

ABSTRACT

In this research work Copper Zinc Oxide (CuZnO) and Copper Zinc Oxide decorated reduced Graphene Oxide (CuZnO-rGO) composite was synthesized by using Co-Precipitation method. X-ray diffraction (XRD) confirm the crystalline structure of material. Scanning Electron Microscopy (SEM) was used to confirm the morphology of the nanoparticles in the prepared material. FTIR shows that bands below crystalline structure of material 460 cm^{-1} are assigned to ZnO bonds and bands above 501 cm^{-1} are due to CuO bonds. UV-Visible Spectroscopy (UV-Vis) reveals that reduction in band gap value helps to get better conductive properties of Supercapacitor. Cyclic Voltammetry and Galvanostatic Charging-Discharging were used to examine electrical performance of material. The maximum specific capacitance of (CuZnO-rGO) is 408 Fg^{-1} was calculated at 2 Ag^{-1} current density. The maximum calculated energy density for CuZnO-rGO is 14.1 Whkg^{-1} at power density of 500 Wkg^{-1} at 2 Ag^{-1} current density.