Electronic Supplementary Material (ESI) for Nanoscale.

Supporting information for

Dynamically Tuning Near-infrared-induced Photothermal Performances of TiO_2 Nanocrystals by Nb-doping for Imaging Guided Photothermal Therapy of Tumors

Nuo Yu,[a] Yong Hu,[b] Xiaoyong Wang,[c] Gang Liu,[c] Zhaojie Wang,[a] Zixiao Liu,[a] Qiwei Tian,[d] Meifang Zhu,[a] Xiangyang Shi*,[b], Zhigang Chen*,[a]

[a]State Key Laboratory for Modification of Chemical Fibers and Polymer Materials, College of Materials Science and Engineering, Donghua University, Shanghai 201620, China
E-mail: zgchen@dhu.edu.cn
[b]College of Chemistry, Chemical Engineering and Biotechnology, Donghua University, Shanghai 201620, China.
E-mail: xshi@dhu.edu.cn
[c]Center for Molecular Imaging and Translational Medicine, School of Public Health, Xiamen University, Xiamen 361005, China
[d]Shanghai Municipal Education Committee Key Laboratory of Molecular Imaging Probes and Sensors, Shanghai Normal University, Shanghai 200234, China

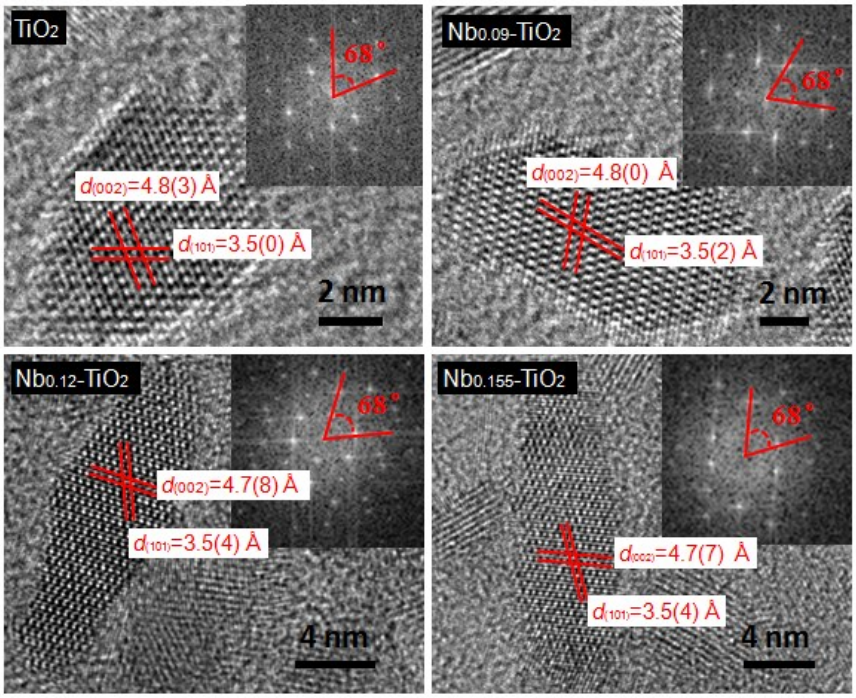

Fig. S1 HR-TEM images and the corresponding FFT patterns of the pure TiO_2 and Nb-doped TiO_2 samples.

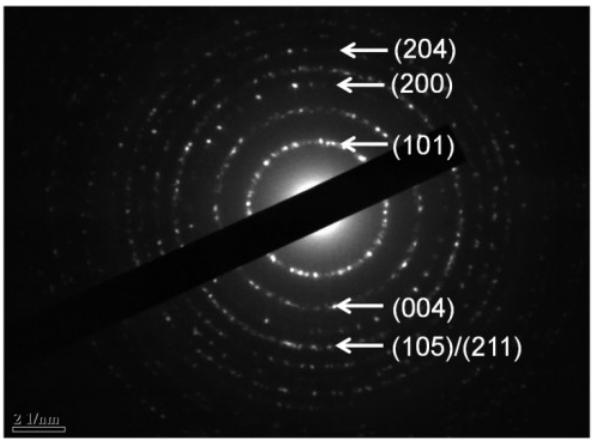

Fig. S2 SAED pattern of $Nb_{0.12}$-TiO_2 sample.

Table S1. The detail peak positions for the fitted peaks.

Samples	Ti^{4+} 2p3/2	Ti^{4+} 2p1/2	*Eg*	Ti^{3+} 2p3/2	Ti^{3+} 2p1/2	*Eg*	Nb^{5+} 3d5/2	Nb^{5+} 3d3/2	*Eg*
$Nb_{0.155}$-TiO_2	459.25	464.9	5.65	456.9	462.5	5.6	207.1	209.9	2.8
$Nb_{0.12}$-TiO_2	459.2	464.9	5.7	456.8	462.4	5.6	206.84	209.64	2.8
$Nb_{0.09}$-TiO_2	459.05	464.7	5.65	456.5	462.2	5.7	206.85	209.65	2.8
TiO_2	458.6	464.3	5.7	/	/	/	/	/	/

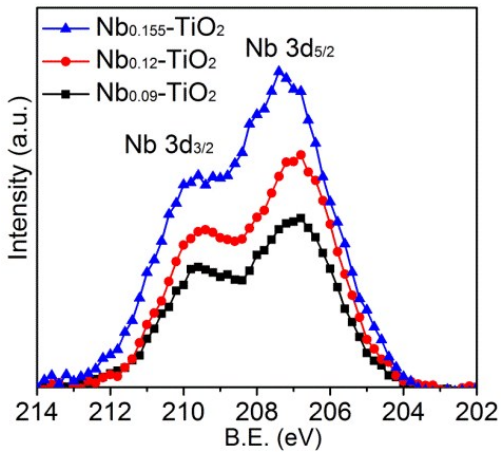

Fig. S3 Nb 3d spectra of Nb-doped TiO_2 samples.

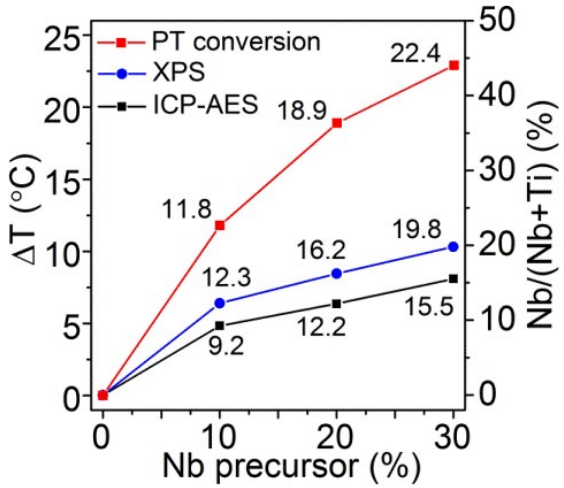

Fig. S4 The curves of temperature elevation (ΔT) and Nb/(Nb+Ti) atomic ratios (determined by ICP-AES and XPS) of TiO_2 samples as a function of Nb precursor ratios.

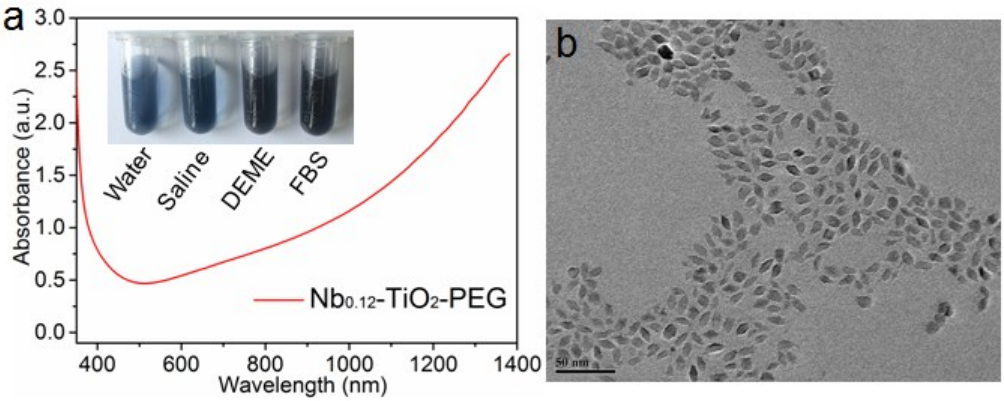

Fig. S5 (a) UV-vis-NIR spectrum of $Nb_{0.12}$-TiO_2-PEG aqueous dispersion. The inset shows $Nb_{0.12}$-TiO_2-PEG nanocrystals in different solvent (water, saline, DMEM, FBS) after being stored for one week. (b) TEM image of $Nb_{0.12}$-TiO_2-PEG.

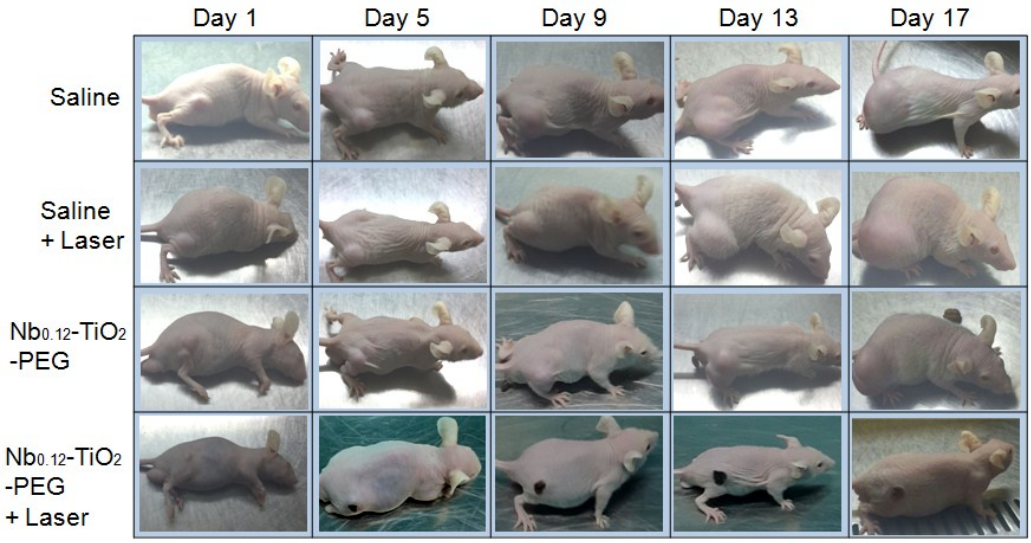

Figure S6. Representative photos of tumors on mouse after treatment with different therapeutic conditions.

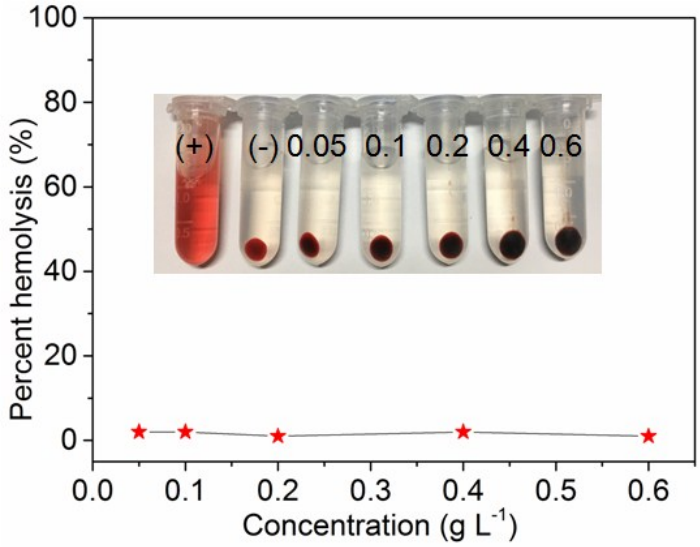

Fig. S7 The hemolytic percent of RBCs incubated with Nb0.12-TiO2-PEG at various concentrations (0.05, 0.1, 0.2, 0.4, 0.6 g L^{-1}) for 4 h, using deionized water (+) and PBS (–) as positive and negative controls, respectively. Inset showing the photograph for direct observation of hemolysis.