

研究简报

Ti, F复合掺杂改进 $\text{LiNi}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$ 正极材料的电化学性能

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摘要 采用复合离子掺杂技术对 $\text{LiNi}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$ 进行改性, 并对材料的结构及电化学性能进行了考察.

关键词 [正极材料](#) [电化学性能](#) [复合掺杂](#) [电荷转移阻抗](#)

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Improvement on the Electrochemical Properties of Cathode Material $\text{LiNi}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$ by Ti-F Co-substitution

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Abstract Layered $\text{LiNi}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$ as the cathode materials for lithium ion batteries was synthesized with the co-precipitated metal carbonate as the precursor. The effects of Ti-F co-substitution on the structure and electrochemical properties of $\text{LiNi}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$ were studied by X-ray diffraction(XRD), X-ray photoelectron spectroscopy(XPS), electrochemical impedance spectroscopy(EIS) and galvanostatic charge-discharge experiments. Ti-F co-substitution leads to the change in the content of transition metal ions with a low valence, thereby induces a expansion in lattice volume. Furthermore, the increase of charge-transfer resistances during the cycling was suppressed by Ti-F co-substitution. The initial discharge capacity of substitute sample is 165.23 mA · h/g and the capacity retention rate is 94.9% up to 20 cycles.

Key words [Cathode material](#) [Electrochemical property](#) [Co-substitution](#) [Charge-transfer resistance](#)

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