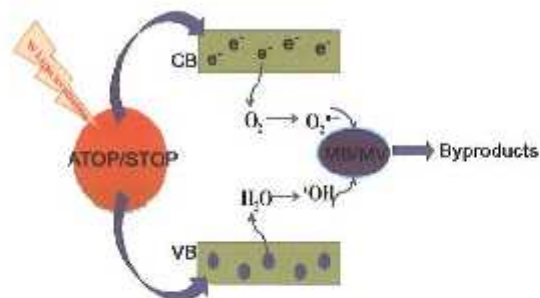


CONTENTS

- 9 **Photocatalytic degradation of methylene blue and methyl violet using cation doped (Sn^{2+} and Ag^+) barium tellurite phosphate, $\text{Ba}_2\text{TeO}(\text{PO}_4)_2$**

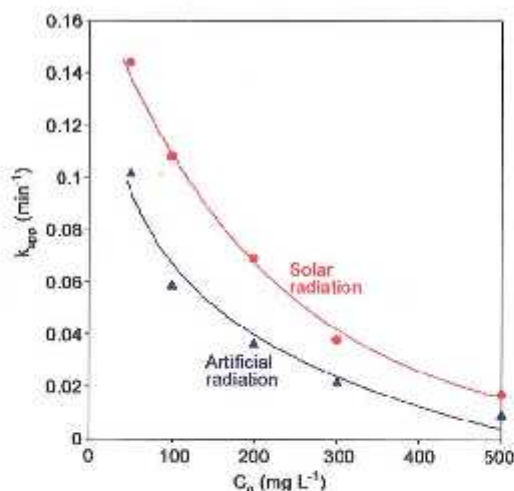
Ag^+ and Sn^{2+} doped BTOP are isomorphous with the parent compound and crystallize in the triclinic lattice with the PI space group. Ag^+ and Sn^{2+} substitution for Ba^{2+} in BTOP is effective in decreasing the band gap energy and increasing the photocatalytic activity. Photocatalytic studies in the presence of radical quenchers confirm that $^{\bullet}\text{O}_2^-$, $^{\bullet}\text{OH}$, and h^+ are the main reactive species in the photocatalytic degradation under visible light irradiation. All the photocatalysts are chemically stable and can be used up to at least four cycles.



CH Sudhakar Reddy, Sreenu K, J R Reddy, G Ravi, Ravinder Guje, M Malathi & M Vithal*

- 16 **Photocatalytic degradation of ciprofloxacin-HCl using Aeroxide® P-25 TiO_2 photocatalyst: Comparative evaluation of solar and artificial radiation**

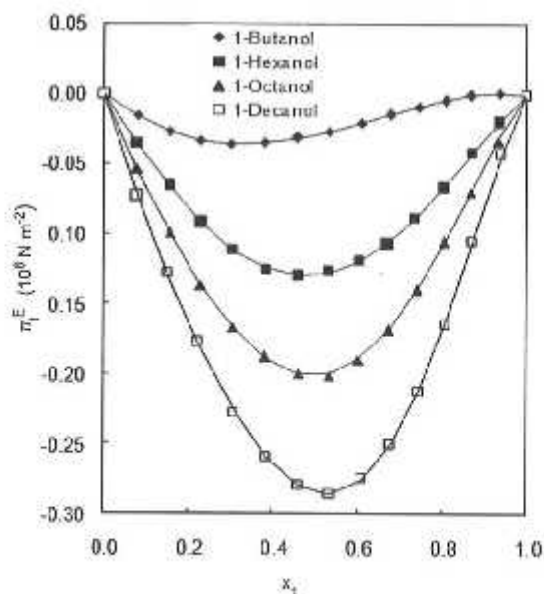
In presence of both solar as well as artificial radiation, ciprofloxacin-HCl (CFX) is degraded from aqueous solutions using Aeroxide® P-25 TiO_2 photocatalyst, with maximum degradation at pH 9. Rate of degradation of CFX using solar radiation is about 1.7 times higher than that under artificial radiation. Sodium carbonate has a substantial detrimental effect, while on a comparative basis, ammonium sulfate and sodium chloride do not show any significant effect on the photocatalytic degradation of CFX.



Rohit Shetty, Gaurav Kothari, Amruta S Tambe, Bhaskar D Kulkarni & Sanjay P Kamble*

- 23 **Internal pressure, free volume and excess thermodynamic properties of methyl acrylate+1-alkanols (C₄-C₁₀) binary mixtures from ultrasonic speed and density**

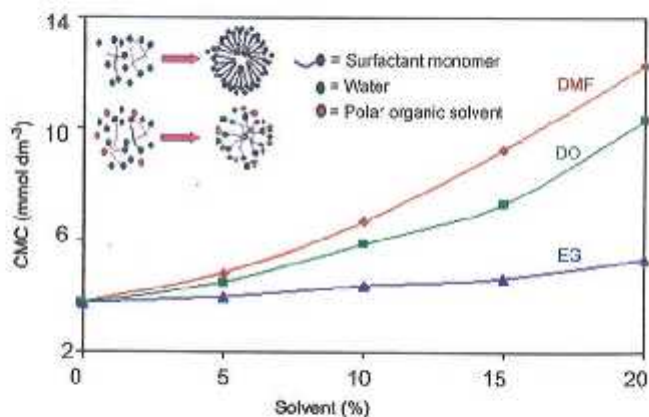
Excess thermodynamic parameters of methyl acrylate+1-alkanol (C₄-C₁₀) binary mixtures indicate weak interactions in the order: 1-butanol > 1-hexanol > 1-octanol > 1-decanol. The results indicate the applicability of scaled particle theory in estimating their ultrasonic speeds reasonably well.



A K Nain* & P Droliya

- 34 **Influence of organic solvents, head-groups and temperature on the micellization behavior of some cationic surfactants**

The CMC of tetradecyltrimethyl ammonium bromide, tetradecyldimethylbenzyl ammonium chloride and their dimeric homologue, dimethylene-1,2-bis(tetradecyldimethyl ammonium bromide) increases in the presence of ethylene glycol, dioxane and dimethyl formamide as these are better solvents than pure water. The increment in CMC in presence of ethylene glycol is the least among the studied solvents. Both CMC and α values increase with temperature and concentration of the solvents.

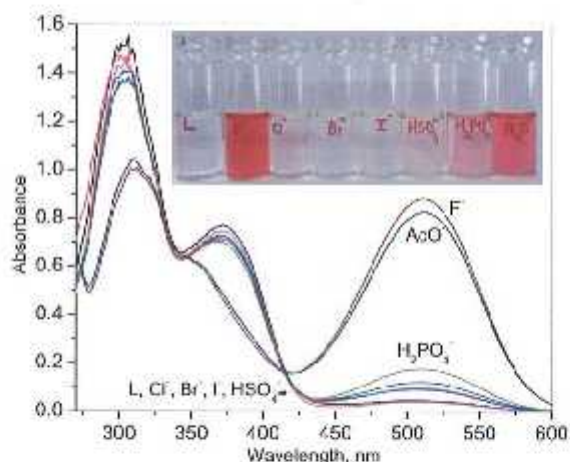


A K Sood, Rupinderjit Kaur & T S Banipal*

Notes

44 Pyridoxal derived chemosensor: Its application in anion sensing and molecular logic gate building

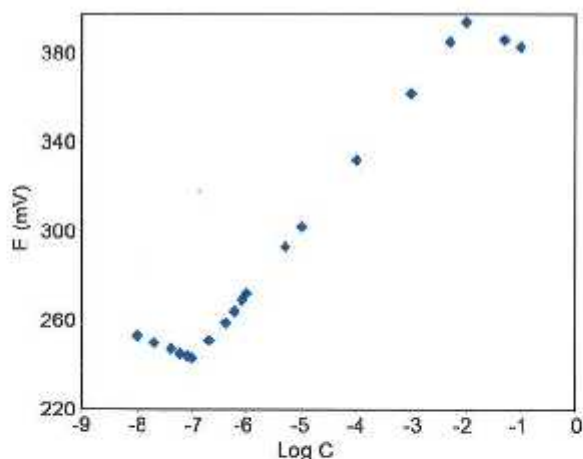
A new, simple and easy-to-prepare colorimetric anion sensor has been developed using Schiff base reaction of pyridoxal with hydrazine. The color of the sensor changes from colorless to red on introduction of F^- and AcO^- anions due to partial deprotonation of aromatic-OH protons. It is also selective for F^- and AcO^- anions in a competitive environment, with a detection limit in the micromolar range. The sensor also displays INHIBIT type molecular logic gate with the inputs of F^- and Ca^{2+} .



Suban K Sahoo^{*}, Darshna Sharma, Shilpa Bothra, Sutapa Mondal Roy, Rajender Kumar, Ashok Kumar SK, Jitendra P Nandre, Umesh D Patil & John F Callan

51 Design and construction of ion-selective electrode based on a new Schiff base and its application in determination of copper(II) ions

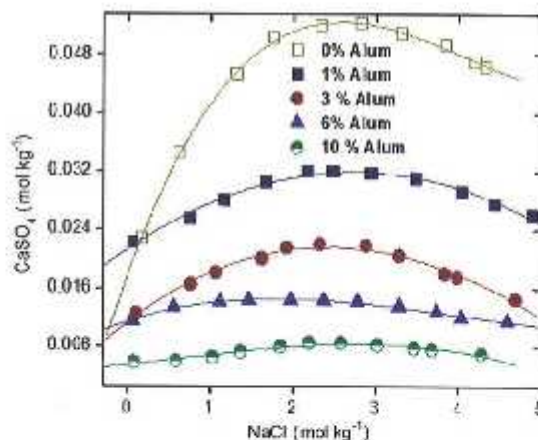
A Cu(II) selective sensor has been made from polyvinyl chloride matrix membrane based on the carrier, 2-(5-bromo-2-hydroxybenzylideneamino)pyridine-3-ol as the ionophore, *ortho*-nitrophenyl octyl ether (*o*-NPOE) as mediator solvent and sodium tetrphenylborate (NaTPB) as additive. The best performance is presented by membrane composition 3.33:63:1 (ionophore:PVC:*o*-NPOE:NaTPB; by wt). The sensor shows a detection limit of 7.4×10^{-8} M with a linear response in the concentration range of 1.0×10^{-7} to 1.0×10^{-2} M with Nernstian slope of 29.5 ± 0.5 mV per decade of Cu^{2+} . The sensor can be used in the pH range of 4–7. The sensor shows a response time of less than 10 s and can be used for at least eight weeks without any difference in potential.



Z. Valitue, M T Vardix^{*} & E Ghorbani Kalhor

- 57 **Effect of flocculating agents on solubility behavior of calcium sulfate dihydrate (gypsum) in aqueous sodium chloride system and solution properties at 35 °C**

The effect of addition of flocculating agents, viz., alum ($KAl(SO_4)_2 \cdot 12H_2O$) (up to 10 wt%) and polyaluminum chloride ($[Al(OH)_2Cl]_n$, $n > 1.05$; $n \sim 15$) (up to 6 wt%) on the solubility behavior of $CaSO_4 \cdot 2H_2O$ in aqueous NaCl solutions has been examined at 35 °C. The solubility of $CaSO_4 \cdot 2H_2O$ decreases on addition of alum, while it increases on addition of polyaluminum chloride without any significant shift in solubility maximum.



Jignesh Shukla, Tushar J Trivedi,
Pankaj Bharmoria & Arvind Kumar*

- 64 **Guide to Authors**

Authors for correspondence are indicated by (*)

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