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Short Communication

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Synthesis, Spectral Characterization and Electrochemical Determination of Nitrite Using MWCNTs-decorated Embedded Metal Phthalocyanine

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Abstract:

The novel work describes the synthesis of 5-[(Z)-2-phenylethenyl]-1,3,4-oxadiazol-2-amine substituted metal phthalocyanine compounds (5-[(Z)-2-POAMPc]) and their characterization by physico-chemical and electro-analytical techniques was used to examine the conformation of synthesized molecules. The sensing of nitrite is done on 5-[(Z)-2-POACoPc]/MWCNT/GCE, to increases the electrochemical signals and active surface area. The modified electrode detect the nitrite using CV and DPV techniques in the long linear concentration range of 0.1 to 1.8 µmolL1 ,0.2 to 3.6 µmolL-1 with the LOD of 0.033µmolL-1 , 0.06 µmolL-1 and sensitivity is 3.533 µAµM-1 cm-2 , 1.8724 µAµM-1 cm-2 , and Whereas, the CA showed linear response in the concentration range of 0.02-1.8 µM the correlation coefficient (R2) was found to be 0.999 with limit of detection (LOD) 066 nmol L −1 and the sensitivity was 3.554 µAnmol−1 cm−2 for nitrite. The hybrid material composite electrodes show an excellent catalytic behavior for the oxidation of nitrite. Nitrite oxidation which gives a lower peck potential values with greater peck current response as compare to reported were obtained in this work for the (5-[(Z)-2- POACoPc]/MWCNT/GCE) with very high stability. The fabricated electrode 5-[(Z)-2- POAMPc]/MWCNT/GCE shows high selectivity even in the presence of excess of interfering ions such as K+ , Na+ , NH4 + , No3 - , HPO4 2- . The developed composite sensor was investigated for the NO2 - examination in milk samples and the results were in accordance with the literature. The average recapture for these samples was 100.1 (±0.7) %.

Biography

Dr. Malathesh Pari currently working as a Assistant professor Dept of Chemistry/Industrial Chemistry Vijayanagara Sri Krishnadevaraya University Ballari-583105. and also doing research work in field of N4-macromoleculer synthesis and their electrochemical applications.

Publication of speakers

1. Design and diagnostics of high-precision accelerator neutrino beams
2. Amperometric determination of dopamine based on an interface platform comprising tetra-substituted Zn2+ phthalocyanine film layer with embedment of reduced graphene oxide
3. A Facile Cobalt (II) Tetra Amino Phthalocyanine Ingrained Poloy Aniline (PANI) Nano-fiber Film Layer Based Electrode Material for Amperometric Determination of Thiocyanate
4. Microwave-assisted green synthesis, characterization and adsorption studies on metal oxide nanoparticles synthesized using Ficus Benghalensis plant leaf extracts
5. Electrochemical sensing based

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