

Characterization of COOH-Fe₃O₄/NCC-CTA⁺ on screen printed carbon electrode using field emission scanning electron microscope and energy dispersive x-ray for DNA biosensor

ABSTRACT

A novel DNA biosensing platform was designed by the functionalization of iron oxide (Fe₃O₄) with the carboxylic group via capping agent, mercaptopropionic acid (MPA) and conjugated with nanocellulose crystalline (NCC) surface modified with surfactant cetyltrimethylammoniumbromide (CTAB) to assist in the DNA sensing capability. The product of nanocomposite compound was drop-casted on screen printed carbon electrode (SPCE). Characterization by field emission scanning electron microscope (FESEM) and energy dispersive X-Ray (EDX) spectroscopy showing that carboxyl functionalized iron oxide (COOH-Fe₃O₄) can be hybridized with NCC-CTA⁺ via electrostatic interaction.

Keyword: Biosensor; DNA; Nanocomposite; Nanocellulose crystalline; Screen printed carbon electrode