Synthesis of Chiral N-heterocyclic Carbene Complexes and their Utility in Asymmetric Catalysis

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Abstract: A series of new silver, gold, nickel and palladium complexes supported over chiral N-heterocyclic carbene ligands prepared from readily available enantiopure (+)-pinene, (+)-camphor and (–)-menthol. Designing the chiral catalyst plays a crucial role in the asymmetric synthesis. We have developed a new class of N-heterocyclic carbene (NHC) complexes of 6-membered and 12-membered bifunctional catalysts and CNC type cationic pincer architecture (**Fig**. **1**). These NHC complexes have been characterized by NMR, elemental analysis and the structures are unambiguously determined by X-ray crystallography. The catalytic applications of some of these catalysts in asymmetric synthesis will be discussed.

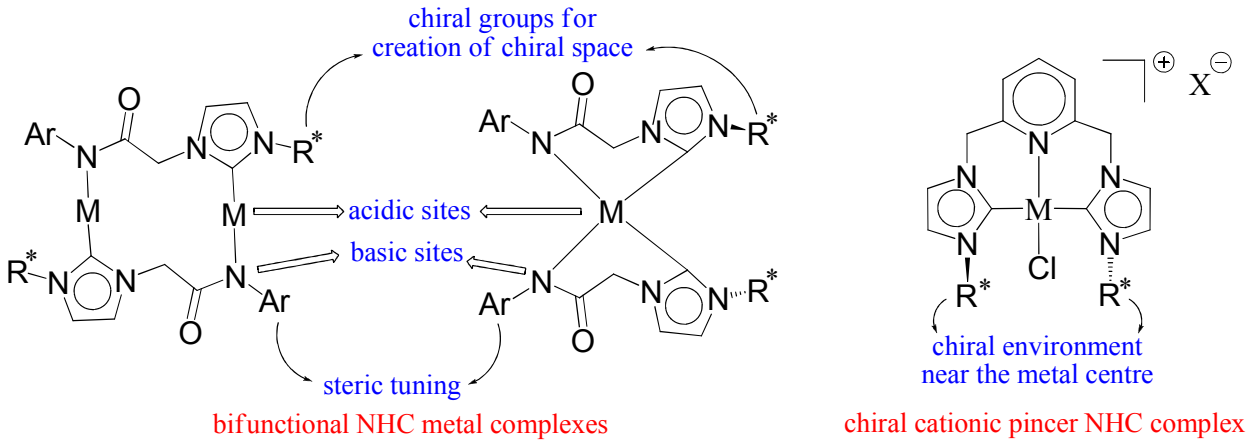

Figure 1: Design of new chiral NHC complexes