## **Development of Tungsten Bronzes Nanorods for Redox-Enhanced**

## **Photoacoustic Imaging-guided Photothermal Therapy of Tumors**

Hongbo Gao<sup>a,b,1</sup>, Xiangming Fang<sup>c,1</sup>, Jing Xiang<sup>d</sup>, Xiaohang Liu<sup>a,b</sup>, JianPing Zhang<sup>b,e,f</sup>, Bingni

Zhou<sup>a,b</sup>, Bingxin Gu<sup>b,e,f</sup>, Hua Zhang<sup>g</sup>, Wei Liu<sup>a,b</sup>, Yingying Zheng<sup>b,e,f</sup>, Yuyun Sun<sup>b,e,f</sup>, Yi Li<sup>b,e,f</sup>,

Wei Tang<sup>a,b\*</sup>, LiangPing Zhou<sup>a,b\*</sup>

<sup>a</sup>Department of Radiology, Fudan University Shanghai Cancer Center, Shanghai 200032, China.
<sup>b</sup>Department of Oncology, Shanghai Medical College, Fudan University, Shanghai 200032, China.
<sup>c</sup>Department of Radiology, Wuxi People's Hospital, Nanjing Medical University, Wuxi, 214023, China.
<sup>d</sup>Department of Ophthalmology, Affiliated Hospital of Nantong University, Natong 226001, Jiangsu Province, China.
<sup>e</sup>Department of Nuclear Medicine, Fudan University Shanghai Cancer Center, Shanghai, 200032, China.
<sup>f</sup>Shanghai Engineering Research Center of Molecular Imaging Probes, Shanghai, 200032, China.
<sup>g</sup>Department of Radiology, Huashan Hospital of Fudan University, Shanghai 200040, China

<sup>1</sup> Hongbo Gao and Xiangming Fang contributed equally to this work.

\* Email addresses:

Wei Tang: tangwei105@163.com Liangping Zhou:zhoulp2006@163.com **Supplementary Figures** 

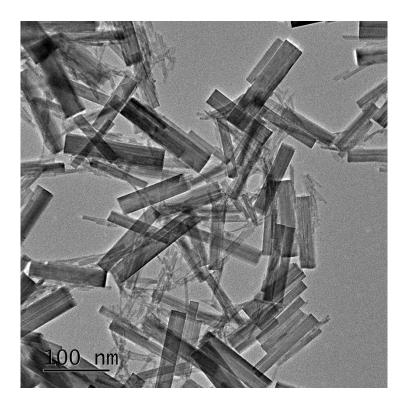


Figure S1. TEM images from a different zone of PEG-Na<sub>x</sub>WO<sub>3</sub> NRs dispersed in water.

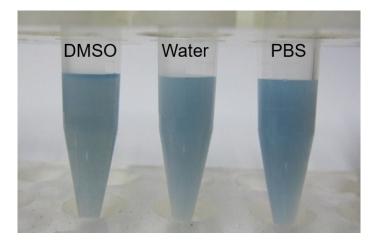
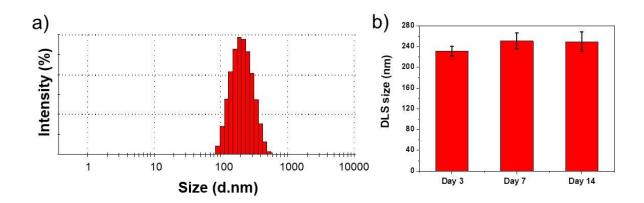


Figure S2. The digital photos of PEG-Na<sub>x</sub>WO<sub>3</sub> dispersed in different aqueous solutions



**Figure S3. a)** DLS size of PEG-Na<sub>x</sub>WO<sub>3</sub> NRs dispersed in water. b) The DLS diameters of PEG-NaxWO<sub>3</sub> NRs dispersed in water for 3, 7, and 14 days.

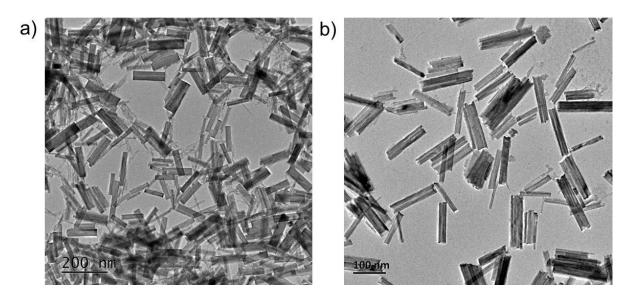
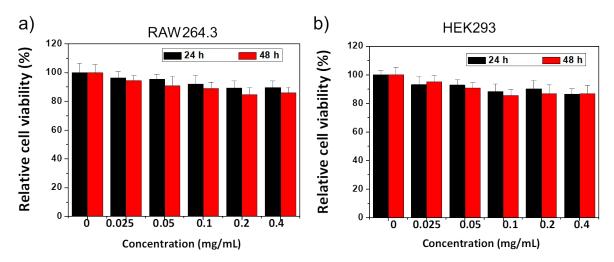
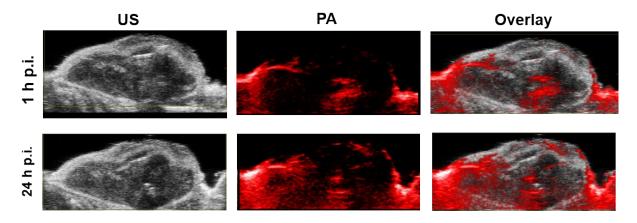


Figure S4. TEM images of PEG-Na<sub>x</sub>WO<sub>3</sub> NRs from different zones reduced by GSH.



**Figure S5.** Relative viabilities of a) RAW 264.3 normal cells and b) HEK293 normal cells after incubation with different concentrations of PEG-Na<sub>x</sub>WO<sub>3</sub> NRs.



**Figure S6.** *In vivo* PA images of 4T1 tumor-bearing mice before and after intravenous injection with PEG-Na<sub>x</sub>WO<sub>3</sub> NRs at 1 h and 24 h p.i., respectively.

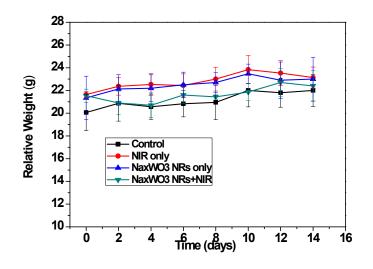
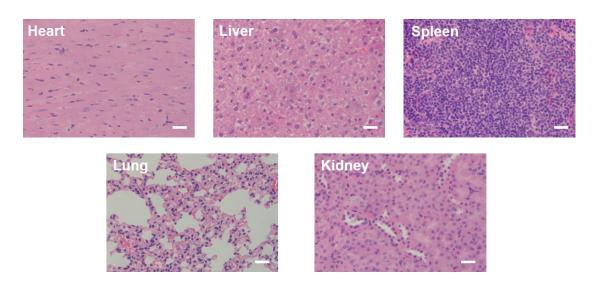


Figure S7. Body weight of mice after various treatments indicated.



**Figure S8.** H&E-stained tissues from major organs of mice after the intravenous injection of PEG-Na<sub>x</sub>GdWO<sub>3</sub> for one month. Scale bar:  $50 \mu m$ .