**Abstract**

The different concentrations (0.002 M, 0.004 M, 0.006 M, 0.008Mand 0.01M) of gold nanoparticles encapsulated β-cyclodextrin functionalized reduced graphene oxide nanocomposites (rGONS/β-CD/Au) synthesized via wet chemical method is reported. The synthesized rGONS/β-CD/Au nanocomposites are investigated using FTIR, XRD, SEM, EDS andTEManalysis. The FTIR spectra reveal that the blue shift in the bands may be due to the intermolecular interaction between reduced graphene oxide and cyclodextrin. FromXRDanalysis the average crystallite size is found to be around 10 nm, which is in good agreement withTEManalysis. The SEM analysis shows the spherical structure of the gold nanoparticles. The glassy carbon electrode (GCE) modified with the synthesized rGONS/β-CD/Au nanocomposites of 0.006Mconcentration is employed for the sensitive detection of different nitrophenols such as ortho-nitrophenol (o-NP), para-nitrophenol (p-NP) and metanitrophenol (m-NP) by using electrochemical techniques and the result displays a wide detection range for all the nitrophenol isomers.