

Editorial



When *SYNLETT* decided to publish a special dedicated issue to me, I was deeply honored, yet abashed at such an extravagant praise. It was this staggering moment that prompted me to recall my 58 years of academic career in a research institute – a long yet often interrupted phrase of my life.

I graduated in 1947 from the Department of Chemistry of National Zhejiang University, where I met Professor Bao-Ren Wang, an enlightening organic chemistry professor who was regarded not only as the best in our university but also in China at that time. He introduced me to the fascinating world of organic chemistry and I graduated with several honors from his courses. I later joined the Shanghai Institute of Organic Chemistry (SIOC) in 1953, after leaving the field of organic chemistry for more than five years. China was in transition to a new country and finding a good job was not easy. I was in luck to land a job in SIOC which was then headed by the late Professor Chang-Gong Zhuang and late Professor Yu Wang. Professor Zhuang and Professor Wang both returned to China from Germany, where they had worked in the research groups of Professors Windaus and Wieland, respectively. I was mesmerized by the intellectual ambience of SIOC and was longing to explore each novelty I had missed in the past five years.

In the early Fifties, “conformational analysis”, a new concept in stereochemistry, emerged and influenced every facet of the development of organic chemistry. Still young and craving to learn, I was very much seized by this new concept (The concept of conformation and its application in chemistry were honored with the Nobel Prize in 1969). We read the

articles about “conformation” with fervor and tried to translate it into Chinese for our colleagues. It was in this process of rendering that we discerned the insight in stereochemistry. With the same ambition we translated another classical book in stereochemistry, i.e. “Steric Effects in Organic Chemistry” edited by Melvin S. Newman. Years later when I reviewed this book, I was astonished by how many prominent chemists like D. J. Cram, E. L. Eliel, G. S. Hammond, F. H. Westheimer, F. Hawthorne and many others were involved in the writing. Learning about conformational analysis and the steric effects in organic chemistry facilitated my subsequent research in synthetic reactions as sound knowledge in reaction mechanism proved to be crucial. It also inspired many of my later research projects. One would be a discontinued project on the total synthesis of aureomycin led by the late Professor Yao-Zeng Huang. I suggested at that time a project in determining the absolute configuration of aureomycin by means of asymmetric synthesis.

In the late Sixties and early Seventies, intellectuals, not only chemists, had a difficult time in the confines of political reforms. It was only after 1978 that we began to pursue knowledge and teach students with the freedom that was enjoyed by academics of many other countries. I felt so liberated to meet knowledge in such an unreserved manner, especially after years of dreaming from a distance.

My group researched asymmetric synthesis during the emergence of the then-called “chiral technology”. I was fortunate to have worked with several young, talented and diligent students. Asymmetric synthesis was very different back in the 1950s. It was the efforts of research groups of V. Prelog and D. J. Cram, by using a known asymmetric reaction to correlate the configuration of a chiral center. Asymmetric synthesis nowadays is used to construct new chiral centers with high enantioselectivity. We usually regard selectivity of a synthetic organic reaction as a highly important criterion. With good or ideal selectivity, we then have a clean reaction with high yield and very low yield of side products. I trust highly efficient and highly selective organic syntheses will form the basis for reshaping and remodeling the present chemical industry into a sustainable industry, without further complaining by the public. I view this aspect as the most important responsibility of synthetic chemists in the 21st century.

At last I would like to express my sincere thanks to all the contributors, editors of this Special Issue and of course, Peter Vollhardt and his *SYNLETT* Editorial Board.

Lixin Dai

Shanghai Institute of Organic Chemistry

March, 2011



I was born in August of 1928. After graduating from Zhejiang University in July 1951, I started my career in research in the Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, in August of the same year. Since then I have been enjoying conducting research in organic chemistry together with young and energetic students. At the beginning I had been doing research in the groups of other group leaders, during which I learned a lot from Professor Yu Wang in this institute. I started to conduct independent research in 1978. Starting from the early studies on reactions involving molybdenum complexes, this group has mainly observed the following interesting transformations: (1) transition-metal-catalyzed reactions of allylic esters; (2) isomerizations of electron-deficient alkynes, alkynols or alkenols; (3) nucleophilic additions of electron-deficient alkynes; (4) transition-metal-catalyzed inter- or intramolecular coupling or cyclization between alkenes and alkynes; (5) cationic palladium complex catalyzed addition reactions to carbon-heteroatom multiple bonds; (6) phosphine-catalyzed reactions involving allenes, alkynes or allylic ylides. From the current point of view, I have been working on two areas: organometallic chemistry directed towards organic synthesis (OMCOS) and organocatalysis. In the OMCOS research, I benefitted from my experience with Professor A. Yamamoto. Ironically, I moved into the area of organocatalysis, i.e., the phosphine-catalyzed

reactions, in 1991 by accident, when the group was studying the reaction of palladium-phosphine complex catalyzed isomerization of electron-deficient alkynes. Interestingly, when the transition metal was omitted, the reaction still underwent the same transformation to conjugated electron-deficient 1,3-alkadienes under catalysis by the phosphine ligand(s) alone. This obviously led us to the fruitful observation on phosphine-catalyzed [3+2] cycloaddition of electron-deficient allenes, alkynes or allylic ylides. I believe that due to the diversity of both metals and reactive organocatalysts, more and more new reactions with unique mechanisms will be discovered both by accident and delicate conceptual design. Organic synthesis/chemistry and related disciplines will surely benefit from achievements in both areas with the concepts of atom economy, stereoselectivity, and efficiency in mind. In both areas chiral synthesis will be actively pursued. Finally, I would like to thank the *SYNLETT* editorial team for their kind proposal to compile this Special Issue dedicated to Professor Dai and me.

Xiyun Lu
Shanghai Institute of Organic Chemistry
March, 2011

Laudation for Professors Xiyan Lu and Lixin Dai, Members of the Chinese Academy of Sciences

I am pleased to act as one of two guest editors for the Special Issue of *SYNLETT* dedicated to Professors Lu and Dai. I joined Professor Lu's group in 1987 as a second-year graduate student in the Shanghai Institute of Organic Chemistry. At that time, I had some limited research experience from Professor Xian Huang's group at Hangzhou University (now a part of Zhejiang University). When I expressed my desire to join his group, he spent a lot of time talking to me on a couple of occasions. During that process, I sensed that he was trying to determine my suitability for research in organic chemistry. This has benefitted me since I have been doing the same thing to get qualified students into my group; at that time, Professor Lu was extensively studying the transition-metal-catalyzed allylation by using different combinations of allylic esters and nucleophiles. Thus, I also spent some time developing such reactions; however, the success was very limited. Here comes another good tradition in Professor Lu's group: there is a group meeting every week discussing new chemistry by reading recently published papers, which was not very common at that time in the institute. Thus, I was able to get the M. Sc. degree in 1988 by developing by SmI_2 -promoted or -catalyzed reactions, a very popular topic at that time. At the end of the 1980s, going abroad for graduate studies started to become very popular in Shanghai; however, my family was not able to pay the expensive fee for the TOEFL examination. Finally, after discussing with my parents, Professor Huang, and Professor Lu, I decided to pursue my Ph.D. in the Shanghai Institute of Organic Chemistry. Due to some complaints from other groups in the institute, we decided to start something other than SmI_2 . Again, the group meeting helped. Based on the habit of reading the publications in new journals, I noticed that there were so many publications in the area of intramolecular Heck reactions at that specific period of time so that I prepared a review in Chinese on this subject without even letting Professor Lu know, which was submitted to You Ji Hua Xue (Chinese Journal of Organic Chemistry). In fact, the manuscript was formally published without the authorship of Professor Lu. Later on, I learned that this should be a big mistake if it happened in other groups. However, Professor Lu did not say even one "bad" word to me over this issue. Based on this, we started a completely new project on divalent palladium-catalyzed cyclization of enynes. Since this moment, I have been keeping this group meeting tradition for my own research program with some improvement; in addition, I would like to mention that Professor Lu has been doing everything very carefully. He always tells me that when we are conducting research or basically doing anything, we should keep a mood like reaching into deep water or skating over a very thin ice (战战兢兢, 如临深渊, 如履薄冰). Now I have been very careful over the experimental data we collected by checking all the original spectra. Several years ago, when one of my former students, Dr. Ning Jiao, now a professor at Peking

University, told me that Professor Reetz even asks his group members to reproduce some results, my group also started to follow this practice. Finally, I would like to mention that Professor Lu also told me that it is very important to know whether you love to have a life just conducting research in organic chemistry: if you love it you enjoy a life with it. In conclusion, Professor Lu led me into a joyful life in organic chemistry by teaching me how to get good students and how to deal with data.

Shengming Ma

Shanghai Institute of Organic Chemistry

March 2011

I have been working with Professor Lixin Dai as his assistant and co-worker since 1989 when I returned to Shanghai Institute of Organic Chemistry after finishing my postdoctoral studies in Cologne, Germany. It is my great honor and pleasure to serve as one of the guest editors for this Special Issue dedicated to Professors Xiyan Lu and Lixin Dai to celebrate their lifelong contributions to organic chemistry education and research in China. This special issue includes 37 papers written by their former students, postdoctoral associates, colleagues and friends in China as well as in other countries, in recognition of the continuing contributions by Professors Lu and Dai to the development of organometallic chemistry and asymmetric catalysis on the Chinese mainland.

When I came back to Shanghai Institute of Organic Chemistry in 1989, I was a beginner in the study of organometallic chemistry and asymmetric catalysis because I had focused on the synthesis of the planar non-aromatic cyclooctatetraenes during my Ph.D. studies under the mentorship of Professors Weiyuan Huang of Shanghai Institute of Organic Chemistry and Henry N. C. Wong of The Chinese University of Hong Kong. My postdoctoral studies in Cologne were on the synthesis of aromatic porphycenes with Professor Emanuel Vogel. It was Professor Dai who introduced me to the research fields of organometallic chemistry and asymmetric catalysis. Through group seminars, research proposal preparation, research funding applications, and discussions with graduates, Professor Dai taught me a lot on how to do research. He always encouraged me to address the challenges in organic chemistry. He also let me take charge of the group starting in 1993, when I had been promoted to Associate Professor merely one year before. Professor Dai's strong work ethics and forward thinking have influenced me both personally and career-wise.

Although both Professors Lu and Dai are in their 80s, they still hold a passion for organic chemistry and constantly play an active role in research projects. We hope that the international community of chemists will join the contributors of this Special *SYNLETT* Issue in wishing Professors Xiyan Lu and Lixin Dai a very happy life.

Xue-Long Hou

Shanghai Institute of Organic Chemistry

March 2011