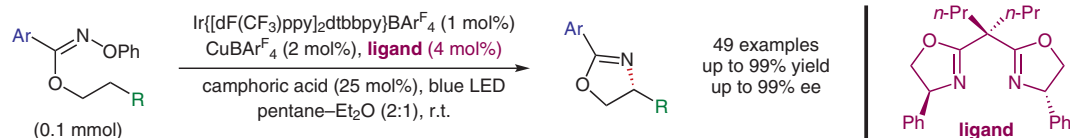


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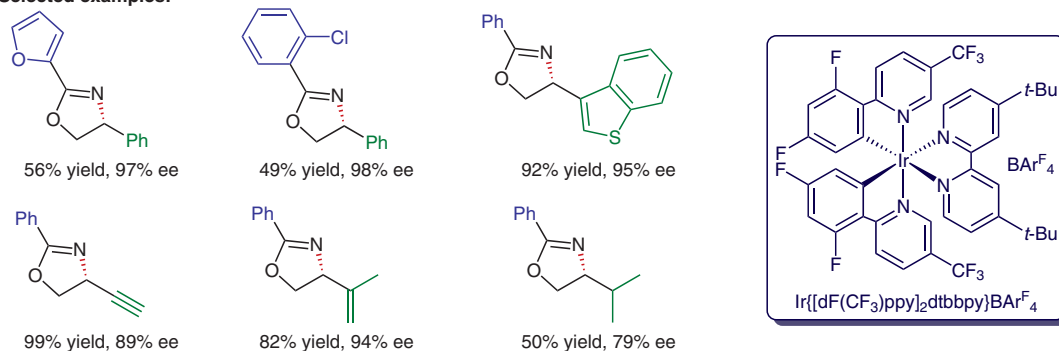
Enantioselective Radical C–H Amination for the Synthesis of β -Amino Alcohols

Nat. Chem. 2020, 12, 697–704.

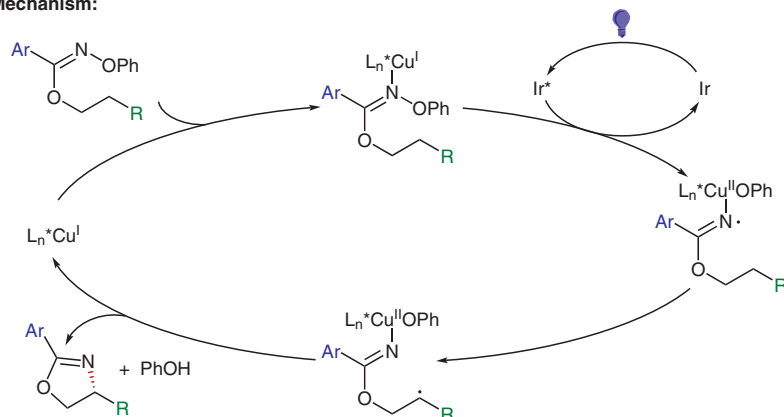
Synthesis of β -Amino Alcohols by Visible-Light-Assisted Intramolecular Copper-Catalyzed C–H Amination



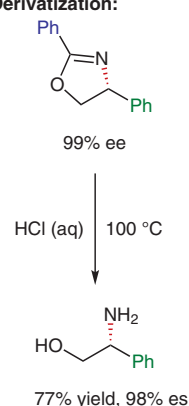
Selected examples:



Mechanism:



Derivatization:



Significance: The authors report a chemo-, regio- and enantioselective copper-catalyzed intramolecular C–H amination for the synthesis of amino alcohols from achiral oximes derived from readily available alcohols. A variety of oxazoline products containing diverse functional groups were produced in moderate to excellent yield, and the utility of the process was demonstrated by cleavage of the heterocycle under acidic conditions to give the unprotected amino alcohol.

Comment: Extensive mechanistic studies were performed to elucidate the reaction mechanism; in particular, the nature of the 1,5-hydrogen atom transfer (HAT) and the role of the photocatalyst. A large, primary kinetic isotope effect was observed through a competition experiment; suggesting the HAT is the product-determining step. Stern–Volmer quenching studies indicated the acceptor of the triplet energy from the photocatalyst was the Cu-coordinated imidate intermediate.

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Category

Metals in Synthesis

Key words

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