Nickel-Catalyzed Enantioselective Hydroalkylation of 1,3-Dienes

**Significance:** Transition-metal-catalyzed asymmetric addition of enols or enolates to unsaturated hydrocarbons remains an unanswered challenge. The authors have developed a regio- and stereoselective hydroalkylation of 1,3-dienes by nickel catalysis.

**Comment:** This catalytic reaction provides a wide range of γ,δ-unsaturated ketones or esters in good yields and with high enantioselectivities. One product was easily converted into the nonsteroidal anti-inflammatory drug (R)-flobufen, which also exhibits immunomodulatory properties.

**Selected examples:**

- **Derivatization:**
  - **Ph**
  - **Ph**
  - **Ph**
  - **Ph**

**Selected examples:**

- **Ph**
  - 78% yield, er = 96:4a
  - 91% yield, er = 96:4a
  - 91% yield, dr = 1.1:1, er = 90.5:9.5a
  - 70% yield, dr = 1.4:1, er = 90.5:9.5a
  - 40% yield, er = 86:14b

**Derivatization:**

- **Ph**
- **Ph**

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