SEMINARIO DI DIPARTIMENTO

Venerdì 11-03-2016, Ore 10.00, aula IV. I piano, Edificio Caglioti

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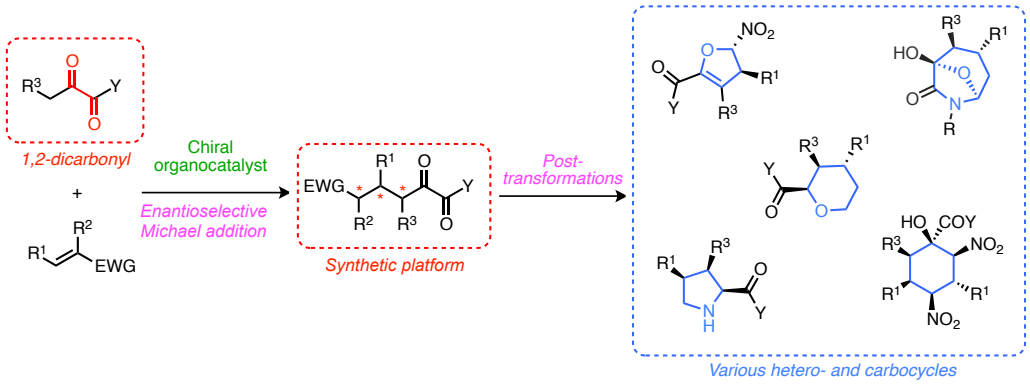
Exploiting the Reactivity of 1,2-Dicarbonyls in Organocatalyzed Transformations

Research towards organocatalytic enantioselective methodologies to access enantioenriched molecules has received much attention in the last fifteen years.[1] Such methodologies have many advantages in terms of efficiency, selectivity and environmental benefits. More particularly, the asymmetric organocatalyzed Michael addition is a very useful reaction as the reaction products can easily be converted into highly functionalized cyclic or acyclic building blocks.

In this context, we became interested in the challenging reactivity of 1,2-dicarbonyl compounds as pro-nucleophiles in organocatalyzed transformations as only few examples have been reported so far.[2] The presence of adjacent multiple reactive centers allows the selection of specific activation modes for enhancing the reactivity of these important ambident pro-nucleophiles. Hence, we successfully developed the first enantioselective organocatalyzed Michael additions of 1,2-ketoamides and 1,2-ketoesters on nitroalkenes with excellent stereoselectivities and very good yields.[3] The Michael adducts can be used as versatile synthetic platforms to make five-[4] and six-membered carbo- and heterocycles,[5] or even seven-membered heterocycles[6] with the creation and control of additional stereogenic centers. Recent research developments using this chemistry also allowed us to design an innovative methodology for the preparation of optically active furan and pyridine atropisomers via central-to-axial chirality conversion.[7,8]



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8. Unpublished results.