

## Experimental Section

### Material synthesis

In a typical synthesis,  $\text{In}(\text{NO}_3)_3$  (0.3 g, J&K, 99.99%), Polyvinyl Pyrrolidone (0.5 g, PVP,  $M_w=1300000 \text{ g mol}^{-1}$ , Aladdin) were dissolved in N,N-dimethylformamide (2 mL, DMF, Aladdin) and ethanol (2 mL) mix solution, then dispersed by stirring for 6 h. The resultant precursor solution was poured into a glass syringe connected to a metal needle of 0.8 mm diameter. The flow rate was ca.  $1 \text{ mL h}^{-1}$  and a grounded stainless steel plate was placed 20 cm to collect the nanofibers. A high voltage of 20 kV was applied by a high voltage power supply. The collected electrospunfibers were annealed in an  $\text{Al}_2\text{O}_3$  crucible at  $200 \text{ }^\circ\text{C}$  for 3 h in air, then calcined in a tube furnace at  $600 \text{ }^\circ\text{C}$  for 2 h under Ar (95 vol%)/ $\text{H}_2$  (5 vol%) atmosphere.

### Material characterization

The morphology and structural characteristics were observed using X-ray diffraction (XRD, Rigaku D/max 2500 diffractometer), high-resolution transmission electron microscopy (HRTEM, JEOL 2010) equipped with an electron energy loss spectroscopy (EELS). Desorption isotherm was used to determine the pore size distribution using the Thermal gravimetric analysis (TGA) was performed to quantify the amount of carbon present in the In@C nanofibers.

### Electrochemical characterization

The electrochemical properties of the samples were measured using CR2025-type coin cell with a multichannel-current static system (Arbin Instruments BT 2000, USA). For the preparation of anode of half-cell tests, the active materials (80 wt%), carbon black (10 wt%) and binder (LA133 and CMC) were homogeneously mixed in distilled water and absolute alcohol with constant stirring for 8 h. The well-mixed slurry was then spread onto a copper foil and dried at  $80 \text{ }^\circ\text{C}$  in a vacuum oven for 12 h. A

Celgard 2400 microporous polypropylene membrane was used as a separator. The electrolyte consisted of a solution of 1 M  $\text{LiPF}_6$  in ethylene carbonate–dimethyl carbonate–diethyl carbonate (1:1:1, in wt%). The lithium foil was the counter electrode. These cells were assembled in a glovebox (Super 1220/750, Switzerland) filled with highly pure argon gas ( $\text{O}_2$  and  $\text{H}_2\text{O}$  levels < 1 ppm). The cells were aged for 12 h before the measurements to ensure percolation of the electrolyte to the electrodes. For the charge-discharge test of In@C samples, the mass loading of active materials was  $\sim 2 \text{ mg cm}^{-1}$ . Electrochemical impedance spectroscopy (EIS) was conducted on a CHI660C electrochemical workstation. We test the EIS of cell at the discharge potentials, and the potentials is about 2.2 V.

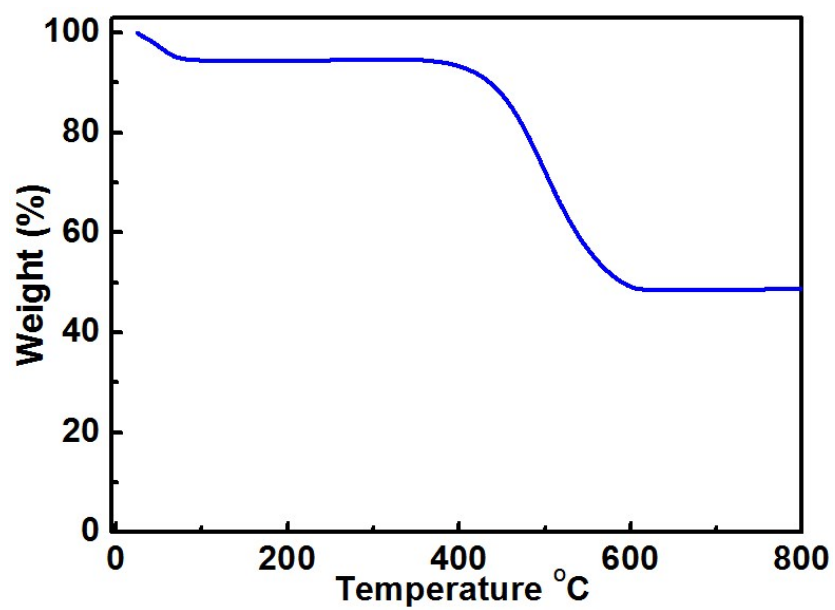


Figure S1. TGA curve of In@C materials.