

Prof. Liqun Zhang's Curriculum Vitae

- **President** of Xi'an Jiaotong University, Xi'an
- **Academician** of the Chinese Academy of Engineering (CAE)
- **Doctor Honoris Causa** of the University of Lorraine, France
- **Vice President** of the Chemical Industry and Engineering Society of China
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Education

- B. E., Beijing University of Chemical Technology 1986-1990
- M. S., Beijing University of Chemical Technology 1990-1992
- Ph. D., Beijing University of Chemical Technology 1992-1995

Working Experiences

- Associate Professor, Beijing University of Chemical Technology 1996-1998
- Professor, Beijing University of Chemical Technology 1998-2022
- Visiting Scientist, Department of Polymer Science, University of Akron, USA 1999.06-2000.06
- Post-doctor, Department of Macromolecular Science, Case Western Reserve University, USA, 2000.06-2001.05
- Cheung Kong Scholar, Ministry of Education, China, 2005-2008
- Distinguished Young Scientists Funds, Natural Science Foundation of China, 2007-2011
- Hundred, thousand, ten thousands of Talents Project in New Century, Ministry of Personnel, China, 2007
- Chief Scientist of the National 973 Project, Ministry of Science and Technology, China, 2012-2017
- Dean of the College of Materials Science and Engineering of BUCT, 2016-2020
- Vice-president in charge of research of Beijing University of Chemical Technology, 2020-2022
- **President** of South China University of Technology (SCUT), Guangzhou, 2022-2024

Current Positions:

- **President** of Xi'an Jiaotong University, Xi'an, 2024-now
- Director of Engineering Center of the Ministry of Education on Energy Conservation and Resources Utilization of Elastomer
- Vice-director of State Key Laboratory of Organic-Inorganic Composites
- Leader of "Yangtze River Scholar Innovation Team of Ministry of Education"
- Director of the National-Level Teaching Group of "Polymer Engineering"
- Director of the National Refined Course "Polymer Processing Engineering"

Research fields

- Elastomer Materials Science and Engineering
- Polymer Process Engineering
- Polymer Nanocomposites
- Bio-based Polymer Materials

- Reclamation of Waste Rubbers

Scientific Records from Google Scholar on 7 January 2024

(<https://scholar.google.com/citations?user=YrHG4oIAAAAJ&hl=en&oi=ao2>)

- Over 800 peer-reviewed articles in peer-reviewed journals
- Total citations: 43900
- H-index: 102
- Over 100 plenary lectures or invited lectures at international conferences
- (Co-)chair of more than 40 conferences or sessions
- Two books (chief editor) and 8 chapters in 8 scientific books

International and Chinese and Honors & Awards

1. *Doctor Honoris Causa of the University of Lorraine, France, 2022*
2. *Academician of the Chinese Academy of Engineering (CAE), 2021*
3. *Colwyn Medal of The Institute of Materials, Minerals and Mining (only one person is awarded every year worldwide), UK, 2021*
4. *International Rubber Conference Organization (IRCO) Medal (IRCO, only one person is awarded each time worldwide), 2018*
5. *Morand Lambla Award of Polymer Processing Society (only one person is awarded every year worldwide), 2014*
6. *Sparks-Thomas Award of Rubber Division of American Chemical Society (only one person is awarded every year worldwide), 2012*
7. *The SCEJ Asia Research Award of the Society of Chemical Engineers, Japan (SCEJ, two Asians are awarded every year), 2012*
8. National Excellent Scientific and Technical Workers, 2014
9. Youth Award of 9th Guanghua Engineering Science and Technology Award, Chinese Academy of Engineering (CAE), 2012
10. Scientific and Technological Innovation Award (Youth Innovation Award) of Ho Leung Ho Lee Foundation, 2011
11. Youth Science and Technology Award for Outstanding Contribution, China Petroleum and Chemical Industry Federation, 2011
12. 18th Mao Yisheng Youth Science and Technology Award, Mao Yisheng Foundation, 2009
13. 9th China Youth Scientific Award, China Association for Science and Technology, 2006
14. Excellent Leadership in Creation and Innovation in China Rubber Industry, China Rubber Industry Association, 2006
15. Youth Teacher Award, Ministry of Education, China 2005
16. Special Government Allowance of the State Council, China, 2005
17. Youth Award of Hou Debang Science and Technology Award, China Chemical Industry and Engineering Society, 2005

Important Chinese Scientific and Technological Prizes

1. The firstwinner of the Second Prize of National Scientific and Technological Progress Award for “special and high performance rubber composites toward key technique and engineering application”, 2019
2. The first winner of the Second Prize of National Technological Invention Award for “key technologies in the design and preparation of high performance rubber nanocomposites for

fuel saving tires”, 2015

3. The first winner of the Second Prize of National Technological Invention Award for “the whole set industrialization techniques on complete pre-dispersion and dynamic vulcanization of thermoplastic vulcanized rubber”, 2008
4. The first winner of the First Prize of the China Petroleum and Chemical Industry Federation for Scientific and Technological Progress Award for “key technologies and industrial application of high performance and long lifetime rubber conveyor belt”, 2012
5. The first winner of the First Prize of the China Petroleum and Chemical Industry Federation for Scientific and Technological Progress Award for “the preparation technologies of special elastomer composite for high performance packer cartridge in oil field”, 2006
6. The first winner of the First Prize of the Science and Technology Award of China Circular Economy Association for “the green preparation technology of granular regenerated rubber by continuous de-crosslinking of multi-order screw”, 2016
7. The first winner of the First Prize of the Science and Technology Award of China Circular Economy Association for “the key preparation technologies of high performance bitumen modified by waste tire rubber powder”, 2014.

Professional Affiliations

1. **Vice President** of the Chemical Industry and Engineering Society of China, Chairman of Green Manufacturing Division for Rubber and Plastic Products
2. **Council member** of Chinese Materials Research Society and Vice Chairman of Macromolecular Material and Engineering Division
3. **Council honorary member** of Chinese Society for Composite Materials
4. **Council Member** of China Energy Technology and Industry Society
5. **Associate Editor of scientific journals:** Science Bulletin (materials section)
6. **Honorary Editor-in-Chief of scientific journals:** Advanced Nanocomposites
7. Member of Editorial Board of scientific journals: Composites Science and Technology, Composites Part B: Engineering, Composites Communication, Nano Materials Science, Journal of Applied Polymer Science, Plastics, Rubber and Composites: Molecular Engineering, Advanced Fiber Materials, Giant
8. Associate Editor of Chinese scientific journals: Chinese Polymer Bulletin, Synthetic Rubber Industry, Plastics Industry, Polymer Bulletin
9. Member of Editorial Board of Chinese scientific journals: Acta Materiae Compositae Sinica, Polymer Materials Science & Engineering, Engineering Plastics Applic
10. Chief Editor of Chinese scientific journals: Elastomers; Honorary Editor-in-Chief of Chinese scientific journals: Special Rubber Products, Rubber Industry,

Publications: 10 most relevant articles

- Engineering sciences of high performance elastomers (articles 1-4),
- Engineering sciences of functional elastomers (articles 5-8)
- Engineering sciences of green elastomers (articles 9-10)

Authors, title, journal name & year	Citations
1. Liqun Zhang , Yizhong Wang, Yiqing Wang, Yuan Sui, Dingsheng Yu, "Morphology and mechanical properties of clay/styrene-butadiene rubber nanocomposites," Journal of Applied Polymer Science , 78, 1873, 2000.	434
2. Zhenhua Wang, Jun Liu, Sizhu Wu, Wenchuan Wang, Liqun Zhang* , "Novel percolation phenomena and mechanism of strengthening elastomers by nanofillers," Physical Chemistry Chemical Physics , 12, 3014, 2010.	232
3. Jun Liu, Yong-Lai Lu, Ming Tian, Fen Li, Jianxiang Shen, Yangyang Gao, Liqun Zhang* , "Interesting influence of nanosprings on the viscoelasticity of elastomeric polymer materials: simulation and experiment", Advanced Functional Materials , 23, 1156, 2013.	93
4. Xuan Qin, Bingyong Han, Jianmin Lu, Zhao Wang, Zheng Sun, Dong Wang, Thomas P. Russell*, Liqun Zhang* , "Rational design of advanced elastomer nanocomposites towards extremely energy-saving tires based on macromolecular assembly strategy," Nano energy , 48, 180-188, 2018.	62
5. Jiajia Xue, Min He, Hao Liu, Yuzhao Niu, Aileen Crawford, Phil D Coates, Dafu Chen, Rui Shi*, Liqun Zhang* , "Drug loaded homogeneous electrospun PCL/gelatin hybrid nanofiber structures for anti-infective tissue regeneration membranes." Biomaterials , 35, 9395-9405, 2014. A joint work with the University of Bradford, UK.	366
6. Meihong Liao, Pengbo Wan,* Jiangru Wen, Min Gong, Xiaoxuan Wu, Yonggang Wang, Rui Shi, Liqun Zhang* , "Wearable, healable and adhesive epidermal sensors assembled from mussel-inspired conductive hybrid hydrogel framework," Advanced Functional Materials , 27, 1703852, 2017.	657
7. Xinxin Zhou, Baochun Guo*, Liqun Zhang* , Guo-Hua Hu*. "Progress in bio-inspired sacrificial bonds in artificial polymeric materials." Chemical Society Reviews , 46, 6301-6329, 2017. A joint work with the University of Lorraine, France.	154
8. Wenjie Wu, Xia Cao, Jingdian Zou, Yong Ma, Xiaohui Wu, Chongzhi Sun, Mei Li, Ning Wang, Zhonglin Wang*, and Liqun Zhang* . "Triboelectric nanogenerator boosts smart green tires," Advanced Functional Materials , 29, 1806331, 2019.	69
9. Runguo Wang, Jun Ma, Xinxin Zhou, Zhao Wang, Hailan Kang, Liqun Zhang* , Kuo-chih Hua, and Joseph Kulig, "Design and Preparation of a Novel Cross- Linkable, High Molecular Weight, and Bio-Based Elastomer by Emulsion Polymerization", Macromolecules , 45, 6830, 2012. A joint work with Goodyear Company.	91

10. Qinan Zhang, Mengze Song, Yanyan Xu, Wencai Wang, Zhao Wang*, Liquan Zhang* , “Bio-based polyesters: Recent progress and future prospects”, Progress in Polymer Science , 120, 101430, 2021.	148
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Main Research Achievements

Professor Liquan Zhang has made contributions to the realm of polymer materials and engineering, particularly in the field of rubber materials science and engineering, achieving globally recognized accomplishments and status. His exemplary achievements have been recognized with prestigious awards from the United States, Japan, United Kingdom, and the global community. These accolades, often steeped in history and limited to one recipient per edition, recognize his contributions, along with several important awards from associations and societies in the fields of polymer and chemical engineering in China. Evidently, Professor Liquan Zhang's influence extends beyond accolades, as reflected in his extensive record of over 100 Plenary and Invited Lectures at international conferences. As the corresponding author of more than 400 SCI-indexed papers, his publications have amassed over 43,000 citations, attaining an impressive H-index of over 100. Additionally, he holds over 200 Chinese patents and PCT patents. He may be considered one of the most outstanding scientists in the field of rubber materials science and engineering worldwide today. In China, he is the only Member of the Chinese Academy of Engineering in the field of rubber materials science and engineering, and is the leading academic figure in this field.

His most significant contributions include:

(1) Pioneering molecular dynamics simulation research in the field of rubber materials science, establishing related methodologies, and revealing the complex structure-property relationships of rubber nanocomposite materials at the molecular and nanoscale levels. This has strongly guided the design of rubber nanocomposite materials and products, as well as the development of new elastomer materials. Therefore, in this field, he can be considered a pioneer and a leader. His research findings have already been applied by more than 10 domestic and international tire companies, sealing product companies, and vibration damping product companies. Furthermore, based on his technology, the world's first production line for layered silicate/rubber nanocomposite materials (10,000 tons/year) has been successfully established and utilized in China.

(2) He and his team tackled the issue of non-recyclable petroleum-based thermoset rubbers and bridged the gap in China's thermoplastic vulcanizate (TPV) industry. They innovated the Fully Pre-dispersion-Dynamic Vulcanization technology, setting up a comprehensive suite of TPV production techniques with proprietary intellectual property rights. They crafted a variety of recyclable TPVs, including EPDM/PP, IIR/PP, and NBR/PP TPV, and led the establishment of the country's first 10,000-ton production line. This initiative culminated in the formation of the largest TPV manufacturing entity in China, with an annual revenue surpassing 1 billion US dollars. Moreover, the enterprise has made significant strides in international trade, exporting its products to more than ten nations, including the United States and Japan.

(3) Addressing the unsustainability and high carbon emissions of fossil-based synthetic

rubber, as well as the pollution issues related to waste rubber products, especially tire dust, he and his team have invented two types of bio-based rubber with new structures: one is itaconate elastomer and the other is polyester elastomer. They scaled them up for trial production and downstream product development. These two types of rubber are original creations and are expected to have excellent market prospects, attracting widespread attention from the global rubber industry and scientific community. It can be said that these works are pioneering. The itaconate rubber line with a capacity of 5,000 tons/year has been established, and the polyester rubber line with a capacity of 10,000 tons/year is being established.

(4) Addressing the pollution issues related to waste tires and the efficient recycling and reuse of waste rubber, he and his team have invented a continuous and green technique by combining three twin-screw extruders with different function. Through coupling optimization with chemical additives and process parameters, he successfully achieved the de-crosslinking of waste tire rubber, obtaining reclaimed rubber with good reprocessability and high performance. Over twenty production lines have been established in multiple enterprises, producing 100,000 tons of reclaimed rubber per year. Currently, this technology is the most advanced and environmentally friendly in the whole world.

(5) He has also made significant contributions in the field of special and functional rubber materials and products, including flame retardant, damping, oil resistance, heat resistance, chemical corrosion resistance, thermally conductive, and electrically conductive rubber materials and products, which have been applied in a number of enterprises in China and internationally.