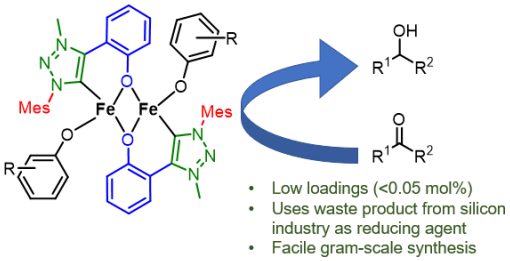
Highly Efficient Hydrosilylation of Ketones and Aldehydes Catalysed by an Iron-Mesoionic Carbene Complex

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Reduction of unsaturated bonds is a well-established organic transformation, mostly performed by hydrogenation utilizing high pressure of dihydrogen gas. Alternatively, hydrosilylation can offer safer, selective, catalytic alternatives to these reduction processes by going through a silane-based intermediate.[1] Industrially, hydrosilylation is often performed with platinum complexes, driving up the cost of this transformation as well as posing concerns due to the scarcity and toxicity of this metal.[1] Consequently, iron-based catalysts are often desirable in the place of precious metals as iron is Earth-abundant, biocompatible, and inexpensive.



In this contribution, we report the use of an iron complex bearing mesoionic carbene ligands to efficiently catalyse the hydrosilylation of ketones and aldehydes to alcohols. Mesoionic carbene ligands and their highly sigma donating nature have found versatile use in catalysis.[2] Using remarkably low catalyst loadings (0.05 mol% or less) and polymethylhydrosiloxane- a waste product from the silicon industry- as the reducing agent, this system quantitatively converts a variety of substrates on a gram scale - rivalling the state of the art for iron systems.[3]

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