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LIGAND PROPERTIES OF THE -$OSeF_5$ AND -$OTeF_5$ GROUPS IN PSEUDO-TRIGONAL-BIPYRAMIDAL MOLECULES

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The compounds $F_2Te(OTeF_5)$ and $F_2Se(OTeF_5)_2$ are generated by ligands exchange starting with TeF_4 (SeF_4) and $B(OTeF_5)_3$.

$F_2Se(OSeF_5)_2$ has been prepared by reactions of $Hg(OSeF_5)_2$ and $SeCl_4$

$$SeCl_4 + 2Hg(OSeF_5)_2 \xrightarrow{-2HgCl_2} \{Se(OSeF_5)_4\} \longrightarrow$$

$$F_4Se\begin{smallmatrix} O \\ \diagup \quad \diagdown \\ O \end{smallmatrix}SeF_4 + F_2Se(OSeF_5)_2$$

All three compounds are structurally related to SeF_4 and TeF_4. There is a pair of axial and a pair of equatorial ligands and a no-bonding electron pair.

The structures have been investigated by ^{77}Se and ^{125}Te n.m.r. spectroscopy. All three materials have the expected pseudo-trigonal-bipyramidal structures with axial -$OSeF_5$ (-$OTeF_5$) ligands, and the fluorine ligands in equatorial positions.

This behaviour is discussed in terms of the extreme electronegativity of these ligands.