SL06 New Methods for the Synthesis and Elaboration of Amine Containing Compounds

Jonathan A. ELLMAN
Department of Chemistry, Yale University

Practical new methods for carbon-carbon bond formation will be described that enable the efficient preparation of amine containing compounds. Additions to *N*-*tert*-butanesulfinyl imines, enantioselective reactions catalyzed by *N*-sulfinyl ureas, and Rh(I)- and Rh(III)-catalyzed C-H bond functionalization will be presented with an emphasis on regio- and stereoselective entry to pharmaceutically relevant classes of chiral amines and nitrogen heterocycles. The utility of these methods will also be demonstrated with syntheses of bioactive natural products and drugs.

Leading References:

1. Kimmel, K. K.; Weaver, J. D.; Ellman, J. A. "Enantio- and Diastereoselective Addition of Cyclohexyl Meldrum's Acid to β- and α,β-Disubstituted Nitroalkenes via *N*-Sulfinyl Urea Catalysis" *Chem. Science* **2011**, Advance Article.
2. Hesp, K. D.; Bergman, R. G.; Ellman, J. A. "Expedient Synthesis of N-Acyl Anthranilamides and β-Enamine Amides by the Rh(III)-Catalyzed Amidation of Aryl and Vinyl CH Bonds with Isocyanates" *J. Am. Chem. Soc.* **2011**, *133*, 11430–11433.
3. Colby, D. A.; Bergman, R. G.; Ellman, J. A. "Rhodium-Catalyzed C-C Bond Formation via Heteroatom-Directed C-H Bond Activation" *Chem. Rev.* **2010**, *110*, 624-655.
4. Robak, M. T.; Herbage, M. A.; Ellman, J. A. "Synthesis and Applications of *tert*-Butanesulfinamide" *Chem. Rev*. **2010**, 110, 3600–3740.