APPENDIX

LIST OF PUBLICATIONS

Abstracts :

1. Studies in mixed ligand complexes Part VIII, Ind.J.Chem., 12, 402 (1974).

   Formation constants of the mixed ligand complexes $[MAL]$ where M = Cu(II), Ni(II), Zn(II) and Cd(II); A = dipyridyl or o-phenanthroline and L = ethylenediamine or propylenediamine have been determined by using an extension of Irving-Rossotti titration technique. The formation constants K^{MA}_{MAL} have been determined using two methods suggested for the basic ligands i.e. titration of M + A + L mixture against alkali and the titration of M + A mixture agqainst concentrated solution of L. K^{MA}_{MAL} is found to be nearly equal to K^{M}_{ML} and this has been explained by considering M ⟶ dipyridyl π bonding.

2. Studies in mixed ligand complexes Part IX, J.Indian Chem.Soc., 50, 804 (1973).

   Formation constants of the mixed ligand complexes, MAL where M = Cu(II), Ni(II), Zn(II) and Cd(II); A = histidine, iminodiacetic acid or nitrilotriacetic acid and L = ethylenediamine or propylenediamine have been determined by using an extension of Irving-Rossotti titration technique. The values of mixed ligand formation constants K^{MA}_{MAL} are found to be $\sim$ 1.5 unit lower than the first formation constant $K^{M}_{ML_1}$. The smaller difference in $K^{MA}_{MAL} - K^{M}_{ML_1}$ can be explained by considering that the secondary ligand is neutral. The greater difference in Cu.NTA.L complexes is due to Jahn-Teller effect.

3. Studies in mixed ligand complexes Part XI, Indian J.Chem., (in press).

Study of the formation constants of the complexes MAL where M = Cu(II) and Ni(II); A = histidine, iminodiacetic acid or nitrilotriacetic acid and L = 1,3-diaminopropane have been carried out. The lowering in the value of $K^{Cu.L}_{Cu.AL}$ from K^{Cu}_{CuL}, in cases where A = NTA and L = 1,3-diaminopropane is less than where L = ethylenediamine or propylenediamine. This has been attributed to Jahn-Teller effect in Cu(II) complexes and the longer chain length of 1,3-diaminopropane molecule.

4. Studies in mixed ligand complexes Part XII; Bulletin de L'academie Polonaise des Science (accepted)

An extension of the Irving-Rossotti titration technique has been used to study the systems $\boxed{MAL}$ where M = Cu(II), Ni(II); A = dipyridyl, o-phenanthroline, histidine, iminodiacetic acid and nitrilotriacetic acid; L = ethylenediamine with one or more substitution over nitrogen atoms. However, for the comparison of the values of the formation constants in ternary and binary complexes, studies under similar conditions is necessary. The formation constant values for the binary complexes were, therefore, determined by using Irving-Rossotti titration technique. In case of the complexes of alkyl N-substituted ethylenediamine K^{MA}_{MAL} is lower than K^{M}_{ML}. This is because of the steric hindrance due to the alkyl group. The lowering in the values in all the cases is in the order N-N-diethyl en > N-N-dimethyl en > N-N'-dimethyl en > N-ethyl en > N-methyl en > en. Anomaly is observed only in case of $\boxed{M.NTA.L}$ in this case $K^{M.NTA.}_{M.NTA.L'} > K^{M.NTA}_{M.NTA.L''}$ where L' = N-N-dimethyl en and L" = N-N'-dimethyl en. This may be because of the disposition of the NTA.

5. Mixed ligand complexes containing bidentate tertiary and primary amines., J.Ind.Chem.Soc., (communicated).

The compounds of the type $[M(A)(H_2O)_4]SO_4$ where M = Ni(II), Zn(II), Cd(II); A = dipyridyl or o-phenahthroline have been prepared. From these binary compounds two water molecules have been replaced by diamines and compound $[M(A)(en)(H_2O)_2]SO_4$ or $[M(A)(pn)(H_2O)_2]SO_4$ was obtained where M = Cu(II), Ni(II), Zn(II), Cd(II); A = dipyridyl or o-phenanthroline. The structure of the binary as well as ternary compounds were confirmed by analytical, magnetic, visible spectral, reflectance spectral and I.R.spectral studies.

6. Template reaction in mixed ligand complexes, J.Inorg.Nucl.Chem. (in press).

Reaction of salicylaldehyde with coordinated ethylenediamine and propylenediamine in mixed ligand complexes $[(L\text{-}L^{2-})M\ en\ or\ pn]$ where M = Ni(II) or Cu(II); L-L = catechol or 2,3-dihydroxynaphthalene have been carried out by template reaction. The resulting complexes retain $(L\text{-}L^{2-})$ in their structure, and the schiffbase formed by condensation of salicylaldehyde with the amine is bidentate, the -OH groups of the salicylaldehyde remaining uncoordinated. This has been confirmed by molar conductance, magnetic and spectral studies.

7. Schiffbase formation from coordinated diamine in mixed complexes Indian J.Chem (communicated).

The mixed ligand complexes of the type $[(L\text{-}L^{2-})M.1,3\text{-}pn]\,2H_2O$ where M = Cu(II), Ni(II); L-L = catechol or 2,3-dihydroxynaphthalene have been prepared. Template method was used to react salicylaldehyde with coordinated 1,3-diaminopropane in these mixed ligand complexes $[(L-L^{2-})M,1,3\text{-}pn]$. The resulting complexes retain $(L-L^{2-})$ in their structure and the -OH groups of schiffbase remain uncoordinated. Geometry of the schiffbase does not allow it to occupy two coordination positions in two different planes. The chain length of 1,3-diaminopropane also does not seem to be sufficient to allow this.