

CBC SEMINAR ANNOUNCEMENT



Professor Holger Braunschweig
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Borametallo mimetics – Activation of Small Molecules by Low-valent Boron Species

The activation of small molecules is generally associated with transition metals (TM) and constitutes the basis of catalysis. It was believed that TM catalysts are required to facilitate processes such as the activation of H₂ and other unreactive substrates. However, recent years have witnessed exciting developments in main group element chemistry, and the discovery of carbenes, FLPs and heavy main group species that are capable of TM-like activation reactions.¹

Our ongoing studies on borylenes, diborenes, and diborynes have shown that these low-valent species exhibit a very rich chemistry, which is distinctly different from that of common compounds deriving from boron in oxidation state +3. Particularly interesting is the metal-like behavior of some borylenes and diborynes, which form CO complexes analogous to TMs, bind H₂ and unsaturated organic substrates under mild conditions and even activate N₂.²

References:

[¹a] P. P. Power, *Nature*, **2010**, 463, 171; [b] G. C. Welch, R. R. San Juan, J. D. Masuda, D. W. Stephan, *Science*, **2006**, 314, 1124; [c] G. D. Frey, B. Lavallo, B. Donnadieu, W. W. Schoeller, G. Bertrand, *Science*, **2007**, 316, 439.

[²a] H. Braunschweig, R. D. Dewhurst, F. Hupp, M. Nutz, K. Radacki, C. Tate, A. Vargas, Q. Ye, *Nature*, **2015**, 327; [b] H. Braunschweig, K. Radacki, A. Schneider, *Science*, **2010**, 328, 345; [c] H. Braunschweig, R. D. Dewhurst, K. Hammond, J. Mies, A. Vargas, K. Radacki, *Science*, **2012**, 336, 1420; [d] M.-A. Légaré, G. Bélanger-Chabot, R. D. Dewhurst, E. Welz, I. Krummenacher, B. Engels, H. Braunschweig, *Science*, **2018**, 359, 896

Date:	14th June 2019 (Friday)
Time:	2.00 pm to 3.30 pm
Venue:	SPMS Research & Graduate Studies Office Conference Room
Host:	Associate Professor Rei Kinjo