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A NEW ROUTE TO TELLURIUM-NITROGEN COMPOUNDS

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Whereas there is a vast chemistry of sulfur nitrogen compounds, very little is known about the corresponding tellurium nitrogen systems. A few Te-N compounds have been prepared by replacement of fluorine by nitrogen containing groups, resulting e.g. in TeF_5NH_2[1]. But this method seems to be exhausted. We have now found that TeF_5Cl can be added photolytically to nitriles under retainment of the TeF_5 group.

$$TeF_5Cl + R\text{-}C{\equiv}N \ (R{=}Cl,CF_3) \longrightarrow TeF_5N{=}C(R)Cl$$

The reaction of $TeF_5N{=}CCl_2$ with excess HF gives the amine TeF_5NHCF_3 as a clear, stable liquid in 90% yield. The anion $TeF_5(CF_3)N^-$ can be generated directly from $TeF_5N{=}CCl_2$ by reaction with CsF. The imine $TeF_5N{=}CF_2$ is produced in 35% yield by pyrolysis of the salt found between TeF_5NHCF_3 and KF. A mercury derivative, $Hg[N(CF_3)TeF_5]_2$, has also been obtained by the reaction of HgF_2 with TeF_5NHCF_3. This colorless, crystalline, sublimable mercurial serves for the preparation of other TeF_5-N compounds: $TeF_5N(Cl)CF_3$, $TeF_5N(Br)CF_3$. Both nitrogen

$$Hg[N(CF_3)TeF_5]_2 + 2XF(X{=}Cl,Br) \longrightarrow 2TeF_5N(X)CF_3 + HgF_2$$

halogen compounds are surprisingly stable. Photolysis of $TeF_5N(Cl)CF_3$ gives the first material with two tellurium atoms bonded to the same nitrogen. All new materials have been identified by conventional

$$2TeF_5N(Cl)CF_3 \xrightarrow{h\nu} (TeF_5)_2NCF_3 + Cl_2 + \ldots.$$

physical methods including elemental analysis where possible. Especially the ^{19}F-NMR spectra exhibit in all cases an AB_4-pattern with ^{125}Te-isotope satellites, as characteristic for TeF_5 groups.

1 K. Seppelt, Inorg. Chem., 12, 2837 (1973)