Room-temperature Facile Synthesis of Co₃O₄ Nanoflakes as Anode Material for Li-ion Rechargeable Batteries

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doi: 10.20964/2018.02.73

Received: 18 October 2017 / Accepted: 13 December 2017 / Published: 28 December 2017

There have been numerous reports on the synthesis of Co₃O₄ nanoparticles with a wide variety of nanostructures using different chemical methods. Many such approaches involved the synthesis of the metal hydroxide followed by thermal annealing to obtain the oxide. Recently, several low-temperature chemical methods have been developed. However, these procedures typically involve tedious experimental parameters. In this study, we developed a simple, strategic room-temperature approach to obtain hierarchical arrays of Co₃O₄ nanoflakes. The properties of the obtained material (phase, morphology, and structure) were analyzed comprehensively by techniques. The Co₃O₄ nanoflakes show superior electrode performance as an anode material in Li-ion rechargeable batteries, in terms of cycle life and rate capability, that is suitable for next-generation energy storage applications.

Keywords: room-temperature synthesis; Co₃O₄ nanoflakes; lithium-ion rechargeable battery; specific capacity

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