Two-step Synthesis of $\text{LiVP}_2\text{O}_7/\text{C}$ for Use as Cathode Material in Lithium-Ion Batteries

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$\text{LiVP}_2\text{O}_7/\text{C}$ was synthesized by a novel two-step method, which involves combining the sol-gel method and the high-temperature solid phase method. VP_2O_7 , VOPO_4 , and LiVOPO_4 were used as the precursors for producing the $\text{LiVP}_2\text{O}_7/\text{C}$ composite. The electrochemical performances of the three samples synthesized using the different precursors were compared. It was found that $\text{LiVP}_2\text{O}_7/\text{C}$ prepared using VP_2O_7 as the precursor showed the best electrochemical performance. The initial discharge capacity of this sample was $100.2 \text{ mAh}\cdot\text{g}^{-1}$, while its discharge capacity was $90.8 \text{ mAh}\cdot\text{g}^{-1}$ after 50 cycles. Moreover, this LiVP_2O_7 sample exhibited a high voltage platform of approximately 4.2 V/4.3 V.

Keywords: $\text{LiVP}_2\text{O}_7/\text{C}$; cathode materials; two-step synthesis method

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