

Fabrication of a Novel Nickel-Curcumin/Graphene Oxide Nanocomposites for Superior Electrocatalytic Activity toward the Detection of Toxic p-nitrophenol

Sasikumar Ragu¹, Shen-Ming Chen^{1,*}, Palraj Ranganathan², Syang-Peng Rwei²

¹ Department of Chemical Engineering and Biotechnology, National Taipei University of Technology, No. 1, Section 3, Chung-Hsiao East Road, Taipei 106, Taiwan, ROC.

² Institute of Organic and Polymeric Materials, National Taipei University of Technology, No. 1, Section 3, Chung-Hsiao East Road, Taipei 106, Taiwan, ROC.

*E-mail: smchen78@ms15.hinet.net

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The current study deals with the sensitive electrochemical sensor for ecologically harmful p-Nitrophenol (pNP) based on a glassy carbon electrode which was modified by nickel-curcumin [Ni(Curc)₂]/graphene oxide [GO]. The physicochemical properties of the as-prepared nanocomposites were characterized using a different analytical and spectroscopic method, which include UV-Vis spectrophotometer, fourier-transform infra-red spectrophotometer, field emission scanning electron microscopy and cyclic voltammetry. The reduction of pNP at modified GCE revealed linear range 0.49-760 μM , limit of detection 0.016 μM and high sensitivity 0.671 $\mu\text{A } \mu\text{M}^{-1} \text{ cm}^2$. The recommended sensor was well developed and established the influence of low cost, easily prepare, which is greater to newly reported modified electrodes, thereby permissive practical industrial applications.

Keywords: Electrochemical, Curcumin, p-nitrophenol, Grapheme Oxide, Nickel nitrate, Cyclic voltammetry, Sensor

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