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Phosphorus, Sulfur, and Silicon and the Related Elements

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title~content=t713618290>

PH-Functional Methylenbisphosphanes $RR'P-CH_2-PRH$ ($R' = R, H$) - Reactive Bridging Ligands with A Small Bite Angle

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To cite this Article Hasselkuß, G. , Hietkamp, S. , Knüppel, P. C. and Stelzer, O. (1987) 'PH-Functional Methylenbisphosphanes $RR'P-CH_2-PRH$ ($R' = R, H$) - Reactive Bridging Ligands with A Small Bite Angle', Phosphorus, Sulfur, and Silicon and the Related Elements, 30: 3, 732

To link to this Article: DOI: 10.1080/03086648708079226

URL: <http://dx.doi.org/10.1080/03086648708079226>

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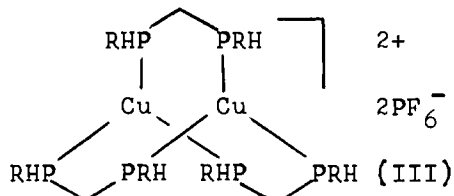
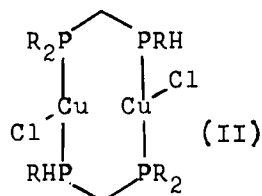
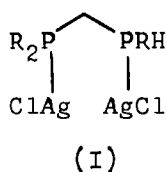
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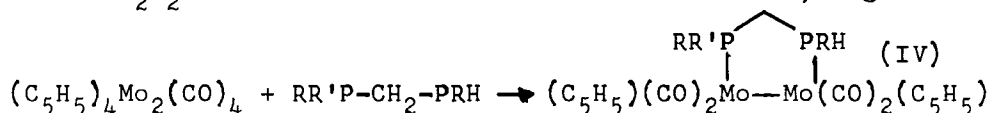
PH-Functional Methylenebisphosphanes $RR'P-CH_2-PRH$ ($R' = R, H$) - Reactive Bridging Ligands with A Small Bite Angle

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PH-functional methylenbisphosphanes $RR'P-CH_2-PRH$ ($R' = R, H$) are versatile ligands in coordination chemistry. They may oxidatively add with their PH-bonds to transition metals in low oxidation numbers and form cluster compounds with P-C-P-bridges. P-C-P-bond cleavage reactions afford phosphinidenes $\langle PR \rangle$ (through a formal 1,2-hydrogen shift from phosphorus to the CH_2 -group, $RR'P-CH_2-PRH \rightarrow RR'P-CH_3 + \langle PR \rangle$) which are incorporated into the oligometallic cluster framework formed. As reactive bidentate donors with a small bite angle and low steric demand they also may bridge isolated and directly bonded transition metals in various manners (I - III), e.g.



They add to $M \equiv M$ -multiple bonds to give binuclear complexes with a M_2P_2C five membered PH-functional framework, e.g.



The structure of compounds of type I - IV will be discussed using 1H -, ^{13}C -, ^{31}P -nmr data and x-ray structures. Reactions at the PH-bonds of the ligands $RR'P-CH_2-PRH$ in complexes of type I - IV will be reported.