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## Retirement

Professor TOSHIMITSU, Akio  
Division of Multidisciplinary Chemistry  
– Interdisciplinary Chemistry for Innovation –



On March 31, 2015, Dr. Akio Toshimitsu retired from Kyoto University after 36 years of service and was honored with the title of Professor Emeritus of Kyoto University.

Dr. Toshimitsu was born in Tokyo on September 12, 1949. He graduated from Faculty of Engineering, Kyoto University in 1973 and studied organic chemistry under the supervision of Professor Emeritus Masaya Okano in the Department of Hydrocarbon Chemistry, Graduate School of Engineering. In 1979, he received the doctoral degree of engineering, Kyoto University, for the thesis “Preparation of Some Organo-thallium and -selenium Compounds and their Utilization in Organic Synthesis”. After one year experiment as a post-doctoral fellow of Japan Promotion of Science, he continued his research activity at the Institute for Chemical Research as Educational Staff (from 1979) and was promoted to Assistant Professor in 1982 and Associate Professor in 1993. He was appointed Professor at the International Innovation Center, Kyoto University, in 2002. The center was re-organized as Innovative Collaboration Center in 2007 and he served as the Director of this Center from 2009. In 2010, the Center was again re-organized as Office of Society-Academia Collaboration for Innovation. In 2011, he returned to ICR directing the Laboratory of Interdisciplinary Chemistry for Innovation in Division of Multidisciplinary Chemistry.

Throughout his academic career, Dr. Toshimitsu devoted himself to the investigation of novel reactions in organic synthesis based on heteroatom chemistry. He succeeded in the control of the stereochemistry in the reactions through anchimeric assistance of sulphur or selenium to introduce versatile oxygen, nitrogen, and carbon nucleophiles. Notably, he clarified that the chiral carbon in the three-membered cationic intermediate containing selenium atom racemizes through bimolecular attack of nucleophile on the selenium atom. By the steric protection of the selenium atom, both the racemization of the chiral carbon and the selenophilic attack of the carbon nucleophile were suppressed to realize the construction of chiral carbon center by the formation of new C-O, C-N, or C-C bond. He also clarified that divalent silicon species, silylene, behaves as nucleophile

by the intramolecular coordination of base. He provided experimental proof to the conformational dependence of conjugation of Si-Si bonds. Thus, he controlled the configuration of tetrasilane to *anti* or *syn* by the introduction of bicyclic carbon unit to the central Si-Si bond. Using the oligosilanes prepared by these units, it was clearly shown that only the *anti* unit contributes to the elongation of conjugation and the *syn* unit interrupts the conjugation.

It should be noted that he has opened new aspect of academic activity in the industry-academia collaboration. He pointed out that it is not impossible to fulfill the requirement of companies by the investigation which is also important in the academic society. Actually, his investigation on anticancer reagents and organic light-emitting transistor provided good patents as well as scientific papers of high quality.

Dr. Toshimitsu's educational contribution is also notable. In these years, he has supervised 25 graduate students including 4 doctor theses as a chief examiner. His students gained valuable experience in the field of organic syntheses through his supervision and assume important roles in various fields of industry and academia.

His contribution to the administration of Kyoto University in the days of collaboration centers should also be noted. He recognized the importance of coordinator who can understand the essence of academic as well as industrial activities. He has learned the know-how of the coordinator for the success of the collaboration from his experience and established the system of “on the job training” of young staffs. As for the intellectual properties, he established the system to discriminate the wrights which should be owned by Kyoto University and how to utilize them in the license to the industry. Recent remarkable increases in the funds for the collaborations and license fee in Kyoto University should be attributed to these foundations.

Dr. Toshimitsu's contribution to Kyoto University and the Institute through his scientific, educational, and administrative activities is greatly acknowledged. His perpetual quest of the rule of nature will be remembered for a long time to come.