GEMINAL SILICON/BORON BIMETALLOIDS: VERSATILE BUILDING BLOCKS FOR MOLECULAR DIVERSITY

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Within the ever-expanding search for methods to access multi-substituted carbon centers, a particularly interesting class of substrates are those containing more than one geminally disposed metalloid fragments. Such species have the potential to engage in complexity-generating coupling sequences [1], especially when bearing chemically differentiated metalloid groups, a scenario which may enable chemoselective iterative C–C and C–heteroatom bond-forming processes [2]. In this context, we recently described the synthesis and reactivity of a new class of such building block, in which an olefinic C(sp2) atom bears a gem–SiR3 / B(OR)2 pair. We showed that species of this type enabled interesting reactivity sequences, including a modular stereoselective an all-carbon substituted olefins, such as the Tamoxifen core [3].

As an expansion, we have now explored the synthesis and reactivity of the saturated benzylic Csp3-centered gem-silyl / boryl compounds, including their chemoselective functionalization by either metal-assisted or metal-free cross-coupling reactions. We hope this work would help reinforce the notion that differentiated main-group gem dimetalloids indeed constituted a powerful reagent class suitable for the development of game-changing reactivity patterns.