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Chromium-Catalyzed Stereodivergent *E*- and *Z*-Selective Alkyne Hydrogenation Controlled by Cyclic (Alkyl)(amino)carbene Ligands

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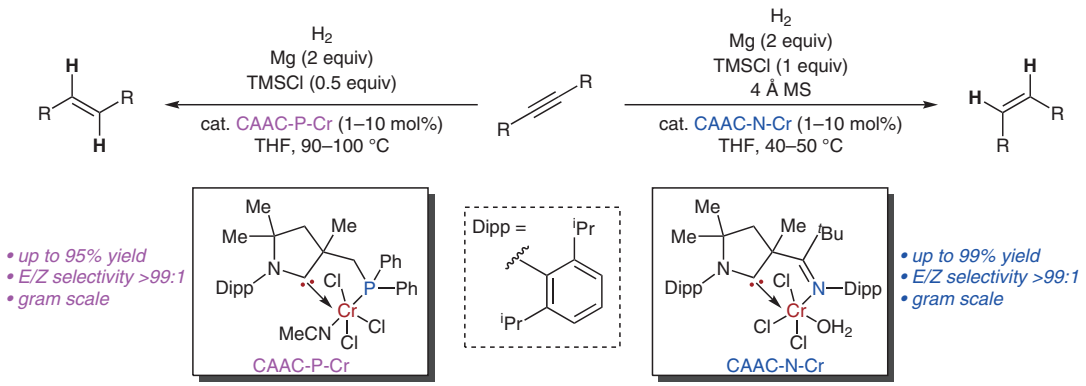
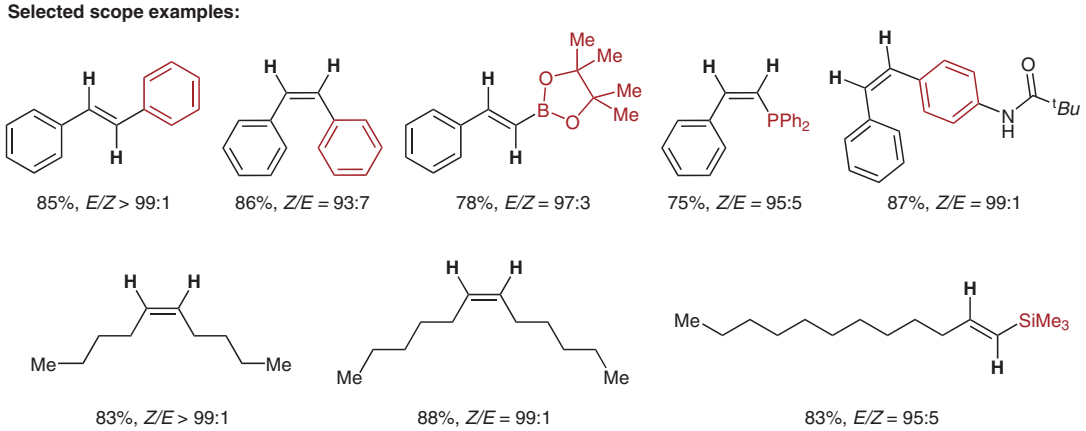
Highly *E*- and *Z*-Selective Hydrogenation of Alkynes Using Chromium and Cyclic Carbene Ligands



Selected scope examples:



Significance: Achieving stereochemical control in the hydrogenation of alkynes to generate alkenes is a long-standing challenge. Common strategies to synthesize both the *E*- and *Z*-olefins selectively from an alkyne utilize two separate metal catalysts. Zeng and co-workers report a ligand-controlled sterodivergent hydrogenation of alkynes using the same metal to access both isomers of the desired alkenes.

Comment: The authors collect the reaction profile for both ligands. It is noted that the initial formation of the *Z*-olefins are favored, and in the case of CAAC-P-Cr, product isomerization takes place to yield the *E*-olefins. This result is due to the less bulky and more electron-rich nature of CAAC-P compared to that of CAAC-N-Cr.

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