Indian Journal of Chemistry
Sect. A: Inorganic, Bio-inorganic, Physical, Theoretical & Analytical

VOLUME 55A	NUMBER 9	SEPTEMBER 2016

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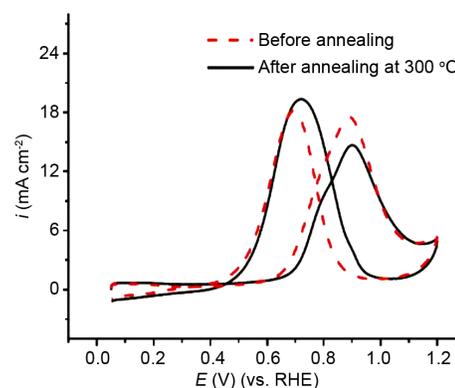Grafting of alkyl sulphonic acid groups on Pt/CDX975 catalyst shows redistribution of Pt nanoparticles on the carbon black support, along with enhanced activity for methanol electrooxidation. Sulphonation with sodium sulphite and formaldehyde shows better performance and stability than that by diazotization with 2-aminoethanesulfonic acid and sodium nitrite in the presence of mineral acid
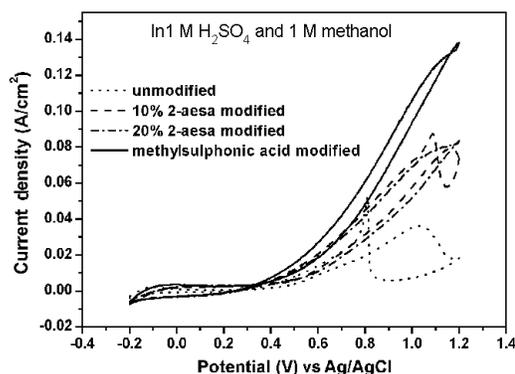
S Chandravathanam & B Viswanathan*

PtRu/Vulcan XC-72 catalyst with high catalytic performance has been synthesized by microwave-assisted polyol process. The effect of annealing on performance of the PtRu/C catalyst has been investigated. Prior to the annealing treatment, the as-prepared PtRu/C catalyst has a small particle size and a relatively high amount of Pt and Ru in their metallic state, along with some amount of hydrous ruthenium oxides, all of which contribute to the higher activity of catalyst. On the other hand, after annealing at 300 °C for 1 h, the anhydrous ruthenium oxide is found to be less active for methanol electrooxidation.

Jingjing Yang, Yuan-Yuan Chu*, Zhen-Bo Wang, Yu Qian, Yongxiang Jin, Xiaoyao Tan*

1059   **Oxidative degradation of norfloxacin by water soluble colloidal MnO$_2$ in the presence of cationic surfactant**

The oxidative degradation of norfloxacin by water soluble colloidal MnO$_2$ in alkaline medium is studied spectrophotometrically at 298 K, in the absence and presence of the cationic surfactant, cetyltrimethylammonium bromide. Under pseudo-first order condition with respect to [MnO$_2$], positive fractional order and negative fractional order are observed with respect to [NOR] and [NaOH] respectively in both aqueous and micellar media. The rate constant increases with decreasing dielectric constant of the medium in both the systems.

1, with CTAB
2, without surfactant

$5+\log k_{obs}$(curve 1)
$4+\log k_{obs}$(curve 2)

$4+\log$ [NOR]

Ajaya Kumar Singh*, Neelam Sen &
Som Kumar Chatterjee

Notes

1068   **Kinetics and mechanism of oxidation of thiourea by Waugh-type enneamolybdomanganate(IV) in aqueous perchloric acid**

The Waugh-type polyoxometalate, enneamolybdomanganate(IV), oxidizes thiourea in aqueous perchloric acid to give formamidine disulphide. The proposed mechanism involves formation of a precursor complex which decomposes in a slow step.

$$H_5[Mn^{IV}Mo_9O_{32}]\cdot + H^+ \xrightarrow{K_H} H_6[Mn^{IV}Mo_9O_{32}]$$

$$\underset{Thiourea}{H_6Mn^{IV}Mo_9O_{32}] + SC(NH_2)_2} \xrightarrow{K_C} Precursor\ complex$$

$$\underset{complex}{Precursor} + H_2O \xrightarrow{k_c} H_4[Mn^{II}Mo_9O_{32}] + \underset{Sulfenic\ acid}{HOSC(NH)(NH_2)} + 4H^+$$

$$HOSC(NH)(NH_2) + SC(NH_2)_2 \xrightarrow{Fast} SC(NH)(NH_2) + H_2O$$
$$|$$
$$\underset{Formamidine\ disulfide}{SC(NH)(NH_2)}$$

Shekhar S More & Gavisiddappa S Gokavi*

1074 Kinetics and mechanism of electron transfer reaction: Oxidation of sulfanilic acid by hexachloroiridate(IV) in acid medium

Kinetics of oxidation of sulfanilic acid by $[IrCl_6]^{2-}$ in acid medium is studied. The reaction is overall second order, being first order with respect to each reactant. However, the rate is retarded by hydrogen ion concentration. The activation parameters such as energy and entropy of activation calculated by Eyring equation are found to be 59.99 ± 0.93 kJ mol^{-1} and -106.44 ± 2.2 J K^{-1} mol^{-1} respectively. The oxidation product, 2-keto-azoxy- benzene-4,4′-disulfonic acid has been confirmed spectrally.
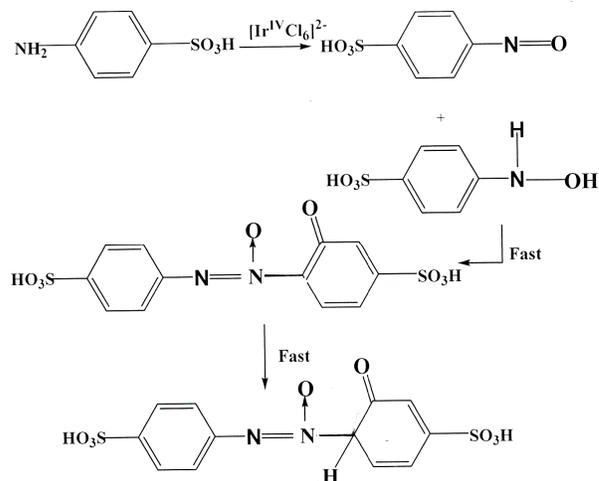
Riya Sailani, Deepmala Pareek, Anita Meena, Kritika Jangid & Chandra L Khandelwal*

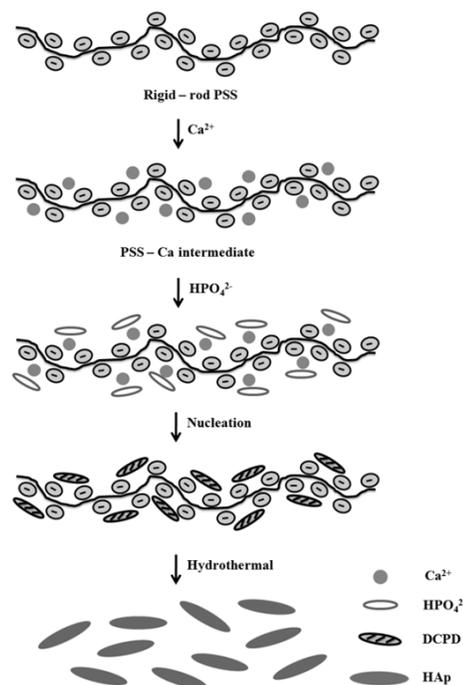**1080 Intermolecular interactions in sulfuric acid-water system**

Viscosity and density of aqueous concentrated sulfuric acid $(1.0–9.0)$ mol dm^{-3} have been measured at 297.65 K and the values of A and B coefficients of Jones-Dole equation have been calculated from the viscosity data. The interaction parameters obtained from Jones-Dole equation confirm the presence of three concentration regions of sulfuric acid in water with the following order of B coefficient: $1.0–4.0$ mol dm^{-3} < $4.0–7.0$ mol dm^{-3} < $7.0–9.0$ mol dm^{-3}. In the concentration range of $1.0–4.0$ mol dm^{-3}, the existence of HSO_5^{3-} has been proposed. In the concentration range of $4.0–7.0$ mol dm^{-3}, intermolecular association is more effective due to the large number of bond formation between the solute and solvent molecules. In the concentration range of $7.0–9.0$ mol dm^{-3}, the solute-solvent interaction attains the higher value and intermolecular forces are strong due to the formation of hydrated species like $H_2SO_4.H_2O$.
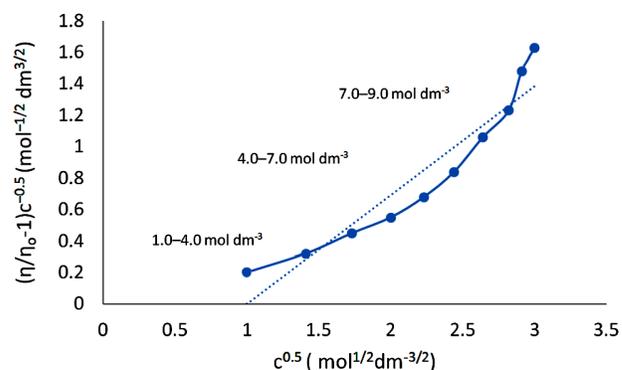
Renu Loshali* & Narain D Kandpal

1084 Sodium polystyrene sulfonate template assisted hydrothermal synthesis of hydroxyapatite nanorods

Hydroxyapatite nanoparticles (nHAp) have been synthesized by benign hydrothermal reaction from the aqueous mixture of $Ca(NO_3)_2 \cdot 4H_2O$ and $(NH_4)_2HPO_4$ solutions in the presence of non-toxic sodium polystyrene sulfonate (PSS) template.. The PSS template generates the largely negative surface of dicalcium phosphate dihydrate precursor, resulting in minimization of precursor agglomeration and promoting the hydrothermal growth of nHAp along the preferential *c*-axis as rod-shaped crystals. The crystallite sizes along 002-plane of nHAp synthesized with and without PSS template are 47.1 and 29.5 nm, respectively. With longer hydrothermal treatment time, larger crystallite size of nHAp is obtained.

Rigid – rod PSS

↓ Ca^{2+}

PSS – Ca intermediate

↓ HPO_4^{2-}

↓ Nucleation

↓ Hydrothermal

● Ca^{2+}

○ HPO_4^{2-}

DCPD

HAp

Pakvipar Chaopanich[a] & Punnama Siriphannon

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