Temperature-induced Hollow Hierarchical NiCo₂O₄ Microspheres for High Performance Pseudocapacitors

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Spinel nickel cobaltite (NiCo₂O₄) has been proved to be one of the most promising electrode materials for high performance supercapacitors due to its high theoretic specific capacitance, excellent electronic conductivity and good environmental benignity. In this work, the unique NiCo₂O₄ structure was fabricated hydrothermally via the induction of the reaction temperature and investigated electrochemically as supercapacitor electrode material. The resultant NiCo₂O₄ electrode with hollow hierarchical microspherical structure as supercapacitor displays excellent capacitive characteristic with higher specific capacitance, better cycling stability and rate capability compared to those with various morphologies, revealing the morphology dependence of the capacitive properties of NiCo₂O₄ electrode owing to the discrepant electronic conductivity and ion diffusion behavior. Thus, the temperature-induced changes in morphology are potential in the large-scale fabrication of NiCo₂O₄ electrode materials as supercapacitors.

Keywords: NiCo₂O₄, Electrode materials; Pseudocapacitors; Electrochemical performance.

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