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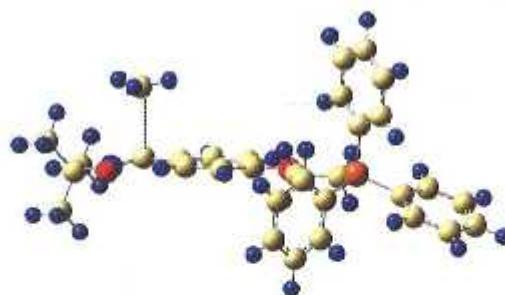
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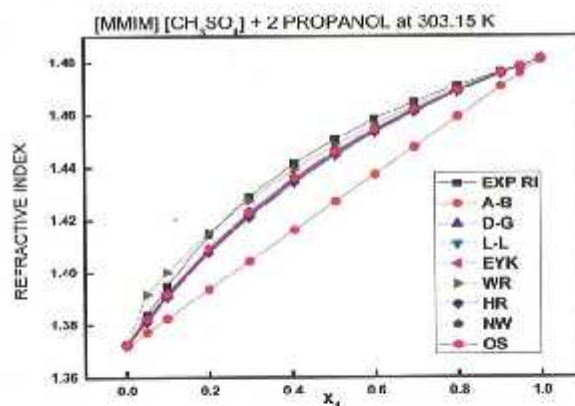
CONTENTS

- 9 **DFT study for radical capture by mitochondria oxidotoxin protective ionic and non-ionic amphiphilic α -phenyl-N-t-butyl nitrene derivatives**
- DFT analysis for radical capture by biologically active amphiphilic α -phenyl-N-t-butyl nitrene derivatives is reported. Analysis of global and local reactivity descriptors is presented from both natural and electrostatic based charges. Transition states for radical attacks have been located and the activation barriers for radical capture are calculated. The *cis* attack is energetically favored in each case. Hyperfine splitting constants have been computed and compared with the reported experimental findings.



Sutapa Mandal & Nivedita Acharjee*

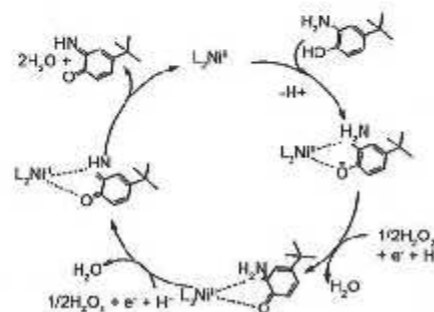
- 21 **Thermophysical, excess and transport properties of organic solvents with imidazolium based ionic liquids**
- Ultrasonic velocity and refractive index are evaluated for eight binary mixtures comprising imidazolium based ionic liquids ([BMIM][PF₆], [HMIM][PF₆], [OMIM][PF₆] and [MMIM][CH₃SO₃]) with organic solvents of varying nature, viz., 2-propanol, 2-butanone and ethylacetate, at 293.15, 298.15 and 303.15 K.



Akanksha Saini, Aditya Harshvardhan & Ranjan Dey*

- 36 Nickel(II) complex based on bis-(1-(pyridin-2-yl-methyl)-benzimidazol-2-yl-methyl) ether and its utilization in the oxidation of 2-amino-4-*tert*-butylphenol

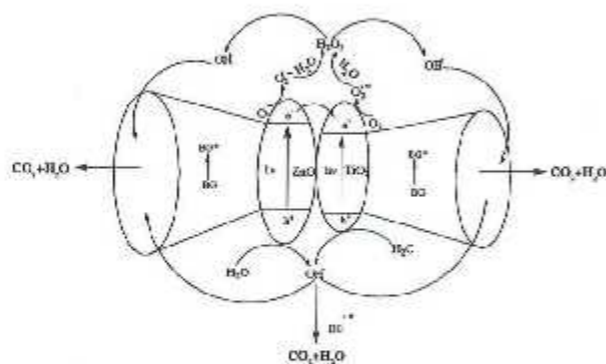
Ni(II) complex of a bis-benzimidazole ligand crystallizes in the tetragonal system with space group $I4_1/a$ and appears to be propeller-shaped when viewed along the *c*-axis.



Raghvi Khattar, Anjana Yadav, Kuldeep Mahiya & Pavan Mathur*

- 43 Improved photocatalytic performance of (ZnO/TiO₂)-β-CD on decolorization of brilliant green dye under UV light irradiation

The (ZnO/TiO₂)-β-CD system has higher photocatalytic activity than (ZnO/TiO₂). ZnO and TiO₂ due to the synergistic effect of ZnO and TiO₂ as well as the formation of strong inclusion complexes between β-CD and BG dye molecules.

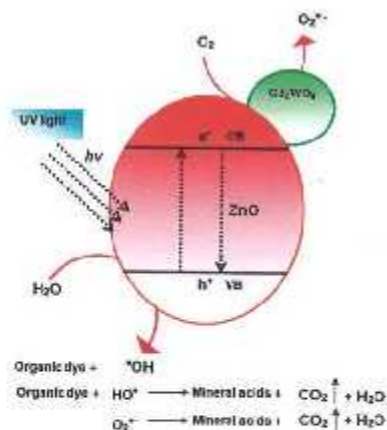


P Velusamy* & G Lakshmi

Notes

- 50 Synthesis and characterization of gadolinium tungstate doped zinc oxide photocatalyst

Gd₂WO₆-ZnO with the morphological structure of nanorods and microsponge acts as an effective electron scavenger to trap the conduction band electrons of ZnO.



Kuppulingam Thirumalai, Manohar Shanthi & Meenakshisundaram Swaminathan*

- 57 A comparative study of the photocatalytic properties of CuS nanotubes and nanoparticles by hydrothermal method

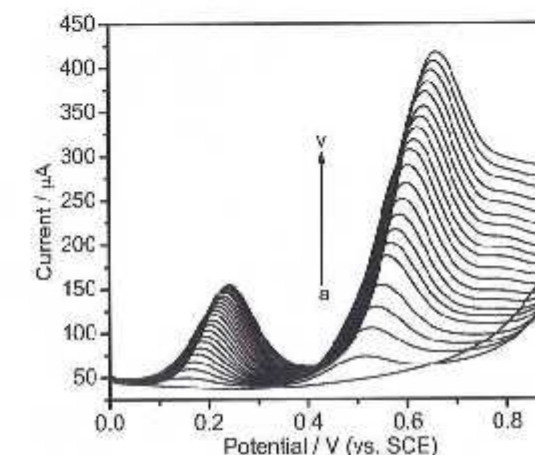
Copper sulfide nanotubes and nanoparticles have been successfully synthesized by a hydrothermal process at 160 °C for 10 h, employing copper chloride and thioacetamide as starting materials, and polyethylene glycol-400 as surfactant. Both, CuS nanotubes and nanoparticles, belong to the hexagonal phase CuS. The CuS nanotubes with smooth inside and coarse outside present higher photocatalytic performance than the CuS nanoparticles.



Xuyan You, Xiaohong Geng, Xiue Liu, Yang Yu & Zhibong Jing*

- 63 Nitrogen doped graphene supported Pt-Pd nanoparticle modified GC electrode for electrochemical determination of tramadol and paracetamol

The NGP-PDDA supported Pt-Pd nanoparticle modified electrode detects paracetamol over a concentration range of 5×10^{-6} to 1×10^{-4} M, and tramadol from 1.2×10^{-5} to 2.4×10^{-4} M. The limit of detection is found to be 1.8×10^{-7} and 5.7×10^{-6} M, respectively ($S/N = 3$).



Janakiraman Manokaran, Jonna Narendranath, Rethinasabapathy Muruganatham & Natesan Balasubramanian*

- 69 Guide to Authors

Authors for correspondence are indicated by (*).