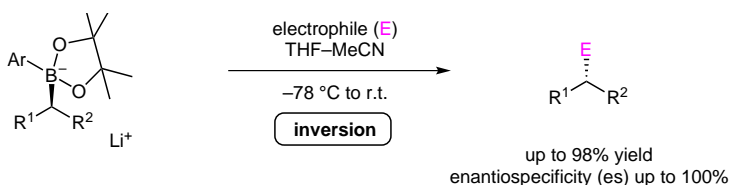


R. LAROUCHE-GAUTHIER, T. G. ELFDOR, V. K. AGGARWAL* (UNIVERSITY OF BRISTOL, UK)

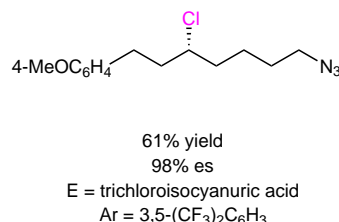
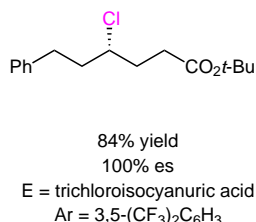
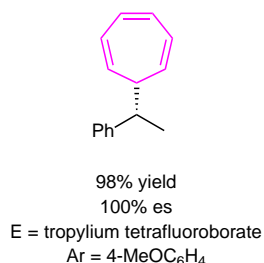
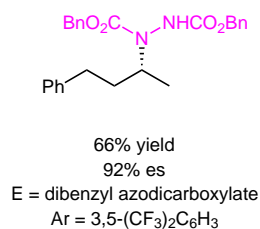
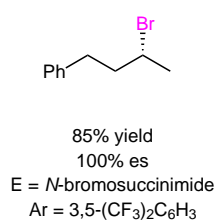
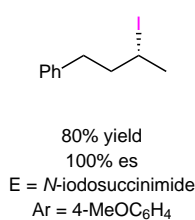
Ate Complexes of Secondary Boronic Esters as Chiral Organometallic-Type Nucleophiles for Asymmetric Synthesis
J. Am. Chem. Soc. **2011**, *133*, 16794–16797.

Boron–Ate Complexes as Chiral Nucleophiles for Asymmetric Synthesis



Ar = 4-MeOC₆H₄, 3,5-(CF₃)₂C₆H₃
R¹ = Ar, Ar-substituted Alk
R² = Me, Et, *i*-Bu, allyl, substituted Alk
E = various electrophiles

Selected examples:



Significance: The authors report that secondary chiral boronic esters can be converted into reactive nucleophiles by addition of an aryllithium reagent. These enantiomerically enriched nucleophiles react with a broad range of electrophiles with inversion of stereochemistry.

Comment: By changing the substituents on the aryl group on boron, a switch in mechanism from a classical 2e⁻ pathway (nucleophilic substitution) to a radical pathway was observed. Therefore, electron-poor boronic esters favor the desired nucleophilic substitution, whereas electron-rich esters give racemized products.

SYNFACTS Contributors: Paul Knochel, Andreas K. Steib
Synfacts 2012, 8(1), 0077 Published online: 19.12.2011
DOI: 10.1055/s-0031-1289458; **Reg-No.:** P15311SF

2012 © THIEME STUTTGART • NEW YORK

Category

Metal-Mediated
Synthesis

Key words

ate complexes

boronic esters

asymmetric
synthesis

SYNFACTS
of the month