**Abstract**

 In this study, a novel reduced graphene oxide-based nanocomposite electrochemical biosensor for the reliable detection of H2O2 is developed. Reduced graphene oxide-chitosan nanocomposites are successfully prepared by chemical reduction method. XRD, FT-IR, SEM and EDAX analysis are performed to characterize the structural, spectral, morphology and composition of the prepared nanocomposites. The response of the modified electrode to H2O2 is examined by cyclic voltammetry. Under optimal experimental conditions, the RGO-CS biosensor showed outstanding catalytic activity toward H2O2 reduction. The H2O2 reduction peaks are observed about 0.1V. These results confirm that RGO-CS nanocomposites with the high surface area and electrocatalytic activity offer a promising candidate for the detection of H2O2 in biological environment.