Electronic supplementary information (ESI)

Green ionothermal synthesis of hierarchical nanostructures of SnS_2 and their Li-ion storage properties.

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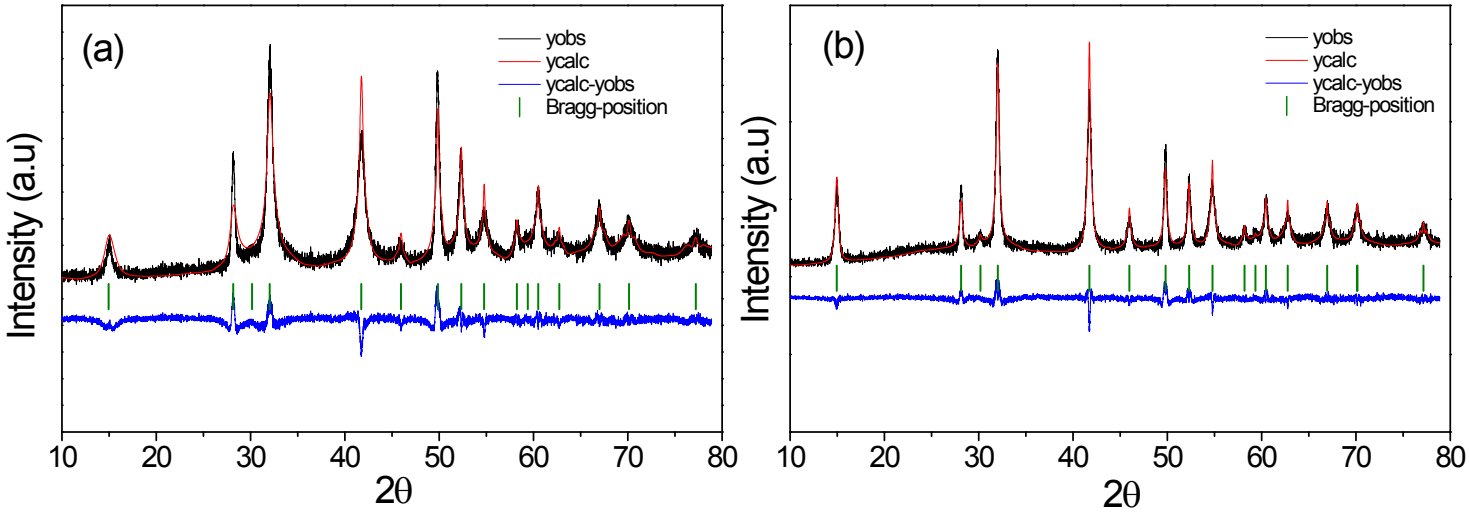


Figure S1. Rietveld refinement of powder XRD profiles of SnS_2 flowers synthesized at (a) 180 ^{0}C (**I**) and (b) 240 ^{0}C (**II**).

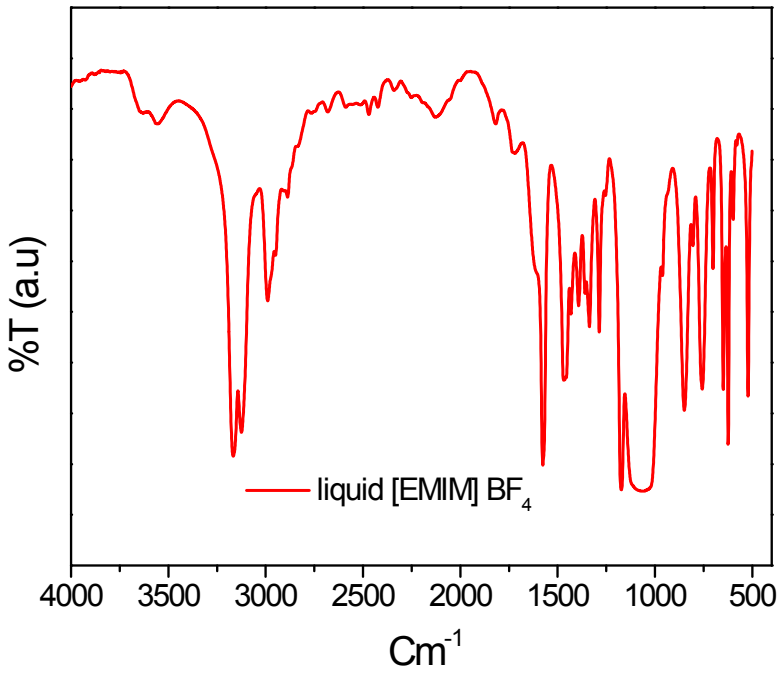


Figure S2. FTIR spectrum of neat [EMIM]BF_4 ionic liquid

Figure S3. In-plane HRTEM images of SnS_2 nanosheets synthesized at an intermediate reaction temperature of 210^0C. Clearly the images show that the individual nanosheets are tending to be single crystalline with disappearing voids.

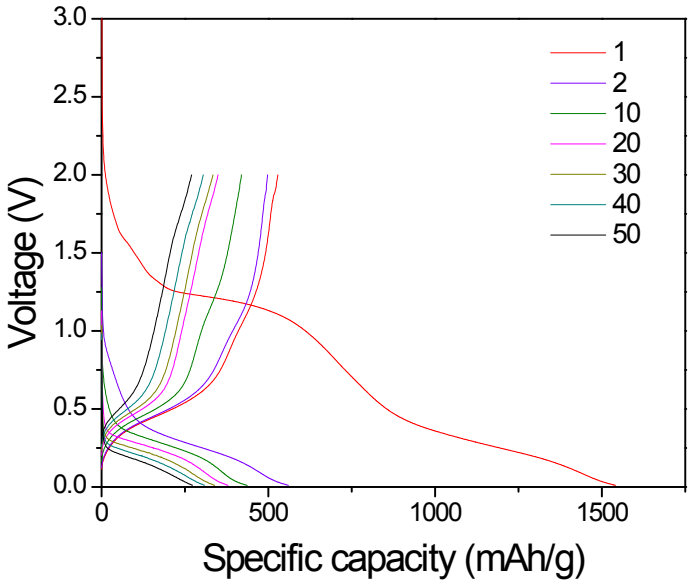


Figure S4. Galvanostatic charge-discharge profiles of SnS_2 flowers synthesized at 180 ^{0}C (I)

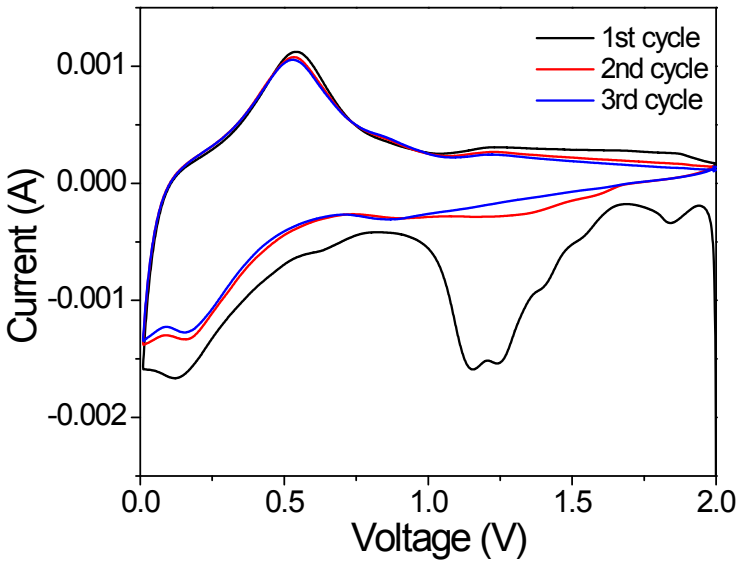


Figure S5. Cyclic voltammogram of SnS_2 flowers synthesized at 180 ^{0}C (I)

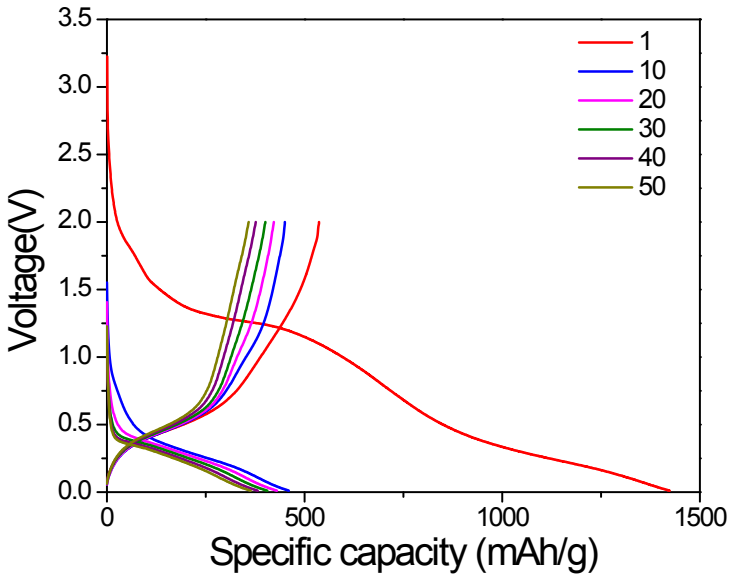
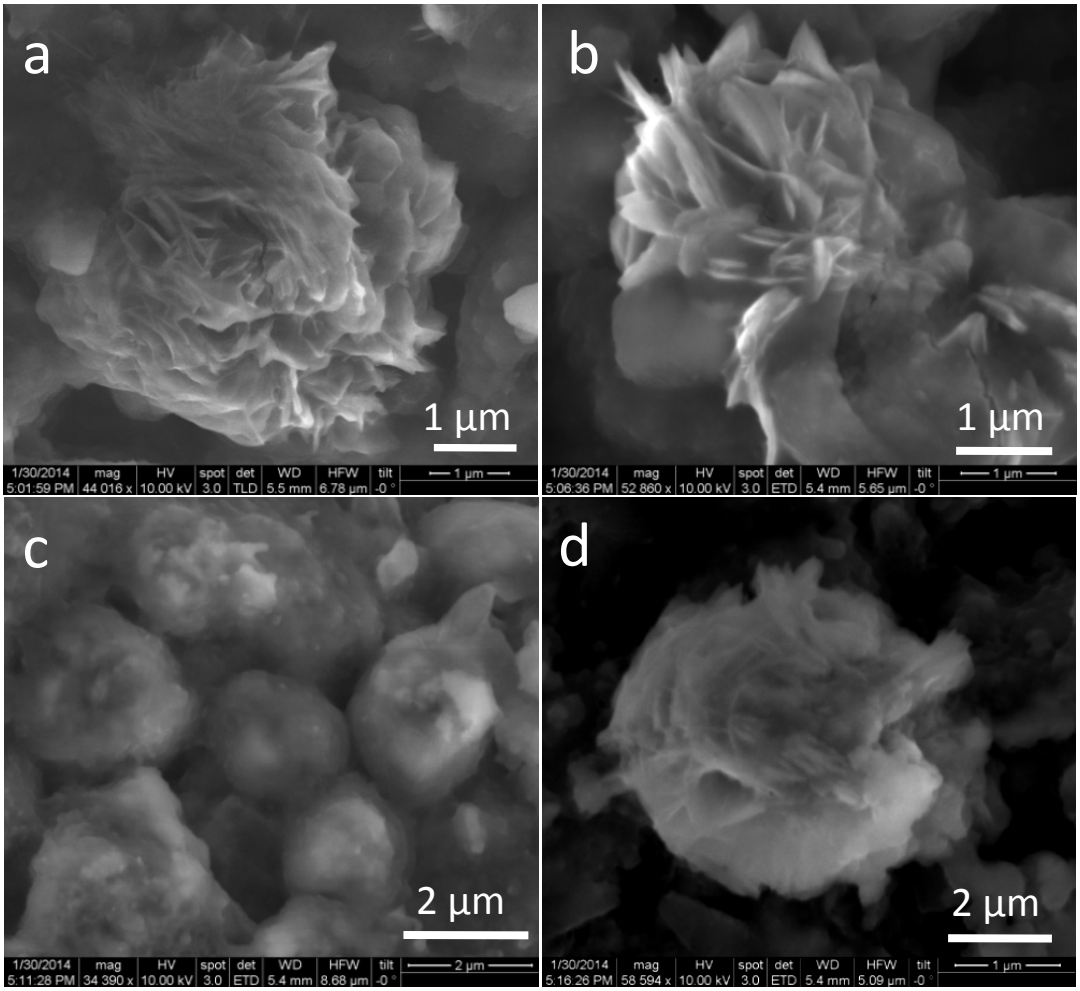


Figure S6. Galvanostatic charge-discharge profiles of SnS_2 flowers synthesized at 240 ^{0}C (II)


a
1 µm
1/30/2014 | mag | HV | spot | det | WD | HFW | tilt
5:01:59 PM | 44 016 x | 10.00 kV | 3.0 | TLD | 5.5 mm | 6.78 µm | -0 °
1 µm
b
1 µm
1/30/2014 | mag | HV | spot | det | WD | HFW | tilt
5:06:36 PM | 52 860 x | 10.00 kV | 3.0 | ETD | 5.4 mm | 5.65 µm | -0 °
1 µm
c
2 µm
1/30/2014 | mag | HV | spot | det | WD | HFW | tilt
5:11:28 PM | 34 390 x | 10.00 kV | 3.0 | ETD | 5.4 mm | 8.68 µm | -0 °
2 µm
d
2 µm
1/30/2014 | mag | HV | spot | det | WD | HFW | tilt
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1 µm

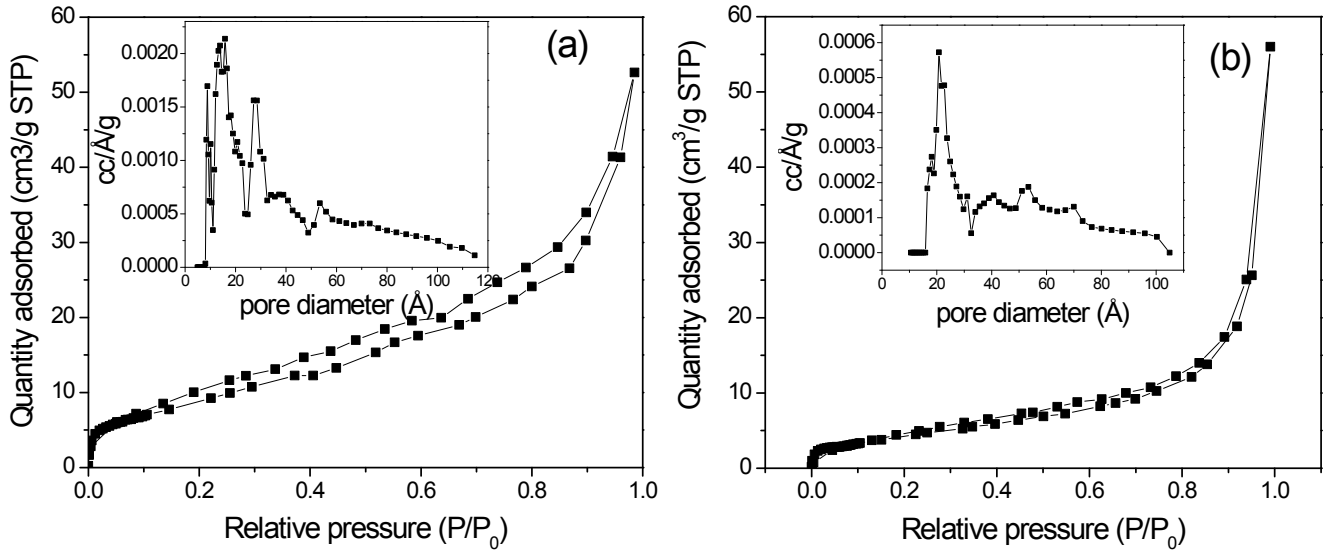

Figure S7. FESEM images of a) sample **I** (180 ^{0}C) and b) sample **II** (240 ^{0}C) electrodes extracted after first cycle of CV; FESEM images of c) sample **I** (180 ^{0}C) and d) sample **II** (240 ^{0}C) electrodes extracted after twenty charge-discharge cycles.

Figure S8. N_2 gas adsorption isotherms and the corresponding pore size distributions (given as insets) of SnS_2 flowers synthesized at a) 180^{0}C (I) and b) 240^{0}C (II).