

Directed Synthesis and Chemistry of Unsymmetric Dicationic Diboranes and Their Use in Frustrated Lewis Pair-like Chemistry

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Frustrated Lewis Pairs (FLPs) have been intensively investigated in the past years due to their intriguing ability to activate small molecules.^[1] So far, no FLPs based on dicationic diboranes with two B^{II} atoms that are engaged in direct B–B bonding have been realized. Here, we report the first glimpse on the FLP-like chemistry with unsymmetrically substituted dicationic diboranes. Reaction of the electron-rich ditriflate-diborane B₂(hpp)₂(OTf)₂ with phosphino-pyridines leads to triflate elimination and formation of dicationic diboranes with new B–N and B–P bonds. Steric constraints lead to a delayed B–P bond formation in the case of 2-PyCH₂P^tBu₂, allowing intervention in the process (see Figure 1). A test reaction with an aldehyde demonstrates the applicability of this intermediate in FLP-like chemistry.

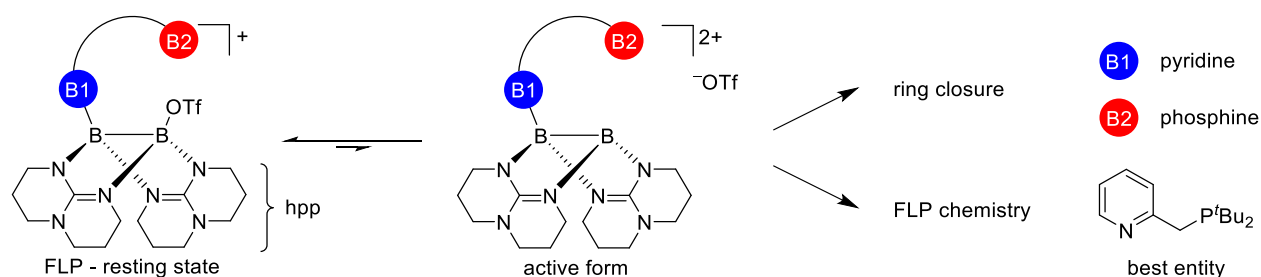


Figure 1. New FLP-like chemistry with a dicationic diboron intermediate.^[2]

References:

[1] For a recent review, see for example: J. Lam, K. M. Szkop, E. Mosaferi, D. W. Stephan, *Chem. Soc. Rev.* **2019**, 48, 3592–3612.

[2] L. Kistner, D. Kowatsch, A. Marz, E. Kaifer, H.-J. Himmel, *Chem. Eur. J.* **2022**, 28, e202104016 (1–17).

