New synthetic methodologies using silicon-based synthetic tools

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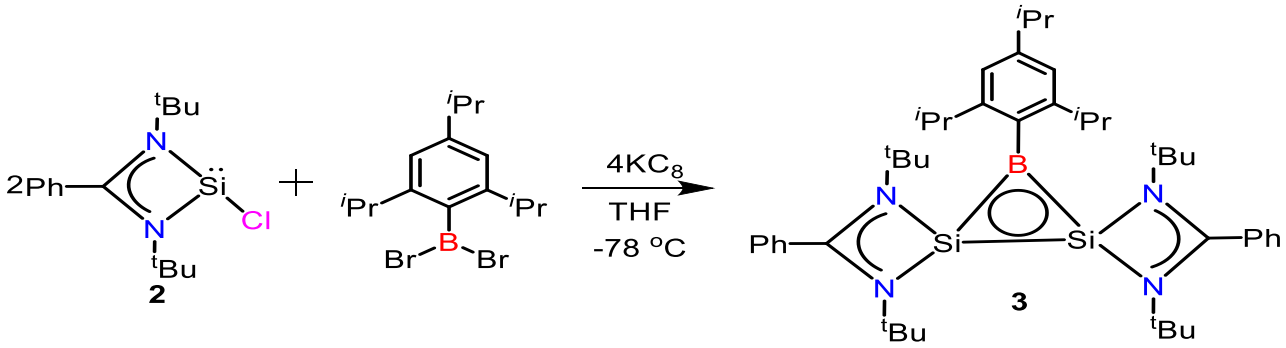
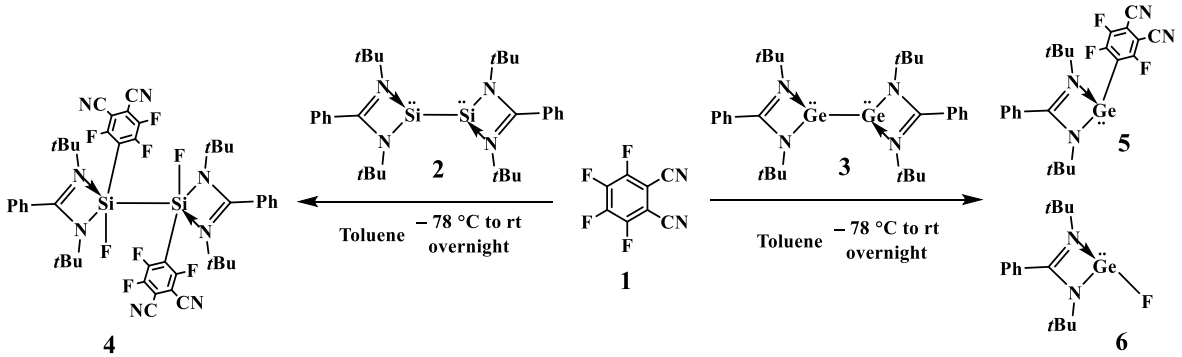
We investigated the chemistry of low valent silicon, due to known abundant species in the interstellar space. For the stabilization of the room temperature examples, we used N-heterocyclic carbenes, isoelectronic silylenes, phosphines or phosphinidenes. Moreover, monosilylene **2** was used for the preparation of an uncharged aromatic three- membered 2π electron Si_2B-ring **3**.



Treatment of **3** with Me_3SiN_3 resulted in the insertion of the nitrene into the Si-Si bond. The aromatic properties of compound **3** disappeared.Compound **2** reacts with aromatic nitriles under oxidative addition, with the result that an inverted carbon atom resulted with longest C-N bond in the literature.Furthermore, the reactions of compound **2** with aromatic organic fluorides reacted under formation of silylene substituted fluorinated derivatives. Recently we were able to show that bissilylenes and fluorine substituted aromatics react at the lone pairs of the bissilylene without cleavage of the Si-Si bond.



References: S. K. Sarkar, R. Chaliha, M. M. Siddiqui, S. Banerjee, A. Münch, R. Herbst-Irmer, D. Stalke, E. D. Jemmis, H. W. Roesky Angew. Chem. Int.Ed. https://doi.org/10.anie.202009638. J. Li, D. J. Goffitzer, M. Xiang, Y. Chen, W. Jiang, M. Diefenbach, H. Zhu, M. C. Holthausen, H. W. Roesky J.Am.Chem.Soc. **2021**,*143,* 8244-8248