SUPERCAPACITIVE PERFORMANCE OF REDUCE GRAPHENE OXIDE / NICKEL / TITANIUM DIOXIDE TERNARY NANOCOMPOSITE

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ABSTRACT

SUPERCAPACITIVE PERFORMANCE OF REDUCE GRAPHENE OXIDE / NICKEL / TITANIUM DIOXIDE TERNARY NANOCOMPOSITE

In this report of rGO/Ni/TiO_2 ternary nanocomposites, were examined at different amount (10%, 20% and 30%). Using electrochemical characterization such as cyclic voltammetry and charge-discharging time, the almost rectangular symmetry plot graph and the symmetry charge-discharge graph can be obtained. The specific capacitance for the 10% rGO/Ni/TiO_2 range about (46.16- 489.91F/g), 20% 10% rGO/Ni/TiO_2 range about (35.81 – 196.41F/g) and 30% 10% rGO/Ni/TiO_2 range about (225.29 – 446.94 F/g) respectively. The 10% rGO/Ni/TiO_2 at 20 mV/s show the highest specific capacitance (489.91 F/g) among all the others. By charging-discharging time graph, rGO/Ni/TiO_2 exhibit higher energy density of 244.95 Wh/kg and power density of 4961.1 W/kg. This explain the capability of TiO_2 in improving electrochemical performance in the electrical devices.