Nickel/Porous Carbon Composite Derived from Bimetallic MOFs for Electrical Double-Layer Supercapacitor Application

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A novel method to synthesize nickel/ porous activated carbon composite materials has been proposed initially from bimetallic Ni(II)-MOF-5s. Electrochemical results present that the nickel /activated carbon maintains nearly 83 % capacity with the current density increases from 0.2 to 50 A g⁻¹ and shows excellent cyclic stability of about 1.5 % decrease after 5000 cycles. This product also demonstrated a good rectangularity at a high scan voltage of 2 V s⁻¹ and very low charge transfer resistance of approximately 0.35 Ω, which can be a prospective electrode material for electrochemical double-layer supercapacitor applications.

Keywords: Bimetallic MOFs; Ni nanoparticles; Graphitic porous carbon; Supercapacitor

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