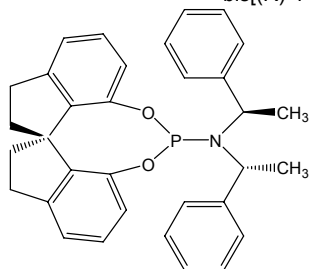


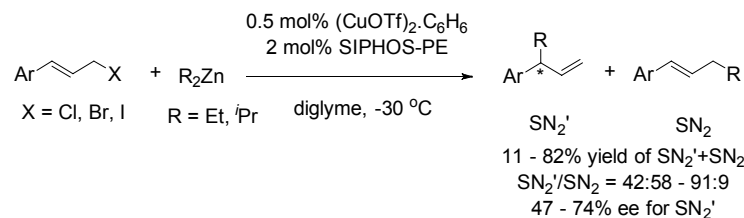
Catalog # 15-5162 (11aR)-(+)-10,11,12,13-Tetrahydroindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-bis[(R)-1-phenylethyl]amine, min. 98% (R)-SIPHOS-PE



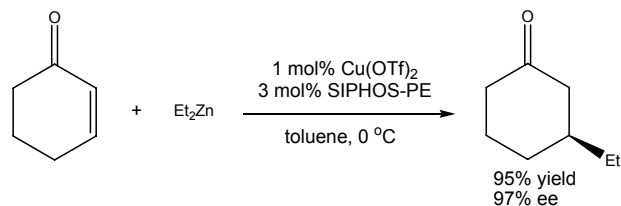
Note: Spiro Monophosphite and Monophosphoramidite Ligand Kit component.

Technical Notes:

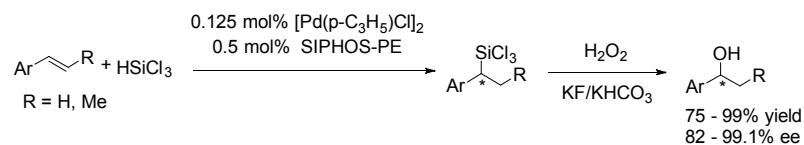
1. Chiral ligands for copper-catalyzed asymmetric allylic alkylation with dialkylzincs.
2. Chiral ligands for copper-catalyzed asymmetric conjugate addition of diethylzinc to enones.
3. Chiral ligands for palladium-catalyzed asymmetric hydrosilylation of styrenes
4. Chiral ligands for copper-catalyzed asymmetric ring-opening of oxabicyclic alkenes with Grignard reagents.
5. Chiral ligands for nickel-catalyzed asymmetric hydrovinylation of α -alkyl vinylarenes.
6. Chiral ligands for iridium-catalyzed asymmetric hydrogenation of cyclic enamines.
7. Chiral ligands for iridium-catalyzed asymmetric hydrogenation of cyclic imines.
8. Chiral ligands for gold-catalyzed asymmetric [2 + 2] cycloaddition reaction.
9. Chiral ligands for rhodium-catalyzed asymmetric hydroacylation of salicylaldehydes to homoallylic sulfides.
10. Chiral ligands for palladium-catalyzed asymmetric carboamination reactions.



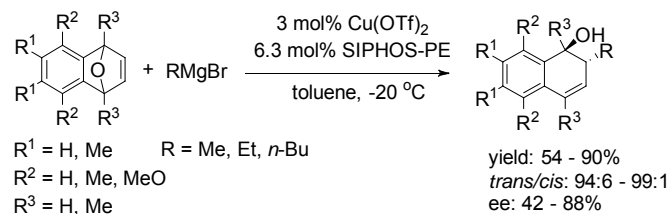
Tech. Note (1)
Ref. (1)



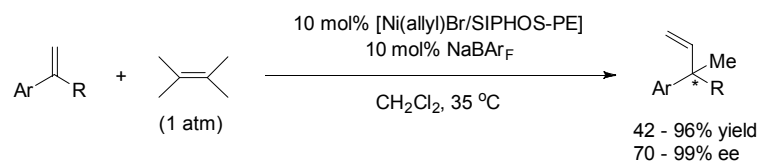
Tech. Note (2)
Ref. (2)



Tech. Note (3)
Ref. (3)

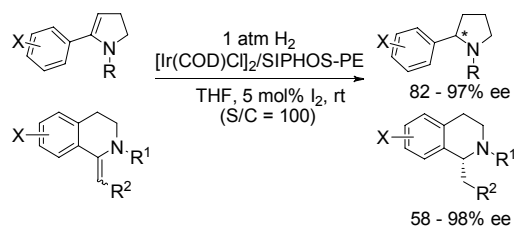


Tech. Note (4)
Ref. (4)

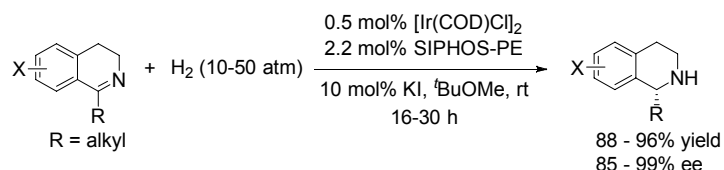


R = Et, *n*-Pr, *i*-Pr, *i*-Bu, *c*-C₆H₁₁, CH₂OTMS

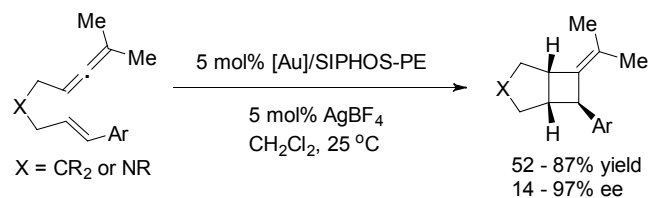
Tech. Note (5)
Ref. (5,6)



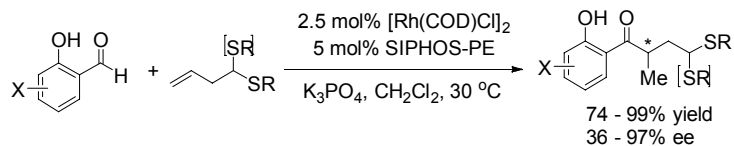
Tech. Note (6)
Ref. (7,8)



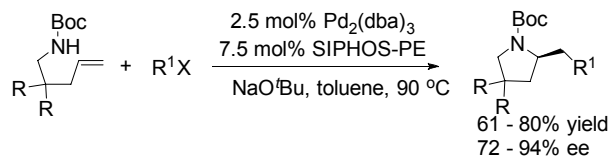
Tech. Note (7)
Ref. (9)



Tech. Note (8)
Ref. (10)



Tech. Note (9)
Ref. (11)



Tech. Note (10)
Ref. (12,13)

References:

1. *Tetrahedron: Asymmetry* **2003**, 14, 3867.
2. *J. Org. Chem.* **2003**, 68, 1582.
3. *Tetrahedron: Asymmetry* **2004**, 15, 2231
4. *J. Org. Chem.* **2005**, 70, 3734.
5. *J. Am. Chem. Soc.* **2006**, 128, 2780.
6. *Sci. China Chem.* **2010**, 53, 1899.
7. *J. Am. Chem. Soc.* **2009**, 131, 1366.
8. *Adv. Synth. Catal.* **2010**, 351, 3243.
9. *ACS Catal.* **2012**, 2, 561.
10. *J. Am. Chem. Soc.* 2011, 133, 5500.
11. *J. Am. Chem. Soc.* **2010**, 132, 16330.
12. *J. Am. Chem. Soc.* **2010**, 132, 12157.
13. *Org. Lett.* **2011**, 13, 2932.