

Supporting Information

Coaxial TiO₂-Carbon Nanotube Sponges as Compressible Anodes for Lithium-Ion Batteries

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Supporting Information

Figure S1

Figure S2

Figure S3

Figure S4

Figure S5

Figure S6

Figure S7

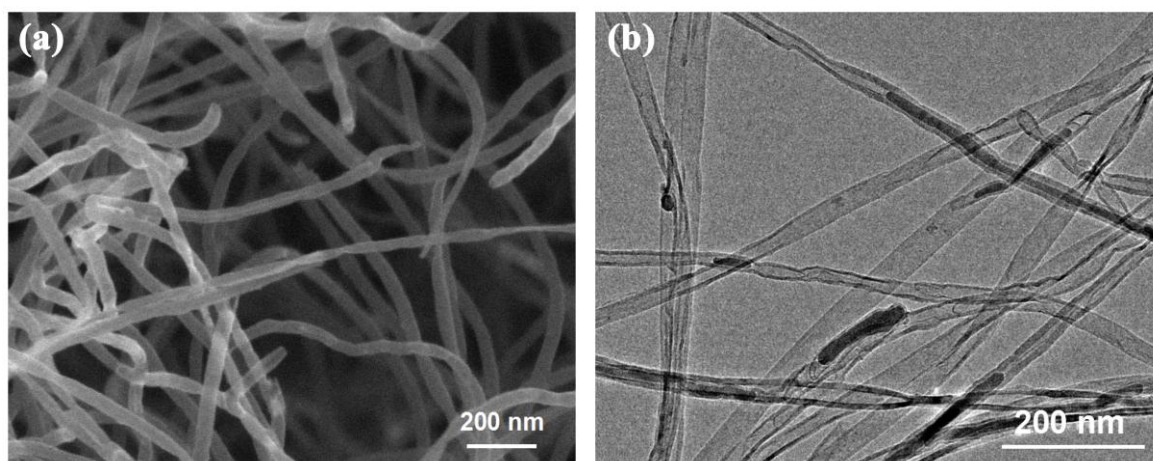


Fig. S1 (a) SEM image of CNT sponge. (b) TEM image of CNT sponge.

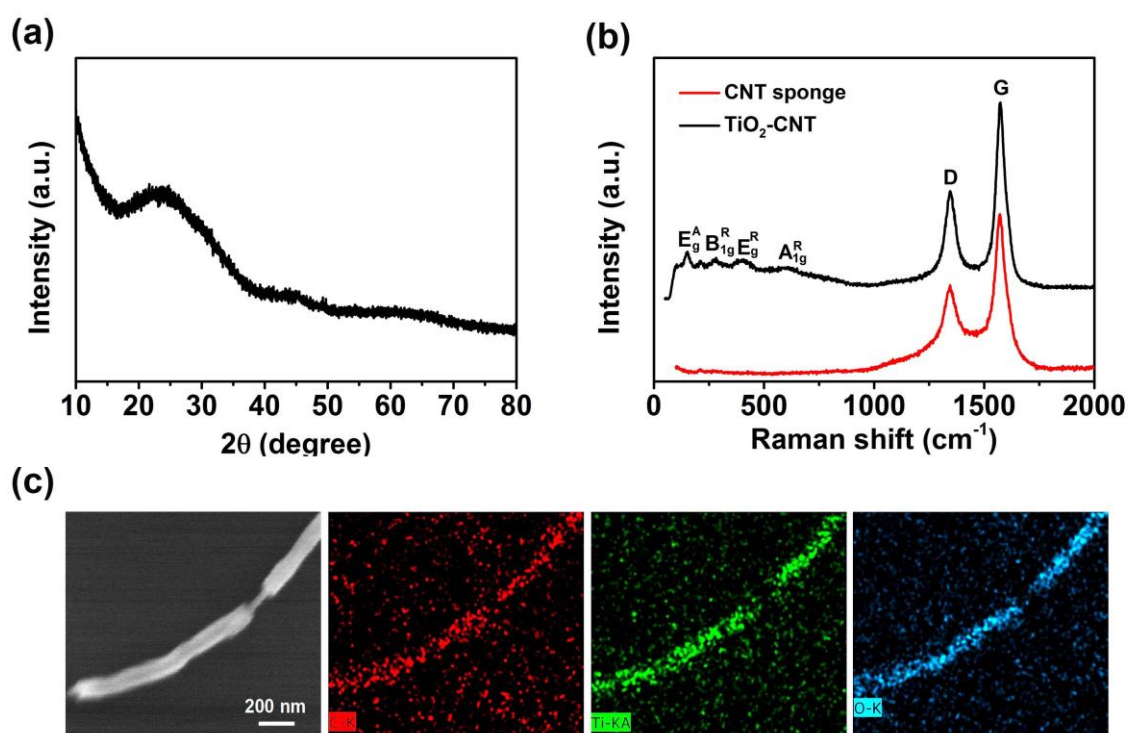


Fig. S2 (a) XRD pattern of pure CNT sponges. (b) Raman spectra of anatase TiO_2 -CNT sponges. (c) Energy-dispersive X-ray spectrometer (EDX) elemental mapping analysis of a TiO_2 -CNT coaxial structure (left SEM image). The red pattern represents the carbon element from internal CNT, while the green and blue patterns represent the titanium and oxygen element from external TiO_2 layer, respectively. The dots in the background come from dispersed solution after sonication dropped on the substrate.

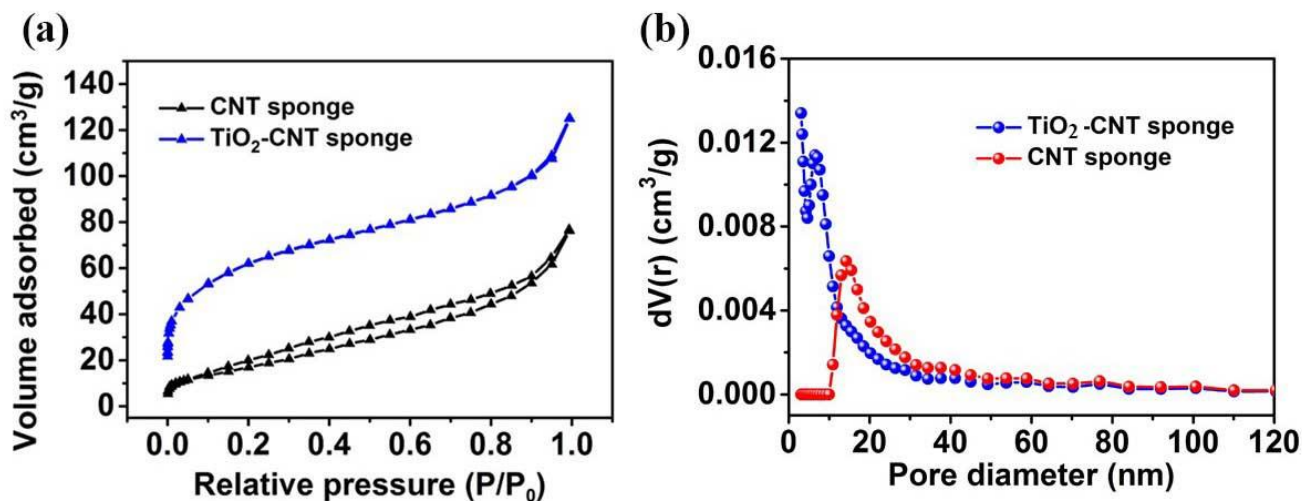


Fig. S3 (a) Nitrogen sorption isotherms for CNT sponges and TiO₂-CNT sponges. (b) The pore size distributions for respective samples.

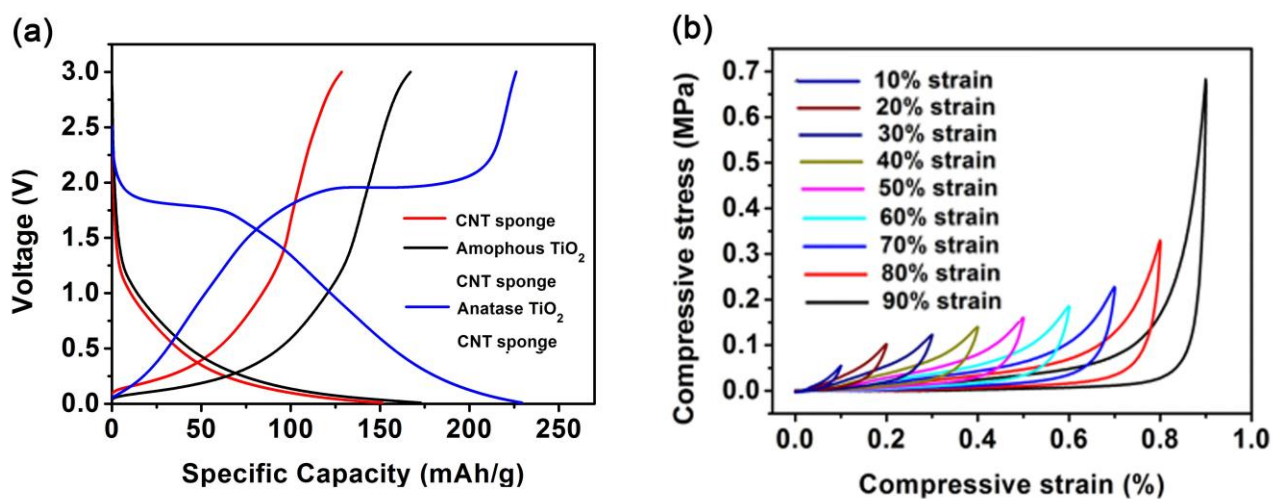


Fig. S4 (a) Charge/discharge voltage profiles of the CNT sponge, amorphous TiO₂-CNT sponge and anatase TiO₂-CNT sponge. (b) Compressive σ - ϵ curves of anatase TiO₂-CNT sponges at 10 %-90 % strain.

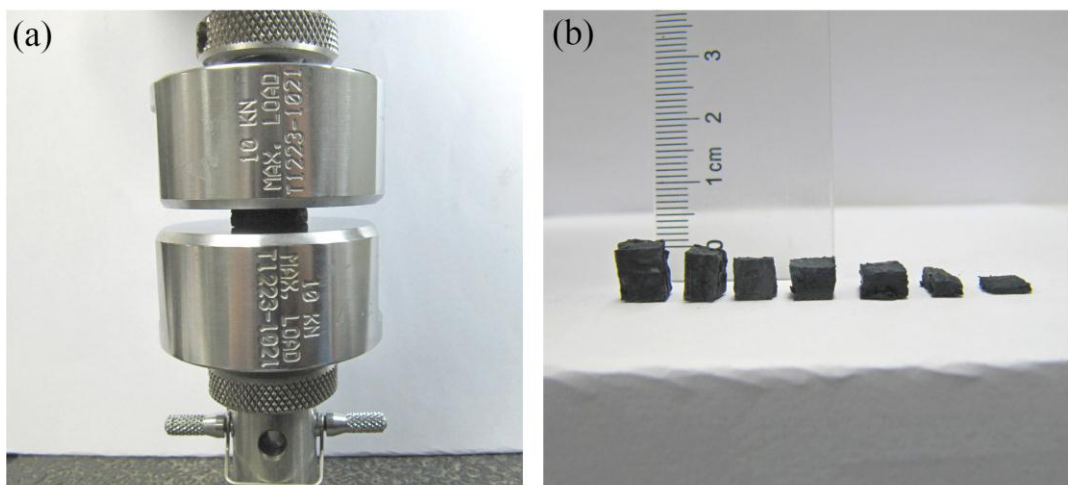


Fig. S5 Photos of (a) compressing a composite sponge and (b) anatase TiO_2 -CNT sponges with different initial thicknesses (h_i).

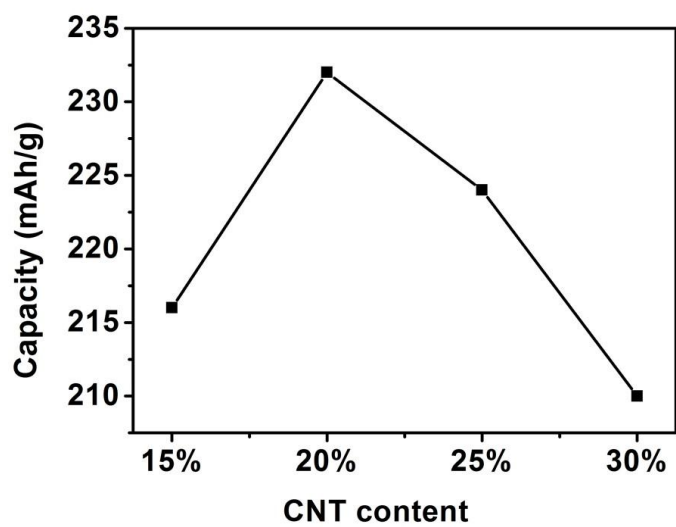


Fig. S6 Specific capacities of anatase TiO_2 -CNT sponge anodes with different CNT contents.

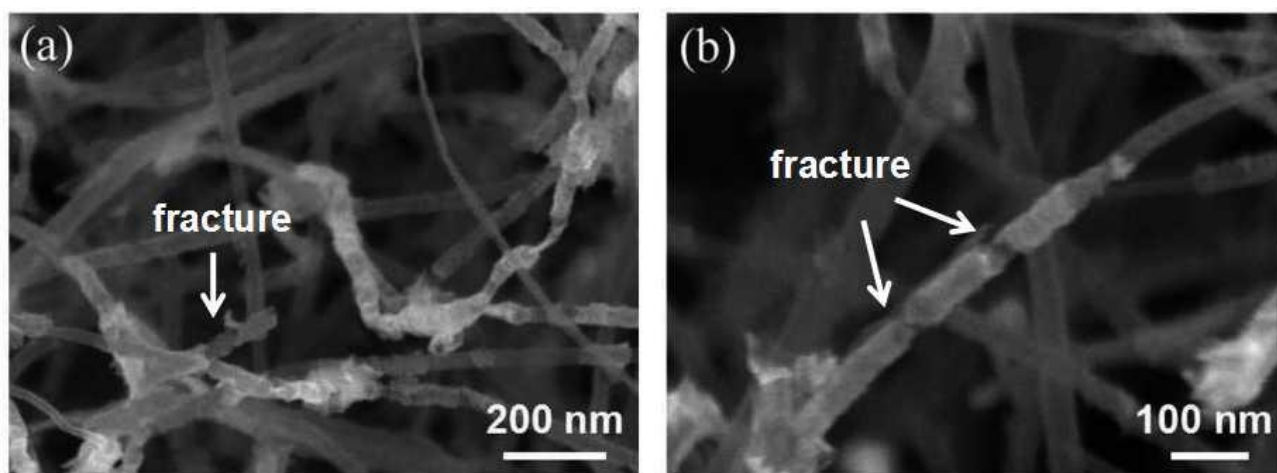


Fig. S7 (a) Low- and (b) High-magnification SEM images of anatase TiO_2 -CNT sponges after 1000 cycles compression. The TiO_2 layer coating on CNTs was partially broken (white arrows).