PUBLICATIONS

(1) Studies on Binuclear Copper(II) Complexes Involving Co-ordination of (Quadridentate Schiff base) Copper(II) with (Tertiary diamine)Copper(II)

J. Chem. Soc., Dalton, 359, 1982.

Dimeric Copper(II) complexes of the type $\left[Cu(L)Cu(A)\right](ClO_4)_2$ have been prepared, where L = various quadridentate Schiff base ions derived by the condensation of salicylaldehyde or 2-hydroxyacetophenone with ethylenediamine or 1,3-propylenediamine and A = 2,2'-bipyridyl, 1,10-phenanthroline, or 2-(2'-pyridyl)benzimidazole. Magnetic moment values of the complexes are observed to be much lower than the spin only value, due to antiferromagnetic interaction between the two Copper(II) centres. $\left[Cu(L)\right]$ and $\left[Cu(A)\right]^{2+}$ seem to affect the ligand field spectral band position of each other when co-ordinated in the binuclear complexes $\left[Cu(L)Cu(A)\right]^{2+}$. Ultraviolet spectral studies of these complexes have also been carried out which show that there is no significant interaction between the π orbitals of the two ligands through metal ion d orbitals. Infrared spectra show a shift of $\nu_{(C-O)}$ bands to higher energy in the binuclear complexes indicating bridging through phenolic O^-.

(2) Studies in Binuclear Copper(II) Complexes Involving Unsymmetrical Tetradentate Schiff Bases

Indian J. Chem., <u>21A</u>, 674, 1982.

Binuclear Copper(II) complexes of the type $[Cu(TSB)CuX_2]$ (type I) and $[Cu(TSB)Cu(A\text{-}A)]$ $(ClO_4)_2$ (type II) have been prepared where X = Cl^- or ClO_4^-, TSB = various unsymmetrical tetradentate schiff bases obtained from condensation of ethylenediamine or 1,3-propylenediamine with salicylaldehyde at one end and 2-hydroxyacetophenone or 2-hydroxy-1-naphthaldehyde at the other end; and A-A = 2,2'-dipyridyl, 1,10-phenanthroline or 2-(2'-pyridyl)benzimidazole. Room temperature magnetic moment values of the complexes are observed to be much lower than that expected for two Copper(II) ions. This is due to antiferromagnetic interaction between two non-equivalent Copper(II) centres. UV data show the absence of any significant interaction between the π orbitals of the two ligands through metal ion d orbitals.

(3) Studies in Binuclear Copper(II) Complexes Involving Tetradentate Schiff Bases with Greater π Delocalization

Indian J. Chem., (In press).

Dimeric Copper(II) complexes of the type $[Cu(TSB)Cu(A\text{-}A)]$ $(ClO_4)_2$ have been prepared, where

TSB = symmetrical tetradentate schiff bases derived by the condensation of salicylaldehyde or 2-hydroxyacetophenone with o-phenylenediamine and unsymmetrical tetradentate schiff base derived by the condensation of o-phenylenediamine with salicylaldehyde and 2-hydroxyacetophenone and A-A = 2,2'-bipyridyl, 1,10-phenanthroline or 2-(2'-pyridyl)-benzimidazole. Magnetic susceptibility measurement at room temperature shows lowering in μ_{eff} value. This is due to antiferromagnetic interaction between two nonequivalent Copper(II) ions. UV spectral studies indicate that the π orbitals are not involved in superexchange interaction.

(4) Study of Binuclear Copper(II) Complexes Derived from Tetradentate Mannich Base Complexes

J. Coord. Chem., (Communicated; revised manuscript).

Several new mononuclear tetradentate mannich base complexes of Copper(II) have been prepared. The mononuclear complexes have been used as bidentate ligands in the preparation of binuclear complexes of the type $[Cu(TMB)\ CuX_2]$ and $[Cu(TMB)Cu(A\text{-}A)]\ (ClO_4)_2$, where TMB = various symmetrical tetradentate mannich bases, X = Cl^- or ClO_4^- and A-A = 2,2'-bipyridyl, 1,10-phenanthroline or 2-(2'-pyridyl)benzimidazole. Complexes were characterized by IR, Reflectance spectral and magnetic susceptibility measurement studies. Room temperature magnetic moments are found to be subnormal due to antiferromagnetic interaction between non-equivalent Copper(II) centres. Infrared spectra show a shift of $\nu_{(C-O)}$ band to higher energy in the binuclear complexes indicating bridging through phenolic O^-.