

Fabrication of electrochemical sensor using Hollow ZnO Spheres for Hydrazine Detection

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This work reports the synthesis of hollow sphere zinc oxide (HS-ZnO) nanostructures by simple and economical hydrothermal method for the effective detection of toxic hydrazine chemical via electrochemical sensor. The ethylene glycol (EG) and ethanol as solvents played a significant role to achieve the HS-ZnO nanostructure. The crystalline and structural analysis evidenced that the synthesized nanomaterials were well-crystalline with typical wurtzite ZnO crystal. The electrode was fabricated for the detection of different concentrations of hydrazine chemical through an electrochemical analysis. Herein, HS-ZnO based electrode exhibited a high sensitivity of $\sim 361.2 \mu\text{A}\cdot\text{mM}^{-1}\cdot\text{cm}^{-2}$, a good detection limit of $\sim 20.8 \text{ nM}$ and short response time of 10 s with correlation coefficient (R) of ~ 0.97752 . Thus, HS-ZnO nanostructures electrode could be used as an efficient electron mediator for the fabrication of various effective chemical sensors.