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Personalities in Polymer Science



He Binglin*

He Binglin is one of the founders of polymer science in China. He is not only a scientist and educator but he also saw that his scientific achievements were brought to technical fruition. He contributed especially to the use of polymers for separation technology and worked closely with industry.

He Binglin was born in Shawan, Panyu County, Guangdong Province in China on August 21, 1918 as the son of He Houxun, and Li Bao. He Binglin had two sisters, He Danjian and He Danjuan and three brothers, He Bingxi, He Binglian and He Binghuan. He grew up in Guangdong from 1918 to 1936 where he was enrolled in the Peizheng School system, attended Elementary, Middle and High School there and graduated in 1936. In 1938, he began his studies in the Department of Chemistry of Southwest Associate University (SAU) and received his B.S. degree in 1942. Subsequently, he was appointed Teaching Assistant at SAU and worked there from 1943 to 1946.

In 1948 He Binglin decided to go abroad and went to the United States for his graduate studies. He entered the Graduate School of Indiana University at Bloomington, Indiana and selected Professor John Hillman as the advisor for his thesis on *Organic Synthesis on Catalytic Hydrogenation*.

*In Chinese, the family name is written first followed by the first or given name as in He Binglin. It is becoming increasingly popular among Chinese scientists to write names in the Western style, Binglin He. However in this article we are using the traditional sequence of the Chinese names.

After receiving his Ph.D. in the Spring of 1952 He Binglin joined the National Aluminate Corporation in Chicago as an associate organic chemist where he worked on pesticides. After two years, he was reassigned to work on ion exchange resin and was promoted to senior organic research chemist. In 1956, he returned to China and accepted an appointment as Professor in the Department of Chemistry of Nankai University in Tianjin and has been at this University ever since. He has not officially retired and remains active as Emeritus Professor, in part because he is a Member of the Chinese Academy of Sciences (Academia Sinica).

At Nankai University He Binglin was Head of the Polymer Division of the Chemistry Department from 1958–83, Associate Chairman of the Chemistry Department from 1962–1979 and Chairman of the Chemistry Department from 1980–83; he also served as Director of the Institute of Polymer Chemistry from 1984–1996.

Professor He Binglin also served as President of Qingdao University from 1985 to 1986.

Over the years He Binglin was extensively involved in teaching: He presented courses to senior college students and graduate students on Polymer Chemistry, Natural Polymers, Phosphorus Polymers, Ion Exchange Resins and Chemical Analysis. During his academic career he supervised over 160 graduate students working for their M.S. and Ph.D. degrees and he also had 12 post-doctoral coworkers.

In his scientific career, He Binglin pioneered ion exchange resin research and polymeric adsorbent technology in China. From 1956 to 1958, He Binglin started research on ion exchange resins concentrating on established and conventional ion exchange resins and determined their chemical and physical properties. He improved this technology by preparing macroporous resins with significantly improved properties. He is also the founder of the first ion exchanger plant in China.

During the Cultural Revolution, He was dispatched from Nankai University to the Huabei Pharmaceutical Company where he played a significant role in the purification of streptomycin using the separation technology he had developed at Nankai University.

After 1976, He's research was focused on the following areas:

- Polymeric adsorbents;
- Biomaterials-removal of the a) endogenous b) exogenous toxicity from the blood;
- Environmental protection; Removal of harmful metals from the wastewater with ion exchange resins, elimination of organic compounds with polymeric adsorbents.

- Polymeric catalysts: He investigated polymer-supported metal complexes catalysts for hydrogenation, hydroformylation, asymmetric hydroxylation and ring-opening metathesis polymerization.

He Binglin presented numerous invited lectures at international conferences, such as the IUPAC Symposium held at the University of Massachusetts in 1982; the International Conference on Medicine-Biotechnology held at the University of Washington, Seattle in 1987; the Japan-China Bilateral Symposium on Polymer Science and Technology held in Tokyo and Kyoto in 1982; the third World Biochemistry Conference held in Kyoto in 1988; the International Symposium on Hemoperfusion and Artificial Organs organized in the Soviet Union in 1986.

In 1983 He Binglin organized the International Conference on Hemoperfusion and Artificial Organs in Tianjin. In 1991, He and Feng Xinde organized the International Conference in Biomaterials and Fine Polymers in Guilin. In 1994, He and Zhou Renxi organized the International Symposium on Reactive Polymers in Xian. In 1994 He Binglin with Zhou Renxi, organized the International Symposium on Biomaterials and Fine Polymers in Wuhan. He Binglin also organized a number of domestic conferences on Ion Exchange and Adsorption from 1985 to 1998 in various cities of China.

Of his other professional activities: from 1986 to 1992, he was Associate Chairman of the Polymer Division of the Chinese Chemical Society and from 1980–1990 a Member of the Standing Committee of the Chinese Chemical Society. He Binglin was a Consultant for the China Petroleum General Corporation from 1986 to 1993.

Since 1980, He Binglin is a member of the Chinese Academy of Sciences (Academia Sinica); and, since 1950, a Member of Phi Lambda Upsilon and Sigma Xi.

For his scientific accomplishments in science and education in China, Professor He Binglin received numerous awards from National, State and local authorities: They are listed in chronological order:

In 1964, the first and third class awards for herbicides and ion exchange resins respectively from the State Commission of Science and Technology; in 1978, six awards for his work on ion exchange resins from the State Science Congress; in 1982, the third class award of State Inventions from the State Commission of Science Technology; in 1982, the first class awards from the Tianjin Community Commission of Science and Technology; in 1983, the second class award for the removal of excess sleeping pills or absorption of poisonous pesticides from the

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blood of patients with hemoperfusion from the Tianjin Commission of Science and Technology; in 1983, the second class award for H-series adsorbents from the State Commission of Education; in 1983, the third class award from the Tianjin Bureau of Light Industry; in 1984, the second class award from the Tianjin Municipality and the State Bureau of the Environment; in 1985, the award from the Science Technology of the Ministry of Electronics; in 1986, the third class award from the world exhibition of IJNICA held in Brussels, Belgium; in 1987, the second class award for scientific and technology progress from the State Commission of Education; in 1987, the second class award for the synthesis, structure and property of ion exchange resins and new types of polymeric adsorbents from the National Natural Science Foundation; in 1988, the second class award of science and technology for polymer supported chelate catalysts from the Ministry of Education; in 1989, the award for the establishment of distinguished systems in teaching from the Ministry of Education; in 1991, the second class award for progress in science and technology by studying the effects of the structures and properties of polymers on crosslinking reaction from the Ministry of Education; in 1991, the third class award of the science and technology progress on the design synthesis of the peptides from amino acids and resolution of it in order to get biological active products from the Ministry of Education; in 1993, the second class award of progress in science and technology for the design and synthesis of new types of polymer separation materials used for the selective separation for natural products from the Ministry of Education; in 1996, the award for contributions to the development of polymer science and International cooperation in the field of polymer science from the Society of Polymer Science, Japan; in 1997, the award given to the person who has made outstanding contributions to science and technology from the selection board of Ho Leung, Ho Lee foundation; in 1998, the award for distinguished teaching contributions from the Tianjin Hua Ye Groups Company; in 1999, the first class award for biomedical polymers from the Ministry of Education.

He Binglin has published extensively and was very active as Editor of scientific journals. He published over 650 scientific papers in Chinese and International journals and 120 review papers were published in Chinese journals. He was involved in five domestic Chinese Journals on science in China. He is the Associate Editor-in-Chief of the Chinese Journal of Polymer Science and since 1984 he has been the Editor of the

Chemical Journal of Chinese Universities. Since 1985 He has also been the Editor-in-Chief of Ion Exchange and Adsorption, and, since 1986, of Science in China, (Chinese Science Bulletin). He Binglin is also the Editor of the International Journal of Reactive and Functional Polymers.

He Binglin has a number of hobbies. He enjoys classical music, plays bridge and watches basketball games.

In 1946 He Binglin married Chen Ruyu, his classmate. She also went to SAU from 1938 to 1942 and came with He Binglin to the United States in 1948. She also enrolled in Indiana University in Bloomington and earned her Ph.D. in Organic Chemistry in 1952. In 1956 she was appointed Professor in the Research Institute of Elemental-Organic Chemistry of Nankai University. She was elected a Member of the Chinese Academy of Sciences in 1980. Like her husband, He Binglin, she has not officially retired.

The He's have three sons. Two were born in the USA and one in Tianjin. One of his sons, He Zhenchi, is married to Huang Jianping the daughter of Professor Huang Baotong, the former Director of the Institute of Applied Polymer Chemistry in Changchun, China.

This article was prepared by **Otto Vogl**, Herman F. Mark Professor Emeritus, Department of Polymer Science and Engineering, University of Massachusetts, Amherst, MA 01003-4350, and **Frank C. Ho (He Zhenchi)**, He Binglin's son, Carolina Power and Light, 120 Kindly Street, Raleigh, NC 27602, USA.