

Dialkylaminotellurium(VI) Fluorides

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COMPOUNDS containing the SF_5 group in which the sulphur atom is bonded to C, N, and O, are well known, but the corresponding area of tellurium chemistry has been little explored, and is restricted to oxygen-containing compounds.¹ We report the first derivatives of tellurium(VI) in which the tellurium atom is bonded to nitrogen.

Tellurium hexafluoride reacts with dimethylaminotrimethylsilane at -78° to give dimethylaminotellurium(VI) pentafluoride, F_5TeNMe_2 (I), bisdimethylaminotellurium(VI) tetrafluoride, $F_4Te(NMe_2)_2$ (II), and trimethylfluorosilane. The pentafluoride (I) is a pale yellow liquid, vapour pressure 3 mm./ 20° , thermally unstable above 50° . The vapour-phase i.r. spectrum shows three bands in the region associated with Te-F stretching vibrations at 930, 698, and 629 cm^{-1} as expected for an octahedral MF_5Y compound. The 56.4 Mc./sec. ^{19}F n.m.r. spectrum is consistent with a typical AB_4 system, with $J_{AB} = 169$ c./sec.,

$\delta_A = +36$, $\delta_B = +60$ p.p.m. (relative to $CFCl_3$) calculated by the method of Harris and Packer.² The tetrafluoride (II) is a pale yellow crystalline solid, m.p. 57° , sublimable at 25° under high vacuum. Its i.r. spectrum in Nujol shows bands associated with Te-F stretching vibrations at 928, 643, 613, and 588 cm^{-1} . The ^{19}F n.m.r. spectrum has two triplets ($\delta_A +47.5$; $\delta_B +78.4$ p.p.m.; $J_{AB} = 135$ c./sec.; relative to $CFCl_3$) consistent with the *cis* isomer. Other dialkylamino-compounds have been prepared; preliminary studies show they have similar spectral properties to the dimethylamino-derivatives. It should be noted that substitution of more than one fluorine atom in TeF_6 is evidently possible, unlike the analogous sulphur case, so that the chemistry of substituted tellurium fluorides is likely to differ considerably from that of substituted sulphur fluorides.

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¹ A. Engelbrecht and F. Sladky, *Monatsh.*, 1965, **96**, 159.

² R. K. Harris and K. J. Packer, *J. Chem. Soc.*, 1961, 4736.