**Abstract**

Solar cells are based on semi-conducting components that once assembled properly can convert successfully sunlight into electricity. Dye Sensitized Solar Cells are currently the most efficient third-generation solar technology. Natural dye sensitized solar cells are becoming promising candidates for replacing synthetic dyes. Graphene oxide is one of the most promising materials for electronic devices because of its unique properties. It is prepared from natural graphite flakes by modified hummer’s method. A novel Nitrogen doped Graphene oxide/yttrium oxide (NGO / Y2O3) nanocomposites are prepared by chemical precipitation method. The structure of the prepared nanocomposites is investigated by X-Ray diffraction analysis and the morphological properties of the prepared nanocomposites are investigated by scanning electron microscopy (SEM). The presence of functional groups in the synthesized nanocomposites is studied by Fourier transform infrared spectroscopy (FT-IR). The electrochemical activity of the prepared nanocomposites is investigated by cyclic voltammetry (CV). The prepared nanocomposites can be applied for dye sensitized solar cell applications.