Electrochemical Performance study of Metal ions co-doping in B-site of LTO Anode Material

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Metal ions co-doped $\text{Li}_4\text{Sb}_x\text{Cr}_x\text{Ti}_{5-2x}\text{O}_{12}$ ($0 \leq x \leq 0.1$) anode material had been successfully synthesized by solid state reaction method. The electrochemical properties of these spinel anode materials had been investigated. The results showed that $\text{Li}_4\text{Sb}_x\text{Cr}_x\text{Ti}_{5-2x}\text{O}_{12}$ materials with good crystallization and the metal ions $\text{Sb}^{5+}/\text{Cr}^{3+}$ had entered the Ti^{4+} B-site lattice without destroying or changing the crystal structure of $\text{Li}_4\text{Ti}_5\text{O}_{12}$. Compared with pristine $\text{Li}_4\text{Ti}_5\text{O}_{12}$ anode material, the $\text{Li}_4\text{Sb}_{0.05}\text{Cr}_{0.05}\text{Ti}_{4.9}\text{O}_{12}$ materials presented the best charge/discharge capacity, better reversibility and higher cyclic stability, especially at high current rates, for lithium-ion batteries.

Keywords: Metal ions co-doping, $\text{Li}_4\text{Sb}_x\text{Cr}_x\text{Ti}_{5-2x}\text{O}_{12}$, Anode material, lithium storage capacity

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