

# **Voltammetric studies and characterizations of biocompatible graphene/collagen nanocomposite-modified glassy carbon electrode towards enantio-recognition of chiral molecules**

## **ABSTRACT**

Chiral recognition has continuously attracted the attention among researchers due to its significance in the field of biomedical, as well as pharmaceutical sciences. Thus, graphene has been found surprisingly unfamiliar for incorporation with collagen, whereby it is fundamentally capable of enhancing the chiral recognition properties in chiral molecules. Hence, pertaining to the promising prospective of this composite, electro-analysis studies had been carried out on graphene/collagen nanocomposites on glassy carbon electrode. On top of that, cyclic voltammetry studies were conducted with various parameters, such as scan rates, temperatures, pH, concentrations, multiple cycles, as well as different graphene conditions to evaluate the potential of graphene/collagen as a promising aspirant in chiral recognition. Apart from that, the properties of nanocomposites were looked into via electrochemical impedance spectroscopy, microscopic, as well as spectroscopic method, involving Fourier transform infrared spectroscopy, UV–visible spectroscopy, Raman spectroscopy, Field-emission scanning electron microscopy, and Transmission electron microscopy. Finally, the optimised nanocomposites were applied in simple chiral recognition of chiral molecules involving Mandelic Acid and Tyrosine.

**Keyword:** Collagen; Cyclic voltammetry; Differential pulse voltammetry; Electrochemical impedance