

个人简历

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[[Web of Science](#)] [[Scopus](#)] [[ResearchGate](#)]



个人信息

出生日期: 1991 年 9 月 5 日 籍贯: 湖北随州

工作经历

2019.09 博士后, 机械与宇航工程学院, 南洋理工大学 (新加坡)
- 至今 (合作导师: Charles Yang Chun 教授, Tuan Tran 副教授)

教育背景

2014.09 博士, 动力工程及工程热物理 (排名 5/50), 能源与动力工程系, 清华大学
- 2019.07 博士论文: 过冷水滴的结冰与碰撞及其耦合特性研究
 (指导老师: 吴晓敏 教授, 闵敬春 副教授)
2010.09 学士, 热能与动力工程系 (排名 1/57), 机械与车辆学院, 北京理工大学
- 2014.07 毕业论文: 基于两相流动的沸腾气阻研究
 (指导老师: 张卫正 教授)

研究兴趣

- 结冰/结霜/冷凝, 相变换热与流动
- 液滴动力学, 表/界面科学
- 微纳尺度传热/传质/流动
- 相变储能与材料 (PCM), 增材制造 (AM)

期刊论文

(# Equal contribution; * Corresponding author)

1. Xin Liu, Jingchun Min*, **Xuan Zhang***, Zhifeng Hu, Xiaomin Wu, Supercooled water droplet impacting-freezing behaviors on cold superhydrophobic spheres, *International Journal of Multiphase Flow* 141, 103675 (2021). [[Link](#)] [[PDF](#)]
2. **Xuan Zhang**, Bingqiang Ji, Xin Liu, Siyu Ding, Xiaomin Wu*, Jingchun Min*, Maximum spreading and energy analysis of ellipsoidal impact droplets, *Physics of Fluids* 33 (5), 052108 (2021). [[Link](#)] [[PDF](#)]
3. **Xuan Zhang**, Zhibing Zhu, Chaoyang Zhang, Chun Yang*, Reduced contact time of a droplet impacting on a moving superhydrophobic surface, *Applied Physics Letters* 117 (15), 151602 (2020). [[Link](#)] [[PDF](#)]

4. Siyu Ding, Xin Liu, Xiaomin Wu*, **Xuan Zhang***, Droplet breakup and rebound during impact on small cylindrical superhydrophobic targets, *Physics of Fluids* 32 (10), 102106 (2020). (Selected as **Editor's Pick**) [[Link](#)] [[PDF](#)]
5. Xin Liu, Jingchun Min*, **Xuan Zhang***, Dynamic behavior and maximum spreading of droplets impacting concave spheres, *Physics of Fluids* 32 (9), 092109 (2020). [[Link](#)] [[PDF](#)]
6. **Xuan Zhang**, Xin Liu, Xiaomin Wu*, Jingchun Min*, Impacting-freezing dynamics of a supercooled water droplet on a cold surface: Rebound and adhesion, *International Journal of Heat and Mass Transfer* 158, 119997 (2020). [[Link](#)] [[PDF](#)]
7. **Xuan Zhang**, Xin Liu, Jingchun Min*, Xiaomin Wu*, Shape variation and unique tip formation of a sessile water droplet during freezing, *Applied Thermal Engineering* 147, 927-934 (2019). [[Link](#)] [[PDF](#)]
8. **Xuan Zhang**, Xin Liu, Xiaomin Wu*, Jingchun Min*, Experimental investigation and statistical analysis of icing nucleation characteristics of sessile water droplets, *Experimental Thermal and Fluid Science* 99, 26-34 (2018). [[Link](#)] [[PDF](#)]
9. **Xuan Zhang**, Xin Liu, Xiaomin Wu*, Jingchun Min*, Simulation and experiment on supercooled sessile water droplet freezing with special attention to supercooling and volume expansion effects, *International Journal of Heat and Mass Transfer* 127, 975-985 (2018). [[Link](#)] [[PDF](#)]
10. **Xuan Zhang**, Xiaomin Wu*, Time and frequency characteristics of pressure fluctuations during subcooled nucleate flow boiling, *Heat Transfer Engineering* 39, 642-653 (2018). [[Link](#)] [[PDF](#)]
11. **Xuan Zhang**, Xiaomin Wu*, Jingchun Min*, Freezing and melting of a sessile water droplet on a horizontal cold plate, *Experimental Thermal and Fluid Science* 88, 1-7 (2017). [[Link](#)] [[PDF](#)]
12. **Xuan Zhang**, Xiaomin Wu*, Jingchun Min*, Xin Liu, Modelling of sessile water droplet shape evolution during freezing with consideration of supercooling effect, *Applied Thermal Engineering* 125, 644-651 (2017). [[Link](#)] [[PDF](#)]
13. **Xuan Zhang**, Xiaomin Wu*, Jingchun Min*, Aircraft icing model considering both rime ice property variability and runback water effect, *International Journal of Heat and Mass Transfer* 104, 510-516 (2017). [[Link](#)] [[PDF](#)]
14. **Xuan Zhang**, Jingchun Min*, Xiaomin Wu*, Model for aircraft icing with consideration of property-variable rime ice, *International Journal of Heat and Mass Transfer* 97, 185-190 (2016). [[Link](#)] [[PDF](#)]
15. Zhifeng Hu, **Xuan Zhang**, Sihang Gao, Zhiping Yuan, Yukai Lin, Fuqiang Chu*, Xiaomin Wu*, Axial spreading of droplet impact on ridged superhydrophobic surfaces, *Journal of Colloid and Interface Science* 599, 130-139 (2021). [[Link](#)] [[PDF](#)]
16. Zhifeng Hu, Xiaomin Wu*, Fuqiang Chu*, **Xuan Zhang**, Zhiping Yuan, Off-centered droplet impact on single-ridge superhydrophobic surfaces, *Experimental Thermal and Fluid Science* 120, 110245 (2021). [[Link](#)] [[PDF](#)]
17. Xin Liu, **Xuan Zhang**, Jingchun Min*, Spreading of droplets impacting different wettable surfaces at a Weber number close to zero, *Chemical Engineering Science* 207, 495-503 (2019). [[Link](#)] [[PDF](#)]
18. Xin Liu, **Xuan Zhang**, Jingchun Min*, Maximum spreading of droplets impacting spherical surfaces, *Physics of Fluids* 31 (9), 092102 (2019). (Selected as **Editor's Pick**) [[Link](#)] [[PDF](#)]
19. Fuqiang Chu, Sihang Gao, **Xuan Zhang**, Xiaomin Wu, Dongsheng Wen*, Droplet re-icing characteristics on a superhydrophobic surface, *Applied Physics Letters* 115 (7), 73703 (2019). [[Link](#)] [[PDF](#)]
20. Fuqiang Chu, **Xuan Zhang**, Shaokang Li, Haichuan Jin, Jun Zhang, Xiaomin Wu, Dongsheng Wen*, Bubble formation in freezing droplets, *Physical Review Fluids* 4 (7), 71601 (2019). [[Link](#)] [[PDF](#)]
21. Yicun Tang, Jingchun Min*, **Xuan Zhang**, Guiling Liu, Meniscus behaviors and capillary pressures in capillary channels having various cross-sectional geometries, *Chinese Journal of Chemical Engineering* 26, 2014-2022 (2018). [[Link](#)] [[PDF](#)]
22. Fuqiang Chu, Zhiping Yuan, **Xuan Zhang**, Xiaomin Wu*, Energy analysis of droplet jumping induced by multi-droplet coalescence: The influences of droplet number and droplet location, *International Journal of Heat and Mass Transfer* 121, 315-320 (2018). [[Link](#)] [[PDF](#)]
23. Fuqiang Chu, Xiaomin Wu*, Bei Zhu, **Xuan Zhang**, Self-propelled droplet behavior during condensation on superhydrophobic surfaces, *Applied Physics Letters* 108, 194103 (2016). [[Link](#)] [[PDF](#)]

24. 张旋, 刘鑫, 吴晓敏*, 闵敬春, 过冷水滴碰撞结冰的实验与模拟研究, *工程热物理学报* 41 (02), 402-410 (2020). [\[Link\]](#) [\[PDF\]](#)
25. 张旋, 吴晓敏*, 闵敬春, 冷壁上单个静止过冷液滴冻结过程的数值模拟, *工程热物理学报* 39 (01), 159-164 (2018). [\[Link\]](#) [\[PDF\]](#)
26. 胡志锋, 褚福强, 张旋, 袁志平, 吴晓敏*, 液滴偏心撞击超疏水微柱表面: 形态变化与接触时间, *工程热物理学报* 41 (09), 2266-2271 (2020). [\[Link\]](#) [\[PDF\]](#)
27. 刘鑫, 张旋, 闵敬春*, 壁面静止水滴冻结过程形状变化, *工程热物理学报* 41 (03), 704-708 (2020). [\[Link\]](#) [\[PDF\]](#)
28. 褚福强, 吴晓敏*, 张旋, 朱毅, 超疏水表面冷凝液滴行为与生长机制, *工程热物理学报* 37 (07), 1527-1531 (2016). [\[Link\]](#) [\[PDF\]](#)

会议论文

(# Equal contribution; * Corresponding author)

1. **Xuan Zhang**, Ngoc-Vu Nguyen, Tuan Tran*, Conversion of in-process optical and thermal data into a single 3D file representing printing process in Powder Bed Fusion, *STP1637 on ASTM International Conference on Additive Manufacturing (ASTM ICAM 2020)* (West Conshohocken, PA: ASTM International, 2020). (Accepted)
2. **Xuan Zhang**, Xin Liu, Xiaomin Wu*, Jingchun Min, Axisymmetric ellipsoidal droplet impact on a horizontal solid surface, *APS March Meeting 2019*, Boston, US, March 2019, R48.00010.
3. **Xuan Zhang**, Xiaomin Wu*, Jingchun Min, Xin Liu, Impact of a supercooled water droplet on different temperature and contact angle cold plates, *16th International Heat Transfer Conference*, Beijing, China, August 2018, IHTC16-23531.
4. **Xuan Zhang**, Xiaomin Wu*, Jingchun Min, Xin Liu, Shape variation of a sessile droplet during freezing, *6th Asian Symposium on Computational Heat Transfer and Fluid Flow*, Chennai, India, December 2017, ASCHT 2017-107.
5. **Xuan Zhang**, Jingchun Min, Xiaomin Wu*, Effects of airflow parameters on aircraft icing characteristics, *1st Asian Conference on Thermal Sciences*, Jeju, Korea, March 2017, ACTS-P00285.
6. **Xuan Zhang**, Xin Liu, Xiaomin Wu*, Jingchun Min, Numerical simulations of freezing process of a sessile supercooled water droplet using Eulerian method, *9th International Symposium on Heat Transfer*, Beijing, China, August 2016, ISHT9-K0370.
7. **Xuan Zhang**, Xiaomin Wu*, Tien Zhang, Weizheng Zhang, Time-frequency characteristics of pressure fluctuation in subcooled nucleate boiling, *IWHT2015 3rd International Workshop on Heat Transfer Advances for Energy Conservation and Pollution Control*, Taipei, Taiwan, October 2015, IWHT2015-1238.
8. Sihang Gao, Fuqiang Chu, **Xuan Zhang**, Xiaomin Wu*, Condensed droplet growth and jumping behavior on a superhydrophobic surface, *XII International Conference on Computational Heat, Mass and Momentum Transfer*, Rome, Italy, September 2019, No. 07003.
9. Xin Liu, **Xuan Zhang**, Jingchun Min*, Simulation of droplet impact on a spherical surface, *APS March Meeting 2019*, Boston, US, March 2019, G70.00399.
10. Xin Liu, **Xuan Zhang**, Jingchun Min*, Xiaomin Wu, Experiment on droplet impacting on a spherical surface, *15th International Conference on Flow Dynamics*, Sendai, Japan, November 2018, OS18-89.
11. Xin Liu, **Xuan Zhang**, Jingchun Min*, Droplet spreading and oscillation on different wettability surfaces at low Weber number, *15th International Conference on Flow Dynamics*, Sendai, Japan, November 2018, OS18-88.
12. Xin Liu, **Xuan Zhang**, Jingchun Min*, Modelling and experimental investigation of the shape change of a sessile water droplet during freezing, *16th International Heat Transfer Conference*, Beijing, China, August 2018, IHTC16-24001.
13. Xin Liu, **Xuan Zhang**, Jingchun Min*, Freezing simulation of static supercooled water droplet on a cold surface, *1st Asian Conference on Thermal Sciences*, Jeju, Korea, March 2017, ACTS-P00209.

14. Fuqiang Chu, Xiaomin Wu*, **Xuan Zhang**, A theoretical model for the self-propelled droplet jumping phenomenon, *9th International Symposium on Heat Transfer*, Beijing, China, August 2016, ISHT9-A0244.
15. **张旋**, 吴晓敏*, 闵敬春, 冷壁上单个静止过冷液滴冻结过程的数值模拟, *2016 年中国工程热物理学会传热传质学学术会议*, 中国, 北京, 2016 年 10 月, No. 163721.
16. **张旋**, 闵敬春, 吴晓敏*, 霜冰区对飞机结冰过程的影响, *2015 年中国工程热物理学会传热传质学学术会议*, 中国, 大连, 2015 年 10 月, No. 153646.
17. 刘鑫, **张旋**, 闵敬春*, 低韦伯数下超疏水球面上过冷水滴的碰撞结冰研究, *2020 年中国工程热物理学会传热传质学学术会议*, 中国, 广州, 2020 年 11 月, No. 203319.
18. 丁思宇, **张旋**, 吴晓敏*, 液滴撞击单个微柱过程的动力学研究, *2020 年中国工程热物理学会传热传质学学术会议*, 中国, 广州, 2020 年 11 月, No. 203455.
19. 刘鑫, **张旋**, 闵敬春*, 水滴冻结形状变化模拟与分析, *2017 年中国工程热物理学会传热传质学学术会议*, 中国, 苏州, 2017 年 10 月, No. 173508.
20. 吴晓敏*, **张旋**, 赵然, 朱禹, 基于流型的水平微细光管内 R32 流动沸腾换热特性研究, *2015 年中国工程热物理学会传热传质学学术会议*, 中国, 大连, 2015 年 10 月, No. 153198.

专利

1. **张旋**, 马树奇, 靳松, 谢登轩, 付铁, 周凯, 王晓颖, 一种可精确调节摇摆角度和方向的空间曲柄摇杆机构, 实用新型专利, ZL 201320729918.0, 授权日期: 2014 年 10 月.

专著

1. **张旋**, 过冷水滴的结冰与碰撞及其耦合特性研究 (清华大学优秀博士论文系列丛书), 正在出版, 清华大学出版社, 北京, 2021.

项目经历

1. 博士后国际交流计划 (派出项目), 剪切流动与表面微结构对过冷水滴结冰与融化的耦合作用机理 (No. 201900005, 2019.09–2021.09), 人社部/博管办 (主持)
2. **Tier 2 Academic Research Fund**, Mechanistic Prediction of Heat Transfer Enhancement on Nanostructured Surfaces (No. MOE2018-T2-2-113, 2019.05–2022.04), *Ministry of Education, Singapore* (参与)
3. **Tier 2 Academic Research Fund**, Mechanisms of Ice Morphology of a Frozen Nanofluid Droplet on Subcooled Surfaces (No. MOE2016-T2-1-114, 2017.01–2019.12), *Ministry of Education, Singapore* (参与)
4. 国家重点基础研究发展计划 (973 计划) 项目, 飞机结冰致灾与防护关键基础问题研究 (No. 2015CB755800, 2015.01–2019.08), 科技部 (参与)
5. 国家自然科学基金面上项目, 表面微纳结构与跨尺度液滴多场耦合演化行为的相互关系及其调控 (No. 51476084, 2015.01–2018.12) (参与)
6. School Enterprise Cooperation Project, Conversion of In-process Optical and Thermal Data into 3D File Representing Printing Process in Powder Bed Fusion Process (No. 2019069, 2020.01–2021.08), *National Additive Manufacturing Innovation Cluster (NAMIC, Singapore) & ASTM International* (参与)
7. 暑期实践项目, 转子压缩机电机切边冷媒气泡运动规律研究 (2016.06–2016.08), 美的集团广东美芝制冷设备有限公司
8. 校企合作项目, 翅片表面结霜的模拟研究 (2014.09–2015.07), 日本大金公司

学术兼职

1. 期刊审稿人

- Elsevier: International Journal of Heat and Mass Transfer, International Communications of Heat and Mass Transfer, International Journal of Thermal Science, International Journal of Heat and Fluid Flow
- AIP Publishing: Physics of Fluids
- Springer Nature: Acta Mechanica, Advances in Aerodynamics
- Begell House: Journal of Enhanced Heat Transfer
- MDPI: Processes, Fluids

2. 清华大学《工程热力学》MOOC 课程助教 (2015.03–2019.07) (入选教育部 2018 年国家精品在线开放课程)

3. 清华大学硕士生毕业答辩秘书 (2016.09–2019.07)、博士生资格考试秘书 (2016.09–2019.07)

奖励与荣誉

1. Star Reviewer for Physics of Fluids (2020), AIP Publishing

2. 吴仲华优秀研究生奖 (全国共 10 人/年) (2019), 中国工程热物理学会

3. 清华大学优秀博士论文 (2019)

4. 博士后国际交流计划 (派出项目) (全国共 120 人/年) (2019), 人社部/博管办

5. 清华大学博士后支持计划 (2019)

6. 博士研究生国家奖学金 (2018)、国家奖学金 (2012, 2011), 教育部

7. 北京市优秀毕业生 (2019, 2014)

8. 国家精品在线开放课程 (2018, 排名 2/5), 教育部

9. 清华大学学生实验室建设贡献奖三等奖 (2020, 排名 2/2)

10. 全国大学生工程训练综合能力大赛一等奖 (2013)

11. “挑战杯”全国大学生课外学术科技作品竞赛二等奖 (2013)

12. 全国大学生 (部分地区) 物理竞赛二等奖 (2011)

13. 全国大学生数学竞赛 (北京赛区) 三等奖 (2011)

14. 北京市大学生工程训练综合能力大赛一等奖 (2013)

15. “挑战杯”首都大学生课外学术科技作品竞赛一等奖 (2013)

16. 北京市大学生机器人大赛二等奖 (2012)

17. “智汇·深呼吸”首都大学生环保创新创业实践大赛二等奖 (2013)

18. 首都大学生暑期社会实践优秀团队 (2013)、优秀成果 (2013)

19. 清华大学综合优秀一等奖学金 (2015–2017)

20. 清华大学优秀党建与思想政治工作者 (党支部书记) (2019)、优秀研究生党支部书记 (2018)、同方环境社工单项奖 (2016–2018)、学堂在线优秀助教 (2017)

21. 美的集团广东美芝制冷设备有限公司优秀实习生 (2016)

22. 北京理工大学优秀毕业生 (2014)、徐特立奖学金 (全校共 20 人/年) (2013)

23. 北京理工大学科技竞赛奖学金 (2013)、“世纪杯”学生课外学术科技作品竞赛特等奖 (2012)、大学生创新项目优秀奖 (2012) 等

24. 北京理工大学专业之星 (2013)、一等奖学金 (2010–2014) 等

25. 北京理工大学学习标兵 (2011–2014)、优秀团员 (2013) 等

26. 清华大学学生社会实践金奖支队 (2018)、研究生暑期就业实践金奖支队 (2018)、研究生寒假实践银奖支队 (2015)
27. 北京理工大学优秀实践团队一等奖 (2013)

其他

- CAE 软件: AutoCAD, ProE, Solidworks, SketchUp 等
- CFD 软件: Gambit, ICME CFD, Fluent, Tecplot, OpenFOAM, CFX, COMSOL 等
- 编程语言: Matlab, C/C++, Python, Fortran, Maple, Mathematic 等
- 其他工具: LabVIEW, MS Office, Origin, Visio, Endnote 等
- 其他工具: ImageJ, Photoshop, Corel VideoStudio, Vegas, Illustrator 等

更新于 2021-06-09