Efficient chemical synthesis of complex natural products using catalysis

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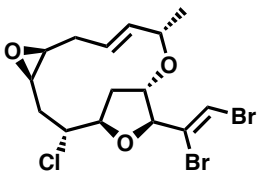
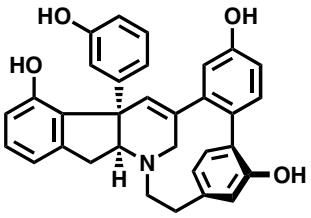
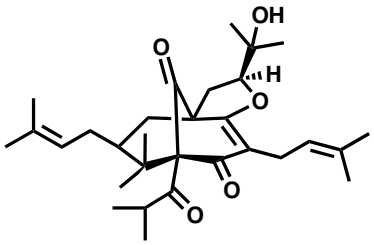
This presentation will describe studies in our laboratories that have been focused on the total synthesis of natural products. Macrocycles of marine origin, *poitediene* and *haouamine A*, feature unprecedented 12-membered ring ether and 11-membered aza-paracyclophane motifs, respectively, while the plant-derived *garsubellin A* and *3-demethoxyerythratidinone* represent unique bridged and tetracyclic molecular architectures. In order to address challenges associated with the synthesis of these novel targets, our approaches have been based upon new methods and strategies emanating from the new catalytic reactivity of transition metal complexes, as exemplified by our recent synthesis of the *Erythrina* alkaloid. Examples will be given on how the transition metal catalysis is applied to resolve a wide variety of difficult issues encountered during the total synthesis campaigns. Also discussed will be how the findings from target-oriented synthesis efforts have led to the development of new catalytic methods of broad utility.



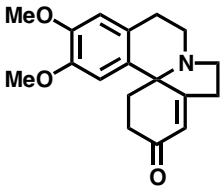
Poitediene



Haouamine A



Garsubellin A



3-Demethoxyerythratidinone