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## LASERS AND FLUORINE CHEMISTRY: A FEW ILLUSTRATIVE STUDIES

R. Bougon

Division d'Etudes de Séparation Isotopique et de Chimie Physique, DPC/SCM, Centre d'Etudes Nucléaires de Saclay, 91191 Gif-sur-Yvette, Cedex (France)

Following a brief survey of the current work on fluorine and lasers, the main results of studies performed in our laboratory concerning laser photochemistry, fluorine generators for chemical lasers and electronic transition gas lasers will be presented.

The laser photochemistry study was achieved using isotopic selective excitation of the  $^{35}\text{ClF}$  molecule and the observed isotopic effect allowed us to obtain information on the photo-induced reaction with sulfur tetrafluoride.

Some tetrafluoroammonium salts which may be considered as potential solid sources of fluorine for chemical lasers, were studied mainly from a thermochemical point of view. Results concerning their decomposition, solid state phase change and resulting formation enthalpy were obtained.

As far as the electronic transition gas lasers are concerned, a highly corrosion resistant experimental set up has been used to study the chemical behavior of halogens or noble gas fluorides under electric discharge regime and to obtain information on the processes involved.

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## FLUORINE CHEMISTRY AND GRAPHITE INTERCALATION COMPOUNDS

Nobuatsu Watanabe

Department of Industrial Chemistry, Faculty of Engineering, Kyoto University, Sakyo-ku, Kyoto, 606 (Japan)

The graphite intercalated by fluorine at a higher temperature is called as graphite fluoride and the molecular formula is expressed as  $(\text{CF})_n$  or  $(\text{C}_2\text{F})_n$ . The special characteristic of the compound is extremely low surface energy which has been found in the course of our investigation on anode effect in fluorine electrolysis. Since then, interest in the compounds has led to the systematic studies on the reaction of fluorine with carbon materials and these studies have clarified the reaction mechanism, chemical composition and crystal structure of graphite fluoride.

At the present time, increasing interest is being shown in the application of the compounds. In this paper, properties of these compounds will be reviewed and emphasis will be placed on the characteristic of the cathodic active mass in lithium organic electrolyte batteries and the application of the low surface energy.