Short Communication

Synthesis of β -LiVOPO₄/C by Sol-gel Method and Microwave Sintering as Cathode Material for Lithium Ion Batteries

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The pure phase of β -LiVOPO₄/C materials was synthesized by sol-gel method and microwave sintering with a starting material of V₂O₅, H₃PO₄, LiNO₃ and citric acid in microwave oven calcined for 5 min at the power of 900 W. The micro-structure was detected by X-ray diffraction (XRD) and the transmission electron microscopy (TEM) was also conducted to observe morphology of the material. Meanwhile, electrochemical property were also characterized by constant charge/discharge test, AC impedance and Cyclic voltammetry test. The results indicated that the external of LiVOPO₄ was coated on amorphous carbon with a thickness of 1.57 nm, which originated from citric acid, and enhanced the ionic conductivity of the material. Besides, the first discharge capacity is 94.5 mAh·g⁻¹ between 3 V and 4.5 V at the rate of C/20. The discharge capacity of β -LiVOPO₄/C maintained at 88.6 mAh·g⁻¹, which has 93.8% capacity retention after 30 cycles.

Keywords: Sol-gel method; Microwave sintering; β -LiVOPO₄/C; Electrochemical property;

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