Short Communication

Rhombohedral-structured LiVO₂ Prepared by a Novel Two-Step Method and Its Electrochemical Properties

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Layered LiVO₂ was prepared as a cathode material for lithium ion batteries by a novel two-step reduction method. The structure and morphology of the material were characterized by X-ray diffraction, X-ray photoelectron spectroscopy, and transmission electron microscopy. The specific capacity of the material reached 201.7 mAh g⁻¹ when charged and discharged at a rate of 0.2 C in the voltage range of 1.0–4.5 V. The retention ratio of discharge capacity was 65% after 30 cycles. The charge-transfer resistance calculated by fitting the experimental electrochemical impedance data to the equivalent circuit model was 81.65 Ω. From this, the lithium ion diffusion coefficient was calculated to be 2.72×10⁻¹¹ cm s⁻¹, indicating that this material exhibits excellent ionic and electronic conductivity.

Keywords: LiVO₂; two-step method ; cathode materials; electrochemical performance

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