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## 2. Toshinobu Higashimura

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## Personalities in Polymer Science

### Toshinobu Higashimura



During his career which spanned over almost half a century, Toshinobu Higashimura has made significant contributions to the progress of polymer science in Japan and abroad. His accomplishments consist of major contributions to cationic and living polymerizations and precision polymer synthesis. He was also a substantial contributor toward the development of Kyoto and Shiga Prefecture University and the Society of Polymer Science, Japan.

Toshinobu Higashimura was born in 1929 in Kobe, the largest port in Japan, which is situated 60 km southwest of Kyoto. His father was Manji Higashimura and his mother, Yoshie. He has one brother and two sisters. Higashimura grew up in a suburb 40 km west of Kobe City and attended Elementary School there.

In 1945, Higashimura enrolled in a junior high school in Hiroshima. He was at school the day the atomic bomb was dropped. Being about one mile from the blast, he was buried under the debris of the wooden school building, but miraculously survived. He is probably the only polymer scientist who experienced an atomic mid at such close distance.

From 1947 to 1950, Toshinobu Higashimura attended senior high school in Himeji, Hyogo Prefecture. In 1950 he enrolled at Kyoto University, in the Department of Fiber Chemistry. He worked un-

der the guidance of the late Professor Seizo Okamura on a thesis entitled *Kinetic Study of Cationic Polymerization of Styrene with Metal Halides*. In 1953 he received his B.S. in Fiber Chemistry from Kyoto University and continued to work with Professor Okamura on a Ph.D. thesis entitled *Study of Cationic Polymerization of Vinyl Compounds*, which led to his Ph.D. degree (Dr. of Engineering) in Polymer Chemistry from Kyoto University in 1961.

In 1956, Higashimura was appointed Instructor (*Jo-shu*), at the Department of Fiber Chemistry, the Faculty of Engineering, Kyoto University, a position he held until 1961. From 1961 to 1970 he was Associate Professor (*Jo-kyoju*). By this time the Department of Fiber Chemistry had been renamed Department of Polymer Chemistry, still at the Faculty of Engineering, Kyoto University. During his time he continued to be associated with Professor Okamura.

In 1970, Higashimura was promoted to the position of Professor (*Kyoju*) at the Department of Polymer Chemistry, Kyoto University, a position he held until his retirement in 1993. During this period, from 1990–1992, Higashimura was also the Director of the Environment Protection Center at Kyoto University. At the end of his career at Kyoto University, from 1991 to 1993, he served also as a Council Member of Kyoto University. In 1993 he reached his mandatory retirement age and became a Professor Emeritus.

After his retirement from Kyoto University, Higashimura started his second career in academia. He was invited to assist in the establishment of The University of Shiga Prefecture and was appointed a Member of the Preparatory Committee in 1993. From 1995 to 2000, he served as Professor in the Department of Material Science in the Faculty of Engineering at the University of Shiga Prefecture. The University is located in Hikone, Shiga Prefecture, about 50 km northeast of Kyoto, on the east shore of Lake Biwa. From 1995–1999 Higashimura also served as Dean of the Faculty of Engineering. In 2000 he retired again and became Professor Emeritus of Shiga Prefecture University.

During his illustrious scientific career Higashimura developed and pursued a number of scientific interests in polymer chemistry and polymer synthesis:

- Fundamental problems of chemistry involved in cationic polymerization of vinyl monomers;
- In 1983 he discovered the living cationic polymerization with vinyl ethers and iodonium counter ion as the example which could be used for precision polymer synthesis.
- Transition metal-mediated polymerization of substituted acetylenes;
- Synthesis and utilization of oligomers;
- Ring-opening cationic polymerization of trioxane and related monomers;
- Radiation-induced polymerization.

The results of his work and those of his research groups have been published in over 500 original papers, and ca. 30 patents. He also wrote 30 review articles and 10 books. His work was also presented in a number of plenary and invited lectures at international symposia including Gordon Research Conferences and IUPAC Macromolecular Symposia.

Higashimura's scientific accomplishments resulted in his selection for several awards. In 1966 he received the Award of the Society for Polymer Science, Japan (SPSJ) and in 1993 the SPSJ Award for Distinguished Service for Progress of Polymer Science. His publication activity and interest in publishing brought him the Editorship and Editorial Board Memberships of several scientific journals that publish articles on polymers: *Macromolecules*, *Polymer Journal*, *Polymer Bulletin*, *Journal of Polymer Science, Part A, Polymer Chemistry Edition*. He was also the Regional Editor for Eastern Asia for *Die Makromolekulare Chemie* (now *Macromolecular Chemistry and Physics*).

Not only did Higashimura teach and present his lectures at Kyoto University, but he also gave courses at the Faculty of Engineering and Design, Kyoto Institute of Technology; the Faculty of Science, Osaka University; Nagasaki University of

Technology at the Faculty of Engineering; and Fukui Technical University at the Faculty of Engineering. He was also Guest Professor of Zhongshan University (Guangzhou, China; 1987).

Toshinobu Higashimura held a number of responsible positions in institutions representing research activities in Japan. From 1988 to 1994, he was a Member of the Liaison Committee of Chemistry Research of the Research Council of Japan. From 1994 to 1995 he served as Chairman of the Board of Directors of the Research Institute for Production Development, and since 2001 he has been the Representative Director of the Research Institute for Chemical Fibers, Japan.

For years, Higashimura played a prominent role in the Society of Polymer Science, Japan. From 1983 to 1986 he served as Vice President for two terms, and from 1988 to 1990 he was the President of the Society. From 1984 to 1988 he also served for two terms as the Vice President of the Adhesion Society of Japan.

Higashimura was also involved in several professional societies. In addition to being a member of SPSJ (honorary member) and the Adhesion Society of Japan (honorary member), he was also a member of the Chemical Society, Japan and of the Division of Polymer Chemistry of the American Chemical Society.

Higashimura was also active in International Activities related to polymer science in Japan and abroad. In 1980, he was a Member of the Organizing Committee of the 11th IUPAC International Symposium on Ionic Polymerization (IUPAC IP 80, Kyoto, Japan). In 1988, he served as the Chairman of the Program Committee of the 32nd IUPAC International Symposium on Macromolecules (IUPAC Macro 88, Kyoto, Japan). In 1990, he was the Chairman of the Organizing Committee of the Japan-China Symposium on Polymer Science and Materials (Guangzhou, China) and, in 1990, the Chairman of the Organizing Committee of the Third International Polymer Conference (IPC 90, Kyoto, Japan) organized by SPSJ.

In addition to his devotion to science,

Higashimura is also interested in photography and Japanese architecture and art. He can be seen visiting temples and hiking in the hills around Kyoto, Nara, and Shiga, admiring the numerous kinds of statues of Buddha and photographing the scenery. He is also an avid collector of Japanese and other postage stamps. He is an enthusiastic fan of selected sports and watches baseball and sumo wrestling, now mostly on television.

In 1953 Toshinobu Higashimura married Kiyomi Kakimoto. They have one daughter, Masako, and three granddaughters. Kiyomi is interested in the Japanese tea ceremony and Miso-ryu flower arrangement. Higashimura and his daughter often hosted persons accompanying scientists to international symposia in Japan and invited overseas guests to their home.

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