SYNFACTS

Highlights in Current
Synthetic Organic
Chemistry

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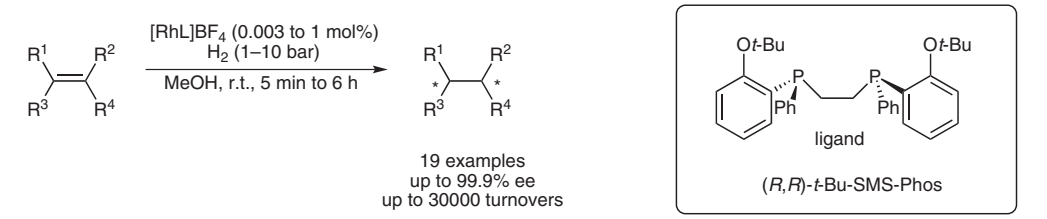
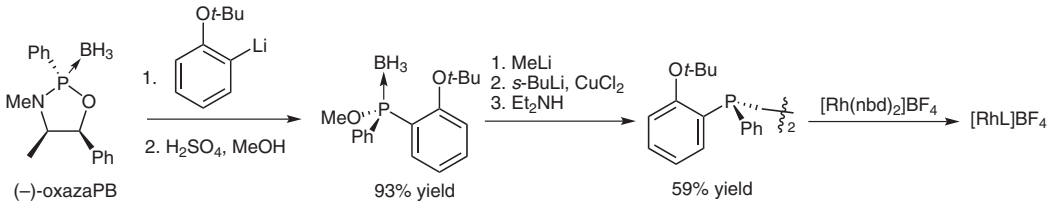
Heavyweight "R-SMS-Phos" Ligands in the Olefins' Hydrogenation Arena

Org. Lett. **2010**, *12*, 1296-1299.

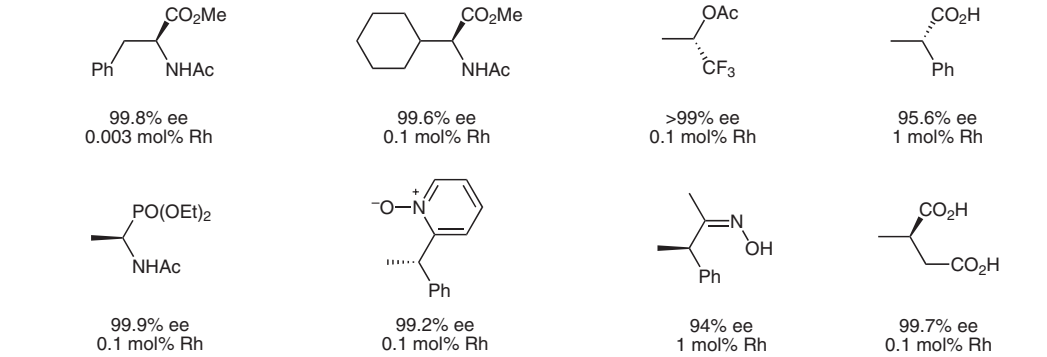
P-Stereogenic Diphosphine Ligands for Asymmetric Hydrogenation



Catalyst synthesis:



Selected products:



Significance: Asymmetric alkene hydrogenation is perhaps the most important and efficient method for synthesizing chiral molecules, with Knowles' pioneering RhDiPAMP catalyst being particularly effective. Stephan and co-workers recently synthesized analogues of DiPAMP, often observing improved activities and enantioselectivities (*Adv. Synth. Catal*. **2008**, *350*, 2024). As a continuation of this work, the authors explore the reactivity of their *t*-Bu-SMS-Phos ligand in the rhodium-catalyzed reduction of a diverse range of prochiral olefins.

Comment: Among the many DiPAMP analogues screened, *t*-Bu-SMS-Phos was found to be the most effective, giving remarkable TONs and enantioselectivities. The majority of reactions were done at room temperature under 1 bar of H_2, making the catalyst appealing for both small- and large-scale reactions. The ligand is prepared from known (–)-oxazaPB, which is derived from enantiopure pseudoephedrine.

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