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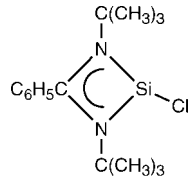
Editor's Page

Introduction to the Review by Nagendran and Roesky in This Issue of *Organometallics*

The review in this issue of *Organometallics* deals with the chemistry of low-valent compounds of aluminum, silicon, and germanium, specifically Al(I), Si(II), and Ge(II). This currently very active area of research is one to which Professor Herbert Roesky and his co-workers at the University of Göttingen have devoted some six years and discovered much new chemistry that is both very interesting and original. Our cover molecule, **1**, is an example of the low-valent compounds that have been



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prepared during the course of these studies: a stable monomeric chlorosilylene. The secret of such successful preparations of stable and isolable low-valent compounds (in contrast to the many examples of low-valent compounds of these elements that are too unstable to permit their isolation) lies in the use of very bulky substituents, either a monodentate substituent, such as $(Me_3Si)_3C$, $(Me_3Si)_3Si$, or $(Me_3C)_3Si$, or a bidentate group such as the β-amidinato ligand present in our cover molecule. Such substituents provide the steric protection to the central Al, Si, or Ge atom that prevents oligomerization and/or destructive attack by an external reagent, i.e., that imparts some degree of kinetic stability to the molecule.

The cover molecule was prepared, as described by So, Roesky, Magull, and Oswald in 2006 (Angew. Chem. Int. Ed. 2006, *45*,3948), by reduction of the tetravalent $[C_6H_5C(N^tBu)_2]$-$SiCl_3$ with potassium in THF. It was isolated as a colorless, crystalline solid that is stable in an inert atmosphere at room temperature in the solid state and in solution. The reactivity of this novel Si(II) chloride remains to be investigated, but quite a bit is known about the interesting reactions of the analogous and related Ge(II) derivatives.

This fascinating chemistry of Al(I), Si(II), and Ge(II) compounds has been published by Professor Roesky and his co-workers in a large number of communications (mostly in *Angew. Chem. Int. Ed.*, *J. Am. Chem. Soc.*, and *Organometallics*) and some full papers. It is gratifying to have the subject matter of these outstanding contributions summarized in the present review so that the reader will be able to obtain a good overview (and an appreciation) of Professor Roesky's fine work in developing this area. The present review discusses also the results of other workers, thus providing an excellent account of the whole field of stable Al(I), Si(II), and Ge(II) carbene analogues.

Professor Roesky, the senior author, studied chemistry at the University of Göttingen. He carried out his Diplom and doctoral research under the guidance of Professor Oskar Glemser in the area of metal fluoride chemistry. After he received his doctoral degree in 1963, he spent a year as a postdoctoral fellow at the DuPont Experimental Station in Wilmington, Delaware, working in the group of Earl Muetterties on fluorine-containing phosphorus anions and cations. Subsequently, he returned to Göttingen to carry out research for his Habilitation, which he completed in 1967. After four more years at Göttingen, he was appointed Professor of Inorganic Chemistry at the University of Frankfurt in 1971. He returned to Göttingen in 1980 as Professor of Chemistry and Director of the Institute of Inorganic Chemistry. He has been Professor Emeritus since 2004 but has maintained a vigorous and very productive program of research since his retirement.

The subject of the present review represents only a small part of the varied research that Professor Roesky has carried out over the years. He has maintained an active interest in the area of his doctoral research, fluorine chemistry, and for his contribution in that area received the ACS Award for Creative Work in

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Fluorine Chemistry in 1999. For his outstanding work in other areas of inorganic chemistry, he received the ACS Award in Inorganic Chemistry and the German Alfred Stock Memorial Award. There is not space to give an account of all the different areas of inorganic, organometallic, and materials chemistry in which Professor Roesky and his co-workers have made significant, often innovative, contributions. In lieu of such a discussion it may be of interest to just list a few of the molecules that have been featured in Professor Roesky's numerous publications: $[Zn(cyclo\text{-}S_2N_2C{=}O)_6][AsF_6]_2$, $[Ag(S_8)_2]AsF_6$, $VCl_2(S_2N_3)$, $[Ag\{S_n(CN)_2\}_2]AsF_6$, $Ph_2P(S)N{=}TiCl_2 \cdot 3py$, Cp^*WF_5, $[Cp^*Ta(Cl){=}N]_3$, $[P(N_3)_6]^-$, $[S_5N_5]^+$, BN, AlN, and GaN by CVD, and many others. Also worthy of note are Professor Roesky's famous popular science lectures, in which he performs spectacular chemical demonstration experiments, and the book *Chemical Curiosities*, in which these experiments are described.

The coauthor of the present review, S. Nagendran, is a native of India. He obtained his Ph.D. at the Indian Institute of Technology−Kanpur, with research under the guidance of Professor V. Chandrasekhar. After a two-year postdoctoral stay at Tohoku University in Japan, in which he carried out research in organosilicon chemistry in the group of Professor Mitsuo Kira, he joined Professor Roesky's group as a postdoctoral fellow.

The cover figure was kindly generated by Professor Arnold L. Rheingold.

Dietmar Seyferth
Editor

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