

## Polarity and Polarisability of 3,3-Dimethyl-1-phosphabutylene

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The progress attained in the field of onecoordinated phosphorus compounds was summarised recently in review (Usp.Chim., 1985, v.54, p.418). Formerly we have been analysed (Izv.Akad.Nauk USSR, Ser.chim., 1984, p.415) the polarity of  $P\equiv C$  triple bond in phosphalkynes on the grounds of literary date on dipole moments defined by microwave spectroscopy. In this work the dipole moment of 3,3-dimethyl-1-phosphabutylene (I) was determined in cyclohexane solution:  $\mu_{\text{exp.}} = 1,24 \pm 0,05 \text{ D}$ ,  $\lambda = 1,250$ ,  $\gamma = 0,078$ ,  $P_0 = 31,876 \text{ cm}^3$ . Analysis of all known up to date experimental date on polarity of phosphalkynes brings us to the conclusion about small polarity of  $P\equiv C$  triple bond and slight sensitivity of this value ( $0,7 \pm 0,2 \text{ D}$  towards carbon atom) to varying of substituent at  $C_{\text{sp}}$ -atom. We can only note slight tendency of the increasing  $m(P\equiv C)$  in the phosphalkynes  $RC\equiv P$  ( $R=H, CH_3, F, CH=CH_2, CN, tBu$ ) with the growth of -I - effect of substituent R.

Onecoordinated phosphorus compounds have not been investigated previously by means of Kerr effect, an anisotropy of polarizability of  $P\equiv C$  bond was unknown. We determined experimental molar Kerr constant (I) in cyclohexane solution ( $104 \cdot 10^{-12} \text{ e.s.u.}$ ). Molecular anisotropy of polarizability ( $5,30 \text{ \AA}^3$ ) of (I) is determined mainly by anisotropy of  $P\equiv C$  bond ( $5,31 \text{ \AA}^3$ ).