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Catalytic Asymmetric γ-Alkylation of Carbonyl Compounds via Stereoconvergent Suzuki Cross-Couplings
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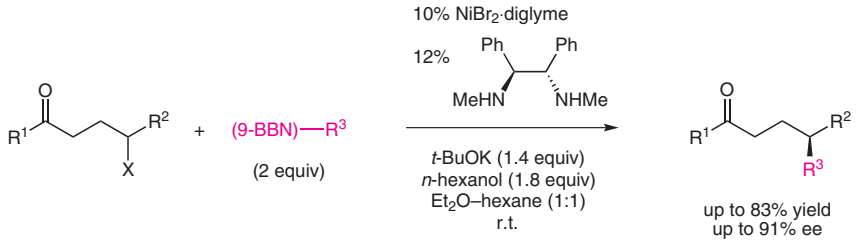
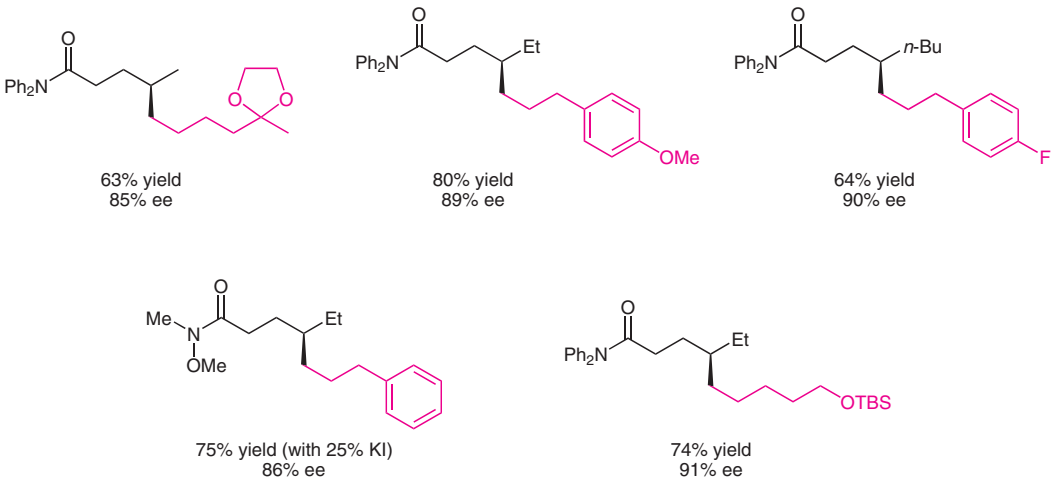
Catalytic Enantioselective γ-Alkylation of Carbonyl Compounds



R^1 = NPh_2, N(OMe)Me
R^2 = Me, Et, *n*-Bu, Bn, *i*-Bu
R^3 = various substituted alkyl groups
X = Cl, Br
BBN = 9-borabicyclo[3.3.1]nonane

Selected examples:



Significance: The authors describe a new method for the catalytic enantioselective γ- (and δ-)alkylation of carbonyl compounds by cross-coupling of γ- (and δ-)haloamides with alkylboranes. The reaction is catalyzed by nickel and uses a commercially available chiral diamine ligand to achieve high enantiomeric excess.

Comment: The reaction conditions tolerate alkyl chlorides as well as alkyl bromides as suitable electrophilic cross-coupling partners. Also, an aryl metal, a boronate ester, and a secondary alkyl metal compound are able to undergo the stereoselective cross-coupling with good enantiomeric excess.

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