

عنوان مقاله:

A Graphene and Nickel-Cobalt Metal Organic Framework Composite as a high-performance electrode material for supercapacitor application

محل انتشار:

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خلاصه مقاله:

A high-performance Ni, Co-MOF-G/nickel foam was fabricated using a novel electrodeposition method and used as an electrode material for a supercapacitor application. Structural tests including powder X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FT-IR), and Raman results affirmed the formation of the electrode active materials. Scanning electron microscopy (SEM) images showed a flower-like Ni, Co-MOF inside graphene sheets forming a composition of active materials on the nickel foam substrate. The electrochemical performance of the Ni, Co-MOF-G/ Nickel foam was examined using cyclic voltammetry (CV), galvanostatic charge/discharge (GCD), and electrochemical impedance spectroscopy (EIS). The prepared electrode delivered approvable specific capacitance of 158 F g^{-1} at the current density of 2 A g^{-1} in three molar potassium hydroxides. Excellent storage capacity of the fabricated electrode is attributed to the synergetic effects of bi-metal metal organic frameworks (Ni, Co-MOF) with porous carbon materials (graphene).

کلمات کلیدی:

electrodeposition, Ni, Co-MOF-G/ NF, Supercapacitors, Porous materials

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