Supporting Information

Template Synthesis of Graphitic Hollow Carbon Nanoballs as Supports for SnO_x Nanoparticles towards Enhanced Lithium Storage Performance

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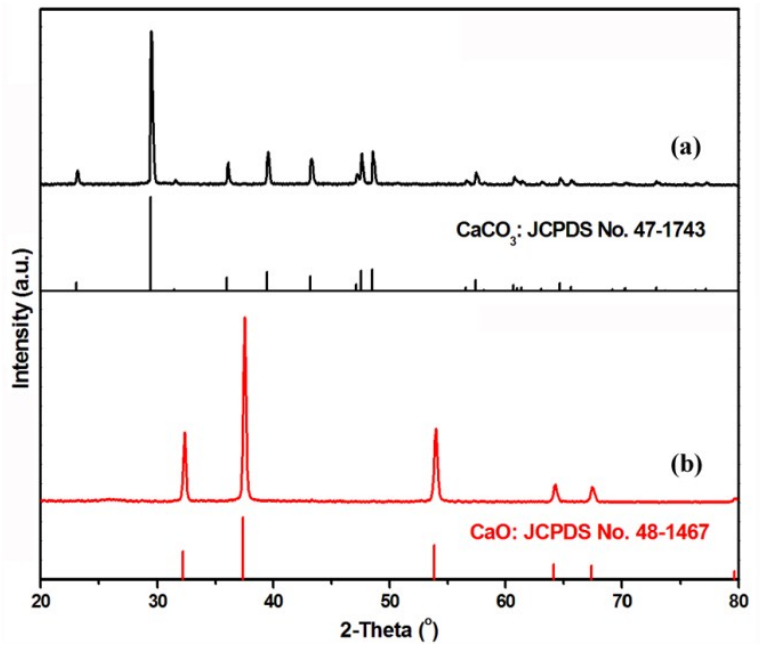

Figure S1. XRD patterns of (a) the $CaCO_3$ template and (b) the C@CaO counterpart after CVD reaction.

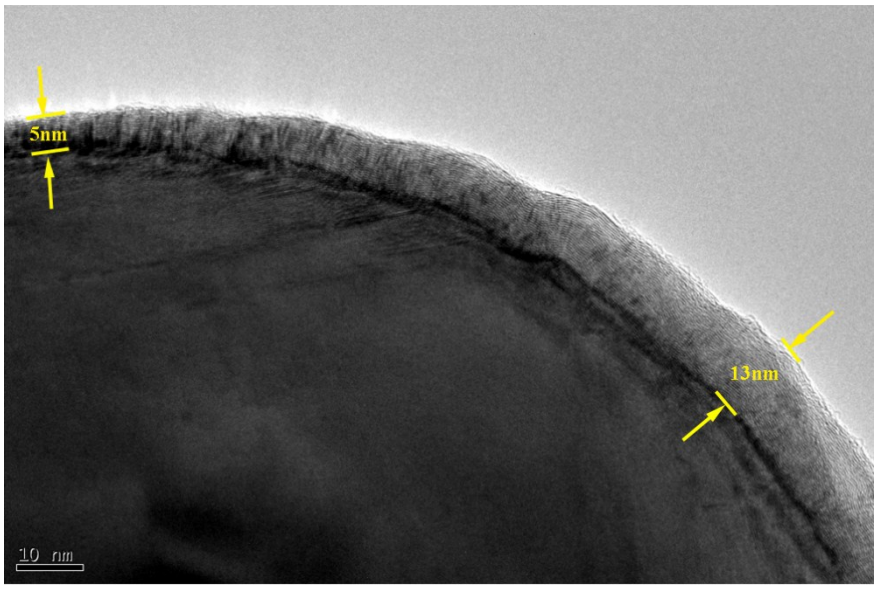

Figure S2. TEM image taken from the interfacial region between CaO core and carbon shell in the C@CaO product.

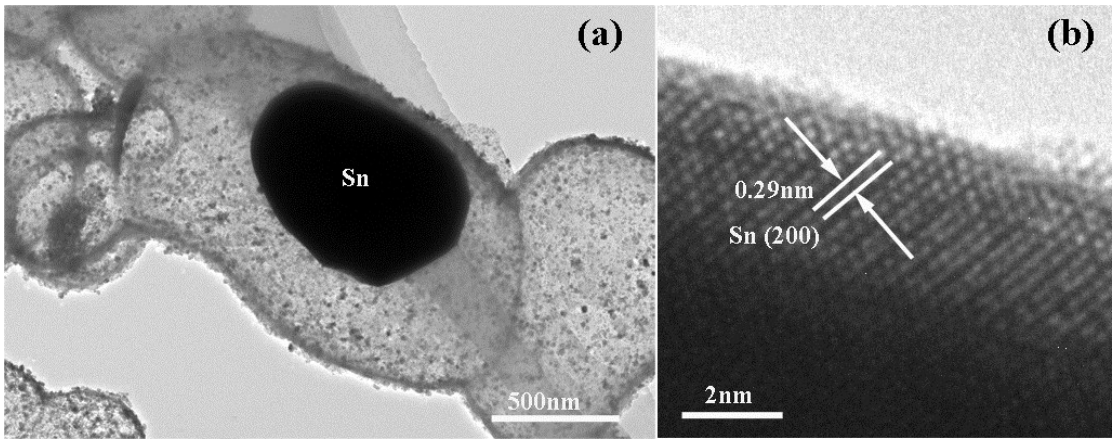

Figure S3. (a) TEM image of the SnO_x@HCNBs showing the presence of large Sn metal particle, and (b) HRTEM image taken from the edge region of a single Sn particle, whose lattice fringes with d spacing of 0.29 nm can be indexed to the (200) plane of metallic Sn phase (JCPDS No. 04-0673).

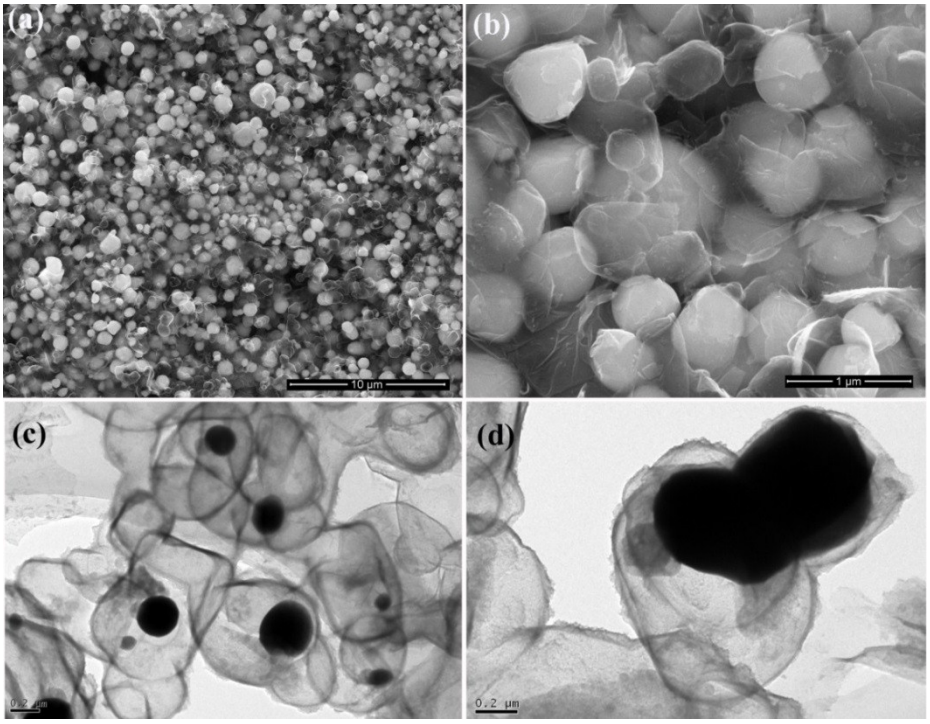

Figure S4. (a, b) SEM and (c, d) TEM image of the Sn@HCNBs obtained by annealing SnO_2@HCNBs at 900 °C under Ar atmosphere.

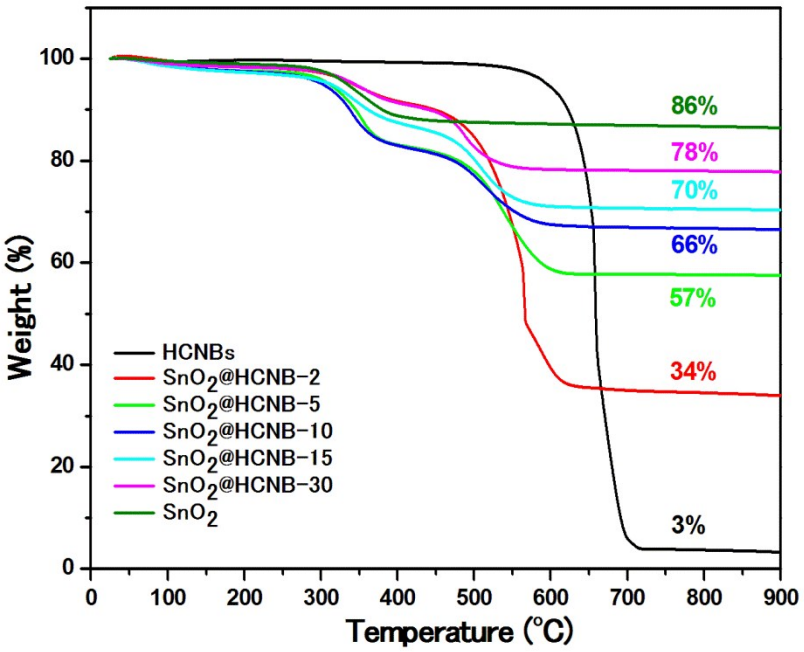

Figure S5. TGA curves of the HCNBs, SnO_2@HCNB-x (Note: To facilitate the description, SnO_2@HCNB-x was used somewhere, in which x means the weight ratio of tin (II) 2-ethylhexanoate to HCNBs), and the SnO_2 obtained by annealing tin (II) 2-ethylhexanoate without presence of HCNBs under the same condition.

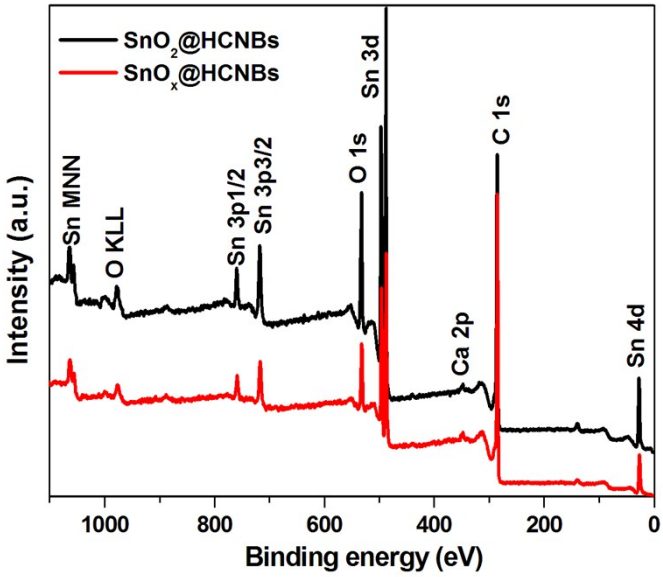

Figure S6. Survey XPS spectra of SnO_2@HCNBs and SnO_x@HCNBs.

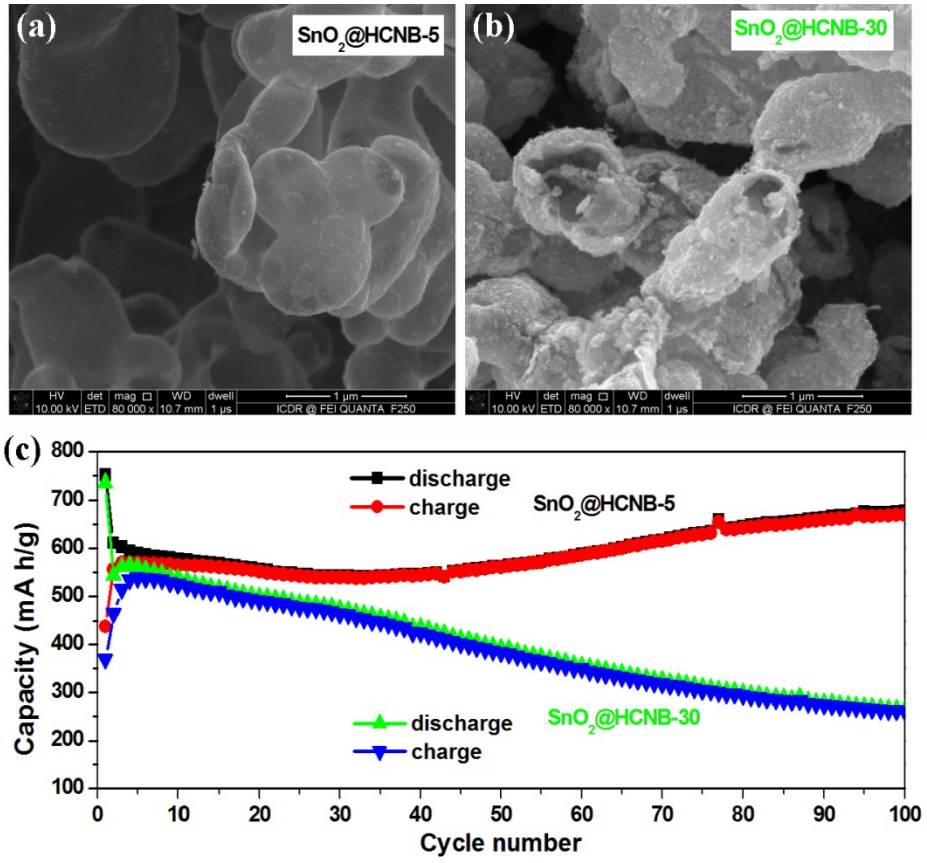

Figure S7. (a, b) SEM images of (a) SnO_2@HCNB-5 and (b) SnO_2@HCNB-30, and (c) their cycle performance at 200 mA/g. These result indicates that too less SnO_2 results in a low specific capacity, while too much SnO_2 in the composites suffers from bad cycle stability and lower specific capacity.

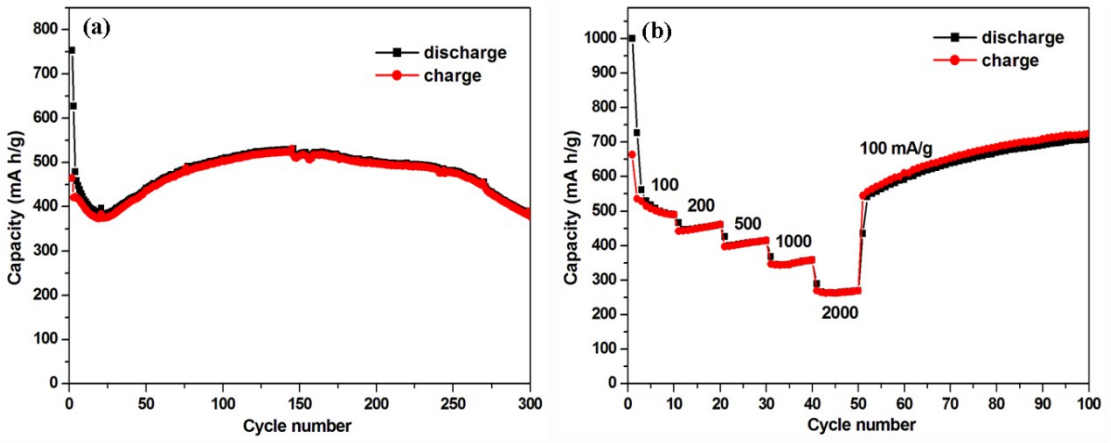

Figure S8. (a) cycle performance at 200 mA/g, and (b) rate performance of Sn@HCNBs obtained by annealing SnO_2@HCNBs at 900 ^oC under Ar atmosphere (corresponding to the images in Figure S4).