Photochemical Asymmetric Iridium-Catalyzed C(sp^3)—C(sp^3) Cross-Coupling

**Proposed mechanism:**

**Selected examples:**

**Significance:** The Melchiorre group reports an enantioselective C(sp^3)—C(sp^3) cross-coupling of α-vinylbenzyl alcohols with radical precursors under visible-light irradiation. In contrast to the well-established ionic reactivity of allyl-iridium(III) catalysts, photoexcitation allowed for the activation of a coupling partner via a single-electron transfer manifold.

**Comment:** No external photocatalyst was required as the reaction relies on the photoexcitation of the chiral organometallic intermediate. In addition to Hantzsch ester derivatives, α-amino trimethylsilanes and tetrafluoroborates could be employed as radical precursors, typically with lower efficacy.