

## Supporting Information

### Tailored synthesis of hierarchical spinous hollow titania hexagonal prisms via a self-template route

Ye Zhang,<sup>a</sup> Buyuan Guan,<sup>a</sup> Duihai Tang,<sup>b</sup> Xue Wang,<sup>a</sup> Tao Wang,<sup>a</sup> Bo Zhi,<sup>a</sup>  
Dongmei Wang,<sup>a</sup> Xiang Li,<sup>a</sup> Yunling Liu<sup>a</sup> and Qisheng Huo<sup>\*a</sup>

<sup>a</sup> State Key Laboratory of Inorganic Synthesis and Preparative Chemistry, College of Chemistry, Jilin University, Changchun 130012; P. R. China.

<sup>b</sup> Department of Mechanical and Nuclear Engineering, The Pennsylvania State University 272 Materials Research Laboratory, University Park, PA, 16802, USA.

\*E-mail: huoqisheng@jlu.edu.cn; Tel: +86-431-85168602

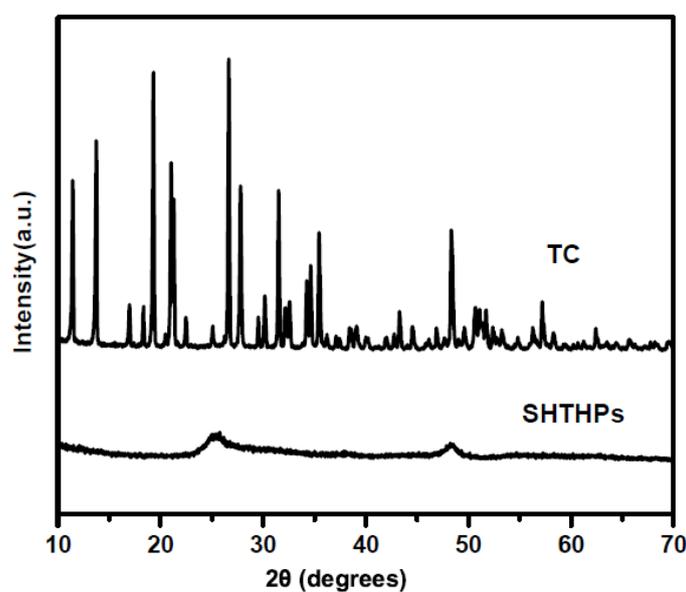
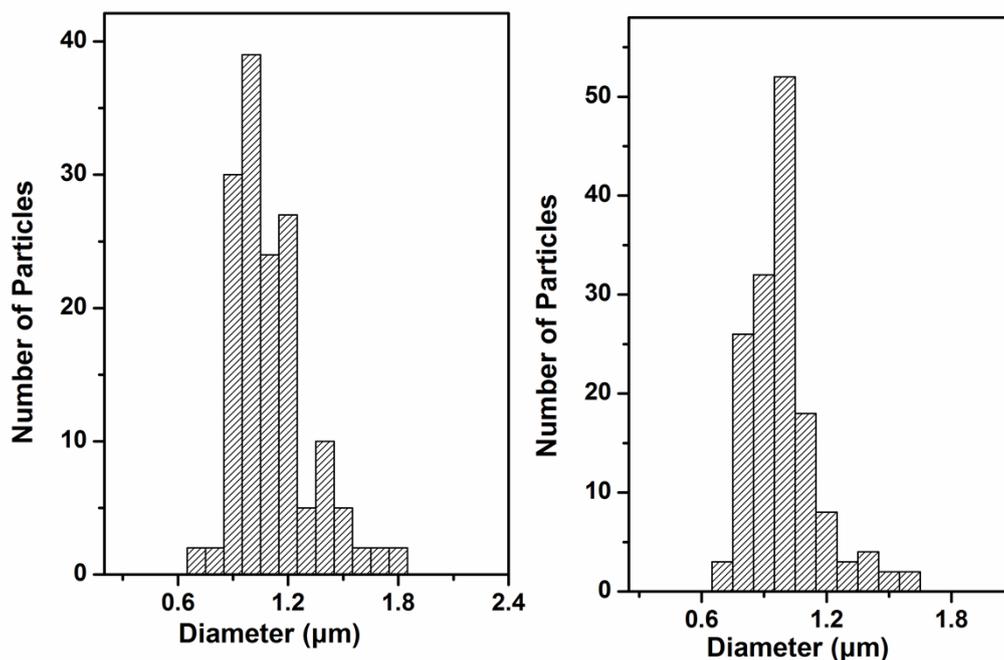
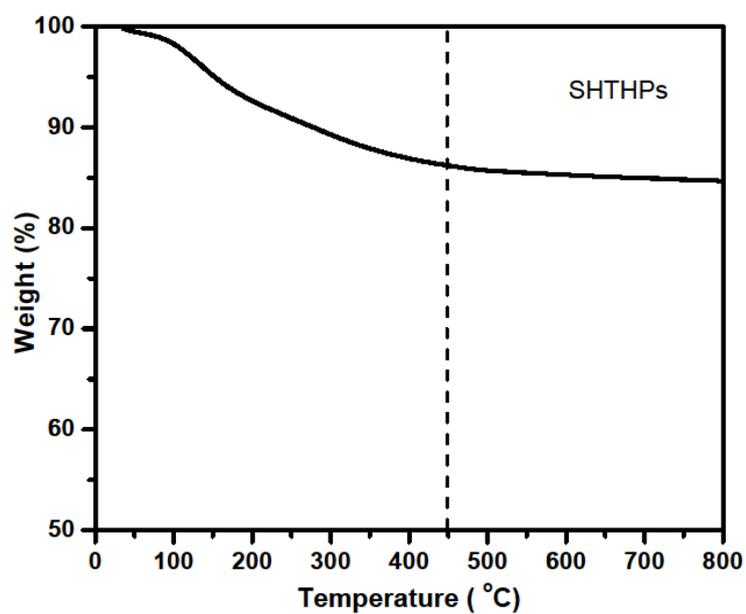


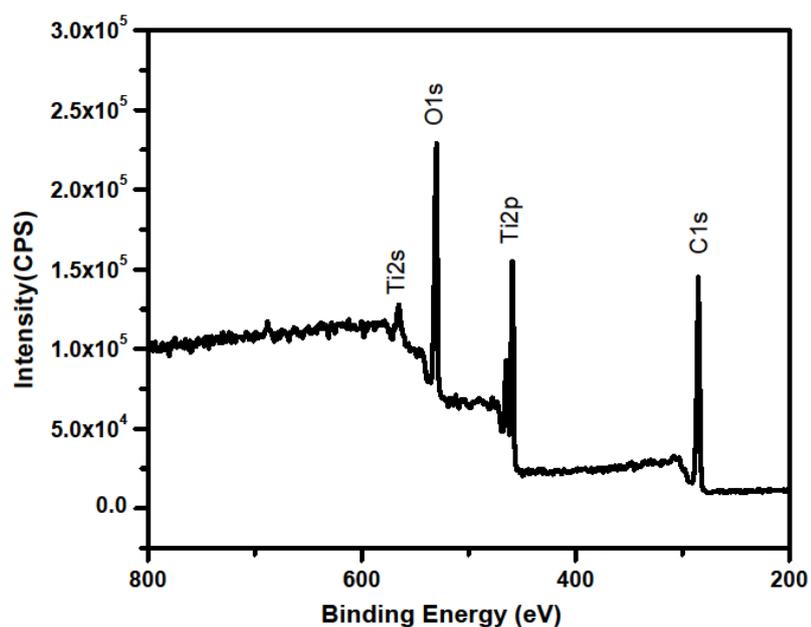
Fig. S1 XRD patterns of TC and SHTHPs.



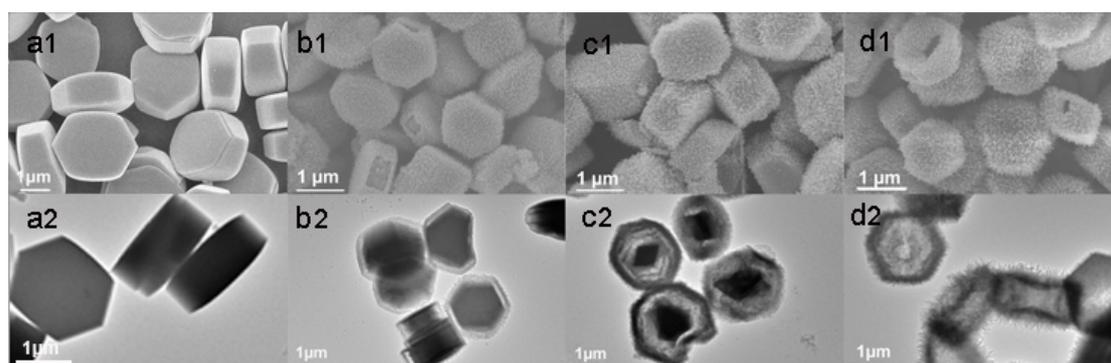
**Fig. S2** Histograms of the side length distribution of TC (left) and SHTHPs (right).



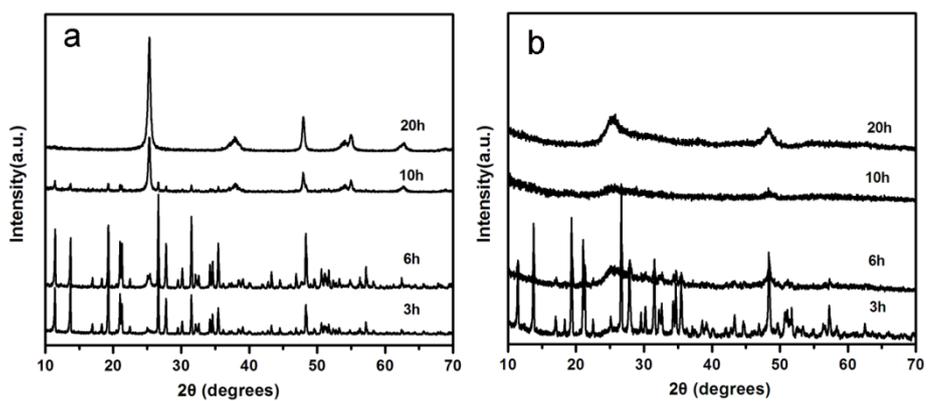
**Fig. S3** TG curve of SHTHPs (prior to calcination).



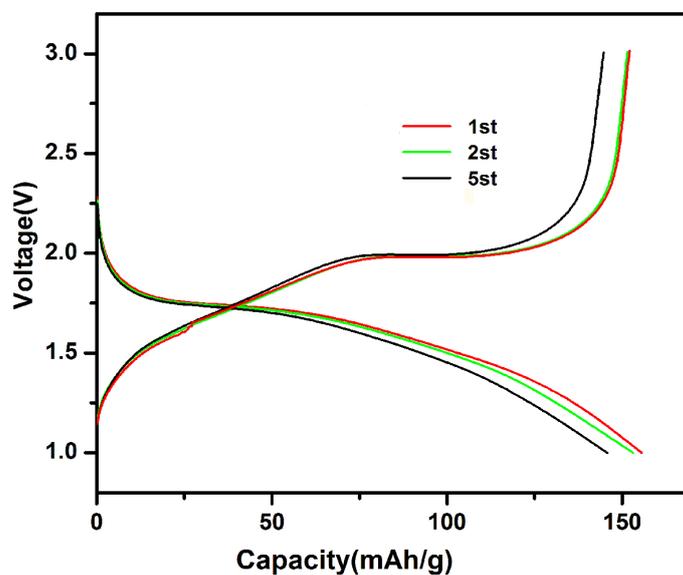
**Fig. S4** XPS survey spectrum of calcined SHTHPs.



**Fig. S5** SEM and TEM images of the TC (a1 and a2) and products obtained from different solvothermal reaction time: (b1 and b2) 3 h for TC @ titania core-shell structure; (c1 and c2) 6 h for TC @ titania yolk-shell structure; (d1 and d2) 20 h for hollow titania structure.



**Fig. S6** XRD patterns of the products obtained after solvothermal treatment without ammonia (a), in the presence of ammonia (b).



**Fig. S7** discharge-charge profiles of calcined SHTHPs at a current rate of 2 C.