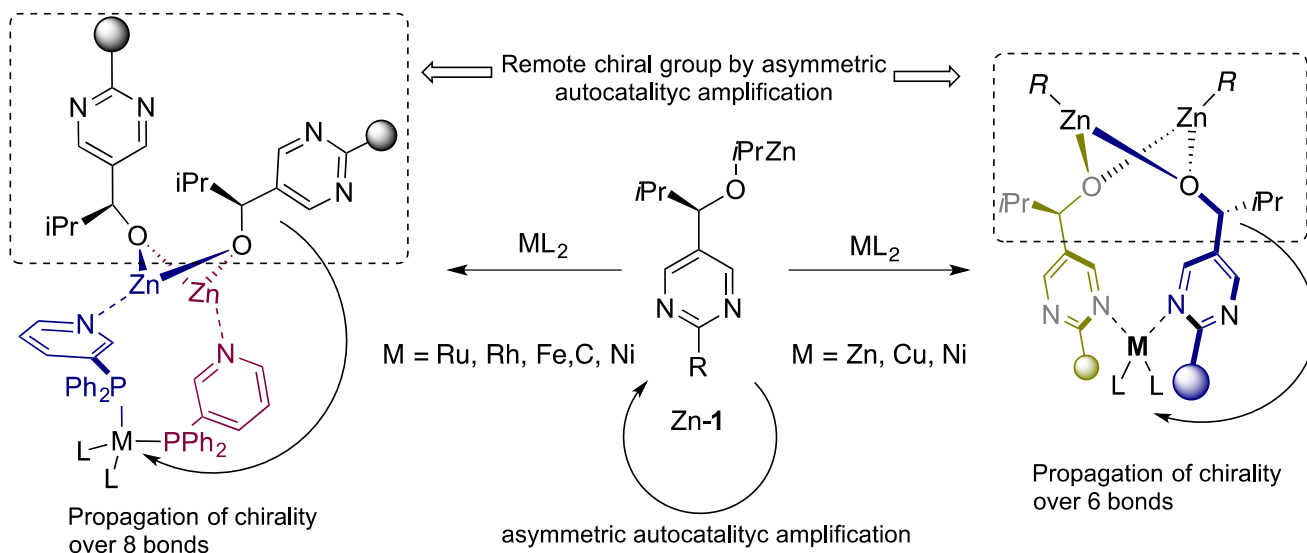




Molecular devices for remote amplification of chirality



Motivation and challenge: Conformational control can be used to transmit information in the form of chirality over relatively long molecular distances and could be the key to the construction of catalytic responsive molecular systems for remote asymmetric amplification.

Objectives and scope: We have recently discovered that Soai's autocatalyst Zn-1 can be coupled to asymmetric induction in subsequent chemical reactions. Here, we seek to investigate the generation of new molecular devices as catalyst structures through the self-assembly of phosphine-pyridines by coordination to Zn-1. The resulting assembly will consist in a supramolecular complex in which the phosphine functional groups would serve as ligands to other metals (Ru, Rh, Cu). The catalytic properties of such molecular devices will be evaluated as chiral relays in well-defined chemical transformations. This will also provide information on the influence of the chiral Zn-1 unit on the level of asymmetric induction, now located remote to the catalytic site.

Skills to be developed: Chemical synthesis, Handling of organometallic and air-sensitive compounds, advanced NMR techniques.

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