

Supporting Information

**Novel Peapod NiO Nanoparticles Encapsulated in Carbon fibers for High-efficiency
Supercapacitors and Lithium-ion Batteries**

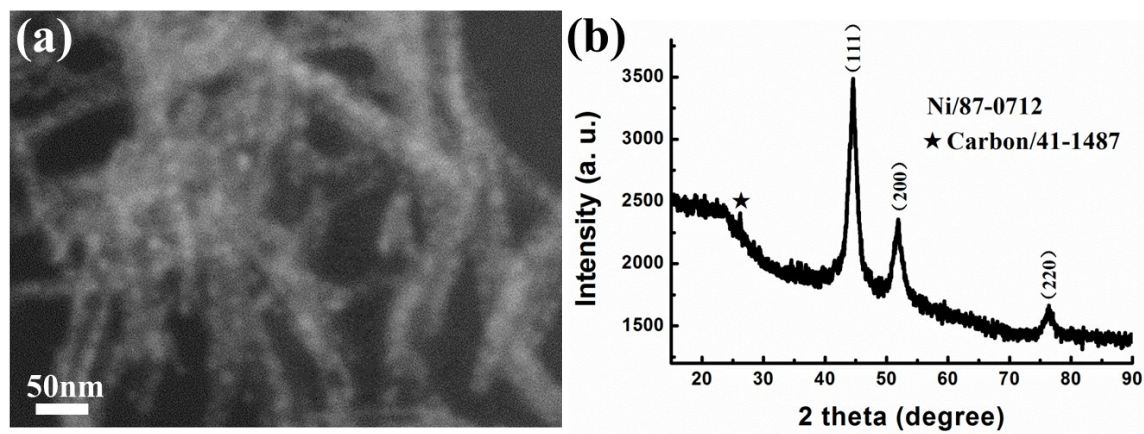


Figure S1 SEM image (a) and XRD pattern (b) of the intermediate products of peapod Ni/C.

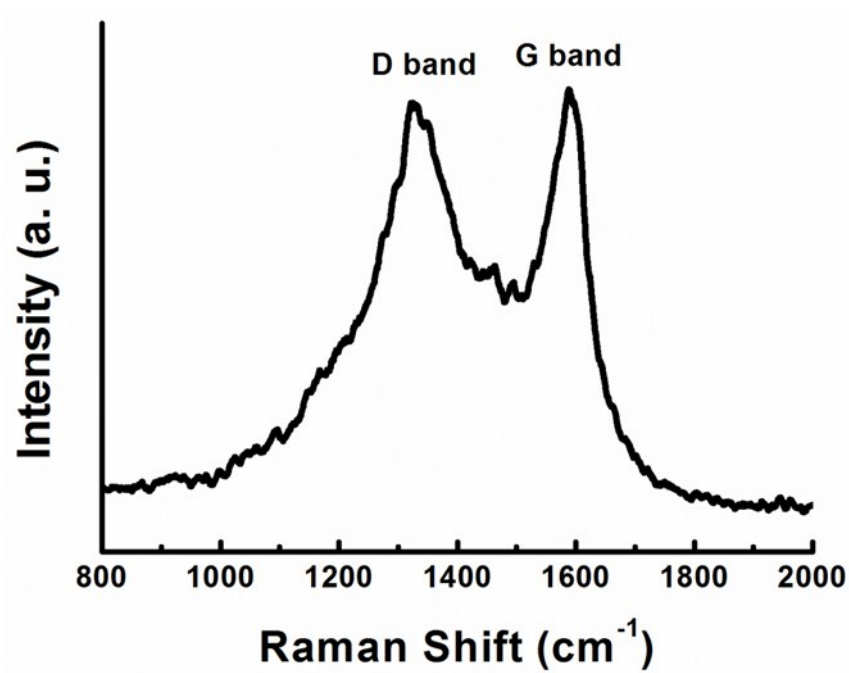


Figure S2 Raman spectra to disclose the graphitization of peapod NiO/C.

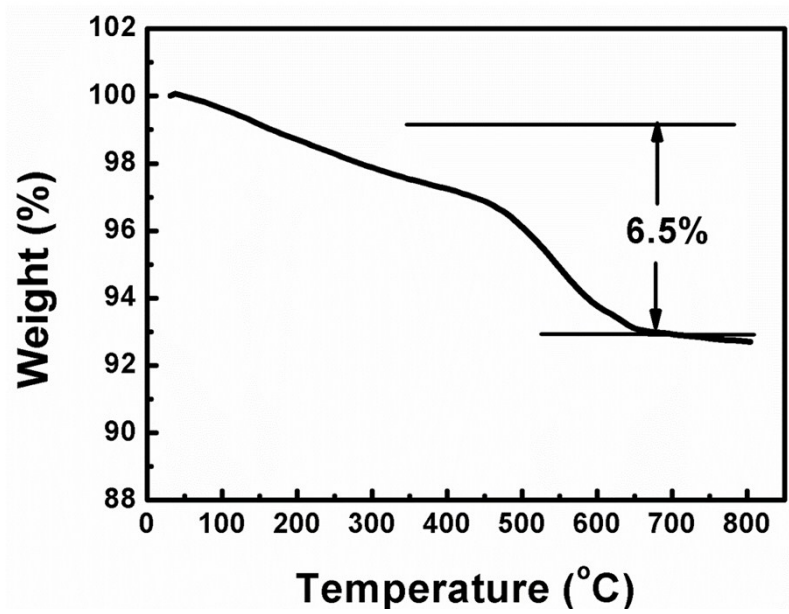


Figure S3 TGA curve of peapod NiO/C tested from room temperature to 800 °C under O₂ atmosphere.

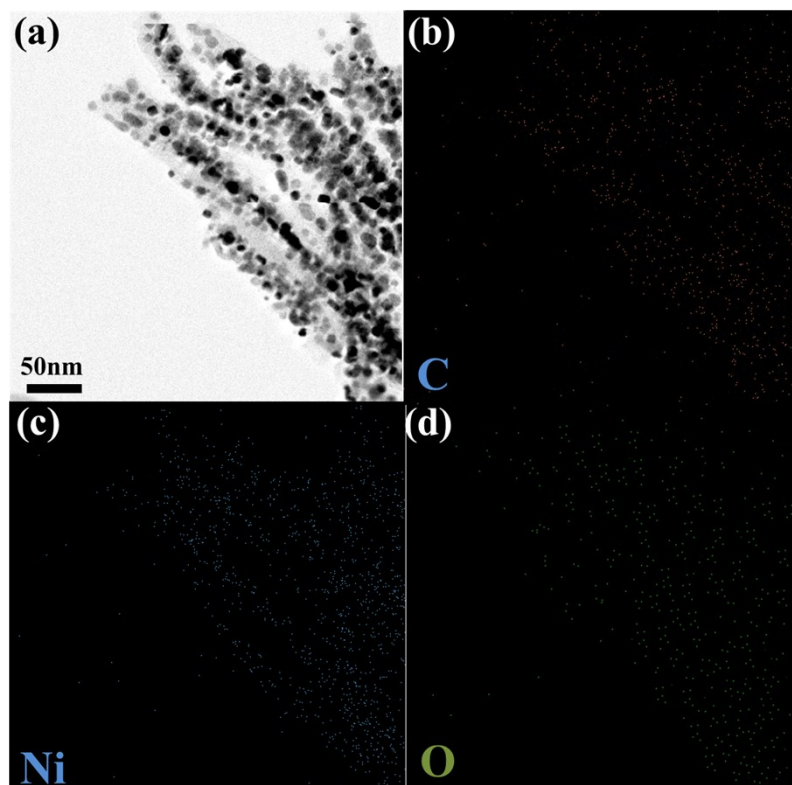


Figure S4 Elemental imaging via EDX shows the element distribution of the peapod NiO/C. (a) TEM image. (b), (c) and (d) demonstrate the presence and distribution of C, Ni and O.

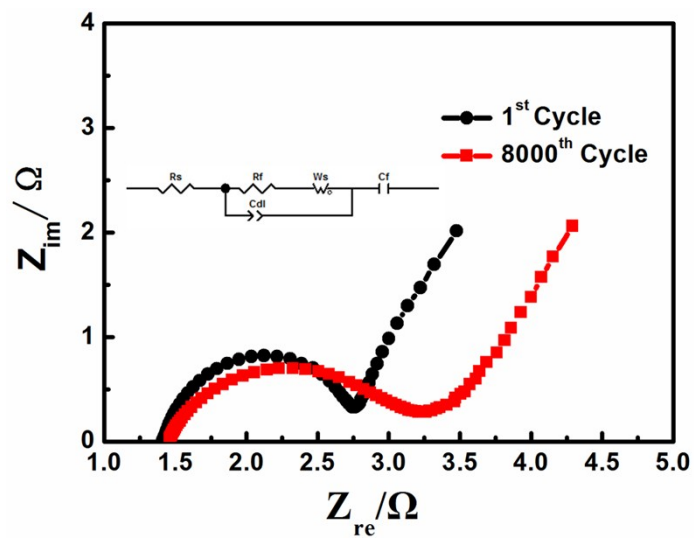


Figure S5 Nyquist plots of peapod NiO/C for the first and 6000 cycles and the equivalent fitting circuit and impedance (inset) at high frequency region.

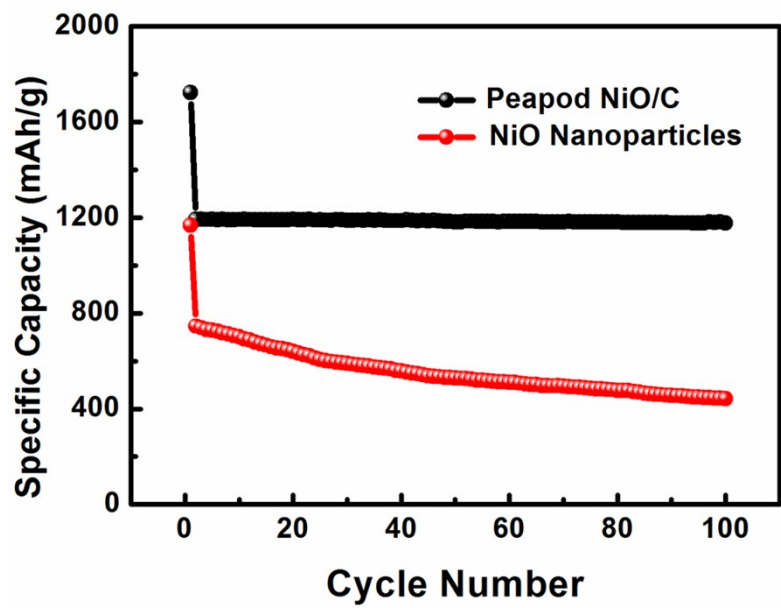


Figure S6 Comparison of galvanostatic measurement of peapod NiO/C (black line) and NiO nanoparticles (red line).

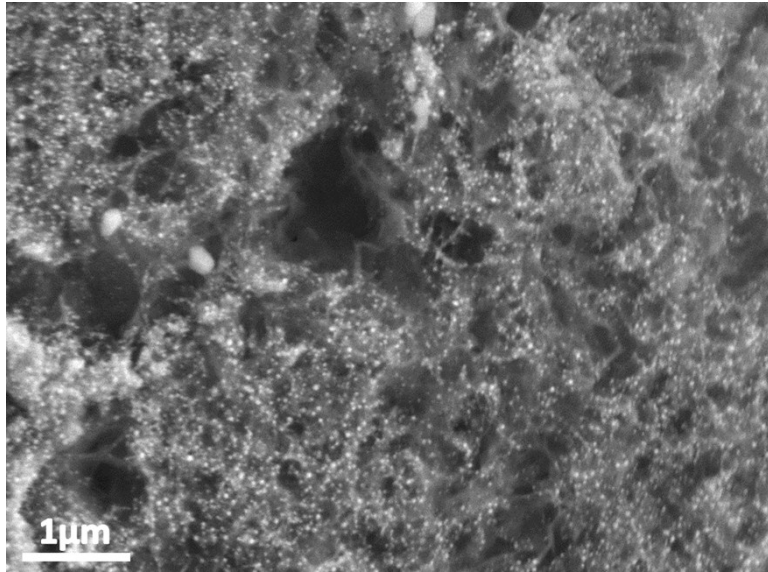


Figure S7 SEM image of peapod NiO/C after operating for 200 cycles.

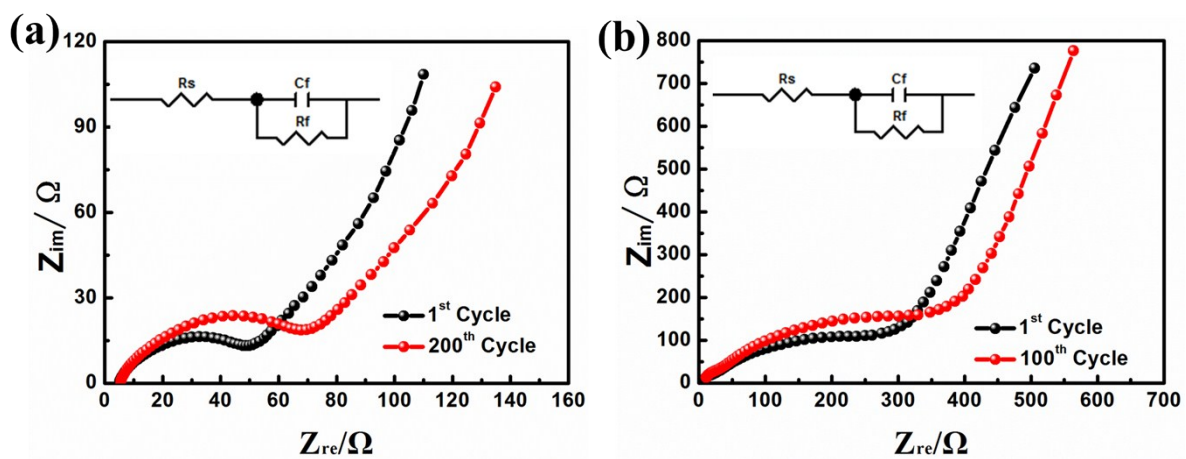


Figure S8 Nyquist plots of (a) Peapod NiO/C and (b) pure NiO nanoparticles before and after cycling at current density of 500 mA/g and the equivalent fitting circuit and impedance (inset).