

Special Issue: In Memory of Professor Fosong Wang



Professor Fosong Wang (1933–2022)

Professor Fosong Wang was a leading polymer chemist and made great contributions in polymer science including synthetic rubber, stereospecific polymerization, conjugated polymers and biodegradable polymers. He was also a highly respected educator in the field of polymer. He was not only a professor, a mentor, but also an academic father to many students. In order to thank him for his outstanding contributions to the research and education of polymer science and for setting an excellent and influential example for young generation, Professor Qi-Feng Zhou, the editor-in-chief of *Chinese Journal of Polymer Science* (CJPS), initiated a special issue “In Celebration of the 90th Birthday of Professor Fosong Wang” in April 2022. However, when the collection of contributed papers of this special issue was nearing completion, Professor Fosong Wang unfortunately passed away on December 31, 2022 in Beijing, at the age of 89 due to illness. The death of Professor Fosong Wang is a great loss for us and for polymer science in general. Thus, this special issue was retitled as “In Memory of Professor Fosong Wang” to memorize this great chemist.



Picture 1: Professor Fosong Wang (2009)

Professor Wang was an honorable, open-minded, and generous man. He was born in 1933 in Guangdong Province, China. He received his B. S. degree from Wuhan University in 1955, and Ph.D. degree from the Institute of High Molecular Compounds Leningrad, USSR, in 1960. Since 1961, he had been working in Changchun Institute of Applied Chemistry, Chinese Academy of Sciences. In 1979–1981, he was a visiting professor in the Institute of Polymer of CNR, Italy. He was promoted to full professor in 1983. He was elected as a member of Chinese Academy of Sciences in 1991, and a member of the Academy of Sciences for the Developing World in 2000.

Professor Wang devoted his life to polymer science. His research over the last 70 years had been focused on the field of synthetic rubber, stereospecific polymerization, conjugated polymers and biodegradable polymers. He is one of the pioneers in synthetic rubbers and stereospecific polymerization of butadiene and isoprene in China. For example, in 1966, he invented the cobalt-based catalyst system for *cis*-polybutadiene, which was used as the first catalyst for the pilot plant test of synthetic rubber in Jinzhou Petroleum 6th Plant. He developed the polymerization of isoprene with rare-earth catalysts and published the first paper on the systematic study on the polymerization of isoprene in 1974. He is one of the pioneers of conducting polymers in China. In 1981, he started the fundamental research on the synthesis and properties of polyacetylene prepared with rare earth catalysts, and obtained high *cis*-content polyacetylene film with different molecular and crystalline structures. The *cis-trans* thermal isomerization of polyacetylene was investigated by infrared spectroscopy and free-standing polyacetylene film with the conductivity exceeding 10⁵ S/cm was developed by using low temperature polymerization and aging catalyst at high temperature. In 1983, he focused on synthesis of conducting polyaniline by chemical oxidative polymerization and electrochemical oxidative polymerization. The team led by him invented a chemical oxidative polymerization method for substituted anilines, elucidated the structure-property relationship of the resulting polymers, succeeded in preparing soluble polyanilines and free-standing polyaniline film. He published the first paper on using solution NMR and infrared spectroscopy without scattering influence to investigate the 1,4-coupling chain structure and molar ratios of benzoid and quinoid structures in the intrinsic state of soluble polyaniline. Four BQ-derivatives mode in the doped state was proposed by investigating the doping behavior. Now, 1000 tons/year mass production line was built for polyaniline as anti-corrosive coating. He then continued to lead the development and application of optoelectronic conjugated poly-

mers such as single light-emitting polymers for white electroluminescence and through-space charge transfer polymer for full color display, and high mobility conjugated polymers for solution-processed organic transistor. Starting around 1998, Professor Wang extended his research focus to the development of the high molecular weight CO₂-based biodegradable polymers by the copolymerization of propylene oxide and CO₂ with heterogeneous rare earth ternary catalysts. On the basis of this new technology, a ton-scale pilot plant was first built in 2004 in Inner Mongolia, China, being a breakthrough for poly(propylene carbonate) (PPC) industrialization in the world. In 2013, a 10000 tons/year production line was built in Taizhou Bangfeng Plastics (Zhejiang, China).



Picture 2: Fosong Wang (right) and Rizhen Jin (left) work in laboratory in 1973

For his achievements in the fields of synthetic rubber, stereospecific polymerization and plastic electronics, Professor Fosong Wang received many national and international awards, including the special class award of Nation-

al Science and Technology Progress Awards (1985), the second (1982, 1987, 2009) and the third class awards (1991) of National Natural Science Award of China, the International Award of the Society of Polymer Science, Japan (2001).

Professor Wang was also active in various national and international professional organization in polymer science. He served as the Director of Changchun Institute of Applied Chemistry, Chinese Academy of Sciences (1985–1988), vice President of Chinese Academy of Sciences (1988–1994). He had been the deputy director of foreign affairs committee of the National People's Congress (1993–2003). He had been an executive member of the Chinese Chemical Society for five terms (1986–1990, 1991–1994, 1999–2002, 2003–2006, 2007–2010), and the President of Polymer Division, Chinese Chemical Society (1995–2010), the President of Pacific Polymer Federation (PPF, 1998–1999), the President of Federation of Asian Polymer Societies (FAPS, 2012–2013). He served as the Editor-in-Chief of *Chinese Journal of Polymer Science* (2004–2015) and *Acta Polymerica Sinica* (2003–2015), and had been an Editorial Board Member of many journals including *Progress in Polymer Science*, *Journal of Macromolecular Science—Pure and Applied Chemistry* and *Polymers for Advanced Technologies*, and the Editorial Advisory Board Member of *Polymer*.

This special issue brings together work from 21 national renowned researchers including his old friends, colleagues, and students. It includes 1 perspective article, 6 review articles and 14 research articles related to the optoelectrical polymers, polymer chemistry, polymer physics and bio-based polymers, which, we believe, will provide new inspiring insights into the development of polymer science. With this special issue, we pay our tribute to Professor Fosong Wang's great contributions to polymer science. He will always be in the memory of his family, friends, colleagues, students and those he had inspired.



Prof. Zi-Chen Li
Associate Editor



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