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香港城市大學
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REVISED

Special Departmental Seminar

By

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Unusual Metallate Shifts based on Tetracoordinate Boron Species

Date: **13 June 2025 (Friday)**

Time: **10:00 am – 11:30 am**

Venue: **P4302 (Purple Zone, 4th Floor)**
Yeung Kin Man Academic Building
City University of Hong Kong

For abstract, please refer to the attached sheet.

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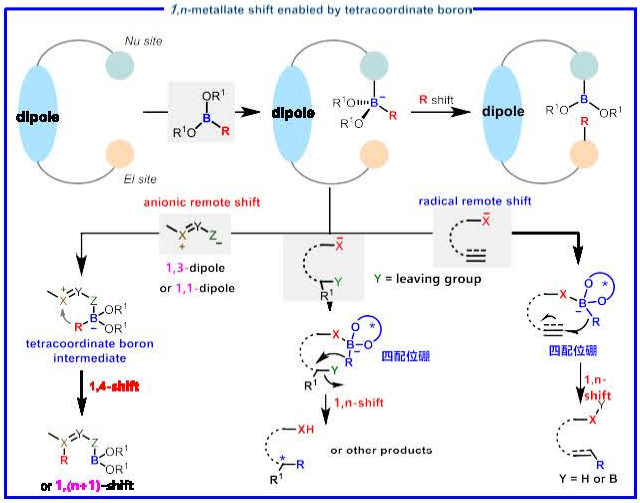
~ All Are Welcome ~

Abstract

Since 1950's, great progress has been achieved on the synthesis, functional transformations and applications of organoboron compounds. As one of very importance synthetic synthons in chemical science, organoboron compounds have been widely used in the synthesis of natural products, drug candidates as well as in materials sciences and catalytic chemistry.[1] Among them, tetracoordinate boron species are the unique organoborons and serve as key intermediates in boron-involved transformations. Despite their importance and well-studied 1,2-metallate shift, there are still some challenges and hurdles to overcome. Focusing on the development of unusual metallate shifts via tetracoordinate boron species, in the past five years, we have disclosed several very interesting and efficient metallate shifts, such as long distance 1,4-metallate shift, consecutive 1,2- and 1,3-metallate shift as well as radical-enabled long distance 1,4-, 1,5- and 1,6-metallate shift, which greatly enhance and broaden the application of tetracoordinate boron species in synthetic community.[2]



Reference

1. For an example of review: D. G. Hall, Boronic Acids: Preparation and Applications in Organic Synthesis Medicine and Materials, 2nd ed., Wiley-VCH, Weinheim 2011, pp. 427-477.

2. (a) Kai Yang, Feng Zhang, Tongchang Fang, Guan Zhang and **Qiuling Song***, *Angew. Chem. Int. Ed.* **2019**, *58*, 13421-13426; (b) Kai Yang, Xiaoxiao Hu, Wangyang Li, Jian Qiu, Qiang Feng, Shihui Wang, Guan Zhang, Zhijie Kuang, Peiyuan Yu* and **Qiuling Song***, *Cell Rep. Phy. Sci.* **2020**, *1*, 100268; (c) Kai Yang, Yixian Lou, Chenglan Wang, Liang-Wen Qi, Tongchang Fang, Feng Zhang, Hetao Xu, Lu Zhou, Wangyang Li, Peiyuan, Yu*, **Qiuling Song***, *Angew. Chem. Int. Ed.* **2020**, *59*, 3294-3299; (d) Kai Yang, Feng Zhang, Tongchang Fang, Chaokun Li, Wangyang Li, and **Qiuling Song***, *Nat. Commun.* **2021**, *12*, 441; (e) Chaokun Li, Shangteng Liao, Shanglin Chen, Nan Chen, Feng Zhang, Kai Yang and **Qiuling Song***, *Nat. Commun.* **2022**, 1784; (f) Jianke Su, Chengbo Li, Xinyuan Hu, Yu Guo and **Qiuling Song***, *Angew. Chem. Int. Ed.* **2022**, *61*, e202212740; (g) Xingxing Ma, Luo Li, Mengwei Tan, Zihao Zhong, Jinchao Liang, Puhui Li and **Qiuling Song***, *Chem*, **2023**, *9*, 1164-1181; (h) Xue Li, Hao Wang, Qiaohui Zhang, Heyun Sheng and **Qiuling Song***, *Nat. Synth.* **2023**, *2*, 1211-1221; (i) Yu Guo, Xiaosha Wang, Chengbo Li, Jianke Su, Jian Xu* and **Qiuling Song***, *Nat. Commun.* **2023**, *14*, 5693; (j) Xingxing Ma, Mengwei Tan, Luo Li, Zihao Zhong, Puhui Li, Jinchao Liang and **Qiuling Song***, *Nat. Chem.* **2024**, *16*, 42-53; (k) Chaokun Li, Nan Chen, Tangfeng Yao, Chenchen Zhao, Shangteng Liao and **Qiuling Song***, *CCS Chem.* **2025**, *7*, 279.

Biography

Prof. Dr. Qiuling Song obtained her MSc degree in organic chemistry from Peking University under the supervision of Prof. Zhenfeng Xi and her PhD degree from Princeton University, USA with Prof. Robert A. Pascal. She started her independent work in 2013 after 5 years working in pharmaceutical companies in the USA. Currently her research interests include organoboron chemistry, organofluorine chemistry, radical chemistry and asymmetric synthesis.

Representative Publications:

[1] Xingxing Ma, Mengwei Tan, Luo Li, Zihao Zhong, Puhui Li, Jinchao Liang and Qiuling Song*, *Nat. Chem.* **2024**, *16*, 42-53.

[2] Wanlan Su, Jide Zhu, Yu Chen, Xu Zhang, Weihua Qiu, Kai Yang*, Peiyuan Yu* and Qiuling Song*, *Nat. Chem.* **2024**, *16*, 1312-1319.

[3] Xingxing Ma, Zihao Zhong and Qiuling Song*, *Chem* **2025**, *11*, 102272.

[4] Hao Wang, Bolin Qiao, Jide Zhu, Huosheng Guo, Zhen Zhang, Kai Yang*, Shi-Jun Li, Yu Lan* and Qiuling Song*, *Chem*, **2024**, *10*, 317-329.

[5] Xingxing Ma, Luo Li, Mengwei Tan, Zihao Zhong, Jinchao Liang, Puhui Li and Qiuling Song*, *Chem*, **2023**, *9*, 1164.

[6] Wangyang Li, Shanglin Chen, Jinhui Xie, Zhenwei Fan, Kai Yang and Qiuling Song*, *Nat. Synth.* **2023**, *2*, 140-151.

[7] Xue Li, Hao Wang, Qiaohui Zhang, Heyun Sheng and Qiuling Song*, *Nat. Synth.* **2023**, 2, 1211-1221.

[8] Zhijie Kuang, Haohua Chen, Jian Qiu, Zongliang Ou, Yu Lan* and Qiuling Song*, *Chem.* **2020**, *6*, 2347-2363.

[9] Jinhui Xie, Wangyang Li, Yong Lu, Yanping Zheng, Yanying Huang, Shanglin Chen and Qiuling Song*, *J. Am. Chem. Soc.* **2024**, *146*, 10167-10176.

[10] Kai Yang, Yanfei Mao, Jie Xu, Hao Wang, Yong He, Wangyang Li and Qiuling Song*, *J. Am. Chem. Soc.* **2021**, *143*, 10048-10053.

[11] Shengnan Jin, Kang Liu, Shuai Wang and Qiuling Song*, *J. Am. Chem. Soc.* **2021**, *143*, 13124-13134.

[12] Kai Yang, Qiuling Song*, *Acc. Chem. Res.* **2021**, *54*, 2298-2312.