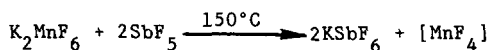


## CHEMICAL GENERATION OF ELEMENTAL FLUORINE

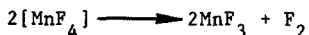
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The feasibility of generating elemental fluorine by purely chemical means is critically reviewed. Although pursued for at least 173 years, no practical methods had been known until now which allowed the generation of elemental fluorine in significant yields and at substantial pressures from starting materials which do not require the prior use of fluorine for their syntheses. In this paper, the first purely chemical synthesis of elemental fluorine in significant yield and concentration is reported. This synthesis is based on  $K_2MnF_6$  and  $SbF_5$ , two starting materials which have been known since 1899 and 1906, respectively, and which can be prepared in high yield from HF solutions. In a simple displacement reaction,



thermodynamically unstable  $MnF_4$  is generated which irreversibly decomposes at the reaction temperature to a lower fluoride and elemental fluorine.



The elemental fluorine, thus formed, was measured volumetrically and identified by its reaction with mercury.