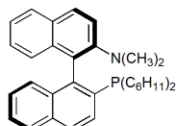


# Asymmetric Suzuki-Miyaura cross-coupling of aryl chlorides with enhancement of reaction time and catalyst turnover

○ Akihiro H. Sato, and Tetsuo Iwasawa

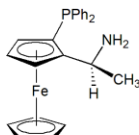
Department of Materials Chemistry, Ryukoku University, Seta, Otsu, Shiga 520-2194, Japan

## Background



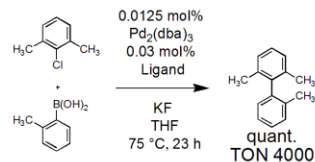
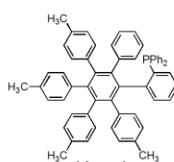
up to 92% ee, TON 24

Yin, J.; Buchwald, S. L. *J. Am. Chem. Soc.* **2000**, *122*, 12051-12052.

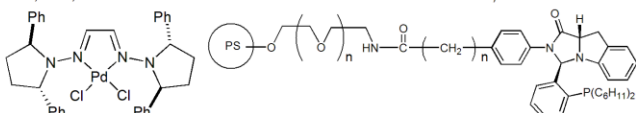


up to 85% ee, TON 17

Cambridge, A. N.; Crepy, K. V. L. *Chem. Commun.* **2000**, 1723-1724.

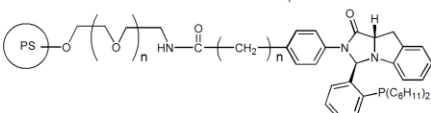


*Tetrahedron Lett.* **2008**, *49*, 5244-5246.  
*Tetrahedron Lett.* **2008**, *49*, 7430-7433.



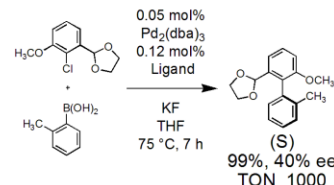
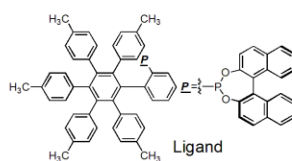
up to 95% ee, TON 16

Bermejo, A.; Ros, A.; Fernandez, R.; Lassaletta, J. M. *J. Am. Chem. Soc.* **2008**, *130*, 15798-15799.

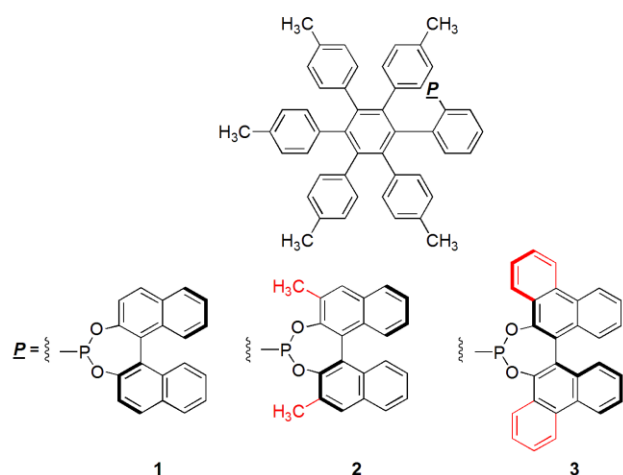


up to 94% ee, TON 10

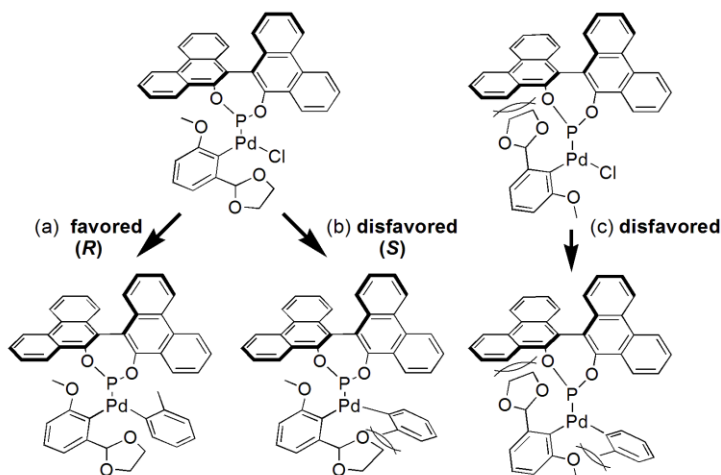
Uozumi, Y.; Matsuura, Y.; Arakawa, T.; Yamada, Y. M. A. *Angew. Chem., Int. Ed.* **2009**, *48*, 2708-2710.



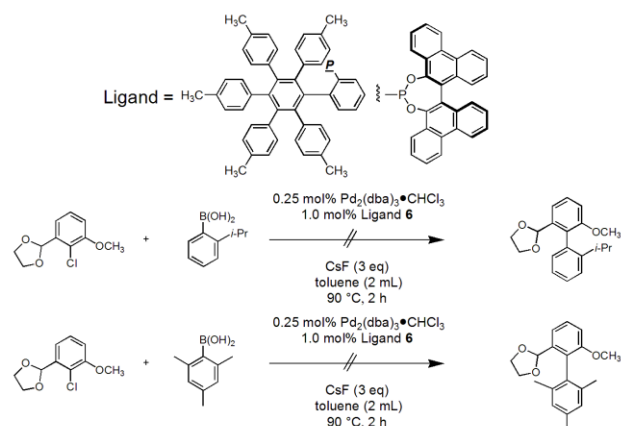
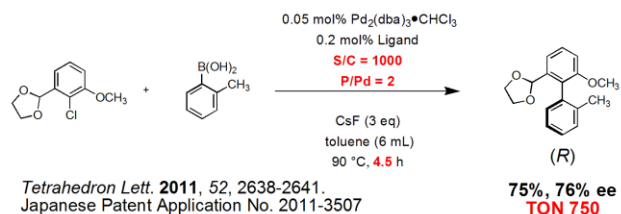
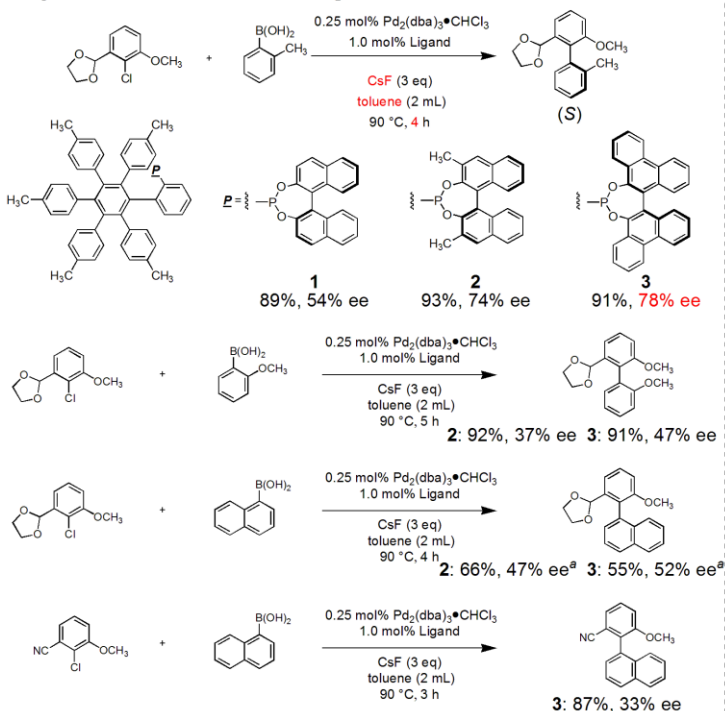
## Chiral phosphonite ligands



## plausible mechanism



## Asymmetric cross-coupling



<sup>a</sup>The values of % yield and % ee were calculated after the recrystallization was operated.