Electronic Supplementary Information

Ru$_{0.01}$Ti$_{0.99}$Nb$_2$O$_7$ as an intercalation-type anode material with a large capacity and high rate performance for lithium-ion batteries

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Fig. S1 Crystal structure of TiNb$_2$O$_7$ showing the m × n × ∞ (m = n = 3) ReO$_3$-type blocks.
Fig. S2 (a) Nyquist plots of Li₄Ti₅O₁₂/Li cell. (b) Relationship between real impedance with low frequency for Li₄Ti₅O₁₂/Li cell. The specific surface area of Li₄Ti₅O₁₂ is 3.63 m² g⁻¹. The loading density of Li₄Ti₅O₁₂ is 1.45 mg cm⁻². σ_w = 11.95 Ω s⁻⁰.₅, D = 1.81 × 10⁻¹⁶ cm² s⁻¹.
**Fig. S3** Coulombic efficiency of Ru\textsubscript{0.01}Ti\textsubscript{0.99}Nb\textsubscript{2}O\textsubscript{7}/Li cell at 5 C.

**Fig. S4** Ex-situ XRD patterns of TiNb\textsubscript{2}O\textsubscript{7} electrodes after (a) as-fabricated, (b) first-discharged to 0.8 V vs. Li/Li\textsuperscript{+}, (c) first-charged to 3 V vs. Li/Li\textsuperscript{+}, and (d) charged to 3 V vs. Li/Li\textsuperscript{+} in the 10\textsuperscript{th} cycle. Identical discharge–charge rates were used.
Fig. S5 SEM image and EDX mapping of Ru$_{0.01}$Ti$_{0.99}$Nb$_2$O$_7$. 

![Image of SEM image and EDX mapping of Ru$_{0.01}$Ti$_{0.99}$Nb$_2$O$_7$.](image_url)