

Supporting Information

**Unique Synthesis of Novel Octahedral Micro/Nano Hierarchical LiFePO₄ Cages as an
Enhanced Cathode Material for Lithium-ion Batteries**

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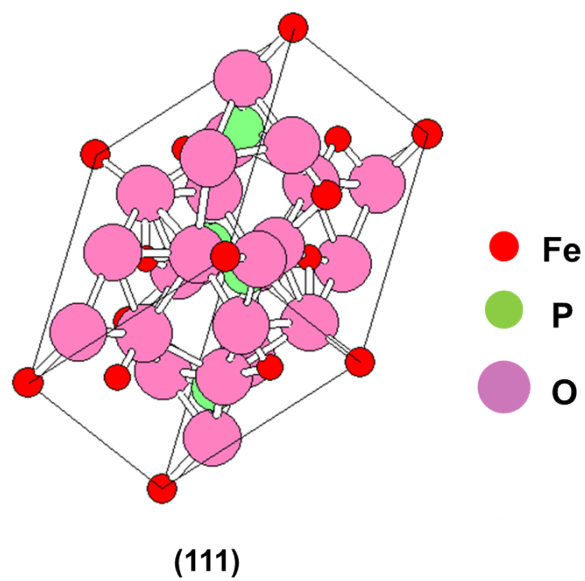


Figure S1. Crystal structure projection on the (111) plane of $\text{Fe}_3(\text{PO}_4)_2(\text{OH})_2$ precursor.

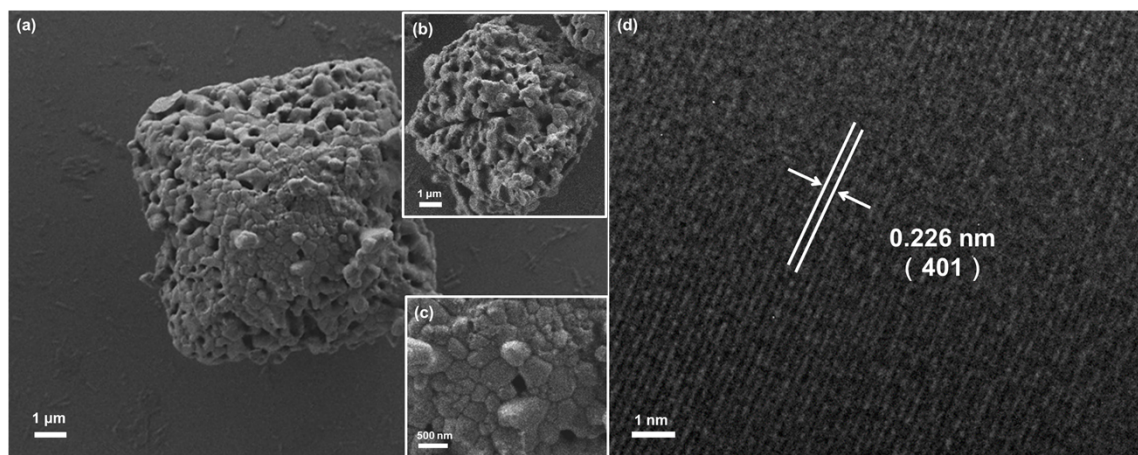


Figure S2. SEM (a) and HRTEM (d) images of octahedral micro/nano hierarchical LiFePO_4 cages after long-term discharge/charge cycles. Inset: (b) Cross-sectional image of interstices in the octahedral cage by sonication. (c) Interstices on the octahedral cage surface.

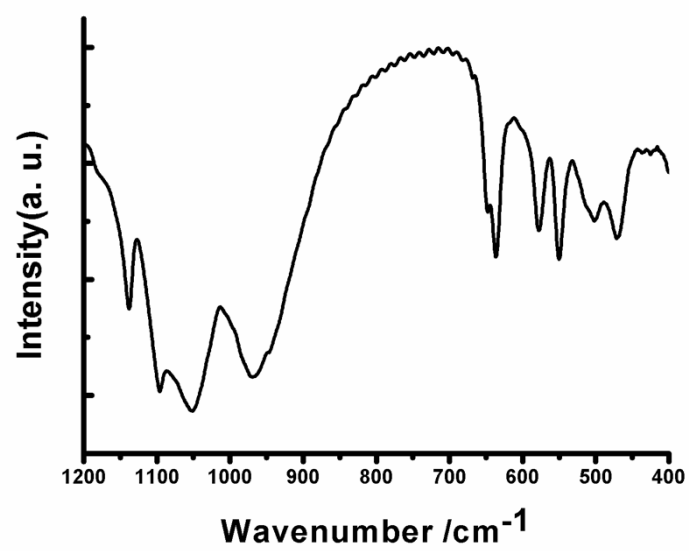


Figure S3. Fourier transformation infrared spectrum (FTIR) for octahedral micro/nano hierarchical LiFePO₄ cages.

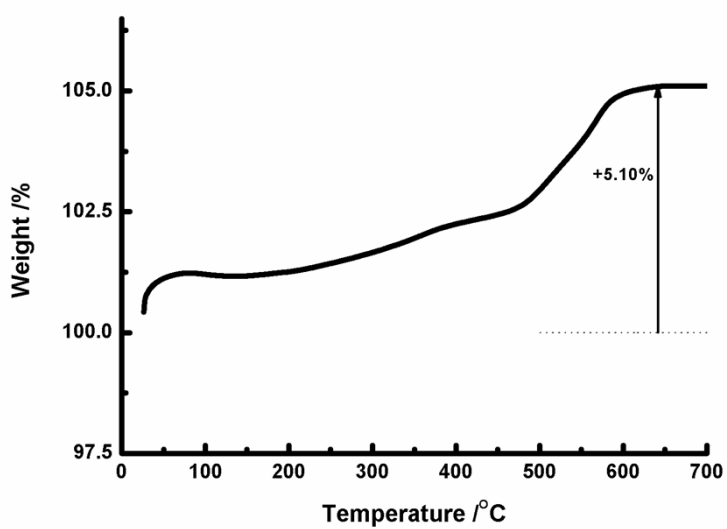


Figure S4. TG curve of the LiFePO₄ cages, obtained in oxygen from room temperature to 700 °C, at a heating rate of 10 K/min.

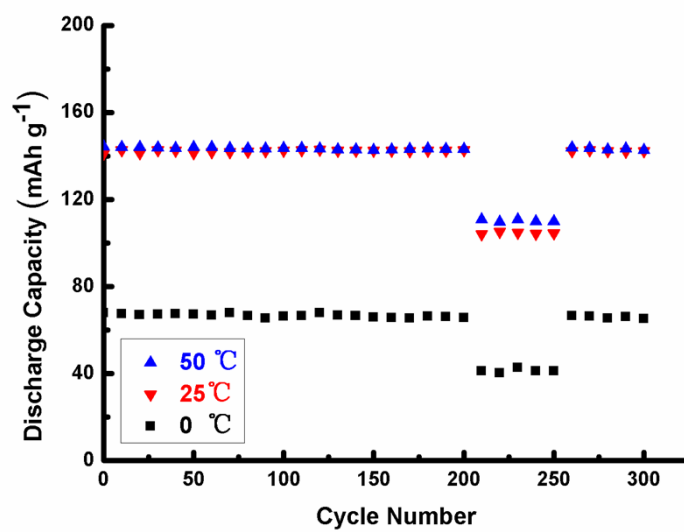


Figure S5. The temperature-dependent galvanostatic results of octahedral micro/nano hierarchical LiFePO₄ cages for cycled over 300 times at 0, 25 and 50 °C.

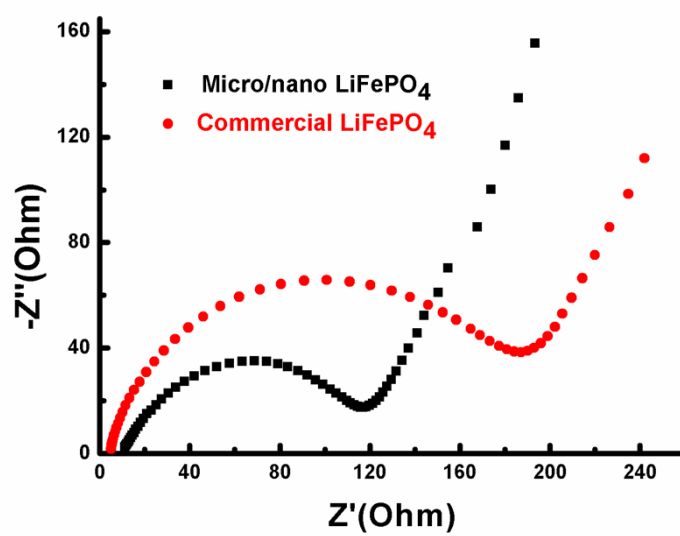


Figure S6. Electrochemical impedance spectra (EIS) curves for micro/nano LiFePO₄ cages and commercial LiFePO₄ powders at the frequency from 0.1 Hz to 100 Hz.

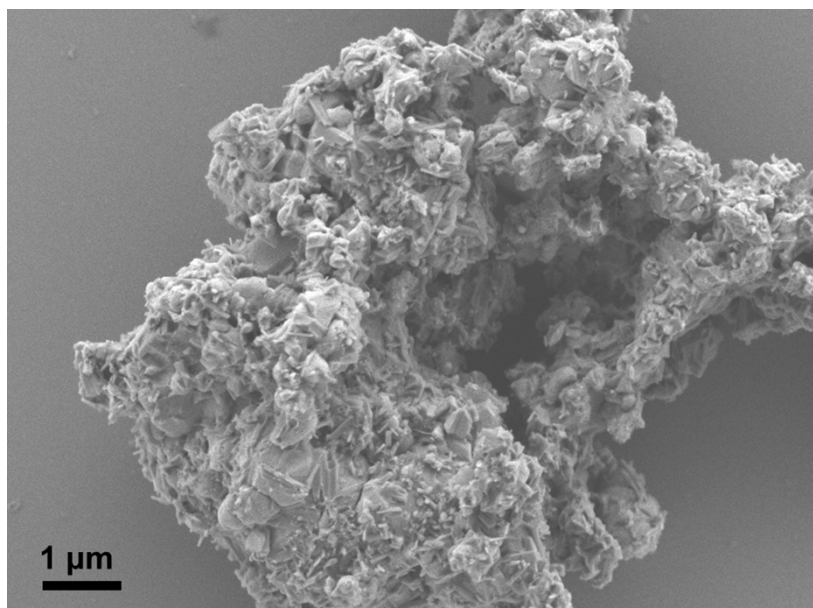


Figure S7. SEM image of commercial LiFePO₄ powders in this experiment for comparison.