

Enantioselective Zr-Catalyzed Carboalumination Plus Cu-Catalyzed Cross-Coupling

Category

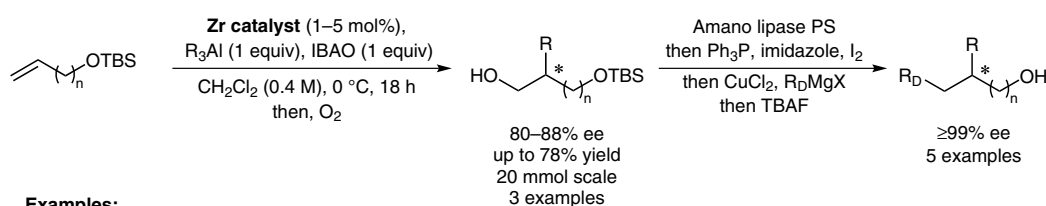
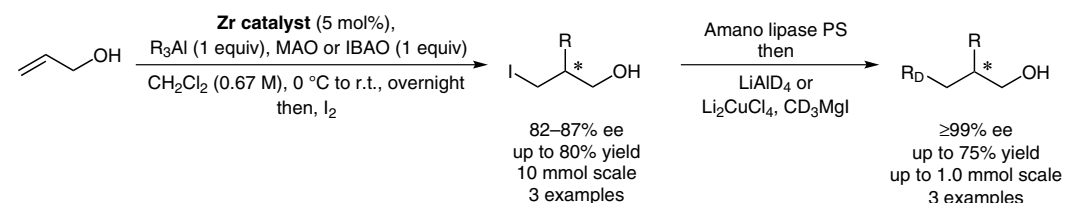
Metal-Catalyzed
Asymmetric
Synthesis and
Stereoselective
Reactions

Key words

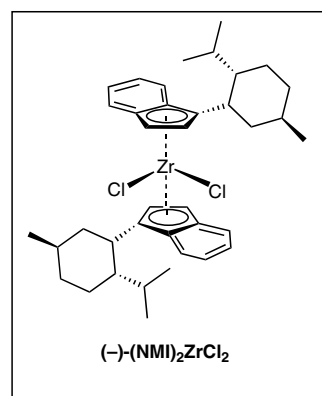
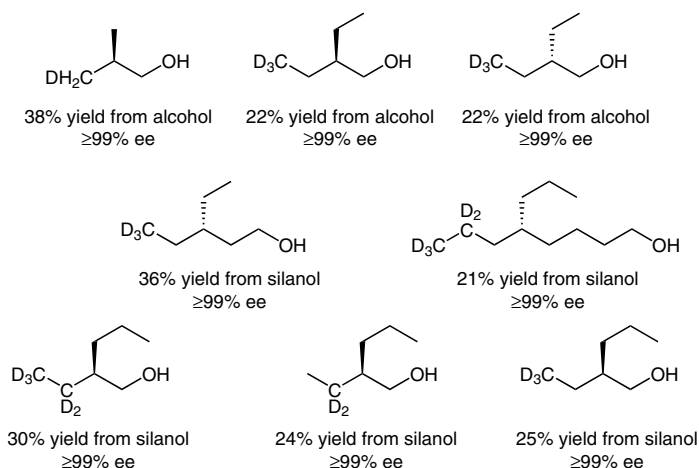
zirconium

neomenthylindenyl
ligands

cryptochirality



Examples:



Significance: Deuterium-labeled chiral compounds can be excellent tools for probing reaction mechanisms. Commonly used strategies for their synthesis include the use of chiral auxiliaries in stoichiometric quantities (J. Haesler et al. *Nature* **2007**, *446*, 526). The authors present an asymmetric zirconium-catalyzed carboalumination. Following ee upgrades by lipase treatment, deuterium was incorporated to generate cryptochiral molecules (G. Zhang et al. *J. Am. Chem. Soc.* **2006**, *128*, 6026).

Comment: The products of the zirconium-catalyzed reaction were produced in modest ee's (80–88%), which were then upgraded to $\geq 99\%$ ee by lipase treatment. Introduction of deuterium was accomplished by treatment with LiAlD₄ or via copper-catalyzed cross-coupling. The enantiomeric ratios were determined via Mosher's method (see recent Review below).

Review: J. M. Seco, E. Quiñoá, R. Riguera *Chem. Rev.* **2004**, *104*, 17–118.