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A comparative study of various electrochemical sensors for hydrazine detection based on imidazole derivative and different nano-materials of MCM-41, RGO and MWCNTs: Using net analyte signal (NAS) for simultaneous determination of hydrazine and phenol

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Abstract

The present paper reports using 5-(5-Chloro-2,4- dihydroxyphenyl)imidazo[4,5-d][1,3]thiazin-7(3*H*)-one (CIT) and different characterized Nano-materials (nano particles based on silica (MCM-41) and carbon (reduced graphene oxide (RGO), carbon Nano-tubes (CNT) and the mixture of them (CNT/RGO)) in the carbon pate electrode (CPE) structure as new platforms for hydrazine determination. The main purpose of this paper is investigation of effect of silica and carbon nanomaterials on the electrochemical behavior of the various designed sensors (CIT/MCM41/CPE, CIT/RGO/CNT/CPE, CIT/RGO/CPE and CIT/CNT/CPE) for hydrazine analysis. Under the optimum conditions, some kinetic parameters of modifier such as electron transfer coefficient (α) and heterogeneous rate constant (k) for hydrazine were obtained. The observations revealed that using nanomaterials of MCM-41, RGO, CNT and RGO/CNT has a key role in decreasing oxidation potential and increasing oxidation peak currents, obtaining

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