

## ABSTRACT

. Electrocatalytic behaviour of graphene oxide nanosheets (GONS) and cobalt oxide nanoparticles ( $\text{Co}_3\text{O}_4\text{NPs}$ ) composite modified glassy carbon based sensor for 2,4 dichlorophenol (2,4 DCP) is investigated in this work. The GONS and  $\text{Co}_3\text{O}_4\text{NPs}$  were successfully synthesised and characterised by Fourier Transform Infrared Red (FTIR) spectroscopy, UV–Vis spectroscopy, Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM) and Energy Dispersive X-ray (EDX) spectroscopy, electrochemical impedance spectroscopy and cyclic voltammetry. The electrode surface area and surface coverage were  $0.13 \text{ cm}^2$  and  $1.31 \times 10^{-12} \text{ mol cm}^{-2}$  respectively after modification with GONS/ $\text{Co}_3\text{O}_4\text{NPs}$  composite. The modified electrode had an electro-oxidation catalytic rate constant,  $k$ , of  $3.6 \times 10^6 \text{ M}^{-1} \text{ s}^{-1}$  and limit of detection of  $3.5 \times 10^{-7} \text{ M}$  for the same test analyte. The electrode showed good reproducibility and an appreciably low oxidation potential (0.8 V) for 2,4-DCP.