

# Development of a Broad Range of Asymmetric C–C Bond Forming Reactions with a Versatile Iridium Catalyst

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Among the most important challenges in modern organic synthesis is the catalytic asymmetric formation of carbon–carbon bonds, which can grant rapid access to molecular building blocks with potential applications in medicinal, agricultural, and materials chemistry. These transformations become particularly valuable when they exhibit high atom/step economy and operational convenience.

The presentation focuses on the versatility of a chiral iridium–phosphoramidite/olefin complex, which enables a number of enantioconvergent carbon–carbon bond forming processes. Following operationally simple protocols, readily available racemic allylic alcohols or their derivatives can undergo direct displacement reactions with alkenyltrifluoroborates (C-sp<sup>2</sup>), alkynyltrifluoroborates (C-sp), allylsilanes (C-sp<sup>3</sup>), unactivated alkenes (C-sp<sup>3</sup>), and functionalized alkylzinc reagents (C-sp<sup>3</sup>). Various classes of optically active scaffolds obtained via these methods have been utilized in concise preparations of biologically active natural products and medicinal/agricultural agents.

