Fig. S1 N\textsubscript{2} adsorption-desorption isotherm for the double-shelled SnO\textsubscript{2} hollow sphere.

The synthesized SnO\textsubscript{2} sample exhibits type-IV isotherm plot with a sharp capillary condensation step, indicative of mesoporous structures. The BET surface area of double-shelled SnO\textsubscript{2} hollow sphere is 42.8 m\textsuperscript{2} g\textsuperscript{-1}.

Fig. S2 The cycling performance of the various SnO\textsubscript{2} spheres.

When tested as the anode materials for LIBs, these complex double-shelled SnO\textsubscript{2} hollow spheres exhibit superior cyclic stability.
Fig. S3 XRD pattern of the double-shelled SnO$_2$ hollow sphere.

The crystallinity of the double-shelled SnO$_2$ hollow spheres is independently confirmed by XRD. All the peaks in the XRD pattern could be indexed to crystalline SnO$_2$ by comparison with JCPDS card No. 41-1445, indicating good phase purity.