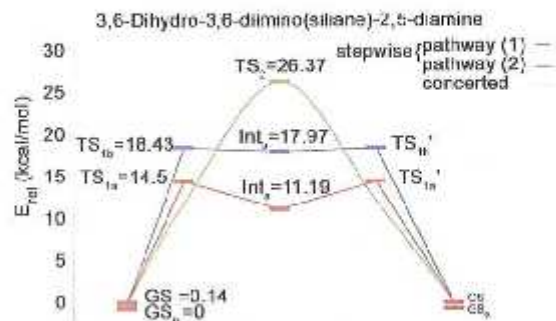


- 529 DFT studies of intramolecular double proton transfer of 3,6-dihydro-3,6-dimino(silane or pyridine)-2,5-diamine

Intramolecular double proton transfer of 3,6-dihydro-3,6-diminosilane-2,5-diamine (A) and 3,6-dihydro-3,6-dimino-pyridine-2,5-diamine (B) at DFT (B3LYP) level of theory has been investigated. For both the compounds, the process of proton transfer is through the stepwise mechanism (TS₁), which itself includes two pathways, pathway (1) and pathway (2), involving the resonance forms from side of N-C-C-C-N and N-C-X-C-N atoms (X = Si-H or N), respectively. For compound (A) the process is through pathway (1), while for compound (B), both pathways (1) and (2) are almost similar to each other. In addition, aromaticity of the two compounds has been evaluated based on the nucleus independent chemical shift values to predict dominant resonance structures and the charge distributions in the ring.



Hasan Tahermansouri* & Lida Farhan

- 537 Biogenic Ag-nanoparticles as heterogeneous catalyst for synthesis of 2-aryl benzimidazoles at room temperature

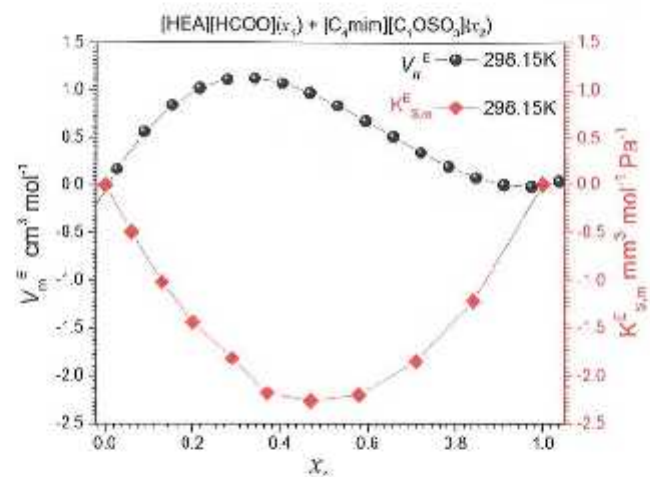
Synthesis of silver nanoparticles by reduction of Ag⁺ ion by *Syzygium jambos* (L.) Alston leaves extract is reported. Spherical, nanometer-sized particles, with average particle size of 20 nm are formed. The Ag-nanoparticles efficiently catalyze the synthesis of 2-substituted benzimidazoles by the reaction of aldehydes with *o*-phenylenediamine in DMSO at room temperature.



Eramoni Saikia & Bolin Chetia*

544 Tuning the physicochemical properties of protic-aprotic ionic liquids upon reciprocal binary mixing

The alterations in properties of protic/aprotic (2-hydroxyethylammonium formate/*N*-butyl-3-methylimidazolium methyl sulfate) ionic liquids, based on reciprocal binary mixing concept ([A][B][X][Y]) indicate a very high level of non-ideality in the mixtures which is required for improved solvent properties.

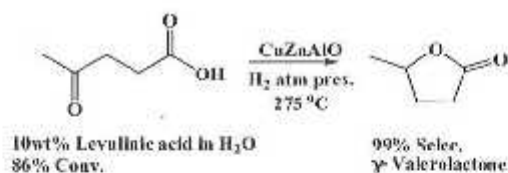


Pankaj Bharmoria, Tushar J Trivedi, Naved I Malek* & Arvind Kumar*

Notes

554 Vapour phase hydrogenation of aqueous levulinic acid to γ -valerolactone over CuZnAlO hydrotalcite

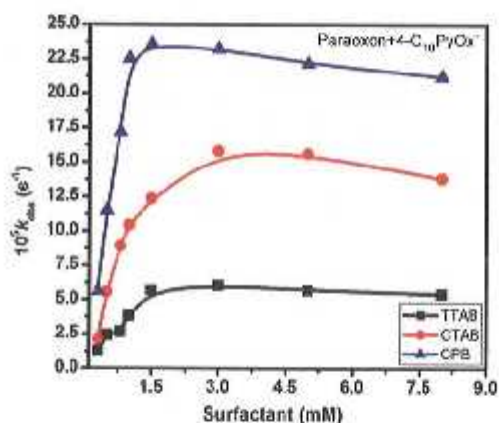
Vapour phase hydrogenation of levulinic acid to γ -valerolactone has been accomplished in aqueous phase over copper-zinc-aluminum hydroxalate, prepared by co-precipitation method using nitrate salts as their precursors. The hydroxalate system exhibits superior activity in the hydrogenation and cyclization of 10% aqueous solution of levulinic acid with >99% selectivity for γ -valerolactone at 275 °C under atmospheric pressure of hydrogen (flow rate of H_2 : 30 mL/min).



V Swarna Jaya* & Medak Sudhakar

560 Hydrolytic cleavage of paraoxon and parathion by oximate and functionalized oximate ions: A comparative study

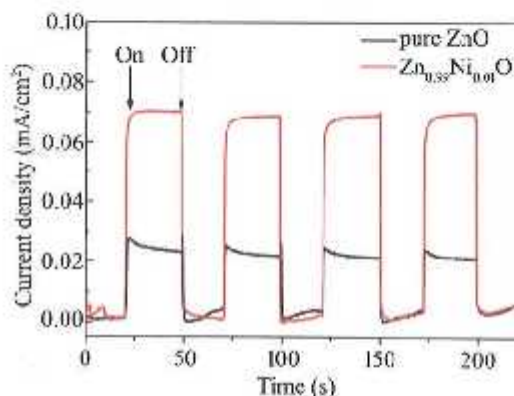
The bimolecular reactions of paraoxon and parathion with oximate and functionalized oximate, 4-(hydroxylimino)methyl-1-alkylpyridinium bromide ions (alkyl = C₁₀H₂₁ (4-C₁₀PyOx⁻); alkyl = C₁₂H₂₅ (4-C₁₂PyOx⁻)) have been investigated in aqueous and cationic micellar media of cetylpyridinium bromide, cetyltrimethylammonium bromide and cetyltetradecyltrimethylammonium bromide at pH 9.5 and 27 °C. Under the micellized condition, a 1.2×10³ fold and 9.0×10² fold rate enhancement over the aqueous reaction of paraoxon ($k_a = 7.5 \times 10^{-8} \text{ s}^{-1}$) and parathion ($k_a = 9.5 \times 10^{-11}$) is observed.



Hitesh K Dewangan, Neha Kandpal, Rekha Nagwanshi & Manmohan L. Satnam^{*}

566 Synthesis of heteroatom-doped ZnO nanoparticles as an efficient visible light photocatalyst and its photoelectrochemical performance

Zn_{1-x}Ni_xO exhibits better photocatalytic activity than pure ZnO which may be due to longer lifetime and higher separation efficiency of photogenerated charges as shown by the transient photocurrent response and EIS experiments. •OH and h⁺ are primarily responsible for the enhanced photocatalytic performance of Rhocamine B.



Wenjie Wu, Xiaodan Zhu, Qiaoqiao Yin, Liuxiang Tan, Xiaoxia Ke & Ru Qiao^{*}

571 Utilization of sodium montmorillonite clay for enhanced electrochemical sensing of amlodipine

Nanosize surface of sodium montmorillonite has been prepared via sonication and deposited on glassy carbon electrodes for use as working electrode in a highly sensitive electrochemical biosensor for the detection of trace amounts of the calcium channel blocking drug, amlodipine. In alkali medium (pH 13.0), the sensor shows good response. The anodic peak current is linear with analyte concentration at optimum conditions; the detection limit has been determined to be 0.01 µg/mL.

A Mohamed Sikkander, C Vedhi & P Manisankar^{*}