

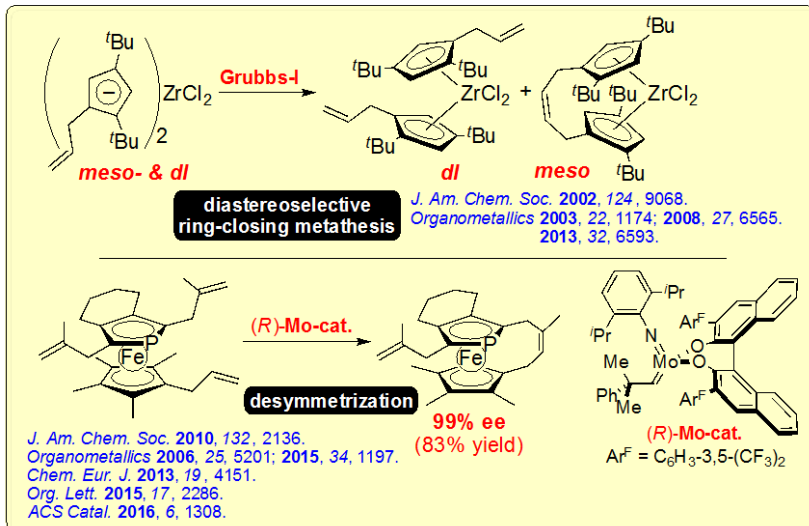


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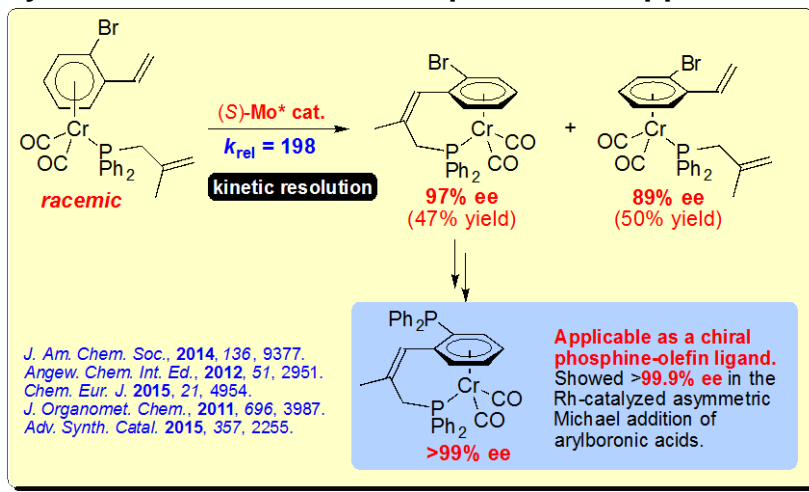
Catalytic Asymmetric Synthesis of Planar-Chiral Transition-Metal Complexes

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Catalytic Asymmetric Synthesis of Metallocenes



Synthesis of π -Arene-Cr Complexes and Application



Content:

The two faces of an unsymmetrically substituted cyclopentadienyl anion are enantiotopic each other. The η^5 -coordination of a metal cation to the Cp anion discriminates the two faces, and the obtained metallocene becomes chiral. This type of chirality is called “planar-chiral”. Planar-chiral metallocenes are important chiral scaffolds in asymmetric synthesis, however, their effective preparations in scalemic forms are limited. We have demonstrated that the olefin metathesis can be applicable to the transformation of various metallocenes, and chiral metathesis catalysis realizes catalytic asymmetric synthesis of planar-chiral metallocenes.

Analogous planar-chirality can be seen in unsymmetrical π -arene-Cr complexes as well, and we have also succeeded to achieve the catalytic asymmetric synthesis of various planar-chiral π -arene-Cr by the asymmetric ring-closing metathesis. The phosphino-derivatives from the planar-chiral compounds have been clarified to be excellent chiral ligands in the Rh-catalysis.

Keywords: asymmetric synthesis,
homogeneous catalysis

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