Synthesis of Unsaturated Silicon Clusters Utilizing Asymmetrically Substituted Disilanes

([1]*Institute for Chemical Research, Kyoto University*)
○Yamato Omatsu,[1] Yoshiyuki Mizuhata,[1] Norihiro Tokitoh[1]

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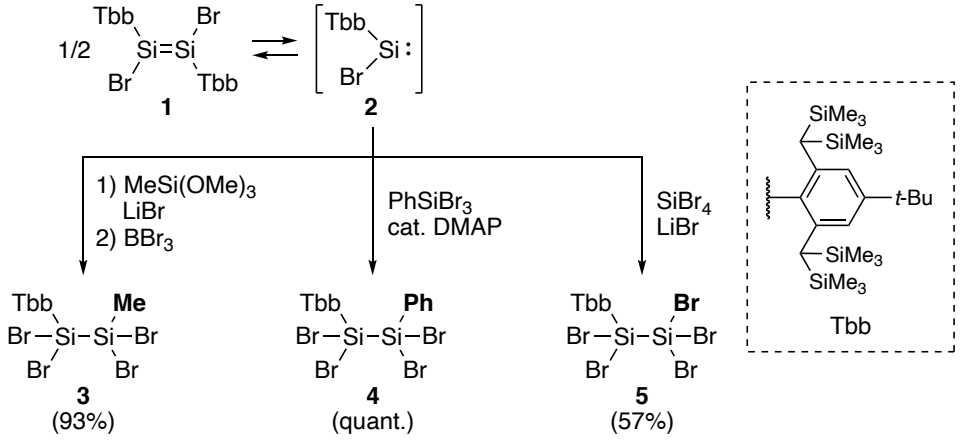
Reductive dehalogenation of disilanes is an effective synthetic method for disilenes, disilynes, or silicon clusters. Commonly, such disilanes have same bulky substituent on each silicon center. On the other hand, it has been clarified in recent studies that reductive condensation of asymmetrically substituted disilanes shows different reactivity and affords unsaturated silicon clusters.[1] Herein, we report the synthesis of novel disilanes with different substituents on each silicon center.

The reaction of $MeSi(OMe)_3$ with LiBr and silylene **2** generated from the dissociation of dibromodisilene **1** afforded the corresponding methoxydisilane, and the further bromination gave disilane **3** in high yield. On the other hand, when silylene **2** was treated with $PhSiBr_3$ and a catalytic amount of DMAP, disilane **4** was obtained quantitatively. Moreover, pentabromodisilane **5** was prepared by the reaction of **2** with $SiBr_4$ and LiBr. Such disilanes were characterized by NMR spectroscopy and X-ray crystallographic analysis. In this presentation, their reductive debromination with several reductants will also be discussed.



1) a) S. Ishida, T. Iwamoto, C. Kabuto, M. Kira, *Nature* **2003**, *421*, 725–727; b) K. Uchiyama, S. Nagendran, S. Ishida, T. Iwamoto, M. Kira, *J. Am. Chem. Soc.* **2007**, *129*, 10638–10639.