

Asymmetric Vinylogous Mukaiyama–Michael Reaction via Iminium Catalysis

Category

Organo- and Biocatalysis

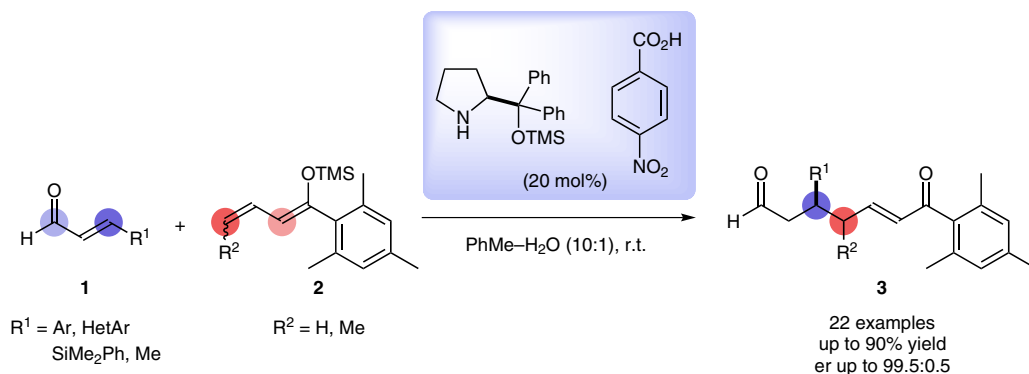
Key words

vinylogous Mukaiyama–Michael reaction

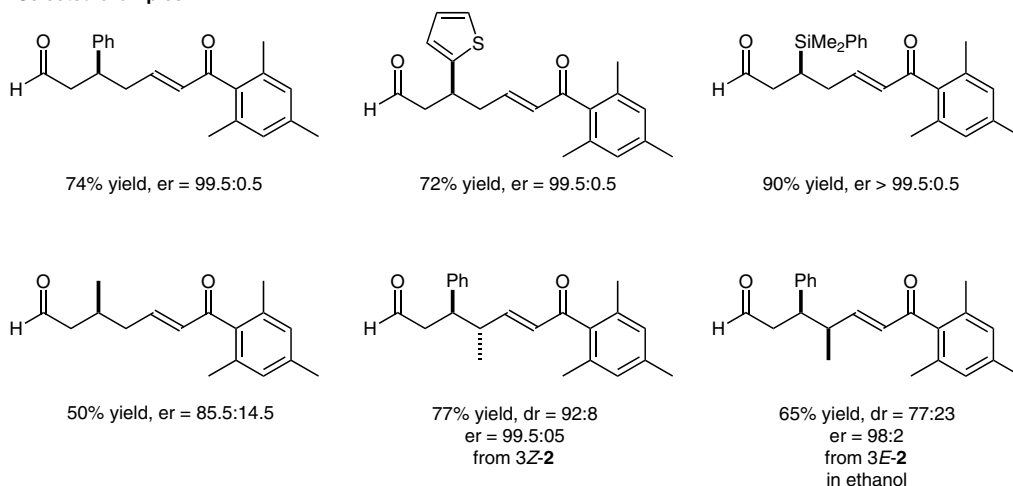
Jørgensen–Hayashi catalyst

enals

dienol silyl ethers



Selected examples:



Significance: The authors report a highly enantio- and diastereoselective vinylogous Mukaiyama–Michael reaction of acyclic dienol silyl ethers **2** to various enals **1** by employing a Jørgensen–Hayashi catalyst. 1,7-Dicarbonyl compounds **3** are obtained under mild reaction conditions with good to excellent yield and remarkable regioselectivity. *Z/E*-Configured γ -methyl-substituted dienol silyl ethers are selectively converted into the *anti* and *syn* products **3** with excellent enantioselectivity.

Comment: Vinylogous Michael reactions of dienol derivatives can form a C–C bond with high regio- and stereoselectivity in the presence of a chiral catalyst. However, a catalytic enantioselective process of this reaction with acyclic nucleophiles and enals was elusive since the reaction can produce a number of regio- and stereoisomers. Herein, the catalyst nicely operates presumably by forming an iminium species with enal **1** to induce 1,4-addition of nucleophile **2** with high γ -selectivity.