Fabrication of Poly (Toluidine Blue O) Functionalized Multiwalled Carbon Nanotubes on Glassy Carbon Electrode for Hydrazine Detection

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Herein, we present an amperometric sensor for hydrazine developed via simple potentiodynamic electrochemical polymerization of O-Toluidine Blue (pTBO) on functionalized multi walled carbon nanotubes (*f*-MWCNTs) coated glassy carbon electrode (GCE). The obtained of *f*-MWCNTs/pTBO composite was confirmed through FESEM, EDX and cyclic voltammetric studies. Relative to pTBO modified electrodes, *f*-MWCNTs/pTBO modified GCE displayed a well-defined electro-oxidation peak current response towards the detection of hydrazine. *f*-MWCNTs/pTBO/GCE exposes its good electrocatalytic ability in a wide linear range from 1 μM to 357 μM . Our modified electrode also possesses low limits of detection (0.24 μM) with high sensitivity (2492 $\mu\text{A mM}^{-1} \text{cm}^{-2}$) value. The successful demonstration of feasible practicality of *f*-MWCNTs/pTBO composite modified GCE was performed in untreated rain, lake and tap water samples.

Keywords: Amperometric sensor, O-Toluidine Blue, Functionalized multi walled carbon nanotubes, Hydrazine.

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