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## 34. Shunsuke Murahashi

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## Personalities in Polymer Science



Shunsuke Murahashi

### Honoring Professor Murahashi on his 88th Birthday [Bojyu]

Shunsuke Murahashi is one of the founders of Polymer Science in Japan and is regarded by many to be the father of Polymer Science at Osaka University. Many of his students have reached prominent positions in Polymer Science in Japan.

Shunsuke Murahashi was born in Kyoto on January 1, 1908, the 41th year of the Meiji era. The Murahashis were a highly educated family: Jiro Murahashi, Shunsuke's grandfather was an Engineer at the Mint Bureau and became President of the Osaka Hygiene Institute while his father was also an engineer and held a B.S. degree from Kyoto University.

Young Shunsuke went to Elementary School in Kyoto and to Middle School in Kobe, which at that time was the equivalent of a High School today.

After graduating from High School in 1923, Shunsuke went to Matsuyama College in Shikoku (which was called Matsuyama High School at that time) and graduated in 1927. Subsequently, he entered Tohoku University and carried out the required undergraduate research under the guidance of Professor Rikoh Majima, one of the most distinguished organic chemists of Japan at that time, particularly

well known for his work on natural products, including urushiol, the key ingredient of Japanese lacquer. In 1930 Murahashi received his B.S. degree in Chemistry, joined the Institute of Physical and Chemical Research and continued his research in organic chemistry in the same laboratory of Tohoku University for an additional three years. In 1933, when Professor Majima moved to Osaka University, Murahashi was invited to join Majima at his *kozo* at Osaka University as lecturer (*fukushu*). Murahashi was directly associated with Majima until 1939 working on various subjects of organic chemistry, including indole derivatives, dinaphthyl derivatives, alkaloids and the perfume components of mushrooms.

In 1935, Murahashi received his doctoral degree based on his research of the active ingredients responsible for the flavor component of the Matsutake mushroom.

In 1939, Shunsuke Murahashi was promoted to Associate Professor and subsequently moved to the newly created Institute of Scientific and Industrial Research of Osaka University. At that time, Murahashi was a classical and typical organic chemist.

In 1940, Murahashi was appointed to a newly created chair of Professor in the New Institute. It was at that time that Murahashi started his work on acetylene and carbon monoxide chemistry and on polymer synthesis and synthetic fibers. His interests were focused on monomer syntheses using acetylene as the starting material and the subsequent polymerization of these monomers. He developed new syntheses of vinyl ethers and butyndiol based on Reppe chemistry.

He still continued his work on organic chemistry and synthesized ephedrine and marfanil, which was commercialized. His research activities in polymer chemistry expanded rapidly from the synthesis and study of new polymers to organometallic chemistry. His creative work not only emphasized the academic but also the industrial point of view.

With the introduction of the new University program in Japan in 1948, higher education in Japan expanded and new thrust areas were developed. In 1953, Shunsuke Murahashi was appointed to a new chair (*6th kozo*) of polymer chemistry

in the Department of Chemistry, Faculty of Science. At the same time he was designated to organize a new Department of Macromolecular Science which was accomplished by 1959. He then became a Professor in this Department and served as the dean of the Faculty of Science in 1968.

In addition to his accomplishments in the then well established field of the synthesis of new polymers, Murahashi began to direct his efforts into an other new thrust area: the stereoregular polymerization of vinyl monomers. His research was focused on the preparation and characterization of new stereoregular polymers by Ziegler-Natta initiators, with special emphasis on the preparation of highly isotactic and syndiotactic poly(vinyl alcohol)s. He also became interested in the polymerization of internal olefins, the preparation of N-vinyl compounds and their polymerizations and polymer formation from azabutadienes.

Murahashi was not only actively involved in polymer research but he also raised the education of polymer science at Osaka University to a very early high standard. He always believed in the importance of a sound polymer education together with polymer research, since he first became involved in polymer research.

For his synthesis of ephedrine from acetylene he received the Osaka Cultural Promotion Award in 1948, and for his work on the synthesis of the stereoregular polymers, Murahashi received the Award of the Chemical Society of Japan in 1966. In 1987 he received a special Award in Synthetic Organic Chemistry for his work on Acetylene and carbon monoxide chemistry as well as polymer chemistry.

Shunsuke Murahashi was the Head of the Kansai Branch of the Society of Polymer Science, Japan, from 1958-1964 and the Vice President of the Society of Polymer Science, Japan, from 1968-1972.

Over 270 papers, published on organic synthesis and polymer science, resulted from Murahashi's scientific activities. A number of reviews and contributions to books also represent his wide scientific interest and his established acclaim.

After retirement from Osaka University, Murahashi continued his activities in various directions. He is an

\*For the significance of special Japanese Birthdays, see O. Vogl and T. Ouchi, *Polymer News* 21(1), 18 (1996).

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avid reader, enjoys gardening and collects stamps, particularly of Japanese stamps. Shunsuke Murahashi is a well-read person and always makes notes of his impressions after reading a book or a newspaper. He has a collection of his notes from the time that he retired from Osaka University. Currently, Murahashi has an extensive garden, and not only grows flowers, especially roses, but also vegetables, corn, potatoes and Japanese radishes.

In 1936 Shunsuke Murahashi married the former Yoshiko Shingu. They have 3 children, 2 sons, Shun-ichi Murahashi and Toshiaki Murahashi and one daughter, Kikuko Takahashi and 7 grandchildren. His son, Shun-ichi Murahashi is Professor of Engineering Science at Osaka University.

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