Supporting Information

Si Nanoparticles Encapsulated in Elastic Hollow Carbon Fibre for Li-Ion Battery Anodes with High Structure Stability

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Figure S1. Digital images of the (a)SiO_2 nanofibres; (b)pure Si nanofibres synthisized by directly magnesiothermic reduction; (c) Si NP@C nanofibres.
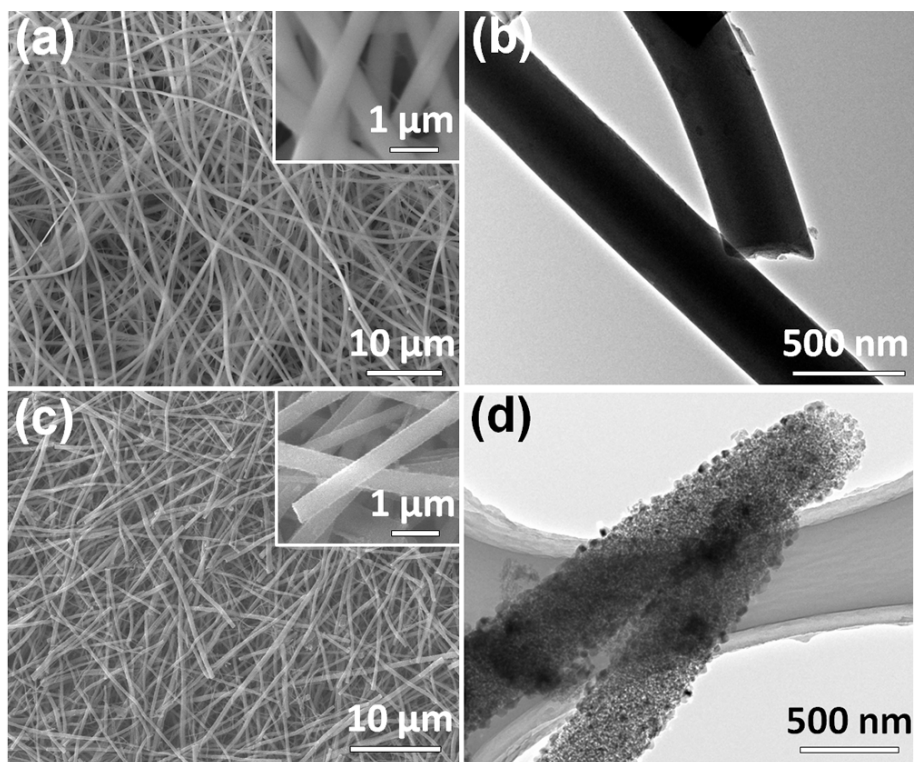
Figure S2. (a,b) SEM and TEM images of SiO$_2$ nanofibers. (c-d) SEM and TEM image of Si nanofibres.
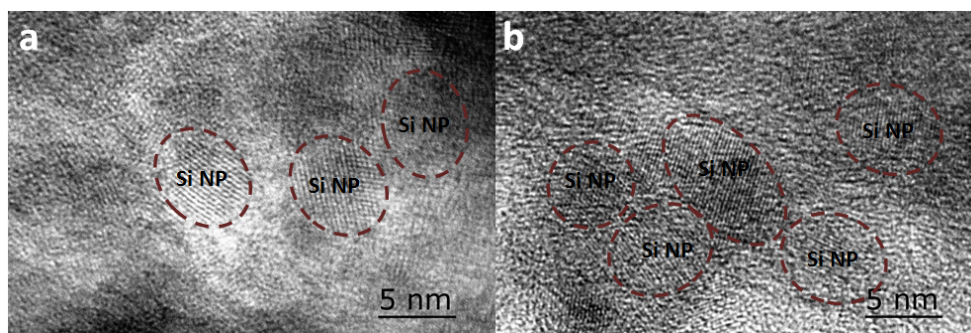

Figure S3 (a, b) HRTEM images of Si nanoparticles in the carbon nanofibres (Si NP@C nanofibres) which demonstrate the Si nanoparticles with an average particle size of approximately 10 nm.
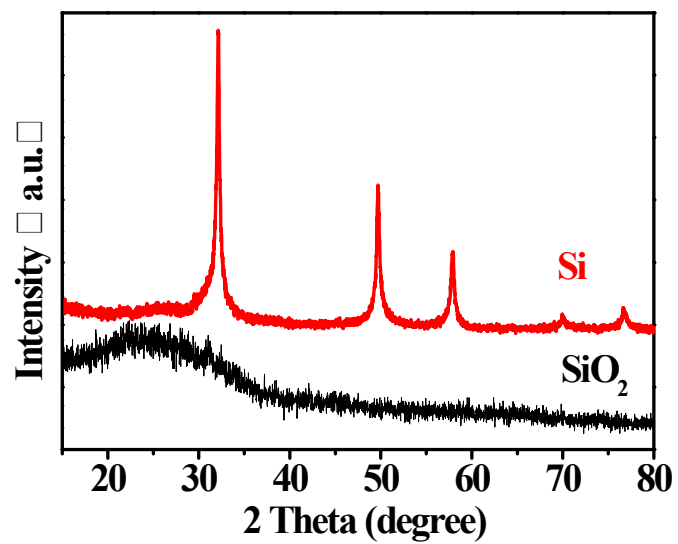
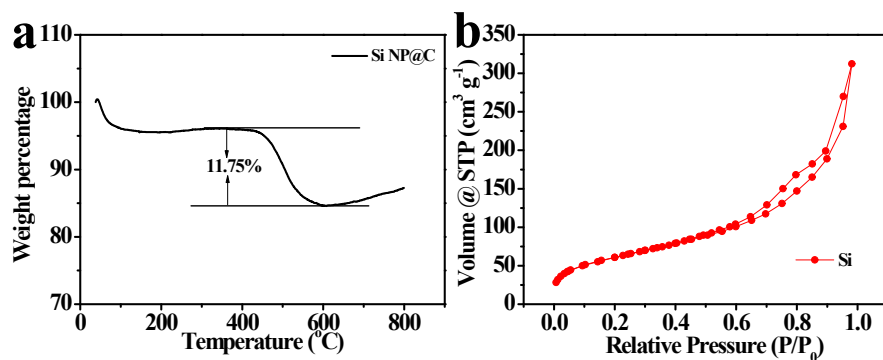Figure S4. XRD patterns of SiO$_2$ nanofibres and pure Si nanofibres.

Figure S5. Thermogravimetric analysis (TGA) of Si NP@C nanofibres. (b) A nitrogen adsorption-desorption isotherm for the Si nanofibres (a surface area of 220.9 m^2 g^{-1}).
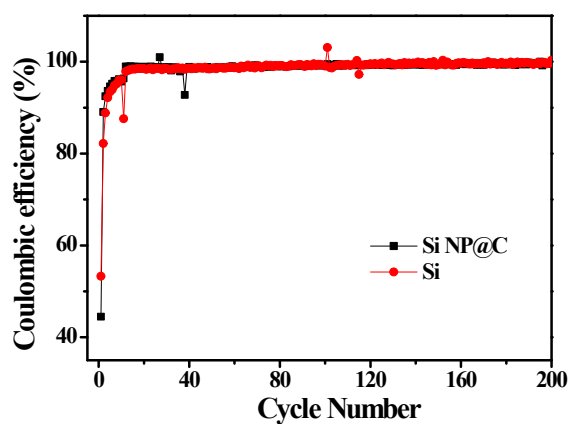
Figure S6. The Coulombic efficiency of Si NP@C nanofibres and Si nanofibers during the cycling performance.
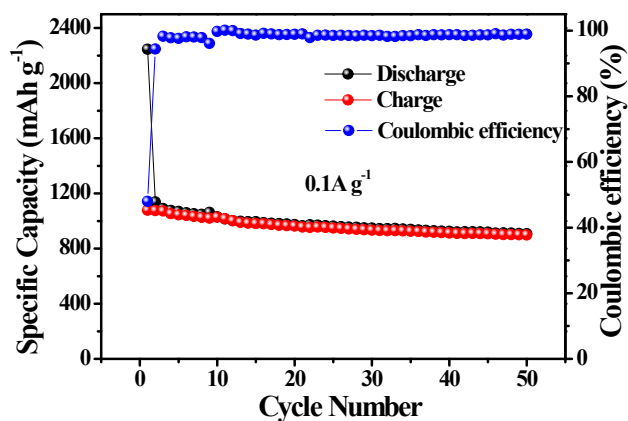

Figure S7. Cycling performance of Si NP@C nanofibres measured at 0.1 A g^{-1}. The capacity retained a specific discharge capacity of 908.5 mAh g^{-1} after 50 cycles
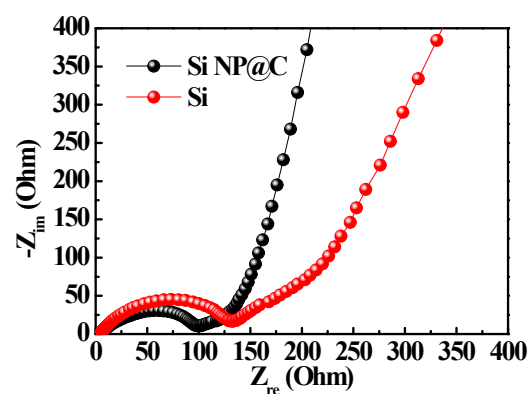
Figure S8. Nyquist plots of the Si NP@C nanofibres and Si nanofibres after 200th cycles at a current density of 1.0 A g^{-1}.
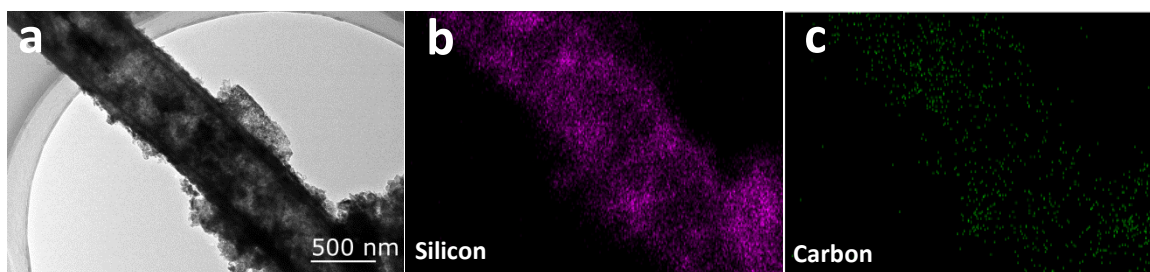

Figure S9. TEM images of Si NP@C nanofibers after 200 cycles at 1 A/g and corresponding EDS mapping images of Si (purple), C (green).