DEVELOPMENT OF NEW METHODOLOGIES IN THE PRESENCE OF GOLD(III) COMPLEXES

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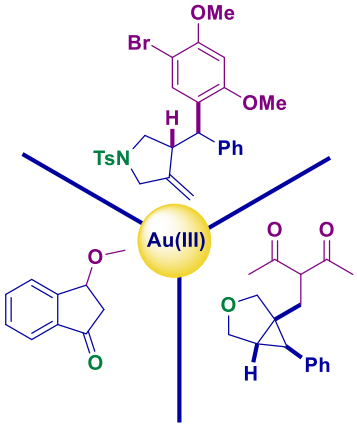
Developments in transition-metal catalysis, notably with gold, have dramatically transformed organic synthesis, pushing the limits of gold complex applications from apparent inertness to catalytically active roles.[1] Gold(I) and gold(III) complexes are characterized by their ability to facilitate a huge range of chemical transformations. Gold(I) complexes, renowned for their ability to activate π-C-C bonds, have played a key role in the development of novel and original rearrangements. Despite extensive exploration of gold(I), the potential of gold(III) complexes has remained relatively untapped due to the challenges associated with obtaining stable, controllable reactivity. In 2015, Toste's group introduced a new method for stabilizing gold(III) complexes using biphenylene, leading to the development of a new gold(III) catalyst.[2] However, this catalyst has seen only limited application since its inception. Taking advantage of these developments and following our recent work on novel gold(I) complexes, we envisaged to use gold(III) complexes in domino cyclization and Petasis-Ferrier cycloisomerization/rearrangement reactions.[3,4] This approach has enabled the synthesis of complex cyclic molecules with high efficiency and precision. In this communication, we will present our preliminary results on gold(III) catalyzed transformations as well scope and limitations of Petasis-Ferrier and domino processes.



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