

Abstract

Electrode materials with effective electrochemical characteristics are continually preferred for high-energy storage systems. Metal-organic frameworks (MOFs) are being given more consideration as potential electrode materials for supercapattery device. Supercapattery is a mixture of batteries and supercapacitors that combines the benefits of both automations in a single arrangement. Here, we have synthesized three samples of trimetallic Ni-Co-Zn MOFs via hydrothermal method using trimesic acid and terephthalic acid as organic linker. By varying the amount of zinc with percentage 25, 50 and 75 in Ni/Co/Zn-MOF naming samples as S25, S50 and S75 gives us better performance and large specific area at 25% having least amount of Zn. Among the investigated MOFs, sample S25 displays the largest specific capacitance (C_s) of 322 Fg^{-1} at current density of 0.3 Ag^{-1} and 253 Fg^{-1} at scan rate of 5 mV/s . Three electrode configuration was used for comparative electrochemical analysis of these MOFs, and more correlations of electrochemical performance was found with physico-chemical characteristics.