Electronic Supporting Information

A nanofibrous silver-nanoparticle/titania/carbon composite as anode material for lithium ion batteries

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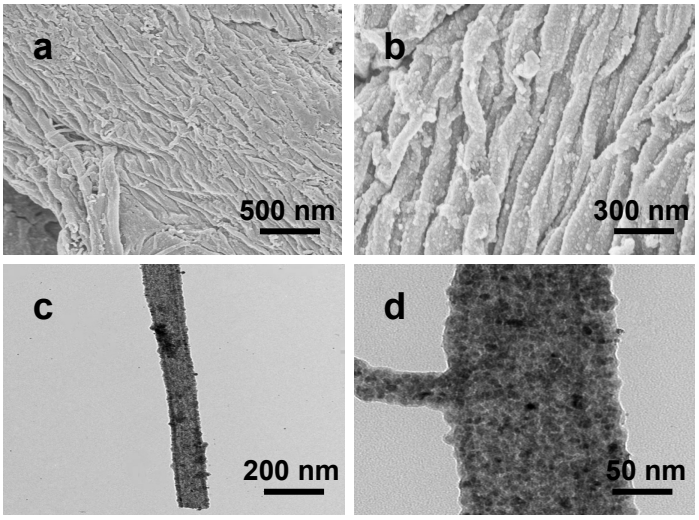

Fig. S1 Electron micrographs of sample Ag-NP/titania/carbon-A (9.27 wt.% of silver). (a) and (b), FE-SEM micrographs, showing nanofibre assemblies at different magnifications. (c) and (d), TEM images of an individual composite nanofibre isolated from the assemblies at different magnifications, and the average size of the Ag-NPs is 4−5 nm.

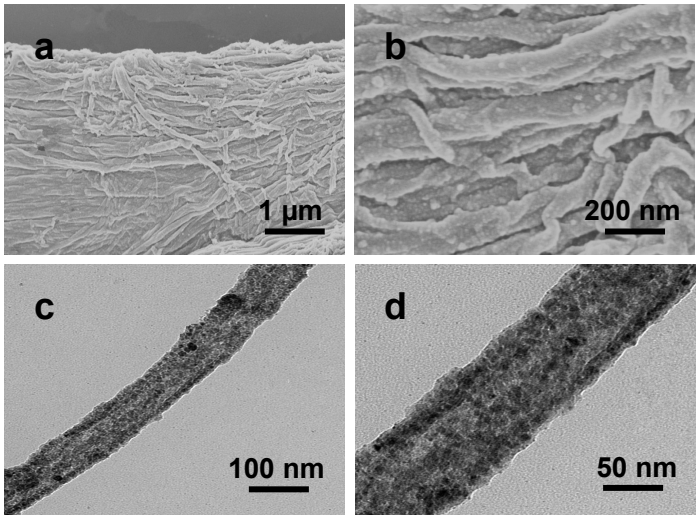

Fig. S2 Electron micrographs of sample Ag-NP/titania/carbon-B (10.71 wt.% of silver). (a) and (b), FE-SEM micrographs, showing nanofibre assemblies at different magnifications. (c) and (d), TEM images of an individual composite nanofibre isolated from the assemblies at different magnifications, and the average size of the Ag-NPs is 5−6 nm.

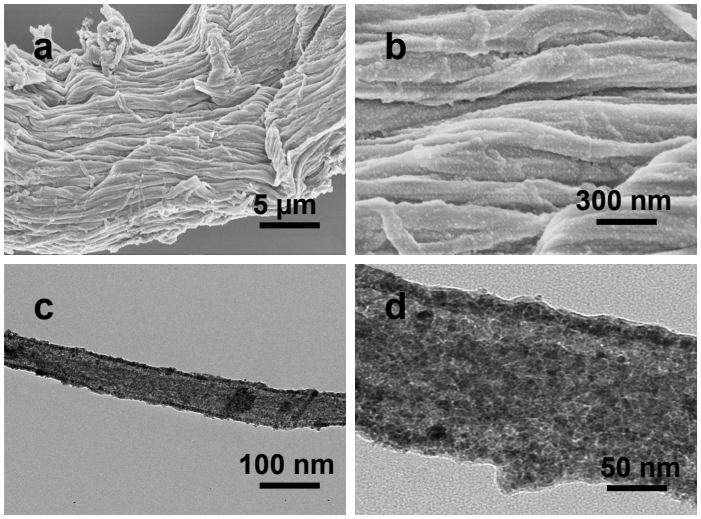

Fig. S3 Electron micrographs of sample Ag-NP/titania/carbon-C (11.87 wt.% of silver). (a) and (b), FE-SEM micrographs, showing nanofibre assemblies at different magnifications. (c) and (d), TEM images of an individual composite nanofibre isolated from the assemblies at different magnifications, and the average size of Ag-NPs is 6−8 nm.

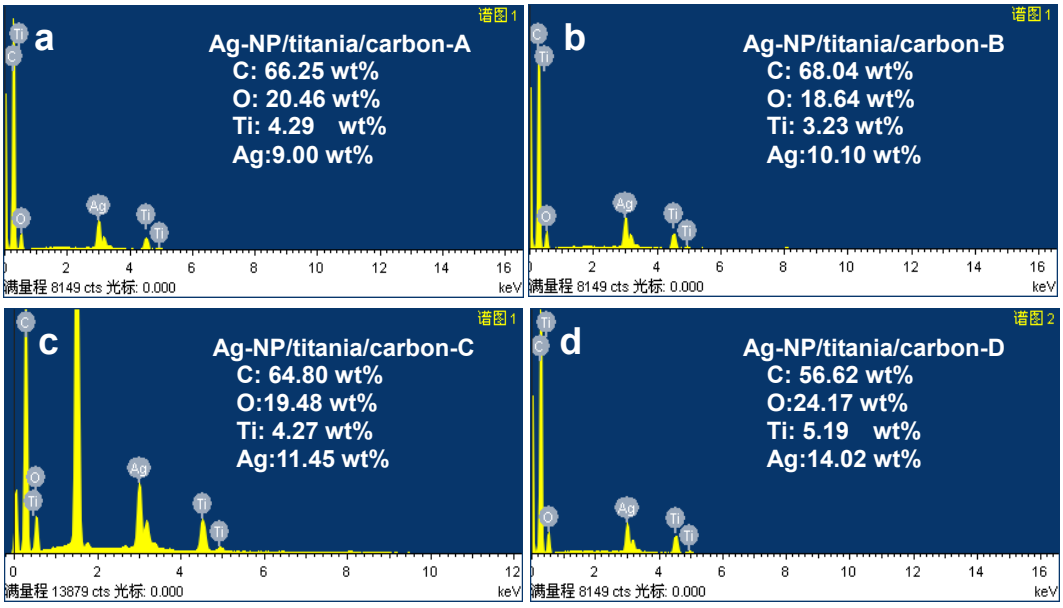

Fig. S4 Energy dispersive X-ray (EDX) microanalysis report of the Ag-NP/titania/carbon composites.

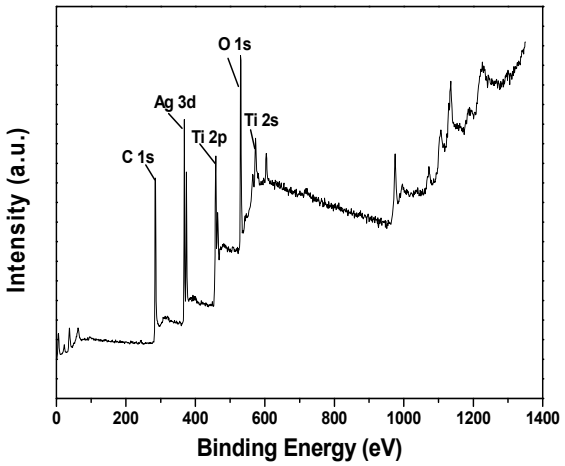

Fig. S5 The high-resolution XPS spectra of sample Ag-NP/titania/carbon-D.

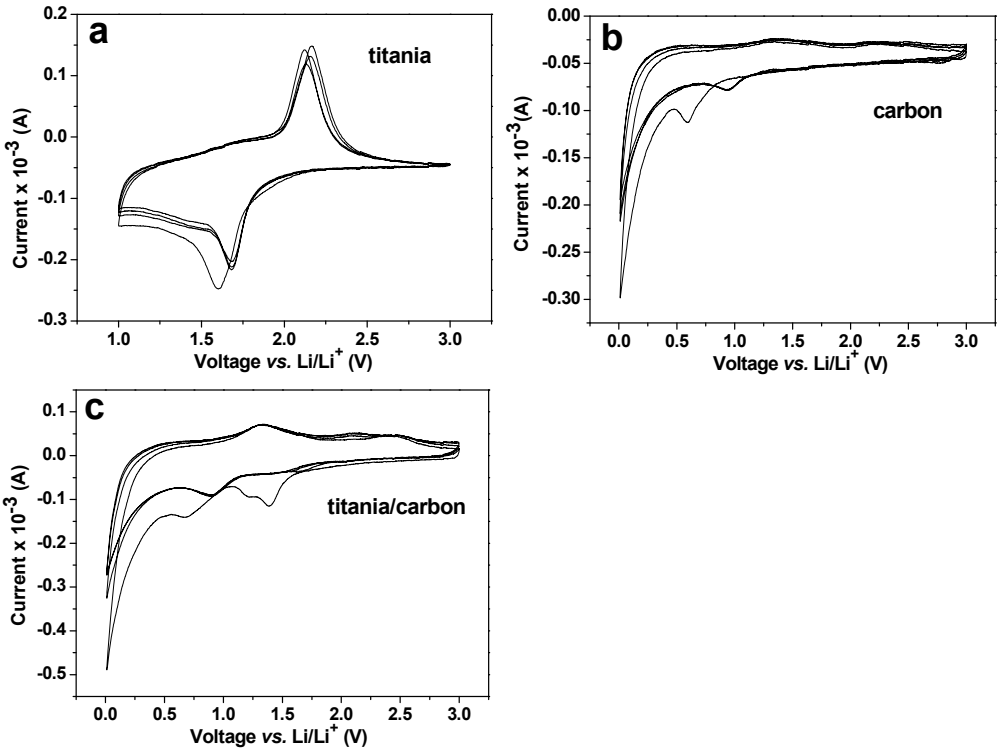

Fig. S6 Cyclic voltammetry curves of (a) the pure nanotubular titania (voltage range: 1–3 V *vs.* Li/Li^+); (b) carbon matter obtained by carbonization of filter paper, and (c) nanofibrous titania/carbon composite (voltage range: 0.01–3 V *vs.* Li/Li^+) at a scan rate of 0.1 mV s^{-1}.

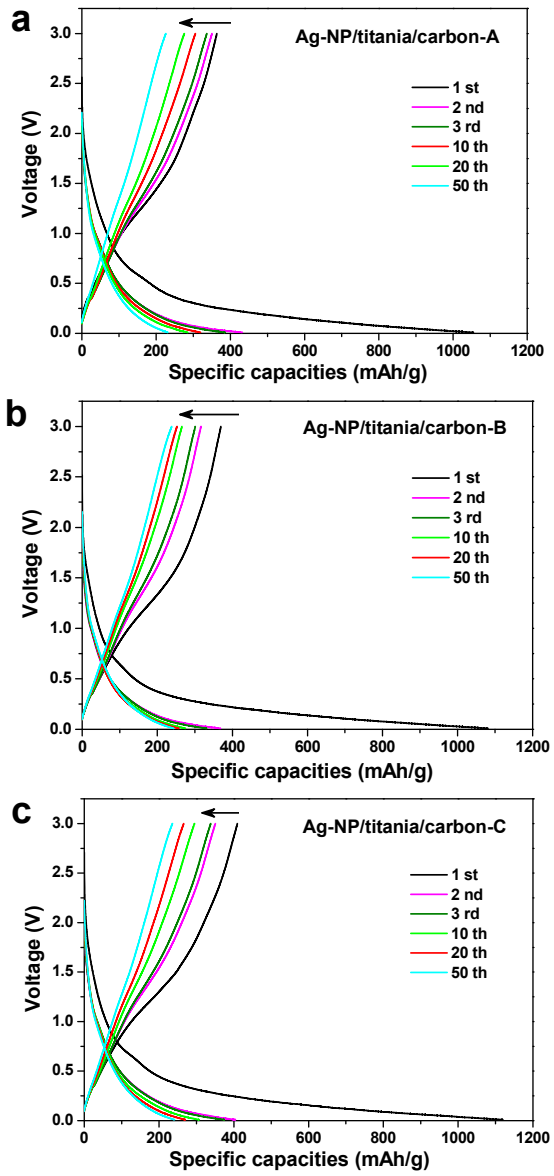

Fig. S7 The charge–discharge profiles of samples Ag-NP/titania/carbon-A, B and C (a, b and c, respectively) at the 1st, 2nd, 3rd, 10th, 20th and 50th cycle under a constant current density of 100 mA g^{-1} between 0.01 and 3.0 V.

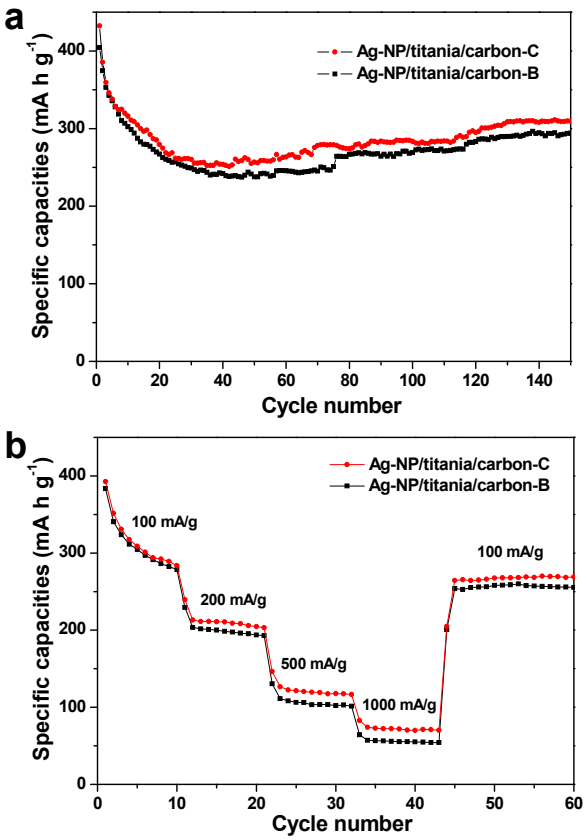

Fig. S8 (a) The discharge cycling performance of samples Ag-NP/titania/carbon-B and C from the second cycle at the current densities of 100 mA g^{-1} between 0.01 and 3.0 V. (b) The rate capabilities of samples Ag-NP/titania/carbon-B and C from the second cycle at various current densities.