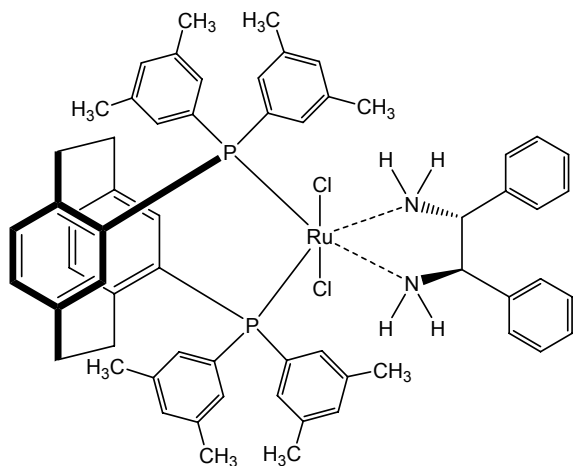


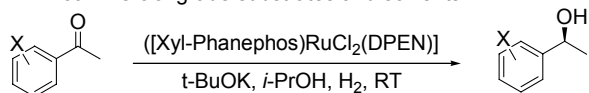
Catalog # 44-0380 Dichloro[(R)-(-)-4,12-bis(di(3,5-xylyl)phosphino)-[2.2]-paracyclophane][(1S,2S)-(-)-1,2-diphenylethylenediamine] ruthenium(II), min. 95%



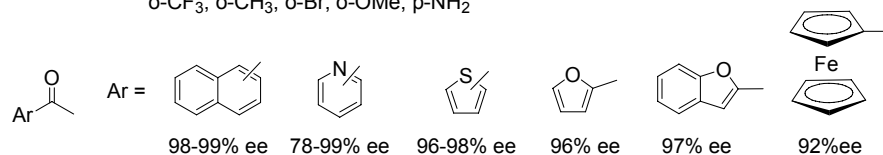
Note: Sold in collaboration with Chirotech for research purposes only. US Patent nos. 5874629 and 6486337.

Technical Notes:

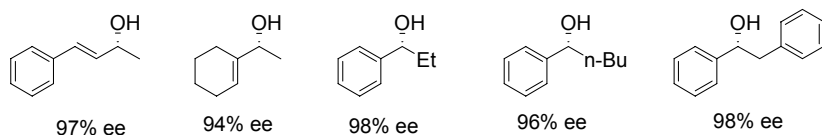
1. The Noyori [(diphosphine) RuCl<sub>2</sub> (diamine)] catalysts containing the chiral ligand Xylyl-Phanephos display exceptional activity and enantioselectivity in the asymmetric hydrogenation of a wide range of aromatic, heteroaromatic and  $\alpha,\beta$ -unsaturated ketones.
2. Reactions are performed under mild conditions at room temperature and typically at low H<sub>2</sub> pressures of 2-10 bar. High substrate concentrations of up to 40% w/v are tolerated.
3. Molar substrate/catalyst ratios of up to 100,000/1 are achieved with excellent reactivity and enantioselectivity using commercial grade substrates and solvents.



X = p-CF<sub>3</sub>, p-Br, p-F, p-OMe, m-CF<sub>3</sub>, o-CF<sub>3</sub>, o-CH<sub>3</sub>, o-Br, o-OMe, p-NH<sub>2</sub>



Other Examples



References:

1. *Org. Lett.*, **2000**, 2, 4173.
2. Burk, M.J.; Hems, W.; Zanotti-Gerosa, A. PCT WO/0174829 A1, **2001**.
3. *Org. Proc. Res. Dev.*, **2003**, 7, 89.