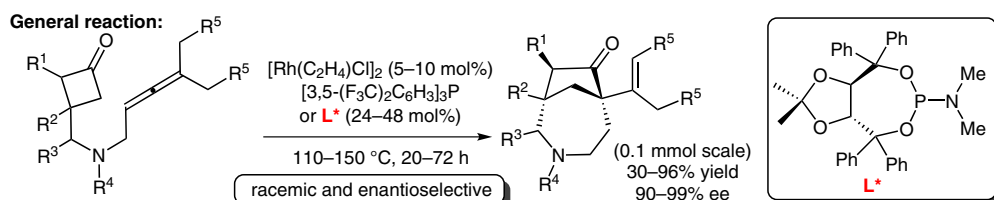


X. ZHOU, G. DONG* (UNIVERSITY OF TEXAS AT AUSTIN, USA)

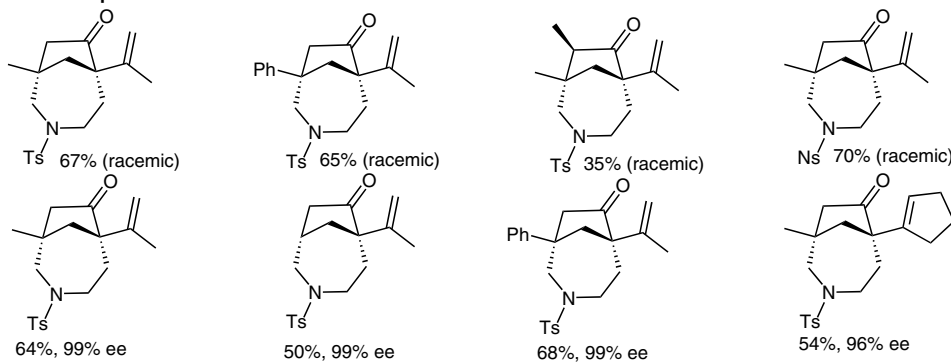
[4+1] vs [4+2]: Catalytic Intramolecular Coupling between Cyclobutanones and Trisubstituted Allenes via C–C Activation

J. Am. Chem. Soc. **2015**, *137*, 13715–13721.

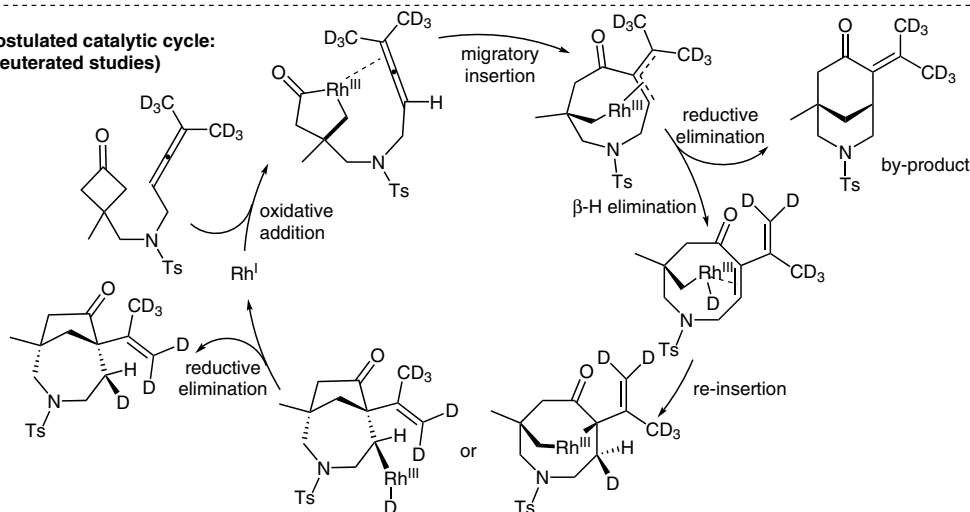
Asymmetric Rhodium-Catalyzed C–C Activation of Cyclobutanones



Selected examples:



Postulated catalytic cycle:
(deuterated studies)



Significance: C–C activation is an attractive method to functionalize strained four-membered ring systems. Zhou and Dong demonstrate the utility of allenes as a formal vinyl carbenoid in a rhodium-catalyzed asymmetric intramolecular ring expansion of cyclobutanones.

Comment: An impressive substrate scope for this C–C activation protocol is demonstrated. Challenging cyclobutanone substrates such as those that are α -substituted also worked for this methodology, albeit with slightly diminished yields.

SYNFACTS Contributors: Mark Lautens, Charles C. J. Loh
Synfacts 2016, 12(1), 0041 Published online: 16.12.2015

DOI: 10.1055/s-0035-1561044; Reg-No.: L14915SF

2016 © THIEME STUTTGART • NEW YORK

Category

Metal-Catalyzed
Asymmetric
Synthesis and
Stereoselective
Reactions

Key words

rhodium catalysis

[4+1] cyclization

enantioselective
reaction

Synfact
of the month