

Study on Preparation and Electrochemistry Performance of Fluorinated $\text{Li}_4\text{Ti}_5\text{O}_{12}$ Material

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That searching a suitable anode came to be one of the hottest issues in lithium ion batteries with the increasing development of energy storage [1]. Due to its good electrochemistry properties, $\text{Li}_4\text{Ti}_5\text{O}_{12}$ has attracted great attention. It owned the advantages of long discharge plateau, superior safety and nice performance at low temperature, which indicated a great applicable potential [2]. However, $\text{Li}_4\text{Ti}_5\text{O}_{12}$ suffered the low electron conductivity. [3] In this work, a facile method for the fluorination of $\text{Li}_4\text{Ti}_5\text{O}_{12}$ was applied. Via this method, better rate performance and larger specific capacity were obtained of the fluorination $\text{Li}_4\text{Ti}_5\text{O}_{12}$. As shown in Figure 1, the discharge capacities were 170, 163, 157, 140, 115, 88 and 65 at the rate of 0.20, 0.50, 1, 2, 5, 10 and 15 C, respectively. Larger Li^+ diffusion parameter after fluorination was confirmed by calculation. All these results would provide an applicable modification of $\text{Li}_4\text{Ti}_5\text{O}_{12}$ materials, which can contribute a lot to the development of lithium ion batteries.

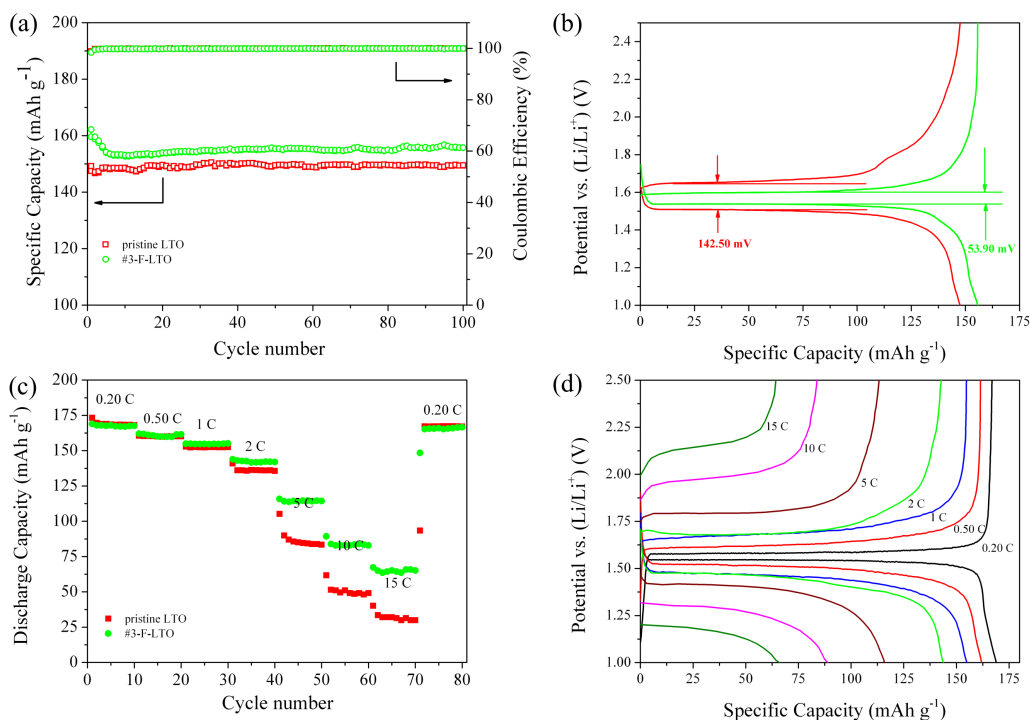


Figure 1 Cyclic performance (a) and 100th charge–discharge curves (b) of LTO and F-LTO at 1 C; Electrochemical properties of LTO and F-LTO at various current rates from 0.20 to 15 C: rate performance (c) and charge-discharge curves of F-LTO (d).

References:

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