Study for the Silylenoid Generation from Stabilized Silyl-Boronate Complex

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　　Controlling the reactivity of silylenes has been a long-standing challenge in organic chemistry. Silylenes, the divalent silicon species, have been extensively studied to reveal unique electronic and chemical properties. Silylenoids, intermediates where a leaving group remains weakly coordinated to the silylenes, exhibit the fascinating reactivity to generate silylenes through fast α-elimination. However, despite their potential, silylenoids are rarely employed in organic synthesis. Effective control of silylenoid reactivity would enable precise modulation of silylene reactivity, broadening their utility in synthetic applications. Although various strategies have been developed to generate silylenes under milder conditions, these approaches remain limited in substrate scope due to challenges in precursor synthesis.[1] Moreover, a general method for generating silylenes via silylenoids has yet to be established.

　　Herein, we developed a general strategy forming silylenes via the silylenoid generated from chlorosilylboranes through boron-metal exchange. The key intermediate is the stabilized silyl-boronate complex with an electron-deficient nucleophile. In this presentation, we will explore in detail the application of this silylenoid generation method to silylene insertion reactions. This approach will be available for the efficient and controlled synthesis of organosilicon compounds.
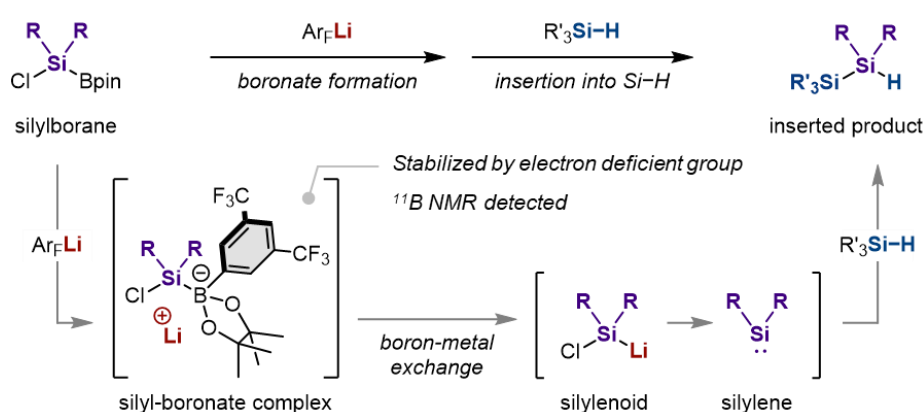
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