Supplementary Information

Electrospinning of carbon-coated MoO₂ nanofibers with enhanced lithium-storage properties

Wei Luo, Xianluo Hu,* Yongming Sun and Yunhui Huang*

State Key Laboratory of Material Processing and Die & Mould Technology, College of Materials Science and Engineering, Huazhong University of Science and Technology, Wuhan 430074, P. R. China

E-mail: huxl@mail.hust.edu.cn; huangyh@mail.hust.edu.cn

Fig. S1 A typical EDX spectrum taken from the MoO₂@C product, suggesting the existence of Mo, O, and C, where the signal of Na is generated from the conducting tape on the sample holder.
Fig. S2 High-resolution XPS spectra of C 1s of the MoO$_2$@C nanofibers. The spectra can be deconvoluted into four peaks. The peak at 284.6 eV is assigned to the C–C bonds in the disordered carbon frameworks, while the smaller ones at 286.2, 287.6, and 289.0 eV suggest the existence of the residual groups from the insufficient reduction/carbonization of PVA.
Fig. S3 (a) Raman spectrum of the MoO$_2$@C nanofibers; (b) Thermogravimetric (TG) analysis and differential thermal analysis (DTA) of the MoO$_2$@C product measured at a heating rate of 10 °C min$^{-1}$ in a flowing air.
Fig. S4 (a) Columbic efficiency for the electrodes that are made of the core-sheath MoO$_2$@C nanofibers (current density: 50, 100, and 200 mA g$^{-1}$). (b) Cycling performance of the MoO$_2$@C electrode at a current density of 50 mA g$^{-1}$ over 100 cycles, indicating good cyclability.
**Fig. S5** XRD pattern of the free MoO$_2$ particles that were prepared by direct thermal treatment of (NH$_4$)$_6$Mo$_7$O$_{24}$·4H$_2$O in air at 180 °C for 0.5 h and 300 °C for 0.5 h, and subsequent reduction at 600 °C for 5 h in a 5% H$_2$/Ar atmosphere.