Short Communication

Synthesis of Polypyrrole Coated RGO/S Composite as a Cathode material for Enhanced Lithium-Sulfur Batteries

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Lithium-sulfur (Li-S) batteries have been widely studied in recent years, but the utilization of sulfur cathode is still limited by the low conductivity of cathode material and dissolution of polysulfides. A polypyrrole (PPy) coated reduced graphene oxide/S (RGO/S@PPy) material was synthesized in this study. It is shown that sulfur is uniformly distributed on RGO sheets, and a PPy layer is homogeneously coated on the surface of the RGO/S composite. The PPy coating relieves the dissolution of polysulfides and improves the utilization of active sulfur. As a result, a discharge capacity of 631 mA h g⁻¹ after 300 cycles at 0.2C and an excellent rate capability are obtained.

Keywords: Lithium-sulfur battery; Reduced graphene oxide; Polypyrrole; Cycle stability; Rate performance

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