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# SALTS OF SULFANE-α,ω-BIS(FLUORODITHIOPHOSPHORIC ACIDS)

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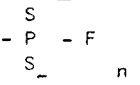
In aqueous medium $P_4S_{10}$ reacts with sodium fluoride yielding sodium difluoropentathiodiphosphate, $Na_2[P_2S_5F_2]$[1].

It was found that in acetonitrile sulfur-rich phosphorus sulfides (the S:P ratio varying from 11:4 to 16:4) react with fluoride under formation of alkali sulfane-α,ω-bis(fluorodithiophosphates) of the general formula 1



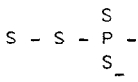
1

n = 2-7

The higher the sulfur content of the sulfur-rich phosphorus sulfides the higher are the yields of sulfane derivatives.

These sulfane-α,ω-bis(fluorodithiophosphates) are identified by 19 F and 31 P NMR spectroscopy.

For the trisulfane derivative 2



2

long range couplings over six bonds are observed.

These results may be explained by the assumption of a substitution of S-atoms in the P-S-P bridges of the adamantane-like $P_4S_{10}$ molecule by $S_n$-units in the sulfur-rich phosphorus sulfides.

On the other side solutions of alkali pentathiodifluorodiphosphates in $CH_3CN$ react with sulfur also to a mixture of compounds of type 2. Therefore the nucleophilic degradation of $P_4S_{10+m}$(m=1-5) with fluorides do not allow definite conclusions about the molecular structure of the starting compounds.

1 H.W.Roesky, N.F.Tebbe, E.L.Muetterties, J.Am.Chem.Soc.89(1967) 1272.