N/O Co-doped Hollow Carbon Nanocapsules-Supported Ge Nanoparticles as Anodes for Excellent Performance Lithium-ion batteries

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In this work, a novel N/O Co-doped hollow carbon nanocapsule-supported Ge nanoparticles nanocomposite (Ge-N/O-CNCs) was successfully prepared by a facile heating reflux method. N/O codoped hollow carbon nanocapsule-supported Ge nanoparticles not only relieve the agglomeration of Ge nanoparticles and control the volume expansion, but also facilitate the rapid transmission of electrons. In LIBs, the unique Ge-N/O-CNCs nanoarchitecture was used as the anode material. At a high current density of 1 A g⁻¹, it remains a stable specific capacity of 448 mAh g⁻¹ remained after 100 cycles. Additionally, even at 3.2 A g⁻¹, this material exhibited a high-rate specific capacity of 350 mAh g⁻¹.

Keywords: Ge-N/O-CNCs, LIBs, high capacity, cycling stability

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