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Thermodynamically and Kinetically Controlled Metallation Reactions on Aminomethylphosphines

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The reaction of different substituted dimethylamino methyl phosphines with strong bases, and the following reactions of a number of carbanions obtained, have been investigated.

The deprotonation of $\text{Me}_2\text{CH}_2\text{PPh}_2$ with different bases under various reaction conditions leads to the formation of α - or ortho-metallated derivatives.



Bis(dimethylamino methyl)phenyl phosphine e.g. was found to be α -metallated by the treatment with LiBu in high yields after a short reaction time, whereas the ortho-metallated product is observed after a longer time.

The results suggest that α -deprotonated intermediates are formed by the reaction, but their high basicity leads very quickly to the products being thermodynamically more stable.

As it is shown the intermediates are valuable building blocks for the synthesis of functional substituted phosphorus compounds.