Retirement

Professor FUKUDA, Takeshi
Division of Materials Chemistry
— Chemistry of Polymer Materials —

On March 31st, 2007, Dr. Takeshi Fukuda retired from Kyoto University after 34 years of service and was honored with the title of Professor Emeritus of Kyoto University.

Dr. Fukuda was born in Kyoto on October 28th, 1943. He graduated from Department of Polymer Chemistry, Faculty of Engineering, Kyoto University in 1967 and subsequently entered Graduate School of Engineering, Kyoto University, where he took the master and then doctoral programs, studying solution properties of copolymers under the supervision of the late Professor Hiroshi Inagaki. In 1973, he was granted a doctoral degree with a thesis entitled "Some Behavior of Block Copolymer Chains in Solution". In 1972, he had a position of research associate at Institute for Chemical Research, Kyoto University (ICR) and was appointed Assistant Professor (1977), Associate Professor (1990), and Full Professor (2001) at ICR, directing the Laboratory of Design of Polymer Materials at that time.

Throughout his academic carrier, Dr. Fukuda has devoted himself to studies on both synthesis and properties of polymers and polymer materials on the basis of physicochemical approaches.

His achievements in the field of polymer properties include his invention of the light scattering method known as the "optical theta-solvent method", which permitted selective observation and precise analysis of the interactions between unlike polymers and the compositional heterogeneity of copolymers, and his establishment of the theoretical model relevant to "orientation-dependent excluded-volume effect", which was useful for a systematic understanding of orientation-dependent phenomena such as the nematic-isotropic phase transition in semiflexible polymers and the induced segmental orientation and orientation-induced phase separation in polymer blends.

In the field of polymer synthesis, he was the first to experimentally determine the propagation and termination rate constants in free radical copolymerization. By a series of precise experiments, he disclosed the general failure of the Mayo-Lewis copolymerization model with respect to absolute rate constants, showing that the penultimate-unit effect was responsible for the failure of the classic model. He also established a new velocity equation of copolymerization by experimentally proving that the termination step in copolymerization was not chemically controlled, as had been so believed for a long time, but diffusion controlled.

More recently, Dr. Fukuda has made pioneering contributions to the establishment of the kinetic theory of living radical polymerization (LRP), which has rapidly developed for this decade or so, as a new versatile and robust method of precise synthesis of polymers. At the same time, he has applied LRP to the synthesis of a variety of new polymers and polymer materials. In particular, he and his co-workers were the first to establish the technique of surface-initiated LRP on various substrates to produce polymer-grafted surfaces with ultra-high graft density or "concentrated polymer brushes".

These achievements of Dr. Fukuda have been published as over 250 scientific publications including original papers, reviews, and book chapters and are highly appreciated internationally as well as in Japan. He was granted the Award of the Society of Polymer Science, Japan (1992) for the work on copolymerization kinetics and the Grant-in-Aid for Specially Promoted Research (2005–2008) for the work on concentrated polymer brushes and LRP.

His contribution to ICR and Kyoto University through his scientific and educational activities is hereby gratefully acknowledged.

Retirement

Professor SAKATA, Kanzo

Division of Biochemistry

— Chemistry of Molecular Biocatalysts —

On March 31st, 2007, Dr. Kanzo Sakata retired from Kyoto University after 9 years of service and was honored with the title of Professor Emeritus of Kyoto University. Dr. Sakata was born in Shiga Prefecture on August 6th, 1943. He graduated from Department of Agricultural Chemistry, Faculty of Agriculture, Kyoto University in 1966. He started his research career on natural product chemistry in Graduate School of Agriculture, Kyoto University under the supervision of late Professor T. Mitsui. After completing his Master's degree in 1968, he proceeded to the doctoral program. During the doctoral study, in 1970, he was appointed as a Researcher of the Institute of Physical and Chemical Research (RIKEN). He continued his study and was granted a doctoral degree for a thesis entitled "Studies on a Piscicidal Constituent of *Hura crepitans*" in 1972. On leave from RIKEN, from 1977 to 1979, he studied the chemistry of bioactive isocyanates under Dr. R. Rickard at Research School of Chemistry, Australian National University in Canberra as a Research Fellow. In 1981, he was appointed as an Associate Professor of Department of Agricultural Chemistry, Faculty of Agriculture, Shizuoka University and was promoted to a Professor of the university, Laboratory of Marine Biological Science, in 1987. He was transferred to Institute for Chemical Research, Kyoto University in 1998.

Dr. Sakata devoted himself mainly to the chemistry of biologically active natural products such as an active principle of a piscicidal plant, antibiotics for agricultural use, feeding stimulants for marine gastropods, settlement retardants for marine fouling organisms, *etc.* He was awarded a prize for young active scientists from Japan Society of Agricultural Chemistry for the study on the chemical studies of Ezomycins for agricultural use in 1975.

He also extended his interests to studies on tea from new viewpoints since he moved to Shizuoka University. Being interested in the beautiful floral aroma of oolong tea, he tried to elucidate the molecular basis of the floral aroma formation during the oolong tea manufacturing by applying research technologies in natural product chemistry, biochemistry, and molecular biology. The results of his studies showed that the floral tea aroma is produced as the results of self-defense mechanism responding to various kinds of stresses applied on leaves of tea plants during the manufacturing processes. Furthermore he studied the molecular basis of the profound aroma formation of the famous Formosa oolong tea, Oriental Beauty, and the Darjeeling Second Flash, that are produced from tea leaves infested by particular species of insects, he showed that the insect infestation is very important for each tea to have the characteristic tea aroma. Based on the knowledge he obtained through these studies, he is trying to improve the quality of black tea or to make new type of black tea by collaborating with scientists of Tea Research Association, India. His contribution to development of tea science was appreciated and he was awarded 34th Tocklai Conference Award by TRA India in 2005.

When he was appointed as a Professor of Kyoto University, he decided to organize a team comprising of young staff members with diversed research backgrounds including a natural product chemist, an organic synthetic chemist, and a plant molecular biologist. The team can nurture students who can well understand organic chemistry and apply molecular biological methods when need. His young collaborators have developed wide range of research projects that can be done by such a unique research group; its successful achievements include identification of cytochrome P450 genes involved in a new route of biosynthesis/metabolism of plant hormones such as brassinosteroide and abscisic acid, a challenging approach to clarify the key enzymes in homeostasis in auxins as well as a key enzyme in coumarine biosynthesis.

All the achievements, which are results of the contribution with his dedicated colleagues and students, have been published as 148 original articles in international journals and 91 accounts, reviews and books. His contribution to Kyoto University through his scientific and educational activities is hereby gratefully acknowledged.

Retirement

Professor TAKANO, Mikio
International Research Center for Elements Science
— Advanced Solid State Chemistry —

On March 31st, 2007, Dr. Mikio Takano retired from Kyoto University after 25 years of service and was honored with the title of Professor Emeritus of Kyoto University.

Dr. Takano was born in Kyoto on March 7th, 1944. He graduated from Department of Chemistry, Kyoto University in 1966. He studied the magnetic properties of various compounds containing iron with Mössbauer spectroscopy at the Graduate School of Science under supervision of Prof. Toshio Takada, and was granted a doctoral degree in 1973.

In 1972 he was appointed as a research associate of Department of Chemistry, Konan University. In 1983 he moved to the Institute for Chemical Research, Kyoto University, and he was promoted to a full professor in 1993 directing the Laboratory of Solid State Chemistry (presently re-named as Advanced Solid State Chemistry). During 2002–2005, he served as the director of the institute and faced the historical change of Kyoto University from a national university to a "national university corporation". On an educational ground, he has given a regular curse on Solid State Chemistry at the Graduate School of Science, Kyoto University and supervised the dissertation works of graduate students.

During his academic carrier, Dr. Takano devoted himself to solid state chemistry (SSC) of 3*d* transition metal oxides and made a number of notable findings. The discovery of the charge disproportionation of Fe^{4+} ion into Fe^{3+} and Fe^{5+} in $CaFeO_3$ (1977) attracted considerable attention in the fields of solid state chemistry and physics, and he was invited as an associate prof. of Bordeaux University I which was one of the three biggest world SSC centers. Dr. Takano was actively involved in the worldwide "High-T_C fever" produced by the discovery of high-T_C superconductivity in cupric oxides (1986). He found an efficient formation process of a superconductor called the Bi-2223 phase, which triggered off the development of industrial potential as a superconducting power cable, for example. Since this time, however, he and his colleagues began to search for genuinely new, chemically and physically interesting oxides using a high pressure technique. New superconductors such as $(Ca,Na)_2CuO_2Cl_2$ and also antiferromagnetic quantum spin ladders like $SrCu_2O_3$ and $Sr_2Cu_3O_5$ which represent the very initial stage of dimensional crossover from 1D to 2D were thus discovered. More recently his group has extended their preparative techniques to obtain films and nano-sized particles.

He authored and co-authored more than 400 research articles and letters, including those published in the most important international journals such as Nature, Nature Materials, and Science. For these distinguished contributions, he was invited as an invited prof. of Grenoble Univ. I (1998) and of Bordeaux Univ. I (1977, 1999). He was presented the JSPM Award for Innovatory Research in 1980 and 1994, and Award for Distinguished Achievements in Research in 2002 (JSPM: Japan Society of Powder and Powder Metallurgy), Award of Merit '97 from The Society of Non-Traditional Technology – New Superconducting Materials Forum, and The L'Oreal Art & Science of Color Prizes: The 8th Gold Prize in 2005. He also made a great effort to develop the SSC in Japan by taking an initiative to hold the first international conference on SSC in Japan.

Dr. Takano also contributed to various scientific societies. He has been an editor and a member of the editorial board of international journals including Solid State Sciences, Journal of Solid State Chemistry, and others. He has been a vice president of JSPM and an advisor of Japan Science and Technology Agency. He has tried to promote collaborations with industries also: He has served as an auditor of a company which has produced iron oxides for almost 200 years.

His contribution to Kyoto University through his scientific, educational and administrative activities is gratefully acknowledged. His sincere and warmhearted personality has been admired by his friends, colleagues, and especially by his students.