Electronic Supplementary Material (ESI) for Nanoscale.

Supplementary Information

Indocyanine Green derived Carbon Dots with Significantly Enhanced Properties for Efficient Photothermal Therapy

Yuxiang Jiang,[a,+] Zhuomin Tan,[b,+] Tianshu Zhao,[a,+] Jiajia Wu,[a] Ya Li,[b] Yinnong Jia,[*b] and Zhili Peng,[*a]

[a]Yunnan Key Laboratory for Micro/Nano Materials & Technology, School of Materials and Energy, Yunnan University, Kunming 650091, People's Republic of China.

[b]Yunnan Provincial Key Laboratory of Pharmacology for Natural Products, School of Pharmaceutical Sciences, Kunming Medical University, Kunming 650500, People's Republic of China.

***Corresponding authors:**

(Y. J.) Tel.: +86-871-65922806; E–mail: jiayinnong@kmmu.edu.cn.

(Z. P.) Tel.: +86–871–65037399; E–mail: zhilip@ynu.edu.cn.

[+]These authors contributed equally to this work.

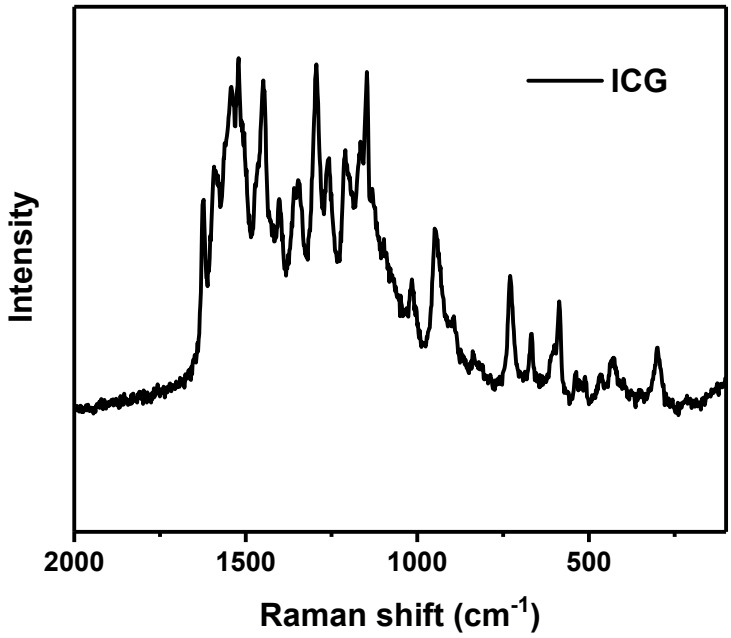

Figure S1. The Raman spectrum of ICG

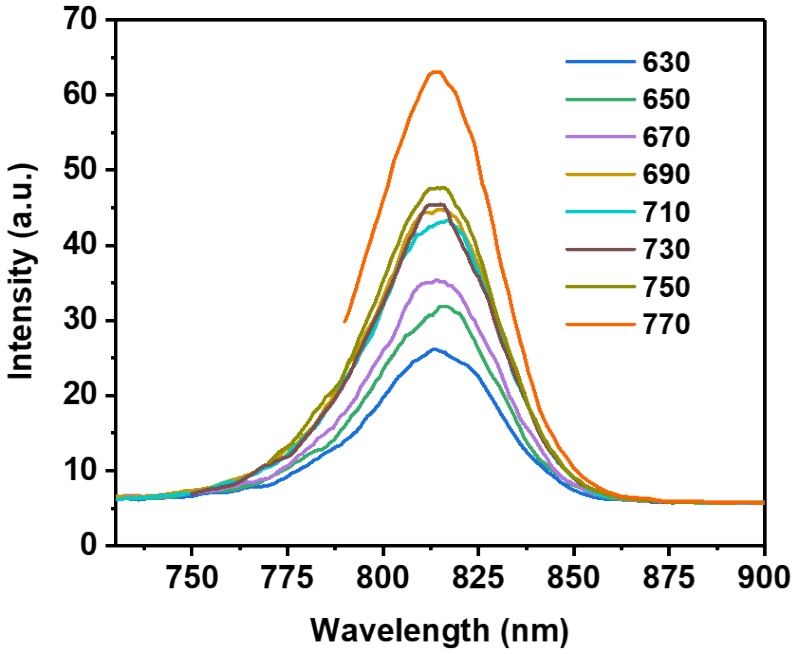

Figure S2. Fluorescent emission spectra of ICG under different excitation wavelengths.

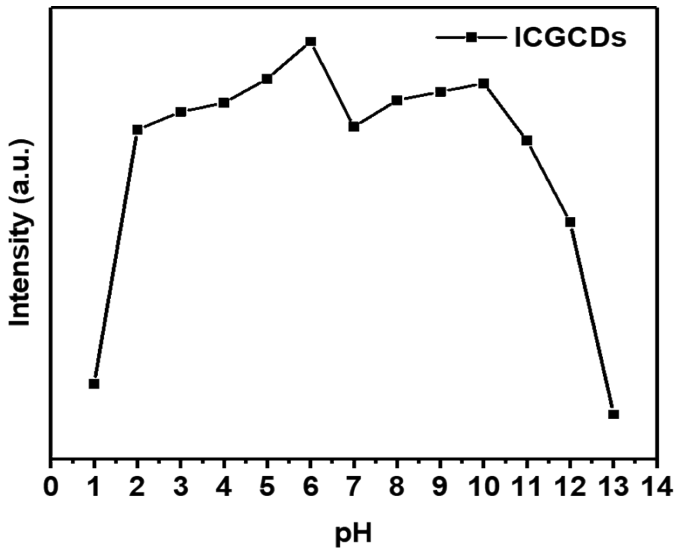

Figure S3. The fluorescent intensity change of the aqueous dispersions of ICGCDs under different pH

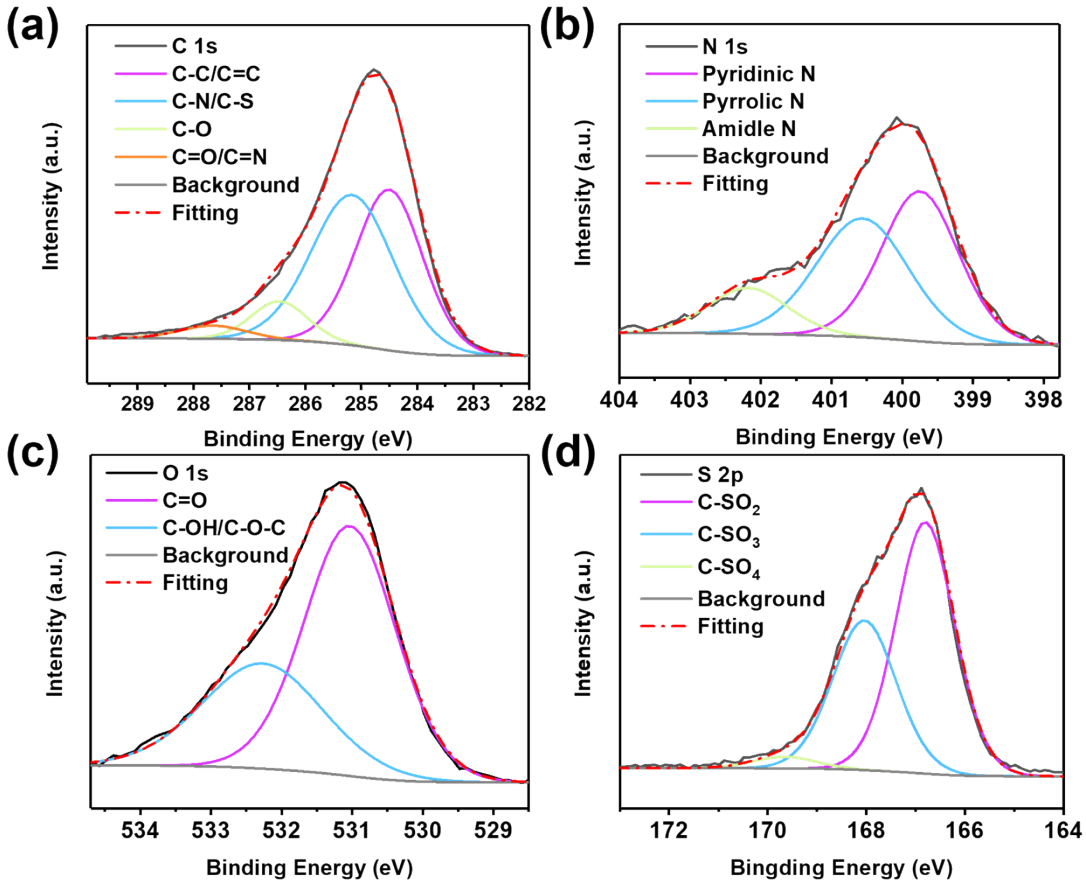

Figure S4. High-resolution XPS spectra of (**a**) C 1s, (**b**) N 1s, (**c**) O 1s and (**d**) S 2p of ICGCDs

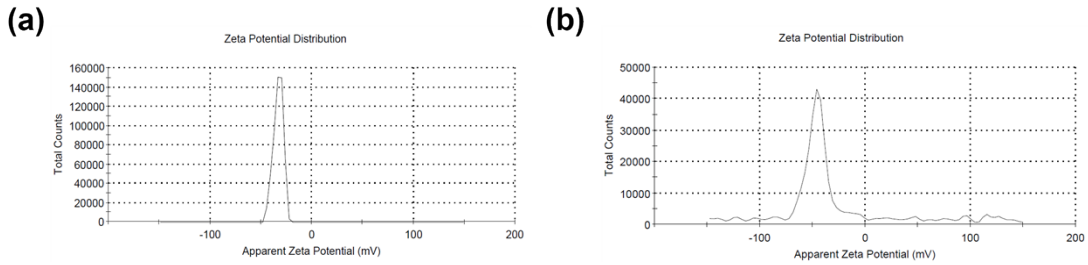

Figure S5. Zeta Potentials of **(a)** ICG and **(b)** ICGCDs

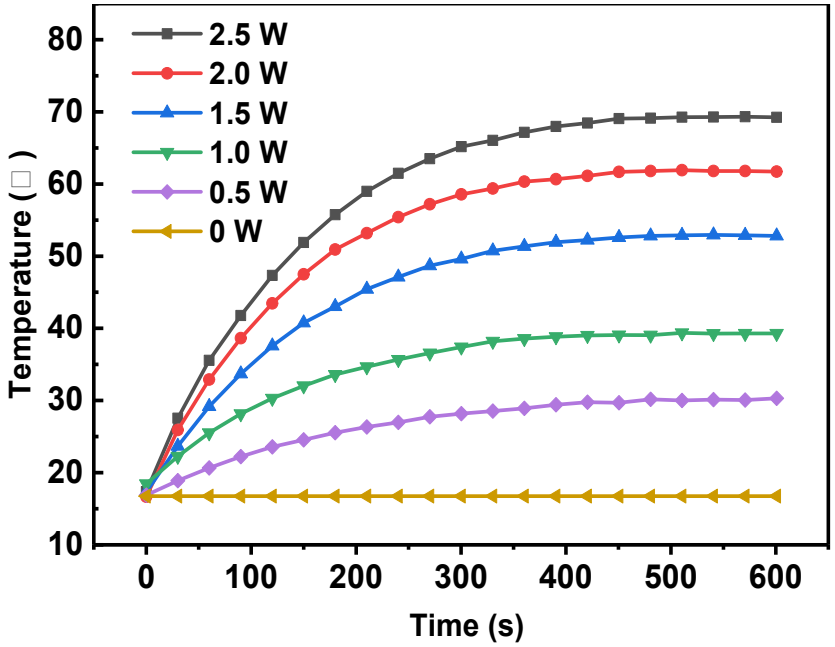

Figure S6. Plot showing temperature changes of ICGCDs dispersion (50 μg/mL) irradiated by an 808 nm laser at varied power densities

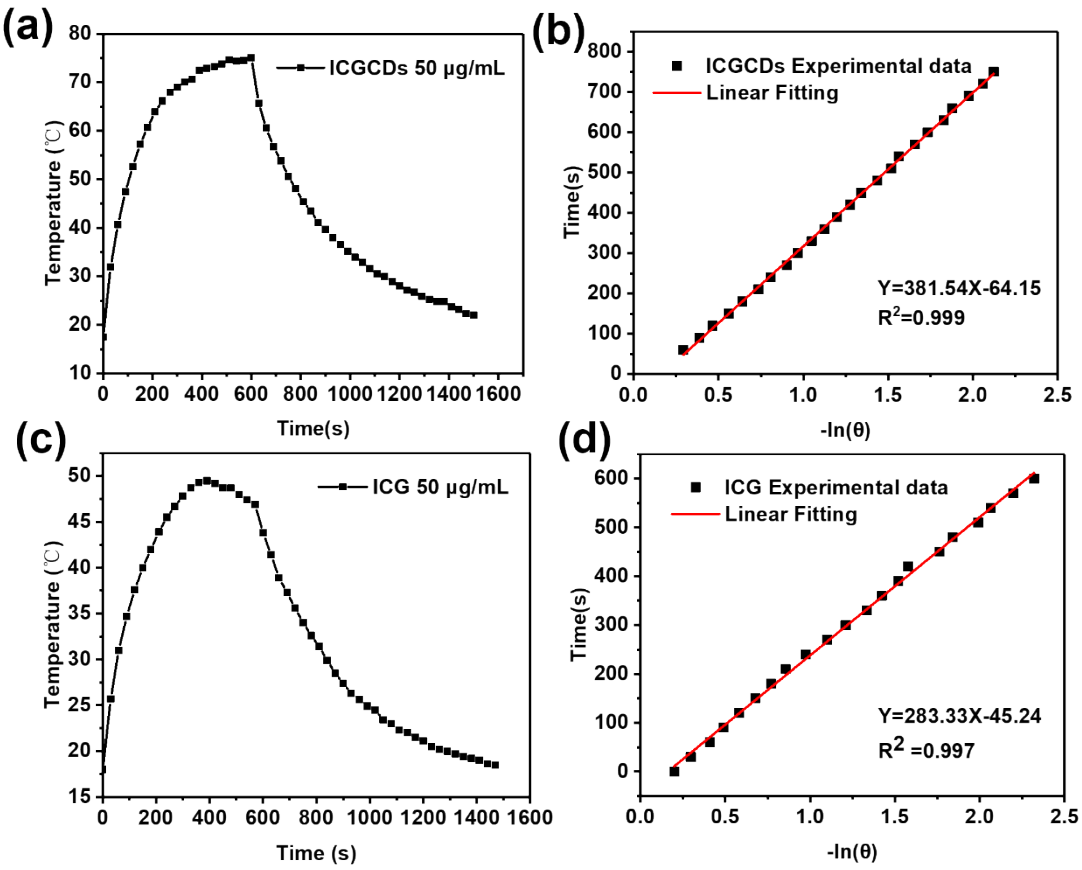

Figure S7. Photothermal experiments and data used for the calculations of the photothermal conversion efficiency of ICGCDs (**a**, **b**) and ICG (**c**, **d**). The concentrations of the aqueous solution of ICG and dispersion of ICGCDs were both 50 μg/mL.

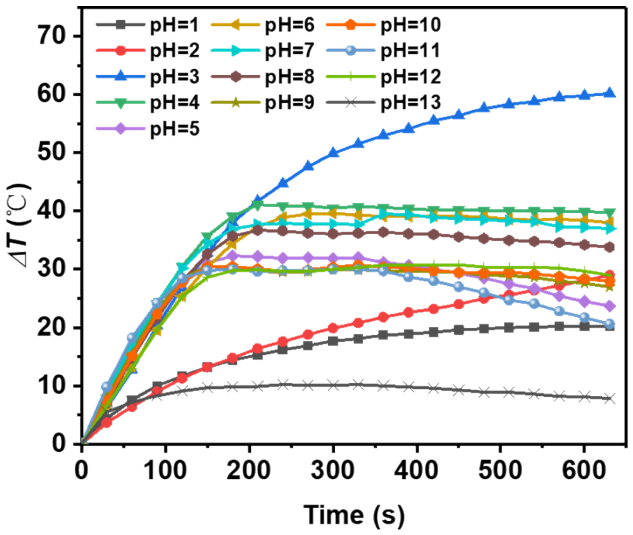

Figure S8. Temperature variations of the aqueous solutions of ICG (50 μg/mL) under different pH after irradiations by an 808-nm laser (2.5 W/cm^{-2}) for 10 min

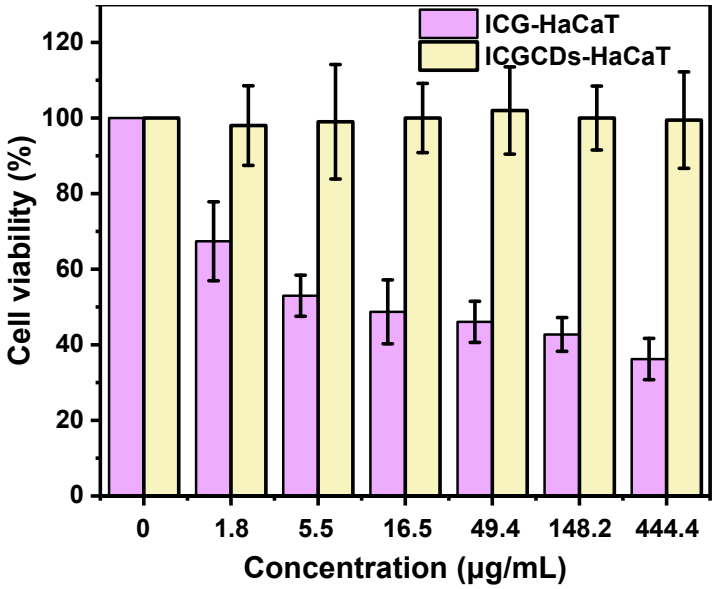

Figure S9. Cell viability of HaCaT cells that were incubated with ICG and ICGCDs of different concentrations for 72 h.

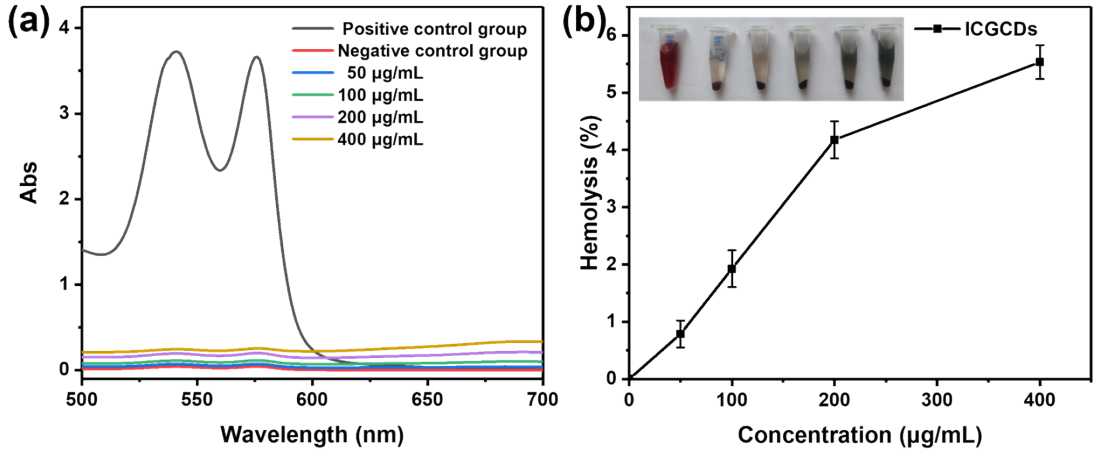

Figure S10. (**a**) UV-vis absorption spectra of supernatant after incubating ICGCDs of different concentrations with red blood cells. (**b**) Hemolysis of ICGCDs of different concentrations, inset photographs show the picture of positive, negative control groups and ICGCDs incubated with red blood cells from low to high concentrations.

Figure S11. Photos of the tumor sites of the PTT group mice after photothermal treatment

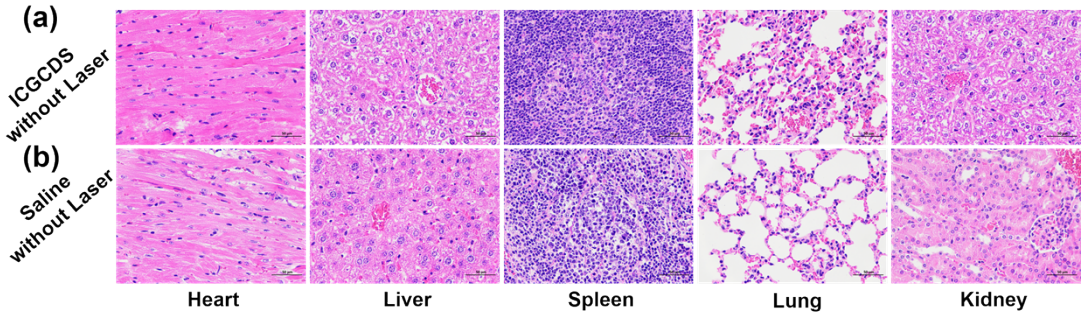

Figure S12. Photomicrographs of hematoxylin and eosin (H&E) stained tissues from: (**a**) mice injected with ICGCDs without laser irradiation and (**b**) mice injected with Saline without laser irradiation.