**Abstract**

The present work describes the synthesis of beta cyclodextrin functionalized silver nanoparticles encapsulated graphene oxide nanocomposite for the sensitive electrochemical detection of nitrophenol (NP) isomers. The functionalization and encapsulation of graphene oxide surface using beta cyclodextrin and silver nanoparticles are done by using chemical reduction of graphene oxide, beta cyclodextrin and silver nitrate chemical reagents. The physico-chemical properties of synthesized GO-CD-Ag nanocomposites are investigated using XRD, SEM, TEM and RAMAN analytical techniques [1]. The SEM and TEM morphological analysis confirms that the beta cyclodextrin molecules are effectively covered on the surface of graphene oxide nanosheets and also the silver nanoparticles are uniformly encapsulated on the surface of beta cyclodextrin functionalized graphene oxide nanosheets. The synthesized GO-CD-Ag nanocomposite modified GCE is employed for the sensitive detection of nitrophenol isomer such as para-nitrophenol (p-NP) and meta-nitrophenol (m-NP). The cyclic voltammetry studies show that the GO-CD-Ag nanocomposite modified GCE exhibits a good electrochemical behaviour for the reduction of p-NP and m-NP isomers in PBS solution [2]. The enhancement in the electrochemical behaviour of graphene oxide may be due to the host guest recognition properties of beta cyclodextrin and electronic properties of silver nanoparticles. The synthesized GO-CD-Ag nanocomposite modified electrochemical sensor exhibits the linear detection limits of 25 mm and 15 mm for p-NP and m-NP, respectively.