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个人简介

2022.07-至今	华东理工大学，化工学院，特聘研究员
2020.01-2022.06	华东理工大学，化工学院，化学工程，博士后，合作导师：钱锋院士
2014.09-2019.12	华东理工大学，化工学院，化学工程，博士，导师：赵玲教授、孙伟振教授
2018.09-2019.09	美国斯坦福大学，化学院，联合培养博士，导师：Michael D. Fayer 院士
2010.09-2014.06	华东理工大学，化工学院，化学工程与工艺，学士

研究方向

主要从事表界面微环境调控与及构效关系研究：面向化工过程及产品绿色化、低碳化、高值化发展战略需求，围绕化工复杂体系表界面微环境调控与反应 / 传质过程强化等关键问题，结合先进表征和理论计算，开展跨尺度表界面特性定量识别、介质筛选与设计、反应 / 传质耦合调控、过程强化等科学与应用基础研究工作：

1. 液 - 液 (固) 体系表界面特性识别与强化

- 表界面结构、反应与传递特性识别与调控机制
- 界面特征 - 介质结构 - 反应 / 传递强化的构效关系构建
- 新型介质（催化剂、溶剂）的高通量筛选与理性设计
- 反应 / 传递耦合调控与过程强化

2. 聚合物体系表界面特性识别与强化

- 复杂反应 / 传递以及溶解溶胀规律识别
- 新型介质（催化剂、溶剂）设计与工艺优化
- 解聚反应 / 传质耦合调控
- 废弃聚合物高值化利用新策略开发

研究成果及主要发表文章

累积发表 SCI 论文 40 余篇，其中第一 / 通讯作者 30 余篇包括 J Am Chem Soc, AIChE J (5), Chem Eng Sci (7), Chem Eng J(2), Ind Eng Chem Res (3 篇), ACS Catal, ACS Nano, ACS Appl. Energy Mater, Fuel, JPCC, JPCB (2) 等，申请发明专利 9 项 (授权 3 项)。相关成果获得中国石油和化学工业联合会 CPCIF-Clariant 可持续发展青年创新奖 - 卓越奖，中国化工学会“化工与材料京博博士论文奖”提名奖等。

- 1.Zheng W#, Yamada SA#, Hung ST, Sun W, Zhao L, Fayer MD. Enhanced Menshutkin SN2 Reactivity in Mesoporous Silica: The Influence of Surface Catalysis and Confinement. Journal of the American Chemical Society, 2020, 142(12):5636-5648.
- 2.Ma, Z., Zheng, W.*, Sun, W.* , Zhao, L. Enhanced catalytic performance of H₂SO₄ - catalyzed C4 alkylation by formyl functional [N1, 1, 1, 1][C10SO₄] additive. AIChE Journal, 2023, e18179.
- 3.Zheng, W., Ma, Z., Sun, W., Zhao, L. Target high - efficiency ionic liquids to promote H₂SO₄ - catalyzed C4 alkylation by machine learning. AIChE Journal, 2022, 68(7), e17698.
- 4.Ma, Z., Sha, J., Zheng, W.* , Sun, W.* , Zhao, L. Effects of deep eutectic solvents on H₂SO₄ - catalyzed alkylation: Combining experiment and molecular dynamics simulation. AIChE Journal, 2022, 68(4), e17556.
- 5.Zheng W, Wang Z, Sun W, Zhao L, Qian F. H₂SO₄-catalyzed isobutane alkylation under low temperatures promoted by long-alkyl-chain surfactant additives. AIChE Journal. 2021,67(10):e17349.
- 6.Zheng W, Sun W, Zhao L et al. Understanding Interfacial Behaviors of Isobutane Alkylation with C4 Olefin Catalyzed by Sulfuric Acid or Ionic Liquids. AIChE Journal, 2018, 64(3): 950-960.
- 7.Zheng W#, Liu C#, Wei X, et al. Molecular-level swelling behaviors of poly (ethylene terephthalate) glycolysis using ionic liquids as catalyst. Chemical Engineering Science, 2023, 267: 118329.
- 8.Liu C, Ling Y, Wang Z, Zheng W*, Sun W*, Zhao L. Unveiling the microenvironments between ionic liquids and methanol for alcoholysis of poly (ethylene terephthalate). Chemical Engineering Science. 2022, 247:117024.
- 9.Zheng W, Sun W, Zhao L, Qian F. Modeling the solid/liquid interfacial properties of methylimidazole confined in hydrophobic silica nanopores. Chemical Engineering Science. 2021, 231:116333.
- 10.Zheng W, Sun W, Zhao L et al. Towards an Understanding of the Microstructure and Interfacial Properties of the Ionic Liquid/Sulfuric Acid Catalyst in Liquid-liquid Reactions. Chemical Engineering Science, 2019, 205:287-298.
- 11.Zheng W#, Cao Piao#, Sun W, Zhao L et al. Experimental and modeling study of isobutane alkylation with C4 olefin catalyzed by Brønsted acidic ionic liquid/sulfuric acid. Chemical Engineering Journal. 2019, 377:119578.
- 12.Zheng W, Sun W, Zhao L et al. Multi-scale modeling of isobutane alkylation with 2-butene using composite ionic liquids as catalyst. Chemical Engineering Science, 2018, 186: 209-218.
- 13.Zheng W, Sun W, Zhao L et al. Screening of Imidazolium Ionic Liquids for the Isobutane Alkylation Based on Molecular Dynamic Simulation. Chemical Engineering Science, 2018, 183: 115-122.
- 14.Zheng W, Sun W, Zhao L et al. Modeling of the interfacial behaviors for the isobutane alkylation with C4 olefin using ionic liquid as catalyst. Chemical Engineering Science, 2017, 166: 42-52.
- 15.Zheng W, Sun W, Zhao L et al. Controllable Preparation of Nanoscale Metal-Organic Frameworks by Ionic Liquid Microemulsions. Industrial & Engineering Chemistry Research, 2017, 56(20): 5899-5905.
- 16.Zheng W, Zhao L, Sun W, Qian F. Understanding the Confinement Effects and Dynamics of Methylimidazole in Nanoscale Silica Pores. The Journal of Physical Chemistry C. 2021, 125(13):7421-7430.
- 17.Wang Z#, Zheng W#, Li B, et al. Confined ionic liquids in covalent organic frameworks toward the rational design of high-safety lithium metal battery. Chemical Engineering Journal, 2022, 433: 133749.