

# **Supporting Information**

## **Ultrasmall Iron-Doped Titanium Oxide Nanodots for Enhanced Sonodynamic and Chemodynamic Cancer Therapy**

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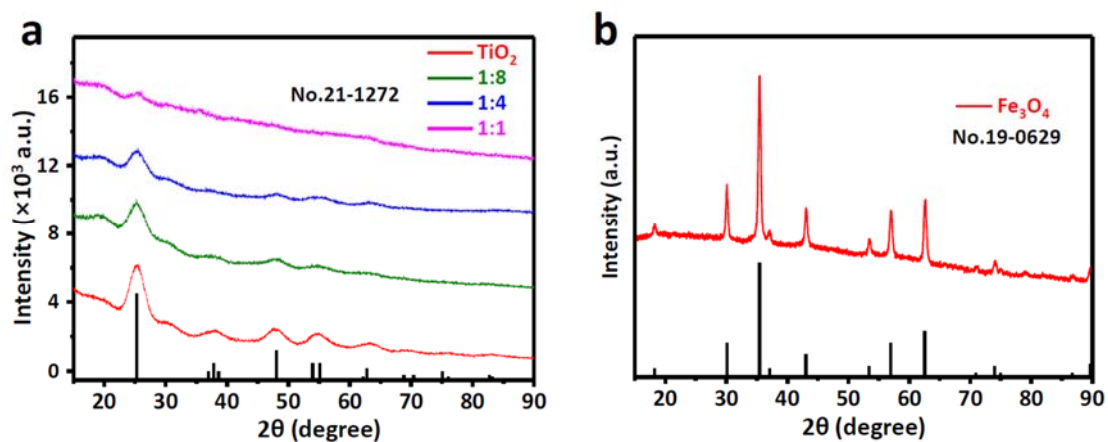
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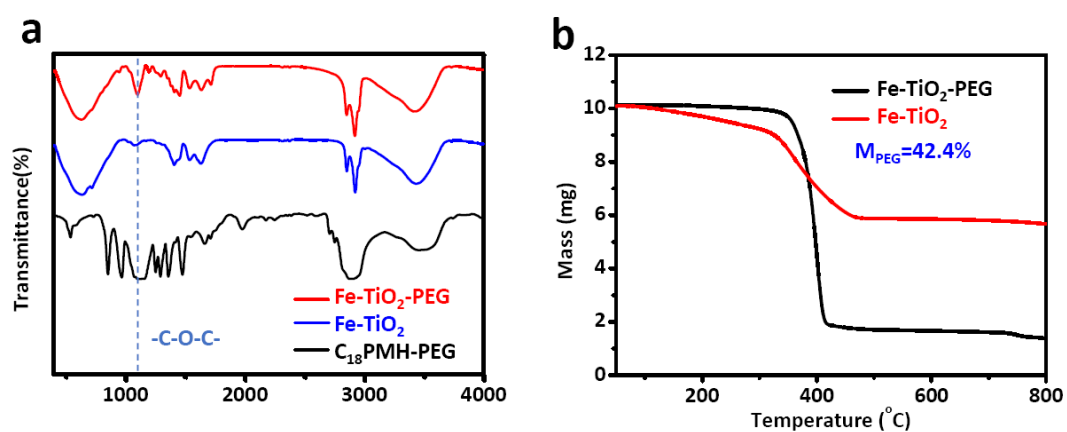
for Carbon-Based Functional Materials and Devices, Soochow University,

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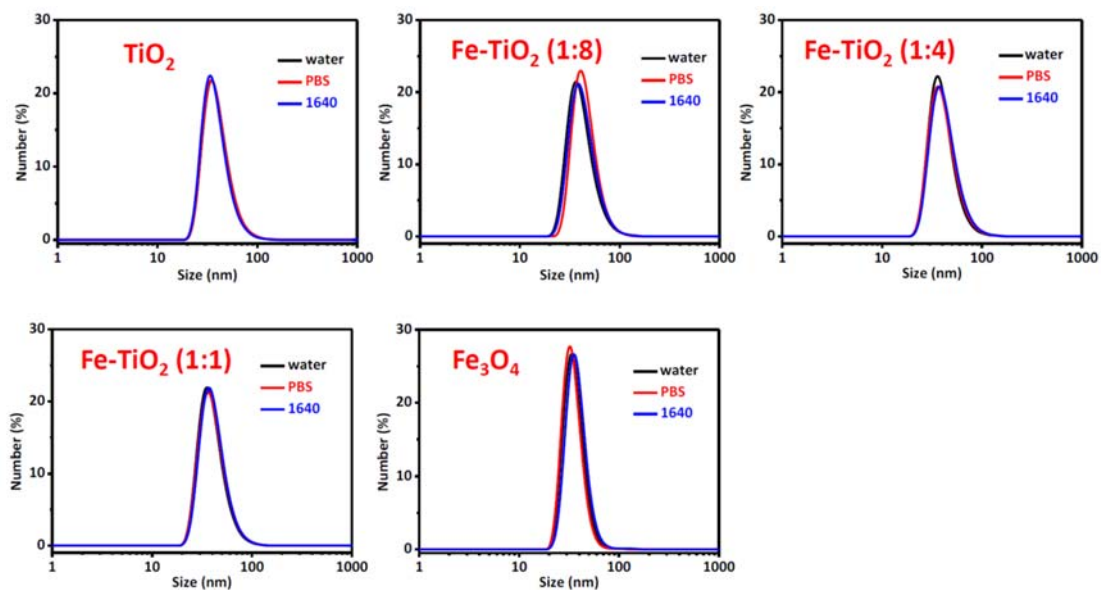
Email: [lcheng2@suda.edu.cn](mailto:lcheng2@suda.edu.cn); [zliu@suda.edu.cn](mailto:zliu@suda.edu.cn)



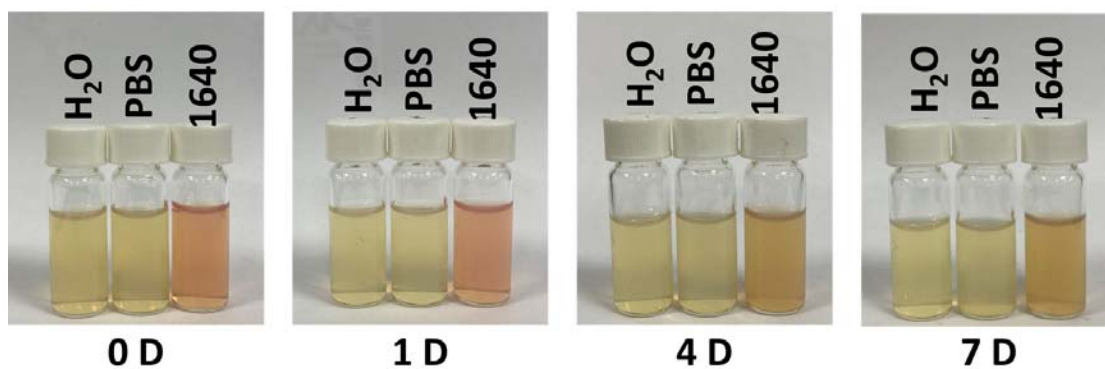
**Figure S1.** XRD patterns of various Fe-TiO<sub>2</sub> NDs (a) and Fe<sub>3</sub>O<sub>4</sub> nanoparticles (b).



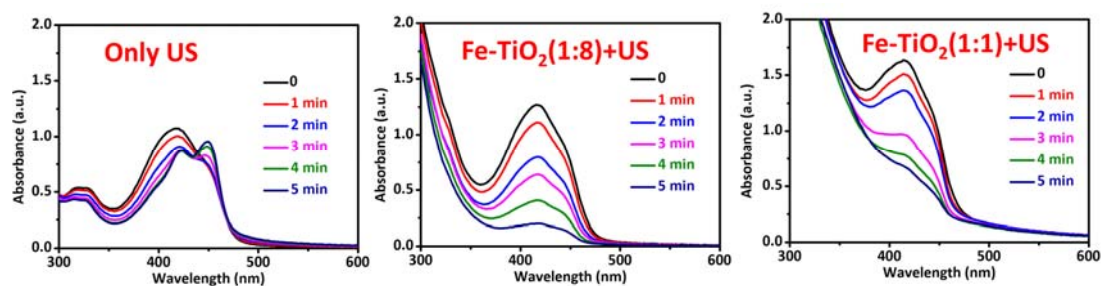
**Figure S2.** The FT-IR spectra (a) and thermogravimetric analysis (b) of Fe-TiO<sub>2</sub> nanodots with the feeding ratio of 1:4 before and after surface modification.



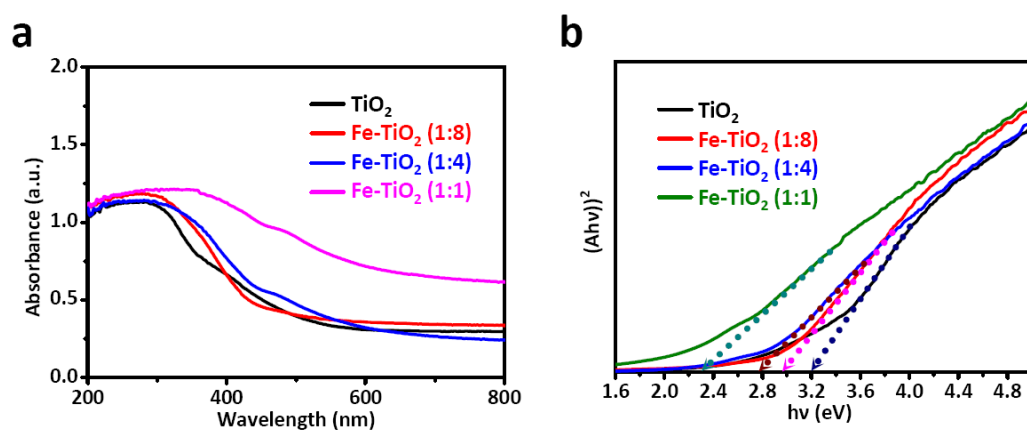
**Figure S3.** Hydrodynamic diameters obtained from the DLS analysis of the various relative Fe-TiO<sub>2</sub> NDs in some physiological solutions, including water, PBS, and 1640 cell culture medium.



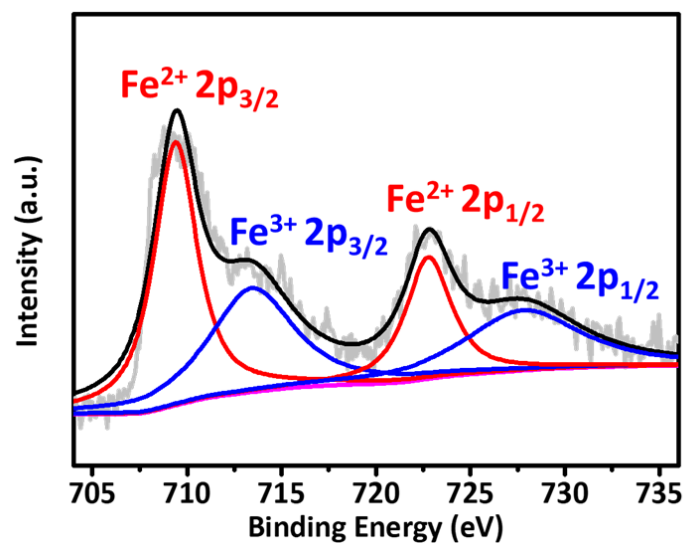
**Figure S4.** The photos of Fe-TiO<sub>2</sub> dispersed in H<sub>2</sub>O, PBS and 1640 cell culture medium during 7 days.



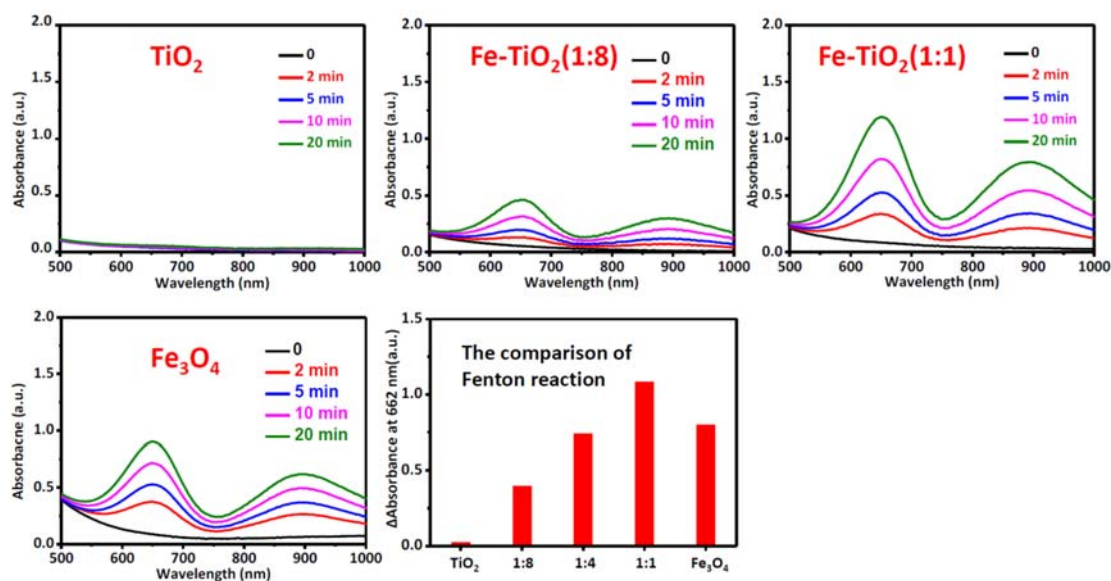
**Figure S5.** The SDT performance of various Fe-TiO<sub>2</sub> NDs reflected by the conversion of DPBF probe.



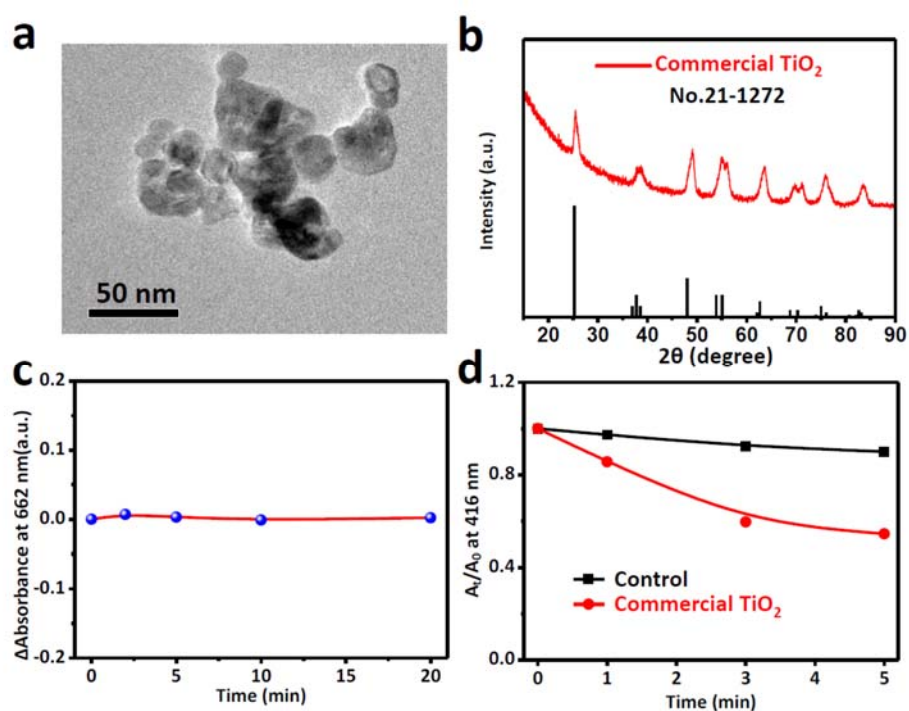
**Figure S6.** The solid UV-vis spectra of pure TiO<sub>2</sub> and various Fe-TiO<sub>2</sub> NDs (a) and the band gap obtained from solid UV-vis spectra (b).



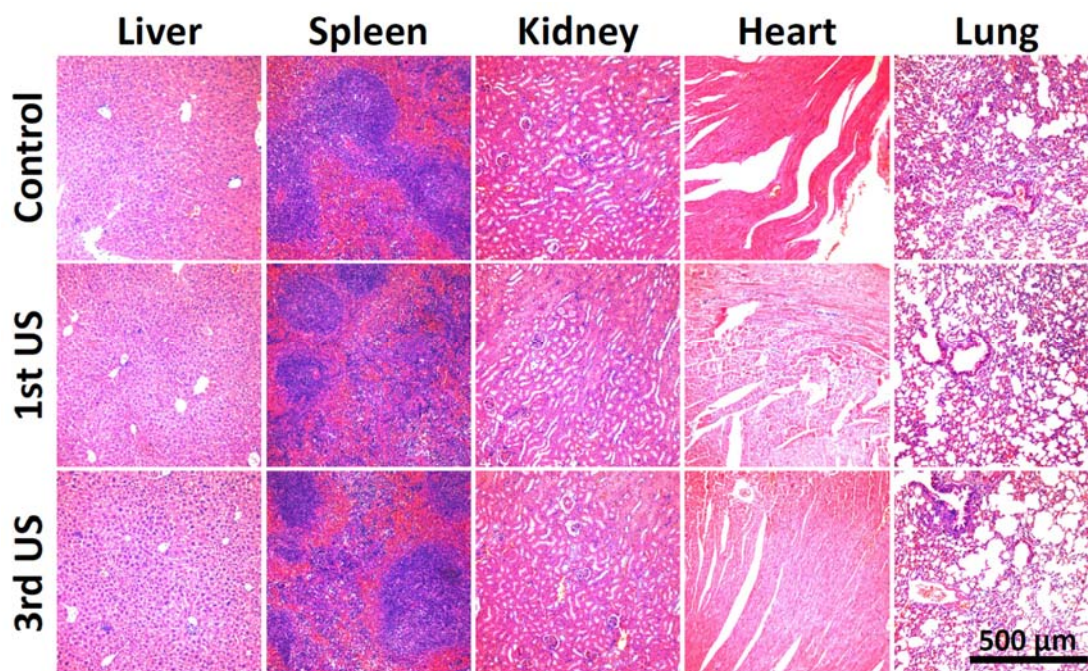
**Figure S7.** The XPS image of Fe-TiO<sub>2</sub> after US treatment for 30 min.



**Figure S8.** The effect of Fenton reaction with H<sub>2</sub>O<sub>2</sub> (100 μM) of various Fe-TiO<sub>2</sub> NDs, pure TiO<sub>2</sub>, and Fe<sub>3</sub>O<sub>4</sub> nanoparticles, reflected by the chromogenic reaction of TMB probe.

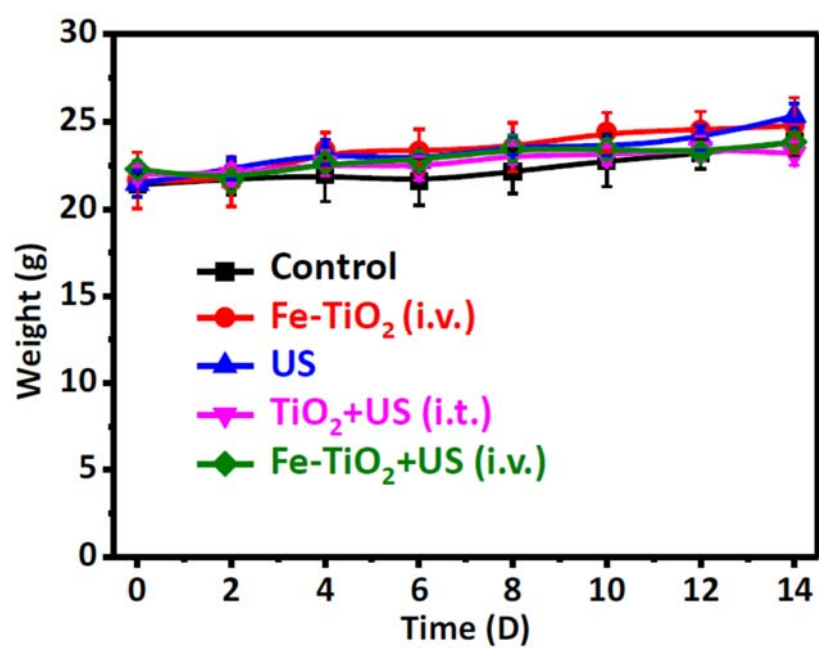


**Figure S9.** The TEM image (a) and XRD pattern (b) of commercial  $\text{TiO}_2$ . The chemodynamic (c) and sonodynamic (d) performance reflected by UV-vis-NIR spectra using the relevant probe, similar to Fe- $\text{TiO}_2$  NDs.



**Figure S10.** H&E staining of main organs after first and third ultrasound treatment.





**Figure S11.** The average weight of the mice with different treatment.