

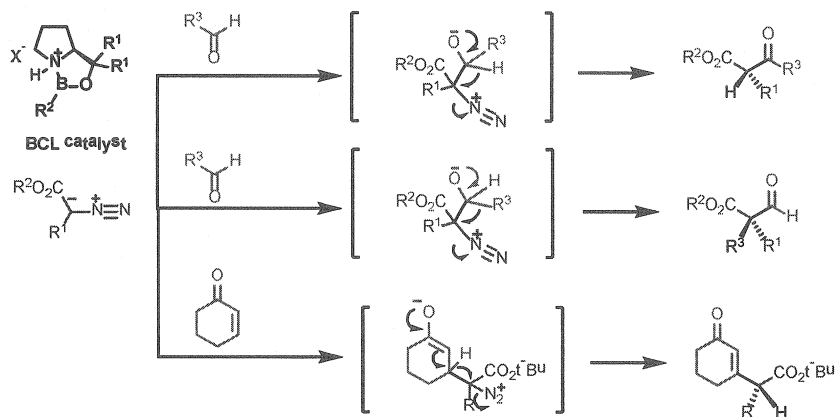
Catalytic Asymmetric Carbon-Hydrogen and Carbon-Carbon Insertion Reactions with Diazoesters

Do Hyun Ryu

Department of Chemistry, Sungkyunkwan University, Suwon 440-742, Korea

email: dhryu@skku.edu

The chemistry of α -diazocarbonyl compounds has attracted great attention because of its extensive applications in organic chemistry since the first recorded synthesis of ethyl diazoacetate by Curtius in 1883. We developed highly enantioselective, catalytic cyclopropanation with diazoesters. In the presence of chiral oxazaborolidinium ion in high yield (up to 93%) with high to excellent diastereoselectivity (up to 98% de) and enantioselectivity (up to 95% ee).¹ In this presentation, we report that highly enantioselective Carbon-Hydrogen^{2a-c} and Carbon-Carbon insertion^{2d,3} reactions with diazoesters and TMS diazomethane. Valuable chiral materials were obtained efficiently. In addition, these methodologies were successfully applied to the synthesis of the natural products, sitophilate, and (+)-epijuvabione. As another application, optically active quaternary α - and β -amino esters were easily prepared from all carbon α -quaternary aldehydes in good yields and excellent enantioselectivities.



References

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