Short Communication

One-Step Synthesis of Co@C Composite as High-Performance Anode Material for Lithium-ion Batteries

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A carbon-coated cobalt (Co@C) composite was synthesized by a one-step method using ionic liquid as carbon source and reducing agent. The Co@C composite exhibited a core-shell structure, in which the cobalt nanoparticles uniformly embedded in the carbon matrix. When used as the anode material for lithium ion batteries, the cobalt nanoparticles enhanced the kinetics of Li⁺ and electronic transport during the charge/discharge process. The Co@C composite material delivered a reversible capacity of 657.3 mAh g⁻¹ after 60 cycles at a current density of 0.1C and exhibits improved rate performance when compared with pure carbon.

Keywords: Co@C composite; Lithium ion batteries; Ionic liquid

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