

Synthesis of Pendent Compartmental Ligand Derived from Polymethacrylate of 3-Formylsalicylic Acid Schiff Base and Its Application Studies

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Abstract : The monomer of (3-((4-(methacryloyloxy)phenylimino)methyl)-2-hydroxybenzoic acid) schiff base polymer was prepared by reacting methacryloyl chloride with imine compound derived from 3-formylsalicylic acid and 4-aminophenol. The monomer was polymerized in DMF at 70°C using benzoyl peroxide as free radical initiator. Polymer metal complex was obtained in DMF solution of polymer with aqueous solution of metal ions. The polymer and the polymer metal complex were characterized by elemental analysis and spectral studies. The elemental analysis data suggest that the metal to ligand ratio is 1:1 and hence, it acts as a binucleating compartmental ligand. The IR spectral data of these complexes suggest that the metals are coordinated through nitrogen of the imine group, the oxygen of carboxylate ion and the oxygen of the phenolic -OH group which also acts as the bridging ligand. The electronic spectra and magnetic moments of the polychelates shows that octahedral and square planar structure for Ni(II) and Cu(II) complexes respectively. X-ray diffraction studies revealed that polychelates are highly crystalline. The thermal and electrical properties, catalytic activity, structure property relationships are discussed. Further the synthesized polymer was used for metal uptake studies from waste water, which is one of the effective waste water treatment strategies. And also, the polymers and polychelates were investigated for antimicrobial activity with various microorganisms by using agar well diffusion method and the results have been discussed.

Keywords : acyclic compartmental ligands, binucleating ligand, 3-formylsalicylic acid, free radical polymerization, polluting ions, polychelate

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