

Metals-organic frameworks (MOFs) based on transition metals (Ni and Co) are synthesized by hydrothermal technique with Terephthalic acid (TPA) as organic-ligand precursor. Among the three MOFs as Ni-MOF, Co-MOF and a bi-metallic Ni-Co-MOF (with 1:1 Ni/Co), the bi-metallic MOF shows enhanced electrochemical properties by employing the synergistic effects of both transition metals. Further, Ni-Co-MOF exhibiting lesser resistances of different kinds, thereby it shows better conductivity by giving highest current of 107 mA at 100 mV/s scan-rate. Having the largest current and large integrated area under the curve in CV analysis, the binary MOF reveals the highest specific capacitance of 1080.44 F/g at 1 A/g current density. It even sustains its rate capability of 67.32 % at much high 10 A/g current density. Furthermore, it retains about 92.7 % of capacitance after 5000 cycles of charging-discharging with faradic efficiency maintained at 99.33 %. These highly improved electrochemical properties of Ni-Co-MOF highlight its application as promising battery type electrode material in supercapattery devices.