Supporting Information

Alpha-MoO$_3$ Nanobelts: A High Performance Cathode Material for Lithium Ion Batteries

Liang Zhou,† Lichun Yang,† Pei Yuan,†‡ Jin Zou,§ Yuping Wu,*† and Chengzhong Yu,*†‡

† Department of Chemistry and Shanghai Key Laboratory of Molecular Catalysis and Innovative Materials, Fudan University, Shanghai 200433, P.R. China

‡ ARC Centre of Excellence for Functional Nanomaterials and Australian Institute for Bioengineering and Nanotechnology, The University of Queensland, Brisbane, QLD 4072, Australia

§ School of Engineering and Centre for Microscopy and Microanalysis, The University of Queensland, Brisbane, QLD 4072, Australia

* To whom correspondence should be addressed. Email: c.yu@uq.edu.au and wuyp@fudan.edu.cn

‖ These authors contribute equally to this paper.
Figure S1. Structure model of $\alpha$-MoO$_3$ sublayer from [010] direction (A); $\alpha$-MoO$_3$ single layer from [010] (B), [100] (C), [001] (D) direction; and $\alpha$-MoO$_3$ layered structure from [010], [100], [001] direction.
Figure S2. TEM images of α-MoO$_3$ nanobelts. A and b are from the same region but with different tilting angles. From tilting, the thickness of the nanobelts can be determined to be $\sim$ 50 nm.
Figure S3. Coulombic efficiency versus cycle number under different current densities. Unlike most other cathode materials, the coulombic efficiency is defined as the ratio of charge capacity to discharge capacity here.
Safety issue:

In the case of lithium metal as anode or counter electrode, it should be small, not larger than 5 cm$^2$, or else, the safety problem related to lithium dendrites should be fully checked during cycling. When it is too large, more measures should be taken to avoid possible safety problems such as fire or explosion during cycling.