

Meet Prof. De-Wei Gao, Thieme Chemistry Journals Awardee 2024!



Prof. De-Wei Gao is an Assistant Professor at the School of Physical Science and Technology, ShanghaiTech University (P.R. China). He obtained his PhD in 2016 at the Shanghai Institute of Organic Chemistry (SIOC), Chinese Academy of Sciences. His first postdoctoral position was at The Scripps Research Institute (USA) until 2018; his second, at the University of California, Los Angeles (USA) until he took up his current position in 2020.

Thieme: Which field of organic chemistry are you interested in the most and why?

Prof. Gao: My primary interest lies in boron chemistry, since organoborons are essential in diverse research fields, including synthetic chemistry, pharmaceutical development, and materials science. These compounds act as catalysts, reagents, and fundamental building blocks for creating functional molecules. Moreover, organoboron compounds play a crucial role in the development of pharmaceuticals for treating various diseases, including cancer.

Thieme: Following that, what is the focus of your current research activity?

Prof. Gao: My research interests include boron chemistry, asymmetric catalysis, and medicinal chemistry.

Thieme: What do you think about the modern role and prospects of organic chemistry?

Prof. Gao: Organic chemistry is a crucial field that innovates new substances, significantly transforming human production and lifestyle in areas like food production, disease treatment, and energy supply. Moving forward, it promises to foster cutting-edge interdisciplinary fields by intersecting and integrating with other disciplines. This progression presents increasingly complex challenges for synthetic chemistry while also unveiling new opportunities.

Thieme: Which difficulties are there for young upcoming chemists in your field? Do you have any tips?

Prof. Gao: For me, identifying a meaningful research direction and earning recognition from peers is quite challenging. It is crucial to constantly broaden our research perspectives and remain open to sharing our findings with both peers and experts across different disciplines. Engaging in this kind of discussion or collaboration can lead to the emergence of innovative scientific ideas.

Thieme: What is your most important scientific achievement to date and why?

Prof. Gao: My favorite research accomplishment is achieving the controllable regioselective alkynylation of 1,3-bis(boronates) using distinct organometallic reagents as activating reagents (*Angew. Chem. Int. Ed.* **2023**, *62*, e202312605). Our discovery, through comprehensive mechanistic studies, revealed that aryl lithium chelates with both boron atoms of 1,3-bis(boronic) esters. Conversely, aryl Grignard reagent chelates exclusively with the primary C–B bond of 1,3-bis(boronic) esters. These unique chelation patterns are crucial in determining the selectivity of the subsequent reaction. Notably, this newly developed methodology effectively overcomes the long-standing issue of low reactivity in 1,3-bis(boronic) esters. Furthermore, it addresses the limitations associated with coupling reactions through radical mechanisms, which often lead to the formation of target products via stable radical intermediates.

Thieme: Could you tell us something about yourself outside the lab, such as your hobbies or extra-work interests?

Prof. Gao: Outside of work, I dedicate my time to running, being with my family, and enjoying outdoor travels.