W. ZHAO, B.-J. LI* (TSINGHUA UNIVERSITY, BEIJING AND NANKAI UNIVERSITY, TIANJIN, P. R. OF CHINA)
Directing Group Repositioning Strategy Enabled Site- and Enantioselective Addition of Heteroaromatic C–H Bonds to Acyclic Internal Alkenes
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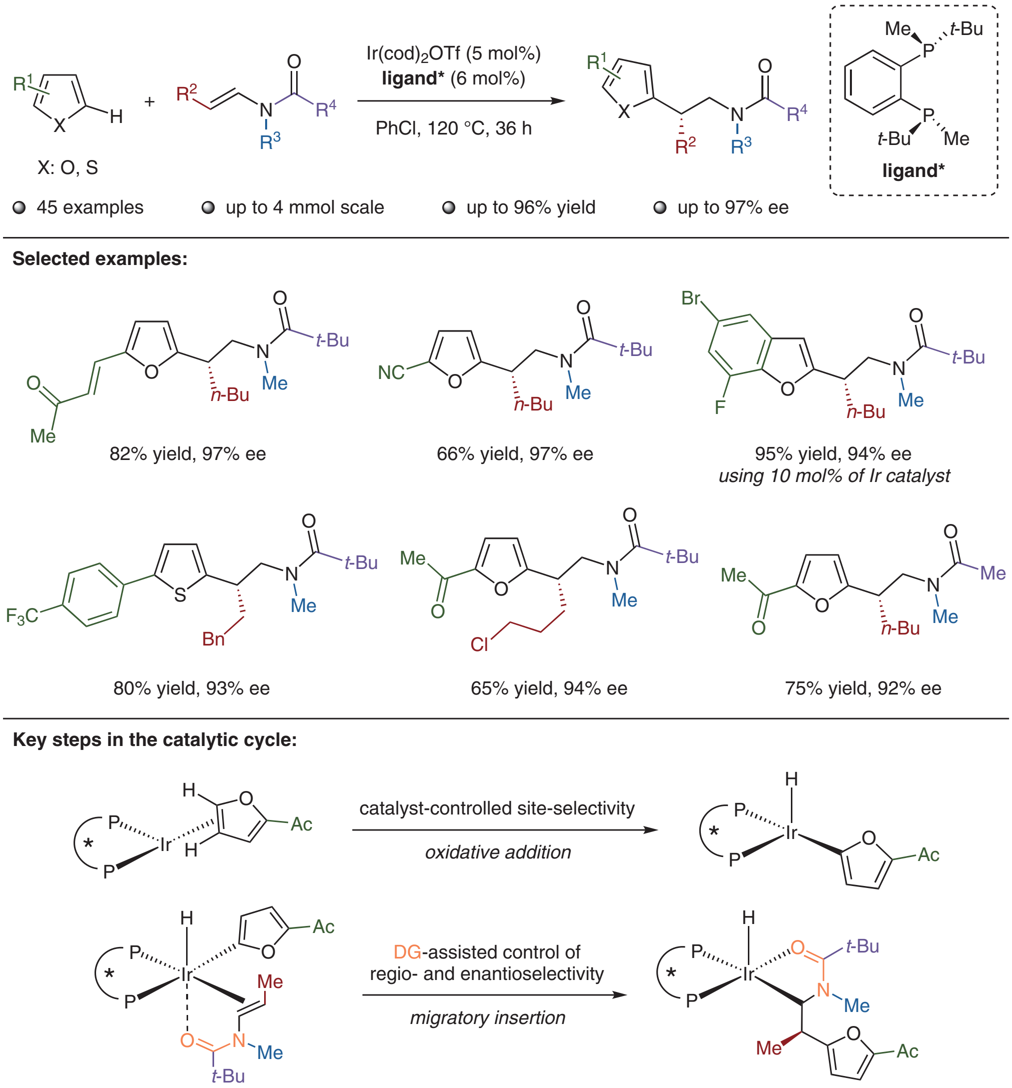
Category
Metals in Synthesis

Key words
iridium catalysis
site-selectivity
regioselectivity
heteroaryl amides
directing group

Ir-Catalyzed Regio- and Enantioselective Synthesis of β-Heteroaryl Amides via Site-Selective C–H Activation



Significance: The Li group reports the iridium-catalyzed addition of substituted furans and thiophenes to internal alkenes in a highly regio- and enantioselective fashion. This atom-economical methodology featuring a C–H metalation provides access to valuable chiral amides bearing a tertiary benzylic center, which were subjected to subsequent transformations.

Comment: DFT calculations were performed to explain the site-, regio- and enantioselectivity of the reaction. The enamide moiety acts as a directing group, guiding the C–H addition onto the more electron-rich position of the olefin. This reactivity is contrary to the more established regioselectivity of hydro(hetero)arylation processes. KIE studies revealed C–H bond cleavage constitutes the turnover-limiting step.

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