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PENTAFLUOROXYTELLURIUM SUBSTITUTED FLUOROCARBONS

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Pentafluoroxytellurium substituted fluorocarbons (TeF_5OR_f), a previously unknown class of compounds, have been prepared by the reactions of either TeF_5OCl or TeF_5OF with fluoroolefins. The addition products are low volatility colorless fluids. Surprisingly, the hypofluorite reacts more controllably and in higher yield (70-85%) than the hypochlorite (20-30%), wherein by-product forming interactions predominate. Addition of TeF_5OF to the double bonds of unsymmetrical olefins results in isomeric products. Details of the syntheses and the characterization of these compounds will be presented. A comparison of the properties of the perfluorocyclopentene adducts $\text{XF}_5\text{OC}_5\text{F}_9$ will be made for the series $X = \text{S}, \text{Se}, \text{Te}$.

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SELENIUM-NITROGEN AND TELLURIUM-NITROGEN COMPOUNDS

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Te-N and Se-N compounds are notoriously unstable. However, starting with $\text{H}_2\text{N}-\text{TeF}_5$ or $(\text{CH}_3)_3\text{Si}-\text{NH}-\text{TeF}_5$ a variety of tellurium nitrogen compounds have been prepared, such as $\text{F}_5\text{TeN}=\text{SF}_2$, $\text{F}_5\text{Te}-\text{N}=\text{PF}_3$, $\text{F}_5\text{Te}-\text{NCl}_2$ a.o. A crystal structure is given of $\text{F}_5\text{Te}-\text{N}=\text{WCl}_4$, and an electron diffraction structure of $\text{F}_5\text{Te}-\text{N}=\text{C}=\text{O}$. Whereas $\text{F}_5\text{S}-\text{N}=\text{C}=\text{O}$ has a similar structure, $\text{F}_5\text{Se}-\text{O}-\text{C}\equiv\text{N}$ appears as cyanate! The first selenium-nitrogen double bond systems have been prepared with $\text{F}_5\text{Te}-\text{N}=\text{SeCl}_2$ and $\text{F}_5\text{Te}-\text{N}=\text{SeF}_2$.