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## 36. Qian Renyuan

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## Personalities in Polymer Science

Honoring Professor QIAN Renyuan on his 80th Birthday



QIAN Renyuan\*

Qian Renyuan the leading personality in polymer science in China, has long been a pioneer in the establishment of research and education in the fields of polymer physics and electronic properties of organic solids in China.

Qian Renyuan was born on September 19, 1917 in Changshu, Jiangsu, the youngest of six children of Qian Nantie and Miao Lingfen. Young Renyuan was brought up in a home of Chinese literati. His father composed rhythmical prose, called *pianywen*, and also wrote poetry.

Qian Renyuan spent his early years in Jiangsu and entered Zhejiang University where he studied chemistry, graduating in 1939. He also developed a keen interest in physics; since his high school days he had been interested in radio and electronics. As he grew up, he became a radio amateur, and, during his sophomore year at the University, he constructed and operated with his classmate Qian Wan a short wave amateur station XUSJY which made contacts with radio amateurs in Japan, Macao, the Philippines and New Zealand.

After graduation from the University and during World War II he worked in

Yishan, Guanxi as an Assistant to a nuclear physicist, Professor Wang Ganchang. He then moved to Southwest Associated University, Kunming, where he carried out research on heavy water under Professor Zhang Qinglian. He became acquainted with some famous scientists of that time, including Yang Shixian, Wu Xuezhou, Huang Ziqing, Zhang Wenyu and Ye Qisun. During this period he acquired a broad background in physics and chemistry and decided to pursue a scientific career.

In 1943, Qian Renyuan went to the United States to the University of Wisconsin to work with Professor Farrington Daniels and later with Dr. Paul Bender on Raman spectroscopy. He was among the first to use photomultipliers as spectroscopic detectors. He also developed an electronic circuit for the precise measurements of dipole moments, the best designed instrument in a decade.

In 1948 Qian Renyuan returned to China and taught physical chemistry at Xiamen University and Zhejiang University. In 1951 he was appointed Professor at the Chinese Academy of Sciences, and, during the next 5 years, worked in the Institute of Physical Chemistry, the Institute of Applied Chemistry and the Institute of Organic Chemistry.

It was at the Institute of Organic Chemistry in Shanghai, where he began his research career in physics and physical chemistry of polymers. With the establishment of the Institute of Chemistry in Beijing in 1956, he moved to this Institute and served as department head.

During the cultural revolution, most of the research at the Institute of Chemistry especially in polymer physics, had come to an end. At the end of the cultural revolution new research had to be initiated and, in 1971, Renyuan started work on conducting and photoconducting organic solids. Of special interest for Qian Renyuan were the properties of polypyrroles and phthalocyanines.

As the research in the Institute flourished, Qian Renyuan had to assume administrative responsibilities. He became Deputy Director of the Institute in 1977 and was Director from 1981 to 1985.

Over the later years of his research

activities, his research interest broadened into a wide spectrum of polymer physics. He became interested in solution properties of polymers, polymer spectroscopy, physics of fiber spinning of synthetic polymers, chain microstructure, solid state properties, rheological properties of solutions and melts. In recent years he became interested in basic physical problems of the condensed state of macromolecules.

The latter research interest was the basis of his appointment as a chief scientist of a State Basic Research Project—the Climb-Up project, 1992–97. In this research field he advanced some new concepts, the behavior of polymer chains in concentrated solutions and in the solid state.

Qian Renyuan has won wide domestic and international recognition. He was elected as president of Chinese Chemical Society, and served from 1982–86; he was Chairman of Polymer Division, Chinese Chemical Society, 1986–96.

He gave numerous invited lectures at international meetings including the IUPAC International Macromolecular Symposia, the International Polymer Conference of the Society of Polymer Science, Japan, the International Conference on Synthetic Metals, meetings of the American Chemical Society, and the Australian Polymer Symposium. He has been very active in the Pacific Polymer Federation and served as councilor, and in IUPAC Macromolecular Division. He has helped organize scientific conferences on polymer science with the U.S., Japan, Germany, Italy, the United Kingdom and Korea.

In 1980, Qian Renyuan was elected a Member of the Chinese Academy of Sciences. He has won numerous awards including the Science Premium, of the Chinese Academy of Sciences in 1956; the State Invention Award in 1980; the SINOPEC Science and Technology Progress Award in 1987; the State Natural Science Award in 1988; the State Science and Technology Progress Award in 1989 and the Natural Science Award of the Chinese Academy of Sciences in 1989; the Qishi Award for Distinguished Scientists in 1994 and the International Award of the Society of Polymer Science, Japan in 1995.

\*In this article we are conforming with the Chinese custom and are using the family name first; for the use of oriental names see also *Polymer News* 20(12), 403 (1995).

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## Columns

Qian Renyuan's scientific work has been published in over 240 research papers, over 40 review articles and book chapters, two books and 2 patents.

Qian Renyuan still goes regularly to the Institute of Chemistry. He lives with his wife in Beijing; he has two children.

This article was written by **Otto Vogl**, Monbusho Professor, Kyoto Institute of Technology, Matsugasaki, Sakyo-ku, Kyoto 606, Japan\*\* and **WU\* Meiyun**, Institute of Chemistry, Academia Sinica, Beijing, China:

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