H. HUO, C. FU, K. HARMS, E. MEGGERS* (PHILIPPS-UNIVERSITÄT MARBURG, GERMANY AND XIAMEN UNIVERSITY, P. R. OF CHINA)
 Asymmetric Catalysis with Substitutionally Labile yet Stereochemically Stable Chiral-at-Metal Iridium(III) Complex
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Asymmetric Friedel–Crafts Reaction Using a Chiral-at-Metal Iridium Catalyst

Overall transformation:

Selected examples:

Synthesis of chiral-at-metal iridium complexes ($\Delta-1$ and $\Delta-1$):

Significance: The widespread use of asymmetric catalysis in academia and industry can be directly attributed to the vast array of synthetically and commercially available chiral ligands. However, the utilization of chiral-at-metal complexes in asymmetric catalysis is relatively underdeveloped. Here, the authors report the efficient synthesis of a chiral-at-iridium catalyst and its application to an asymmetric Friedel–Crafts reaction.

SYNFACTS Contributors: Mark Lautens, David A. Petrone
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Comment: The authors present the asymmetric Friedel–Crafts reaction of indoles and acyl imidazole derivatives using a chiral-at-iridium complex as catalyst. The reaction proceeds with excellent yields and selectivities by employing a low loading (1–2 mol%) of this interesting catalyst. The authors suggest that once coordinated, the achiral ligands block the *re* face of the indole, resulting in a highly selective *si*-face attack.