Electronic Supplementary Material (ESI) for
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Supporting Information

Bulk $Ti_2Nb_{10}O_{29}$ as Long-Life and High-Power Li-ion Battery Anodes

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Experimental section

Characterizations. The as-prepared products were characterized by XRD (Philips X' Pert Super diffractometer, Cu Ka, λ=1.54178 Å), SEM (JEOL-JSM-6700F), HRTEM and SAED (JEOL-2010), Differential thermal analysis (DTA) was measured in air from room temperature to 1300 °C with a heating rate of 10 °C min^{-1}. Raman spectra was tested by using a JYLABRAM-HR Confocal Laser Micro-Raman spectrometer. Inductively coupled plasma (ICP) atomic emission spectrometer (PerkinElmer Instruments) was conducted to measure the ratio of metal atoms. The elements distribution of the sample was detected by energy-dispersive X-ray spectrometry (EDX) elemental mapping analysis (JEM-ARM 200F).

Electrochemical measurements. Electrochemical experiments were tested by using CR2016 coin cells. The electrodes were prepared by mixing the obtained materials, super P and PVDF binder dispersed in N-methylpyrrolidone (NMP) at a weight ratio of 70:20:10. Firstly, the active material and super P were mixed thoroughly, then the binder was added and the mass mixed again. The obtained slurry was coated on Cu foil and dried at 110 °C for 10 h in vacuum. The loading of active materials was 1.0-2.5 mg cm^{-2}. The $LiFePO_4$ cathode was coated on Al foil. For the $Ti_2Nb_{10}O_{29}$/$LiFePO_4$ full-cell, the anode is limited and the weight ratio of $LiFePO_4$ and $Ti_2Nb_{10}O_{29}$ is 2.9:1. The capacity of the full-cell was calculated according to the mass of the $Ti_2Nb_{10}O_{29}$ electrode. The electrolyte used for testing was 1 M $LiPF_6$ in 1:1 EC/DEC and the separator was Celgard 2400. The cells were assembled in an argon-filled glove, and then aged for 12 h before

testing to guarantee full access of the electrolyte with electrode.

Galvanostatic discharge-charge experiments were conducted on a battery-testing system (Land-CT2001A) in the voltage range of 1.0-2.4 V at room temperature.

Cyclic voltammograms (CVs) were tested by CHI660D electrochemical workstation.

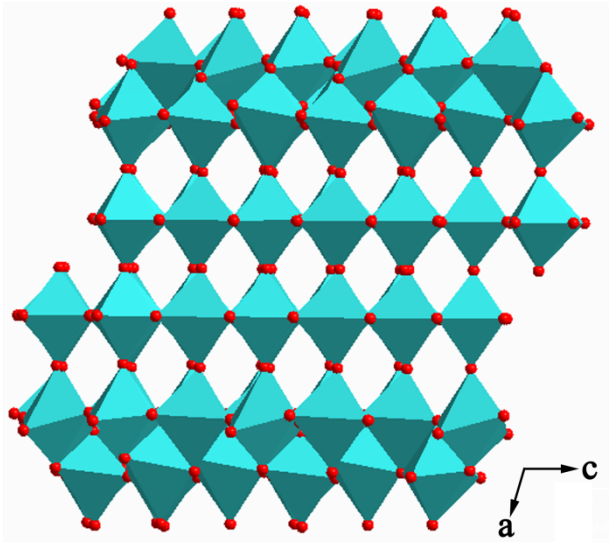

Fig. S1 Crystal structure view of $Ti_2Nb_{10}O_{29}$.

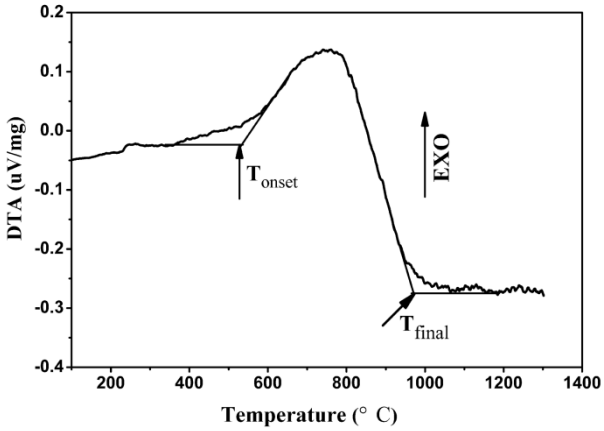

Fig. S2 DTA of the $Ti_2Nb_{10}O_{29}$ with a heating rate 10°C min^{-1} in a flow of air.

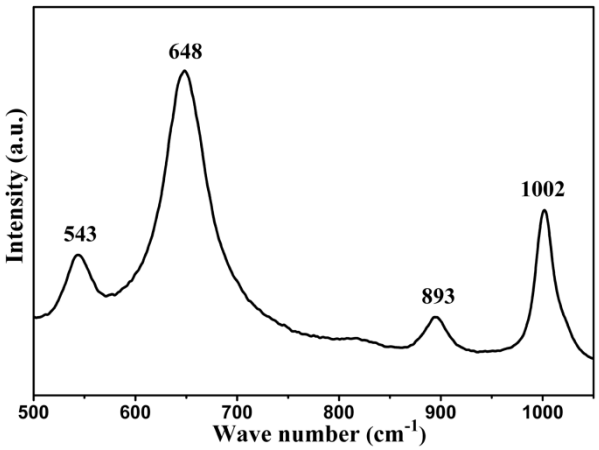

Fig. S3 Raman spectrum of $Ti_2Nb_{10}O_{29}$

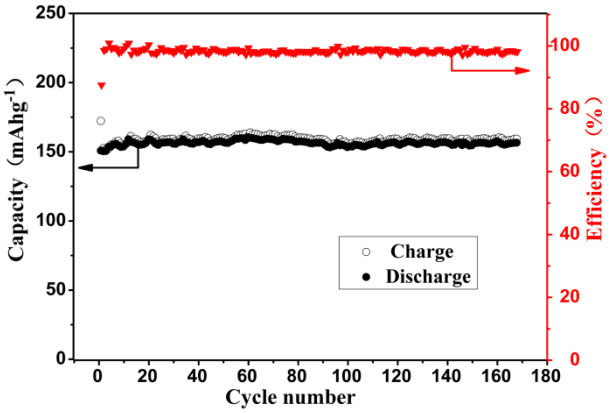

Fig. S4 Cyclic performance of $LiFePO_4$ at a current rate of 1C cycled between 2.5 and 4.2 V