**Abstract**

Yttrium oxide has a good electron conducting capacity and easy to mold into different shapes. A novel Yttrium oxide(Y2O3) nanoparticles are synthesized by simple chemical precipitation method. The prepared nanocomposites are characterized by X-Ray diffraction (XRD), Field emission Scanning electron microscopy (FESEM), High Resolution Transmission Electron Microscopy(HRTEM), Energy-dispersive X-ray spectroscopy(EDAX), Fourier-transform infrared spectroscopy (FT-IR), Raman Scattering Spectroscopy and UV-visible (UV-vis) absorption spectroscopy.The X-Ray diffraction analysis showed that the crystallite size of the prepared nanocomposites is found to be 22 nm. The electrochemical activity of the prepared nanocomposites is investigated by cyclic voltammetry(CV) technique. The synthesized nanoparticles can be applied for solar cell applications, electrochemical investigation and supercapacitor applications.