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Asymmetric Synthesis of Protected Cyclohexenylamines and Cyclohexenols by Rhodium-Catalyzed [2+2+2] Cycloaddition

Angew. Chem. Int. Ed. **2016**, *55*, 15373–15376.

Cyclohexenylamines and Cyclohexenols by Rhodium-Catalyzed Cycloaddition

Category

Metal-Catalyzed
Asymmetric
Synthesis and
Stereoselective
Reactions

Key words

rhodium

[2+2+2]
cycloaddition

cyclohexenylamines

Synfact
of the month

1,1-Disubstituted alkenes:

Selected examples:

Monosubstituted alkenes:

Selected examples:

Significance: Transition-metal-catalyzed [2+2+2] cycloadditions of diynes or enynes with unsaturated moieties have become an attractive method for the stereoselective construction of carbocycles. Herein, Tanaka and co-workers report a regio-divergent asymmetric rhodium-catalyzed [2+2+2] cycloaddition generating cyclohexenylamines and cyclohexenols.

Comment: The rhodium-catalyzed [2+2+2] cycloaddition of enynes bearing 1,1-disubstituted olefins provided the desired products in moderate to excellent yields and with excellent enantioselectivities. Interestingly, by employing enynes with monosubstituted olefins, a different regioisomer is reported to be formed in moderate yields and with excellent enantioselectivities.

SYNFACTS Contributors: Mark Lautens, Hyung Yoon
Synfacts 2017, 13(01), 0045 Published online: 19.12.2016
DOI: 10.1055/s-0036-1589746; Reg-No.: L13916SF

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