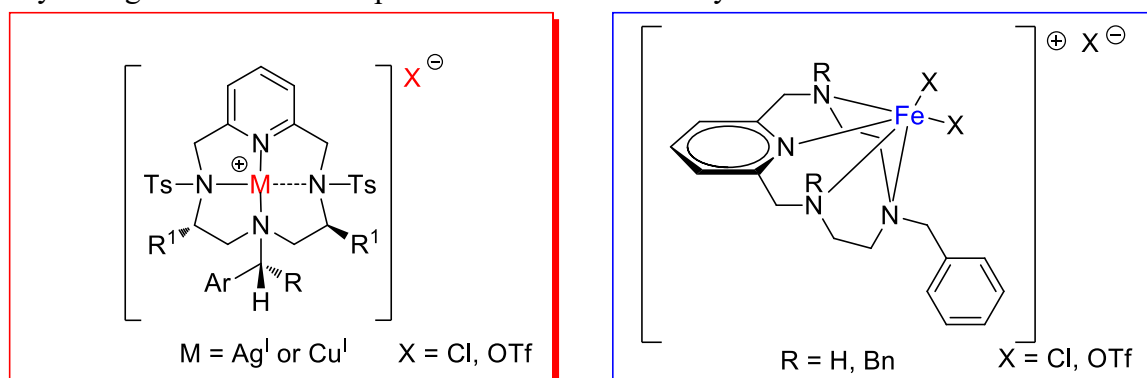


# Pyridine-Containing Macrocyclic Complexes and their catalytic applications

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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.<sup>1</sup> Worth of note is their ability to form stable complexes with a plethora of both transition, especially late, and lanthanide metal cations.<sup>2</sup> Deviation of the macrocycle donor atoms from planarity often leads to rather uncommon oxidation states.<sup>3</sup> 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.<sup>4</sup> 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.<sup>5</sup> 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.<sup>6</sup> The increased conformational rigidity imposed by the pyridine ring allowed for the isolation and characterization of metal complexes which showed a rich coordination chemistry.<sup>7</sup> The very different conformations accessible upon coordination and the easy tuneable synthesis of the macrocyclic ligands have been exploited in stereoselective syntheses.<sup>8</sup>



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

**Key words:** macrocyclic ligands, homogeneous catalysis, copper, silver, iron, C-C and C-O bond forming reactions, alkene oxidation.

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