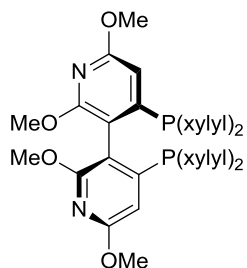


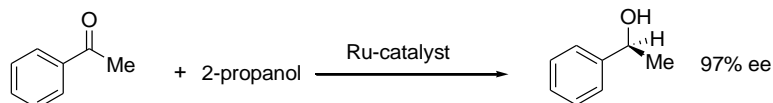
Catalog # 15-5210 (R)-(+)-2,2',6,6'-Tetramethoxy-4,4'-bis(di(3,5-xylyl)phosphino)-3,3'-bipyridine, min. 95% CTH-(R)-Xylyl-P-Phos



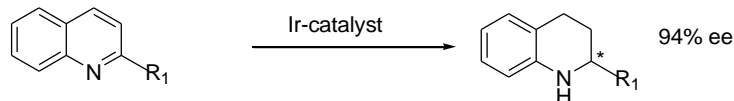
Note: Sold in collaboration with Johnson Matthey for research purposes only. US patent Application No US Patent 5 886 182, 1999 and patents arising therefrom.

**Technical Notes:**

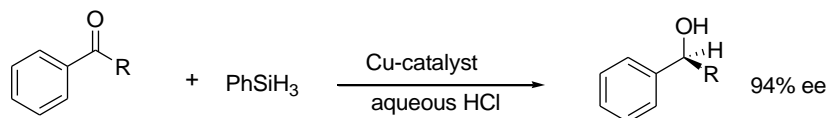
1. Chiral ligand for ruthenium- catalyzed asymmetric hydrogenation of aromatic ketones.
2. Chiral ligand for iridium-catalyzed asymmetric hydrogenation of quinolines.
3. Chiral ligand for copper- catalyzed asymmetric hydrosilylation of ketones.
4. Synthesis of new chiral 2-functionized-1,2,3,4-tetrahydroquinoline derivatives via asymmetric hydrogenation of substituted quinolines.
5. Rhodium-biphosphine-catalyzed asymmetric, intermolecular hydroheteroarylation of  $\alpha$ -substituted acrylate derivatives.



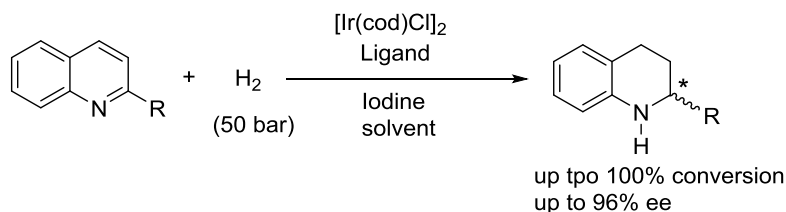
**Tech. Note (1)**  
**Ref. (1)**



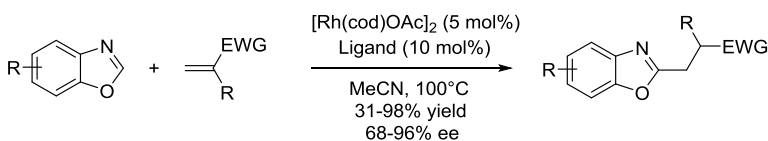
**Tech. Note (2)**  
**Ref. (2)**



**Tech. Note (3)**  
**Ref. (3)**



**Tech. Note (4)**  
**Ref. (3)**



**Tech. Note (5)**  
**Ref. (5)**

**References:**

1. *J. Organomet. Chem.*, **2006**, 691, 2332.
2. *Tetrahedron Asym.*, **2007**, 18, 2625.
3. *Chem. Eur. J.*, **2009**, 15, 5888.
4. *Tetrahedron*, **2013**, 69, 9322.
5. *J. Am. Chem. Soc.*, **2015**, 137, 508.