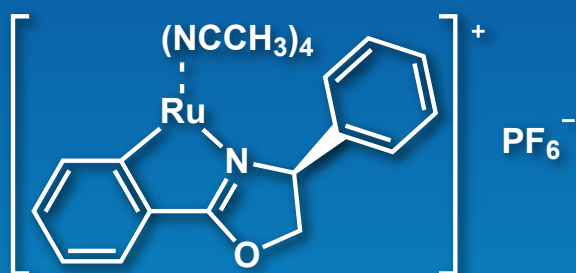


# Chiral Ruthenium Catalyst for Enantioselective Cyclopropanation

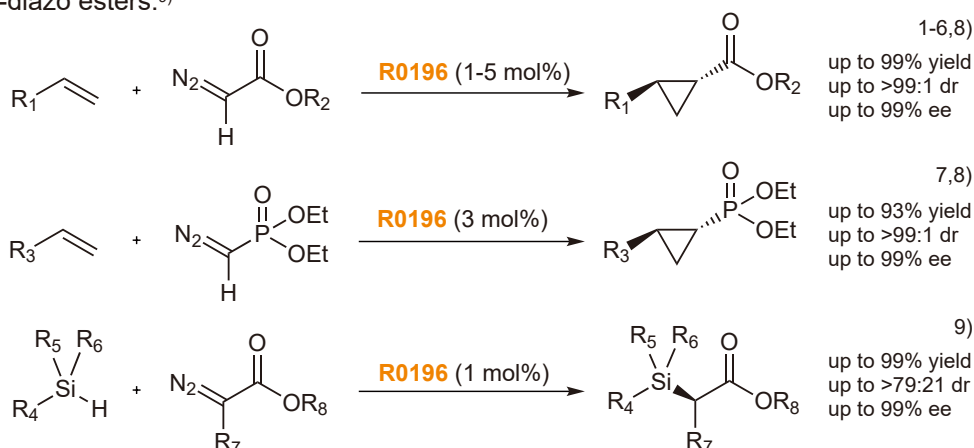


**Ru(II)-(S)-Pheox Catalyst**  
[R0196]

## Advantages

- Easy-to-handle crystalline solid
- Applicable for enantioselective carbene transfer reactions to give optically active cyclopropanes
- The reaction proceeds under mild conditions

**R0196** is a chiral phenyloxazoline-ruthenium(II) complex, developed by Iwasa *et al.* **R0196** shows highly enantioselective cyclopropanation of various olefins using diazoacetates<sup>1-6,8)</sup> or diazomethylphosphonates.<sup>7,8)</sup> **R0196** is a promising reagent for optically active cyclopropane derivatives which are present in a number of medically relevant compounds. In addition, **R0196** is also used for an enantioselective Si-H insertion reaction of  $\alpha$ -diazo esters.<sup>9)</sup>



## References

- 1) A.-M. Abu-Elfotoh, K. Phomkeona, K. Shibatomi, S. Iwasa, *Angew. Chem. Int. Ed.* **2010**, *49*, 8439.
- 2) S. Chanthamath, K. Phomkeona, K. Shibatomi, S. Iwasa, *Chem. Commun.* **2012**, *48*, 7750.
- 3) S. Chanthamath, D. T. Nguyen, K. Shibatomi, S. Iwasa, *Org. Lett.* **2013**, *15*, 772.
- 4) S. Chanthamath, D. S. Takaki, K. Shibatomi, S. Iwasa, *Angew. Chem. Int. Ed.* **2013**, *52*, 5818.
- 5) S. Chanthamath, H. W. Chua, S. Kimura, K. Shibatomi, S. Iwasa, *Org. Lett.* **2014**, *16*, 3408.
- 6) Y. Nakagawa, S. Chanthamath, K. Shibatomi, S. Iwasa, *Org. Lett.* **2015**, *17*, 2792.
- 7) S. Chanthamath, S. Ozaki, K. Shibatomi, S. Iwasa, *Org. Lett.* **2014**, *16*, 3012.
- 8) S. Chanthamath, S. Iwasa, *Acc. Chem. Res.* **2016**, *46*, 2080.
- 9) Y. Nakagawa, S. Chanthamath, I. Fujisawa, K. Shibatomi, S. Iwasa, *Chem. Commun.* **2017**, *53*, 3753.

## Ru(II)-(S)-Pheox Catalyst

200mg / 1g [R0196]

This product was produced by collaboration with Prof. Iwasa, Toyohashi University of Technology.

**Related Product** (S)-Pheox

1g / 5g [D5368]

For further information please refer to our website at [www.TCIchemicals.com](http://www.TCIchemicals.com).

chiral catalysts



# Chiral Ruthenium Catalyst for Enantioselective Cyclopropanation

## Introduction of the Researcher

### Iwasa Laboratory

Department of Environmental and Life Sciences,  
Toyohashi University of Technology



### Research Description

The Iwasa group aims to design and synthesize new chiral transition-metal catalysts for asymmetric synthesis. These newly designed chiral ligands, a series of chiral bis(oxazolinyl)pyridine and phenyl oxazolines (Pheox) derivatives, can be used to efficiently synthesize bioactive organic compounds. Especially, Ru(II)-Pheox is found to be a powerful chiral catalyst for carbene transfer reactions for enantioselective cyclopropanations and enantioselective N-H or Si-H insertion reactions. Furthermore, a class of Ru(II)-Pheox catalysts can feature various substituents on the ligand backbone to control the electron density on the metal center and water-solubility.

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