Asymmetric Lithiation Trapping of \(N\)-Boc Heterocycles

**Significance:** The asymmetric lithiation trapping of various \(N\)-Boc heterocycles is disclosed, using \(s\)-BuLi and chiral diamines such as \((-\)\)-sparteine and \((+\)\)-sparteine surrogate at temperatures above \(-78^\circ C\). The corresponding chiral heterocycles are obtained in high yields and with good enantiomeric ratios.

**Comment:** The experiments can be conveniently performed, since asymmetric lithiation trappings of, for example, \(N\)-Boc pyrrolidine may be conducted at \(-30^\circ C\), still furnishing the chiral heterocycles with a high enantiomeric ration of about 9:1.

**Selected examples:**

1. \(s\)-BuLi/(+\)-sparteine surrogate (1.3 equiv) \(\text{Et}_2\text{O}, \text{up to } -20^\circ C\)
   - up to 91% yield
   - er up to 95:5
   - \(E^+ = \text{PhCHO, MeO}_2\text{CCI, Ph}_2\text{CO, Me}_2\text{SO}_4, \text{PhNCO, allyl bromide, PhBr}\)

2. \(E^+ = \text{PhCHO, MeO}_2\text{CCI, Ph}_2\text{CO, Me}_2\text{SO}_4, \text{PhNCO, allyl bromide, PhBr}\)

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