

## PREPARATION OF SOME PERFLUOROALKYLSULPHINES

R. N. Haszeldine, W. D. Morton\*, D. G. Rowsell and S. Samejima†

Department of Chemistry, UMIST, Manchester, M60 1QD (U.K.)

Fluorotrifluoromethylsulphine ( $\text{CF}_3\text{CF}=\text{S}=\text{O}$ , 1), the first stable perfluoroalkylsulphine has been synthesised recently in our laboratories. An alternative route to (1) and a route to other perfluoroalkylsulphines  $\text{R}_f\text{CF}=\text{S}=\text{O}$  arise via the dechlorofluorination of perfluoroalkylsulphonyl chlorides ( $\text{R}_f\text{CF}_2\text{SOCl}$ , 2), readily available from the corresponding sulphonyl halides.

Thermal dechlorofluorination of the sulphonyl chlorides (2) over copper at approximately  $250^\circ$  gives the corresponding sulphines. In contrast, at temperatures around  $200^\circ$ , the reaction of the sulphonyl chlorides (2) with copper gives the perfluoroalkylthiosulphonates ( $\text{R}_f\text{S}\cdot\text{SO}_2\text{R}_f$ ), which are also prepared from the sulphonyl chlorides (2) and mercury at room temperature.

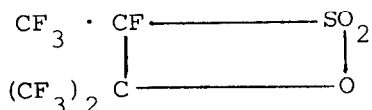
† see footnote on p. 63

PREPARATION AND REACTIONS OF 1,2-OXATHIETAN 2,2-DIOXIDES:  
A CONVENIENT ROUTE TO INTERNAL POLYHALOGENOALKENES

I. W. Cookson\*, R. N. Haszeldine, J. S. Kilburn, W. D. Morton and S. Samejima†

Department of Chemistry, UMIST, Manchester M60 1QD (U.K.)

1,2-Oxathietan 2,2-dioxides ( $\beta$ -sultones) are conveniently prepared either by the addition of sulphur trioxide to polyfluoroalkenes or by the addition of polyhalogenoketones to a sulphene. Thus the sulphonyl fluoride ( $\text{CF}_3\text{CHF}\cdot\text{SO}_2\text{F}$ , 1) reacts with the complex of  $\text{Me}_3\text{N}\cdot\text{SiF}_4$ , probably to give the sulphene  $\text{CF}_3\text{CF}:\text{SO}_2$  which, in the presence of hexafluoroacetone, gives the sultone



Extension of this procedure has yielded a series of  $\beta$ -sultones. Pyrolysis of the sultones eliminates  $\text{SO}_3$  and provides an efficient route to internal perfluoroalkenes, whereas photolysis of a sultone yields an oxirane via loss of  $\text{SO}_2$ .

The reaction of some of the internal olefins with chloride ion will also be described.

† see footnote on p. 63