

Electrochemical Anodic Oxidation Synthesis of TiO₂ nanotube as Perspective Electrode for the Detection of Phenyl Hydrazine

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Abstract : TiO₂ nanotube (NT) arrays were grown on titanium (Ti) foil substrate by electrochemical anodic oxidation and utilized as working electrode to fabricate a highly sensitive and reproducible chemical sensor for the detection of harmful phenyl hydrazine chemical. The fabricated chemical sensor based on TiO₂ NT arrays electrode exhibited high sensitivity of $\sim 40.9 \mu\text{A.mM}^{-1}\text{.cm}^{-2}$ and detection limit of $\sim 0.22 \mu\text{M}$ with short response time (10s).

Keywords : TiO₂ NT, phenyl hydrazine, chemical sensor, sensitivity, electrocatalytic properties

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