

# **Supporting Information for**

## **Hollow Anatase TiO<sub>2</sub> Porous Microspheres with V-shaped Channels and Exposed (101) Facets: Anisotropic Etching and Photovoltaic Property**

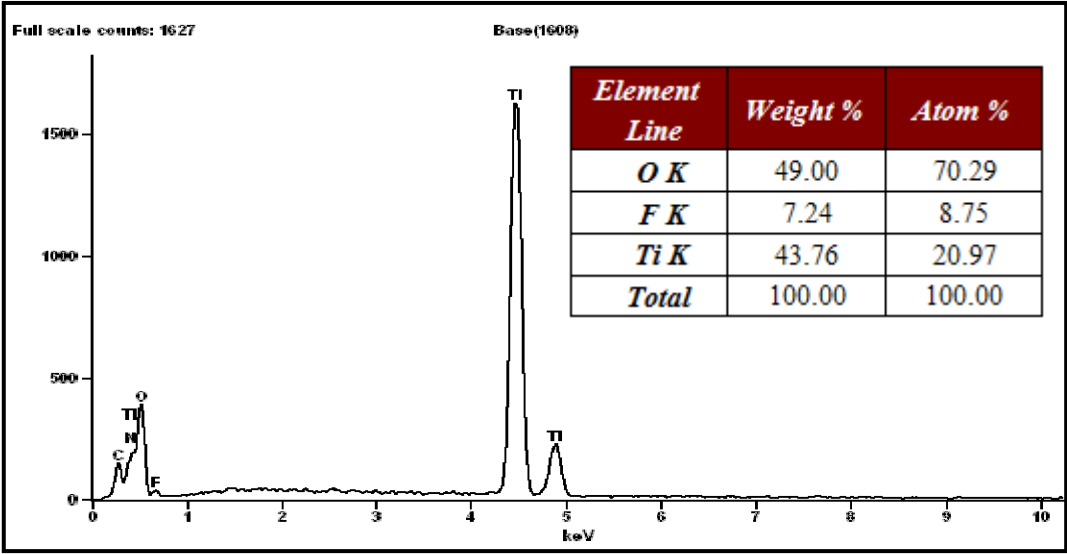
**Hao Pan,<sup>a§</sup> Jieshu Qian,<sup>b§</sup> Yuming Cui,<sup>c</sup> Haixian Xie<sup>a</sup> and Xingfu Zhou<sup>\*a</sup>**

<sup>a</sup> *State Key Laboratory of Materials-Oriented Chemical Engineering, College of Chemistry and Chemical Engineering, Nanjing University of Technology, Nanjing, 210009, China.*  
*E-mail: zhouxf@njut.edu.cn*

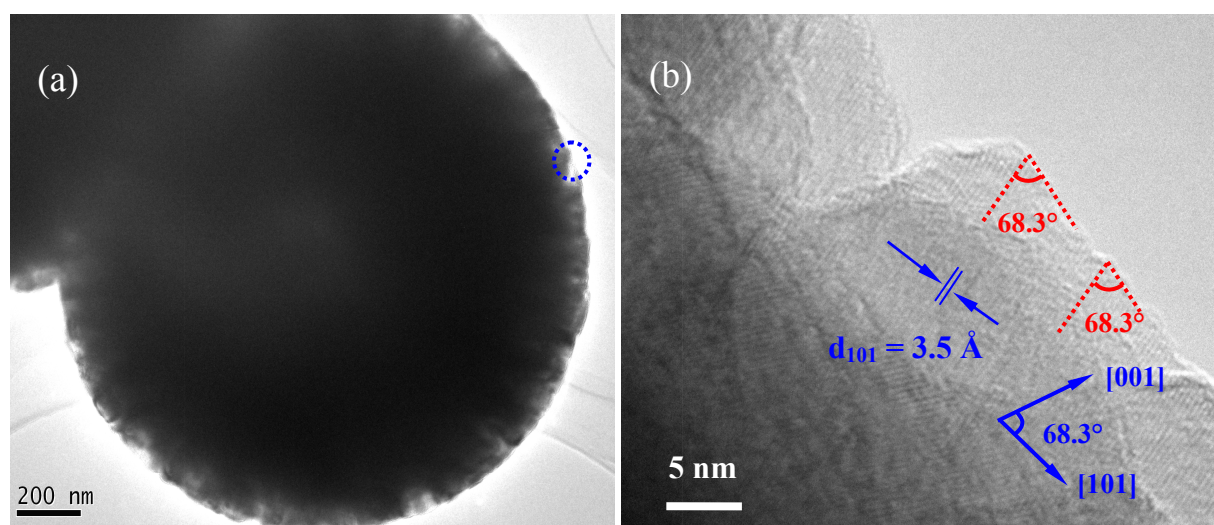
<sup>b</sup> *Department of Chemistry, University of Toronto, 80 St. George Street, Toronto, Ontario, Canada M5S 3H6*

<sup>c</sup> *College of Chemistry and Chemical Engineering, Nanjing University, Nanjing, 210093, China.*

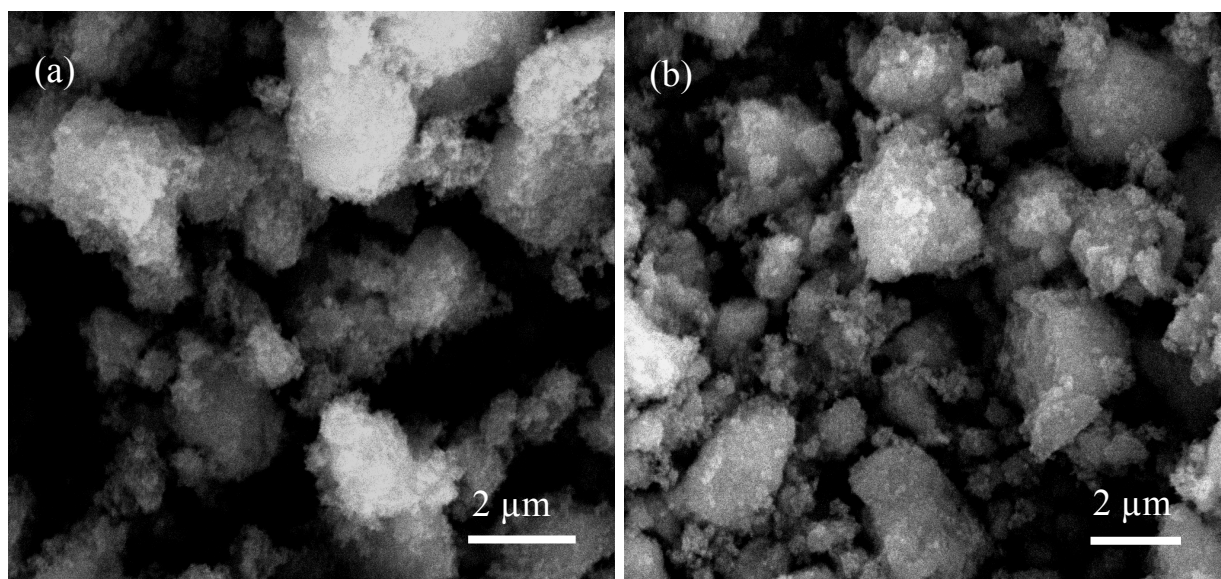
<sup>§</sup> *These authors contributed equally to this work.*



**Fig. S1** A representative EDS spectrum of the anatase TiO<sub>2</sub> microsphere obtained by using 0.5 g ammonium fluoride. Carbon is generated from carbon tape while nitrogen is generated from liquid nitrogen used in the measurement. The inset is the corresponding elements content, showing that the product is composed of titanium, oxygen, and fluorine elements.

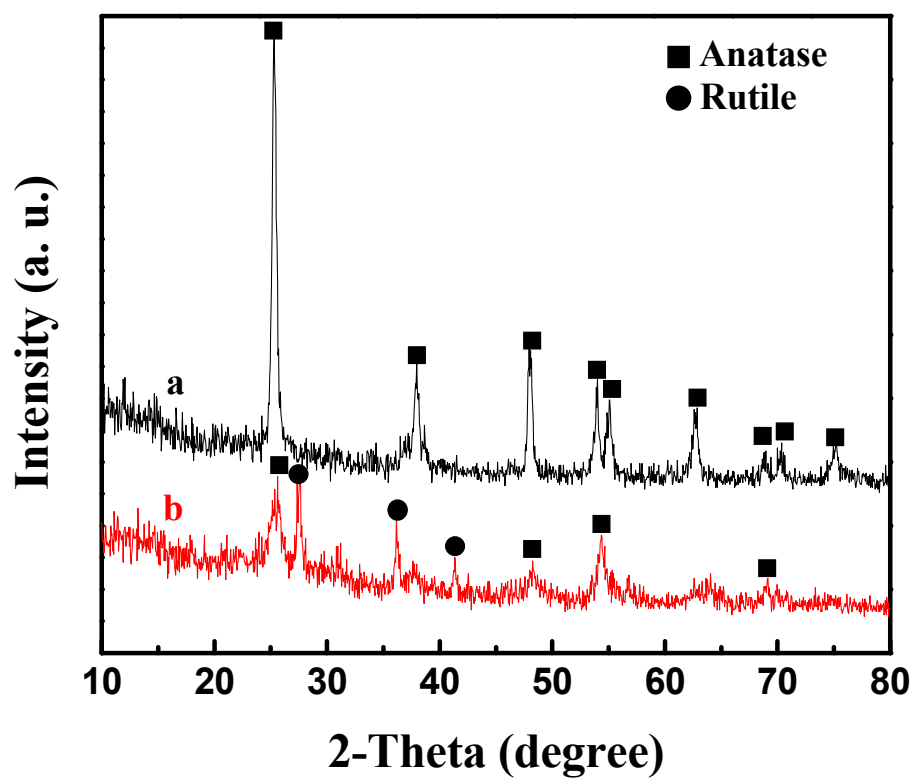


**Fig. S2** TEM image of an individual TiO<sub>2</sub> microsphere (a). The region in blue dashed circle is further investigated by HRTEM and shown in (b). Lattice distance of 3.5 Å corresponds to the lattice space of anatase TiO<sub>2</sub> (101) facet, while the angle value of 68.3° corresponds to the angle between (101) and (001) facets of anatase TiO<sub>2</sub>.



**Fig. S3** SEM images of bulk TiO<sub>2</sub> samples obtained without (a) hydrogen peroxide, or without (b) ammonium fluoride.





**Fig. S4** XRD patterns of bulk  $\text{TiO}_2$  samples obtained without (a) hydrogen peroxide, or without (b) ammonium fluoride. When hydrogen peroxide was absent, the sample obtained is pure anatase  $\text{TiO}_2$ , however, mixed phased anatase/rutile  $\text{TiO}_2$  was obtained when ammonium fluoride not used.