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Mechanism-Driven Elaboration of an Enantioselective Bromocyclopropanation Reaction of Allylic Alcohols
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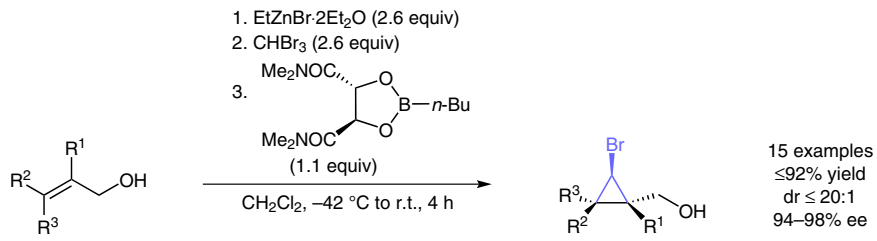
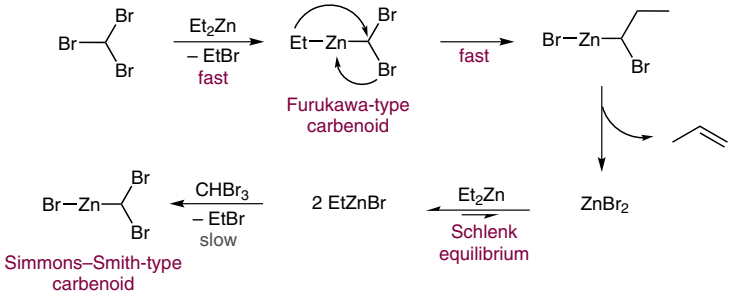
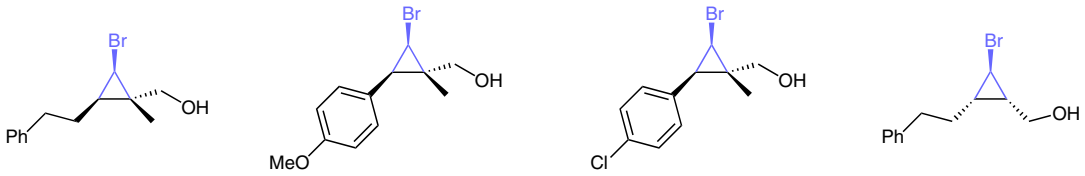
Enantioselective Bromocyclopropanation of Allylic Alcohols



Proposed mechanism for the formation of the active dibromomethylzinc reagent:



Selected examples:



90% yield
dr > 20:1
94% ee

83% yield
dr > 20:1
95% ee

80% yield
dr > 20:1
96% ee

54% yield
dr = 5:1
98% ee

Significance: Charette and co-workers report an efficient enantioselective bromocyclopropanation of allylic alcohols using dibromomethylzinc bromide as active reagent. The targeted bromo-substituted cyclopropanes are obtained in high yields with excellent diastereo- and enantioselectivities.

Comment: NMR studies were performed to gain insight into the mechanism and to determine the formation and nature of the dibromomethylzinc carbenoid. The results allowed the authors to optimize their cyclopropanation method and to develop more atom-economic reaction conditions than previously described.

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Category
Metal-Mediated Synthesis

Key words
zinc
cyclopropanes
carbenoids