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VOLUME 56A **NUMBER 3** **March 2017**

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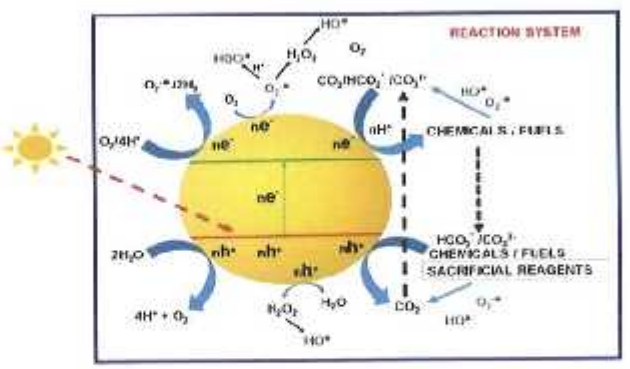
Advances in Contemporary Research

251 **On the current status of the mechanistic aspects of photocatalytic reduction of carbon dioxide**

Hariprasad Narayanan, M V Harindranathan Nair & Balasubramanian Viswanathan*

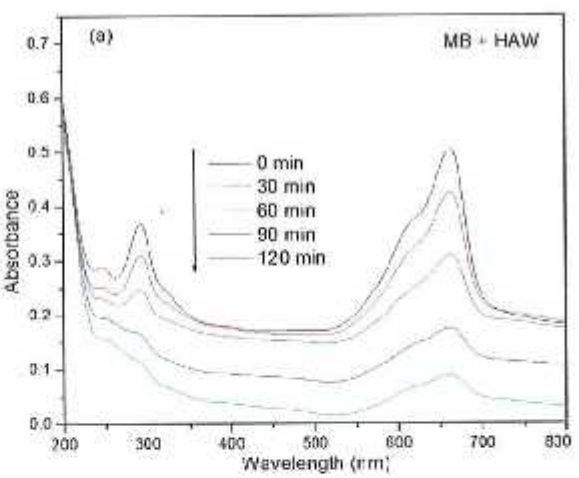
In the aqueous CO_2 reduction system, the reductive photocatalytic conversion of CO_2 involves all the redox reactions occurring at the interface of the semiconductor such as water splitting, hydrogen evolution, oxygen evolution, photo-oxidation reactions and reactions of radical intermediates. The overall product yield is highly dependent on the extent of these competing reactions.



Papers

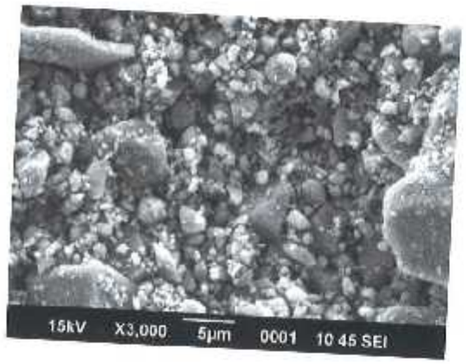
270 **Photocatalytic and DC conductivity studies of proton exchanged $KAl_{0.33}W_{1.67}O_6$ and its application in Pb^{2+} removal**

M Srinivas, G Ravi, P Vijaya kumar, CH Sudhakar Reddy, Sreenu K, Ravinder Guje & M Vithal*



278 **Surfactant assisted synthesis of cobalt doped titania nanomaterial: Characterization and its applications in photocatalysis and anti-bacterial activity**

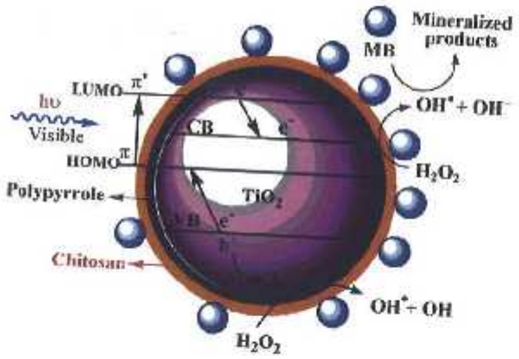
Co^{2+}-TiO_2 (0.5 wt.%) was successfully prepared in the presence of sodium dodecyl sulfate through sol-gel method. The catalyst shows decreased particle size, (8.4–13.2 nm) and increased specific surface area, attributed to the influence of the surfactant during synthesis. Under the optimum conditions, the rate of degradation of methyl red solution was found to be 7.676 mg L^{-1} min^{-1}. The catalyst was also found effective towards the destruction of *E. coli*.



Radha Devi Chekuri & Siva Rao Tirukkovalluri*

287 **Combined effect of adsorbent chitosan and photosensitizer polypyrrole in ternary chitosan-polypyrrole-TiO_2 photocatalyst leading to visible light activity and superior functionality**

The ternary photocatalyst, chitosan-polypyrrole-TiO_2, exhibits higher visible light photodegradation efficiency towards methylene blue as compared to the individual components. Polypyrrole as a visible light sensitizer and chitosan as an adsorbent together enhance the photocatalytic efficiency of TiO_2. The photocatalyst has high stability and sustainability on repeated use.

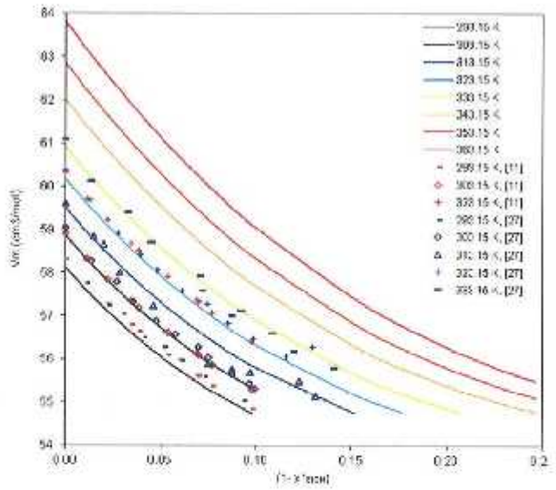


C Murugan & E Subramanian*

Notes

297 **Solvent activity and osmotic pressure of binary aqueous and alcoholic solutions of calcium chloride up to 368 K and high salt concentration**

From ambient to nearly 368 K and from very dilute solutions to nearly 50% by weight of salt, the activity of the solvent decreases significantly with the salt concentration and increases with the temperature. The molar volume of the mixtures deviates significantly from the linear behavior, and, for high salt concentration, the partial molar volume of the solvent is significantly different than that of the pure solvent. The osmotic pressure calculated in this way is of one order of magnitude higher than that predicted by the van't Hoff equation and can reach very high values for aqueous (~400 MPa) and alcoholic (50 MPa) solutions.



G Di Giacomo*, F Scimia & L Taglieri

Letter to The Editor

305 **Comments on "Synthesis and characterization of gadolinium tungstate doped zinc oxide photocatalyst, *Indian J Chem*, 56A (2017) 50-56"**

B R Srinivasan

Response to the Comments (M Swaminathan)

Authors for correspondence are indicated by (*)