

Hydrothermal synthesis and adsorption behavior of $\text{H}_4\text{Ti}_5\text{O}_{12}$ nanorods along [100] as lithium ion-sieves

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1. Effect of second hydrothermal temperature on the nanorod morphology.

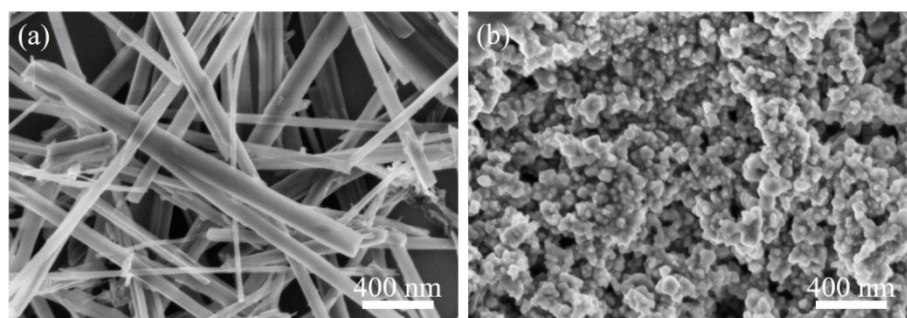


Fig. S1. SEM images of titanium oxides obtained at (a) 95°C and (b) 120°C for 24 h in the second hydrothermal process.

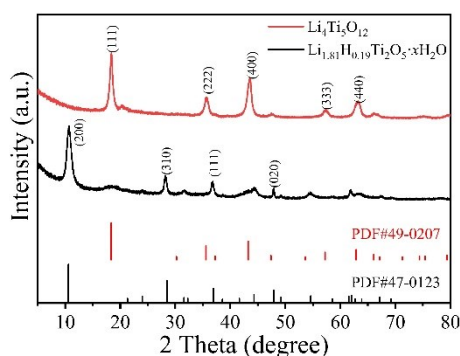


Fig. S2. The XRD patterns of lithium titanium oxides obtained from different treatment process. $\text{Li}_{1.81}\text{H}_{0.19}\text{Ti}_2\text{O}_5 \cdot x\text{H}_2\text{O}$ and $\text{Li}_4\text{Ti}_5\text{O}_{12}$.

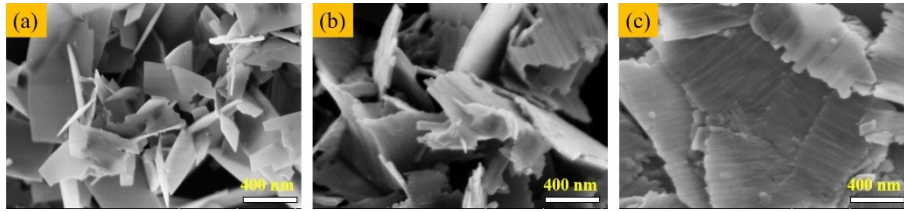


Fig. S3. Low-magnification SEM images of synthesized products: (a) $\text{Li}_{1.81}\text{H}_{0.19}\text{Ti}_2\text{O}_5 \cdot x\text{H}_2\text{O}$ nanosheets (b) $\text{Li}_4\text{T}_5\text{O}_{12}$ nanosheets and (c) $\text{H}_4\text{T}_5\text{O}_{12}$ nanosheets.

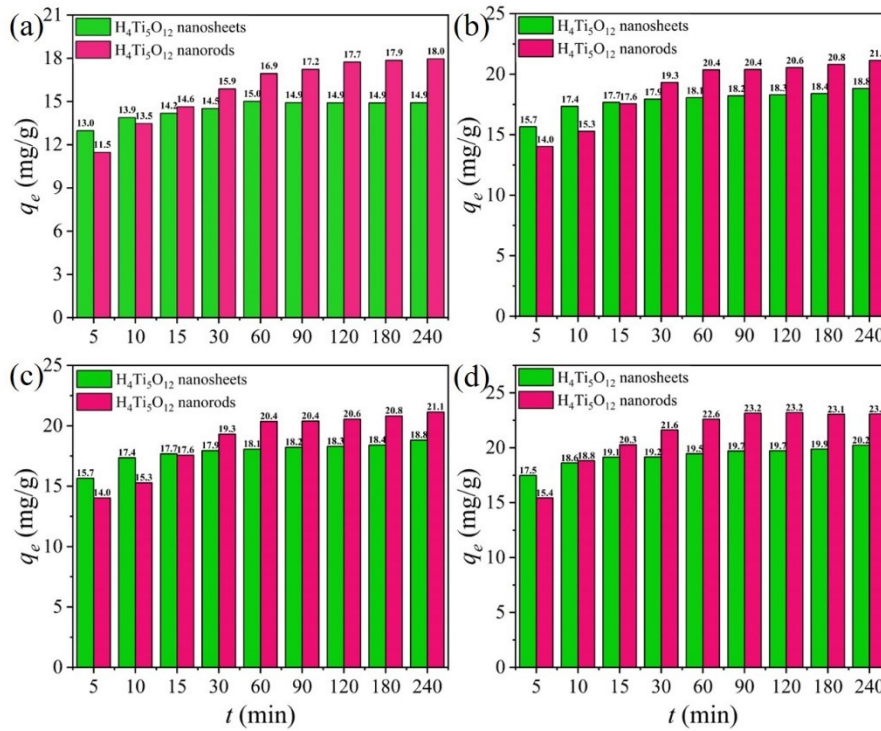


Fig. S4. The effect of LiCl concentrations and adsorption temperatures on the Li^+ adsorption by different shapes of $\text{H}_4\text{Ti}_5\text{O}_{12}$. (a) $C_{\text{LiCl}} = 12 \text{ mM}, T = 25^\circ\text{C}$, (b) $C_{\text{LiCl}} = 24 \text{ mM}, T = 25^\circ\text{C}$, (c) $C_{\text{LiCl}} = 24 \text{ mM}, T = 25^\circ\text{C}$ and (d) $C_{\text{LiCl}} = 36 \text{ mM}, T = 25^\circ\text{C}$.

2. Effect of different adsorption temperatures on the Li^+ adsorption

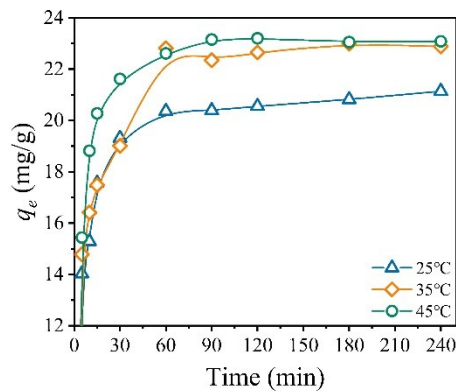


Fig. S5. The adsorption capacities at different adsorption temperatures. (adsorbent: 0.1 g, LiCl)

concentration: 24mM, volume: 50 mL, shaking speed: 150 rpm, pH value: 13).

3. Effect of LiCl concentrations on the Li⁺ adsorption

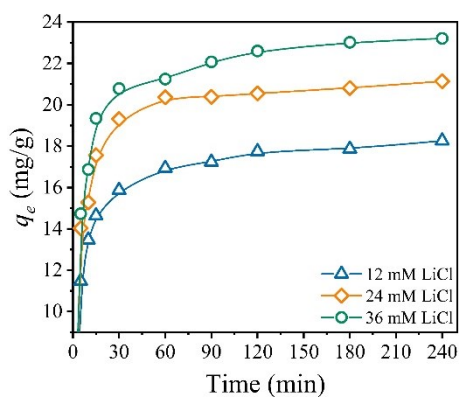


Fig. S6. The adsorption capacities at different LiCl concentrations. (adsorbent: 0.1 g, volume: 50 mL, shaking speed: 150 rpm, temperature: 25°C, pH value: 13).

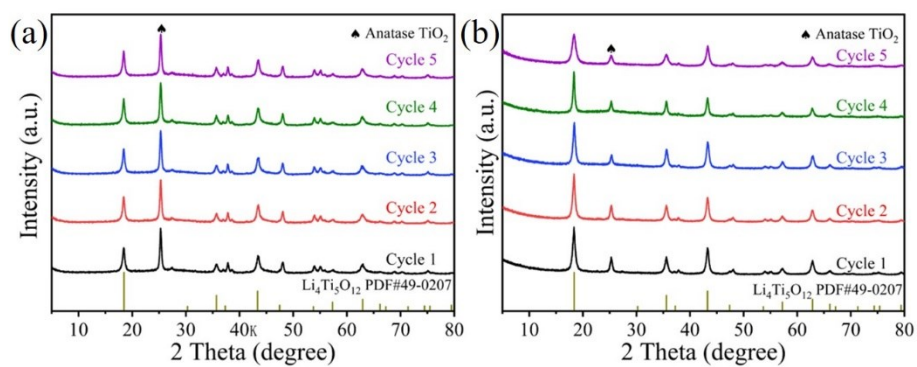


Fig. S7. in revised supporting information. The XRD patterns of (a) H₄Ti₅O₁₂ and (b) r-Li₄Ti₅O₁₂ obtained from each cycle.