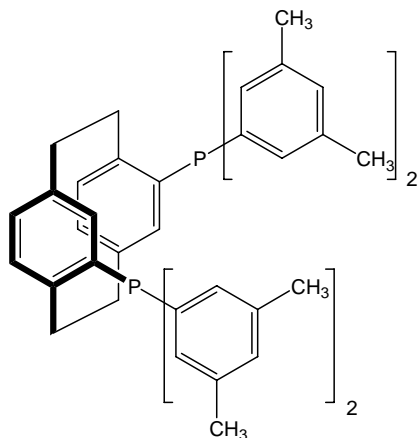


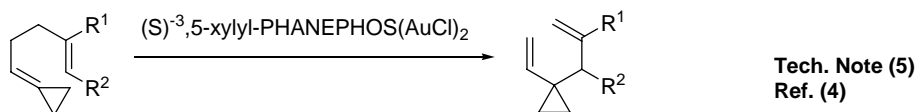
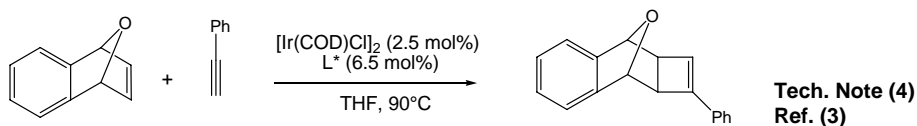
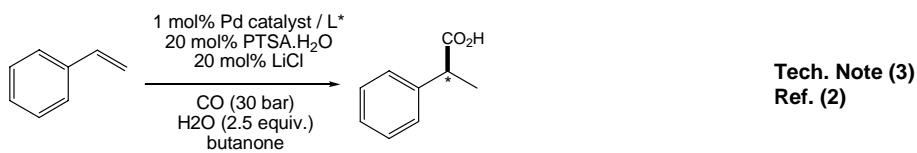
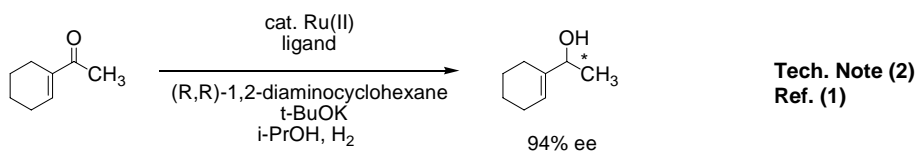
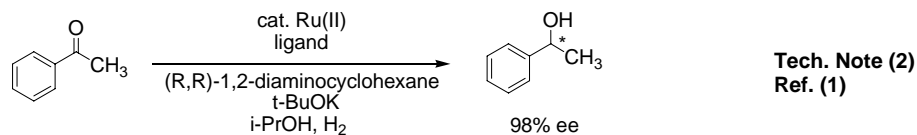
Catalog # 15-0731 (S)-(+)-4,12-Bis(di(3,5-xylyl)phosphino)-[2.2]-paracyclophane, min. 97%
CTH-(S)-3,5-xylyl-PHANEPHOS



Note: Sold in collaboration with Johnson Matthey for research purposes only. US patent Application No 5874629 and patents arising therefrom.

Technical Notes:

1. See [15-0426](#).
2. Chiral ligand employed in the enantioselective hydrogenation of various ketones.
3. Chiral ligand employed in the enantioselective hydroxycarbonylation and alkoxy carbonylation of alkenes.
4. Chiral ligand employed in the enantioselective [2+2] cycloaddition of oxabicyclic alkenes with terminal alkynes.
5. Chiral ligand employed in the gold-catalyzed enantioselective Cope rearrangement of achiral 1,5-dienes.



References:

1. *Org. Lett.*, **2000**, 2, 4173.
2. *Angew. Chem. Int. Ed.*, **2010**, 49, 9197.
3. *Org. Lett.*, **2010**, 12, 304.
4. *Nature Chemistry*, **2012**, 4, 405.