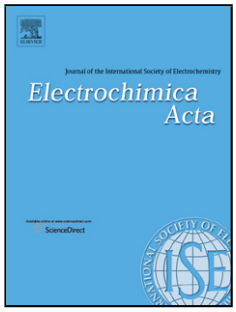

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Flower-like Nickel Oxide Nanocomposites Anode Materials for Excellent Performance Lithium-ion Batteries

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Abstract: A three-dimensional flower-like structure NiO and NiO-based nanocomposites (NiO@C and NiO/Ni) are synthesized with an ingenious fabrication technique followed by calcinating process in N_2 atmosphere. The mesocrystal structure and surface morphology are tested with the X-ray diffraction, scanning electron microscope and transmission electron microscope methods. As the anode materials for lithium-ion batteries, the as-prepared three-dimensional flower-like NiO/Ni and NiO@C nanocomposites maintain reversible discharge capacities of 846 mAh g^{-1} and 739 mAh g^{-1}, respectively, after repeated cycling at a current density of 1 A g^{-1} over 100 cycles. The rate performance of the NiO/Ni nanocomposites is better than that of the NiO@C composites, and the bare NiO should be one of the worst. These results indicate that the transition metal oxide materials can be promising for anode materials in lithium-ion batteries after being composited with good conductor materials.