113

NOVEL REACTIONS OF TRIFLUOROAMINE OXIDE WITH ORGANIC AND INORGANIC SUBSTRATES

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The chemistry of trifluoroamine oxide has remained largely ignored since its initial synthesis more than twenty years ago [1,2]. A review of the chemistry and physical characteristics of trifluoroamine oxide has recently been publisned [3], indicating that its reported chemistry has been largely limited to its Lewis base behavior and Lewis acid catalyzed addition reactions.

We find that trifluoroamine oxide reacts readily with, for example, a variety of amines to form the corresponding N-fluoro and N-nitroso derivatives in good yields. Oxidative fluorination of non-halogenated phosphines occurs under mild conditions to give R_3PF_2, and treatment of phosphites with ONF_3 yields three fluorinated products, i.e., RF, $(RO)_2P(O)F$ and $(RO)_3PF_2$. A number of metals including Ga, Sn and Sb are rapidly converted to GaF_3, SnF_4 and SbF_5, while WF_6 is obtained from the reaction between ONF_3 and $W(CO)_6$. The synthesis of many new or previously difficult to obtain materials has been achieved, and their physical and chemical characteristics, including stability and synthetic utility, are described.

1 N. Bartlett, J. Passmore and E. J. Wells, J. Chem. Soc. Chem. Commun., 213, (1966).

2 W. B. Fox et al., J. Am. Chem. Soc., 88 2604, (1966).

3 H. J. Emeléus, J. M. Shreeve and R. D. Verma, Adv. in Inorganic Chemistry 32 (1988).