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INTERACTION OF COVALENT FLUORIDES AND IMIDODIPHOSPHORIC ACID TETRAPHENYL ESTER

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The weak acid imidodiphosphoric acid tetraphenylester, $(PhO)_2P(O)\text{-}NH\text{-}P(O)(OPh)_2$, LH, is capable to act as bidentate ligand. With M(II) and M(III) cations it forms neutral chelate complexes, in which the coordination of the ligand occurs through the two phosphoryl oxygen atoms.[1-3]. Covalent fluorides such as TaF_5 and TiF_4 react with this ligand in its neutral as well as in its anionic form. We have been able to prove the formation of the complexes $(TaF_5)_2LH$, TaF_5LH, TaF_5L^-, TiF_4LH, and TiF_4L^- by means of ^{19}F-n.m.r. spectroscopy. Additional complexes formed by substitution of fluoride are TaF_4L, TaF_3L_2 and TiF_2L_2. Among them TaF_3L_2 and TiF_2L_2 seem to be the most stable complexes. They can be obtained exclusively at high ligand concentrations. The relations between the structure of the octahedral complexes and n.m.r. data established by Il'in and Buslaev [4] can be confirmed.

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