

Department: School of Chemical Engineering

Professional field: Chemical Engineering and Technology

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## Profile

### Education

1999: PhD, Chemical Engineering, ECUST, China.

1993: MS, Chemical Engineering, ECUST, China.

1990: BS, Chemical Engineering, ECUST, China.

### Academic Experience

2004-present: Professor, School of Chemical Engineering, ECUST, China.

2015-2017: Professor &amp; Dean of school of chemical engineering &amp; Director of UNILAB of

Chemical Reaction Engineering, ECUST, China.

2006-2015: Professor &amp; Vice dean of school of chemical engineering &amp; Director of UNILAB of

Chemical Reaction Engineering, ECUST, China.

2007: Visitor Professor, Polytech' Lille, USTL, France.

2001-2003: Postdoc, Honorary Research Fellow &amp; Royal Society KC Wong Fellowship, Chemical

Engineering, University of Birmingham, UK.

1999-2001: Associate professor, UNILAB of Chemical Reaction Engineering, ECUST, China.

1995-1999: Lecturer, UNILAB of Chemical Reaction Engineering, ECUST, China.

1993-1995: Research Staff, UNILAB of Chemical Reaction Engineering, ECUST, China.

## Research Field

### Polyphase reaction and transfer

#### 1. Industrial Reaction Process Development

Including chemical kinetics, reactor flow field structure control, industrial reaction process Modeling and simulation, reaction process optimization and intensification, etc.

#### 2. Supercritical fluid assisted polymerization and polymer processing

Including the interaction of supercritical CO<sub>2</sub> with polymers; supercritical fluid assisted polymer grafting; supercritical fluid assisted polycondensation; supercritical fluid and thermosetting polymer

## Research results and selected published papers

- Zheng, Weizhong; Li, Di; Sun, Weizhen; Zhao, Ling. Multi-scale modeling of isobutane alkylation with 2-butene using composite ionic liquids as catalyst. Chem. Eng. Sci., 2018, 186, 209-218.
- Zheng, Weizhong; Zheng, Lin; Sun, Weizhen; Zhao, Ling. Screening of imidazolium ionic liquids for the isobutane alkylation based on molecular dynamic simulation. Chem. Eng. Sci., 2018, 183, 115-122.
- Zheng, Weizhong; Huang, Chizhou; Sun, Weizhen; Zhao, Ling. Microstructures of the Sulfonic Acid-Functionalized Ionic Liquid/Sulfuric Acid and Their Interactions: A Perspective from the Isobutane Alkylation. J. Phys. Chem. B, 2018, 122(4), 1460-1470.
- Zheng, Weizhong; Cui, Yanjin; Xu, Zhimei; Zhao, Ling; Sun, Weizhen. Cellulose transformation into methyl glucosides catalyzed by H3PW12O40: Enhancement of ionic liquid pretreatment. Can. J. Chem. Eng., 2018, 96(6), 1250-1255.
- Zheng, Weizhong; Wang, Huanying; Xie, Wenxiu; Zhao, Ling; Sun, Weizhen. Understanding interfacial behaviors of isobutane alkylation with C<sub>4</sub> olefin catalyzed by sulfuric acid or ionic liquids. AIChE J., 2018, 64(3), 950-960.
- Lei Bao, Shuyi Fang, Dongdong Hu, Yuan Zong, Ling Zhao, Weikang Yuan, Tao Liu\*, Stabilization of CO<sub>2</sub>-in-water emulsions by nonfluorinated surfactants with enhanced CO<sub>2</sub>-philic tails. J. Supercrit. Fluids, 2018, 133, 163-170.
- Li Wen, Liwen Wang, Shuyi Fang, Lei Bao, Dongdong Hu, Yuan Zong, Ling Zhao, Tao Liu\*, Stabilization of CO<sub>2</sub>-in-water emulsions with high internal phase volume using PVAc-b-PVP and PVP-b-PVAc-b-PVP as emulsifying agents. J. Appl. Poly. Sci., 2018, 46351-46362.
- Liwen Wang, Yongjia Liu, Lei Bao, Dongdong Hu, Yuan Zong, Gangsheng Tong, Ling Zhao, Tao Liu\*. Preparation of acrylamide-based poly-HIPEs with enhanced mechanical strength using PVDBM-b-PEG-emulsified CO<sub>2</sub>-in-water emulsions. J. Appl. Poly. Sci., 2018, 46346-46355.
- Dong-dong Hu, Jia-xun Lyu, Tao Liu, Mei-dong Lang, Ling Zhao\*. Solvation effect of CO<sub>2</sub> on accelerating the curing reaction process of epoxy resin. Chemical Engineering and Processing: Process Intensification, 2018, 127, 159-167
- Dong-dong Hu, Yong Gu, Tao Liu, Ling Zhao. Microcellular foaming of polysulfones in supercritical CO<sub>2</sub> and the effect of co-blowing agent. J. Supercrit. Fluids, 2018, 140, 21-31
- Tian Xia, Zhenhao Xi, Tao Liu, Ling Zhao\*. Solid state foaming of poly(ethylene terephthalate) based on periodical CO<sub>2</sub>-renewing sorption process, Chem. Eng. Sci., 2017, 168: 124-136.
- Sun, Weizhen, Shao Jianqiang, Xi Zhenhao, Zhao Ling\*, Thermodynamics and kinetics of transesterification reactions to produce diphenyl carbonate from dimethyl carbonate catalyzed by tetrabutyl titanate and dibutyltin oxide. Can. J. Chem. Eng., 2017, 95(2): 353-358.
- Weizhong Zheng, Xiaolei Hao, Ling Zhao Weizhen Sun\*. Controllable Preparation of Nanoscale Metal–Organic Frameworks by Ionic Liquid Microemulsions. Ind. Eng. Chem. Res., 2017. 56(20): 5899-5905
- Weizhong Zheng, Wenxiu Xie, Ling Zhao Weizhen Sun\*. Modeling of the interfacial behaviors for the isobutane alkylation with C<sub>4</sub> olefin using ionic liquid as catalyst. Chem. Eng. Sci., 2017, 166: 42-52.
- C. Wan, G. Sun, T. Liu\*, M. Essegheir, L. Zhao, W. Yuan. Rheological properties of HDPE and LDPE at the low-frequency range under supercritical CO<sub>2</sub>, The Journal of Supercritical Fluids, 2017, 123, 67-75.
- C. Wan, Y. Q. Lu, T. Liu\*, L. Zhao, W. Yuan. Foaming of Low Density Polyethylene with Carbon Dioxide Based on Its in Situ Crystallization Behavior Characterized by High-Pressure Rheometer. Ind. Eng. Chem. Res, 2017, 56, 10702-10710.
- Chen, Z.; Sun, W.; Zhao, L., High-Temperature and High-Pressure Pyrolysis of Hexadecane: Molecular Dynamic Simulation Based on Reactive Force Field (ReaxFF). J. Phys. Chem. A 2017, 121 (10), 2069-2078.
- Chen, Z.; Zhao, P.; Zhao, L.; Sun, W., Molecular Simulation of the Catalytic Cracking of Hexadecane on ZSM-5 Catalysts Based on Reactive Force Field (ReaxFF). Energy & Fuels 2017, accepted
- Bao, L.; Fang, S.; Hu, D.; Zhao, L.; Yuan, W.; Liu, T.\*, Enhancement of the CO<sub>2</sub>-philicity of poly(vinyl ester)s by end-group modification with branched chains. J. Supercrit. Fluid., 2017, 127, 129-136.
- Ling Zhao, Tian Xia, Zhenhao Xi, Tao Liu, Chapter 3 in POLYMERIC FOAMS: Innovations in Processes, Technologies, and Products, CRC Press, Taylor & Francis Group, 2016.8
- Fang, Yu-Wei, Bao Jin-Biao\*, Yan Hai-Kuo, Sun Wei, Zhao Ling\*, Hu Guo-Hua, Preparation of open-cell foams from polymer blends by supercritical CO<sub>2</sub> and their efficient oil-absorbing performance. AIChE Journal, 2016, 62(12): 4182-4185
- Weizhen Sun, Xiangsu Zhai, Ling Zhao\*. Synthesis of ZIF-8 and ZIF-67 nanocrystals with well-controllable size distribution through reverse microemulsions. Chem. Eng. J., 2016, 289, 59-64.
- Hu, D.; Zhang, Y.; Su, M.; Bao, L.; Zhao, L.; Liu, T., Effect of molecular weight on CO<sub>2</sub>-philicity of poly(vinyl acetate) with different molecular chain structure. The Journal of Supercritical Fluids 2016, 118, 96-106.
- Kong, W.L.; Bao, J.B.; Wang, J.; Hu, G.H.; Xu, Y.; Zhao, L., Preparation of open-cell polymer foams by CO<sub>2</sub> assisted foaming of polymer blends. Polymer 2016, 90, (Supplement C), 331-341.
- Chen Y, Xi Z, Zhao L. New bio-based polymeric thermosets synthesized by ring-opening polymerization of epoxidized soybean oil with a green curing agent[J]. European Polymer Journal, 2016, 84:435-447.
- Jianping Shang, Weizhen Sun\*, Ling Zhao, Wei-Kang Yuan. Modeling of CO<sub>2</sub>-assisted liquid phase oxidation of para-xylene catalyzed by transition metals/bromide. Chem. Eng. Sci., 2015, 127: 52-59.
- Weizhen Sun, Jianhai Sun, Zhimei Xu, Ling Zhao\*. Experimental study and modeling of homogenous catalytic oxidation of m-Xylene to isophthalic acid. Ind. Eng. Chem. Res., 2015, 54: 3293-3298.
- Dongdong Hu, Shaojun Sun, Peiqing Yuan, Ling Zhao, Tao Liu\*. Exploration of CO<sub>2</sub>-Philicity of Poly(vinyl acetate-co-alkyl vinyl ether) through Molecular Modeling and Dissolution Behavior Measurement. J. Phys. Chem. B, 2015, 119(38): 12490-12501.
- Dongdong Hu, Shaojun Sun, Peiqing Yuan, Ling Zhao, Tao Liu\*. Evaluation of CO<sub>2</sub>-philicity of poly(vinyl acetate) and Poly(vinyl acetate-alt-maleate) copolymers through molecular modeling and dissolution behavior measurement. J. Phys. Chem. B, 2015, 119(7): 3194-3204
- Jianping Shang, Weizhen Sun\*, Ling Zhao, Wei-Kang Yuan. Liquid phase oxidation of alkyl aromatics at low oxygen partial pressures. Chem. Eng. J., 2015, 278, 553-540.
- Tian Xia, Zhenhao Xi, Xuefeng Yi, Tao Liu, Ling Zhao\*. Melt foamability of poly(ethylene terephthalate)/clay nanocomposites prepared by extrusion blending in the presence of pyromellitic dianhydride. Ind. Eng. Chem. Res. 2015, 54(27): 6922-6931.
- Xu, Yang; Liu, Tao; Yuan, Weikang; Zhao, Ling \*. Influence of microphase morphology and long-range ordering on foaming behavior of PE-b-PEO diblock copolymers. Ind. Eng. Chem. Res. 2015, 54(28): 7113-7121.
- Tian Xia, Zhenhao Xi, Tao Liu, Xun Pan, Chaoyang Fan, Ling Zhao\*. Melt foamability of reactive extrusion-modified poly(ethylene terephthalate) with pyromellitic dianhydride using supercritical carbon dioxide as blowing agent. Polym. Eng. Sci., 2015, 55(7): 1528-1535.