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Molecular Structure of Phosphinidene Phosphates

Dieter Weber^a; Günther Burget^a; Karl-Heinz Zirzow^a; Hans Georg Von Schnering^a; Alfred Schmidpeter^b

^a Max-Planck-Institut für Festkörperforschung, Stuttgart ^b Institut für Anorganische Chemie der Universität München, München

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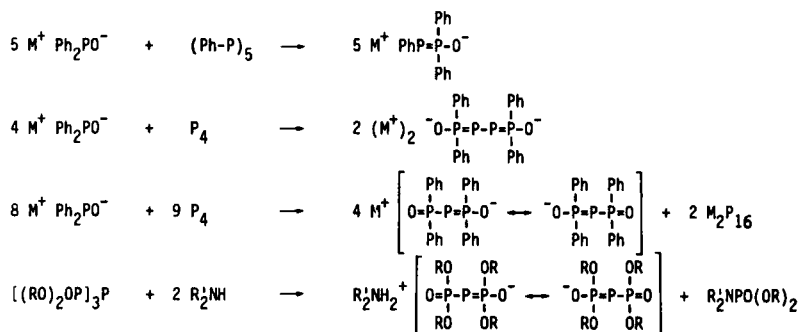
Molecular Structure of Phosphinidene Phosphates

Dieter Weber*, Günther Burget, Karl-Heinz Zirzow, Hans Georg von Schnering and Alfred Schmidpeter

Max-Planck-Institut für Festkörperforschung
Heisenbergstrasse 1, D-7000 Stuttgart 80

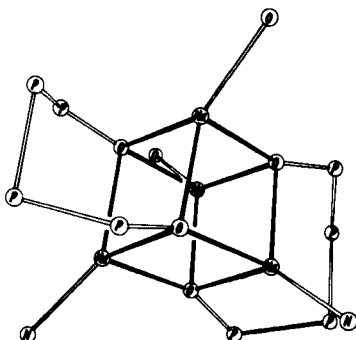
Institut für Anorganische Chemie der Universität München
Meiserstrasse 1, D-8000 München 2

Alkalimetal diphenylphosphinites degrade $(\text{Ph-P})_5$ and P_4 to give anions containing a chain of 2, 3 or 4 four- and two-coordinated phosphorus atoms. Representatives of the chain with two four-coordinated and one two-coordinated P atoms became first available from the aminolysis of tris(phosphoryl)phosphides¹.



The products might be understood as phosphoryl-phosphides with an anionic charge concentrated at the two-coordinated P atom corresponding with the easy addition of two $\text{M}(\text{CO})_5$ groups¹. X-ray structure analyses show however the cations to be primarily (in the case of $\text{R}'_2\text{NH}_2^+$) or exclusively (in the case of alkalimetal cations) coordinated to the oxygen of the phosphoryl unit; P-P as well as P-O bond lengths are in accordance with the phosphinidene-phosphate formulae shown.

Anions with two phosphoryl ends chelate the alkalimetal cation, whereas, in the case of $\text{R}'_2\text{NH}_2^+$ there is only a weak interaction between anion and cation. The coordination of the alkalimetal ion is completed by dimerization and by addition of acetonitrile and tetrahydrofurane. For $\text{Na}_2\text{P}_2(\text{Ph}_2\text{PO})_2$ a rather perfect Na_4O_4 cubane skeleton is formed with an unusual coordination.



¹D. Weber, G. Heckmann, E. Fluck, Z. Naturforsch. B 31 (1976) 81.

D. Weber, K. Peters, H.G. v. Schnering, E. Fluck, *ibid.* B 38 (1983) 208.

D. Weber, E. Fluck, K. Peters, H.G. von Schnering, *ibid.* B 37 (1982) 594.