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A BREAKTHROUGH IN CHEMICAL TECHNOLOGIES OF FORMING THE MULTIPLE BOND WITH FLUORINE ATOMS AND PERFLUOROALKYL SUBSTITUENTS AT IT

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Introduction

At every stage of technical progress the role and direction of fundamental studies, especially of a new class of organic compounds is to a great extent initiated by the society's demands in new materials [1-6].

Fluorine compounds meet such demands in exact way and they can play a significant part in intensification and simplifying the production of lots of products without major reconstruction of existing productions. New technologies based on them appear, they are based on already developed technical base and approaches and on our knowledge as well. The prerequisites for involving these materials into medicine and domestic appliances field have already been created.

The creation of high-tech processes and satisfaction of on-growing demands of experts has become the major goal of late studies. At the same time the fact, that creating of new technologies is impossible without carrying out the fundamental researches allowing obtaining data not only for improving already existing technologies and specifying of offered technical approaches, but for creating new perspective productions in the purpose of broadening the consumers' range is becoming obvious. Having started its development with creation of convenient and economical methods for introducing of fluorine atoms into organic molecules, then having been realized in the series of freons and bio-active compounds, this field of chemistry is always in progress, which is being stimulated by techniques demands [5,6].

In the past years realizing of fluorine organic compounds properties uniqueness had grown and many new directions of their application had appeared. A lot of fluoroorganic compounds have become a subject of commercial production. The introduction of fluorine atoms into organic compounds is of a big scientific and practical interest for creation of new highly effective biologically active compounds and materials of unique properties [7-11].

Perfluoroolefines available and a number of their oligomers, which distinguishing

ability is a pronounced electrophylity are widely used for synthesis of a number of fluorine derivatives [12-15].

These very characteristics of perfluorolefines form the base for one of the fluoroorganic chemistry's directions, including the study of their reactions with nucleophilic reagents, which proved to be effective in both theoretical aspect as it allows looking deep inside into the characteristics of olefine system and practical aspect which makes many fluoroorganic compounds available. The work intended to extend the range of fluorine containing materials and create the technologies and productions of a number of key semi-products based on commercial production of tetrafluoroethylene and hexafluoropropylene is being developed.

That raw materials base allows practical developing of production technology of many necessary fluorine materials. At the same time the actual problem of working out a number of perspective technologies for key inexpensive semi-products used for synthetic organic fluorine chemistry is not being put out sight. However, the price of fluorine materials is rather high, which remains an obstacle for their wide application. At the same time a lot of specialists can't just imagine all of the possibilities for application of that class of compounds and what stands behind the effectiveness of their use. The major attention of this review is paid to the analysis of accumulated experimental material regarding most available and widely used semi-products of tetrafluoroethylene and hexafluoropropylene, which are a starting material for synthesis of many fluorine materials.

The presented review embraces the issues of improving the tetrafluoroethylene production technology, its transforming into hexafluoropropylene, and the considering of perfluoroolefines obtaining methods, of the processes of their isomerization and oligomerization as well.

To be continued