CuH-Catalyzed Enantioselective Anti-Markovnikov Hydroamination

**Significance:** β-Chiral amines are ubiquitous motifs in a range of biologically active molecules, including pharmaceuticals and natural products. The catalytic enantioselective hydroamination of alkenes provides an efficient route to such molecules using simple, and often commercially available, starting materials. Herein, Buchwald and co-workers present an enantioselective CuH-catalyzed anti-Markovnikov hydroamination of 1,1-disubstituted alkenes.

**Comment:** The report expands upon the authors’ previous work on the Cu-catalyzed enantioselective hydroamination of styrene derivatives (*J. Am. Chem. Soc.* 2013, 135, 15746). The proposed mechanism involves hydrocupration of the 1,1-disubstituted olefin in an anti-Markovnikov manner, which is intercepted by the hydroxylamine ester to give the final product and a Cu(II) alkoxide complex. The active CuH catalyst is regenerated by the addition of stoichiometric amounts of hydrosilane.

**Selected examples:**
- **Cy**
  - 88% yield
  - 95% ee

- **t-Bu**
  - 91% yield
  - 99% ee

- **PhMe2Si**
  - 96% yield
  - 90% ee

- **Cy**
  - 90% yield
  - 96% ee

**Proposed mechanism:**

CuH catalyzes the enantioselective hydroamination of 1,1-disubstituted alkenes, providing a route to β-chiral amines. The reaction is carried out in THF at 40 °C for 36 h, affording up to 96% yield and up to 99% ee. The key steps include the formation of an alkoxide complex and the interception by the hydroxylamine ester.