

Supersilylverbindungen der Borgruppen Elemente, IV [1].

Supersilylelementhalogenide $t\text{Bu}_3\text{SiEX}_2$ und $(t\text{Bu}_3\text{Si})_2\text{EX}$ mit

E = Al, Ga, In: Synthesen, Eigenschaften, Strukturen [2]

Supersilylated Compounds of the Thirteenth Group, IV [1].

Supersilylelement Halides $t\text{Bu}_3\text{SiEX}_2$ and $(t\text{Bu}_3\text{Si})_2\text{EX}$ with

E = Al, Ga, In: Syntheses, Properties, Structures [2]

Nils Wiberg*, Kerstin Amelunxen, Hans-Wolfram Lerner, Heinrich Nöth**,
Jörg Knizek**, Ingo Krossing**

Institut für Anorganische Chemie der Universität München, Meiserstraße 1, D-80333 München

Herrn Professor Achim Müller zum 60. Geburtstag gewidmet.

Z. Naturforsch. **53 b**, 333–348 (1998); eingegangen am 7. November 1997

Supersilylaluminum Halides, Supersilylgallium Halides, Supersilylindium Halides, Acid-base Reactions, Redox-Reactions, X-Ray Data

Water and oxygen sensitive compounds $(t\text{Bu}_3\text{SiEX}_2)_2$, $t\text{Bu}_3\text{SiEX}_2\cdot\text{Do}$ and $(t\text{Bu}_3\text{Si})_2\text{EX}$ (E = Al, Ga, In; X = (F), Cl, Br; Do = OR_2 , NR_3) have been synthesized by reaction of EX_3 with $t\text{Bu}_3\text{SiNa}$ in the absence or presence of donors. In addition, $(t\text{Bu}_3\text{Si})\text{AlBr}_2$, $(t\text{Bu}_3\text{Si})_2\text{InF}$ and $t\text{Bu}_3\text{SiInBr}_2$ were prepared by reaction of AlBr_3 with $(t\text{Bu}_3\text{Si})_2\text{Zn}$ or of $(t\text{Bu}_3\text{Si})_2\text{InIn}(\text{Si}t\text{Bu}_3)_2$ with AgF_2 and HBr , respectively. The adduct $[t\text{Bu}_3\text{SiAlBr}_2\cdot\text{AlBr}_3\cdot\frac{1}{2}\text{MgBr}_2]_2$ is formed from AlBr_3 and $(t\text{Bu}_3\text{Si})_2\text{Mg}(\text{THF})_2$. Thermal decomposition of the compounds in solution or in the gas phase leads to the formation of $t\text{Bu}_3\text{SiEX}_2$ (from the dimers or the donor adducts) and of $t\text{Bu}_3\text{SiX}$. The Lewis acidity of $t\text{Bu}_3\text{SiEX}_2$ against donors increases in the direction $\text{Do} = \text{Et}_2\text{O} < \text{THF} < \text{N}(\text{Et})_2$. Dehalogenation of $(t\text{Bu}_3\text{Si})_2\text{ECl}$ with $t\text{Bu}_3\text{SiNa}(\text{THF})_2$ in pentane at room temperature leads to clusters $(t\text{Bu}_3\text{Si})_4\text{Al}_2$, $(t\text{Bu}_3\text{Si})_3\text{Ga}_2^+$, $(t\text{Bu}_3\text{Si})_4\text{In}_2$ and $(t\text{Bu}_3\text{Si})_3\text{Ga}_2\text{Na}(\text{THF})_3$, reduction of $t\text{Bu}_3\text{SiGaCl}_2$ with Na or K in heptane at 100°C to the tetrahedron $(t\text{Bu}_3\text{Si})_4\text{Ga}_4$. The structures of $(t\text{Bu}_3\text{SiGaCl}_2)_2$, $(t\text{Bu}_3\text{Si})_2\text{GaCl}$, and $[t\text{Bu}_3\text{SiAlBr}_2\cdot\text{AlBr}_3\cdot\frac{1}{2}\text{MgBr}_2]_2$ have been determined by X-ray structure analysis.

* Sonderdruckanforderungen an Prof. Dr. N. Wiberg.