

B. FAN,* S. LI, H. CHEN, Z. LU, S. LIU, Q. YANG, L. YU, J. XU, Y. ZHOU, J. WANG*
 (YUNNAN UNIVERSITY OF NATIONALITIES, KUNMING AND SOUTH UNIVERSITY OF
 SCIENCE AND TECHNOLOGY OF CHINA, SHENZHEN, P. R. OF CHINA)
 Palladium/Copper Complexes Co-Catalyzed Highly Enantioselective Ring Opening Reaction of
 Azabenzonorbornadienes with Terminal Alkynes
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Category

Metal-Catalyzed
 Asymmetric
 Synthesis and
 Stereoselective
 Reactions

Key words

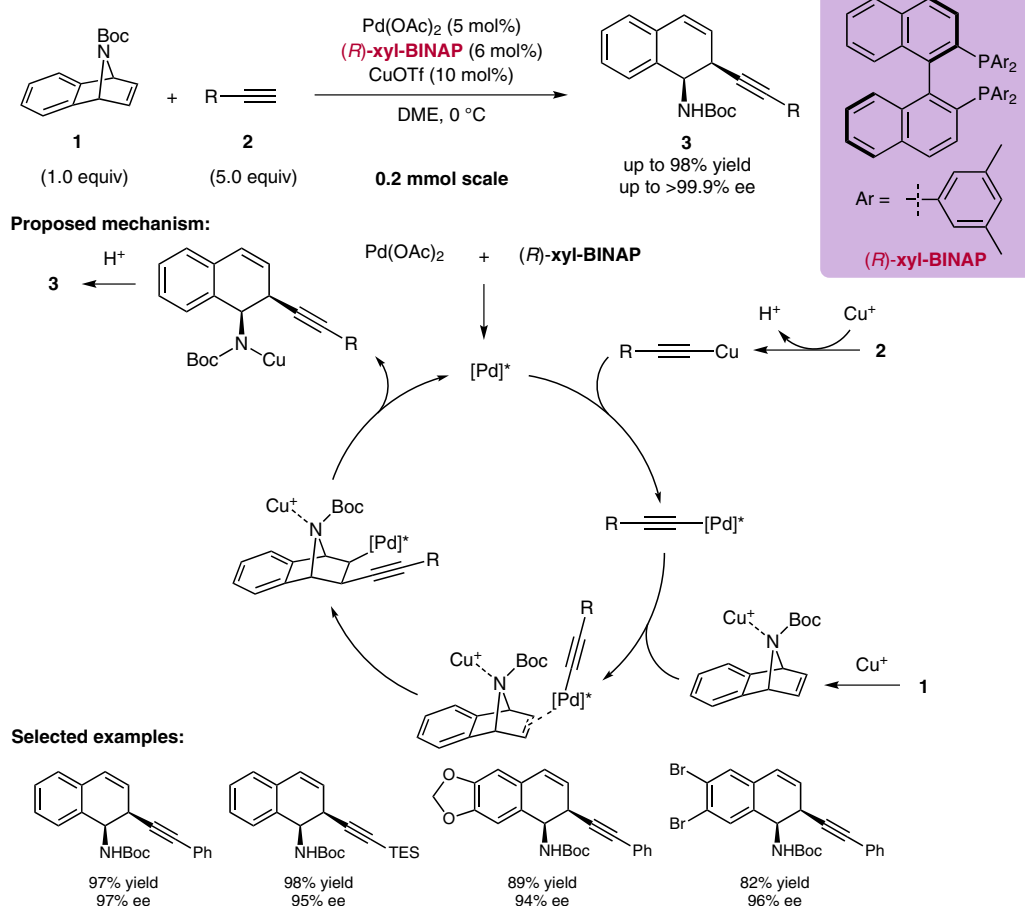
desymmetrization

asymmetric ring
 opening

palladium

copper

Ring Opening of Azabicyclic Alkenes Co-Catalyzed by Palladium and Copper



Significance: The ring opening of strained meso-heterobicyclic alkenes with different nucleophiles serves as a useful strategy for setting multiple stereocenters in a single transformation. Previous methods for this particular ring opening were limited to the use of bulky terminal acetylenes. Here, the authors report the development of a palladium and copper co-catalyzed system that exhibits broad substrate scope.

Comment: The authors propose that the copper(I) catalyst plays two distinct roles in the mechanism: (1) Copper facilitates transmetalation of the acetylene to palladium via the copper acetylide; (2) Copper behaves as a Lewis acid to activate the azabicyclic alkene. In addition to demonstrating wide functional group tolerance, the yields and enantioselectivities observed are excellent across the series of substrates tested.

SYNFACTS Contributors: Mark Lautens, Christine M. Le
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