SYNTHESIS, STRUCTURAL CHARACTERIZATION OF MACROCYCLIC LIGANDS AND THEIR TRANSITION METAL COMPLEXES

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The design and synthesis of macrocyclic ligand having several donor atoms has been shown significant interest. It offers exciting possibilities for creative minds to construct novel supramolecular assemblies that are capable of performing highly specific molecular functions. The precise molecular recognition between macrocyclic ligands and their guest provides a good opportunity for studying key aspects of supramolecular chemistry, which are also significant in a variety of disciplines including chemistry, biology, physics, medicine and related science and technology. Chemically mixed donor macrocycles are important because of their great versatility as ligands due to the presence of several potential donor atoms, their flexibility and ability to coordinate with various metal ions. The complexes of macrocyclic ligands are well known to be biologically important and interesting because of their anticarcinogenic, antibacterial and antifungal properties. The interaction of metal ions with biologically active ligands for instance in drugs, is a subject of great interest. Many of the transition metal ions in living systems work as enzymes or carriers in macrocyclic ligand field environments. Therefore, meaningful research in this direction might generate simple models for biologically occurring metallo-enzymes. The following ligands and their transition metal complexes were investigated and characterized by elemental analysis, molar conductance, magnetic susceptibility, mass, FT-Raman, FT-IR (mid and far), UV/visible, $^1$H, $^{13}$C NMR and quantum chemical calculations using CACHE work system.

References