

## ABSTRACT

Reduced graphene oxide doped metal oxides rGO/CuFe<sub>2</sub>O<sub>4</sub>, rGO/CoFe<sub>2</sub>O<sub>4</sub>, and rGO/CeFe<sub>2</sub>O<sub>4</sub> (GFCs) nanocomposites has been investigated by one-pot hydrothermal method. The formation GFCs were investigated by UV-Visible spectroscopy, Fourier Transform Infra-red , Photoluminescence and Particle Size analyzer, the electrochemical performance of GFCs were investigated by Cyclic Voltammetry (CV), Galvanostatic charging and discharging (GCD) and Electrochemical Impedance spectroscopy (EIS) at 1M KOH aqueous electrolyte. The particle size analysis (PSA) was used to estimate the size of GFCs (Cu, Co and Ce) nanocomposites, 1733, 563 and 249 nm respectively. The specific capacitance values recorded for GFCs (Cu, Co and Ce) were 66.129, 50.156, and 137.728 F/g respectively. The specific capacitance value of rGO/CeFe<sub>2</sub>O<sub>4</sub> is higher than rGO/CuFe<sub>2</sub>O<sub>4</sub> and rGO/CoFe<sub>2</sub>O<sub>4</sub>. So, according to electrochemical performance application, GFCE is the best for electrode material as compared to GFCu and GFCo.

### **Keywords**

One-pot Hydrothermal method, Nanocomposites, Energy storage and world demand, Electrochemical performance, Specific Capacitance, CV, GCD, EIS