Evaluation of β-cyclodextrin NHC-Gold(I) Complex in the Catalysis of Cycloisomerization and Alkoxycyclization Reactions

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Nowadays, selectivity in chemical reactions is a must especially in atom-economical processes that are crucial for environmental concerns. Gold(I) catalysis has recently emerged as a very fecund and selective methodology in a wide range of reactions, and as allowed the development of new regio¹ and enantioselective² chemical processes with high atom efficiency and low energy demand. Encapsulating a reactive center in a cavity with a defined and specific shape is an efficient way to promote selectivity in catalytic processes. This can result in reaction pathways that are different from those of the free catalyst, leading to remarkably enhanced selectivity of the caged catalysts compared to their non-encapsulated analogues. In this context, our groups have evaluated the cavity effect provided by β-cyclodextrin NHC-Gold(I) complex (figure 1) in terms of regioselectivity and asymmetric induction in a series of gold-catalyzed transformations.³ The behavior of the catalyst in known reactions is indicative of strong π-acceptor properties.

References

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