

Poster Presentation

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From Neutral to Ionic Species: Studies of Li...P(SiMe₃)-PtBu₂ Complexes

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The alkali and alkaline earth phosphanides have already been intensively studied, nonetheless there are only a few reports on the alkali metal diphosphanides, on their structural properties and their synthetic use as building blocks for the synthesis of phosphorus-rich compounds and, in particular, transition-metal complexes. This study extends the so far small family of lithium diphosphanides with the series of Li(L)_nP-(SiMe₃)-PtBu₂, where L = THF, n = 0–3; L = TMEDA or 12-crown-4, n = 2. The coordination numbers of the Li ions are in the range of two to eight in the investigated compounds. There is a clear correlation between the Li-P distance and the coordination number of the Li atom. The higher the coordination number of the Li atom, the longer the Li-P distance is. Coordination numbers of four or higher lead to ionic structures. The influence of the space requirement of the phosphorus substituents on the Li-P bond length should also be taken into account especially in the case of coordination number two. Eight-membered ring structures are realized when the formation of four-membered rings is prevented by sterically demanding substituents. This work is a contribution to the fine tuning of structures by donor molecules and substituents [1].

[1] E. Sattler, E. Matern, A. Rothenberger, et al, *Chem.* 2014, 221–232.

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