Category

Organo- and Biocatalysis

Key words

amine catalysis

cyclic β-amino aldehydes

vinylogous Michael addition

asymmetric catalysis

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Access to Cyclic β-Amino Acids by Amine-Catalyzed Enantioselective Addition of the γ-Carbon Atoms of α,β-Unsaturated Imines to Enals

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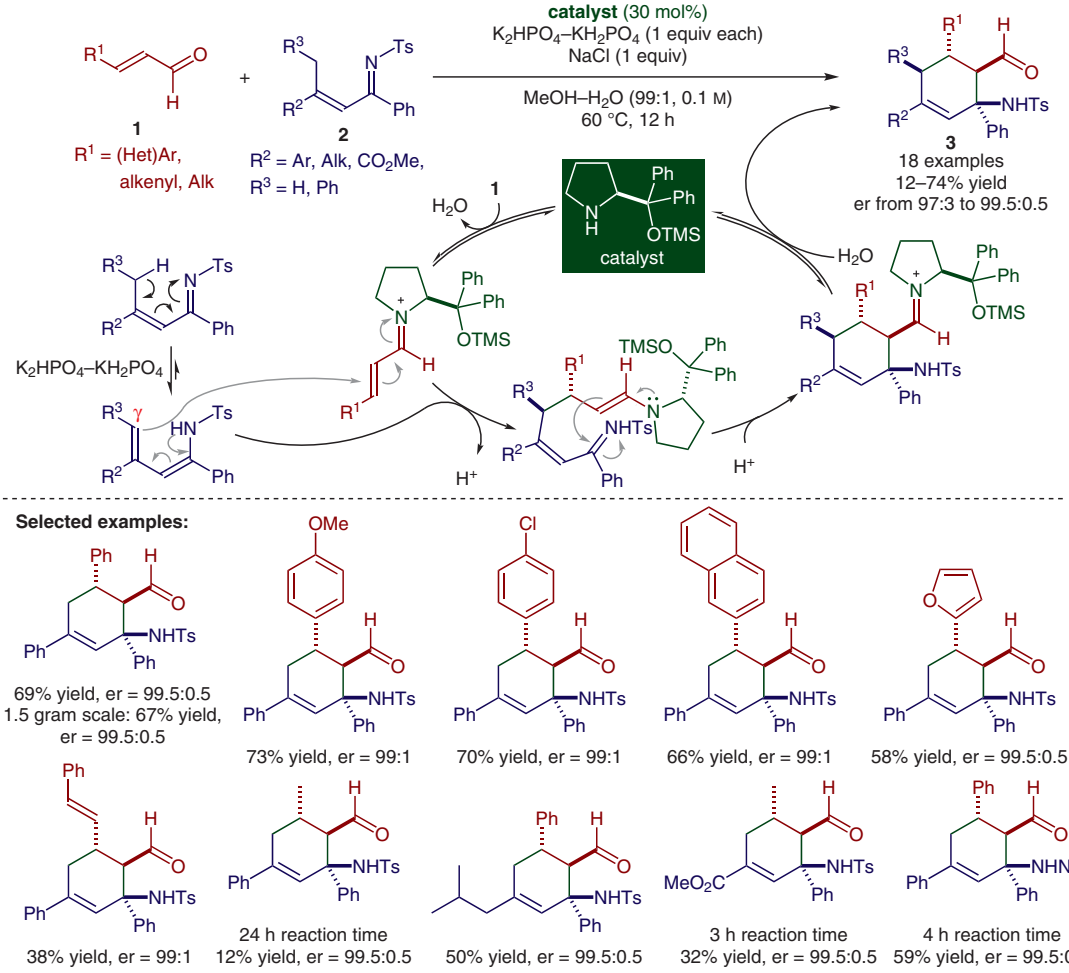
Amine-Catalyzed Enantioselective Synthesis of Cyclic β-Amino Aldehydes



Significance: Chi, Wu and co-workers report an enantioselective synthesis of cyclic β-amino aldehydes by using a simplified Jørgensen–Hayashi-type catalyst in the presence of a basic phosphate buffer and sodium chloride as an additive. The products are obtained in moderate to good yields and with excellent diastereo- and enantioselectivities. Derivatization to the corresponding cyclic β-amino acids proceeds without erosion in the enantiomeric ratio.

Comment: The key step of the transformation is a 1,4-addition of the γ-carbon of the protected imine to the enal. The authors propose that sodium chloride facilitates precipitation of the product, thereby suppressing product decomposition pathways, such as the elimination of sulfonamides (e.g. $TsNH_2$) with concomitant formation of a highly conjugated dienal.

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