

SYNFACTS Highlights in Current Synthetic Organic Chemistry

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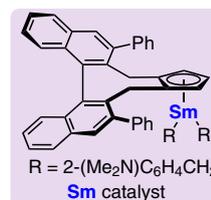
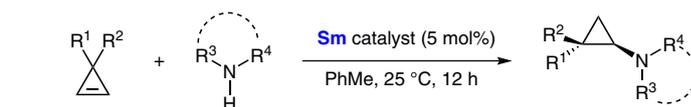
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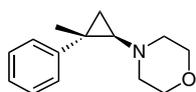
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H.-L. TENG, Y. LUO, B. WANG, L. ZHANG, M. NISHIURA, Z. HOU* (RIKEN CENTER FOR SUSTAINABLE RESOURCE SCIENCE AND RIKEN, SAITAMA, JAPAN)
Synthesis of Chiral Aminocyclopropanes by Rare-Earth-Metal-Catalyzed Cyclopropene Hydroamination
Angew. Chem. Int. Ed. **2016**, *55*, 15406–15410.

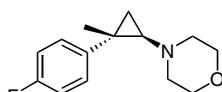
Samarium-Catalyzed Asymmetric Synthesis of Aminocyclopropanes



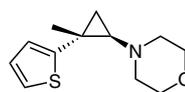
Selected examples:



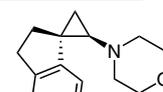
95% yield, 99% ee
dr > 20:1



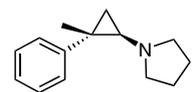
94% yield, 99% ee
dr > 20:1



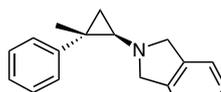
92% yield, 98% ee
dr > 20:1



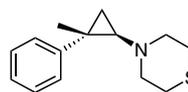
89% yield, 97% ee
dr > 20:1



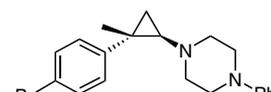
91% yield, 95% ee
dr > 20:1



95% yield, 98% ee
dr > 20:1

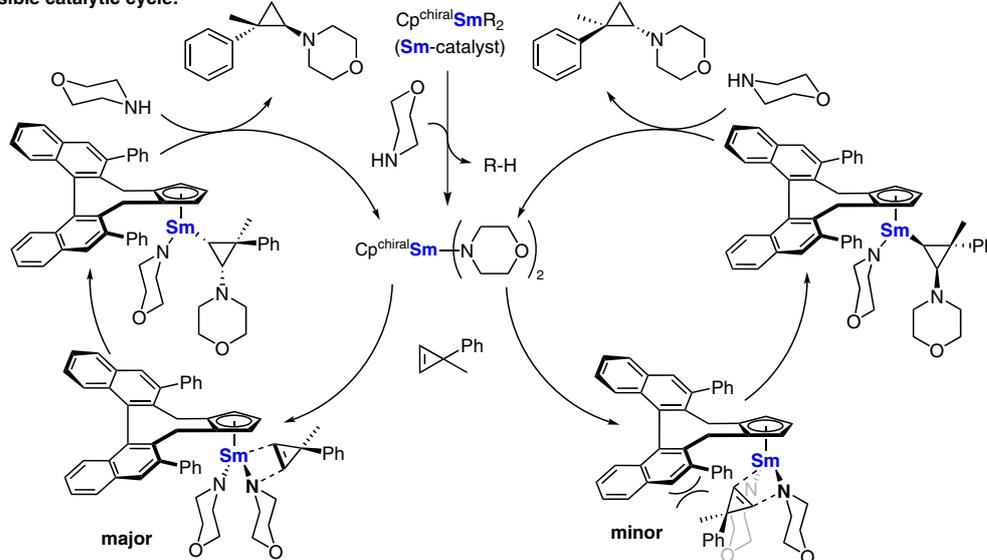


93% yield, 99% ee
dr > 20:1



97% yield, 99% ee
dr > 20:1

Possible catalytic cycle:



Significance: Chiral aminocyclopropanes are important structural motifs found in natural products and pharmaceuticals. The authors developed an efficient method for the synthesis of chiral aminocyclopropanes by a samarium-catalyzed intermolecular asymmetric hydroamination of cyclopropenes.

Comment: A chiral half-sandwich samarium complex catalyzed the hydroamination of cyclopropenes with amines to afford the corresponding chiral aminocyclopropanes in high yields and with excellent stereoselectivities. The authors propose the catalytic cycle shown in the scheme.

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