

## Electronic Supporting Information

*for*

### **Nonstoichiometric $\text{Cu}_{2-x}\text{Se}$ nanocrystals in situ produced on the surface of carbon nanotubes for ablation of tumor cells**

Qiang Wang,<sup>a</sup> Wen Long Li,<sup>b</sup> Hong Yan Zou,<sup>b</sup> Hui Liu<sup>\*a</sup> and Cheng Zhi Huang<sup>\*ab</sup>

*<sup>a</sup>Key Laboratory of Luminescence and Real-Time Analytical Chemistry (Southwest University), Ministry of Education, College of Pharmaceutical Science, Southwest University, Chongqing, 400715, P. R. China.*

*<sup>b</sup>College of Chemistry and Chemical Engineering, Southwest University C, Chongqing 400716, China*

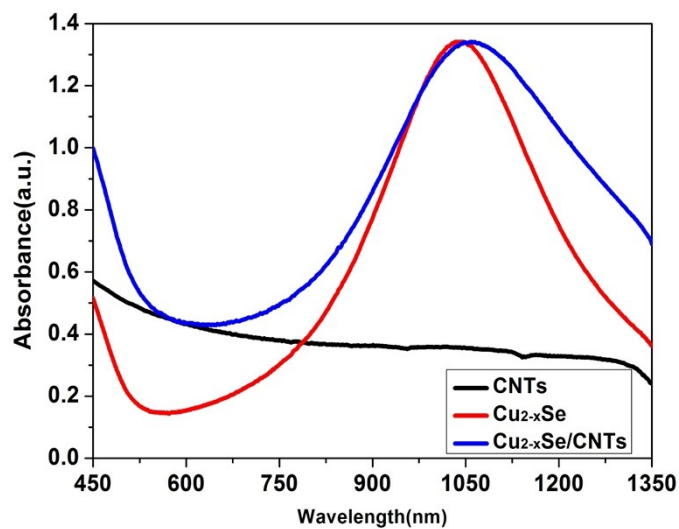
*\*Corresponding author: [chengzhi@swu.edu.cn](mailto:chengzhi@swu.edu.cn)*

Sample	Cu 2p <sub>3/2</sub> (eV)	Cu 2p <sub>1/2</sub> (eV)
Initial	932.1	951.9
15 min	932.3	952.0
1 h	932.5	952.2
4 h	932.8	952.6
CuSe	932.9	952.8

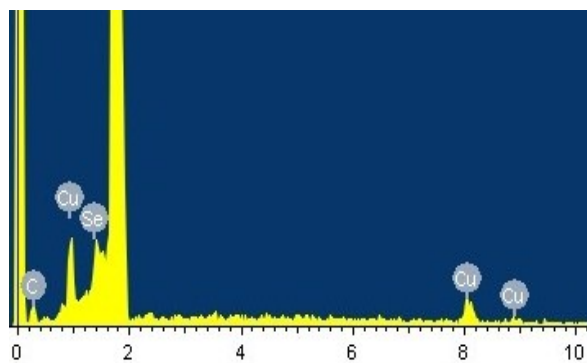
**Table. S1** The peaks of Cu 2p<sub>3/2</sub> and Cu 2p<sub>1/2</sub> XPS spectra compared with the typical values in CuSe NPs at different reaction stage.

Nanocrystal	k	(E <sub>1cm</sub> <sup>1%</sup> )	λ <sub>LSPR</sub> (nm)
CNTs	k= 0.1584	1.289	980 nm
Cu <sub>2-x</sub> Se NPs	k= 0.2121	1.765	980 nm
Cu <sub>2-x</sub> Se/CNTs	k= 0.2776	1.921	980 nm

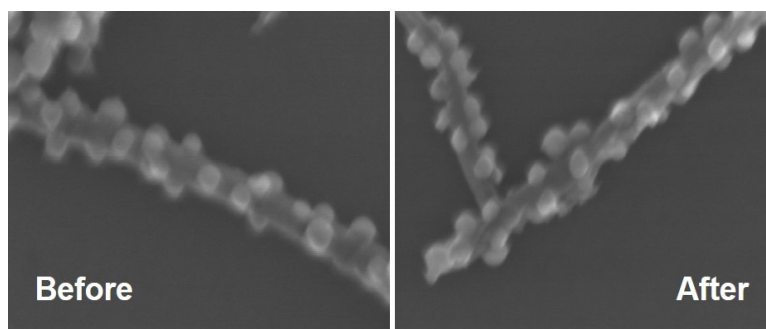
**Table. S2** The absorption coefficient of CNTs, Cu<sub>2-x</sub>Se NPs and Cu<sub>2-x</sub>Se/CNTs at 980 nm.



**Fig. S1** The UV-vis-NIR spectra of CNTs, Cu<sub>2-x</sub>Se NPs and Cu<sub>2-x</sub>Se/CNTs nanohybrids.



**Fig. S2** The elemental analysis of Cu<sub>2-x</sub>Se/CNTs nanohybrids in intracellular.



**Fig. S3** The SEM images of Cu<sub>2-x</sub>Se/CNTs nanohybrids treated with or without ultrasound for 1h.