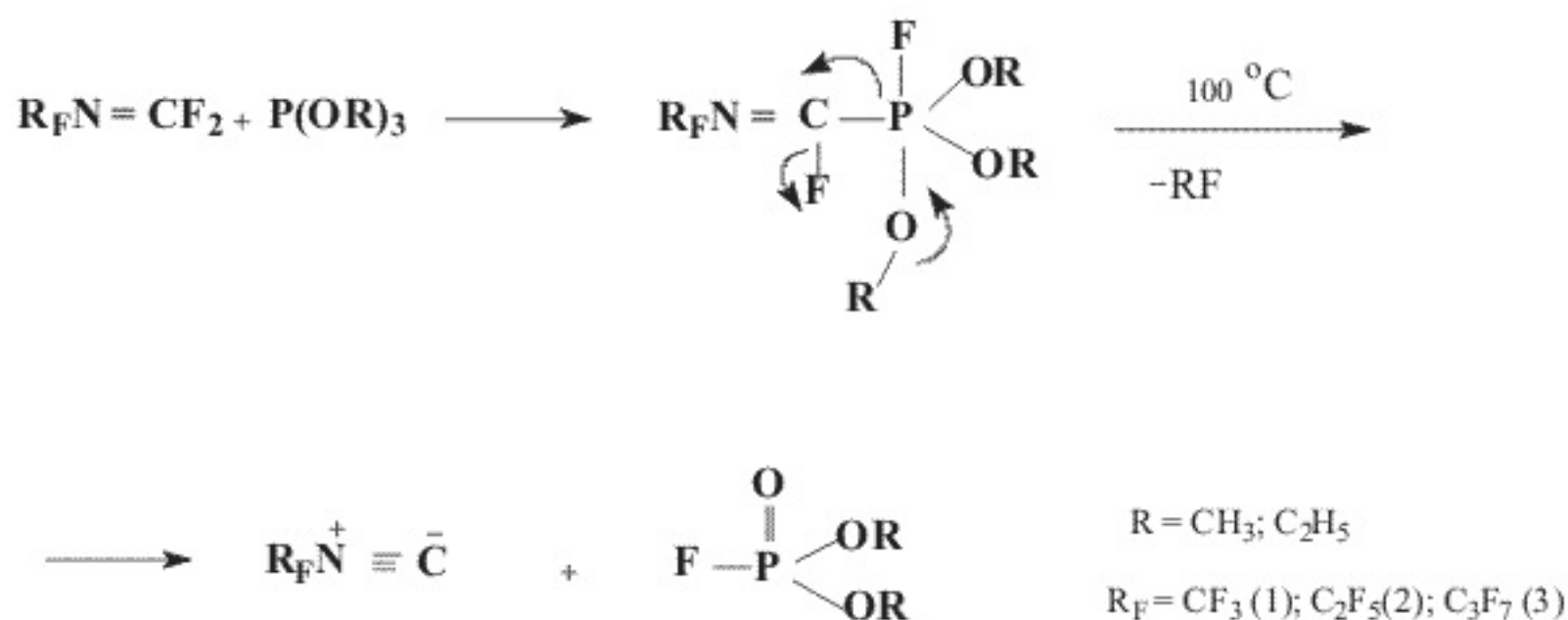


PERFLUOROALKYLISONITRILES

A.F.Gontar

A.N.Nesmeyanov Institute of Organoelements Compounds RAS. 119991, Vavilova str.28, Moscow
e-mail: gontar@ineos.ac.ru

It has been found that the reaction of fluoroazaalkenes ($R_FN=CF_2$) with trialkylphosphites trialkylperfluoroalkylfluorophosphoranes that may be used without isolation in individual perfluoroalkylisonitriles (1-3) unavailable earlier.



Experimental

Trifluoromethylisonitrile $CF_3-N=C$ (1)

Trimethylphosphite (12.4 g, 0.1 mol) is placed in a four-neck flask fitted with a thermometer, and pipes connected with a cold trap cooled to $-120^\circ C$. The flask is cooled to a temperature of $-78^\circ C$ and solid carbon dioxide and perfluoro-2-azapropene (13.3g, 0.1mol) let pass at stirring. Then as the reaction mass reaches room temperature the flask is heated on a boiling water bath to $85-90^\circ C$.

The entrapped products are fractionated in a low temperature still. There is produced 7.5g of product at a temperature from -83 to $-81^\circ C$. The yield is 79%.

Found, %: C, 24.93; N, 14.52; MWt 94.8

C_2NF_3 Calculated, %: C, 25.26; N, 14.73; MWt 95.0

Pentafluoroethylisonitrile $C_2F_5N=C$ (2)

Analogously to (1) from trimethylphosphite (12.4g, 0.1 mol) and perfluoro-2-azabut-1ene (1 pentafluoroethylisonitrile (10.6g); BP -42°C . The yield is 73.2%.
Found, %: C, 25.13, N, 9.57; MW 143.8.
 C_3NF_5 Calculated, %: C, 24.83; N, 9.66, MW 145.0.

Heptafluoropropylisonitrile $\text{C}_3\text{F}_7\text{N}=\text{C}$ (3)

Similar to (1) from trimethylphosphite (12.4g, 0.1 mol) and perfluoroaza-2-p perfluoropropylisonitrile (15.9g); BP -25°C . The yield is 70.9%.
Found, %: C, 24.13; N, 7.29; MW 196.3
 C_4NF_7 Calculated, %: C, 24.62; N, 7.18; MW 195

References

1. Makarov S.P., Englin M.A., ZhOKh, 1967, t. 37, s. 2781
2. Banks B.E., Hasseldine R.N., J. Chem. Soc. 1969, (C), p. 2119,