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Catalytic Approaches for Stereoselective Hydrocarbon Difunctionalization

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ABSTRACT

The development of efficient, safe, clean and operationally simple transformations is a primary challenge in modern synthetic chemistry. Traditionally, transition metal catalyzed C-C bond forming reactions have been developed using pre-made organometallic reagents. These procedures are inherently limited to the availability and reactivity profiles of the reagent itself and entail the formation of a stoichiometric amount of inorganic salt as a reaction by-product. The goal of our research program is to discover and study new metal-catalyzed reactions with the aim to develop highly selective synthetic methodologies based on the use of readily accessible materials. In this context, we have recently developed new synthetic transformations based on the use of simple unsaturated hydrocarbons as transient functionalized organometallic intermediates in multicomponent reactions.¹⁻⁵ From simple and readily available materials we can obtain complex structures with a high level of selectivity.

In this lecture, different catalytic strategies to accomplish stereoselective difunctionalization of unsaturated hydrocarbons based on selective carboboration processes will be presented.

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