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## Phosphorus, Sulfur, and Silicon and the Related Elements

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### Correlation Between Chemical Shifts ( $^{31}\text{P}$ ) and Steric Parameters of Phosphametallacycloalkanes

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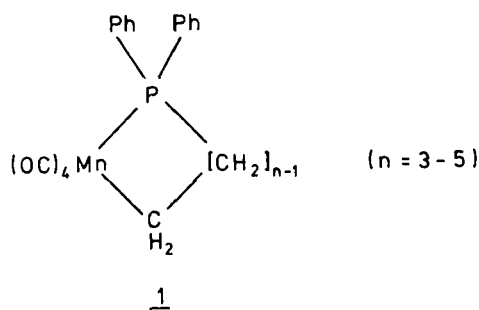
# Correlation Between Chemical Shifts ( $^{31}\text{P}$ ) and Steric Parameters of Phosphametallacycloalkanes

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The X-ray structures of the phosphametallacycloalkanes 1<sup>1)</sup>



were investigated to understand the anomalous chemical shift behavior of the phosphorus incorporated in the ringsystem. The  $^{31}\text{P}$  chemical shifts could not be related to bond angles and to Tolman angles. An electronic contribution to the  $\delta\text{P}$  value could be excluded, while the torsional angle effect proved to be the dominant factor.

1) E. Lindner and R. Fawzi, J. Organomet. Chem. **299**, C47 (1986).