PL-12

ADVANCES IN FLUORINATION OF ORGANIC COMPOUNDS WITH SULPHUR TETRAFLUORIDE

Wojciech Dmowski

Institute of Organic Chemistry, Polish Academy of Sciences, 00-961 Warsaw (Poland)

Sulphur tetrafluoride has been known since 1958 as an efficient fluorinating agent for replacing oxygen atoms in carbonyl groups by fluorines. In the past fifteen years a number of new reactions of sulphur tetrafluoride with carbonyl compounds were discovered. These include formation of bis(1,1-difluoroalkyl)ethers from alkanecarboxylic acids and aldehydes. In the reactions with branched aldehydes rearrangements of hydrogen and fluorine atoms and also of the carbon skeleton were observed. Tertiary amides were successfully converted to 1,1-difluoroamines and tertiary formamides to trifluoromethylamines. This last reaction involves simultaneous fluorination of the carbon-oxygen and carbon-hydrogen bonds.

Participation of carbocations in the mechanism of fluorination of carbonyl groups has been proved and a revised mechanism proposed. A reduction-oxydation mechanism for the replacement of formyl hydrogen by fluorine has also been experimentally evidenced.