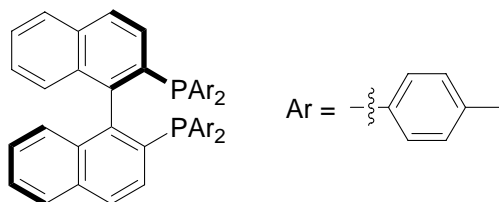


Tech Note

(R)-ToIBINAP

(R)-(+)-2,2'-Bis(di-*p*-tolylphosphino)-1,1'-binaphthyl

CAS Number	99646-28-3
CASName	Phosphine, (1 <i>R</i>)-[1,1'-binaphthalene]-2,2'-diyIbis [bis(4-methylphenyl) –
Formula	C ₄₈ H ₄₀ P ₂
Molecular Weight	678.79



Representative references:

H. Takaya, K. Mashima, K. Koyano, M. Yagi, H. Kumobayashi, T. Taketomi, S. Akutagawa, R. Noyori, *J. Org. Chem.*, 1986, 51, 629.

H. Kumobayashi, T. Miura, N. Sayo, T. Saito, X. Zhang, *Synlett*, 2001, 1055.

Performance Examples and References:

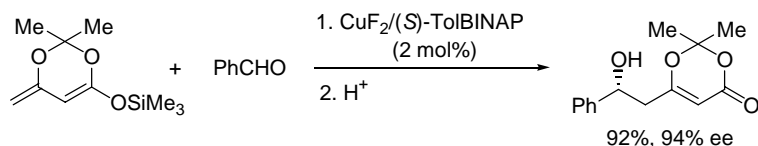
ToIBINAP enjoys high solubility in organic solvents. This property solves the problems caused by low solubility intrinsic to BINAP and its complexes.

1. Ru catalyzed asymmetric hydrogenation;

see *Technical information chapter 1; Asymmetric hydrogenation*

2. Cu catalyzed asymmetric reactions

2.1. Aldol type reactions

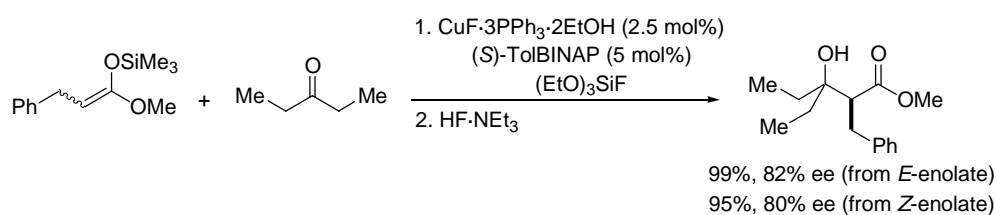


Carreira, E. M. *J. Am. Chem. Soc.* **1998**, 120, 837.



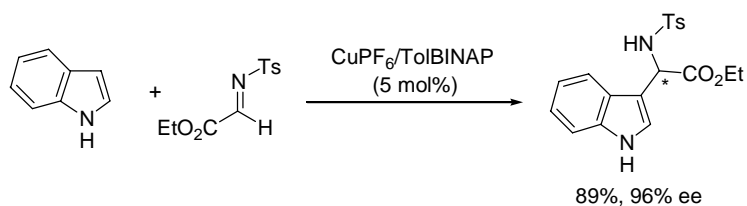
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Tech Note



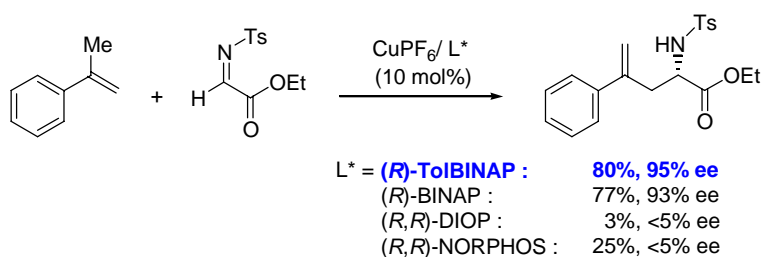
Shibasaki, M. *J. Am. Chem. Soc.* **2003**, *125*, 5644.

2.2. Friedel-Crafts reaction



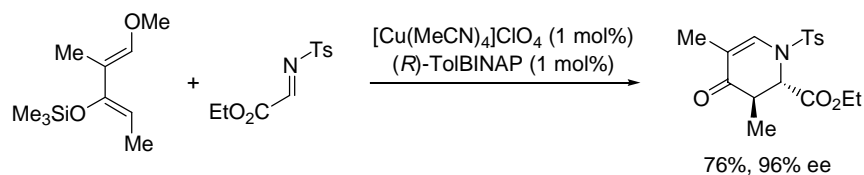
Johannsen, M. *Chem. Commun.* **1999**, 2233.

2.3. Imino-ene reaction



Jørgensen, K. A. *Chem. Commun.* **1998**, 2547.

2.4. Hetero-Diels-Alder reaction



Jørgensen, K. A. *Angew. Chem. Int. Ed.* **1998**, *37*, 3121.

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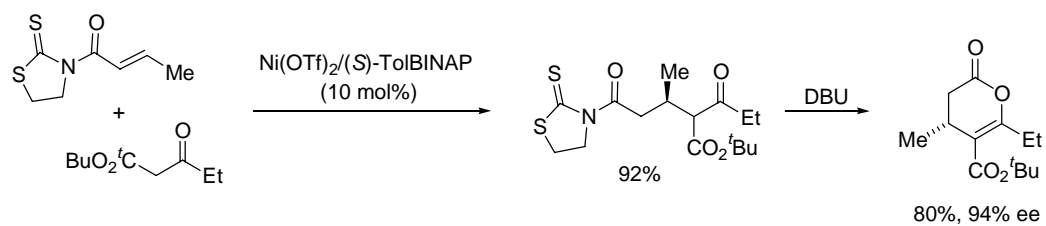
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Tech Note

3. Ni catalyzed asymmetric reaction

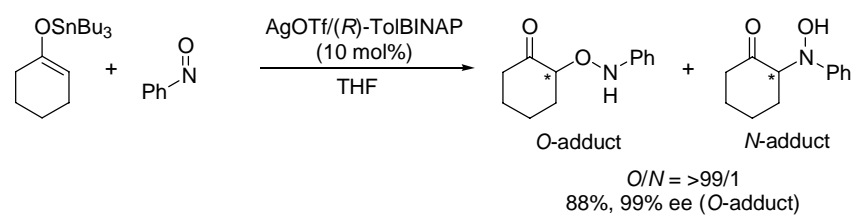
Michael addition



Evans, D. A. *J. Am. Chem. Soc.* **2005**, *127*, 10816.

4. Ag catalyzed asymmetric reaction

Nitroso-aldol reaction.



Yamamoto, H. *J. Am. Chem. Soc.* **2004**, *126*, 5360.



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