

SYNTHESIS, STRUCTURE AND DYNAMICS OF SILYLATED $[\text{Si}_z\text{Ge}_{9-z}]$ ZINTL CLUSTERS

Kevin M. Frankiewicz^{a,b}, Viktor Hlukhyy^a, and Thomas F. Fässler^{a,b}

^aSchool of Natural Sciences, Technical University of Munich, Garching, Germany

^bWACKER Institute of Silicon Chemistry, Technical University of Munich, Garching, Germany

The *Zintl* precursor K_4Ge_9 can be easily silylated in the presence of various chlorosilanes.[1] Starting from these monoanionic, trisilylated species, further charge reduction can be achieved by reaction with different electrophiles e.g. alkyl halides or acyl chlorides. As described for unsubstituted tertel element cluster, these species exhibit a pronounced dynamic behaviour.[2] In contrast to ^{29}Si , the heavier homologue ^{73}Ge bears unfavourable NMR-properties allowing only the periphery of the respective clusters to be studied. Thus, the detailed mechanism of the molecular rearrangement remains unclear. Recently, a reliable synthetic access to trisilylated, nineatomic silicon clusters *via* extraction of $\text{K}_{12}\text{Si}_{17}$ from liquid ammonia was found.[3,4] Hence, in this work we started to transfer this synthetic approach to ternary $\text{K}_{12}\text{Si}_y\text{Ge}_{(17-y)}$ *Zintl* precursors. The corresponding activated phases can be further transformed into the trisilylated, binary $[(\text{R}_3\text{Si})_3(\text{Si}_z\text{Ge}_{(9-z)})]^-$ clusters (**1-7**). ^{29}Si -NMR spectroscopy showed a size-dependent dynamic character of the respective monoanions. Due to the reduced symmetry of the cluster framework, this rearrangement could be investigated now.

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[2] S. Frischhut, W. Klein, M. Drees, T. F. Fässler, *Chem. Eur. J.* **2018**, *24*, 9009.

[3] L. J. Schiegerl, A. J. Karttunen, W. Klein, T. F. Fässler, *Chem. Eur. J.* **2018**, *24*, 19171.

[4] L. J. Schiegerl, A. J. Karttunen, W. Klein, T. F. Fässler, *Chem. Sci.* **2019**, *10*, 9130.