Asymmetric Arylation of Secondary Alkyl Electrophiles

**Significance:** Enantiodivergent cross-coupling of an arylzinc reagent and a secondary alkyl halide with a trifluoromethyl 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.

**Selected examples:**

- **RF**
  - **OMe**
  - **Ph**
  - 50% yield, 87% ee (40 h reaction time)
  - 91% yield, 96% ee (gram scale)

- **F3C**
  - **OMe**
  - **Ph**
  - 81% yield, 91% ee
  - 89% yield, 96% ee

- **OMe**
  - **Ph**
  - 80% yield, 96% ee
  - 91% yield, 97% ee
  - 92% yield, 99% ee

- **OMe**
  - **Ph**
  - 60% yield, 94% ee
  - 68% yield, 94% ee