Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics

Supplementary Information

Electrospinning of carbon-coated MoO_2 nanofibers with enhanced lithium-storage properties

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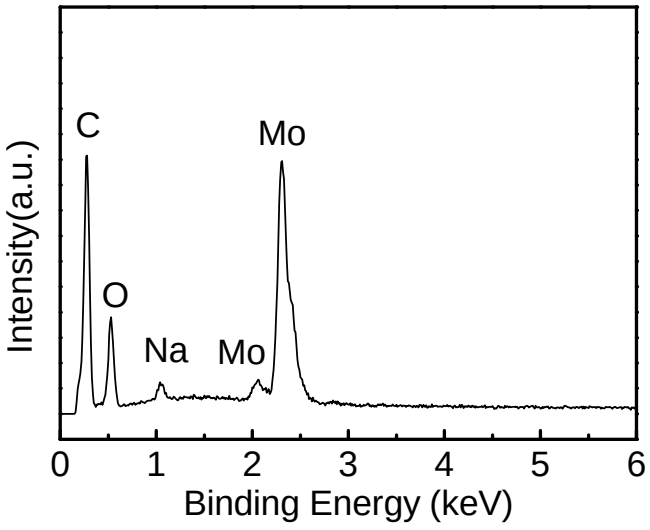

Fig. S1 A typical EDX spectrum taken from the MoO_2@C product, suggesting the existence of Mo, O, and C, where the signal of Na is generated from the conducting tape on the sample holder.

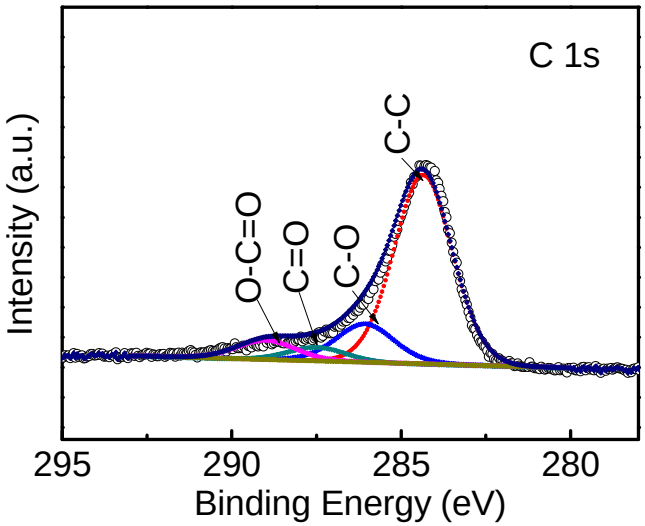

Fig. S2 High-resolution XPS spectra of C 1s of the MoO_2@C nanofibers. The spectra can be deconvoluted into four peaks. The peak at 284.6 eV is assigned to the C–C bonds in the disordered carbon frameworks, while the smaller ones at 286.2, 287.6, and 289.0 eV suggest the existence of the residual groups from the insufficient reduction/carbonization of PVA.

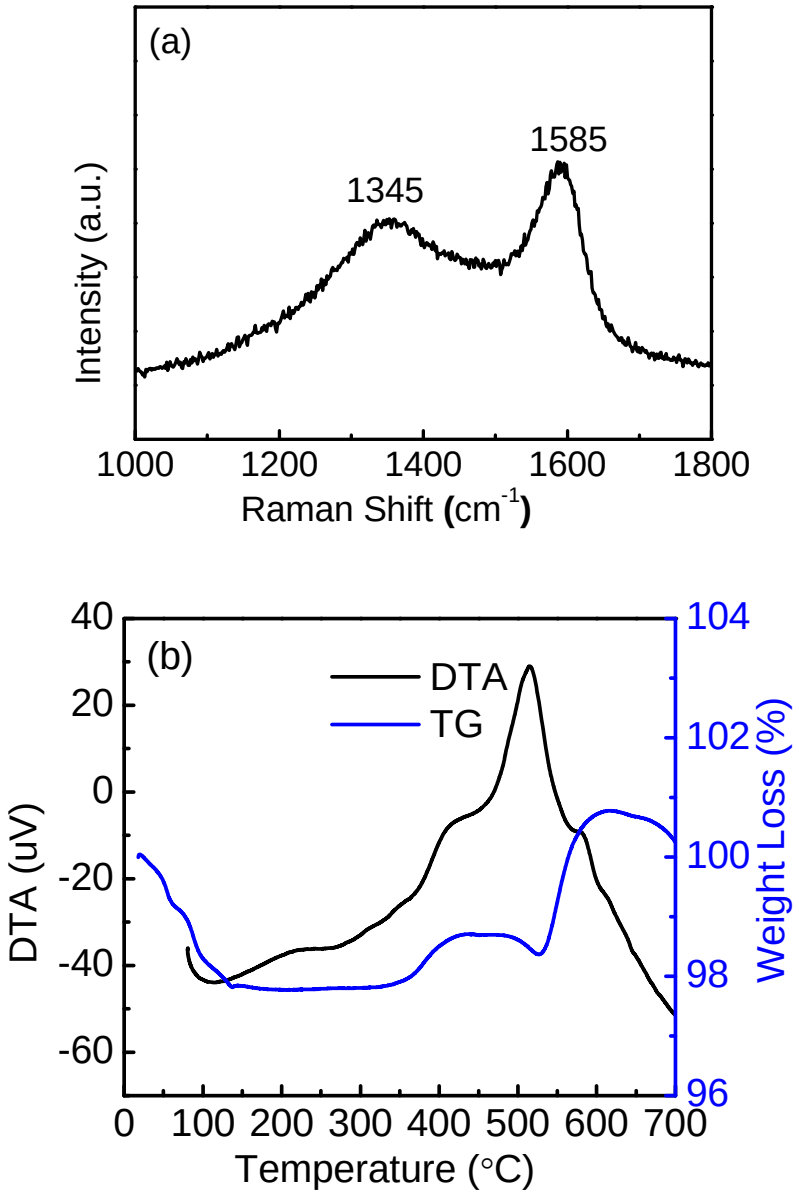

Fig. S3 (a) Raman spectrum of the MoO_2@C nanofibers; (b) Thermogravimetric (TG) analysis and differential thermal analysis (DTA) of the MoO_2@C product measured at a heating rate of 10 ºC min^{-1} in a flowing air.

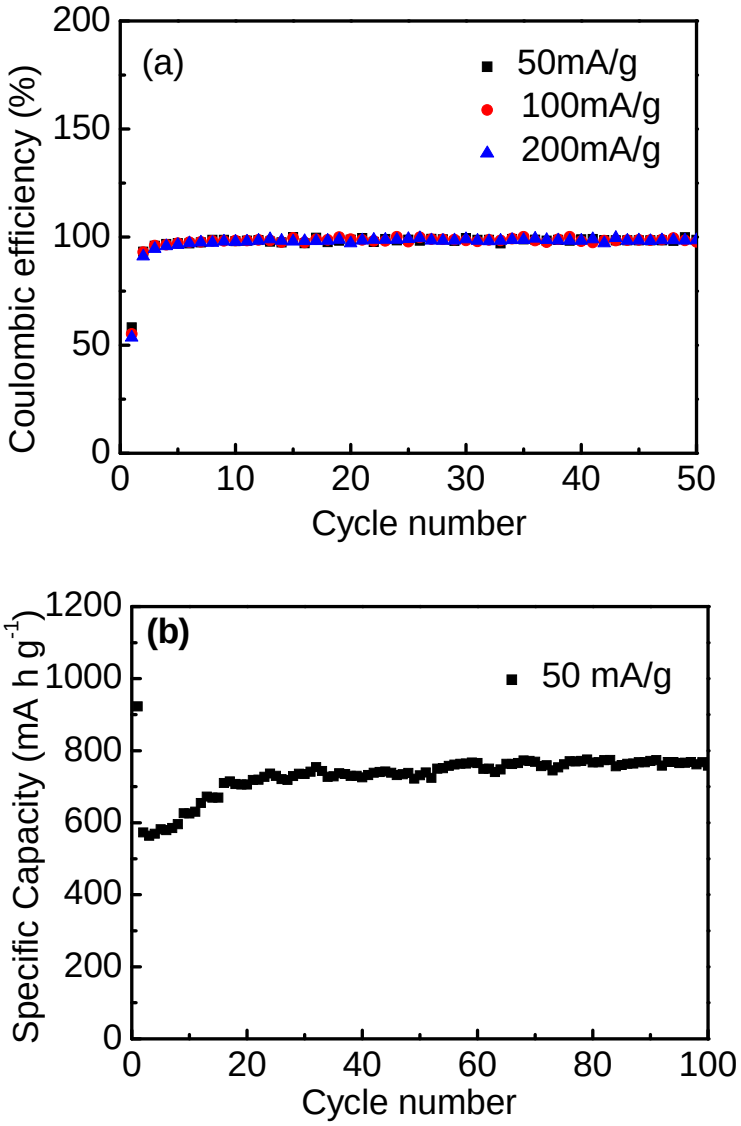

Fig. S4 (a) Columbic efficiency for the electrodes that are made of the core-sheath MoO_2@C nanofibers (current density: 50, 100, and 200 mA g^{-1}). (b) Cycling performance of the MoO_2@C electrode at a current density of 50 mA g^{-1} over 100 cycles, indicating good cyclability.

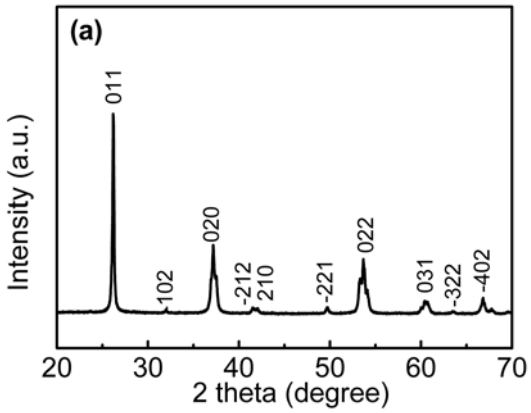

Fig. S5 XRD pattern of the free MoO_2 particles that were prepared by direct thermal treatment of $(NH_4)_6Mo_7O_{24}\cdot 4H_2O$ in air at 180 °C for 0.5 h and 300 °C for 0.5 h, and subsequent reduction at 600 °C for 5 h in a 5% H_2/Ar atmosphere.