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LETTERS TO THE EDITOR

Synthesis and Thermal Stability of *N*-(Chlorodimethylgermylmethyl)-*N*-methyl-*O*-(trimethylsilyl)salicylamide

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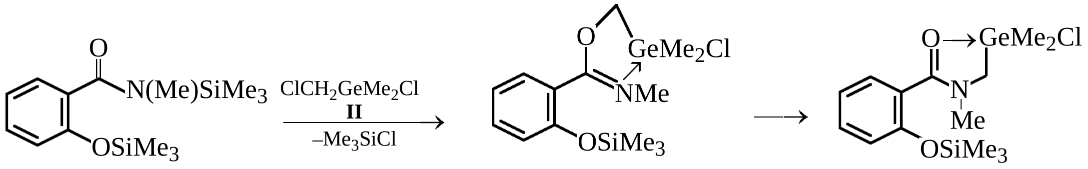
N,*O*-Bis(trimethylsilyl)-*N*-methylsalicylamide (**I**) reacts with chloro(chloromethyl)dimethylsilane under mild conditions with liberation of chlorotrimethylsilane and intermediate formation of a five-coordinate silicon compound, *N*-(chlorodimethylsilylmethyl)-*N*-methyl-*O*-(trimethylsilyl)salicylamide. On fractionation or standing at room temperature the latter undergoes intramolecular cyclization to 2,2,4-trimethyl-1-oxa-4-aza-2-silabenzocycloheptan-5-one with liberation of chlorotrimethylsilane [1, 2]. By contrast, chloro(chloromethyl)dimethylgermane (**II**) reacts with compound I at room temperature within 1.5–2 h in pentane to give, first, intermediate *O*-alkylation product **III** whose spectral characteristics are close to those of the products of syntheses on the basis of amides and lactams [3]. Thus, the IR spectrum of compound **III** shows a strong imidate absorption at 1678 cm^{-1}, and the ^1H NMR spectrum contains signals of the Me_2Ge (0.97 ppm), MeN (2.96 ppm), and OCH_2Ge (4.08 ppm) groups. After standing for some days at room temperature compound **III** isomerized to *N*-germylmethylation product **IV**. This conversion is accompanied by disappearance in the IR spectrum of the absorption band at 1678 cm^{-1} and appearance of absorption bands at 1597 and 1500 cm^{-1} due to the five-memebered $O \rightarrow Ge$ chelate fragment [3]. The half-conversion period of compound **III** to **IV** in the reaction mixture was ca. 3 days at room temperature. No further conversion of compound **IV** into a germanium-containing heterocycle with chlrotrimethylsilane liberation occurred even on vacuum fractionation at a temperature above 200°C. This points to a strongly reduced reactivity of five-coordinate germanium chlorides compared with their silicon analogs toward trimethylsilyl phenol ethers [4], apparently, on account of a weaker $O \rightarrow M$ coordination interaction in germanium analogs [5].



I **III** **IV**

***N*-(Chlorodimethylgermylmethyl)-*N*-methyl-*O*-(trimethylsilyl)salicylamide (IV).** *a.* A solution of 0.94 g of $ClCH_2GeMe_2Cl$ in 2 ml of pentane was added to a solution of 1.37 g of compound **I** in 3 ml of pentane. The reaction mixture was stirred for 1.5 h at room temperature. In the IR spectrum of the reaction mixture we observed gradual disappearance of the absorption band of the starting compound at 1636 cm^{-1} and appearance of a strong absorption band at 1678 cm^{-1} due to *O*-germylation product **III**. Further on the band at 1678 cm^{-1} disappeared and bands at 1598 and 1520 cm^{-1} appeared, belonging to *N*-germylation product **IV**.

b. A distillation flask was charged with 2.6 ml of $ClCH_2GeMe_2Cl$ and 5.50 g of compound **I**. At 90–155°C, Me_3SiCl (1.09 g) was distilled off. The residue was fractionated to obtain 4.16 g (85%) of compound **IV**, bp 215–217°C (10 mm). IR spectrum ($CHCl_3$), ν, cm^{-1}: 1598 s, 1520 w. ^1H NMR spectrum ($CDCl_3$), δ, ppm: 0.08 s (9H, $SiMe_3$), 0.77 s (6H, $GeMe_2$), 2.88 s + s (5H, NCH_2C + NCH_2Ge), 6.6–7.3 m (4H, C_6H_4). Found, %: C 45.35; H 6.12. $C_{14}H_{24}ClGeNO_2Si$. Calculated, %: C 44.88; H 6.45.

The IR spectra of $CHCl_3$ solutions were taken on a Specord IR-75 instrument in KBr. The ^1H NMR spectra were obtained on a Varian XL-400 spectrometer (400.1 MHz) in the pulse mode with subsequent Fourier transform and ^2H stabilization of resonance conditions. The chemical shifts were measured relative to internal TMS.

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