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APPENDIX

LIST OF PUBLICATIONS

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1. Studies in some mixed ligand complexes - Part X - Indian J.Chem., 13(10), 1069 (1975).

Irving Rossotti titration technique has been applied to study the mixed ligand formation constants of heterochelates formed by the reaction MA + L $\rightleftharpoons$ MAL, where M = Ni^{2+} or Cu^{2+}; A = dipyridyl(dipy), o-phenanthroline(o-phen), iminodiacetic acid(IMDA) or nitrilotriacetic acid(NTA) and L = acetyl acetone(AcAc) or benzoylacetone(BA) or dibenzoylmethane(DBM). It is observed that $K^{M(dipy)}_{M(dipy)L}$ is nearly same as K^{M}_{ML} and K^{M}_{ML} - K^{MA}_{MAL} is more when A = IMDA or NTA. Thus, though β-diketones are established π bonding ligands, the formation constants of the ternary complexes containing β-diketones show some relationships to the corresponding binary complex as in cases of ternary complexes containing σ-bonding secondary ligands.

2. Studies in some mixed ligand complexes containing β-dicarbonyls - Part I. J.Inorg.Nucl.Chem., 37, 1665 (1975).

Mixed ligand complex [CuLL'] where L = salicylaldehyde and L' = acetylacetone has been prepared. On treatment of [MLL'] with ammonia, methyl or ethylamine, only the salicylaldehyde part of the molecule forms Schiff base, acetylacetone remaining unreacted. The above Schiff base complex can also be prepared by treating the methylamine complex with an equivalent amount of salicylaldehyde and acetylacetone. Amine exchange reactions are also possible. The treatment of (salicylaldihydato-acetylacetonato)Cu(II) or (salicylideneaminato-acetylacetonato)Cu(II) with ethylenediamine or propylenediamine results in the formation of Schiff base complexes in which diamine is condensed at one end with salicylaldehyde and other and with acetylacetone. This can also be prepared by mixing Cu(II), salicylaldehyde, acetylacetone and diamine in equal ratio. In case of Ni(II) preparation of other compounds were not possible, but the complex of ethylenediamine Schiff base condensed at both ends could be prepared. The complexes have been characterised by elemental analysis, TLC analysis, conductance measurements, magnetic measurements and spectral studies.

3. Studies in some β-ketoester complexes - J.Ind.Chem.Soc., 53(1), 100 (1976).

A study of binary metal β-diketone complexes shows that there is metal-ligand π interaction and there is formation of six membered planar ring with delocalised π-electrons. The formation constants values in case of β-ketoesters, is however, lowered considerably; and this has been attributed to the fact that the resonance of the β-diketone chelate ring is greatly interfered with by participation of one of the carbonyl groups in the very strong ester resonance.

The study of the complexes of acetoacetic esters with substitution at the third carbon atom methyl, ethyl, propyl, iso-propyl, butyl with Cu(II), Ni(II), Zn(II) and Be(II) has therefore been carried out. This may throw some light on the extent of π interaction in β-ketoester complexes.

4. Studies in some mixed ligand complexes containing β-dicarbonyls - Part II - Indian J.Chem. (in press).

Mixed ligand complexes (MLL') where M = Cu(II) or Ni(II), L = salicylaldehyde and L' = benzoylacetone(BA) or dibenzoylmethane(DBM) have been prepared. On treatment of

[MLL'] with ammonia, methyl or ethylamine, only the salicylaldehyde part of the molecule forms Schiff base, the β-diketone part remaining unreacted. The above Schiff base complex can also be prepared by treating the metal amine complex with an equivalent amount of salicylaldehyde and β-diketone. Amine exchange reactions are also possible. The complexes have been characterised by elemental analysis, TLC analysis, conductance measurements, magnetic measurements and spectral studies.

5. Studies in some mixed ligand complexes containing β-dicarbonyls - Part III - Indian J.Chem. (in press).

Mixed ligand complexes CuLL' where L = 2-hydroxyacetophenone or 2-hydroxy-3-methylacetophenone; L' = acetylacetone has been prepared. On treatment of [MLL'] with ammonia, methyl or ethylamine, only the acetophenone part forms Schiff base, acetylacetone remaining unreacted. The above Schiff base complex can also be prepared by treating the metalamine complex with an equivalent amount of the two ligands. Amine exchange reactions are also possible. The treatment of (2-hydroxyacetophenonato,acetylacetonato)Cu(II) or 1-(2-hydroxyphenyl)ethylideneaminato, acetylacetonato)Cu(II) with ethylideneamine or propylenediamine results in the formation of Schiff base complexes in which diamine is condensed at one end with acetophenone and other end with acetylacetone. The complexes have been characterised by elemental analysis, TLC analysis, conductance measurements, magnetic measurements and spectral studies.

6. Studies in some mixed ligand complexes - Part XII - Indian J.Chem. (in press).

An extension of Irving-Rossotti titration technique has been applied to study the mixed ligand formation constants of heterochelates formed by the reaction, $MA + L \rightleftharpoons MAL$, where M = Cu(II) or Ni(II), A = dipyridyl (dipy) or o-phenanthroline(o-phen) and L = 4-(2-hydroxyethylimino)pentane-2-one(HEA) or 4-(2-hydroxyethylimino)-4-phenylbutane-2-one(HEBA) or 4-(2-hydroxypropylimino)-pentane-2-one(HPA) or 4-(2-hydrocy-propylimino)-4-phenylbutane-2-one(HPBA).

It is observed that $K^{M(dipy)}_{M(dipy)L} \approx K^{M}_{ML}$. This has been explained in terms of π interaction. From the above observations it has been considered that though the secondary ligand has three coordinating atoms, it acts as a bidentate ligand in binary and ternary complexes.

7. Nitration of ternary Schiff base complexes of Cu(II) - Indian J.Chem. (communicated).

Nitration of the coordinated ligands in the complexes of the type [MLL'] where M = Cu(II); L = salicylideneaminato or 1-(2-hydroxy-m-tolyl)ethylideneaminato or 1-(2-hydroxyphenyl) ethylideneaminato and L' = acetylacetone or benzoylacetone or dibenzoylmethane, have been carried out. Trinitro compounds have been obtained in all cases except in case of 3-methyl derivative of 2-hydroxyacetophenone where a dinitrocompound is obtained. The substitution products have been characterised by elemental analysis, electronic and IR spectral studies, magnetic and conductance measurements. Nitration reactions confirm the structures of the mixed ligand complexes.