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LiVOPO₄/C的溶液沉积-热解法制备与表征

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Preparation and Characterization of LiVOPO₄/C Composite Prepared by Solution Deposition-Pyrolysis Technique

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摘要 以LiVOPO₄、蔗糖为原料,采用溶液沉积-热解法制备了LiVOPO₄/C复合材料。采用热重与差热分析、X-射线衍射分析、扫描电镜分析以及电化学测试等手段对LiVOPO₄/C的微观结构、表面形貌和电化学性能进行了研究,结果表明:蔗糖热分解后在LiVOPO₄颗粒的表面包覆形成了一层多孔碳;多孔碳可以有效阻止LiVOPO₄颗粒的聚集,增加电极的导电面积,降低电池极化,改善LiVOPO₄的电化学性能;与LiVOPO₄粉末相比,LiVOPO₄/C具有更高的可逆容量、更稳定的循环性能。

关键词: LiVOPO₄ 碳 包覆

Abstract: LiVOPO₄/C composite was prepared by solution deposition-pyrolysis method using LiVOPO₄ and sucrose as raw materials. The microstructure, surface morphology and electrochemical properties were characterized by various electrochemical methods in combination with X-ray diffraction (XRD) and scanning electron microscope (SEM). It is found that the porous carbon layer is coated on the surface of LiVOPO₄ due to the pyrolysis of sucrose. The porous carbon can prevent the LiVOPO₄ particles from aggregation, increase the conductive area of electrode, decrease the polarization of cell and improve the electrochemical properties of LiVOPO₄ effectively. Compared with LiVOPO₄, the LiVOPO₄/C composite has increased reversible capacity, stabilized cycling performance.

Key words: LiVOPO₄ carbon coating

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