Supporting Information

# Metal-organic framework-engaged synthesis of core shell MoO$_2$/ZnSe@N-C nanorod for high performance lithium-ion battery anode

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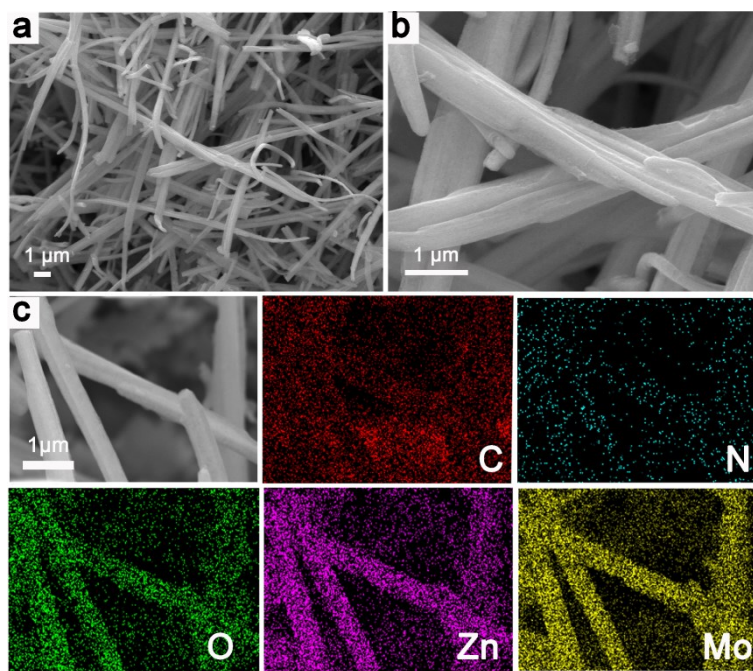
[c] College of Chemistry and Environmental Science, Shangrao Normal University, Shangrao 334001, P. R. China.
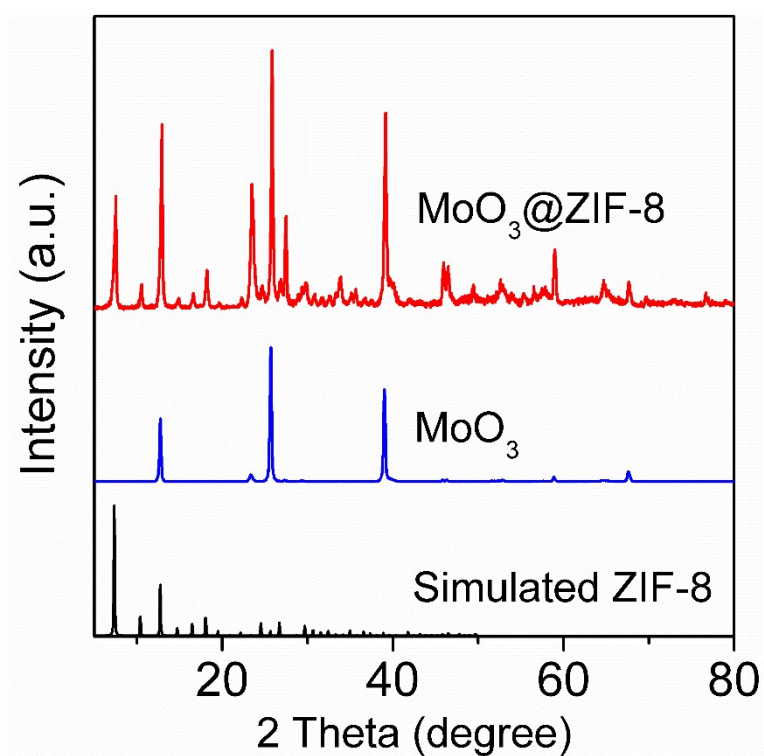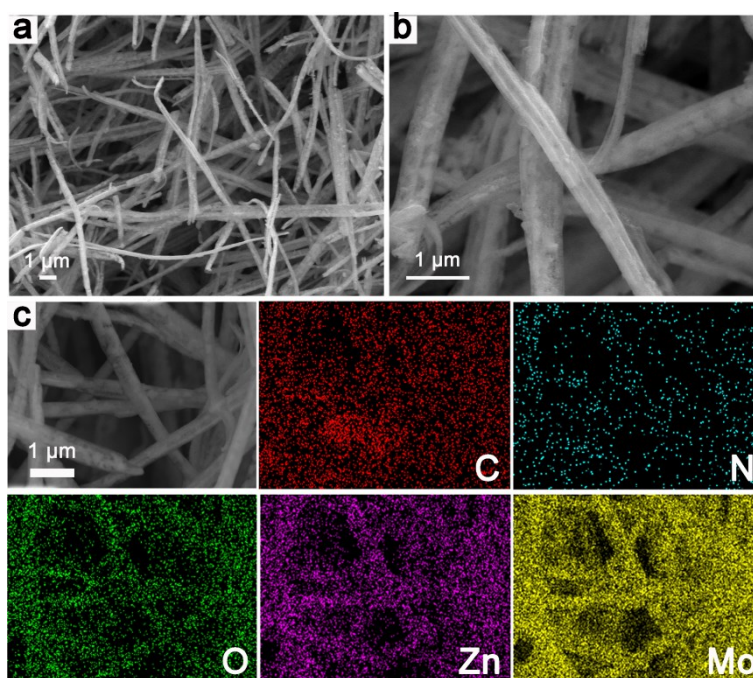
Figure S1. XRD patterns of MoO$_3$ and MoO$_3$@ZIF-8 precursor.
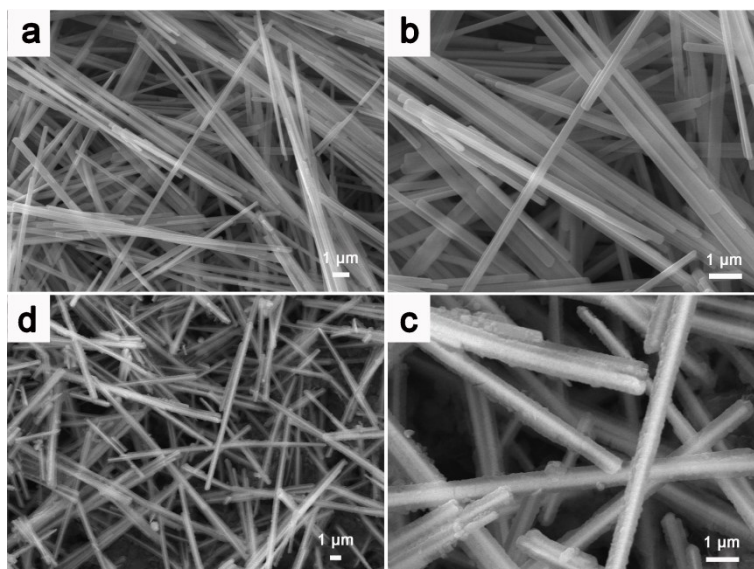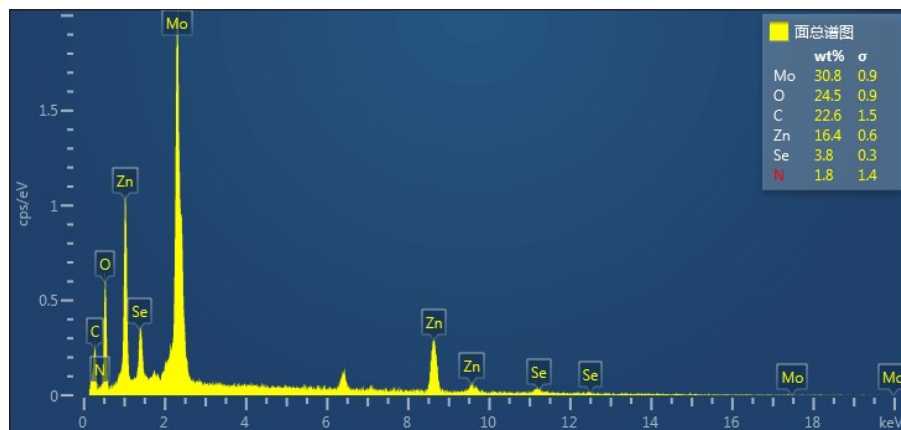

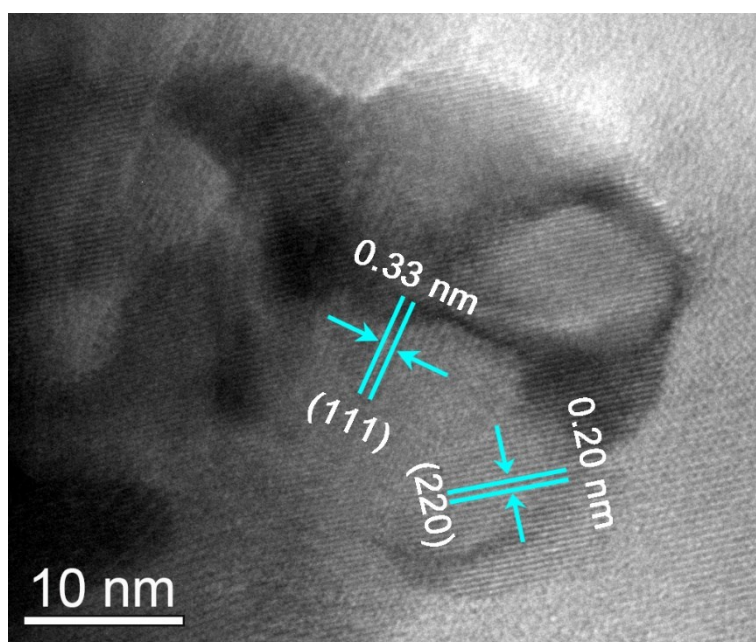**Figure S2.** SEM images of MoO$_3$ nanorods (a, b) and MoO$_3$@ZIF-8 precursor (c, d).

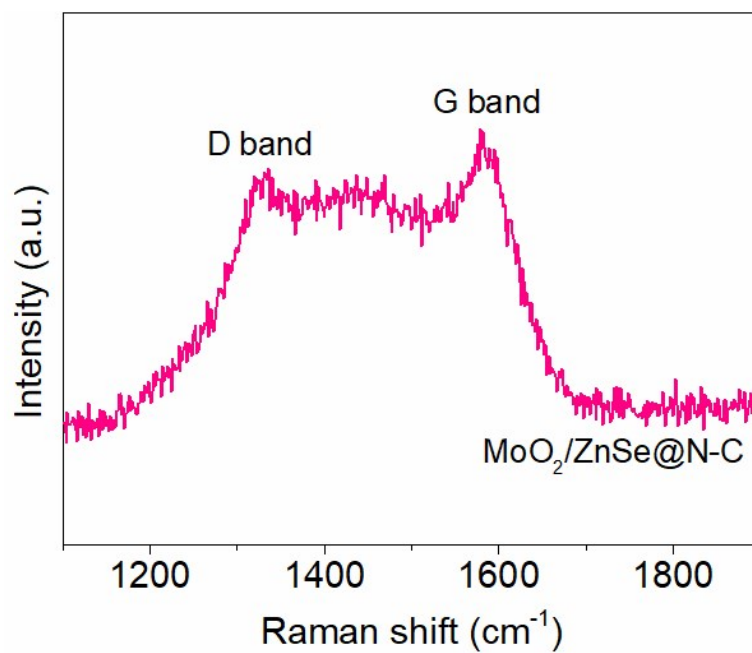**Figure S3.** SEM images and corresponding EDS mapping of the as-obtained MoO$_2$/ZnO@N-C-700 sample.

Figure S4. SEM images and corresponding EDS mapping of the as-obtained MoO$_2$/ZnO@N-C-800 sample.
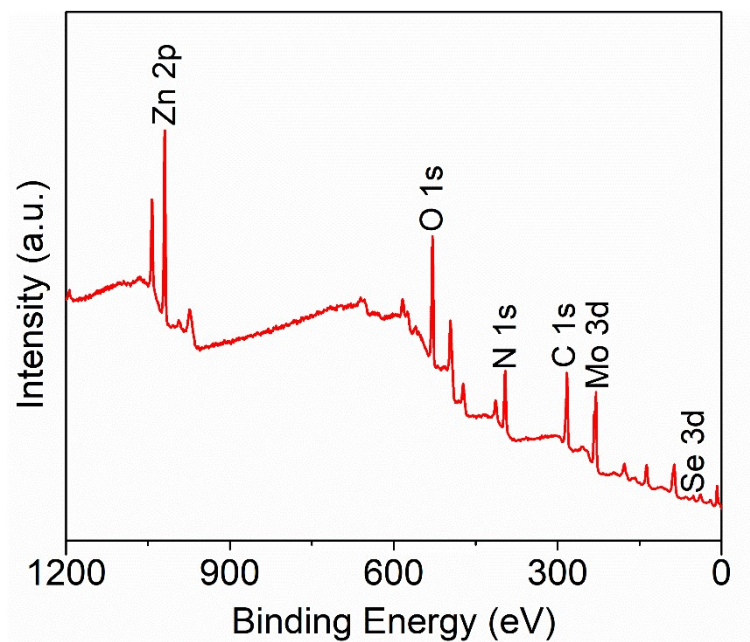
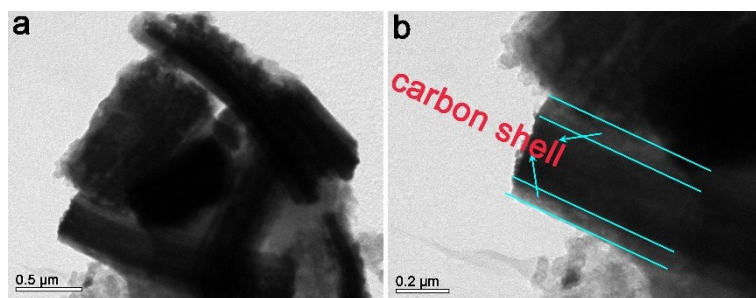**Figure S5.** EDS result of as-formed MoO$_2$/ZnSe@N-C sample.

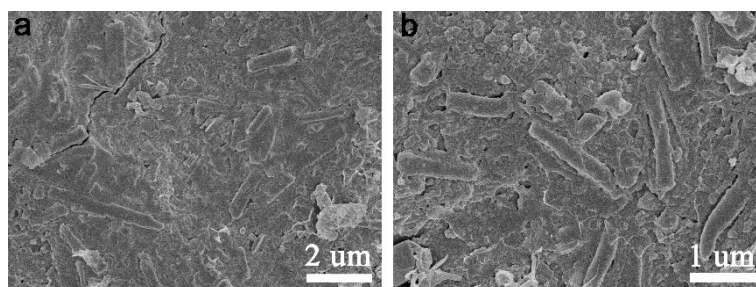**Figure S6.** HRTEM image of as-prepared MoO$_2$/ZnSe@N-C sample.

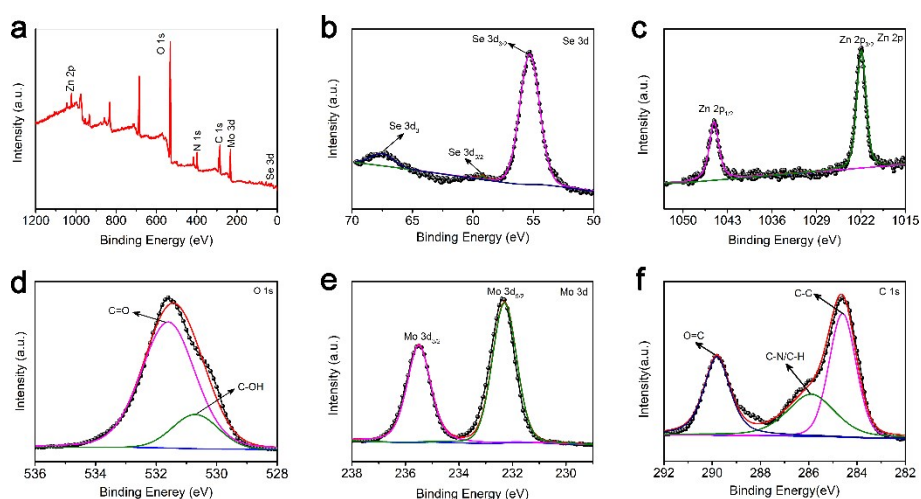**Figure S7.** Raman spectrum of as-obtained $MoO_2/ZnSe@N-C$ sample.

Figure S8. The full XPS spectrum of as-obtained $MoO_2/ZnSe@N-C$ sample.

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Figure S9. (a, b) TEM images of as-formed $MoO_2/ZnSe@N-C-600$ sample after 100 cycles at a current density of 100 mA g^{-1}.

Figure S10. SEM images of as-formed $MoO_2/ZnSe@N-C-600$ sample after 900 cycles at a current density of 500 mA g^{-1}.

Figure S11. The full spectrum and high-resolution Zn, Mo, Se, O, C, and N spectra of as-formed $MoO_2/ZnSe@N-C-600$ sample after 900 cycles at a current density of 500 mA g^{-1}.