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An Ir/Zn Dual Catalysis for Enantio- and Diastereodivergent α-Allylation of α-Hydroxyketones


Enantio- and Diastereoselective α-Allylation

Significance: A dual metal-catalyzed asymmetric allylation of α-hydroxyketones is described. Chiral iridium and zinc complexes are employed for this transformation to furnish stereodefined α-hydroxyketones.

Comment: Multi-metal asymmetric catalysis is a newly emerging field in catalysis. Exploitation of the preferential binding affinity of chiral ligands to specific metal centers allows chemo- and stereoselective formation of the desired products.

Selected examples:

- 90% yield 97% ee dr = 14:1
- 95% yield 99% ee dr = 14:1
- 67% yield 96% ee dr = 3:1
- 91% yield 98% ee dr = 17:1

Derivatization:

1. allyl iodide, DMF
2. Grubbs-Hoveyda catalyst

Selected examples:

- 99% ee dr = 15:1
- 95% yield 99% ee dr > 20:1
- 76% yield 97% ee dr > 20:1

Key words

α-hydroxyketones
dual metal catalysis
asymmetric allylation