SnO₂@C composite as Anode Material of Lithium-ion Batteries with Enhanced Cycling Stability

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Received: 16 September 2021 / Accepted: 1 November 2021 / Published: 2 February 2022

The SnO₂@C composite was prepared by a two-step microwave-hydrothermal method using a microwave reaction system. The surface of the carbon spheres is composited of the SnO₂ nanoparticles with a diameter of about 3 nm. The SnO₂@C composite exhibits excellent electrochemical performances in lithium-ion batteries. The first discharge/charge capacities at a current density of 700 and 1000 mA g⁻¹ is 1393/766 and 1309/685 mAh·g⁻¹ with coulomb efficiencies of 54.99% and 52.33%, respectively. Even after 100 cycles, the discharge specific capacities at a current density of 1000 mA g⁻¹ remains 480 mAh·g⁻¹ with coulomb efficiencies of 99.40%.

Keywords: SnO₂, microwave-hydrothermal, lithium-ion batteries, carbon spheres, electrochemical performances

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