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## INSERTION OF SULFUR TRIOXIDE INTO C-F BOND

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Various organofluorine compounds containing fluorine atoms in allilic and benzilic positions react with  $SO_3$  similar to perfluoropropene yielding fluorosulfates - products of insertion of  $SO_3$  into C-F bond; reaction conditions are determined by charactiristics of the substituents and their position in the molecule.

Perfluorotoluene and 1,1,2-trichloro-3,3,3,-trifluoropropene react with  $SO_2$  without catalyst:

$$C_{6}F_{5}CF_{3} \xrightarrow{SO_{3}} C_{6}F_{5}CF_{2}OSO_{2}F \qquad 80\%$$

$$CC1_{2}=CC1CF_{3} \xrightarrow{SO_{3}} CC1_{2}=CC1CF_{2}OSO_{2}F \qquad 94\%$$

The interaction of homologues of perfluorotoluene and higher fluoroolefines takes place only in the presence of boron or antimony compounds

$$C_{6}F_{5}CF_{2}CF_{2}CF_{3} \xrightarrow{SO_{3}/[SbF_{5}]} C_{6}F_{5}CF-CF_{2}CF_{3} \xrightarrow{65\%} C_{6}F_{5}CF-CF_{2}CF_{3} \xrightarrow{65\%} C_{6}F_{5}CFCFC1CF_{2}C1 \xrightarrow{58\%} C_{6}F_{5$$

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In some cases the reaction of fluorinated olefinic compounds with sulfur trioxide accomponies by migration of the double bond.

$$C_{6}^{F_{5}CF_{2}CF=CF_{2}} \xrightarrow{SO_{3}} C_{6}^{F_{5}CF=CFCF_{2}OSO_{2}F} 70\%$$

$$(CF_{3})_{2}^{CFOCF_{2}CF=CF_{2}} \xrightarrow{SO_{3}/[B_{2}O_{3}]} (CF_{3})_{2}^{CFOCF=CFCF_{2}OSO_{2}F} 60\%$$

$$C_{3}^{F_{7}CF_{2}CF=CF_{2}} \xrightarrow{C_{3}^{F_{7}CF=CFCF_{2}OSO_{2}F} 40\%$$