THE RELEVANC OF STUDIES ON SALEN COMPLEXES

B.Viswanathan

In one of our discussions we have come across this question on Salen complexes. It is known that salen complexes are studied for one reason that they may give some clues on the behaviour of the biological molecules and hence they are being studied. Why this molecule is a model system for biological molecules. Most of the biological molecules are amide molecules and the internal bonding and nitrogen coordination is what is expected from them. This led us to the question why nitrogen containing ligands alone are studied mostly in coordination chemistry even though there are a variety of coordinating ligands.

This note is a simple attempt to find some answers to these questions.

1. Nitrogen coordination especially in the case ammine type coordination is interesting since the geometry around nitrogen is tetrahedral in ammonia and it has a flip flop configuration.
2. Nitrogen tagged with some carbon and also phenyl groups can give rise to a geometric constraint which causes a reactivity difference.
3. The redox behaviour of the central metallic species can be altered considerably in this configuration while in other free coordination spheres the alteration of the redox potential may be marginal.
4. The reasons for the redox potential variation are not only due to the electronic environment changes but also due to the geometric constraints imposed in this coordination sphere.
5. The tagged metal ions are present in peculiar environment and hence unusual catalytic behaviour can be expected because of the constrained environment of the active site.
6. It is also possible that nitrogen coordination can give rise the fluxional behaviour which may not be possible with other species when they are coordinating to the metal site.

It is our intention that we shall examine some of these postulates in one of our subsequent discussions in this site.