
Retirement

Professor SATO, Naoki
Division of Multidisciplinary Chemistry
– Molecular Aggregation Analysis –



On 31 March 2016, Dr. SATO, Naoki will retire from the Institute for Chemical Research (ICR), Kyoto University after about 24 years of service to be honored with the title of Professor Emeritus of Kyoto University.

Dr. Sato was born in Tokyo in February 1951. He graduated from Faculty of Science, The University of Tokyo in 1974 and went on graduate school to study organic solid-state chemistry under the supervision of the late Professor Hiroo Inokuchi at The Institute for Solid State Physics. In 1976, he received a master's and was employed as a technical associate in the Institute for Molecular Science. He earned his Doctor of Science degree for the thesis entitled "Photoemission spectroscopic studies of aromatic solids - Polarization energy and electronic states" from The University of Tokyo in 1983 and was re-assigned to an assistant professor at the Faculty of Science, Kumamoto University next year. He transferred to the College of Arts and Sciences, The University of Tokyo to serve as an associate professor for about five years between 1987 and 1992. Meanwhile, he was sent to the Department of Physics, Chemistry and Biology, Linköping University in Sweden to collaborate with Professor William R. Salaneck under the International Scientific Research Program in 1989. In May 1992, he was appointed professor of the Division of Interface Science II, ICR and came to serve concurrently as a professor at the Division of Chemistry, Graduate School of Science, Kyoto University. Since the reorganization of ICR in 2004 he has held the chair of the Laboratory of Molecular Aggregation Analysis, Division of Multidisciplinary Chemistry. He served as a Vice-Director of ICR between June 2005 and March 2010 and also as the Director of Kyoto University Uji Library between April 2006 and March 2010. After he served as the Director of ICR between April 2012 and September 2014, he was appointed as the Executive Vice-President for finance, facilities, and environmental health and safety in October 2014.

Throughout his academic career, Dr. Sato devoted himself to the investigation in the field of organic solid-state chemistry and/or physical chemistry. His research interests

have focused on three topics: Analyzing electronic structures of frontier electronic states in organic solids and thin films with their surfaces and interfaces, fabricating molecular systems with novel electronic properties, and searching organic solid-state reactions to be followed by dynamic electronic functions. Among them he has been active especially in the first topic, that is, elucidation of the structure - electronic structure correlation in organic semiconductors in the solid and thin-film states, in particular, using photoemission and inverse photoemission spectroscopies with developing their experimental apparatus on his own. He has disclosed main factors contributing to the evolution of the electronic structure in organic semiconductor thin films, with paying close attention to the difference of electronic structures between a film and its component molecule whose electrostatic characteristics should also be recognized. While developing such studies, he has been an active member of domestic and international academic societies, such as the Division of the Organic Crystals, The Chemical Society of Japan.

Dr. Sato's educational contribution in Kyoto University is also noteworthy. He has supervised 43 graduate students to send them out into society, especially industry and academia. He has contributed to education of undergraduate students as well through giving lectures in the liberal arts and general education courses from time to time. In addition, he has given intensive lectures in response to requests from other national universities in Japan.

Finally, his various contribution to the administration of Kyoto University as well as ICR so far goes without saying and will still devote himself to the university as an Executive Vice-President after April 2016 for a while.

Thus, Dr. Sato's contribution to Kyoto University and the ICR through his scientific research, education of students and graduate students, and institute and university operations is highly appreciated. His sincere attitude toward everything including nature will remain in the memory of all the people knowing him for a long time in the future.

Retirement

Professor HATA, Yasuo

Advanced Research Center for Beam Science
– Structural Molecular Biology –



On March 31, 2016, Dr. Yasuo Hata retired from Kyoto University after 25 years of service and was honored with the title of Professor Emeritus of Kyoto University.

Dr. Hata was born in Nara Prefecture on January 6th, 1951. He graduated from Faculty of Science, Osaka University in 1974 and went on to the Department of Macromolecular Science, Graduate School of Science to study protein crystallography under the supervision of the late Professor Masao Kakudo in the Institute for Protein Research. In 1979, he graduated from the doctoral course and was granted the doctoral degree of science for the thesis "X-ray Crystal Structure Analysis of Lipase at 2.8 Å Resolution". Concurrently, he was appointed Assistant Professor and continued his research activity at the Institute for Protein Research. In 1991, he moved to the Institute for Chemical Research, Kyoto University, as Associate Professor and started up a research of X-ray structural biology. In 2002, he was promoted Professor directing the Laboratory of Atomic and Molecular Physics in Division of States and Structures. The laboratory was re-organized as the Laboratory of Structural Molecular Biology in Advanced Research Center for Beam Science in 2004. He served as the head of this center in 2007-2009 and 2013-15.

Throughout his academic career, Dr. Hata devoted himself to X-ray structure determination of novel proteins and clarification of vital phenomena wrapped in mystery, such as mechanisms of enzymatic reaction and protein-protein interaction, based on the structure-function relationship of protein. He succeeded in broadening the research field in structural biology by introducing advanced techniques of SR science and protein engineering into protein science. Moreover, he succeeded in developing research techniques which enabled detailed structural studies on reaction mechanism of enzymes and physical properties of proteins. Notably, he demonstrated that two kinds of one-electron different metals, such as Cu²⁺ and Zn²⁺, in a protein can be physically distinguished from each other by using wavelength-tunable SR X-ray beams. This distinction is quite difficult to be done by chemical methods. In previous studies of Cu²⁺, Zn²⁺-SOD, the locations of these metal ions

in the protein were speculated by the difference in distribution of the amino-acid residues coordinated to the ion. His method is strictly based on physical principles and evaluated highly all over the world. In addition, he succeeded in revealing the existence and biological role of an unexpected metal ion in a protein by the same technique.

He subsequently undertook the elucidation of reaction mechanism of enzymes by using the methods of X-ray structural biology and genetic mutation. He fulfilled the world-first success in X-ray structure determination of L-2-haloacid dehalogenase. This result led to the structural determination of the P-type Ca-ATPase found in Japan. In addition, he succeeded in preparation of reaction-intermediate by using a mutant of the dehalogenase, X-ray structure determination of the intermediate and elucidation of enzymatic-reaction mechanism of the enzyme.

He also performed the study of protein adaptation to temperature environment. He determined X-ray structures of several kinds of proteins from thermophile and psychrophile and succeeded in explanation of adaptation strategies of these proteins to temperature environment from their structural differences. He established the validity of explanation by using mutant proteins. He also succeeded in structure determination of enzymes involved in resorcinol catabolism and elucidation of their reaction mechanism based on their structural changes during the reaction processes in catabolism. His research achievements were reported in a lot of scientific papers of high quality and have been highly evaluated all over the world.

Dr. Hata has supervised many graduate students including doctoral students who took a doctoral degree. He enthusiastically guided his students in the field of X-ray structural biology and let them have valuable experience in that field. His students assume important roles and are active in various fields of industry and academia.

Dr. Hata's contribution to Kyoto University and the Institute through his scientific, educational and administrative activities is hereby gratefully acknowledged.