## **Supplementary Information**

for

## SnO<sub>2</sub> Nanoparticles Embedded in 3D Nanoporous/Solid Copper Current Collectors for High-performance Reversible Lithium Storage

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Figure S1. SEM image of cross-section of  $Cu/Cu_{30}Mn_{70}$  films.



Figure S2. SEM-EDS mapping of Cu, Sn, and O elements in the NP  $Cu/SnO_2$  composite, showing the  $SnO_2$  nanoparticles are uniformly deposited on the Cu ligaments and nanopore channels.



Figure S3. Typical XPS survey spectrum for S/NP Cu/SnO<sub>2</sub> film.



Figure S4. XRD pattern of SnO<sub>2</sub> powder and standard XRD pattern of SnO<sub>2</sub>.



Figure S5. Cross-section SEM image of AB/SnO<sub>2</sub> electrode.



Figure S6. A real capacity retention comparison between S/NP Cu/SnO<sub>2</sub>, AB/SnO<sub>2</sub>

electrodes and S/NP Cu skeleton.



Figure S7. Charge/discharge profiles of the  $AB/SnO_2$  electrode at various current densities.



**Figure S8.** Local densities of states for  $SnO_2$  supported by (a) Cu and (b) carbon substrates.



Figure S9. Cross-section SEM image of S/NP Cu/SnO<sub>2</sub> electrode after 100 cycles.