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Synthesis and Properties of Pentacoordinate Phosphorus Compounds Containing a Pentacoordinate Silicon Atom

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Synthesis and Properties of Pentacoordinate Phosphorus Compounds Containing a Pentacoordinate Silicon Atom

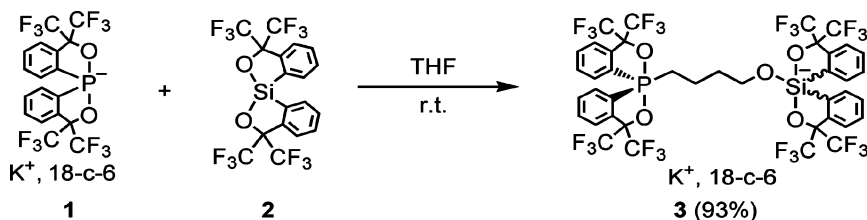
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The first hypervalent compounds bearing both a pentacoordinate silicon atom and a pentacoordinate phosphorus atom were synthesized by the cooperative three-component reaction of a phosphoranide a silane, and THF.

Keywords Hypervalent; pentacoordinate; silicon; phosphorus

Hypervalent compounds bearing both pentacoordinate phosphorus and silicon atoms are attractive due to their having two reactive sites. To the best of our knowledge, however, such a compound has never been reported. We report here syntheses and properties of some of these compounds. Reaction of phosphoranide **1**¹ and silane **2**², both of which have two Martin ligands, in THF gave compound **3** bearing both pentacoordinate phosphorus and silicon atoms bridged by the ring-opened THF unit (Scheme 1). The structure was identified by the NMR and mass spectra. Compound **3** is the first example of such a phosphorane. Compound **3** was obtained as a mixture of two diastereomers because of the existence of chiral pentacoordinated phosphorus and silicon atoms.



SCHEME 1

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