THE SYNTHESIS OF FUNCTIONALISED PERFLUOROCYCLOHEXANES BY THE LIQUID PHASE FLUORINATION OF FLUOROAROMATICS WITH ELEMENTAL FLUORINE

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The fluorosulphonyl perfluorocyclohexane carbonyl fluorides 1,4 FOC.C₆ F_{10} .SO₂F(I) and 1,2 FOC.C₆ F_{10} .SO₂F(II) have been synthesised [1] by direct fluorination of respectively 1,4 FOC.C₆ F_4 .SO₂F(III) and 1,2 FOC.C₆ F_4 .SO₂F(IV).

The use of elemental fluorine for the fluorination of aromatic compounds is usually unsuccessful, even under very carefully controlled conditions, producing mainly oligomers and polymeric tars [2].

However, fluorination of 1,4 FOC.C₆ F_4 .SO₂F(III) [1,3] in CCl₂F.CCl F_2 with F_2/N_2 at ambient temperatures gave 1,4 FCO.C₆ F_{10} .SO₂F(I), together with C₆ F_{11} .COF(V) and oligomers.



This novel difunctional perfluorocyclohexane has been characterised by reaction with alcohols and amines, where the different reactivities of the acid fluoride groups allows derivatives to be prepared on the carbonyl fluoride, leaving the sulphonyl fluoride intact.

- 1 H C Fielding, P H Gamlen and I M Shirley, EP 0 331 321.
- 2 F Cacace, P Giacomello and A P Wolf, J Am Chem Soc 102 (1980) 3511.
- 3 H C Fielding, I M Shirley, J Fluorine Chem 45 (1989) 105.