**Abstract**

In the present work, *β*-cyclodextrin functionalized reduced graphene oxide-silver nanocomposites (GO-*β*-CD-Ag) are effectively synthesized using wet chemical method. The GO-*β*-CD nanocomposites are initially produced via hydrazine reduction. The various concentrations (0.002 M, 0.004 M, 0.006 M, 0.008 M and 0.01 M) of silver nanoparticles are decorated on the GO-*β*-CD surface by the reduction of silver nitrate with sodium borohydrate as a reducing agent. The produced GO-*β*-CD-Ag nanocomposites are well characterized using XRD, SEM and EDAX analysis. The XRD results firmly established that the *β*-CD molecules are satisfactorily coated on the rGO surface and also the Ag nanoparticles with an average size of 23 nm are evenly decorated on the GO-*β*-CD surface. The GO-*β*-CD-Ag nanocomposites modified glassy carbon electrode is captivated for the selective detection of o-Nitrophenol. Cyclic voltammetry test is employed to determine the presence of o-Nitrophenol compound. The result shows the oxidation and reduction potential for o-Nitrophenol at -0.25 V and -0.5 V respectively, indicating the successful determination of o-Nitrophenol by using the GO-CD-Ag nanocomposite modified electrode.