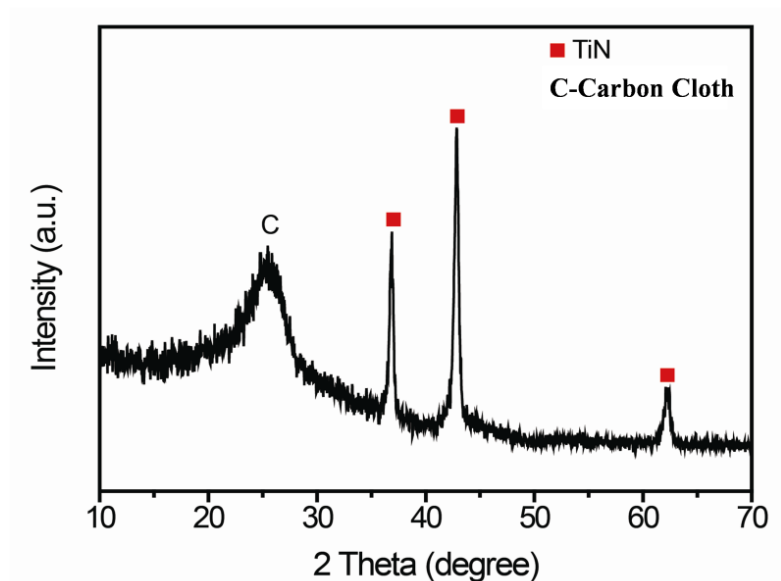


## Electronic Supplementary Information

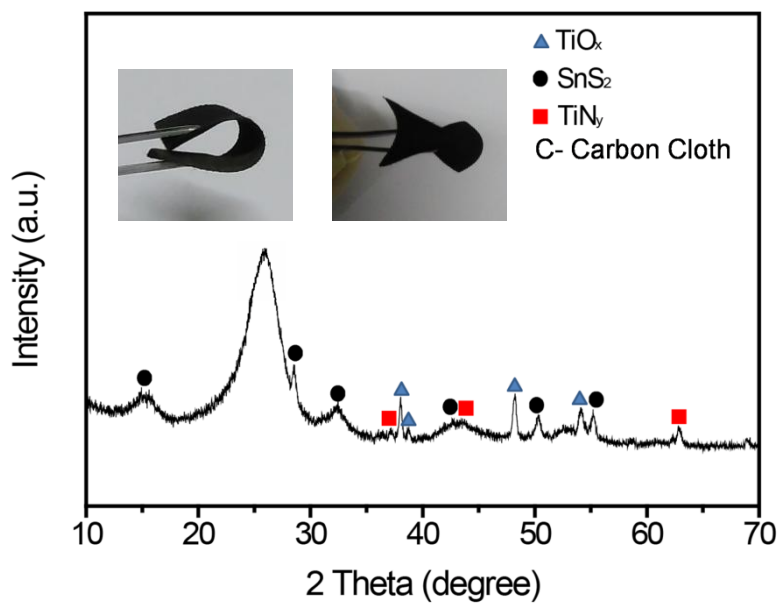
### **Flexible additive-free CC@TiO<sub>x</sub>N<sub>y</sub>@SnS<sub>2</sub> nanocomposites with excellent stability and superior rate capability for lithium ion batteries**

*Fengqi Lu\*, Qiang Chen, Yibin Wang, Yonghao Wu, Pengcheng Wei, Xiaojun Kuang*

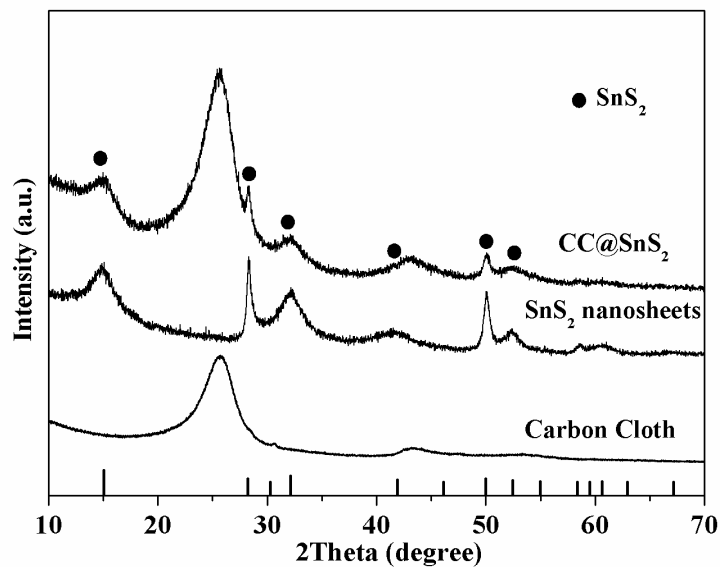
*Guangxi Ministry-Province Jointly-Constructed Cultivation Base for State Key Laboratory of Processing for Nonferrous Metal and Featured Materials, Guangxi Universities Key Laboratory of Non-ferrous Metal Oxide Electronic Functional Materials and Devices, College of Materials Science and Engineering, Guilin University of Technology, Guilin 541004 P. R. China. Email: lufengqi@glut.edu.cn.*



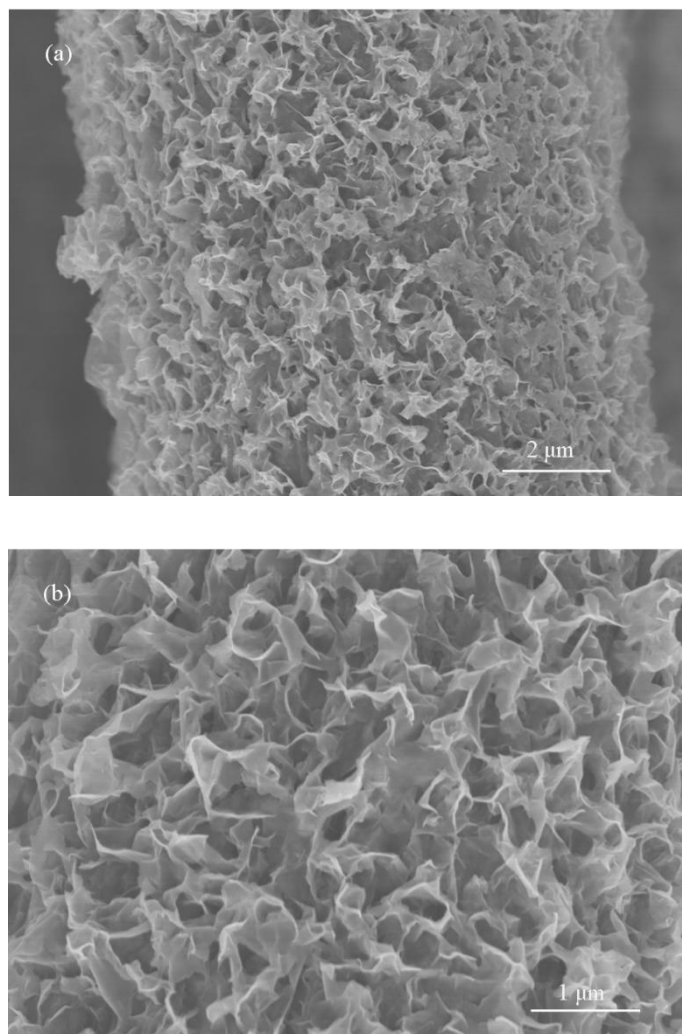
**Fig.S1** XRD Spectra of CC@TiN.



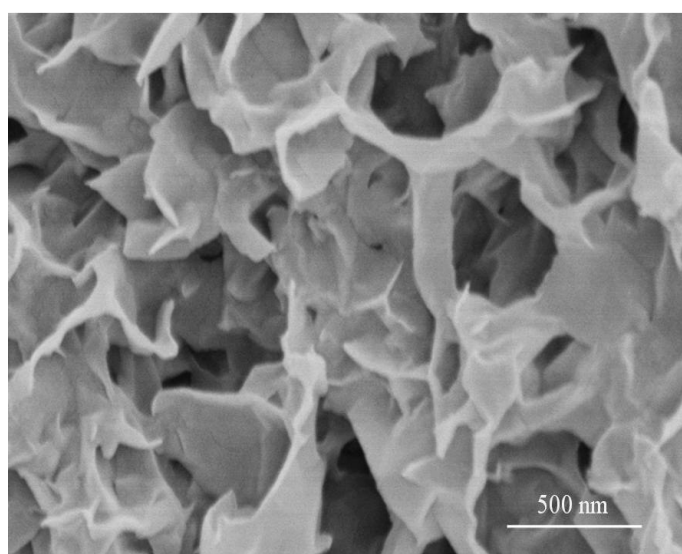
**Fig. S2** XRD Spectra of CC@TiO<sub>x</sub>N<sub>y</sub>@SnS<sub>2</sub> nanocomposites, and inset: photographic image of CC@TiO<sub>x</sub>N<sub>y</sub>@SnS<sub>2</sub> exhibited very good flexibility.



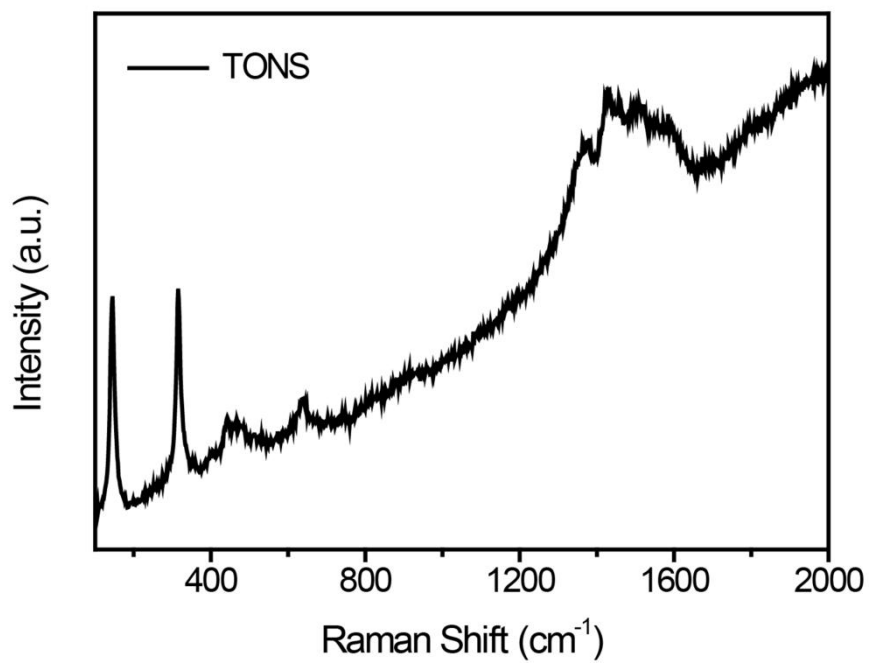
**Fig. S3** XRD spectra of carbon cloth, pristine SnS<sub>2</sub> nanosheets and CC@SnS<sub>2</sub>, the below vertical line remark the JCPDS card no. 23-0677 (SnS<sub>2</sub>).



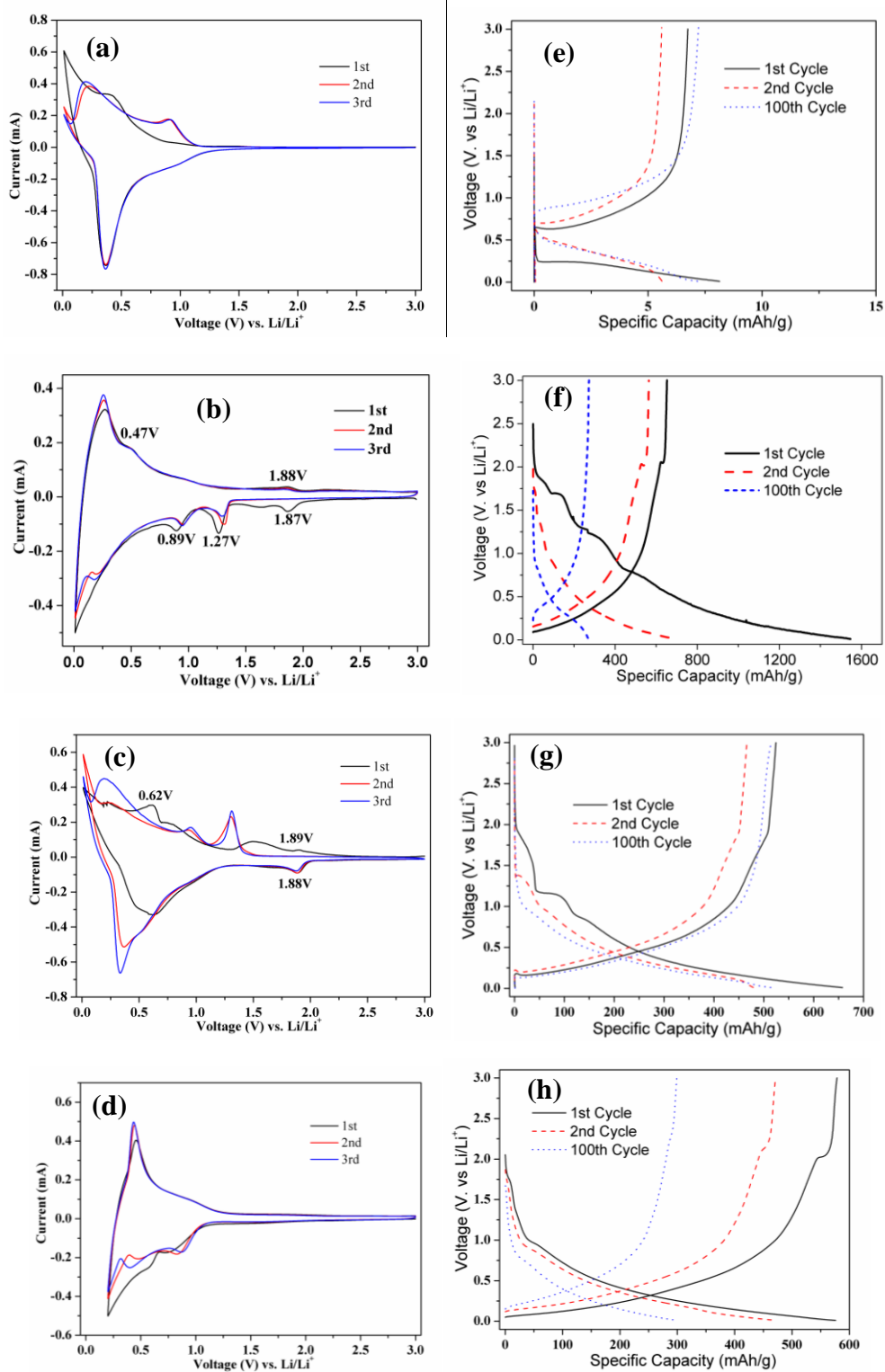
**Fig. S4** (a) Low magnification and (b) high magnification SEM images of the CC@SnS<sub>2</sub>.



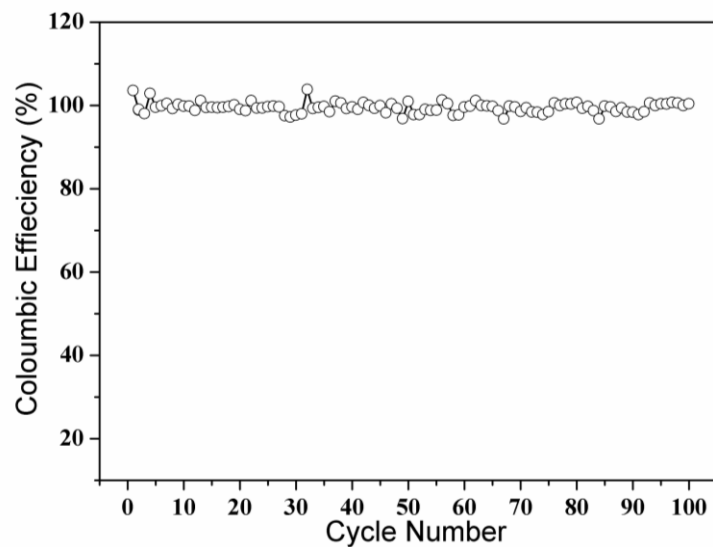
**Fig. S5** SEM images of the pristine SnS<sub>2</sub> nanosheets.



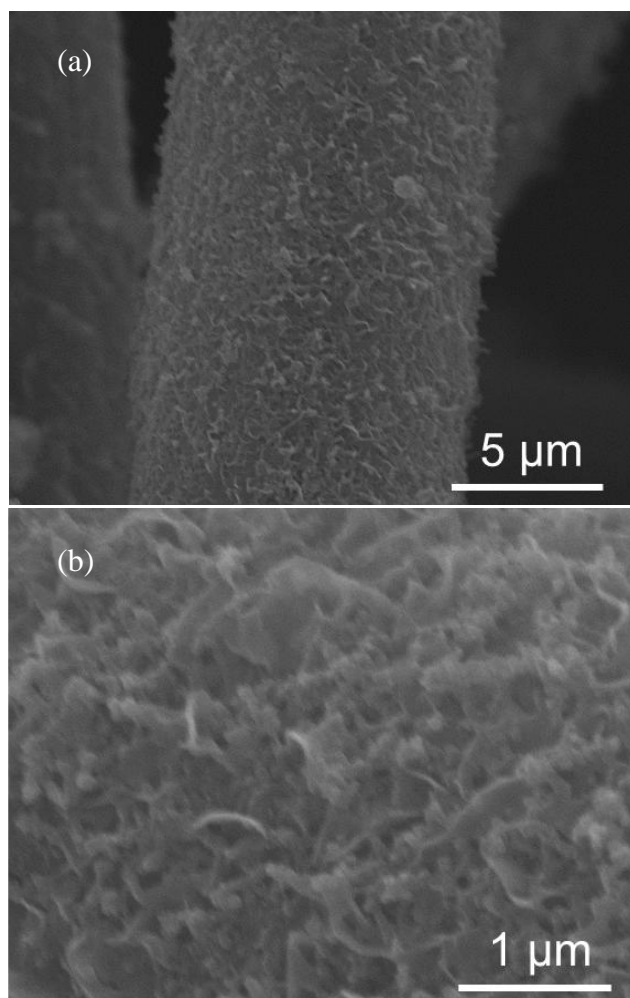
**Fig. S6** Raman Spectrum of CC@TiO<sub>x</sub>N<sub>y</sub>@SnS<sub>2</sub>.



**Fig. S7** CV profiles of CC (a), SnS<sub>2</sub> nanosheets (b), CC@SnS<sub>2</sub> (c) and CC@TiN (d) electrode showing the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> cycles between 0.01 and 3.0 V at a scan rate of 0.1 mV s<sup>-1</sup>; the 1<sup>st</sup>, 2<sup>nd</sup> and 100<sup>th</sup> charging/discharging voltage curves of CC (e), SnS<sub>2</sub> nanosheets (f), CC@SnS<sub>2</sub> (g) and CC@TiN (h) electrode at a current density of 1 C, 1 C = 645 mA g<sup>-1</sup>.



**Fig. S8** Coulombic efficiency curve of CC@TiO<sub>x</sub>N<sub>y</sub>@SnS<sub>2</sub> electrode at a current density of 1 C.



**Fig. S9** (a) Low magnification and (b) high magnification SEM images of the CC@TiO<sub>x</sub>N<sub>y</sub>@SnS<sub>2</sub> electrode after 100 charging/discharging cycles at a current density of 1 C.