Electronic Supplementary Information for

Synthesis of ultralong MnO/C coaxial nanowires as freestanding anodes for high-performance lithium ion batteries

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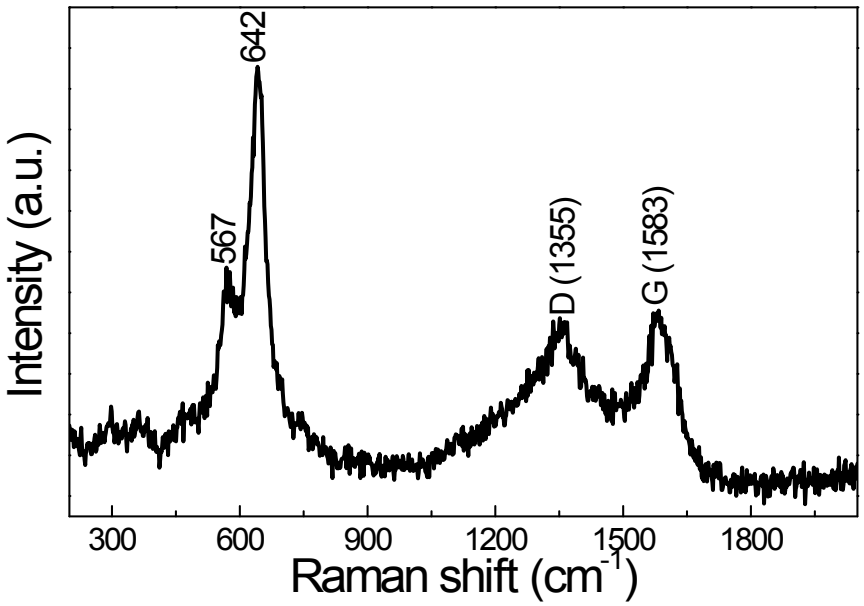

Fig. S1. Raman spectrum of MnO/C.

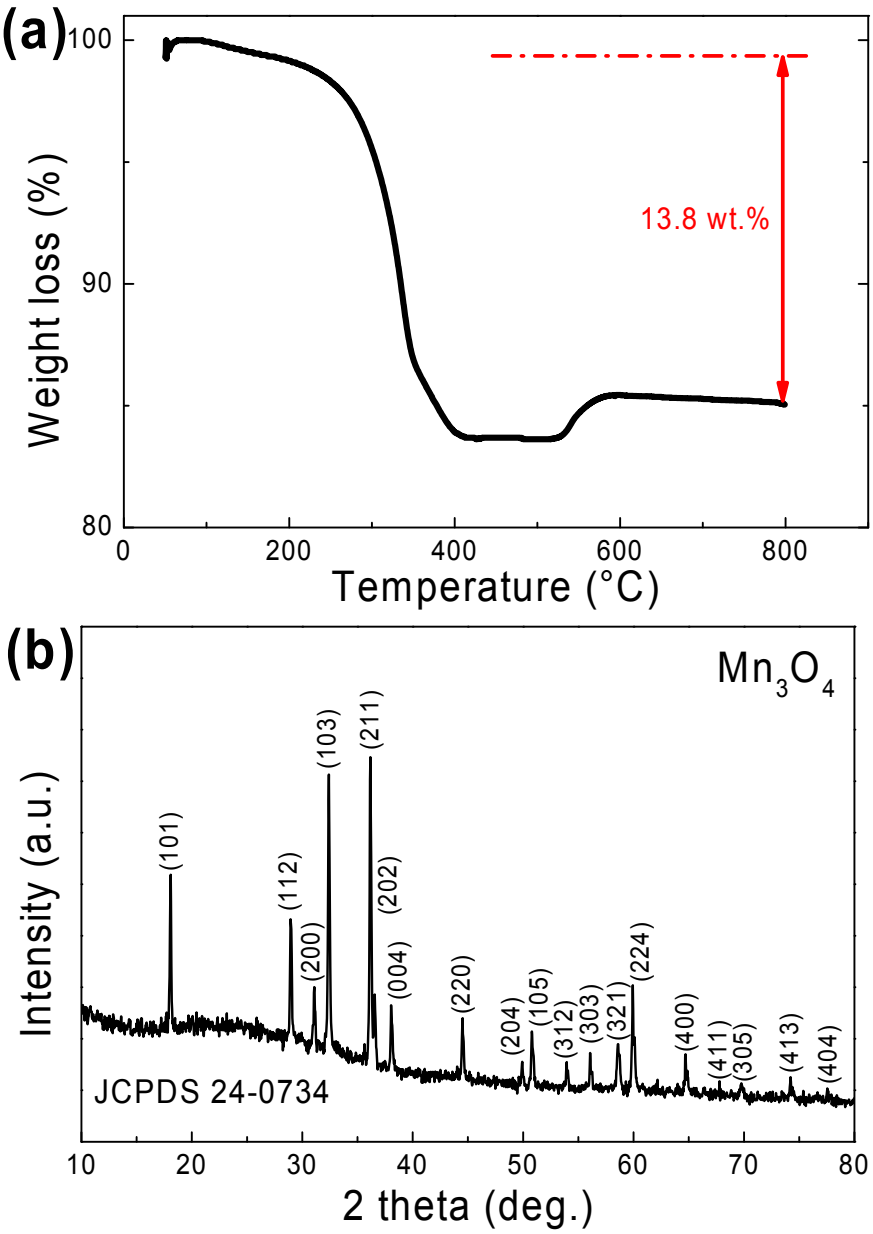

Fig. S2. (a) TGA curves of MnO/C nanocomposites. (b) XRD pattern of MnO/C after annealed at 800 °C in air. The final product belongs to the tetragonal structure of Mn_3O_4 phase (JCPDS 24-0734) from the XRD pattern, indicating MnO was oxidized to form Mn_3O_4. In theory, this oxidation process will give rise to 7.5 wt.% weight increase. Assumed the total mass is 1 and carbon content is x, then MnO content is (1-x). As shown in the TGA curve, the weight loss can be calculated using x-7.5wt.%(1-x), which corresponds to the weight loss of 13.8wt.%. Then the carbon content x equals to 19.8 wt.%.

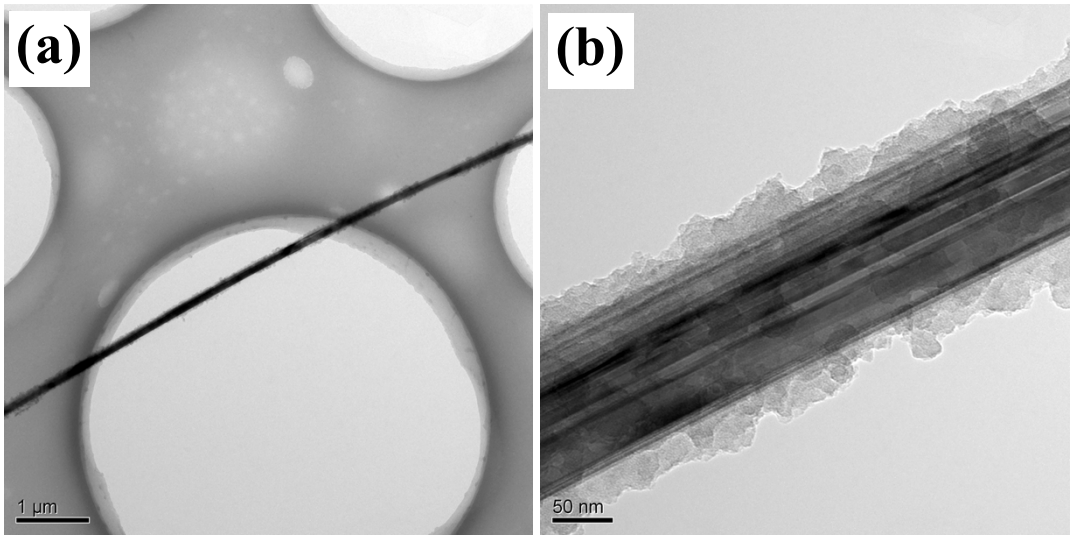

Fig. S3. TEM images of MnO_2/PPy core-shell nanostructures.

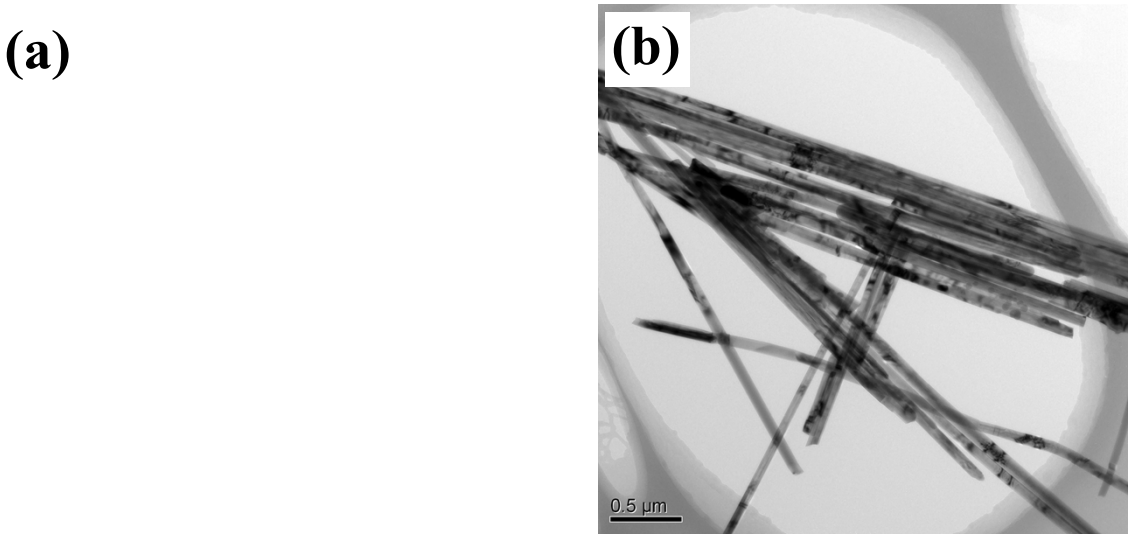

Fig. S4. (a) SEM and (b) TEM images of MnO nanostructures.

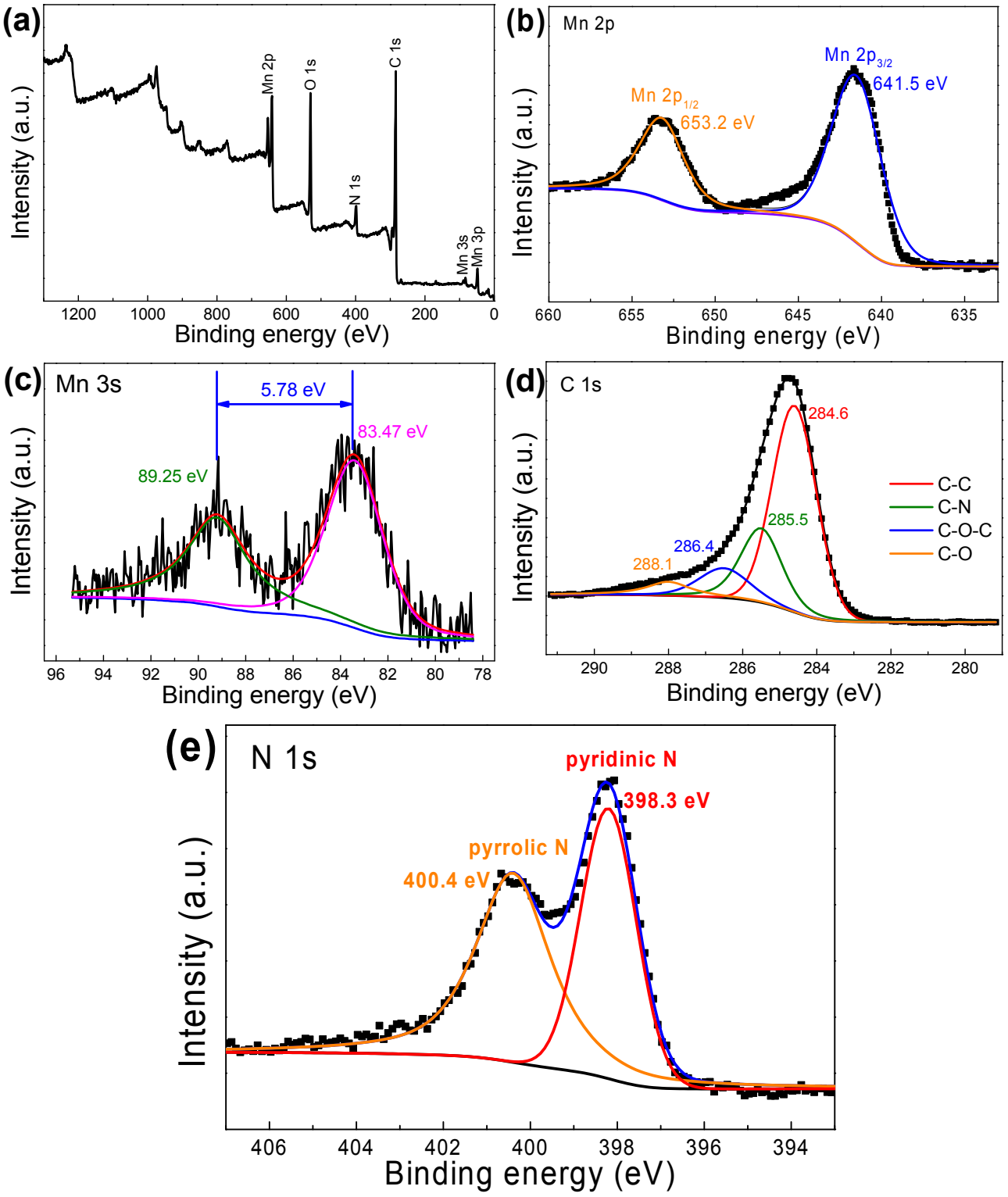

Fig. S5. XPS spectra for the MnO/C nanocomposite: the survey spectrum (a) and the high resolution spectra for (b) Mn 2p, (c) Mn 3s, (d) C 1s and (e) N 1s.

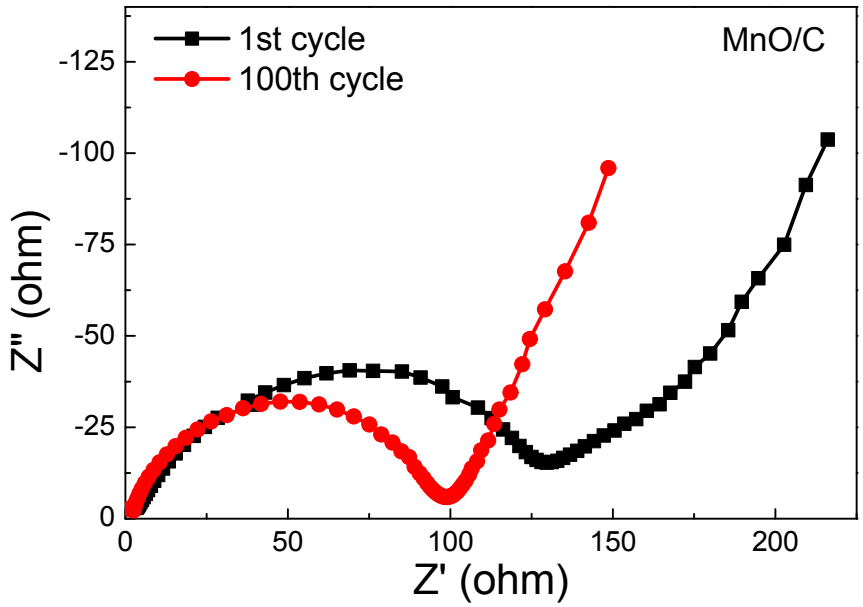

Fig. S6. EIS spectra of MnO/C anode in the first cycle and after 100 cycles.

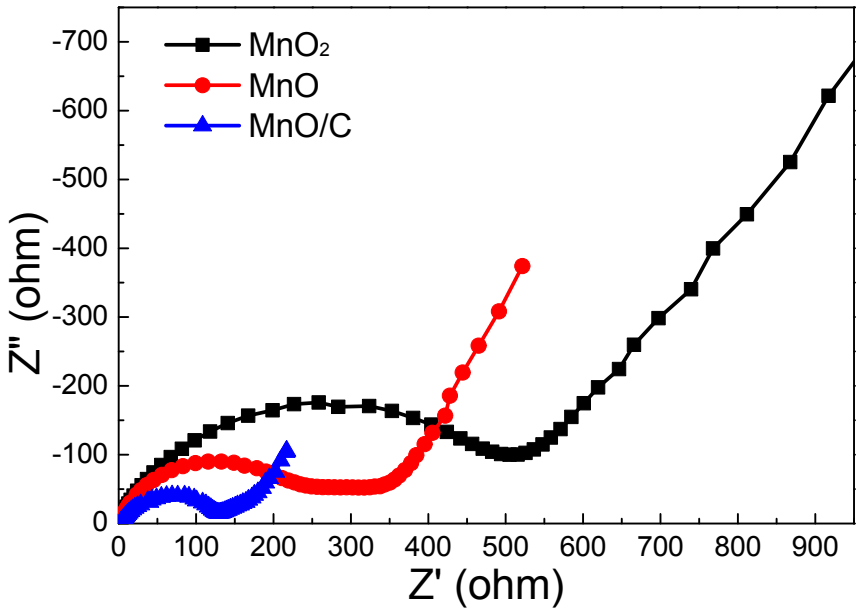

Fig. S7. EIS spectra of MnO/C, MnO and MnO anodes.

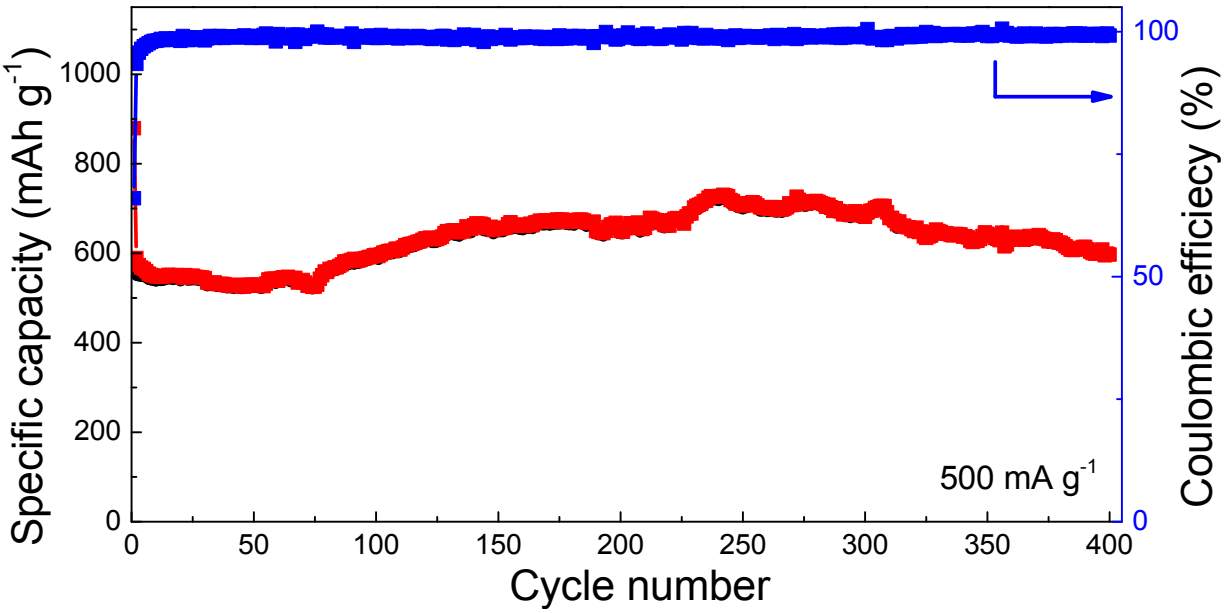

Fig. S8. Cycling performance of MnO/C anode at a current density of 500 mA g^{-1}.