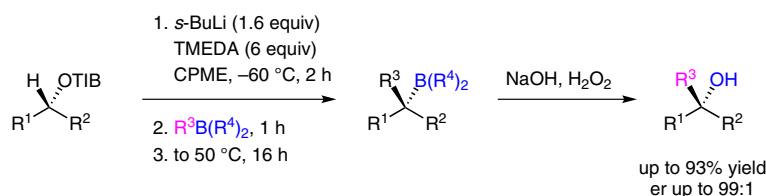


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Lithiation–Borylation of Secondary Alkyl Benzoates



TIB = 2,4,6-triisopropyl benzoate

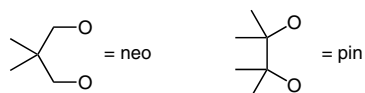
CPME = cyclopentyl methyl ether

R^1 = CH_2Bn , $(\text{CH}_2)_2\text{CHCH}_2$, $(\text{CH}_2)_3\text{OTHP}$

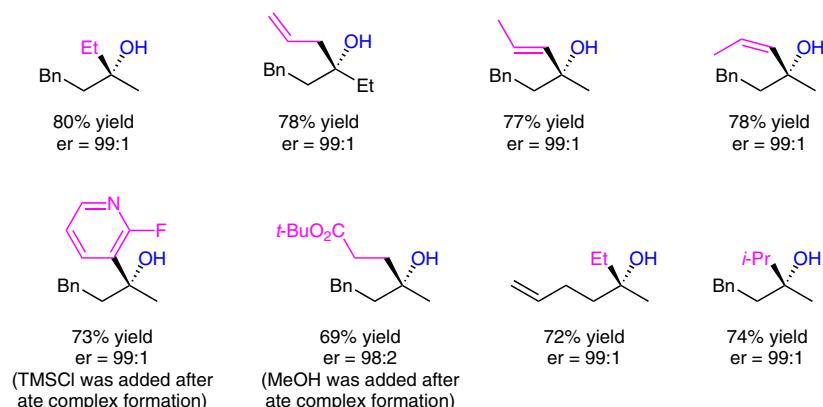
R^2 = Me, Et

R^3 = Et, *i*-Pr, Ph, allyl, 3-(2-fluoropyridyl), $(\text{CH}_2)_2\text{CO}_2\text{t-Bu}$, CHCHCH_3

$(\text{R}^4)_2$ = pin, neo, Et_2



Selected examples:



Significance: Against common wisdom, Aggarwal and co-workers have now shown that secondary 2,4,6-triisopropyl benzoates (TIP esters) can be deprotonated at $-60\text{ }^{\circ}\text{C}$ using a combination of *s*-BuLi and TMEDA in cyclopentyl methyl ether (CPME). The resulting lithium reagents were allowed to react with various neopentyl boronic esters which after 1,2-metalate rearrangement and oxidation furnished a range of tertiary alcohols in good enantioselectivity.

Comment: This lithiation reaction cannot be performed in THF. Simply switching from THF to diethyl ether increased the yield of the lithiated benzoate. The extent of lithiation was increased further by using CPME. Interestingly, the subsequent borylation reaction occurs with complete retention of configuration.