

Tetrakis(sulfurdiimido)silane, -germane and -stannane

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Two tetrakis(sulfurdiimido)silanes [$\text{Si}(\text{NSNR})_4$ ($\text{R} = \text{}^t\text{Bu}$ **1a**, SiMe_3 **1b**)], two germanes [$\text{Ge}(\text{NSNR})_4$ ($\text{R} = \text{}^t\text{Bu}$ **2a**, SiMe_3 **2b**)] and one stannane [$\text{Sn}(\text{NSN}^t\text{Bu})_4\text{Sn}$ **3a**] were prepared and characterised by ^1H , ^{13}C , ^{15}N , ^{29}Si and ^{119}Sn NMR spectroscopy in solution, and **3a** was also studied in the solid state by ^{119}Sn CP/MAS NMR. Whereas **1a,b** and **2a,b** are monomeric in solution, the ^{119}Sn NMR data suggest that **3a** is associated both in solution and in the solid state, and that the tin atoms are hexa-coordinated. The attempted stepwise synthesis of **1a** by using one, two, three or four equivalents of $\text{K}[(\text{NSN})^t\text{Bu}]$ led to mixtures of **1a** with $\text{Cl}_3\text{Si}(\text{NSN}^t\text{Bu})$ **4a**, $\text{Cl}_2\text{Si}(\text{NSN}^t\text{Bu})_2$ **5a**, and $\text{ClSi}(\text{NSN}^t\text{Bu})_3$ **6a**. Only one sulfurdiimido ligand of the silane **1a** reacted with hexachlorodisilane by oxidative addition and cleavage of the Si-Si bond to give the new heterobicyclic derivative **7a** which is held together by two different coordinative N-Si bonds.

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