PLENARY 5

SYNTHESES OF NOVEL BIOLOGICALLY ACTIVE ORGANOFLUORINE COMPOUNDS

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New reactions of two important fluorinating agents will be described.

Diethylaminosulphur trifluoride is extremely useful for the conversion of alcohols into alkyl fluorides and the conversion of ketones into compounds containing the difluoromethylene unit[1]. Such transformations have been used in the synthesis of anti-viral agents[2]. Problems can arise when the DAST reaction is conducted on polyfunctional molecules. It is known that an azide moiety can get involved in neighbouring group participation[3]. We have found that adjacent amino-groups and methoxymethyloxy groups can also participate in a DAST reaction. Indeed the participation of benzyloxy and trialkylsilyloxy groups in a reaction employing DAST was used as one of the key steps in the transformation of the bicycloheptanone derivative into a precursor of a potent thromboxane agonist.

Triethylamine trishydrofluoride is also an important reagent in organo-fluorine chemistry. We have found that this reagent reacts with tricyclo-[3.2.0.0]heptan-6-ones by way of a Michael-type reaction. The synthesis of 7-fluorobicyclo[2.2.1]heptanones in this manner is the important step in the preparation of some biologically active carbocyclic nucleosides. Ring opening reactions of various tricycloalkanones containing a cyclopropyl ketone moiety have been observed.

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2 S.M. Roberts in P.R. Leeming (ed.) 'Topics in Medicinal Chemistry', Roy. Soc. Chem., Dorchester, 1988.
3. K.C. Nicolaou, T. Ladduwahetty, J.L. Randall, and A. Chucholowski, J. Am. Chem. Soc., 1986, 108 (1986) 2466.