

Gold catalysis in the synthesis of heterocycles

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Heterocycles are important structural motifs found in various natural products and functional materials. Their syntheses under mild reaction conditions and in highly efficient manners are still much in demand. On the other hand, Au catalysis has lately emerged as a powerful platform for the development of versatile synthetic methods.

In this presentation, two general strategies for the synthesis of *N*-*O*-heterocycles in the context of gold-catalyzed transformations of alkynes will be discussed. In the first strategy, oxidative catalysis using tethered or external nucleophilic oxidants provide rapid access to azetidin-3-ones, tetrahydrobenzazepinones, piperidin-4-ones, azepin-4-ones and other ring systems. In the second strategy, gold catalysis is employed as the 'spring board' to provide access to versatile intermediates otherwise difficult to obtain, and their further transformations/rearrangements enable the preparation of heterocycles. Among the various implementations of these strategies to be presented, three selected cases are outlined in the Scheme. Applications of these methods in natural product synthesis will also be discussed.

Scheme. Gold-Catalyzed Synthesis of Heterocycles

