Z.-X. Wang, B. J. Li* (Tsinghua University, Beijing, P. R. of China)  
Construction of Acyclic Quaternary Carbon Stereocenters by Catalytic Asymmetric Hydroalkynylation of Unactivated Alkenes  

Iridium-Catalyzed Asymmetric Hydroalkynylation of Unactivated Alkenes

Significance: The authors have developed an enantioselective iridium-catalyzed hydroalkynylation reaction. The reaction transforms trisubstituted β,γ-unsaturated amides with excellent γ-selectivity, forming new alkyne-substituted acyclic quaternary carbon stereocenters.

Comment: The kinetic isotope experiments of the alkenes resulted in an inverse KIE; suggesting that the migratory insertion of the alkene is related to the turnover-limiting step. Notably, the authors propose that the selectivity arises from both a facial preference as well as an alkene isomerization process.

Kinetic isotope effect of alkene:

Selected examples:

SYNFACTS Contributors: Mark Lautens, Randy Sanichar

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