

TETRAFLUOROETHYLENE AND HEXAFLUOROACETONE: NEW CHEMISTRY WITH OLD REAGENTS

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A key reagent in fluorine chemistry is tetrafluoroethylene. Its reaction with elemental sulfur was reported [1]. Treatment of the resulting 1,2,3-trithiolane and 1,2,3,4-tetrathiane with elemental chlorine yields $\text{ClSCF}_2\text{CF}_2\text{SCl}$ as well as $\text{ClSO}_2\text{CF}_2\text{CF}_2\text{SO}_2\text{Cl}$. These halides are versatile starting materials. The reaction of $\text{ClSCF}_2\text{CF}_2\text{SCl}$ with ketones, alkynes, nitriles, amines, ureas and sulfonamides affords five-, six- and seven-membered heterocycles.

Hexafluoroacetone (HFA) is easily available by treating the corresponding chloro compound with hydrogen fluoride. The reaction of HFA with $(\text{SCN})_2$, $\text{Hg}(\text{SCN})_2$ or $\text{Hg}(\text{CN})_2$ yields cyclo addition products. Their chemistry is discussed. The compounds were characterized by nmr and X-ray techniques.

1 C.G. Krespan, W.R. Brasen, J. Org. Chem., 27 (1962) 3995