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ON FLUORINATION WITH OXYGEN DIFLUORIDE

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The use of OF_2 as fluorinating agent was described first by Ruff and Merritt [1,2]. We have tried to use this fluoride as a selektive agent and started our investigations with hex(1)-ene (1) and cyclohexene (2). OF_2 was prepared by electrofluorination of water (HF with 3-5% H_2O, 8V, 5mA·cm^{-2}, nickelelectrodes, 45% OF_2 in the anode gas).

The reaction of (1), dissolved in R 11 (-78°C), and OF_2 gives 2-fluorhexanol and hexan(2)-one. The attack of OF_2 leads to the break of C-C-bonds too, and polymer products were obtained. An addition of alkali metal carbonates to the mixture reduces polymerisation. The same results were achieved with (2) under equal conditions. In this case we found 2-fluorcyclohexanol and 2-fluorcyclohexanone. The pure alkenes explode with OF_2 at about -10°C. But in a gas phase reaction (20°C, dilution with N_2) we indentified (GC, IR, MS) the same products as described above. In comparison with this, the fluorination of (1) and (2) with F_2 (-78°C, R 11) does not only give the expected addition, but substitution products, too.

The fluorination of heterocyclic compounds with OF_2 is also possible, e.g. from 6-azauracil 5-fluor-6-azauracil is obtained [3].

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