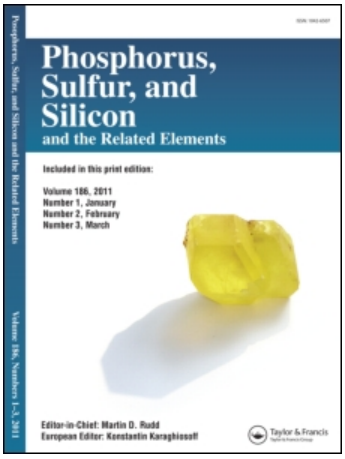

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Reactive Bis(cyclopentadienyl)niobium Moiety: Synthesis of the First Niobium Phosphorus Ylid Complexes

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Reactive Bis(cyclopentadienyl)niobium Moiety: Synthesis of the First Niobium Phosphorus Ylid Complexes

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Phosphorus ylides are known to form σ-metal-carbon bonds of unusual stability. Bis(cyclopentadienyl)niobium derivatives offer a general synthetic approach to niobium phosphorus ylide complexes, the first to be reported.

The reaction between $(\eta^5\text{-Cp})_2NbH_3$ and trimethylphosphorane, for instance, leads to the selective and unexpected formation of $\{H_2Nb|\mu\text{-}(CH_2)_2PMe_2|_2\}_2$, which belongs to the small class of complexes having hydride and phosphorus ylide ligands in the coordination sphere. The high affinity for the metal of alkyl groups bearing a phosphorus atom in β position, and the unusual lability of the $(\eta^5\text{-Cp})_2Nb$ moiety, are further illustrated by the reaction between $(\eta^5\text{-Cp})_2NbCl_2$ and lithiated ylides, giving $\{NbCl_3|(CH_2)_2PPh_2|\}_2$ and $\{NbCl_2|(CH_2)_2PPh_2|_2\}_2$.

Various aspects of the reactivity of these compounds (methylene transfer, reduction, metathesis, ...) will be discussed.