

Hydrazide Organocatalysis: From Cope Rearrangements to Novel Cyclopropane Expansions

Secondary amines form one of the fundamental classes of organocatalysts and are employed in a wide variety of contexts. Our group has been developing hydrazides as organocatalysts for reactions involving iminium intermediates. Hydrazides vastly outperform secondary amines in many contexts, particularly in reactions of α -branched carbonyl substrates. This has enabled their use in a variety of contexts, most notably in Cope rearrangements and polyene cyclizations. This talk will focus on the development of hydrazide catalysts for a number of reactions and explore the source of their unique reactivity. We have also recently found that both hydrazide organocatalysts and traditional Lewis acids can unlock novel cyclopropane chemistry that not only affords access to a variety of bridged ring systems but also has provided fundamental insight into conformational gearing effects provided by small strained-ring systems.