Electronic Supplementary Material (ESI) for Nanoscale.

Supporting information

Growth of Rutile TiO_2 on Convex Surface of Nanocylinder: From Nanoneedles to Nanorods and Their Electrochemical Properties

Junhua Kong,[a] Yuefan Wei,[b] Chenyang Zhao,[c] Meng Yew Toh,[c] Wu Aik Yee,[a] Dan Zhou,[a] Si Lei Phua,[c] Yuliang Dong,[c] and Xuehong Lu[c,*]

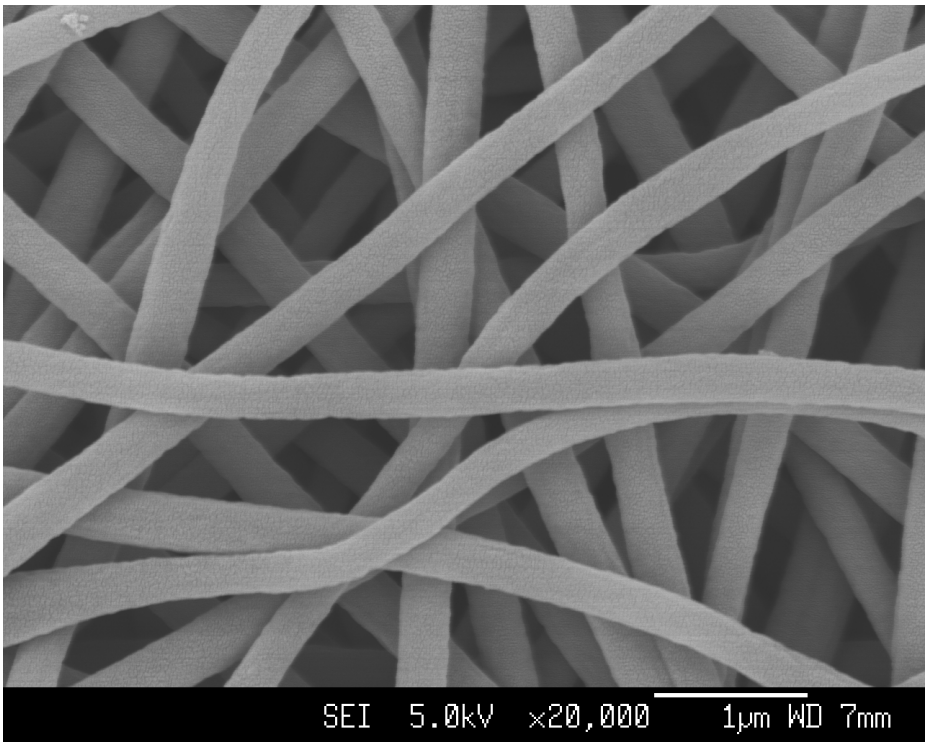

Fig. S1. FESEM image of carbonized electrospinning-derived carbon nanofibers, showing the nanofibrous morphology with uniform diameter and long length as well as the rough surface.

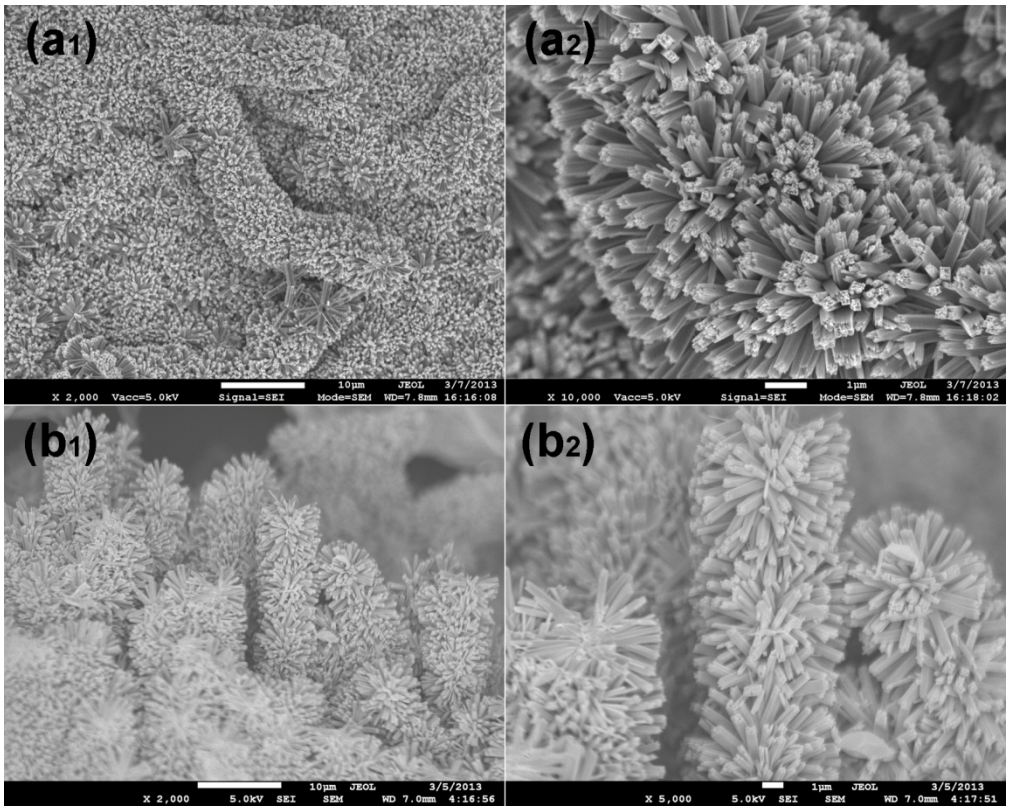

Fig. S2. The FESEM images of TiO_2 nanostructures grown on carbon nanofibers using (a) titanium (IV) isopropoxide and (b) titanium (IV) butoxide as precursors, showing the morphology and dimension of TiO_2 which is of separated nanorods with diameter of tens of nanometers.

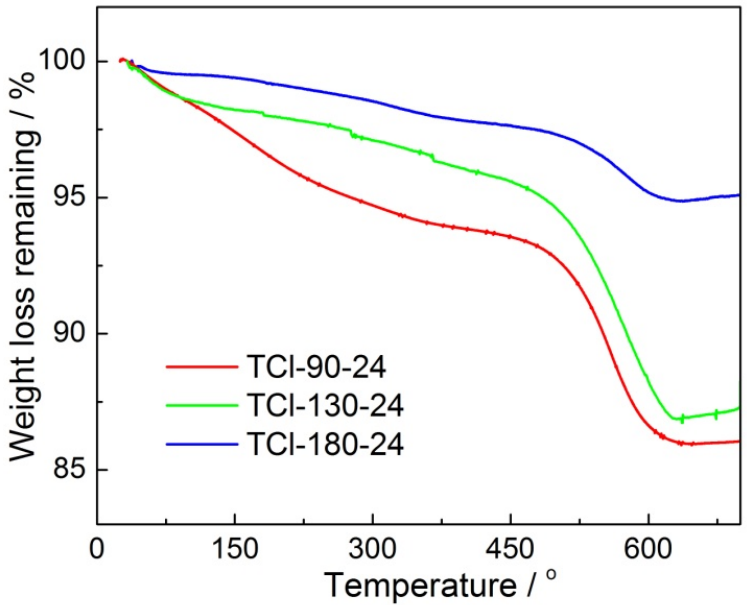

Fig. S3. TGA curves of the samples from 24 hrs' hydrothermal growth at 90 °C (TiO_2-90-24), 130 °C (TiO_2-130-24) and 180 °C (TiO_2-180-24), showing that the content of TiO_2 is higher than 85 wt% in all samples.

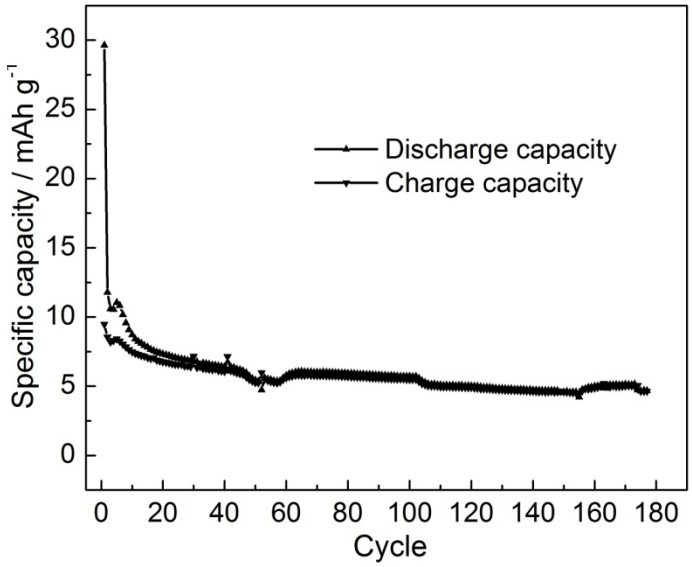

Fig. S4. The cycling capacity of pure carbon nanofibers (CNFs) at current rate of 50 mA g^{-1} and voltage range of 1.0-2.8 V. It is shown that the capacity of CNFs is as low as about 5 mAh g^{-1}, indicating the electrochemical inactivity of CNFs within the voltage range of 1.0-2.8 V.

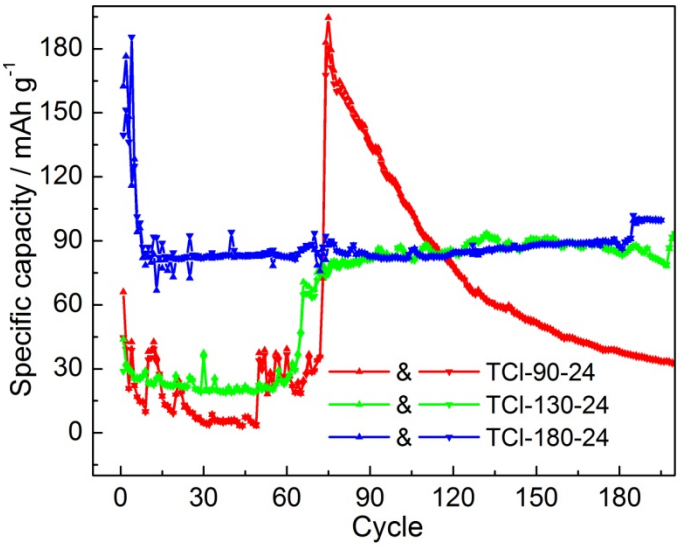

Fig. S5. The cycling capacity of the samples from 24 hrs' hydrothermal growth at 90 °C (TiO_2-90-24), 130 °C (TiO_2-130-24) and 180 °C (TiO_2-180-24). The capacity shows severe instability along with the cycles.