

SYNFACTS Highlights in Current Synthetic Organic Chemistry

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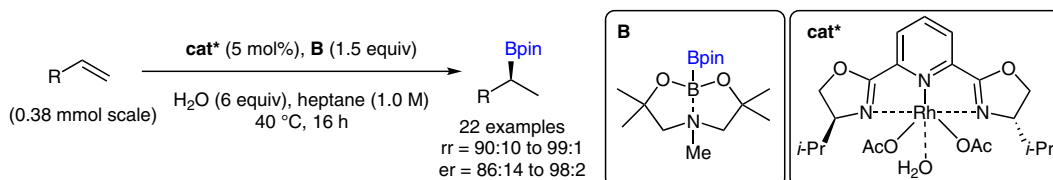
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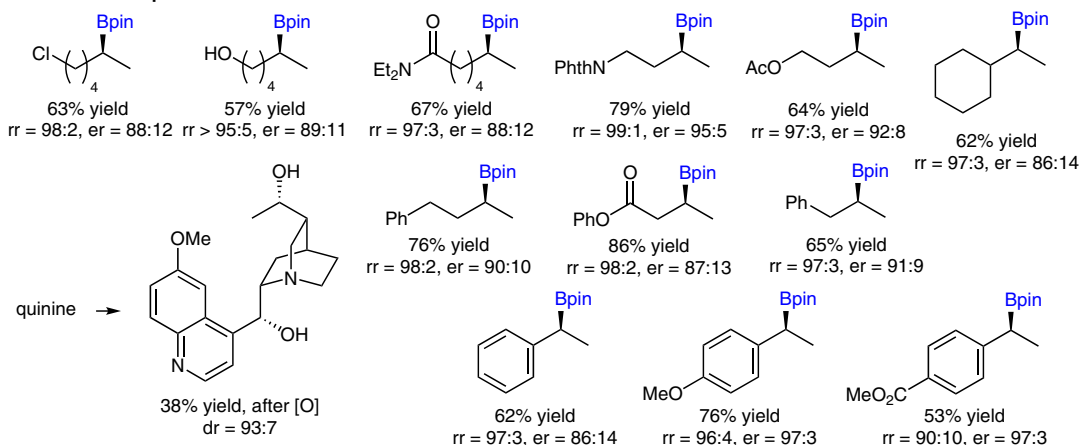
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Enantioselective Rhodium(III)-Catalyzed Markovnikov Hydroboration of Unactivated Terminal Alkenes
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Enantioselective Rhodium-Catalyzed Markovnikov Hydroboration of Alkenes



Selected examples:



Significance: The enantioselective functionalization of terminal alkenes is of great interest in organic chemistry because of their abundance and ease of access. Rhodium-catalyzed hydroboration has been of interest for several decades because it can provide the Markovnikov product, reversing the regioselectivity of traditional hydroboration. Aggarwal and co-workers report a hydroboration of unactivated terminal alkenes by using a preactivated boron source, yielding Markovnikov products with good enantioselectivities.

Comment: The optimized conditions used a rhodium-PyBOX complex and a preactivated boron source, in which the boron–boron bond is weakened by an amino diol ligand. The authors obtained good enantioselectivities and moderate yields for olefins containing various functional groups while maintaining good regioselectivity for the Markovnikov product. Styrenes were also successful substrates, displaying good enantioselectivity with both electron-rich and electron-poor aryl groups. The terminal olefin of quinine was successfully hydroborated, giving good diastereoselectivity for the secondary alcohol.