Supporting information

Flexible Hybrid Carbon Nanotube Sponges Embedded with SnS_2 from Tubular Nanosheaths to Nanosheets as Free-Standing Anodes for Lithium-Ion Battery

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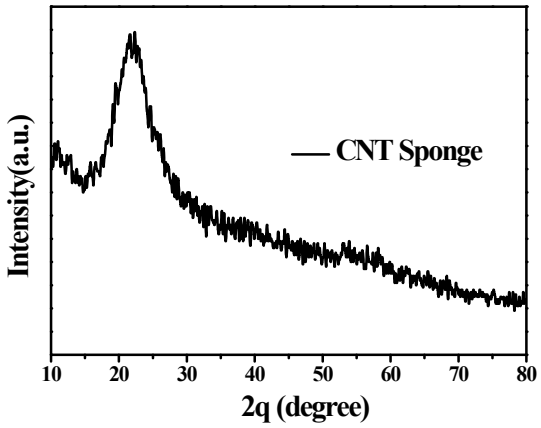

Fig. S1 XRD pattern of the CNT Sponge.

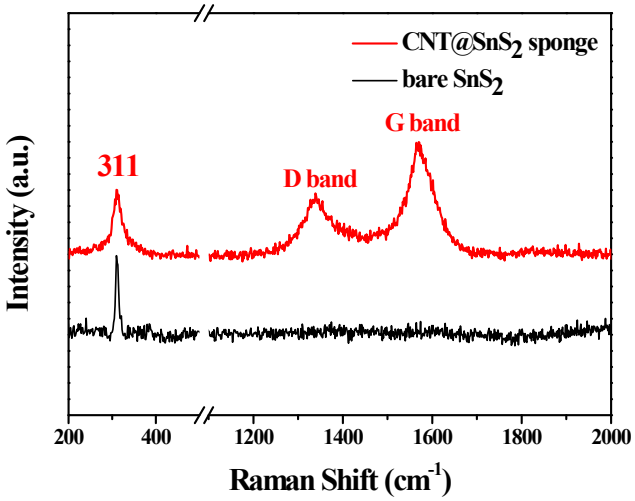

Fig. S2 Raman pattern of the CNT@SnS_2 sponge and pure SnS_2.

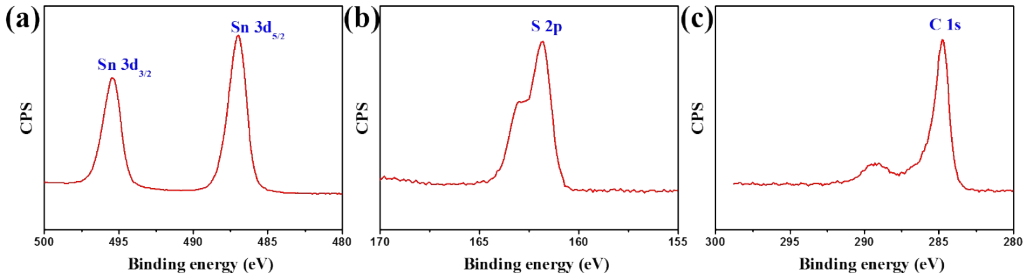

Fig. S3 High-resolution XPS spectra of the CNT@SnS_2 sponge: (a) Sn 3d; (b) S 2p; (c) C 1s.

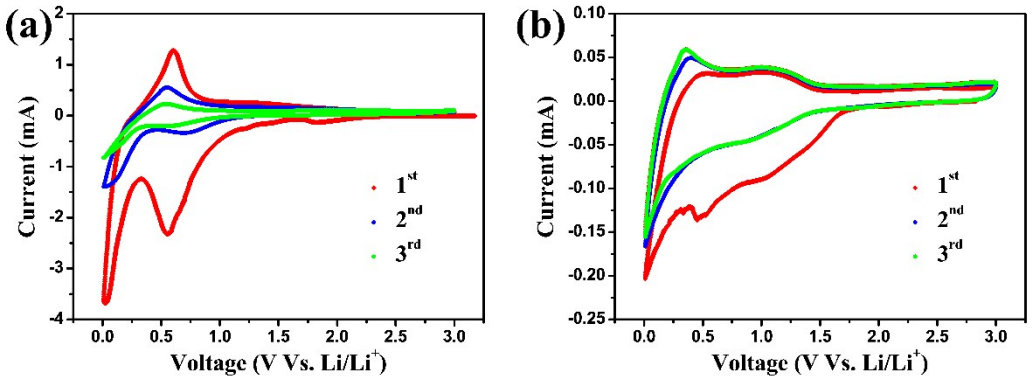

Fig. S4 Cyclic voltammograms of bare SnS_2 (a) and CNT sponge (b) electrodes.

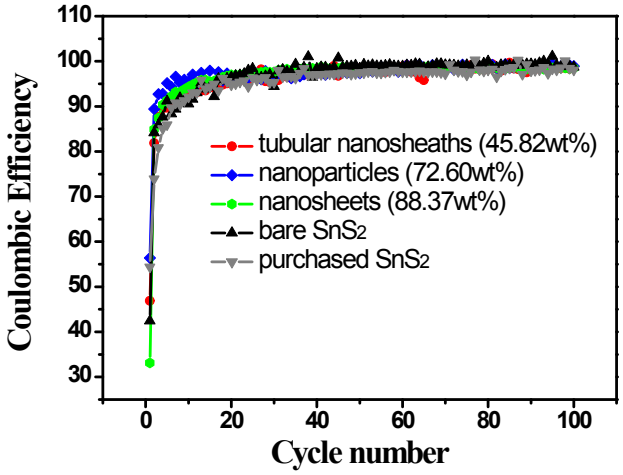

Fig. S5 Coulombic efficiencies of various SnS_2 electrodes.

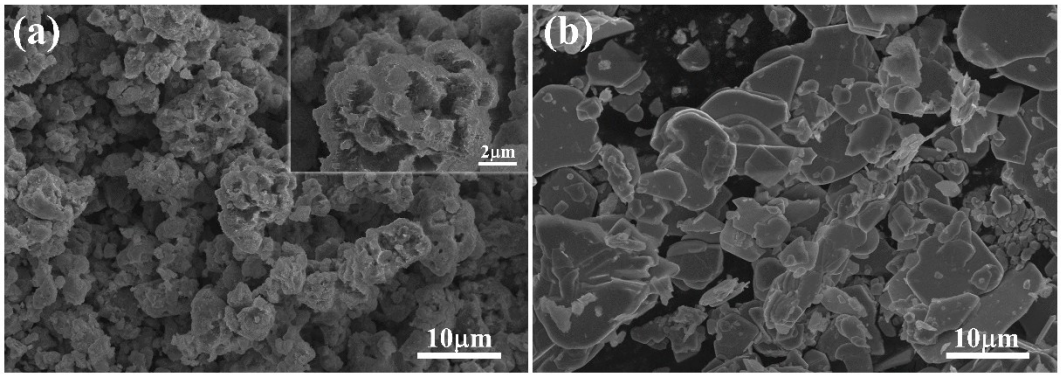

Fig. S6 SEM images of bare SnS_2 (a) and purchased SnS_2 (b) powder. It can be seen that bare SnS_2 prepared by our method agglomerated much greater than purchased SnS_2 dispersed as relatively uniform plate crystals.

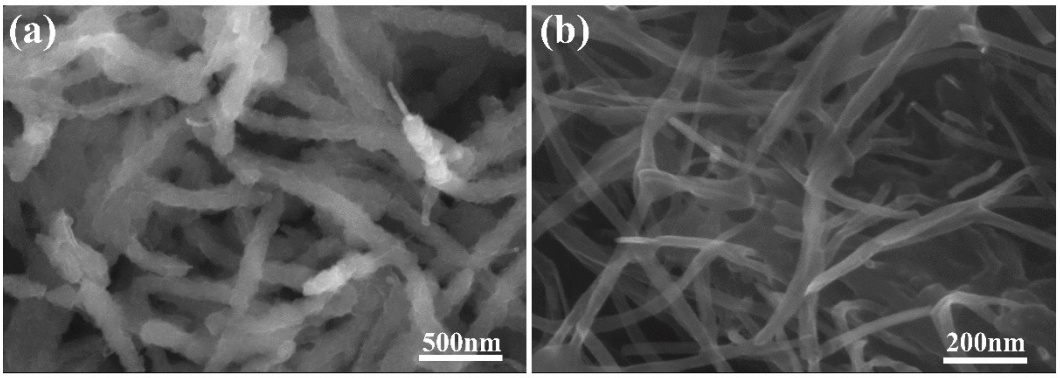

Fig. S7 SEM images of CNT@SnS_2-88.37wt% (a) and CNT@SnS_2-45.82wt% (b) sponge electrodes under absolutely charged state.

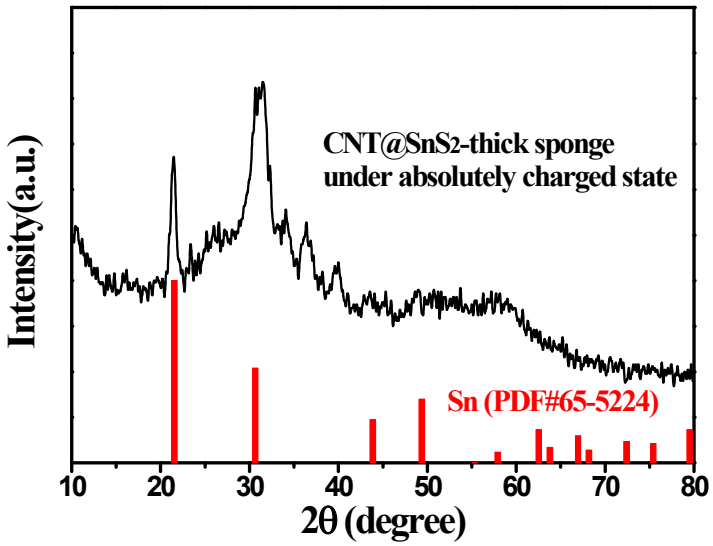

Fig. S8 XRD pattern of the CNT@SnS_2-88.37wt% sponge after the electrode were taken to the absolutely charged state.

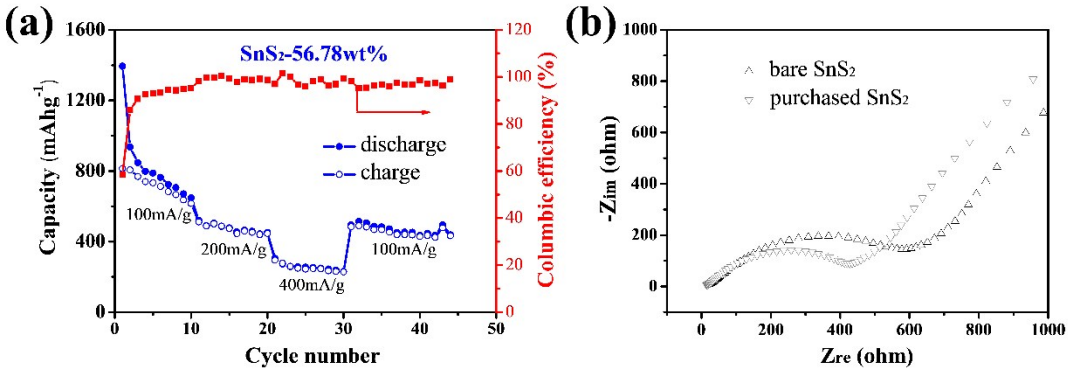

Fig. S9 (a) Rate capability and Coulombic efficiency of SnS_2-56.78wt% embedded in CNT sponge under shifty charge/discharge rates between 100 and 400 mAg^{-1}. (b) Nyquist plots of bare and purchased SnS_2 electrodes.

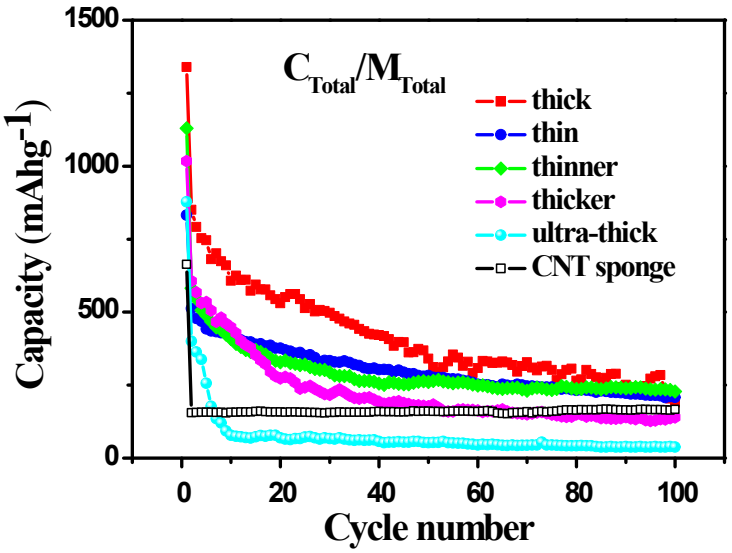

Fig. S10 Cycling performance of the sponges with various ratios of SnS_2 as free-standing electrodes

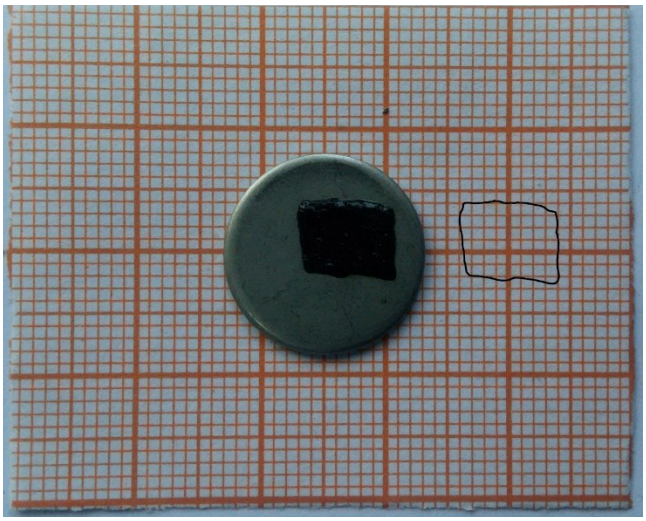

Fig. S11 Photo to show the area calculation of the electrode and the area is 0.46 cm^2.