

Synthesize of Cobalt Oxide Nanoballs/Carbon Aerogel Nanostructures: Towards High-Performance Materials for Supercapacitors

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Abstract : The synthesizer of cobalt oxide nanoballs (length 3–4 μm , width 250–400 nm) was achieved by a simple high-temperature supercritical solution method. Multiwalled carbon aerogels are a step towards high-density nanometer-scale nanostructures. Cobalt oxide nanoballs were prepared by supercritical solution method. Synthesis in an aqueous solution containing cobalt hydroxide at $\sim 80^\circ\text{C}$ without any further heat treatment at high temperature. The formation of cobalt oxide nanoballs on carbon aerogel was confirmed by X-ray diffraction and Raman spectroscopy. The FE-SEM images showed the presence of cobalt oxide nanoballs. The reaction mechanism of the ultrasound-assisted synthesis of cobalt oxide nanostructures was proposed on the basis of the XRD, X-ray absorption spectroscopy analysis and FE-SEM observation of the reaction products taken during the course of the synthesis.

Keywords : cobalt oxide nano balls, carbon aerogel, synthesize, nanostructure

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