**Abstract**

 The present work describes the synthesis of beta-cyclodextrin (β-CD) functionalized copper oxide nanoparticles (CuONPs) encapsulated reduced graphene oxide (rGO) nanosheets (rGONS/β-CD/CuO) for the electrochemical detection of nitrophenol isomer such as ortho-nitrophenol. The chemical functionalization of stabilizing agent with the synthesized rGONS/CuO nanocomposites and the polymer stabilized rGONS/CD/CuO nanocomposites are investigated using FT-IR, XRD, SEM and TEM analysis. The morphological analysis confirms that oligosaccharide molecules are functionalized on the rGONS surface and also the encapsulated spherical shaped CuONPs on the rGONS/β-CD surface. The electrochemical study shows that the rGONS/β-CD/CuO/GCE exhibits a good electrochemical behaviour for the reduction of nitrophenol isomer. It shows good linear range of detection for ortho-nitrophenol with a sensitivity of 2.3 mAμM-1cm-2. The enhancement in the electrochemical behaviour of rGONS may be due to the host guest recognition and catalytic properties of β-CD and CuONPs respectively.