K. OZOLS, Y.-S. JANG, N. CRAMER* (ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE, SWITZERLAND)

Chiral Cyclopentadienyl Cobalt(III) Complexes Enable Highly Enantioselective 3d-Metal-Catalyzed C–H Functionalizations
*J. Am. Chem. Soc.* **2019**, *141*, 5675–5680.

**Category**

**Metals in Synthesis**

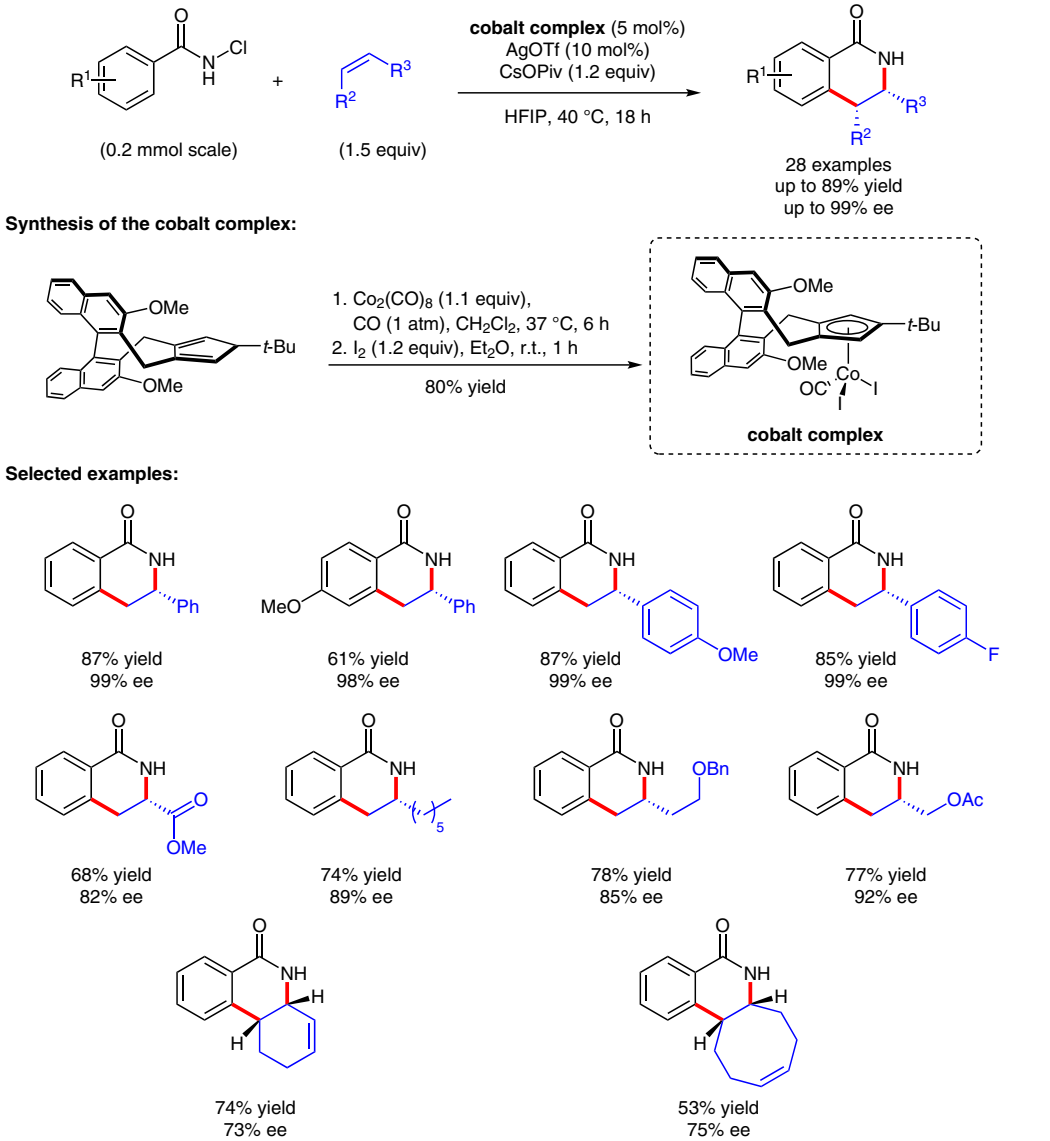
**Key words**

**cobalt catalysis**

**C–H functionalization**

**chiral cyclopentadienyl ligands**

# Asymmetric C–H Functionalization Using Chiral Cp$^X$Co(III) Catalysis




**Significance:** This work is an important advance in catalytic C–H functionalizations for the following reasons: (1) it is the first example of asymmetric C–H functionalization using a chiral Cp$^X$-ligand-bound Co(III) complex; (2) it outperforms competing rhodium-catalyzed methods; (3) reactions with alkyl alkenes give regioisomeric products opposite to those with rhodium complexes.

**Comment:** The authors systematically studied the effect of various substituents on the Cp$^X$ ligand in the C–H functionalization of chlorobenzamides, a benchmark for chiral CpRh(III) catalysis. The presence of the *tert*-butyl group greatly influences the approach of the olefin, whereas the naphthyl backbone acts to orient and align the metallocene.

**SYNFACTS Contributors:** Mark Lautens, Egor M. Larin
Synfacts 2019, 15(06), 0619 Published online: 20.05.2019
**DOI:** 10.1055/s-0037-1611594; **Reg-No.:** L04919SF

2019 © Georg Thieme Verlag Stuttgart · New York



This document was downloaded for personal use only. Unauthorized distribution is strictly prohibited.