

Supporting Information

P-glycoprotein Targeted Photothermal Therapy of Drug Resistant Cancer Cells using Antibody-conjugated Carbon Nanotubes

Xubin Suo^{1,2}, Brittany N. Eldridge¹, Han Zhang^{1,3}, Chengqiong Mao¹, Yuanzeng Min⁴, Yao Sun,⁵ Ravi Singh^{1,*}, and Xin Ming^{1,6,*}

¹ Department of Cancer Biology, Wake Forest University School of Medicine, Winston Salem, North Carolina, United States;

² School of Pharmacy, Guangdong Pharmaceutical University, Guanzhou, Guangdong, China.

³ Heilongjiang Provincial Academy of Sciences of TCM, Haerbin, Heilongjiang, China;

⁴ Department of Chemistry, University of Science and Technology of China, Hefei, Anhui, China;

⁵ Department of Radiology, Wake Forest University School of Medicine, Winston Salem, North Carolina, United States;

⁶ Department of Biomedical Engineering, Wake Forest University School of Medicine, Winston Salem, North Carolina, United States.

* Corresponding authors: Xin Ming (xming@wakehealth.edu) and Ravi Singh (rasingh@wakehealth.edu).

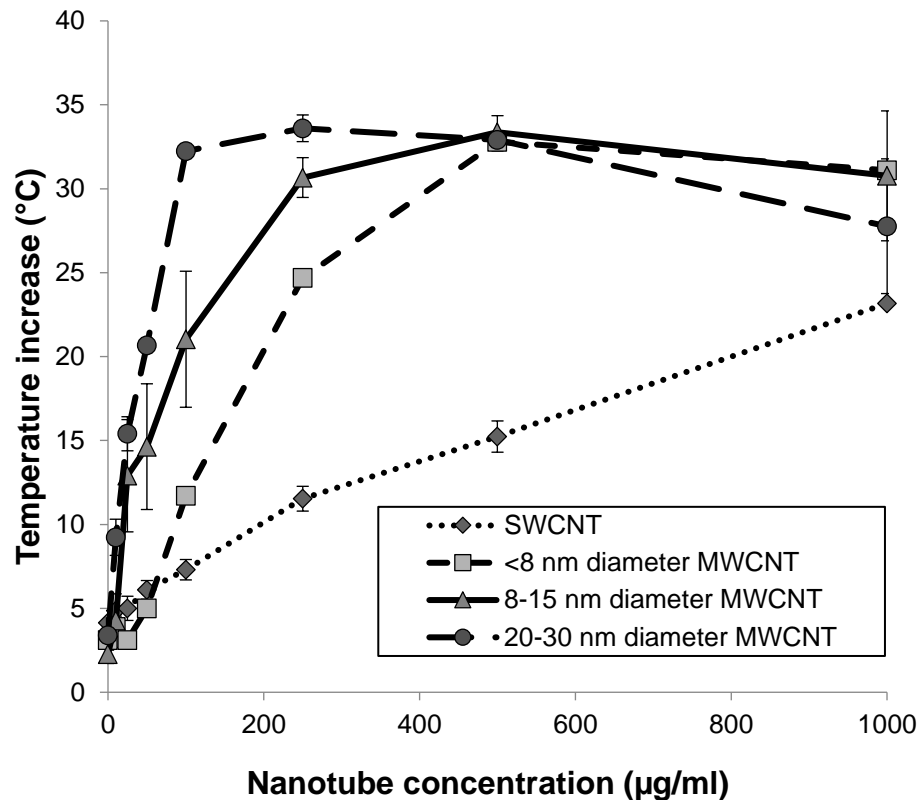


Figure S1. Determination of the effect of nanotube diameter on photothermal heating. Increasing concentrations of single or multiwalled carbon nanotubes (SWCNT or MWCNT, respectively) were exposed to laser irradiation (970 nm; 3 W; 30 s) and temperature was assessed using a thermocouple. The data are displayed as the difference in the mean temperature of triplicate samples after and before laser exposure. Statistical evaluation (Two-way ANOVA followed both Tukey Test) was performed using Sigma Plot 12.0 software. A statistically significant interaction between concentration and diameter was detected ($P = 0.001$), indicating that all four curves differed from each other. Pair wise comparisons indicated that heat generation by SWCNTs was significantly ($P < 0.01$) less than < 8 nm diameter MWCNT preparations at concentrations ≥ 100 $\mu\text{g/ml}$; Both 8-15 nm and 20-30 nm MWCNTs generated significantly ($P < 0.01$) more heat than less than both SWCNTs and < 8 nm diameter MWCNT at concentrations ≥ 10 $\mu\text{g/ml}$. Significant differences ($P < 0.05$) between 8-15 nm and 20-30 nm MWCNTs were detected only for the 25 and 250 $\mu\text{g/ml}$ doses.

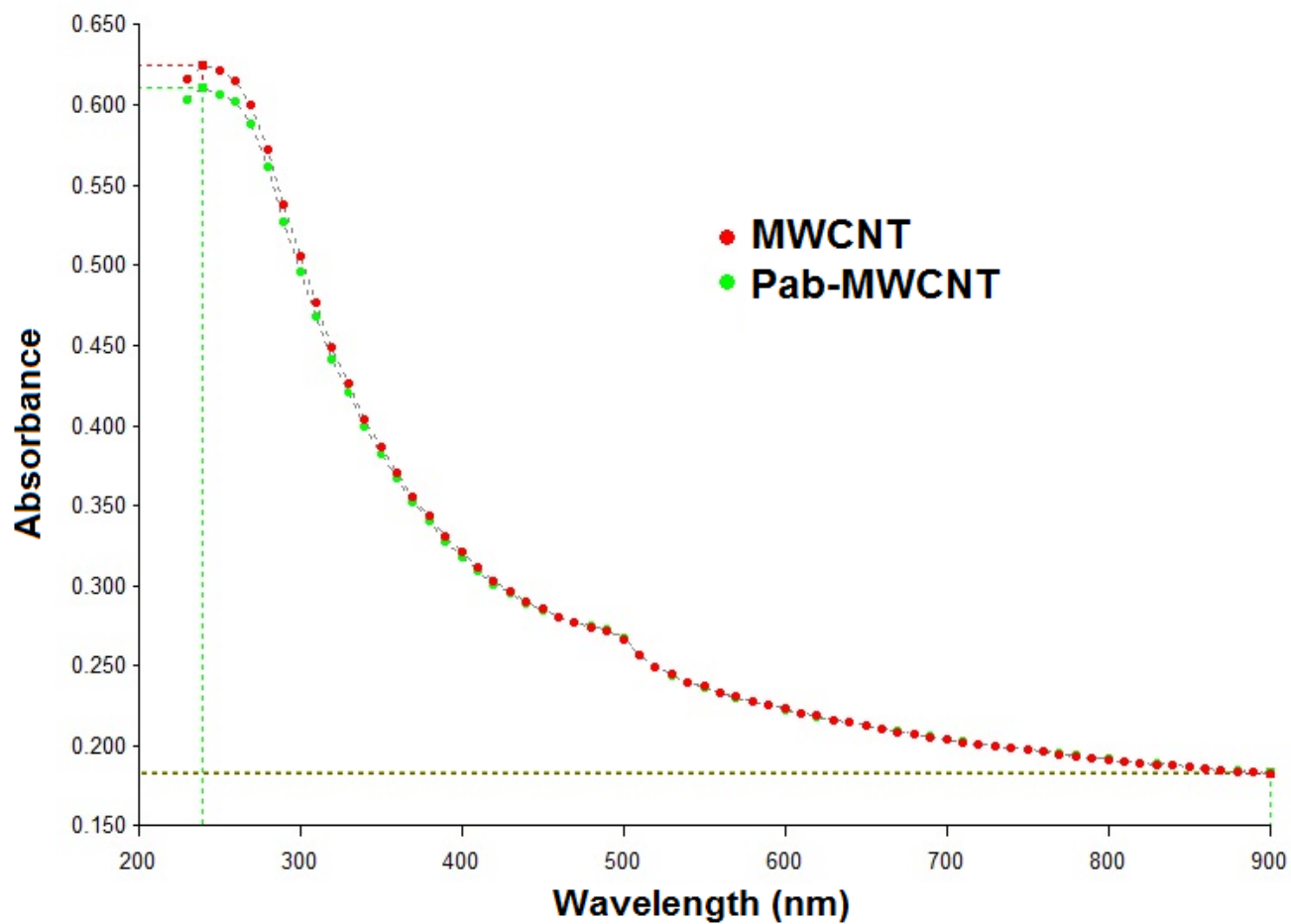


Figure S2. UV-Vis-NIR spectra of MWCNT and Pab-MWCNT