

## Supplementary Information

Article

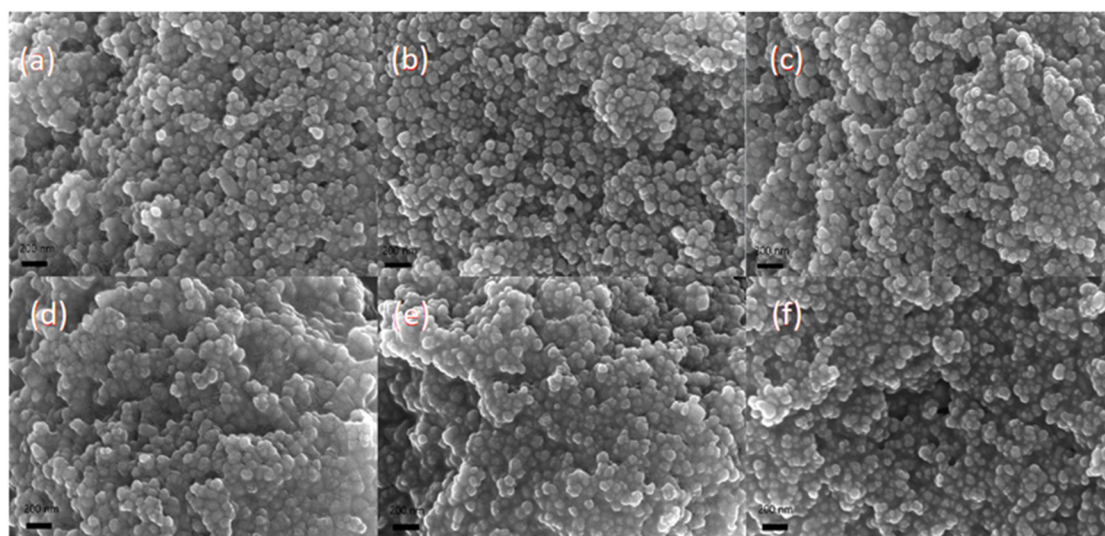
# Boosting Piezocatalytic Performance of BaTiO<sub>3</sub> by Tuning Defects at Room Temperature

Donghui An <sup>1,2</sup>, Renhong Liang <sup>1,2</sup>, Hua Liu <sup>1</sup>, Chao Zhou <sup>1</sup>, Mao Ye <sup>1</sup>, Renkui Zheng <sup>1,2</sup>, Han Li <sup>1,\*</sup> and Shanming Ke <sup>1,2,\*</sup>

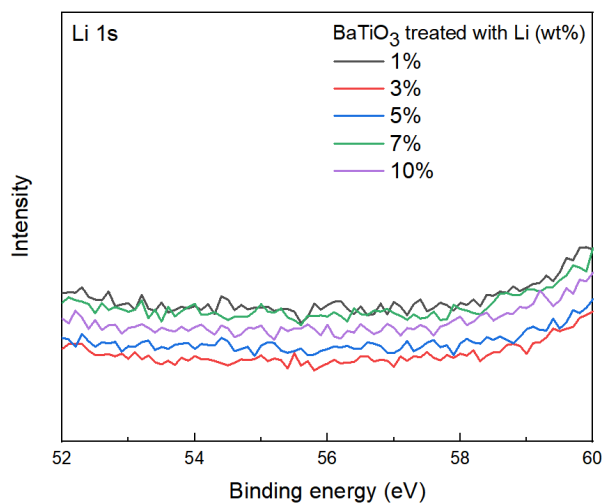
<sup>1</sup> School of Physics and Materials Science, Guangzhou University, Guangzhou 510006, PR China

<sup>2</sup> School of Physics and Materials Science, Nanchang University, Nanchang 330031, PR China

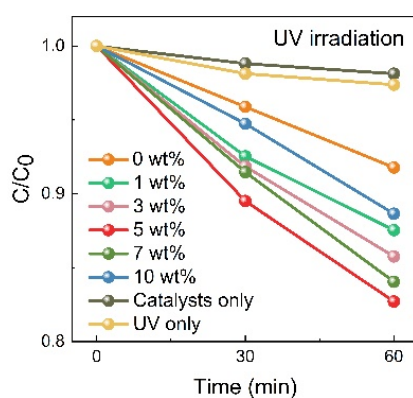
\* Correspondence: lihan@gzhu.edu.cn (H. Li); ksm@gzhu.edu.cn (S. Ke)



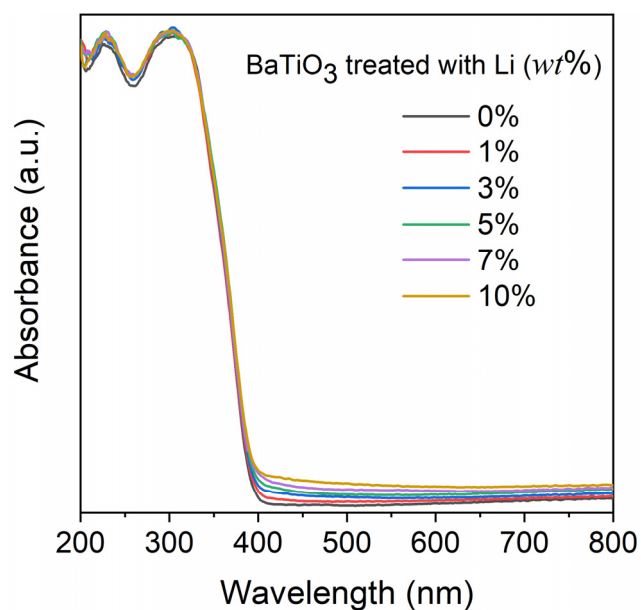
**Figure S1.** SEM images of BaTiO<sub>3-x</sub> with various of Li powder treatment. (a) 0 wt%, (b) 1 wt%, (c) 3 wt%, (d) 5 wt%, (e) 7 wt%, (f) 10 wt%. The scale bar is 200 nm.



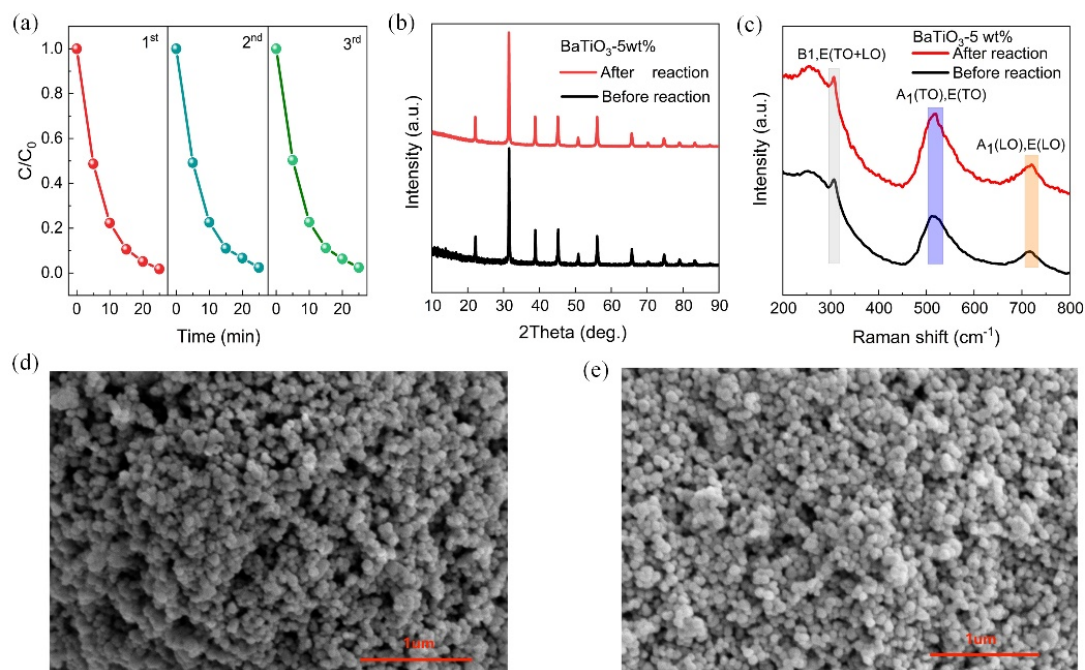
**Figure S2.** XPS spectra (Li 1s) of lithium reduced BaTiO<sub>3</sub> nanoparticles. It is apparent that no peaks correspond to Li (55.5 eV) can be found in the samples, which means the generated lithium oxides have been dissolved and removed in the washing processes.



**Figure S3.** The effect of BaTiO<sub>3</sub> treated with Li (wt %) on the degradation of RhB under UV irradiation without vibration.



**Figure S4.** The absorption spectroscopy of BaTiO<sub>3</sub> powders treated with different Li (wt%). Their band gap has barely changed.



**Figure S5.** (a) Cyclic stability of BTO-5. (b) XRD patterns and (c) room-temperature Raman spectra of the BTO-5 piezocatalysts before and after vibrational catalysis.