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## NOVEL FLUORINATE NON-METAL COMPOUNDS DERIVED FROM STRONG OXIDIZERS

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Nearly all fluorochemicals are derived indirectly from  $\text{CaF}_2$ , which is the main fluoride source for the production of HF. From HF, the vast majority of all known fluorinated compounds can be synthesized without recourse to elemental fluorine. However, the syntheses of many interesting and important compounds do require elemental fluorine or strong oxidizers requiring elemental fluorine for their syntheses. The latter category has been the focus of our research in fluorine chemistry.

Some examples of chemistry which begin with elemental fluorine will be presented. These will include reaction sequences which involve the initial transformations; 1.  $\text{F}_2$  to O-F to O-O, 2.  $\text{F}_2$  to Cl-F to O-Cl, and 3.  $\text{F}_2$  to Cl-F to N-Cl. These sequences are the basis for the synthesis of a variety of novel fluorochemicals.

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## STABILIZING HIGH-OXIDATION STATE CATIONS

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Cations of high electron affinity (e.g.  $\text{Xe}^+$ ,  $\text{ReF}_6^+$ ,  $\text{C}_6\text{F}_6^+$ , and highly oxidized graphite) require anions of high ionization potential for the salt containing the cation to be stable with respect to electron transfer from anion to cation. But even with anions of very high ionization potential (such as  $\text{SbF}_6^-$ ) transfer of  $\text{F}^-$  to the cation may occur. Electron-oxidizer salts of  $\text{O}_2^+$ ,  $\text{KrF}^+$ ,  $\text{C}_6\text{F}_6^+$  can be exploited to generate thermodynamically unstable salts particularly if the counter anions are very weak fluorobases. Although hexafluorides such as  $\text{IrF}_6$  and  $\text{PtF}_6$  are powerful electron oxidizers their  $\text{MF}_6^-$  ions give up  $\text{F}^-$  to strong acids such as  $\text{ReF}_6^+$ . Some recent fluoride-ion and electron affinity evaluations will be included in the survey.