Supporting Information

**Three-Layer Structured SnO2@C@TiO2 Hollow Spheres for High-Performance Sodium Storage**

Yu Tian, Ping Hu, Ting Zhu, Zhenhui Liu, Guangwu Hu, Congcong Cai, Zelang Jian, Liang Zhou,\* and Liqiang Mai\*

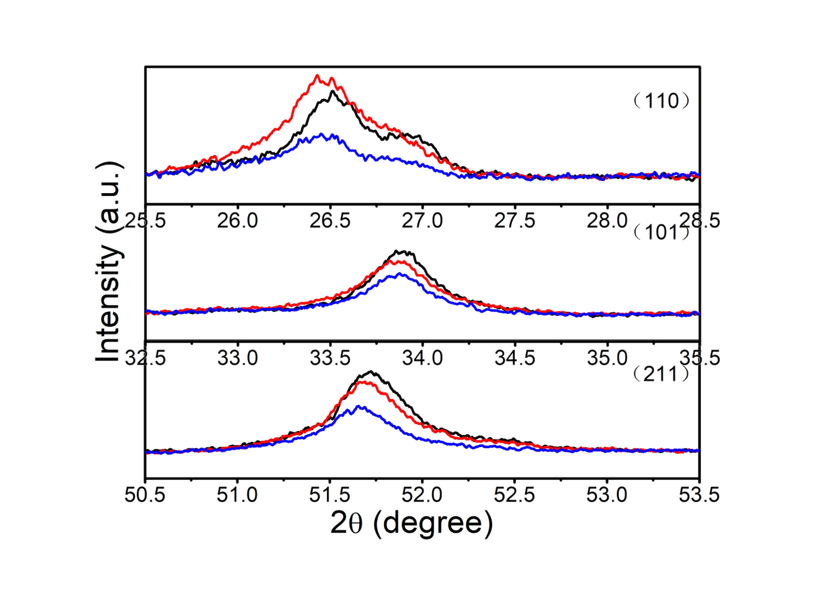
State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology, Wuhan 430070, China

Liang Zhou, Liqiang Mai

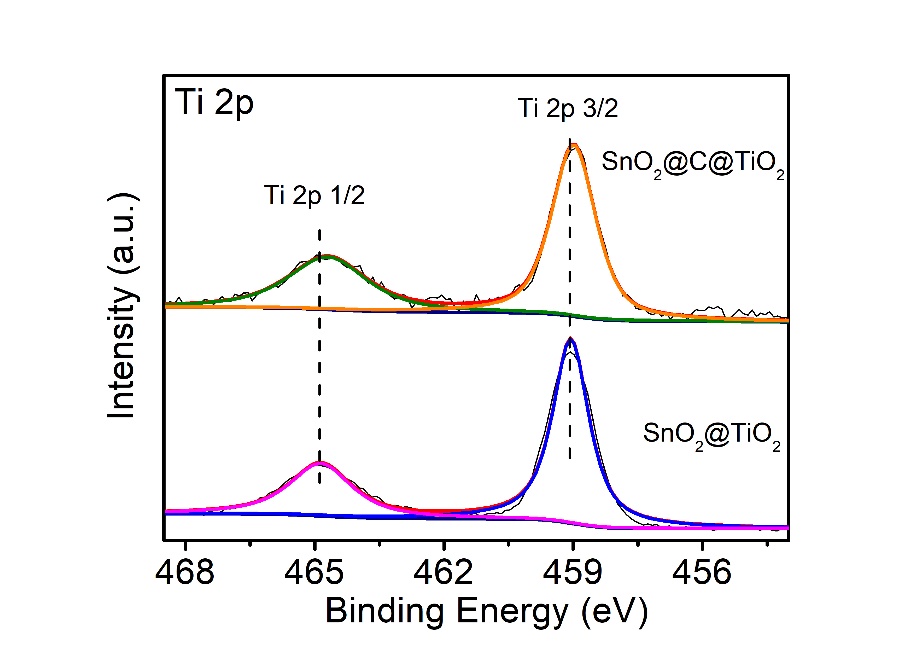
Foshan Xianhu Laboratory of the Advanced Energy Science and Technology Guangdong Laboratory, Xianhu Hydrogen Valley, Foshan 528200, China

Corresponding Author

\*E-mail: [liangzhou@whut.edu.cn](mailto:liangzhou@whut.edu.cn), [mlq518@whut.edu.cn](mailto:mlq518@whut.edu.cn)



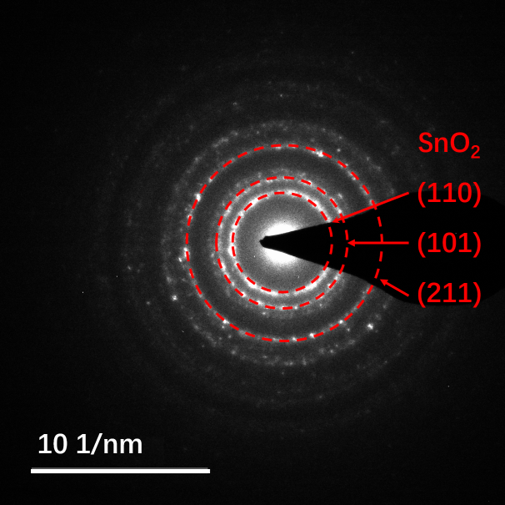
**Figure S1.** The enlarged XRD patterns of SnO2@C@TiO2 (red), SnO2@C (blue), and SnO2 (black).

****

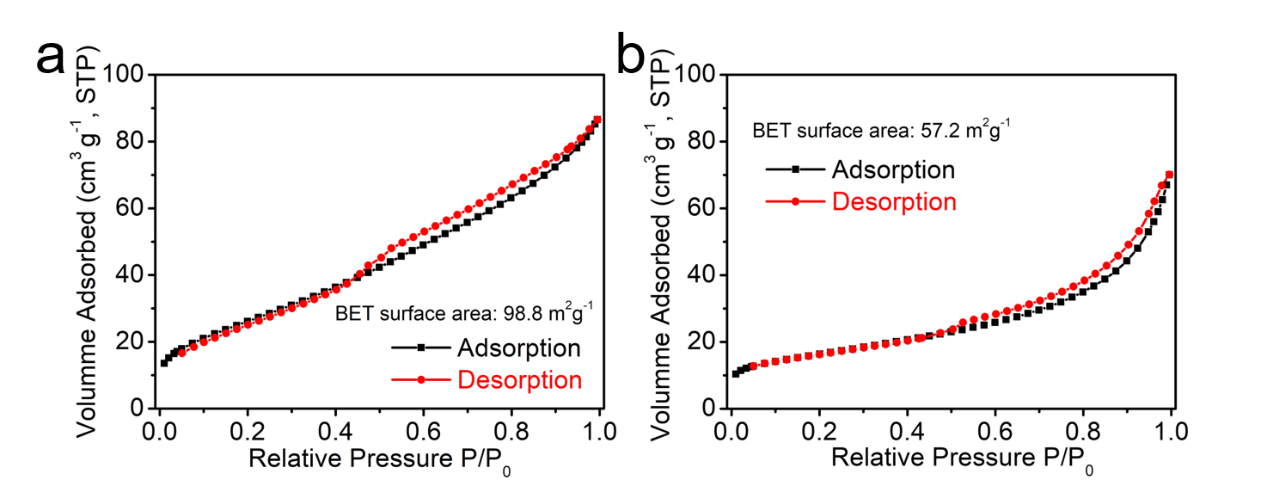
**Figure S2.** High-resolution XPS spectra of Ti 2p for SnO2@C@TiO2 and SnO2@TiO2.

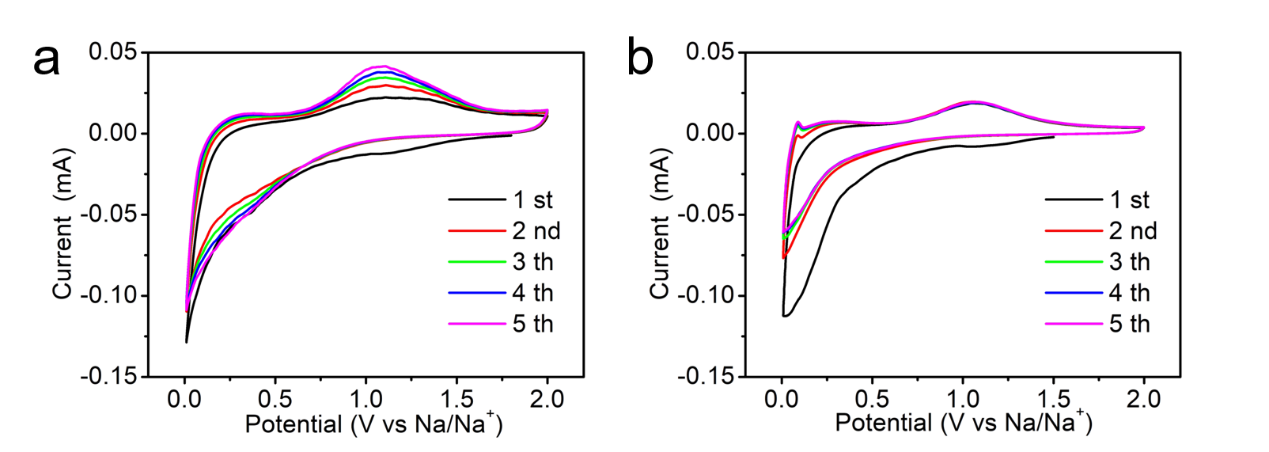
**Table S1.** The elemental composition of SnO2@C@TiO2 determined by ICP.

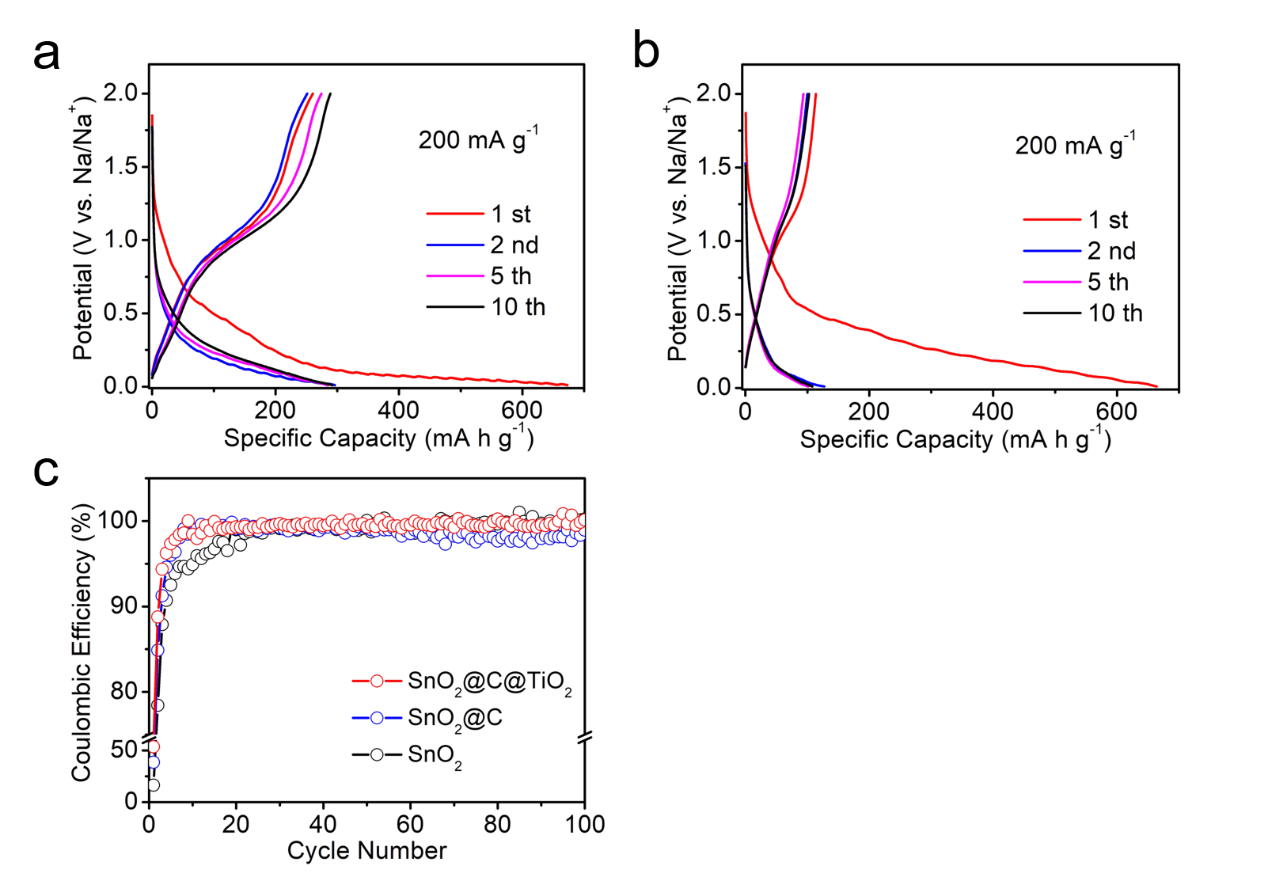
|  |  |  |
| --- | --- | --- |
| Element | Sn | Ti |
| Content (wt %) | 58.74 | 1.084 |



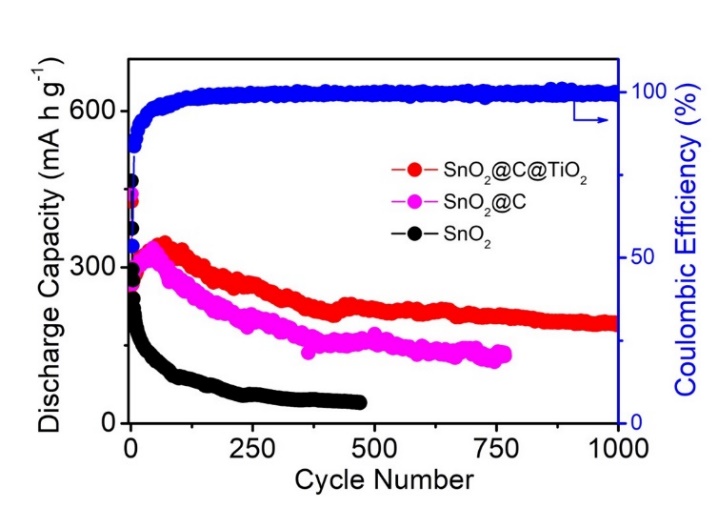
**Figure S3.** SAED pattern of SnO2@C@TiO2.

**Figure S4.** Nitrogen adsorption-desorption isotherms of (a) SnO2@C@TiO2 and (b) SnO2 hollow spheres.

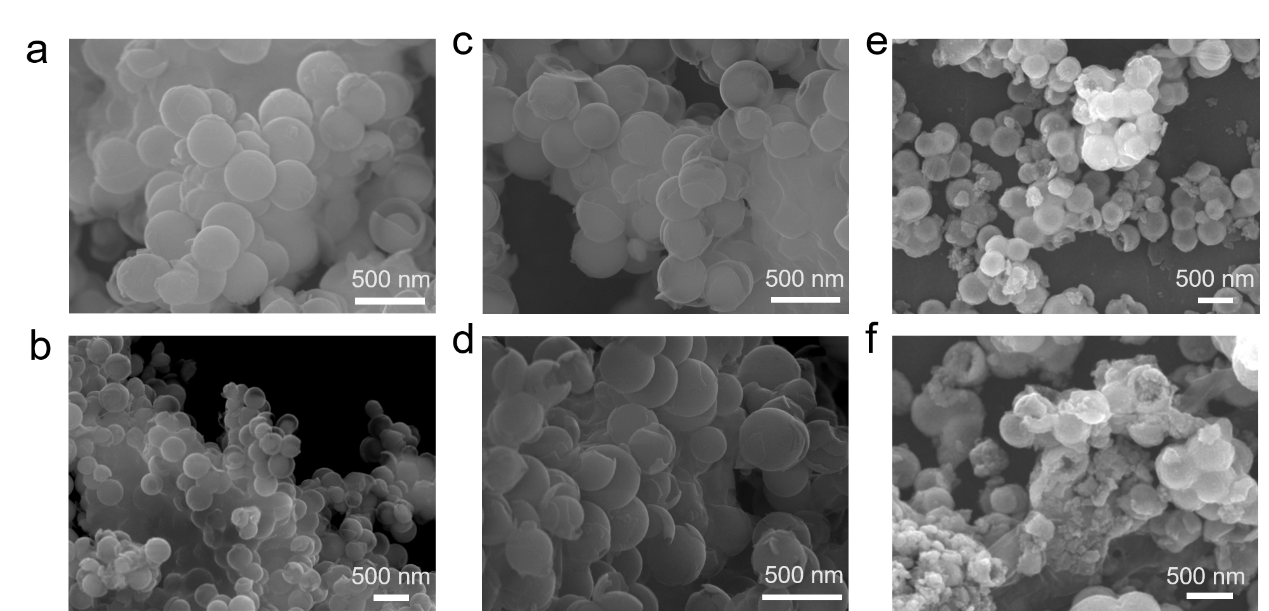
**Figure S5.** CV curves for (a) SnO2@C and (b) SnO2 hollow spheres at a scan rate of 0.1 mV s-1.



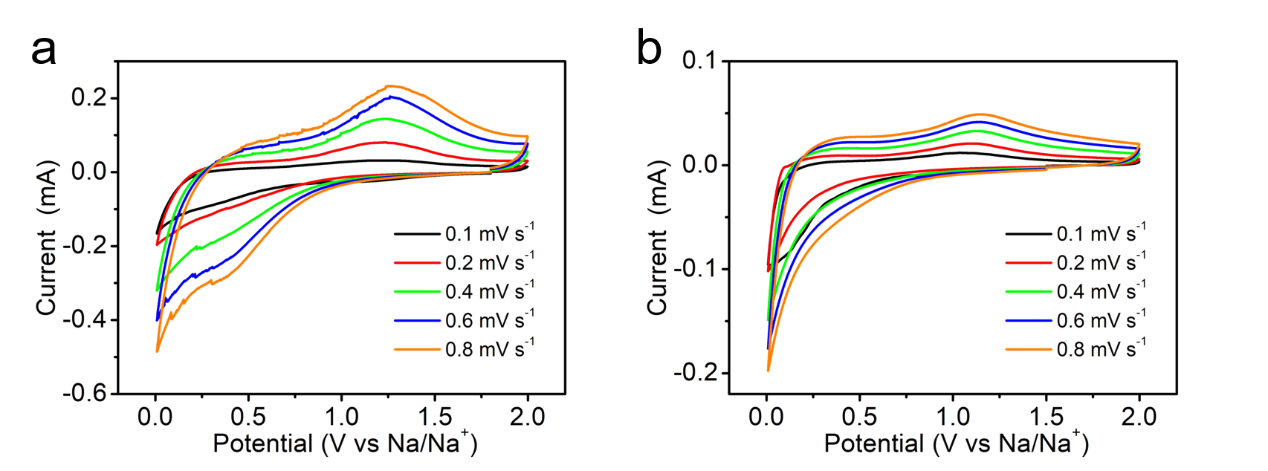
**Figure S6.** GCD profiles of (a) SnO2@C and (b) SnO2 at 0.2 A g-1. (c) Coulombic efficiencies of the three SnO2-based electrodes at 0.2 A g-1.



**Figure S7.** Long-term cycling performances of the SnO2-based samples.



**Figure S8.** SEM images of SnO2@C@TiO2 hollow spheres after (a) 50, (b) 100, (c) 500, and (d) 1000 charge/discharge cycles at 1 A g-1. SEM images of (e) SnO2@C and (f) SnO2@C hollow spheres after 50 cycles.

**Figure S9.** CV curves in the potential range of 0.01 – 2.0 V at scanning rates of 0.1, 0.2, 0.4, 0.6, and 0.8 mV s-1 for (a) SnO2@C and (b) SnO2.