"Nanocomposites and nanomaterials"

Biosensing of Toxic Compounds Based on Multi Walled Carbon Nanotube (MWCNT)-Copolymer Modified Electrode

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A new multi walled carbon nanotube (MWCNT)-copolymer (P(MTM-co-GMA) composite film was used to develop an electrochemical phenol biosensor based on laccase (TvLac). The multi walled carbon nanotubes–copolymer composite MWCNTs–P(MTM-co-GMA) provided a suitable biosensing matrix due to its good conductivity, high stability, and good biocompatibility. Laccase was immobilized on MWCNTs–P(MTM-co-GMA) modified glassy carbon (GC) electrode. GC/P(MTM-co-GMA)/MWCNT/TvLac working electrode was investigated for the parameters of linear range, sensitivity, stability and detection limit. Amperometric response was measured as a function of concentration of phenolic compounds at a fixed bias voltage of -200 mV at pH 4.5 acetate buffer. The obtained biosensor was successfully used for determination of methoxy phenolic compouds. The sensitivity in the linear range was observed in the following order with the GC/P(MTM-co-GMA)/MWCNT/TvLac working electrode: 4 Methoxyphenol>2,6-Dimethoxyphenol> Catechol > Phenol.