

# PL-09

## Chiral Spiro Phosphorus Ligands

Qi-Lin Zhou

*College of Chemistry, Nankai University, Tianjin 300071, China*  
*qlzhou@nankai.edu.cn*

Chiral ligands are the source of chiral induction in metal-catalyzed asymmetric synthesis. In the last half century, many chiral ligands have been developed, among of which chiral phosphorus ligands predominated. However, the most of reported chiral phosphorus ligands showed high activity and enantioselectivity for limited reactions, sometime for only limited substrates. Very few chiral phosphorus ligands afford satisfying activity and enantioselectivity for a wide range of mechanistically unrelated reactions. We developed a new type of chiral phosphorus ligands with a rigid spirobiindane skeleton. The chiral spiro phosphorus ligands exhibited excellent activity and enantioselectivity in a wide range of reactions. This lecture will present the design and synthesis of chiral spiro phosphorus ligands and their applications in metal-catalyzed asymmetric reactions.

### References

- [1] Zhu, S.-F.; Zhou, Q.-L. *Acc. Chem. Res.* **2012**, *45*, 1365-1377.
- [2] Xie, J.-H.; Zhou, Q.-L. *Aldrichimica Acta* **2015**, *48*, 33-40.
- [3] Zhu, S.-F.; Zhou, Q.-L. *Acc. Chem. Res.* **2017**, *50*, 988-1001.
- [4] Zhang, F.-H.; Zhang, F.-J.; Li, M.-L.; Xie, J.-H.; Zhou, Q.-L. *Nat. Catal.* **2020**, *3*, 621-627..