Lithiation-assisted exfoliation and reduction of SnS_2 to SnS decorated on lithium-integrated graphene for efficient energy storage

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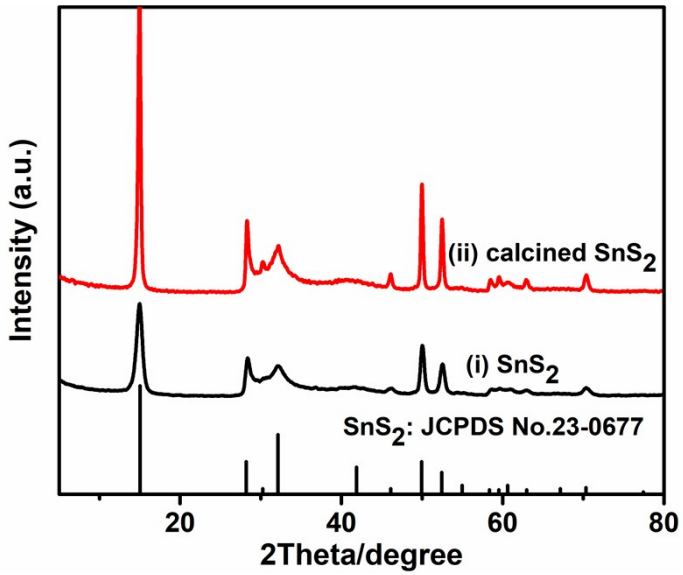

Fig. S1. XRD patterns of the hydrothermally synthesized SnS_2 and its calcination product. The results reveal that the calcination product is still hexagonal SnS_2 without any reduction.

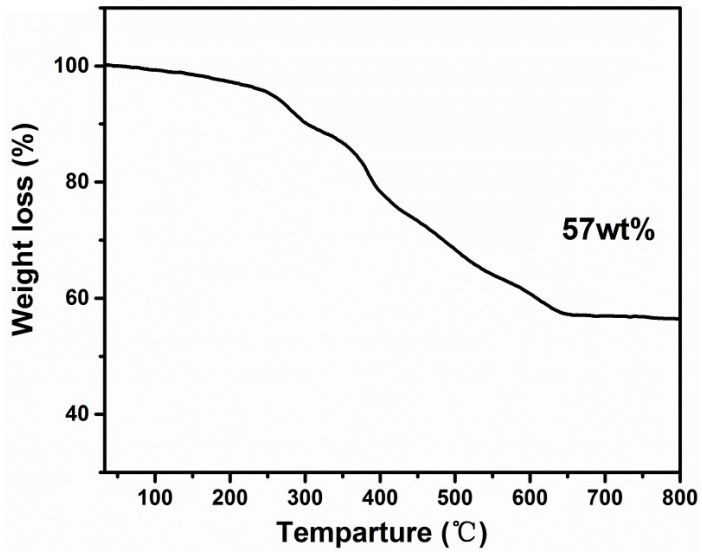

Fig. S2. Thermogravimetric analysis of the SnS/GNS nanocomposite.

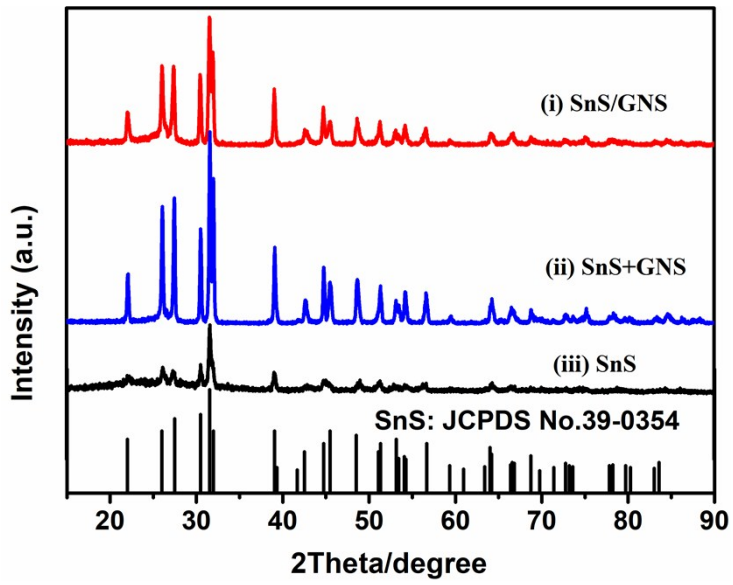

Fig. S3. XRD patterns of the SnS, SnS+GNS and SnS/GNS nanocomposites.

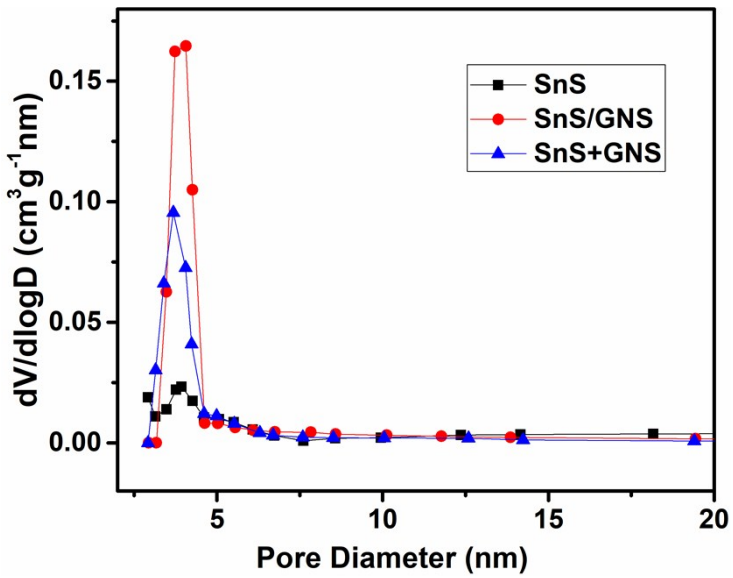

Fig. S4. The BJH desorption pore size distributions of SnS, SnS+GNS and SnS/GNS nanocomposites.

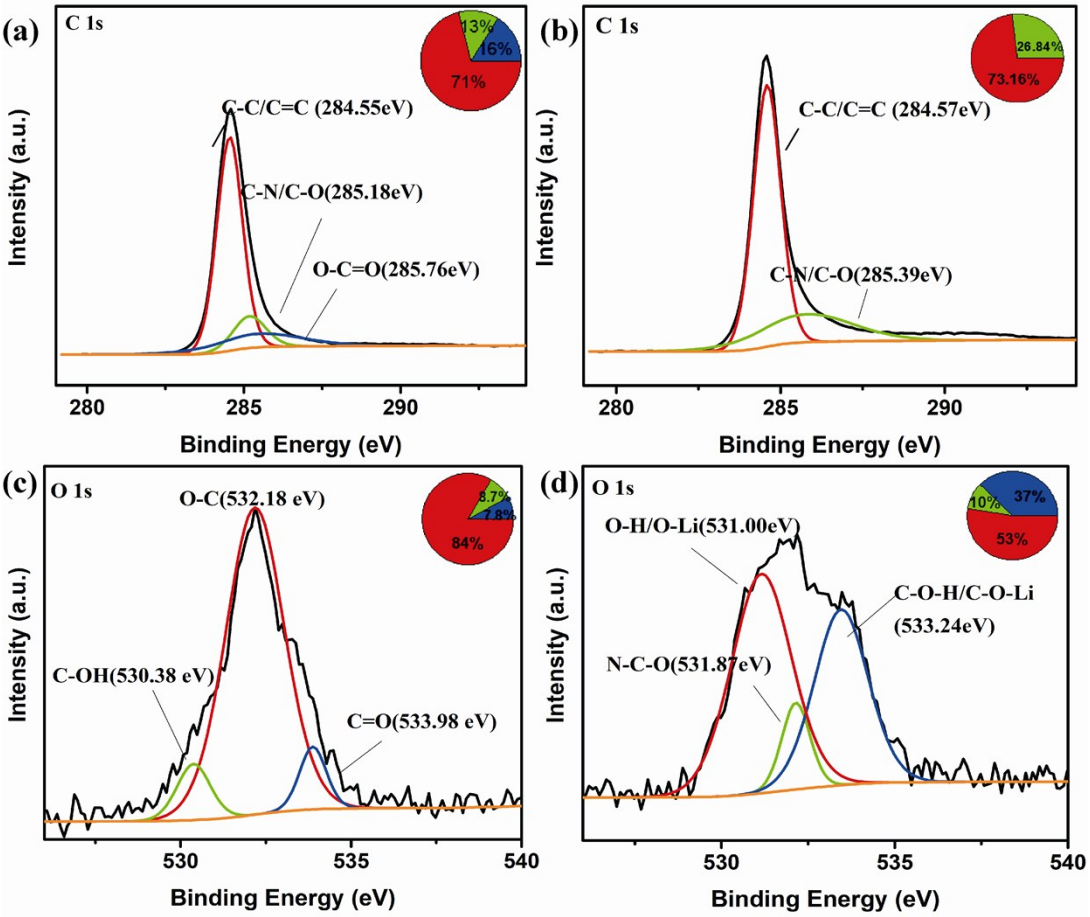

Fig. S5. High-resolution XPS spectra for the C 1s and O 1s of (a,c) SnS+GNS and (b,d) SnS/GNS nanocomposites.

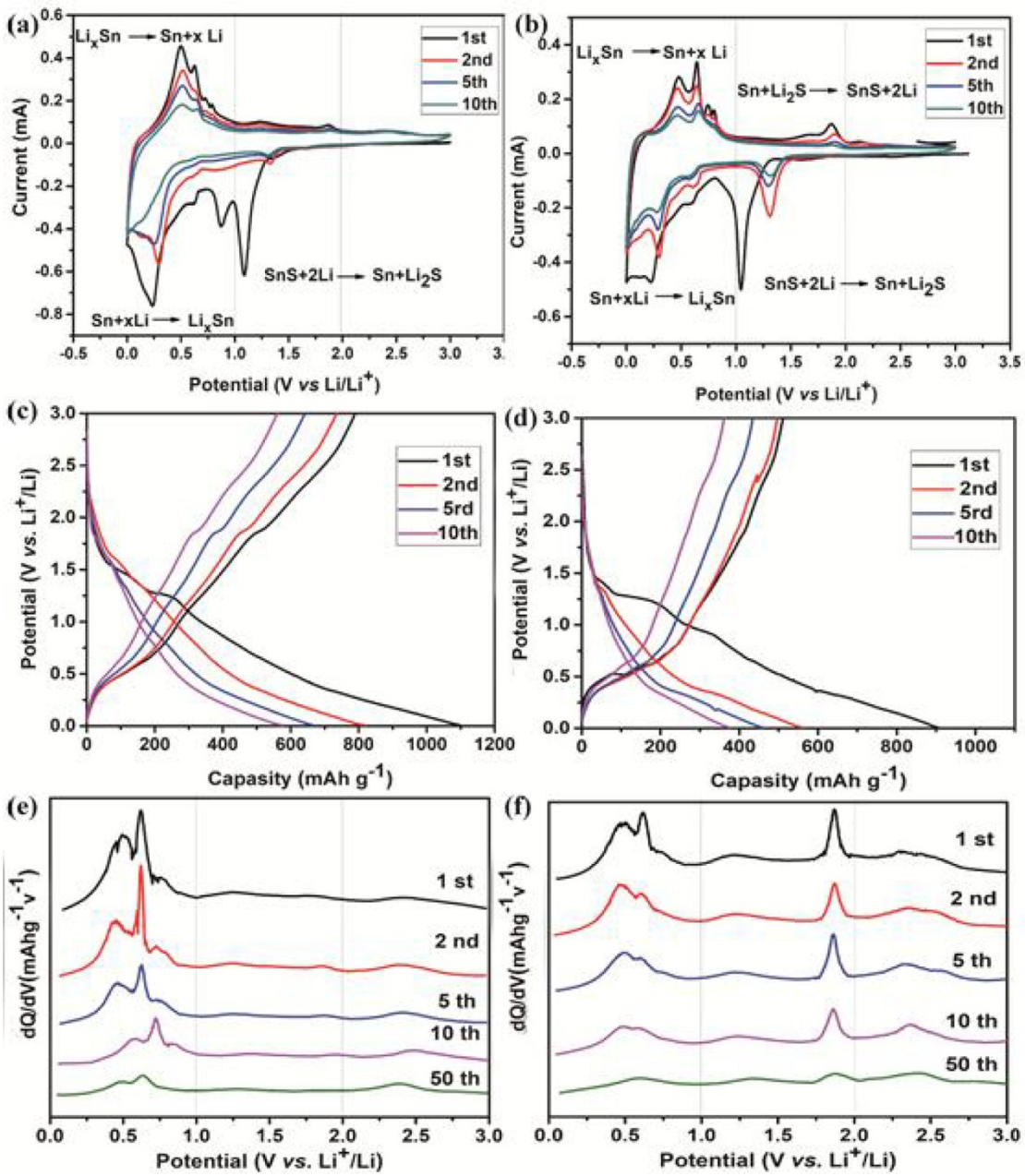

Fig. S6. First ten cyclic voltammograms between 0.01 V and 3 V of (a) pure phase stripped SnS and (b) SnS+GNS; Galvanostatic voltage profiles of (c) pure SnS and (d) SnS+GNS; Differential charge-capacity plots at the 1st, 2nd, 5th, 10th and 50th cycle for (e) pure SnS and (f) SnS+GNS.

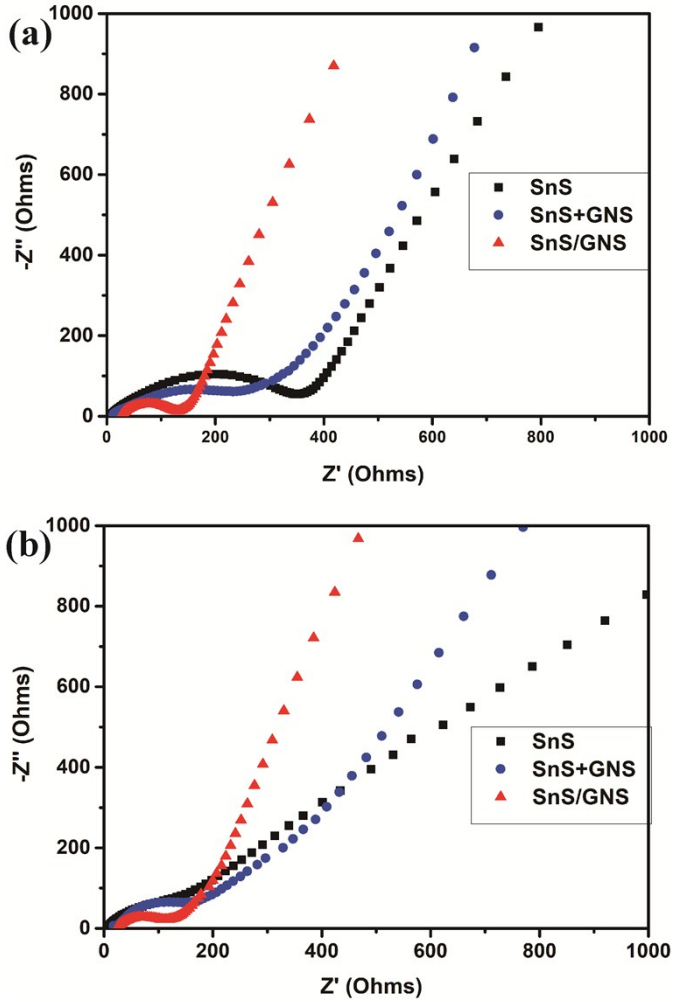

Fig. S7. Nyquist plots of SnS, SnS+GNS and SnS/GNS fresh electrodes (a) and at the 10th cycle with amplitude 5.0 mV over the frequency range 100 kHz to 0.01 Hz.