刘海峰

所属学院 资源与环境工程学院

学科领域 煤气化

邮箱 hfliu@ecust.edu.cn

个人简介

刘海峰，博士，教授，上海煤气化工程技术研究中心主任，中国石化—华东理工大学气化技术研究中心主任，上海市能源研究会常务理事，教育部新世纪优秀人才。热能工程、化学工艺和流体机械及工程专业博士生导师。主持和参与完成了多项“973”计划、“863”计划、攻关计划、国家自然科学基金课题等。在 AICHE J、Chem Eng Sci、Ind Eng Chem Res、Fuel、Phys Fluids、Int J Multiphase Flow 、Chaos 等国内外重要学术刊物已发表论文 100 余篇。合作编著《工程流体力学》教材。合作获国家科技进步二等奖 1 项、省部级科技进步特等奖 1 项、一等奖 1 项、二等奖 2 项和三等奖 1 项。授权发明专利 40 余项（美国专利 2 项）。

研究方向

煤及废弃物的气化技术、多相流动及非线性时间序列分析

研究成果及主要发表文章

各类荣誉及获奖：

2015，单喷嘴冷壁式粉煤加压气化技术关键装备开发及应用，上海市技术发明奖特等奖（1）

2013，日处理煤 2000 吨级多喷嘴对置式水煤浆气化技术，中国石油和化学工业联合会科技进步一等奖（4）

2011，德士古水煤浆气化耐磨喷嘴研发与应用，中国石油和化学工业联合会科技进步二等奖（4）

2010，气态烃非催化部分氧化制合成气关键技术及工业应用，上海市科技进步奖一等奖（5）

2008，教育部新世纪优秀人才

2007，多喷嘴对置式水煤浆气化技术，国家科技进步二等奖（10）

负责承担课题：

- 水葫芦与煤共气化实现能源化利用的关键科学问题研究，国家自然科学基金面上项目，2012-2015
- 新型高效粉煤加压气化技术开发研究，中石化课题，2012-2014
- 气化过程熔渣形成机理、流变特性及传热过程研究，973 课题，2010-2014
- 上海煤气化工程技术研究中心建设，上海市科委课题，2010-2013
- 污泥与煤制浆共气化新工艺及其应用基础研究，国家自然科学基金面上项目，2008-2010
- 单台日耗煤 2000 吨气化工艺应用研究与示范，国家科技支撑计划重点课题，2007-2011
- 多股撞击射流气流床气化炉内多相湍流反应流动研究，973 课题，2005-2009

代表性论文：

1. Hui Zhao, Zhaowei Wu, Weifeng Li, Jianliang Xu, Haifeng Liu*. Interaction of two drops in the bag breakup regime by a continuous air jet. Fuel, 2019, 236:843-850.

2. Chunyu Wang, Hui Zhao, Zhenghua Dai, Weifeng Li, Haifeng Liu*. Influence of alkaline additive on viscosity of coal water slurry. Fuel, 2019, 235: 639-646.

3. Ming Liu, Zhongjie Shen, Qinfeng Liang, Jianliang Xu, Hui Zhao, and Haifeng Liu. Experimental Studies on Two Dimensional Particle Swarm Gasification of Different Coal Chars and Petroleum Coke at High Temperature. Fuel, 2019, 241: 973–84.

4. Ming Liu, Zhihao Zhou, Zhongjie Shen, Qinfeng Liang, Jianliang Xu, and Haifeng Liu. Comparison of HTSM and TGA Experiments of Gasification Characteristics of Different Coal Chars and Petcoke. Energy & Fuels, 2019, 33: 3057-3067.

5. Ming Liu, Zhongjie Shen, Qinfeng Liang, Jianliang Xu, and Haifeng Liu. Characteristics of Single Petcoke Particle during the Gasification Process at High Temperatures. Chinese Journal of Chemical Engineering, 2019, https://doi.org/10.1016/j.cjche.2019.02.025.

6. Ming Liu, Zhongjie Shen, Jianliang Xu, Qinfeng Liang, Haifeng Liu*. New Slag–Char Interaction Mode in the Later Stage of High Ash Content Coal Char Gasification. Energy Fuels 2018, 32, 11, 11335-11343.

7. Binbin Zhang, Zhongjie Shen, Qinfeng Liang, Jianliang Xu, Haifeng Liu*. Numerical study of dynamic response analysis of slag behaviors in an entrained flow gasifier. Fuel, 2018, 234: 1071-1080.

8. Ningsheng Wang，Haifeng Lu，Jianliang Xu，Xiaolei Guo，Haifeng Liu*. Velocity profiles of granular flows down an inclined channel. Int. J. Multiphas. Flow, 2018, https://doi.org/10.1016/j.ijmultiphaseflow.

9. Zhongjie Shen, Liqi Liang, Qinfeng Liang, Jianliang Xu, Kuangfei Lin, Haifeng Liu*. In situ experimental and modeling study on coal char combustion for coarse particle with effect of gasification in air (O2/N2) and O2/CO2 atmospheres. Fuel, 2018, 233: 177-187.

10. Ming Liu, Zhongjie Shen, Jianliang Xu, Qinfeng Liang, Haifeng Liu*. Experimental Studies on CO2 Gasification of Petcoke Particle Swarm at High Temperatures. AIChE J, 2018, 64 (11):4009-4018.

11. Zhongjie Shen, Qinfeng Liang, Jianliang Xu, Haifeng Liu*, Kuangfei Lin. Study on the Fragmentation Behaviors of Deposited Particles on the Molten Slag Surface and Their Effects on Gasification for Different Coal Ranks and Petroleum Coke. Energy Fuels, 2018, 32 (9): 9243-9254.

12. Binbin Zhang, Zhongjie Shen, Qinfeng Liang, Jianliang Xu, Haifeng Liu*. Modeling the slag flow and heat transfer on the bottom cone of a membrane wall entrained-flow gasifier. Fuel, 2018, 226: 1-9.

13. Hui Zhao, ZhaoWei Wu, WeiFeng Li, JianLiang Xu, HaiFeng Liu*. Transition Weber number between surfactant-laden drop bag breakup and shear breakup of secondary atomization. Fuel, 2018, 221: 138-143.

14. Jie Zhou, Zhongjie Shen, Qinfeng Liang, Jianliang Xu, Haifeng Liu*. A new prediction method for the viscosity of the molten coal slag. Part 2: The viscosity model of crystalline slag. Fuel, 2018, 220: 233-239.

15. Jie Zhou, Zhongjie Shen, Qinfeng Liang, Jianliang Xu, Haifeng Liu*. A new prediction method for the viscosity of the molten coal slag. Part 1: The effect of particle morphology on the suspension viscosity. Fuel. 2018, 220: 296-302.

16. Ningsheng Wang, Jianliang Xu, Xiaolei Guo, Haifeng Lu, Hui Zhao, Weifeng Li, Haifeng Liu*. Velocity profiles of avalanches during hopper discharge. Fuel. 2018, 218: 350-356.

17. Jianliang Xu, Qinfeng Liang, Zhenghua Dai, Haifeng Liu*. The influence of swirling flows on pulverized coal gasifiers using the comprehensive gasification model. 2018 Fuel Process Technol. 2018, 172: 142-154.

18. Hui Zhao, ZhaoWei Wu, WeiFeng Li, JianLiang Xu, HaiFeng Liu*. Nonmonotonic Effects of Aerodynamic Force on Droplet Size of Prefilming Air-Blast Atomization, Ind Eng Chem Res, 2018, 57(5): 1726-1732.

19. Ming Liu, Zhongjie Shen, Qinfeng Liang, Jianliang Xu, Haifeng Liu*. Morphological Evolution of a Single Char Particle with a Low Ash Fusion Temperature during the Whole Gasification Process. Energy Fuels. 2018, 32 (2): 1550-1557.

20. Binbin Zhang, Zhongjie Shen, Qinfeng Liang, Jianliang Xu, Haifeng Liu*. Modeling study of residence time of molten slag on the wall in an entrained flow gasifier. Fuel. 2018, 212: 437-447.