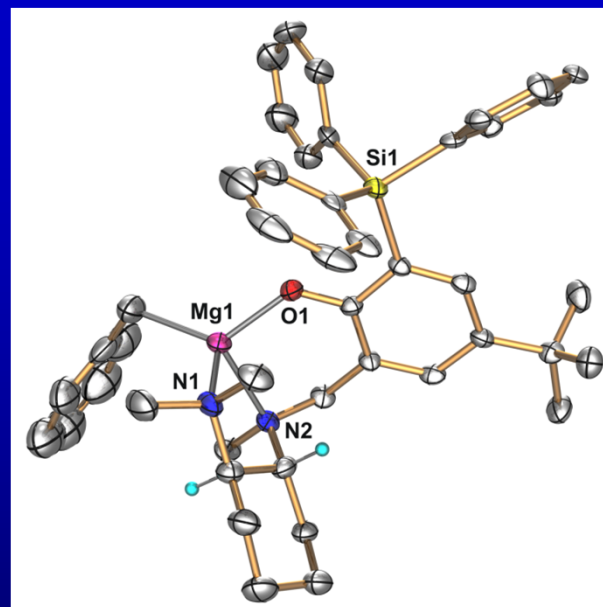


A Chiral Alkaline-Earth Metal Catalyst for Asymmetric Hydroaminations

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The hydroamination reaction of unsaturated carbon-carbon bonds represents a waste-free, highly atom-efficient and green pathway for the synthesis of industrially important bulk chemicals, specialty chemicals and pharmaceuticals. In this process an amine N-H bond adds to an unsaturated carbon-carbon bond.

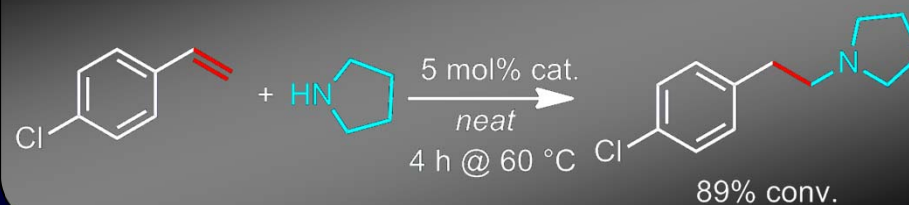
The application of alkaline-earth metal catalysts for this transformation is particularly attractive thanks to their abundance, biocompatibility and chemical behavior resembling that of the rare-earth elements. Significant challenges represent facile Schlenk-type ligand redistribution processes that can thwart efforts to perform enantioselective transformations. *We have now prepared a chiral phenoxyamine magnesium catalyst system that combines outstanding reactivity at low temperatures and high enantioselectivities of up to 93% ee in hydroamination/cyclization reactions of aminoalkenes.* The high catalytic activity of this system was further demonstrated in the *first magnesium-catalyzed intermolecular hydro-amination* of vinyl arenes with amines.



Asymmetric Intramolecular Hydroamination



Intermolecular Hydroamination



These results represent a significant breakthrough for the development of efficient alkaline-earth metal catalysts for the hydrofunctionalization of alkenes.



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