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SYNTHESIS OF SF_5O-SUBSTITUTED FLUOROCARBONS AND COMPARISON TO SOME SeF_5O- AND TeF_5- ANALOGS

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Addition reactions of SF_5OCl with unsymmetrical fluoroethylenes and SF_5OF with 1,2-dichloro-1,2-difluoroethylene result in the formation of SF_5O-substituted fluorocarbons.

$$SF_5OCl + CF_2{=}CFH \longrightarrow SF_5OCF_2CFHCl$$

$$\left.\begin{array}{l} SF_5OCl + CF_2{=}CFCl \\ SF_5OF + ClCF{=}CFCl \end{array}\right\} \longrightarrow SF_5OCFClCF_2Cl$$

$$SF_5OCl + CF_2{=}CFBr \longrightarrow SF_5OCFBrCF_2Cl + SF_5OCF_2CFBrCl$$

77% 23%

These reactions can be difficult to control and yields were in the range of 44-60% for the hypochlorite systems. Surprisingly the hypofluorite example produced a 77% yield of the adduct. All of these new compounds are colorless mobile fluids which have been characterized by vapor pressure and vapor density measurements as well as spectroscopically. Comparison will be made with fluorocarbons containing the related Group VI ligands, SeF_5O- and TeF_5O-, which have been prepared by both similar and alternate synthetic routes.