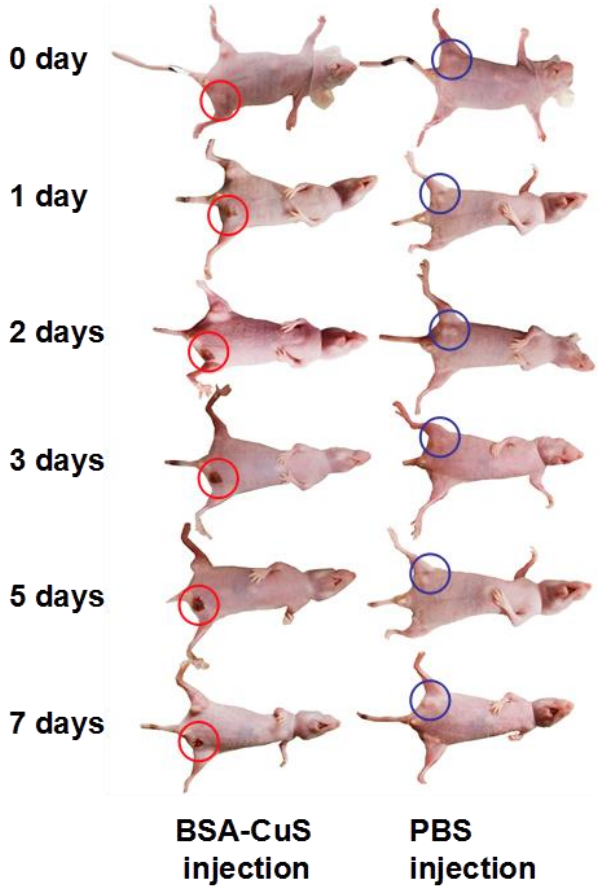

Figure S8. Representative photos of mice at different time points post-injection of PBS or BSA-CuS nanoparticles with the laser irradiation. The tumors without any treatment were regarded as intraindividual control groups.