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1936年5月生于江苏省无锡市,

1959年毕业于莫斯科门捷列夫化工学院, 随后于1962年在该校获得技术科学副博士学位。

现任国际学术期刊“**Computers & Chemical Engineering**”编委, “中国化学工程学报(英文)” 副主编等职。曾担任第8届过程系统工程会议(2003)国际组委会主席。

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自70年代后期即致力于化工系统工程新学科的建设和工业应用, 创建了教学科研基地。围绕石化企业能源和资源的优化利用, 在化工系统综合、在线数据校正及在线优化、人工智能应用、产业链优化、面向本质安全的化工过程设计等前沿领域中展开研究, 不少创新性成果在工业实践中得到了应用, 主要有: 解决了大型石化装置在线优化的关键问题——异常数据识别和在线数据校正, 实现了从离线优化到在线优化的技术跨越; 开发出具有自主知识产权的乙烯工业裂解炉模拟优化工程化软件; 将人工智能与数值计算相结合, 发展了具有逻辑推理、定性决策和定量计算功能的化工智能系统; 提出了考虑灵敏度要求的换热网络优化综合方法以及全厂能量系统集成的数学模型和求解策略, 在炼油厂节能改造中效益明显; 提出了基于过程稳定性和可控性分析的全参数可行域的操作子区域的划分策略, 使得所设计的过程在本质上具有维持稳定运行的系统特性, 从源头上降低不稳定生产的概率或避免事故的发生。

目前主要研究方向为: 过程综合、过程动态分析和生物燃料产业链优化。过程综合重点关注全网络集成的多目标优化算法; 过程动态分析主要基于奇异值理论和分岔理论, 对系统的稳定性和可控性进行有效分析; 生物燃料产业链优化重点研究综合考虑经济、环境、能效等多个指标的生物燃料产业链多目标建模及优化方法。

曾获全国科技大会重大科技成果奖1项, 国家科技进步三等奖1项, 省部级奖13项, 出版专著1本, 译著2本, 在国内外重要期刊及会议上发表论文250余篇。

代表性论文(2009-2013):

1. Wang, HZ; Zhang, N; Qiu, T; Zhao, JS; He, XR; Chen, BZ. **Analysis of Hopf Points for a Zymomonas mobilis Continuous Fermentation Process Producing Ethanol**. Industrial & Engineering Chemistry Research, 2013, 52: 1645-1655
2. Yuan Z, Chen B, Gani R. **Applications of process synthesis: Moving from conventional chemical processes towards biorefinery processes**[J]. Computers & Chemical Engineering, 2013, 49: 217-229
3. WANG H, CHEN B, QIU T, et al. **Quantitative analysis of the capability of resistance to disturbance of stable steady-state points**[J]. CIESC Journal, 2012, 1: 027.
4. Yuan Z, Chen B. **Process synthesis for addressing the sustainable energy systems and environmental issues**[J]. AIChE Journal, 2012, 58(11): 3370-3389.
5. Lei Zhang, Bingzhen Chen (2012), **Applications of Shannon's Entropy Theory to Naphtha Pyrolysis Simulation**. Chem. Eng. Technol., 35: 281-286. doi: 10.1002/ceat.201100194 on Process Systems Engineering, 15-19 July 2012, Singapore.)
6. Zhihong Yuan, Nan Zhang, Bingzhen Chen, Jinsong Zhao. **Systematic Controllability Analysis for Chemical Processes**. AIChE Journal. 58(2012) 3096-3109.
7. Zhihong Yuan, Bingzhen Chen, Gürkan Sin, Rafiqul Gani. **State-of-the-art and Progress in Optimization based Simultaneous Design and Control for Chemical Processes**. AIChE Journal. 58 (2012) 1640-1659. (Featured on Cover)
8. Zhihong Yuan, Bingzhen Chen, Jinsong Zhao. **Phase Behavior Analysis for Industrial Polymerization Reactors**. AIChE Journal. 57(2011) 2795-2807.
9. Zhihong Yuan, Bingzhen Chen, Jinsong Zhao. **An Overview on Controllability Analysis of Chemical Processes**. AIChE Journal. 57(2011) 1185-1201.
10. Zhihong Yuan, Bingzhen Chen, Jinsong Zhao. **Controllability Analysis for the Liquid-phase Catalytic Oxidation of Toluene to Benzoic Acid**. Chemical Engineering Science. 66(2011) 5137-5147.
11. Zhihong Yuan, Bingzhen Chen, Jinsong Zhao. **Effects of Manipulated Variables Selection on the Controllability of Chemical Process**. Industrial & Engineering Chemistry Research. 50(2011) 7403-7413.
12. Wang Hangzhou, Chen Bingzhen, He Xiaorong, Zhao jinsong, Qiu Tong. **Analysis of the stability and controllability of chemical processes**, Computers and Chemical Engineering, 2011, 35(6):1101-1109.
13. Wang Hangzhou, Chen Bingzhen, He Xiaorong, Zhao Jinsong, Qiu Tong. **Modeling, Simulation and**

- Analysis of the Liquid-phase Catalytic Oxidation of Toluene**, Chemical Engineering Journal, 2010, 158(2):220-224.
14. Wang Hangzhou, Chen Bingzhen, He Xiaorong, Zhao Jinsong, Qiu Tong. **Numerical Analysis Tool for Obtaining Steady-State Solutions and Analyzing Their Stability Characteristics for Nonlinear Dynamic Systems**, Journal of Chemical Engineering of Japan, 2010, 43(4):394-400.
 15. Wang Hangzhou, Chen Bingzhen, He Xiaorong, Qiu Tong, Zhao Jinsong. **SDG Based HAZOP Analysis of Operating Mistakes for PVC Process**, Process Safety and Environmental Protection, 2009, 87(1):40-46.
 16. Zhihong Yuan, Hangzhou Wang, Bingzhen Chen, Jinsong Zhao. **Operating Zone Segregation of Chemical Reaction Systems based on Stability and Non-minimum Phase Behavior Analysis**. Chemical Engineering Journal. 155(2009) 304-311.