

基本信息

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教育背景

1999.09-2002.08	天津大学，化学工程专业，工学博士
1992.09-1995.07	四川大学，化学工程专业，工学硕士
1982.09-1986.07	昆明理工大学，化学工程专业，工学学士

工作经历

2016.07-至今	北京理工大学化学与化工学院，教授/化学工程与技术一级学科责任教授、化学工程与工艺专业责任教授
2005.08-2016.06	北京理工大学化工与环境学院，教授/化学工程与技术一级学科责任教授
2002.09-2005.07	清华大学化工系，博士后，博士后联谊会副理事长兼秘书长
1995.08-1999.08	昆明理工大学化工与轻工学院，讲师、副教授
1987.08-1992.08	昆明理工大学化工系，助教、讲师
1986.08-1987.07	云南省省级机关讲师团曲靖分团支教

研究方向

1	膜材料设计理论与制备技术、成膜机理与膜结构调控、膜过程传递理论与分离机理
2	生物质化学和生物转化为能源化学品的关键问题
3	催化膜及其反应器
4	膜法水处理
5	新型分离材料(CO ₂ 捕集、VOCs吸附等)

<u>荣誉奖励</u>	
1	北京理工大学“师德先进个人”（2015）
2	北京理工大学“三育人”先进个人（2013）
3	北京理工大学优秀博士论文指导教师（2014）
<u>承担项目</u>	
1	选择性渗透 VOCs 的化工分离新材料多层次微结构设计 with 性能调控制备，国家自然科学基金重点项目(21736001)，2018/01-2022/12，主持
2	键合负载离子液体多孔膜微结构设计 with 催化生物质水解特性调控，国家自然科学基金面上项目(21576024)，2016/01-2019/12，主持
3	新型膜反应器构建及其催化纤维素水解动力学研究，北京市自然科学基金项目(2162038),2016/01-2018/12，主持
4	真空膜蒸馏耦合能源植物酶解发酵制乙醇基础研究，国家自然科学基金面上项目(21276024)，2013/01-2016/12，主持
5	聚烯烃膜组件整体膜微孔可控亲水抑菌接枝修饰研究，国家自然科学基金面上项目(20976012)，2010/01-2012/12，主持。
6	聚合物膜可控微孔修饰固载手性 salen 催化剂及催化性能研究，国家自然科学基金面上项目(20676015)，2007/01-2009/12，主持
7	聚合物膜微孔接枝负载离子液体及其水解能源植物特性研究，教育部博士点专项基金优先发展领域项目(20131101130005)，2014/01-2016/12，主持
8	聚烯烃膜组件整体可控膜微孔抑菌抗污染接枝修饰研究，教育部博士点专项基金项目(20091101110035)，2010/01-2012/12，主持
9	面向饮用水水质安全保障的抑菌膜研究，北京市自然科学基金项目(8112025)，2011/01-2013/12，主持
10	超滤膜表面改性及表征，国家科技部专项资金计划项目(2012EG111122)，2012/01-2014/12，主持
<u>研究成果</u>	
<p>以废水、生物质、挥发性有机物（VOCs）等为研究对象，以水、生物质等资源高效纯化、转化与利用为研究目标，开展了新型功能膜材料设计与制备、生物质转化与分离过程及工艺、新型膜反应器设计与开发等方面研究工作。担任国家重点研发计划评审专家、“863”计划评审专家、国家自然科学基金通讯评审专家、北京膜学会监事长、国际清洁能源论坛（澳门）理事、《膜科学与技术》编委等。迄今在国内外学术刊物及会议上发表学术论文 150 余篇，其中 SCI</p>	

收录 50 余篇，EI 收录 30 余篇，获授权专利 9 项。	
1	针对聚合物膜材料亲水、疏水、抗菌及催化（生物质水解、手性拆分）修饰，成功开发了远程动态等离子体、紫外光接枝等技术，对膜组件整体实现膜表面修饰，有效解决了膜规模化改性的瓶颈问题，以清洁温和的修饰工艺，制备出了系列聚合物微孔膜及组件。
2	从性能优良的聚砜等材料出发，通过化学键合，成功地构建了负载酸性离子液体(ILs)的新型多孔催化剂、聚合物多孔膜反应器，以水解菊芋多聚糖为可发酵制乙醇的单糖，获得生物乙醇制备中高效节能绿色化学水解所需的新型催化功能膜和关键工艺，并建立了相关催化反应动力学模型。
3	创新性提出了以菊芋酶解-发酵耦合渗透汽化/真空膜蒸馏原位分离的新型膜生物反应器（MDBRs）制备乙醇，解决了生物质转化过程产物（糖、醇）抑制导致转化效率低的关键科学问题，获得了 MDBRs 高效节能制备乙醇的关键工艺和匹配条件。
4	基于挥发性有机物（VOCs）分离、减排回收，创新性提出了膜材料多层次微结构设计理论及其性能调控制备方法，并以离子液体、金属-有机框架材料（MOFs）及其嵌载离子液体的纳米粒子在聚合物中构建适宜于 VOCs 分子溶解扩散传递的微相通道，并通过分子动力学模拟解析了分子溶解-扩散机理，为推动节能减排与环境治理技术进步做贡献。
代表性论文	
1	Rehan Khan, Heng Mao, Ao-Shuai Zhang, Ihtisham Ul Haq, Li-Hao Xu, Hong-Gang Zhen, Zhi-Ping Zhao*. Enhancing the pervaporation performance of PEBA/PVDF membrane by incorporating MAF-6 for the separation of phenol from its aqueous solution. Separation and Purification Technology, 2021, 256, 117804.
2	Ihtisham Ul Haq, Shen-Hui Li, Hong-Gang Zhen, Rehan Khan, Ao-Shuai Zhang, Zhi-Ping Zhao*. Highly Efficient separation of 1, 3-Butadiene from nitrogen mixture by adsorption on highly stable MOF. Chemical Engineering Journal, 2020, 402, 125980.
3	Jun Zhang, Xin Zhao, Wen-Zhi Wang, Zhi-Ping Zhao*. Acidic ionic liquid grafted PPF membrane reactor and its catalytic esterification kinetics. Chemical Engineering Journal, 2020, 400, 125319.
4	Han Jiang, Tao Wang*, Shuo Li, Zhi-Ping Zhao*. Fabrication of porous polymer membrane from polysulfone grafted with acid ionic liquid and the catalytic property for inulin hydrolysis. Journal of Membrane Science, 2020, 618, 118742.
5	Heng Mao, Shen-Hui Li, Ao-Shuai Zhang, Li-Hao Xu, Jiao-Jiao Lu, Zhi-Ping Zhao*. Novel MOF-capped halloysite nanotubes/PDMS mixed matrix membranes for enhanced n-butanol permselective pervaporation. Journal of Membrane Science, 2020, 595, 117543.

6	Hong-Gang Zhen, Heng Mao, Ihtesham Ul Huq, Ali Ahmad, Zhi-Ping Zhao*. SIFSIX-3-Cu loaded melamine formaldehyde foam monolith for efficient capture of low concentration CO ₂ . Separation and Purification Technology, 2020, 233, 116042.
7	Shuo Li, Han Jiang, Jun Zhang, Ao-Shuai Zhang, Yong-dong Zhao, Xin Zhao, Zhi-Ping Zhao*. Fabrication of porous polysulfone microsphere covalently grafted with ionic liquid as catalyst and its catalytic hydrolysis kinetics of inulin. Chemical Engineering Science, 2020, 217, 115544.
8	路姣姣, 毛恒, 王涛, 蔡玮玮, 赵之平*. HNTs 填充 PDMS 膜的制备及其分离 ABE-水体系的研究[J]. 膜科学与技术, 2020, 1 (40), 53-63.
9	Heng Mao, Hong-Gang Zhen, Ali Ahmad, Ao-Shuai Zhang, Zhi-Ping Zhao*. In situ fabrication of MOF nanoparticles in PDMS membrane via interfacial synthesis for enhanced ethanol permselective pervaporation. Journal of Membrane Science 573 (2019) 344–358.
10	Heng Mao, Hong-Gang Zhen, Ali Ahmad, Shen-Hui Li, Yue Liang, Jun-Fan Ding, Yao Wu, Lin-Zhi Li, Zhi-Ping Zhao*. Highly selective and robust PDMS mixed matrix membranes by embedding two-dimensional ZIF-L for alcohol permselective pervaporation. Journal of Membrane Science, 582 (2019) 307–321.
11	Liming Ding, Xipeng Song, Lihua Wang*, Zhiping Zhao*. Enhancing proton conductivity of polybenzimidazole membranes by introducing sulfonate for vanadium redox flow batteries applications. Journal of Membrane Science 578 (2019) 126–135.
12	Yu-Jie Wang, Su-Ying Yan, Zhi-Ping Zhao*, Zhen-Yu Xi. Isothermal Crystallization of iPP in Environment-friendly Diluents: Effect of Binary Diluents and Crystallization Temperature on Crystallization Kinetics. Chinese Journal of Polymer Science, 2019, 37(6): 617–626.
13	Su-Ying Yan, Yu-Jie Wang, Heng Mao, Zhi-Ping Zhao*. Fabrication of PP hollow fiber membrane via TIPS using environment-friendly diluents and its CO ₂ degassing performance. RSC Advances, 2019, 9:19164–19170.
14	李硕, 王兴娅, 王文治, 张傲率, 赵之平*. 高疏水 PVDF 微孔膜及其膜蒸馏分离生物质发酵乙醇性能 [J]. 膜科学与技术, 2019, 39(3): 110-118.
15	Liming Ding, Xipeng Song, Lihua Wang, Zhiping Zhao*, Gaohong He. Preparation of dense polybenzimidazole proton exchange membranes with different basicity and flexibility for vanadium redox flow battery applications. Electrochimica Acta 292 (2018) 10-19.
16	Zhi-Ping Zhao*, Ao-Shuai Zhang, Xiao-Lan Wang, Peng Lu, Hai-Yun Ma. Controllable modification of polymer membranes by LDDLT plasma flow: Grafting acidic ILs into PPF membrane for catalytic performance. Journal of Membrane Science 552 (2018):99–110.
17	Yu-Jie Wang, Zhi-Ping Zhao*, Zhen-Yu Xi, Su-Ying Yan. Microporous polypropylene membrane prepared via TIPS using environment-friendly binary diluents and its VMD performance. Journal of Membrane Science 548 (2018) 332–344.

18	Peng Lu, Zhi-Ping Zhao*, Xing-Ya Wang, Gong-Jia Lan, Xiao-Lan Wang. Understanding effect of molecular structure of imidazole-based ionic liquids on catalytic performance for biomass inulin hydrolysis. <i>Molecular Catalysis</i> , 2017, 435:24–32.
19	刘敏, 赵之平*, 鲁鹏, 陈康成. 手性 salen-Mn(III)催化功能陶瓷膜反应器催化性能研究. <i>膜科学与技术</i> [J]. 2016, 36(2): 41-47.
20	Mei-Sheng Li, Zhi-Ping Zhao*, Ming-Xing Wang, Green hydrophilic modification of PE hollow fiber membranes in a module scale via long-distance and dynamic low-temperature H ₂ O plasma flow. <i>Applied Surface Science</i> , 2016, 386: 187-195.
21	Zhi-Ping Zhao*, Xiao-Lan Wang, Gui-Yin Zhou, Yong Cao, Peng Lu, Wen-Fang Liu. Hydrolysis kinetics of inulin by imidazole-based acidic ionic liquid in aqueous media and bioethanol fermentation, <i>Chemical Engineering Science</i> , 2016, 151: 16–24.
22	Tian-Tian Jin, Zhi-Ping Zhao*, Kang-Cheng Chen. Preparation of a poly(vinyl chloride) ultrafiltration membrane through the combination of thermally induced phase separation and non-solvent-induced phase separation. <i>Journal of Applied Polymer Science</i> , 2016, 133(5), DOI: 10.1002/app.42953.
23	Wan-Ta Xu, Zhi-Ping Zhao*, Min Liu, Kang-Cheng Chen. Morphological and hydrophobic modifications of PVDF flat membrane with silane coupling agent grafting via plasma flow for VMD of ethanol-water mixture. <i>Journal of membrane science</i> , 2015, 491: 110-120.
24	Min Liu, Zhi-Ping Zhao*, Kang-Cheng Chen, Wen-Fang Liu. New Chiral Catalytic Membrane Reactor Created by Immobilizing Salen-Mn(III) onto APTES Modified Ceramic Membrane and Its Performances in Epoxidation of Styrene. <i>Catalysis communication</i> , 2015, 64:70–74.
25	Mei-Sheng Li, Zhi-Ping Zhao*, Ming-Xing Wang, Yue Zhang. Controllable Modification of Polymer Membranes by LDDLT Plasma Flow: Antibacterial Layer onto PE Hollow Fiber Membrane Module. <i>Chemical Engineering Journal</i> , 2015, 265, 16–26.
26	Mei-Sheng Li, Zhi-Ping Zhao*, Ming-Xing Wang. Controllable modification of polymer membranes by LDDLT plasma flow: Membrane module scale-up and hydrophilic stability. <i>Chemical Engineering Science</i> , 2015, 122, 53–63.
27	Jiao-Yu Shi, Zhi-Ping Zhao*, Chun-Yan Zhu. Studies on simulation and experiments of ethanol-water mixture separation by VMD using a PTFE flat membrane module. <i>Separation and Purification Technology</i> , 2014, 123, 53-63.
28	李梅生, 赵之平*, 王明兴. 聚乙烯中空纤维膜组件整体远程动态等离子体流活化-诱导接枝丙烯酸. <i>高等学校化学学报</i> , 2014, 35: 888-894.
29	Zhi-Ping Zhao*, Liang Xu, Xin Shang, Kangcheng Chen. Water regeneration from human urine by vacuum membrane distillation and analysis of membrane fouling characteristics. <i>Separation and Purification Technology</i> 2013(118): 369-376.
30	Zhi-Ping Zhao*, Mei-Sheng Li, Ning Li, Ming-Xing Wang, Yue Zhang. Controllable modification of polymer membranes by long-distance and dynamic

	low-temperature plasma flow: AA grafting penetrated through electrospun PP fibrous membranes, Journal of Membrane Science, 2013, 440: 9-19.
31	Mei-Sheng Li, Zhi-Ping Zhao*, Ning Li, Yue Zhang. Modification of Polymer Membranes by Long-distance and Dynamic Low-temperature Plasma Flow: Treatment of PE Hollow Fiber Membrane in a Module Scale, Journal of Membrane Science, 2013, 427(15): 431-442.
32	Wen-Fang Liu, Zhi-Ping Zhao*, Yi-Qiong Guo. Removal of Lead Ions from Ginseng Ethanol Extracts by Dynamic Adsorption in a Fixed-bed Column, Chinese Journal of Chemical Engineering, 2013, 21 (3): 227-231.
33	王可达, 赵之平*, 陈康成, 刘文芳. 膜蒸馏过程传递机理研究进展IV. 渗透膜蒸馏. 膜科学与技术, 2013, 33(2):117-124.
34	Zhi-Ping Zhao*, Mei-Sheng Li, Jia-Yin Zhang, Hui-Na Li, Peng-Peng Zhu, Wen-Fang Liu. New Chiral Catalytic Membranes Created by Coupling UV-Photografting with Covalent Immobilization of Salen-Co(III) for Hydrolytic Kinetic Resolution of Racemic Epichlorohydrin. Ind. Eng. Chem. Res., 2012, 51(28): 9531-9539.
35	Zhi-Ping Zhao*, Ning Li, Mei-Sheng Li, Yue Zhang. Controllable Modification of Polymer Membranes by Long-distance and Dynamic Low-temperature Plasma Flow: Long-distance and Dynamic Characteristics. Plasm. Chem. Plasm. Proc, (2012) 32:1243-1258.
36	刘文芳, 侯本象, 侯延慧, 赵之平*. 中空纤维膜固定化甲酸脱氢酶催化CO ₂ 合成甲酸, 催化学报, 2012, 33(4): 730-735.
37	Zhi-Ping Zhao*, Chun-Yan Zhu, Dian-Zhong Liu, Wen-Fang Liu. Concentration of ginseng extracts aqueous solution by vacuum membrane distillation 2. Theory analysis of critical operating conditions and experimental confirmation, Desalination, 2011(267)147-153.
授权专利	
1	赵之平, 甄红刚, 蔡玮玮. 一种用于吸附分离的海绵复合金属有机骨架材料. 专利号: ZL201910329595.8.
2	赵之平, 赵永东. 一种负载离子液体聚合物多孔微球的制备方法. 专利号: ZL201810258232.5.
3	赵之平, 王可达, 陈康成. 一种通过双膜蒸馏处理反渗透浓水的工艺及装置. 专利号: ZL201210425431.3.
4	赵之平, 李梅生, 刘文芳, 张悦, 陈康成. 一种利用远程等离子体对膜组件进行整体化学接枝的方法, 专利号: ZL201210249376.7.
5	赵之平, 石教育, 王可达, 李梅生, 陈康成. 平板膜给氧自循环式微生物培养装置及方法. 专利号: ZL201210274535.9.
6	赵之平, 石教育, 王可达, 李梅生, 陈康成. 中空纤维膜给氧自循环式微生物培养装置及方法. 专利号: ZL201210274537.8.
7	赵之平, 刘文芳. 一种用于#####膜蒸馏的方法及装置, 国防发明专利号: 201010047569.5.
8	赵之平, 刘文芳. 一种利用直接蒸汽压缩热泵进行真空膜蒸馏的方法及装置, ZL201010113543.6.

9

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