

Transition Metal Complexes of Diborane(4/6) and Diborene(2)

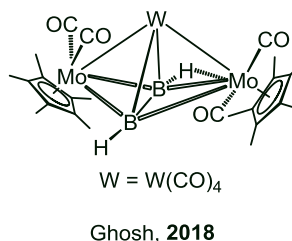
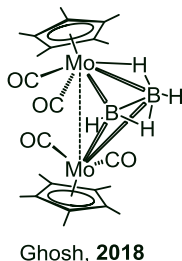
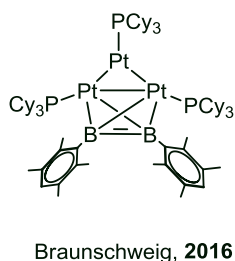
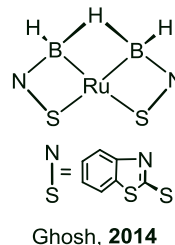
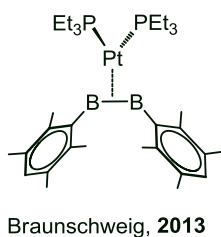
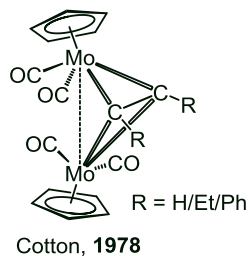
Sundargopal Ghosh

Department of Chemistry, Indian Institute of Technology Madras, Chennai 600 036, India

Email: sghosh@iitm.ac.in

ABSTRACT

The field of transition metal boron chemistry that signifies the compounds with highest vertices to single boron has experienced rebirth during the past several decades. Amid the several boranes known, the chemistry of diborane compounds, particularly the derivatives of B_2H_6 and B_2H_4 been extensively explored for the broad understanding of the chemical bonding and catalysis. Furthermore, diborane(4) compounds have been utilized as relevant starting materials to generate electron precise metal–boron bonds^[1]. Diborane(4) can act as a bridging ligand between two transition metals with an unbroken B–B bond^[2]. Based on the progress of the structures of hydrogen-substituted diborane compounds, shown below in Chart^[3], it appears rather surprising that the search for the simple bimetallic transition metal diborane(4) species met with very little success. As a result, the synthesis, chemistry and detailed bonding description of such species became of interest. The key results of this work will be presented.



REFERENCES

- [1] Westcott, S. A.; Fernandez, E. *Adv. Organomet. Chem.* **2015**, 63, 39.
- [2] Braunschweig, H.; Bertermann, R.; Damme, A.; Kupfer, T. *Chem. Commun.* **2013**, 49, 2439.
- [3] (a) Bailey, W. I. Jr.; Chisholm, M. H.; Cotton, F. A.; Ranke, L. A. *J. Am. Chem. Soc.* **1978**, 100, 5764. (b) Arnold, N.; Braunschweig, H.; Dewhurst, R. D.; Ewing, W. C. *J. Am. Chem. Soc.* **2016**, 138, 76. (c) Braunschweig, H.; Dewhurst, R. D.; Gessner, V. H. *Chem. Soc. Rev.* **2013**, 42, 3197. (d) Anju, R. S.; Roy, D. K.; Mondal, B.; Yuvaraj, K.; Arivazhagan, C.; Saha, K.; Varghese, B. Ghosh, S. *Angew. Chem. Int. Ed.* **2014**, 53, 2873.