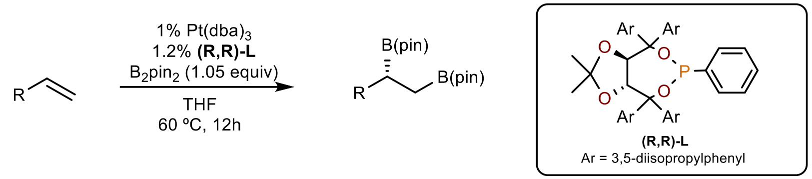
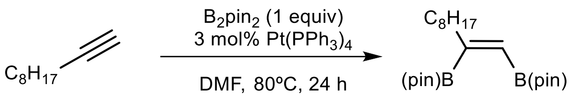
Enantioselective diboration (Morken)

Introduction

- Diboration of terminal olefins
- Enables differential reactivity
- High enantiomeric excess (92%)



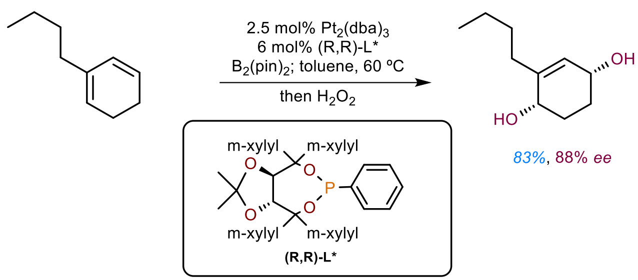
First diboration



Suzuki, A. *Journal of the American Chemical Society* **1993**, 115 (23), 11018–11019. https://doi.org/10.1021/ja00076a081

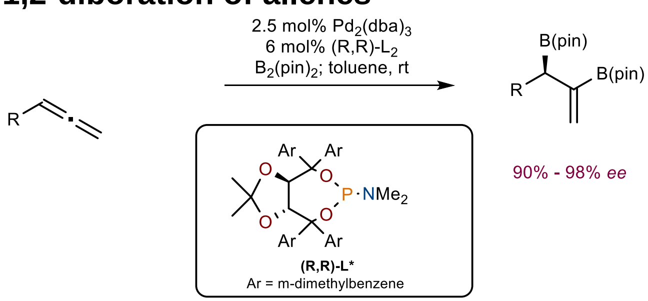
Precedents:

- 1,4-diboration of 1,3-dienes



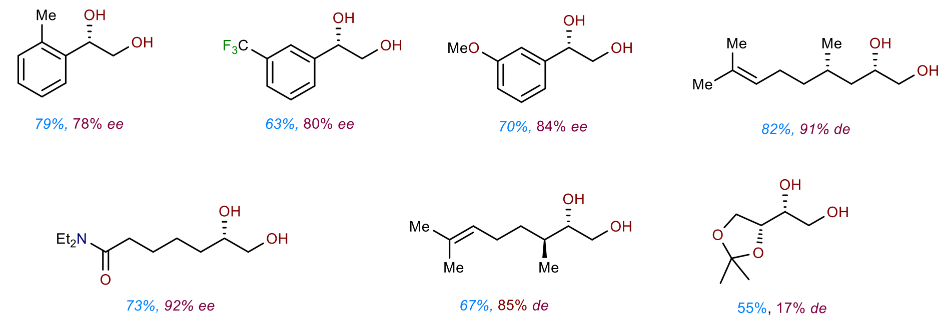
Morken, JP *J. Am. Chem. Soc.* **2009,** *131, 26, 9134–9135*
https://doi.org/10.1021/ja4041016

- 1,2-diboration of allenes

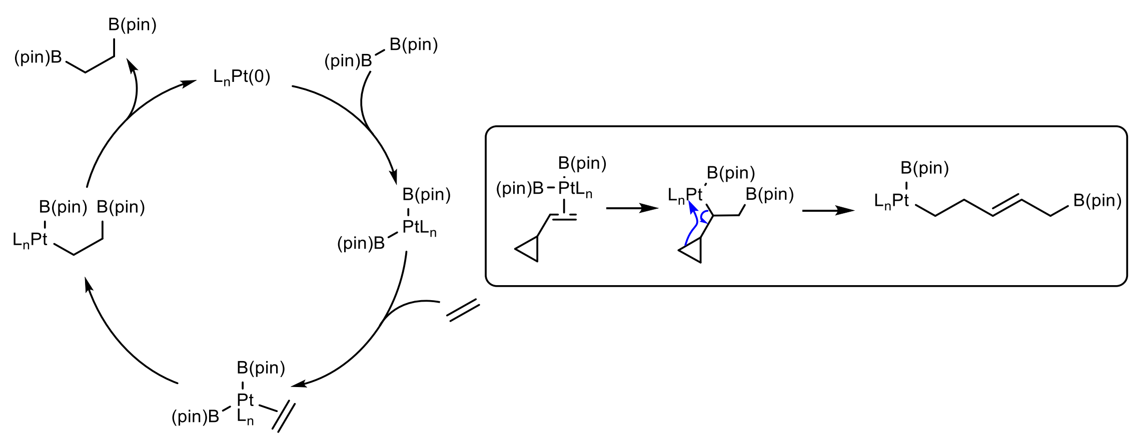


Morken, JP *J. Am. Chem. Soc.* **2007**, 129, 28, 8766–8773
https://doi.org/10.1021/ja070572k

Scope



Mechanism

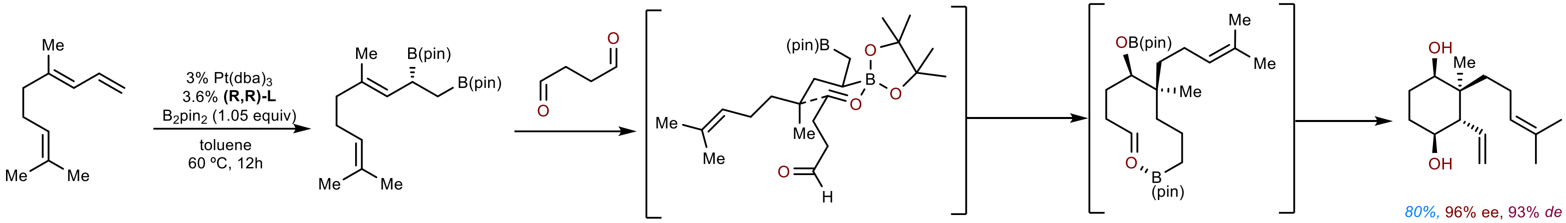


Morken, JP *J. Am. Chem. Soc.* **2013**, 135, 30, 11222–11231 https://doi.org/10.1021/ja4041016

Enantioselective diboration (Morken)

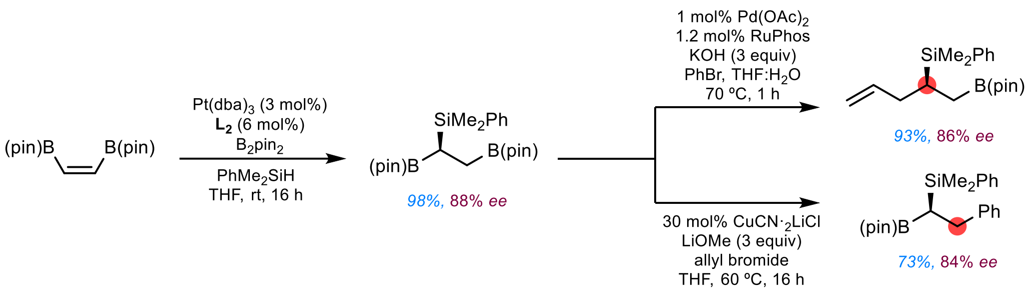
New reactivity of diborylated compounds

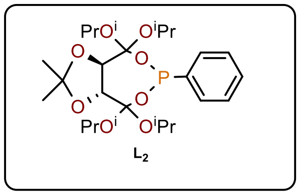
- Enantioselective Tandem Allylation



Morken, JP. *Journal of the American Chemical Society* **2013**, 135 (7), 2501–2504. https://doi.org/10.1021/ja400506j

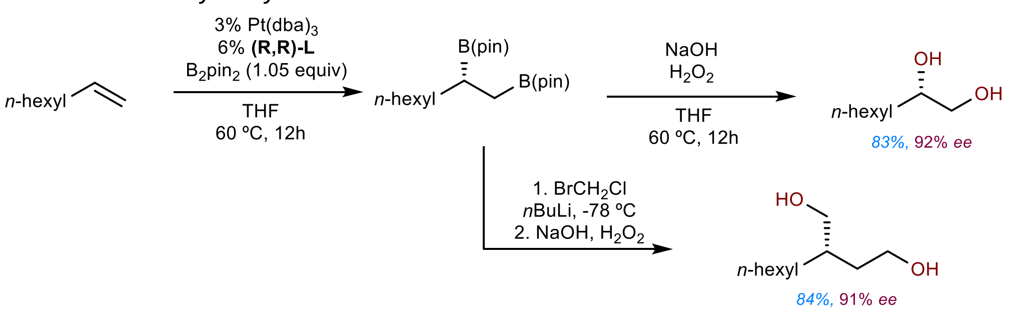
- Making 1,2-Diborylsilanes and Site-Selective Cross-Coupling

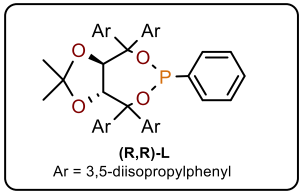




Morken, JP. *ACS Catalysis* **2023**, 13 (17), 11522–11527. https://doi.org/10.1021/acscatal.3c01789

- Dihydroxylation



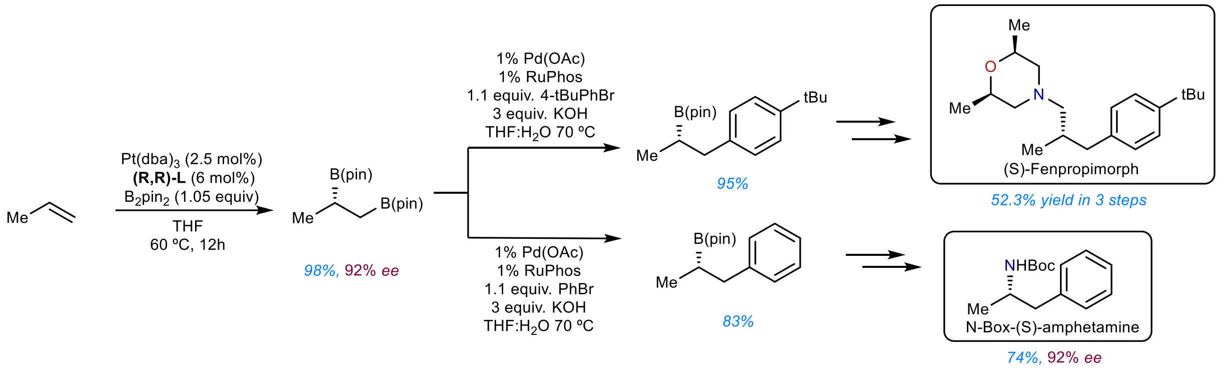


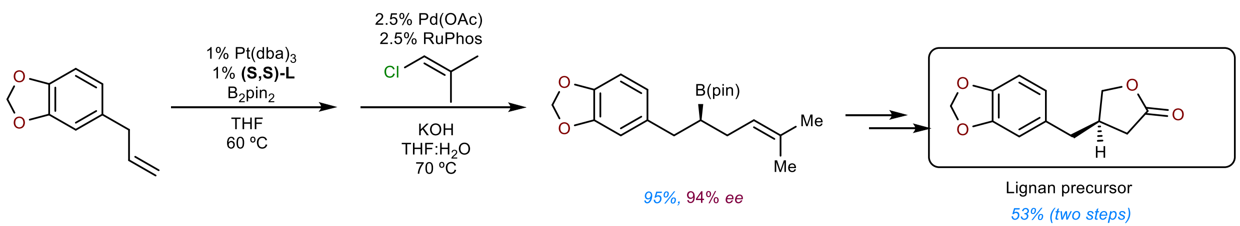
Morken, JP *J. Am. Chem. Soc*. **2013**, 135, 30, 11222–11231 https://doi.org/10.1021/ja4041016

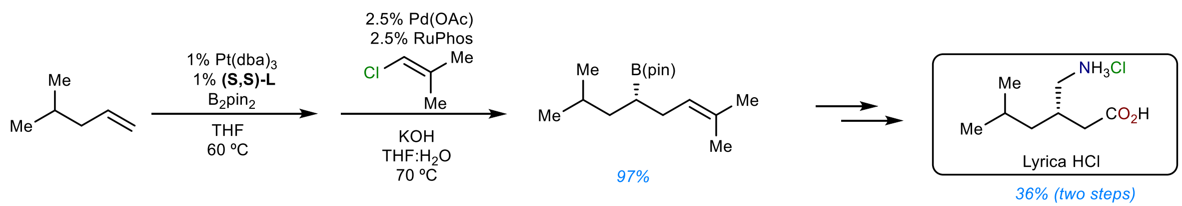
Enantioselective diboration (Morken)

Synthetic applications

Cascade of diboration and cross-coupling allows access to important medicinal agents





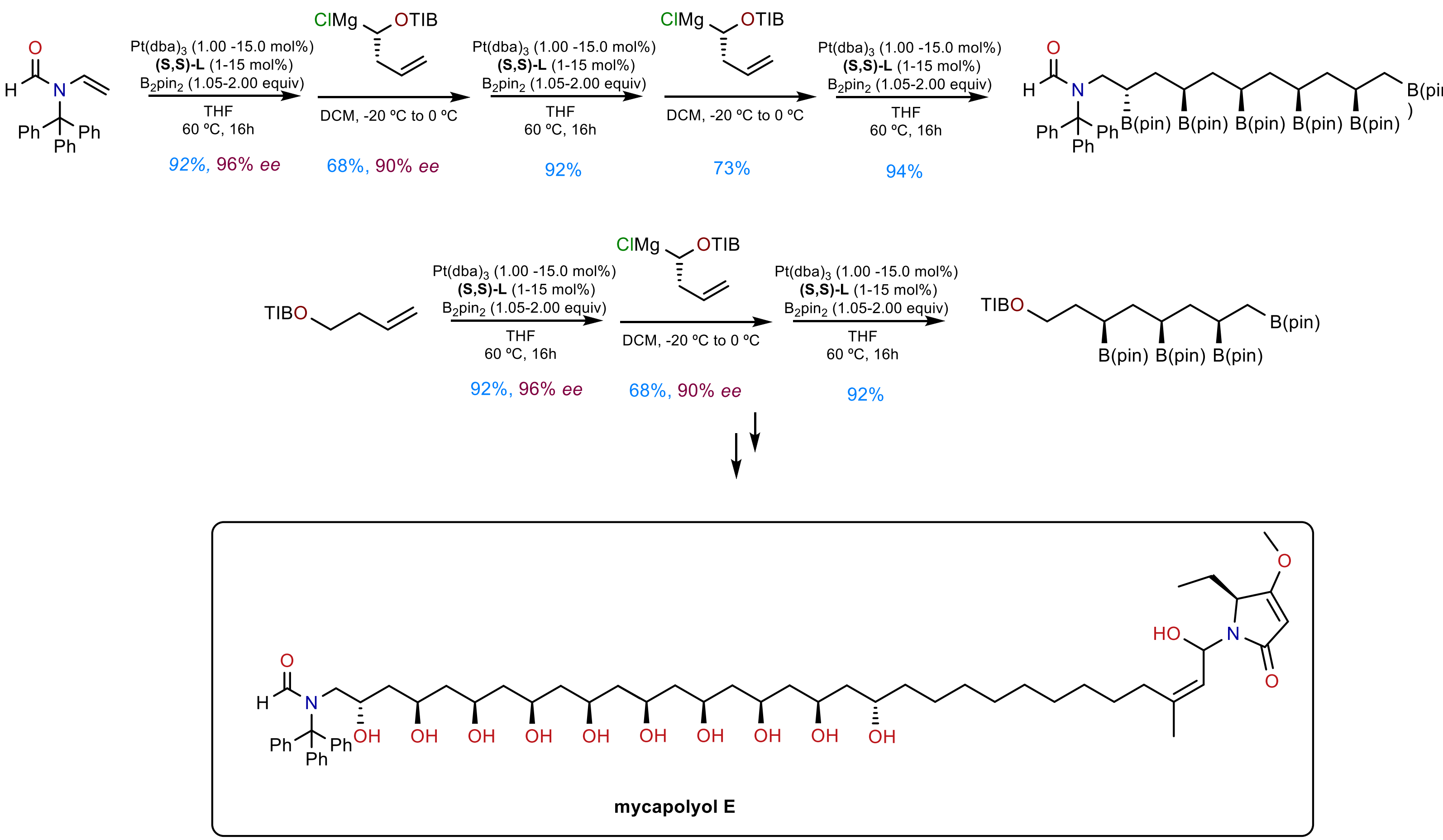


Morken, J.P. *Nature* 505, 386–390 **2014**. https://doi.org/10.1038/nature12781

Enantioselective diboration (Morken)

Synthetic applications

Total Synthesis of Mycapolyol E (Aggarwal 2025)



Aggarwal, V. K.. *Angewandte Chemie* **2025**, 1 (1). https://doi.org/10.1002/anov.70003