Pyridine-Containing Macrocyclic Complexes and their catalytic applications

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Polyazamacrocycles are a common class of macrocyclic compounds, utilized across a number of fields, including, but not limited to, catalysis, selective metal recovery and recycling, therapy and diagnosis, and materials and sensors.[1] Worth of note is their ability to form stable complexes with a plethora of both transition, especially late, and lanthanide metal cations.[2] Deviation of the macrocycle donor atoms from planarity often leads to rather uncommon oxidation states.[3]Both the thermodynamic properties and the complexation kinetics are strongly affected by the introduction of a pyridine moiety into the skeleton of polyazamacrocycles by increasing the conformational rigidity and tuning the basicity.[4] Pyridine-containing ligands engender great interest due to various potential field of applications. They have been successfully employed in biology, Magnetic Resonance Imaging, molecular recognition, supramolecular chemistry and self-assembly, molecular machines and mechanically interlocked architectures.[5]In this lecture, I will provide a perspective on the catalytic applications of metal complexes of pyridine-containing macrocyclic ligands (Pc-L's) which have been studied in our group (Figure), with a focus interest on the structural features relevant to catalysis.[6]

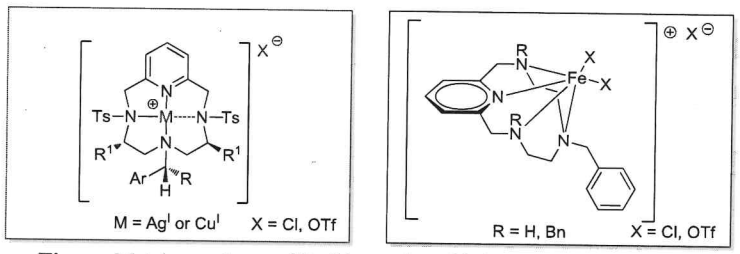

Figure. Metal complexes of Pc-L's employed in homogeneous catalysis.

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