Synthesis and Electrochemical Properties of Doped Tin Fe₂(MoO₄)₃ as Cathode Material for Sodium-Ion Batteries

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Fe₂₋ₓSnₓ(MoO₄)₃ samples were successfully synthesized by wet chemical route. The analytical results of X-ray diffractions indicated that the additions of tin have not destroyed the lattice structure of Fe₂₋ₓSnₓ(MoO₄)₃, but increased the units cell volume. Fe₂₋ₓSnₓ(MoO₄)₃ can be exhibited higher discharge/charge capacities and better cycle-stability than the pristine one. At room temperature, the initial discharge capacity of Fe₁.95Sn₀.⁰₅(MoO₄)₃ is 83.12 mAh g⁻¹ at a discharge rate of 0.5 C and remains 78.81 after 50 cycles. The improved electrochemical properties can be explaining with the presence of tin in the lattice of Fe₂(MoO₄)₃ by improved the structure stability and electrical conductivity.

Keywords: NASICON. Sn doped. Iron molybdite. Cathode materials. Sodium-ion battery.

FULL TEXT

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