Enantioselective Conjugated Addition of Vinylaluminums to Cyclic Enones

**Significance:** The development of transition-metal-catalyzed enantioselective reactions allowing the formation of quaternary stereogenic centers is a challenging task. Herein, the authors report a highly enantioselective conjugated addition of Si-substituted vinylaluminium reagents to five- and six-membered cyclic \( \beta \)-substituted enones of type 1. A chiral bidentate NHC–copper complex has been identified to facilitate the desired transformation of 1 into 2 with good to excellent yields and enantioselectivities.

**Comment:** The active catalyst for the enantioselective addition is easily formed in situ starting from air-stable CuCl\(_2\)·H\(_2\)O and complex 4. The reaction (1 \( \rightarrow \) 2) is typically finished within 15–20 minutes and the required Si-containing vinylaluminium reagents are readily available from silylacetylenes though a stereoselective hydroalumination using DIBAL-H. Furthermore, it has been shown that the enantiomerically enriched vinylsilane products can be easily protodesilylated (7 \( \rightarrow \) 8), oxidized (9 \( \rightarrow \) 10) or transformed into the corresponding vinyl iodides (5 \( \rightarrow \) 6) with good to excellent yields.

**SYNFACTS Contributors:** Mark Lautens, Norman Nicolaus

Synfacts 2011, 4, 0395-0395 Published online: 18.03.2011 DOI: 10.1055/s-0030-1259649; Reg-No.: L02111SF