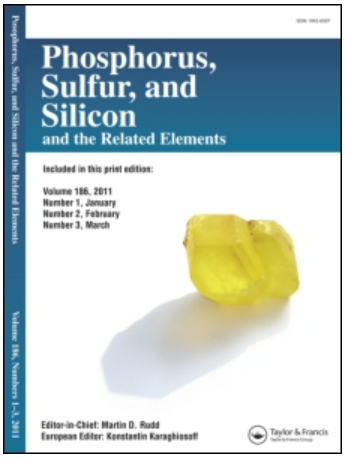

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Synthesis and Reactivity of Hydrolysis Products of Cyclic Phosphites with Amino Substituents

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SYNTHESIS AND REACTIVITY OF HYDROLYSIS PRODUCTS OF CYCLIC PHOSPHITES WITH AMINO SUBSTITUENTS

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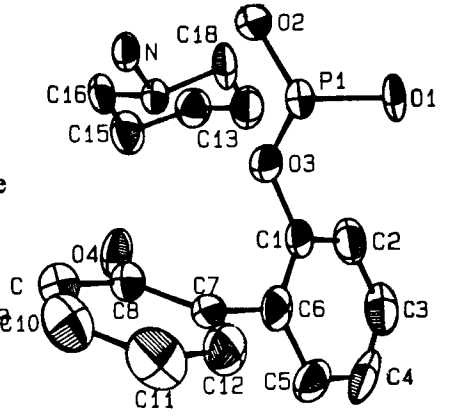
Abstract. Hydrolysis of several cyclic aminophosphites are discussed and compared with that of cyclic chloro/ phenoxy phosphites. An X-ray structure of a hydrolysis product, $(C_6H_{11}NH_3)^+O^-P(O)(H)(2,2'\text{-}OC_6H_4\text{-}C_6H_4OH)$ has been determined.

The cyclic phosphite $(C_6H_{11}NH)P\{2,2'\text{-}O_2(C_6H_4)_2\}$(1) undergoes hydrolysis in aqueous medium to afford the acyclic salt $(C_6H_{11}NH_3)^+O^-P(O)(H)(2,2'\text{-}OC_6H_4\text{-}C_6H_4OH)$ (2) which is characterized by ^1H and ^{31}P NMR, elemental analysis as well as a single crystal X-ray structural analysis. Compound 2 [m.p. 180°C; ^{31}P NMR : 2.98 ppm] upon thermal treatment loses the cyclohexyl amino group to lead to a phosphite with a P-H group [^1J (P-H) = 732 Hz]. A similar feature is observed for the amine salt $(C_6H_{11}NH_3)^+O^-P(O)(H)(OCH_2CMe_2\text{-}CH_2OH)$; in this case, however,one of the products is identified as the cyclic phosphite (H) (O) $P(OCH_2CMe_2CH_2O)$ which is characterized by its Pudovik product with p-chlorobenzaldehyde.[1]

Although the phenoxy compound $(PhO)P(OCH_2CMe_2CH_2O)$ hydrolyses to the ring (phosphorinane) preserved product $H(O)P(OCH_2CMe_2CH_2O)$,[2] the oxinate $(NC_9H_6O)P(OCH_2CMe_2\text{-}CH_2O)$ leads to the ring opened product $(C_9H_6ONH^+)O^-P(O)(H)(OCH_2CMe_2\text{-}CH_2OH)$.



Molecular structure of 2; H atoms not shown. Selected distances (Å) and bond angles (°): P1-O1 1.482; P1-O2 1.471 ; P1-O3 1.589; P-H 1.33; O1...O4 2.71; O1-P1-O2 119.8; O1-P1-O3 110.6; O2-P1-O3 104.3.

REFERENCES:

1. S. SELVI, M. Phil. Dissertation, University of Hyderabad (1994).
2.M. A. SAID, K. C. KUMARA SWAMY, M. VEITH and V. HUCH (submitted)