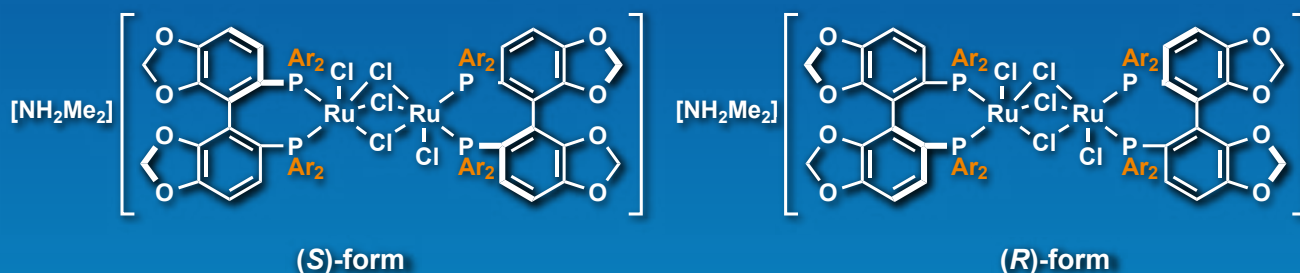


# New

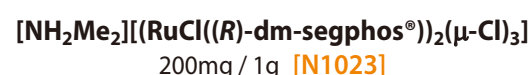
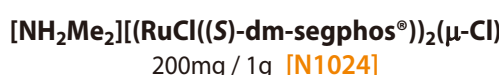
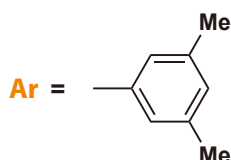
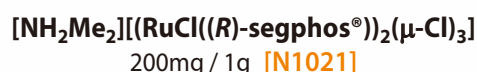
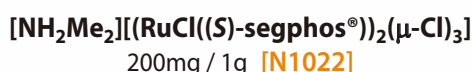
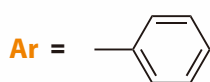
# TGI

# Ruthenium Complex Catalysts for Asymmetric Hydrogenation to Optically Active Amines

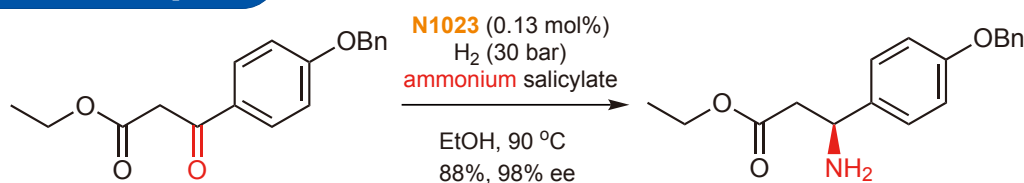


## Advantages

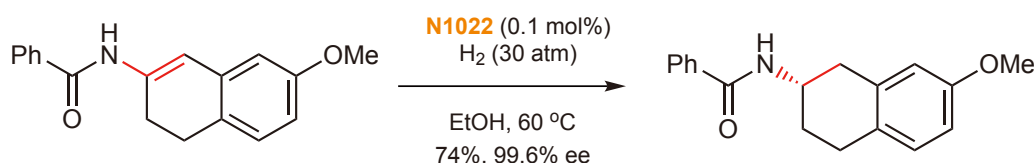
- Convert Ketones to Amines via Reductive Amination in High Yields and High Enantioselectivity
- Convert 1,3-Dicarbonyl Compounds to Alcohols in High Yields and High Enantioselectivity
- High Turnover Number



## Reaction Examples



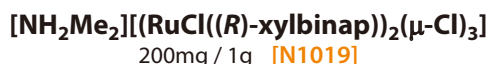
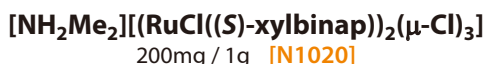
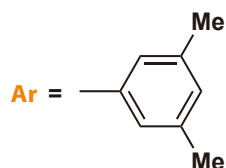
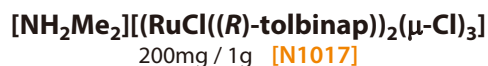
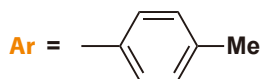
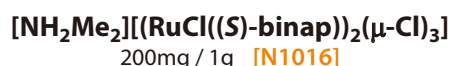
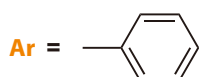
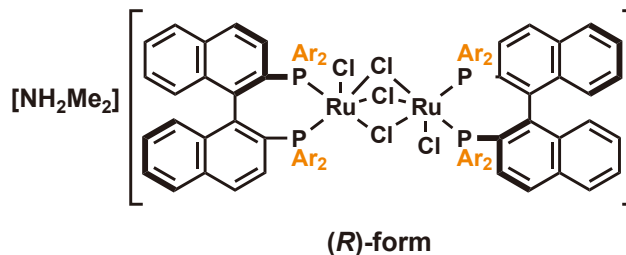
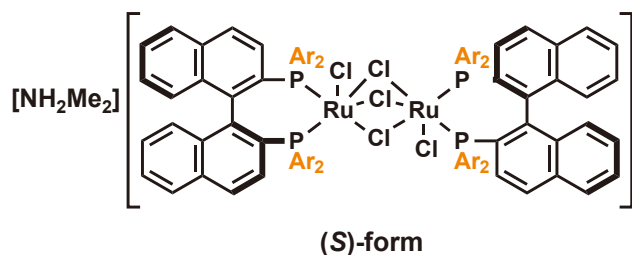
G. F. Busscher, et al. *Tetrahedron: Asymm.* **2010**, 21, 1709.



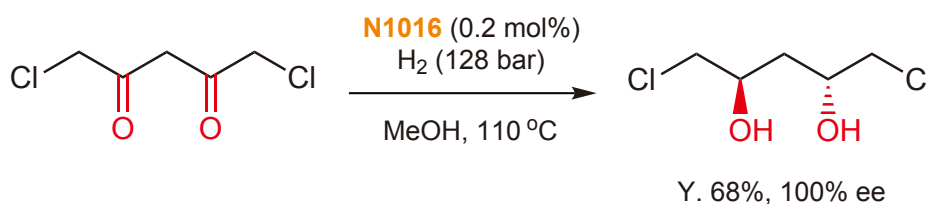
M. Imanishi, et al. *J. Med. Chem.* **2008**, 51, 4804.

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## Ruthenium-BINAP Catalysts



## Reaction Examples



P. Walleser, R. Brückner, *Org. Lett.* **2013**, *15*, 1294.

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asymmetric hydrogenation



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