Editorial

Israel Journal of Chemistry

DOI: 10.1002/ijch.202000013

# *Carbon–Heteroatom and Carbon–Carbon Bond-Forming Reactions*: Special Issue in Honor of the 2019 Wolf Prize Laureates in Chemistry, Professors Stephen L. Buchwald and John F. Hartwig

Janis Louie[a] and John P. Wolfe[b]

The Wolf Prize in Chemistry, first awarded in 1978 by the Israel-based Wolf Foundation, is given once a year to a chemist or group of chemists whose work has had a tremendous impact on their field and on society. The prestige of this award can be seen through perusing the list of recipients over the past 32 years, which includes 9 current Nobel laureates, and many others whose names are mentioned each October in conversations about who will receive the next Nobel prize. We were therefore delighted that our Ph.D. advisors were selected to join this prestigious group of scientists when the 2019 Wolf Prize in Chemistry was awarded to Stephen L. Buchwald and John F. Hartwig "for the development of efficient transition-metal catalysts that have revolutionized drug manufacturing, leading to breakthrough in molecule and synthetics design." We were also honored and pleased when Prof. Ehud Keinan, Editor-in-Chief of the *Israel Journal of Chemistry*, and President of the Israel Chemical Society, invited us to serve as guest editors for this special issue in recognition of Profs. Buchwald's and Hartwig's many accomplishments.

The two of us were extremely fortunate to not only have worked for Steve and John, but also to have joined those groups in the early days of the Buchwald-Hartwig Amination (JL joined the Hartwig group in 1993, and JPW joined the Buchwald group in 1994). The mid-late 1990's were certainly an exciting time to be a member of one of these research groups, and it was truly fascinating to be involved in the development and evolution of such an important chemical transformation. During that span of time, the field of Pd-catalyzed carbon–heteroatom bond-forming reactions, led by efforts of Steve, John, and their co-workers, took quantum leaps forward. In that relatively short period of time, a transformation that initially had exceptionally limited scope, required stoichiometric amounts of tin, and had little or no practical utility, became a reaction that was easy to run, with broad scope and utility, that literally everyone was using. John and Steve taught their co-workers, and also a broad swath of scientists in a variety of sub-disciplines of chemistry, important lessons about organometallic reactivity and the key role that phosphine ligands play in facilitating challenging metal-catalyzed reactions. In addition, they accomplished this while simultaneously creating a fundamentally new and useful way to construct extremely important carbon–heteroatom and carbon–carbon bonds.

In celebration of this award, we have assembled a collection of reviews and primary research articles from students, postdocs, and friends of Steve and John, that we hope you will find stimulating and useful. In these articles, the reader will be able to see lessons that many of us learned from John and Steve about designing and developing new transformations and new catalysts, including the elegance of simplicity, the importance of user-friendly reagents and conditions, and the role of mechanistic understanding on improving reactivity/selectivity. The issue is rounded out by an essay co-written by Profs. Hartwig and Buchwald that provides insight into the prior studies that led to their interest in aromatic C–N bond formation and the eventual development of the Buchwald-Hartwig Amination Reaction. They also remind us of the importance of basic research, and the fact that the key findings of tomorrow are often, or perhaps usually, preceded by the intellectual curiosity of individual scientists who seek to gain a better understanding of the world that can eventually be applied in practical and useful ways.

In closing, we thank Prof. Ehud Keinan for his kind invitation to serve as guest editors for this special issue, along with his advice and his help with the cover art. We also thank Dr. Brian Johnson at Wiley VCH for his support through the process of recruiting authors, getting manuscripts reviewed, and answering our many questions. We would especially like to thank all of the authors for their contributions, and for making this a truly special issue. Finally, we would like to

[a] *J. Louie*
University of Utah, USA
[b] *J. P. Wolfe*
University of Michigan, USA

Israel Journal of Chemistry

thank Steve and John for their mentorship, not only as graduate students, but throughout our careers, and to say "Congratulations" to both for their many accomplishments that are being recognized through their receipt of the Wolf Prize.

John P. Wolfe
University of Michigan
Guests Editor

Janis Louie
University of Utah
Guests Editor