
Obituary

Professor Emeritus

Dr. KAJI, Keisuke (1939–2020)



Dr. Keisuke Kaji, Professor Emeritus of Kyoto University, passed away on April 6, 2020, at the age of 81.

Dr. Kaji was born in Kobe on 14th of February, 1939. After graduation from the Department of Industrial Chemistry, Faculty of Engineering, Kobe University in 1963, he continued his studies on polymer chemistry at the Graduate School of Engineering, Kyoto University for five years. Under the supervision of Professor Emeritus Ichiro Sakurada, he was granted a doctoral degree from Kyoto University in 1970 for his studies on the determination of elastic moduli of polymer crystals by an X-ray diffraction method. In 1968, he was appointed an instructor of Department of Polymer Chemistry, Faculty of Engineering, Kyoto University. On leave from the University, in the years 1976 to 1977, he stayed in the Institut für Physikalische Chemie, Johannes-Gutenberg-Universität Mainz (the University of Mainz, West Germany) as Wissenschaftlicher Mitarbeiter to work on neutron scattering of polymers in collaboration with Professor Dr. Erhard W. Fischer. Dr. Kaji was promoted to an Associate Professor in 1981, and to a full Professor of Kyoto University in 1988 and directed the Division of Polymer Materials Science, Laboratory of Fundamental Material Properties, Institute for Chemical Research.

During the past 40 years, Dr. Kaji's research interest encompassed a wide area in polymer science including fiber science. He is known as a pioneer of neutron scattering researches of polymers in Japan, and he applied this method as well as X-ray and light scattering methods for elucidating structure, dynamics and phase behavior of polymer materials to relate their microscopic and macroscopic behaviors. His scientific life started mainly with determining crystalline elastic moduli of various polymers by an X-ray scattering technique, which give the limiting values for super-high modulus fibers. In this connection he solved several problems of abnormal scattering from small polymer crystallites in the amorphous matrix as well. After Mainz, he applied inelastic neutron scattering techniques

to elucidate the origins of the glass transition and excess heat capacities in amorphous polymers. He is the first to perform systematic experiments on the structure of polyelectrolyte solutions, establishing the phase diagram as functions of the degree of polymerization and the concentration in their wide ranges and revealing the cause for the well-known anomalous behavior in reduced viscosity at very dilute concentrations. He also investigated the structure and its formation processes of poly(vinyl alcohol) gels, showing that the structure is controlled by a competition between the rates of the gelation and the phase separation. His researches on polymer crystallization are prominent. He discovered for the first time a completely new type of primary crystal nucleation, called spinodal decomposition (SD)-assisted crystal nucleation, which is greatly different from the usual homogeneous crystal nucleation. This distinct research has inspired many international investigations in this field. To promote this finding, he organized a project team on polymer crystallization as a coordinator of NEDO International Joint Research Project supported by New Energy and Industrial Technology Development Organization.

For his prominent studies on static and dynamic structure of polymers by neutron and X-ray scattering, he was awarded the Prize of the Society of Polymer Science, Japan in 1985. Dr. Kaji devoted himself to the Society of Fiber Science and Technology, Japan. He served as the Head of Kansai Branch in 1994, as the Chairperson of the Advanced Fiber Materials Research Committee in the years 1994 to 1995, and as the vice-President of the Society in the years 1999 to 2002. He has also devoted to the Society of Polymer Science, Japan as the Regional Manager of Kansai Branch since 1984 and as the Associate Editor of Polymer Journal since 1999.

His contribution to the University through both academic and administrative activities is gratefully acknowledged.

Obituary

Professor Emeritus

Dr. TAKEKOSHI, Hidekuni (1926–2020)

Dr. TAKEKOSHI, Hidekuni, Professor Emeritus of Kyoto University, passed away on January 11, 2020, at the age of 93.

Obituary

Professor Emeritus

Dr. MATSUI, Masakazu (1935–2020)

Dr. MATSUI, Masakazu, Professor Emeritus of Kyoto University, passed away on March 11, 2020, at the age of 84.