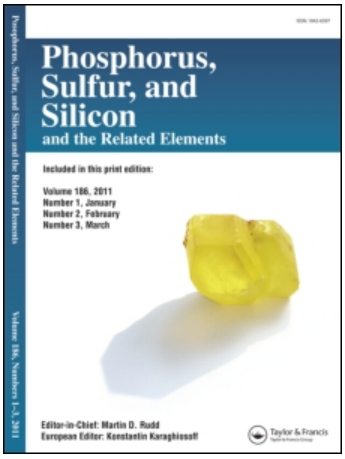

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The Synthesis and Reactivity of Trimethylsilyl Amide of Dichlorophosphoric(V) Acid, Me_3 SiNHP(S)Cl_2

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The Synthesis and Reactivity of Trimethylsilyl Amide of Dichlorophosphoric(V) Acid, $Me_3SiNHP(S)Cl_2$

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Trimethylsilylamid $Me_3SiNHP(S)Cl_2$ (I) was first obtained [1] by reaction $P_2S_2OCl_4$ with hexamethyldisilazane (HMDS) as a crystalline very reactive compound (m.p.=42°C, $\delta^{31}P$=51,3ppm).

We have found that (I) can also be prepared by the reaction:

$$SPCl_3 + Me_3Si.NH.SiMe_3 \xrightarrow[\text{diethylether}]{20^\circ C,\ 20d} \underset{(I)}{Me_3SiNHP(S)Cl_2} + Me_3SiCl.$$

However, contrary to the reaction of $OPCl_3$ with HMDS [2,3], reaction of $SPCl_3$ with HMDS also yields hitherto unknown diazaphosphetidine $[Me_3SiNH.P(S).NSiMe_3]_2$ (II). It has been proved that (II) is a product of the reaction of (I) with excess of HMDS. It is probable that by this reaction hypothetic amide-imide $Me_3SiNHP(S)=NSiMe_3$ as an intermediate is formed which by a cycloaddition leads to (II). In connection with the discussion of a relevant reaction mechanism we have studied the reactions of amides $Me_3SiNHP(X)Cl_2$ (X=O,S) with trialkylamines and the behaviour of products of these reactions towards HMDS. NMR spectra, i.r., Raman and mass spectra of all newly prepared compounds are reported.

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