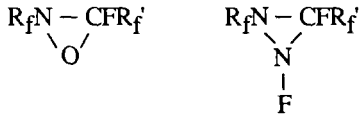
RECENT DEVELOPMENTS IN THE CHEMISTRY OF PERFLUORINATED THREE-MEMBERED HETEROCYCLES

D. D. DesMarteau and V. A. Petrov

H. L. Hunter Chemistry Laboratory, Clemson University, Clemson, South Carolina 29634-1905 (USA) and INEOS, Academy of Sciences USSR, Moscow 117813 USSR

Perfluoro three-membered heterocycles containing two heteroatoms are a rare but interesting class of reactive compounds. Their availability has been severely limited by the lack of suitable preparative methods and the availability of the necessary precursors. Recently we have developed excellent routes for the synthesis of a variety of new oxaziridines and diaziridines of the type



The oxaziridines are obtained by the oxidation of $R_fN{=}CFR_f'$ with m-chloroperbenzoic acid. The diaziridines are formed by the dimerization of $R_fCF{=}NF$, obtained from $(R_f)NF$ in a new reaction, followed by cyclization of the dimer with fluoride ion.

Details of these reactions will be presented and novel reaction chemistry of the heterocycles will be discussed. Many reactions are quite remarkable and unexpected based on our previous work in this area.