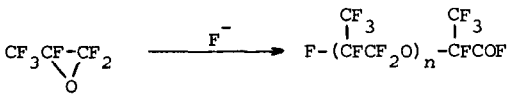
O_{81}

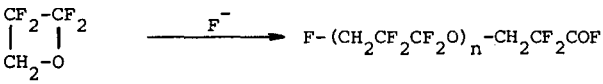
RING-OPENING OLIGOMERIZATION OF 2,2,3,3,-TETRAFLUORO-OXETANE AND DIRECT FLUORINATION OF THE OLIGOMER

Takashi Tozuka* and Yohnosuke Ohsaka
Research and Development Department, Chemical Division, Daikin Industries, Ltd., 1-1 Nishi Hitotsuya, Settsu-shi, Osaka, 566 (Japan)

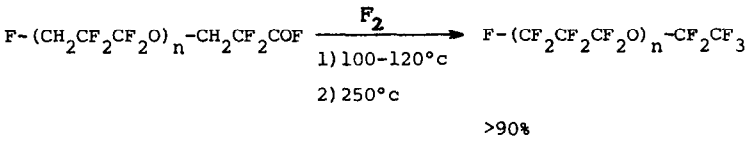
Ring-opening oligomerization of perfluoropropene oxide initiated by fluoride ion to give a useful perfluoro-polyether is well known, i.e.



There are, however, few known other successful studies of oligomerization of fluoro-cyclic-ethers. Interestingly, 2,2,3,3-tetrafluoro-oxetane was also found to be readily oligomerized in the presence of fluoride ion to give a new polyether , i.e.



Furthermore, the oligomer was found to be directly fluorinated by elemental fluorine under rather vigorous conditions to give a new linear type of perfluoroalkylpolyether with few decomposition products, i.e.



This novel perfluoropolyether has lower kinematic viscosity, pour point and glass transition point with higher viscosity index than the other perfluoropolyethers of propylene oxides containing a comparable molecular weight, presumably due to its linear chemical structure.