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Catalytic Enantioselective Addition of Organoboron Reagents to Fluoroketones Controlled by Electrostatic Interactions

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Enantioselective Addition of Organoboron Reagents to Fluoroketones

Category

Metal-Mediated Synthesis

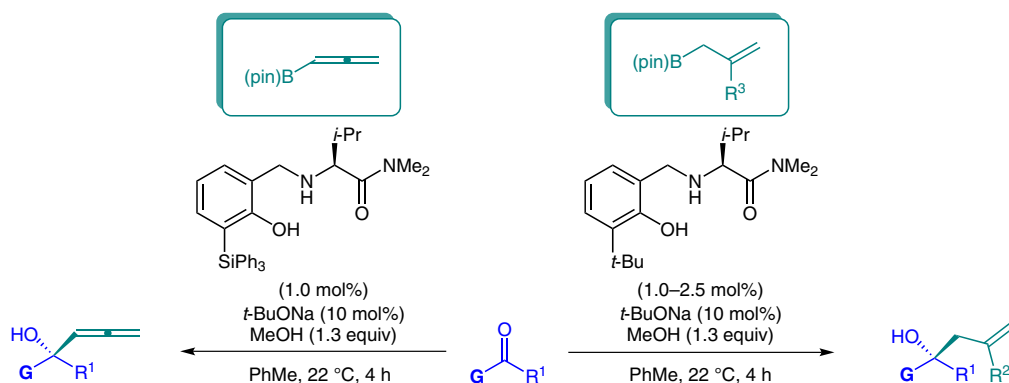
Key words

organoboron reagents

fluoroketones

enantioselectivity

Synfact
of the month



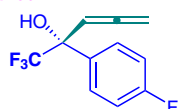
11 examples
85–98% yield
(er up to 99:1)

Method 1

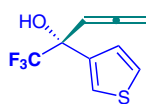
G = CF₃, C₂F₅, C₃F₅
R¹ = various substituents
R² = H, Me, Cl

Selected examples:

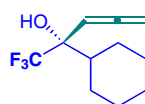
Method 1



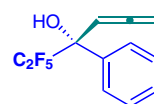
87% yield
(er = 97.5:2.5)



88% yield
(er = 99:1)

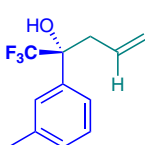


85% yield
(er = 94:6)

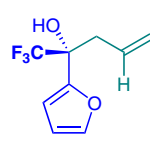


89% yield
(er = 97:3)

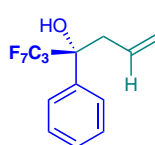
Method 2



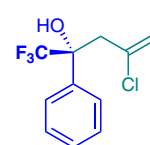
94% yield
(er = 92.5:7.5)



77% yield
(er = 90:10)



89% yield
(er = 96.5:3.5)



96% yield
(er = 96.5:3.5)

Significance: Hoveyda and co-workers have developed an efficient catalytic method for the addition of allyl and allenyl organoboron reagents to fluoroketones, leading to trifluoromethyl-substituted tertiary alcohols in up to 98% yield.

Comment: The versatility of the presented method is illustrated in an enantioselective route to the antiparasitic drug fluralaner (Bravecto, Merck).

SYNFACTS Contributors: Paul Knochel, Dorothée Ziegler
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