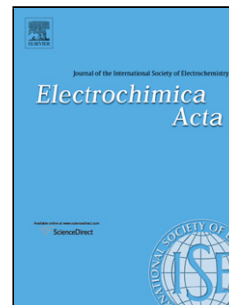


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**Strongly coupled hybrid ZnCo₂O₄ quantum dots/reduced graphene oxide with
high-performance lithium storage capability**

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ABSTRACT: Mesoporous binary metal oxides/reduced graphene oxide (rGO) two-dimensional nanostructures can provide open large surface areas for lithium ion access and storage, holding a great promise as high-performance electrode materials for next-generation energy storage. In this work, we develop an effective strategy involving a simple polyol process and a facile thermal annealing treatment, to synthesize ZnCo₂O₄ Quantum Dots (QDs)/rGO hybrid. Due to the large specific surface area, strongly coupled interaction and synergic effect between ZnCo₂O₄ QDs and rGO, the hybrid shows excellent lithium storage ability, with high reversible specific capacity, and superior rate performance, as well as ultralong cycle life. After 100 cycles, the ZnCo₂O₄ QDs/rGO2 delivers a capacity of 1062 mAh g⁻¹ at a current density of 500 mA g⁻¹. Even cycling at 2000 mA g⁻¹ up to 1000 cycles, the reversible capacity still preserves 682.5 mAh g⁻¹. These electrochemical results indicate the ZnCo₂O₄ QDs/rGO2 hybrid could be a promising candidate material as a high-performance anode material for lithium-ion batteries.

Keywords: ZnCo₂O₄ quantum dots; reduced graphene oxide; anode materials; synergic effect; Li-ion battery

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