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PREFACE TO HETEROCYCLES ISSUE HONORING THE 77TH BIRTHDAY OF PROFESSOR ISAO KUWAJIMA

On behalf of the friends and colleagues of Prof. Isao Kuwajima, and the alumni of the Kuwajima lab, it is my pleasure and honor to introduce the special issue of HETEROCYCLES in celebration of his 77th birthday.

In the Japanese tradition, people celebrate their life at the ages of 3, 5, 7 ... 60, 77, 80, 88, …. As was said in ancient times, "Men seldom live to be 70 years old," 77 years of the life of Prof. Kuwajima is something to be truly celebrated as *Ki-Ju no O-iwai* (the celebration of one's 77 years of age).

Professor Kuwajima was born on November 11, 1937 in the Niigata Prefecture facing the Japan Sea, where people are snowed in in winter. Thus, Niigata is associated with persistent, hard-working, and quiet men of action, that is, Prof. Kuwajima, himself. He entered Tokyo Institute of Technology, and obtained his BS and PhD in chemistry in the Faculty of Science working with Professor Teruaki Mukaiyama, who was then aged in in his mid-thirties and a rising star of organic chemistry. Professor Mukaiyama was just back at Tokyo Tech from Gakushuin University as a full professor. Young Kuwajima was engaged in research on oxidation/reduction condensation to remove water from organic molecules under mild neutral conditions. This chemistry was later developed by Prof. Oyo Mitsunobu into the famous Mitsunobu reaction. Postdoctoral studies at Harvard must have been a fruitful time for him, as there were a number of young Japanese developing their talent in the laboratory of Professor E. J. Corey—Ryoji Noyori, Hisashi Yamamoto, and Isao Kuwajima. He studied organocopper chemistry related to the synthesis of gibberellic acid and developed a method to generate in situ an alkenylcopper intermediate.

Returning to Japan, he joined the Department of Chemistry of Aoyama Gakuin University and developed the chemistry of organocopper reagents and lithium carbenoids, and then moved back to his alma mater in 1973. This was the year I joined his group, which was composed of several students gathered together to start the new Kuwajima lab at Tokyo Tech. I was much impressed by the new rational approach to organic synthesis that was distinctively different from that typical of the previous generation. We did reactions on a <100-mg scale under rationally designed reaction conditions, while many people then used Bunsen burners to do reactions on gram quantities. I enjoyed very much the everyday discussion with Professor Kuwajima on various possibilities of the reaction mechanism.

At Tokyo Tech, Prof. Kuwajima's chemistry flourished, reporting several pioneering works in the 1970s and 1980s, such as the fluoride activation of enol silyl ethers and palladium-catalyzed alpha-arylation of ketones—the chemistry that created a number of followers. In the 1990s, his interest shifted from synthetic methodology to the total synthesis of complex natural products, focusing on the most difficult target molecules of the time, taxol and ingenol. His syntheses of these molecules featured a number of surprises in their overall strategy and the new reactions masterfully incorporated into them. For his achievement in synthetic organic chemistry, he received the CSJ Award for Creative Work from the Chemical Society of Japan. At the compulsory retirement age of 60 at Tokyo Tech, he moved to the Kitazato Institute to continue his synthetic chemistry and recently retired entirely from his research activities. Through his research and educational efforts, Prof. Kuwajima produced a number of eminent chemists in industry and academia, inter alia, full professors at Tokyo Tech, Hokkaido, Tokyo, Mie, and Pohang in Korea, and research directors in a number of companies.

This special issue of HETEROCYCLES is dedicated to Professor Isao Kuwajima to celebrate his "*Ki-Ju*," to share with you the outstanding papers dedicated to his honor, and thereby to learn about the state-of-the-art science on synthetic organic chemistry. We wish many happy returns of the day for Prof. Kuwajima and his wife, Teruko.

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Prof. Eiichi Nakamura is a native of Tokyo, Japan and completed his education at Tokyo Institute of Technology—BS with Professor Teruaki Mukaiyama and PhD with Professor Isao Kuwajima in 1978. After a postdoctoral period at Columbia University with Professor Stork, he joined the Department of Chemistry at Tokyo Tech, and rose to the rank of Full Professor. In 1995, he moved to his current position in the University of Tokyo. Prof. Nakamura has published over 450 original papers in the field of synthetic organic chemistry, mechanistic studies of OMCOS, organic solar cells, and nanoscience using atomic resolution electron microscopy. He has received a number of prizes, including the Chemical Society Award from the Chemical Society of Japan, the 55th Fujiwara Prize, and the Medal of Honor with Purple Ribbon from His Imperial Majesty, as well as the A. C. Cope Scholar Award from the ACS and the Centenary Prize from the RSC. He is a Foreign Honorary Fellow of the American Academy of Arts and Sciences and is currently serving as an Associate Editor of JACS.