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PRELIMINARY NOTE

Perfluoroallyl Fluorosulphonate

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SUMMARY

Perfluoroallyl fluorosulphonate, procured via treatment of perfluoropropene with stabilized sulphur trioxide ('Sulfan'), reacts with potassium iodide, potassium bromide, sodium methoxide, and phenylmagnesium bromide to yield the corresponding perfluoroallyl derivatives $CF_2{=}CFCF_2X$, where X = I, Br, OMe, and Ph respectively.

Du Pont researchers have disclosed recently [1] that perfluoroallyl fluorosulphonate, $CF_2{=}CFCF_2OSO_2F$, can be procured by treatment of perfluoropropene with sulphur trioxide in the presence of boron-based catalysts [e.g. BF_3, $B(OMe)_3$, B_2O_3] and converted into perfluoroallyl iodide with sodium iodide in acetone. This prompts us to report that in the late 1960s, whilst involved in work on the β-sultone $CF_3\overline{CFCF_2OS}O_2$ [2], we discovered that failure to remove the boron-containing stabilizer present in commercial sulphur trioxide * led, in reactions involving perfluoropropene at 60 °C (4 h in Pyrex), to formation of a mixture of the sultone (54.5% yield) and perfluoroallyl

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* Sulfan® [Hardman and Holden (Manchester UK)]

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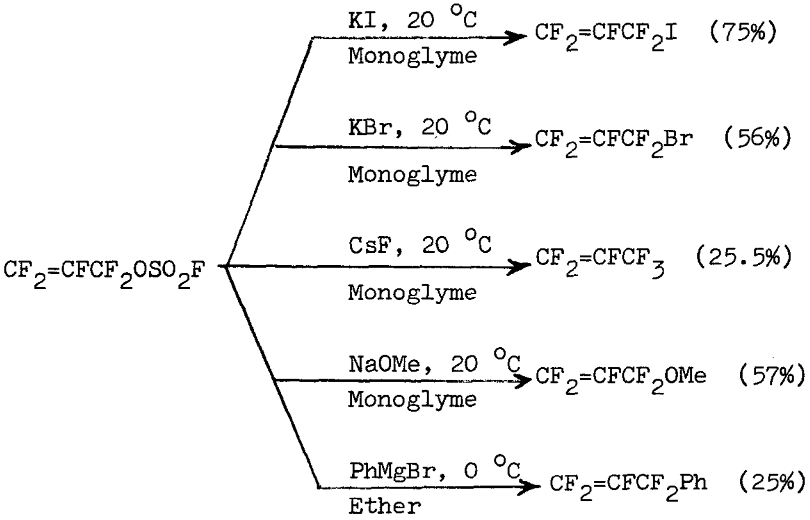

fluorosulphonate (37.5% yield). Our investigation of the use of the fluorosulphonate in the synthesis of 3-substituted pentafluoropropenes is summarized in the scheme.

1 C.G. Krespan and D.C. England, J. Amer. Chem. Soc., 103 (1981) 5598.

2 R.E. Banks, G.M. Haslam, R.N. Haszeldine, and A. Peppin, J. Chem.Soc. (C), (1966) 1171; R.E. Banks, R.N. Haszeldine, and A.L. Jones, unpublished work.