

Novel Organoboron Reagents and Reactivities

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Organoboron compounds have revolutionized the pharma, agrochemical, and other industries by providing facile access to structural systems that were previously difficult to synthesize efficiently. Boronic acids and boronate esters have typically been the focus of much of these research efforts, and until recently little effort has been expended toward further development of other, perhaps complementary or advantageous, organoboron reagents. Boronic acids, commonly used for Suzuki-Miyaura coupling, are far from ideal. Because of competitive protodeboronation, literature protocols for cross-coupling employ excess boronic acid to insure a complete conversion of the electrophilic component of the reaction.

Alternatives to boronic acids and their derivatives will be discussed, with an emphasis on the synthesis and use of the more robust organotrifluoroborate reagents. Novel syntheses of a variety of substructural synthons will be outlined, and unique reagents and chemical transformations will be unveiled as well.