Iridium-Catalyzed Enantioselective 1,6-Addition

Significance: This work described an iridium-catalyzed asymmetric 1,6-addition of arylboroxines to \(\alpha,\beta,\gamma,\delta\)-unsaturated carbonyl compounds by employing an iridium chiral diene complex. Various \(\delta\)-arylated carbonyl compounds were obtained in high yields and enantioselectivity. Also, the authors elaborated the product in a short sequence to provide nature product and important building blocks.

Comment: Asymmetric 1,6-Michael additions to acyclic systems are challenging as a result of poor control of regioselectivity and enantioselectivity. Recently, the authors reported the hydroxoiridium complex coordinated with COD\(\text{<}\) was able to catalyze the 1,6-addition of arylboronic acids to unsaturated carbonyl compounds (Angew. Chem. Int. Ed. 2006, 45, 5164). In this work, they developed an asymmetric version of this reaction. Excellent control of enantioselectivity and regioselectivity was achieved.