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Organic Reactions, Volume 73: Allylboration Of Carbonyl Compounds



Synopsis

Allylic boron compounds have gained a prominent position as a truly practical class of synthetic reagents in the past twenty-five years. Their main application as a method for the stereoselective synthesis of homoallylic alcohols by allyl-transfer to carbonyl compounds is essentially unmatched. In this process, a new carbon-carbon bond is formed, and up to two new stereogenic centers are created in a predictably controlled manner. Highly effective and general enantioselective variants are available, with countless applications in the total syntheses of polyacetate and polypropionate natural products. Furthermore, the residual allylic unit can be manipulated through a number of different transformations such as oxidative cleavage, olefin metathesis, hydrometalations, and many others. The discovery of Lewis and Brønsted acid catalyzed manifolds recently, has opened new doors for further development of this important reaction. This book provides an up-to-date, comprehensive survey of the literature of this rich chemistry as it pertains to organic synthesis. Consistent with the goal of Organic Reactions, the content and presentation emphasize the preparative aspects of the reactions, giving considerable attention to the scope and limitations of the individual transformations along with detailed experimental procedures. A tabular survey of all examples of carbonyl allylboration used in organic synthesis is presented in nine tables organized by type of allylic boron reagent with listings within each table according to increasing carbon number of the carbonyl substrates. The literature is covered through December 2010, including a new listing of nearly 200 literature citations that supplement the original coverage of 834 references used in the earlier hard cover version of the chapter. Allylboration of Carbonyl Compounds is intended to be a useful, easily read reference book for all practitioners of synthetic organic chemistry working in academic and industrial laboratories.

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