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Stereoconvergent Negishi Arylations of Racemic Secondary Alkyl Electrophiles: Differentiating between a CF_3 and an Alkyl Group

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Category

Metal-Catalyzed Asymmetric Synthesis and Stereoselective Reactions

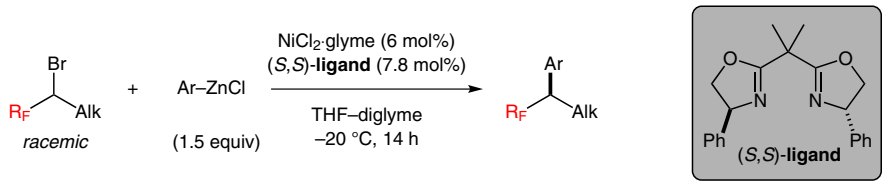
Key words

bis(oxazoline)s

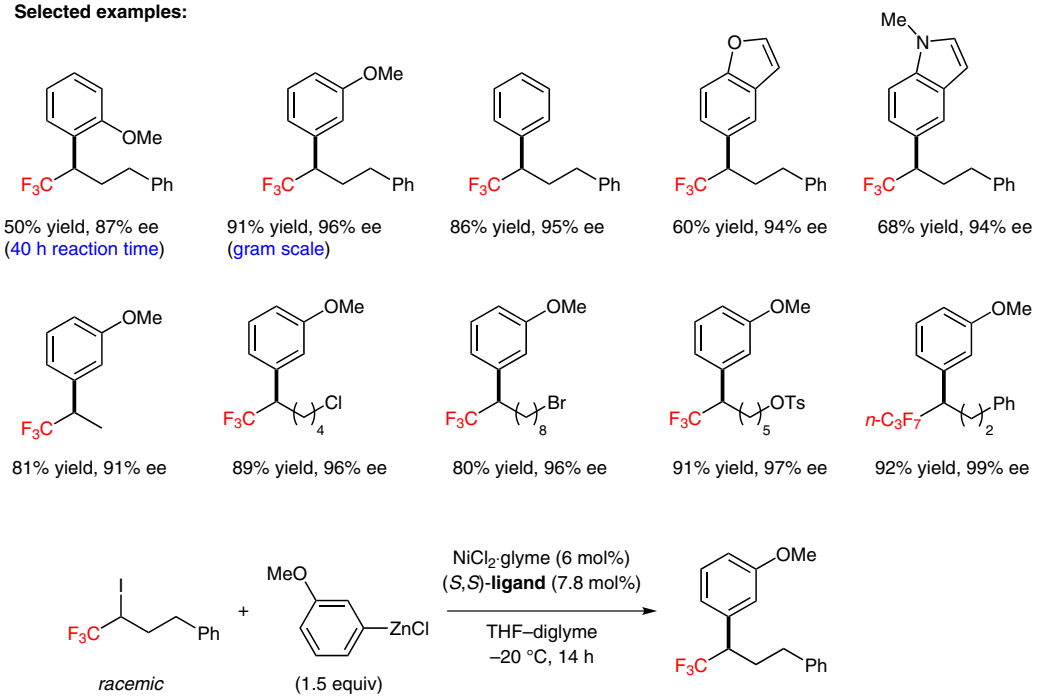
Negishi arylation

nickel

Asymmetric Arylation of Secondary Alkyl Electrophiles



Selected examples:



Significance: Enantiodivergent cross-coupling of an arylzinc reagent and a secondary alkyl halide with a trifluormethyl substituent was achieved by using a readily available nickel/bis(oxazoline) catalyst. The fluorinated products were obtained in good yields and with high enantioselectivities.

Comment: Fu and co-workers have previously reported an enantiodivergent cross-coupling of a racemic secondary electrophile by using a chiral nickel catalyst (*J. Am. Chem. Soc.* **2005**, *127*, 4594; *J. Am. Chem. Soc.* **2014**, *136*, 12161). The chiral catalyst can differentiate between a trifluoromethyl and an alkyl group to deliver the cross-coupling product with high enantioselectivity. The cross-coupling reaction is not air-sensitive, as identical results were obtained when the reaction was conducted in the presence of air.

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