Short Communication

Imidazolate Framework (Zn-Ni(MeIm)₂) Nanohybrids as Electrodes for Supercapacitor Applications

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doi: 10.20964/2020.08.41

Received: 28 March 2020 / Accepted: 7 May 2020 / Published: 10 July 2020

A typical solvothermal method was used to synthesize the imidazole framework (Zn-Ni(MeIm)₂) and subsequently calcined under a nitrogen atmosphere (Zn-Ni(MeIm)₂(N₂-723K), and activated with KOH (Zn-Ni(MeIm)₂(KOH)). The samples were characterized by X-ray diffraction, field emission scanning electron microscopy, Fourier transform infrared spectroscopy, and an electrochemical analyzer system. The pseudocapacitive behavior was exhibited when Zn-Ni(MeIm)₂ was used as a supercapacitor material in the electrolyte of 6 M KOH. The Zn-Ni(MeIm)₂, (Zn-Ni(MeIm)₂(N₂-723K) and (Zn-Ni(MeIm)₂(KOH) electrodes showed specific capacitances of 378, 192 and 573 Fg⁻¹, respectively, at a current density of 5 A g⁻¹. It still retained good performance and stability over 1000-cycles measurement. These results indicate that Zn-Ni(MeIm)₂-derived compounds are promising materials for use as supercapacitors.

Keywords: Imidazolate framework, Supercapacitors, Zn-Ni(MeIm)₂, Pseudocapacitance

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