Liangkui Jiang

Ph. D. Student
Industrial and Systems Engineering
University of Wisconsin Madison
Phone: (515) 598-6366, Email: ljiang248@wisc.edu

Biography Liangkui Jiang is a Ph. D. student in the Department of Industrial and Systems Engineering (ISyE) at the University of Wisconsin Madison, advised by Dr. Hantang Qin. Liangkui Jiang's research interest focuses on the optimization of Electrohydrodynamic (EHD) printing processes for the fabrication of microscale bio and electronic devices for in-space applications by introducing physics analysis and simulation, machine vision, machine learning and control methods. He published 15 papers in top journals, received the best student paper award from IISE M&D division in 2021, best poster award from MSEC in 2022.

Education

Ph. D.	Industrial Engineering	Expected 2025
	University of Wisconsin Madison	
Transferred	Industrial Engineering	May 2022
	Iowa State University	
M. S.	Power Engineering	May 2018
	Huazhong University of Science and Technology	
B. S.	Marine Engineering	May 2016
	Harbin Engineering University	

Awards

1. IISE Future Faculty Fellows Program Fellowship, 2021-2022
2. 2022 Annual IISE Doctoral Colloquium in IISE, 2022
3. 2021 M&D Best Student Paper Award in IISE, 2021
4. 2021 Best Poster Award in MSEC, 2021
5. Teaching Excellence Award from the Department of Industrial and Manufacturing Systems Engineering, 2021.
6. Research Excellence Award from the Department of Industrial and Manufacturing Systems Engineering, 2021
7. NSF Travel Award Winner of 2021 ASME International Manufacturing Science and Engineering Conference (MSEC 2021), 2021.
8. R. Bruce Thompson Graduate Fellowship Award in American Society for Nondestructive Testing (ASNT), 2020.
9. First Place Winner of the DAIS Division Web/Mobile App Competition 2020 IISE Annual Conference, 2020.
10. IMSE Research Symposium: Best Poster Award (graduate student mentor), 2020
11. SolidWorks Professional Certificate.
12. Create the Future Contest Award top 100, 2020.

Publications

Refereed Journal Articles

1. **Jiang, L.**, Wolf, R., Alharbi, K., & Qin, H. (2024). In-Situ Monitoring and Recognition of Printing Quality in Electrohydrodynamic Inkjet Printing via Machine Learning. Journal of Manufacturing Science and Engineering, 1-29.
2. **Jiang, L.**, Li, W., Wolf, R., Marander, M., Kirscht, T., Liu, F., ... & Qin, H. (2024). High-Sensitivity Fully Printed Flexible $BaTiO_3$-Based Capacitive Humidity Sensor for In-space Manufacturing by Electrohydrodynamic Inkjet Printing. IEEE Sensors Journal.
3. **Jiang, L.**, Marander, M., Huang, Y., Wolf, R., Liu, F., Kirscht, T., Chang, Y., Hill, C., Chen, Y. (2024) An Era for In Space Electronics Manufacturing: A Resistive-RAM fabricated under Microgravity by Electrohydrodynamic (EHD) Inkjet Printing. Journal of Manufacturing Science and Engineering.
4. **Jiang, L.**, Yu, L., Premaratne, P., Zhang, Z., & Qin, H. (2021). CFD-based numerical modeling to predict the dimensions of printed droplets in electrohydrodynamic inkjet printing. Journal of Manufacturing Processes, 66, 125-132.
5. **Jiang, L.**[1], Kirscht, T.[1], Liu, F., Jiang, X., Marander, M., Ortega, R., ... & Jiang, S. (2024). Silver Nano-Inks Synthesized with Biobased Polymers for High-Resolution Electrohydrodynamic Printing Toward In-Space Manufacturing. ACS Applied Materials & Interfaces.
6. **Jiang, L.**[1], Huang, Y.[1], Li, B., Premaratne, P., Jiang, S., & Qin, H. (2020). Study effects of particle size in metal nanoink for electrohydrodynamic inkjet printing through analysis of droplet impact behaviors. Journal of Manufacturing Processes, 56, 1270-1276.
7. **Jiang, L.**, Li, Z., Ouyang, J., Fang, Y., Luo, G., & Yao, H. (2019). Kinetic study of coal char thermal deactivation. Energy & Fuels, 33(11), 11959-11967.
8. Wolf, R., **Jiang, L.**, Alharbi, K., Zhang, P., Wang, C., & Qin, H. (2024). Heterogeneous Transfer Learning of Electrohydrodynamic Printing under Zero-gravity towards In-space Manufacturing. Journal of Manufacturing Science and Engineering, 1-39.
9. Chen, Q., **Jiang, L.**, Qin, H., & Kontar, R. A. (2024). Multi-agent Collaborative Bayesian Optimization via Constrained Gaussian Processes. Technometrics, 1-23.
10. Li, Z., **Jiang, L.**, Ouyang, J., Cao, L., Luo, G., & Yao, H. (2018). A kinetic study on char oxidation in mixtures of O_2, CO_2 and H_2O. Fuel Processing Technology, 179, 250-257.
11. Ouyang, J., Hong, D., **Jiang, L.**, Li, Z., Liu, H., Luo, G., & Yao, H. (2020). Effect of CO_2 and H_2O on char properties. Part 1: pyrolysis char structure and reactivity. Energy & Fuels, 34(4), 4243-4250.
12. Ravi-Kumar, S., Zhang, X., Lies, B., **Jiang, L.**, & Qin, H. (2019). An area-depth approximation model of microdrilling on high-density polyethylene soft films using pulsed laser ablation. Journal of Micro-and Nano-Manufacturing, 7(4), 044501.
13. Zou, R., Luo, G., Cao, L., **Jiang, L.**, Li, X., & Yao, H. (2018). Surface CO/CO2 ratio of char combustion measured by thermogravimetry and differential scanning calorimetry. Fuel, 233, 480-485.
14. Li, Z., Zou, R., Hong, D., Ouyang, J., **Jiang, L.**, Liu, H., ... & Yao, H. (2020). Effect of CO_2 and H_2O on char properties. Part 2: in situ and ex situ char in oxy-steam combustion. Energy & Fuels, 34(6), 7554-7563.
15. Xu, M., Hu, H., Yang, F., Yang, Y., **Jiang, L.**, Tang, H., ... & Yao, H. (2018). Novel findings in conversion mechanism of toluene as model compound of biomass waste tar in molten salt. Journal of analytical and applied pyrolysis, 134, 274-280.

Refereed Conference Proceedings
1. **Jiang, L.**, Premaratne, P., Huang, Y., Zhang, Z., & Qin, H. (2021, June). Modeling and Experimental Validation of Droplet Generation in Electrohydrodynamic Inkjet Printing for

Prediction of Printing Quality. In International Manufacturing Science and Engineering Conference (Vol. 85062, p. V001T01A010). American Society of Mechanical Engineers.

2. **Jiang, L.**, Huang, Y., Zhang, X., & Qin, H. (2020). Electrohydrodynamic inkjet printing of Polydimethylsiloxane (PDMS). Procedia Manufacturing, 48, 90-94.
3. Jiang, X., Shen, W., **Jiang, L.**, & Qin, H. (2022). Effects of Particle Size Distribution and Impact Speed on Printing Quality in Direct Energy Deposition. Manufacturing Letters, 33, 521-526.
4. Huang, Y., Yu, L., **Jiang, L.**, Shi, X., & Qin, H. (2022, June). 3D printing of hydrogel-based seed planter for in-space seed nursery. In International Conference on Flexible Automation and Intelligent Manufacturing (pp. 56-63). Cham: Springer International Publishing.
5. Ravi-Kumar, S., **Jiang, L.**, & Qin, H. (2020, September). Finite Element Method (FEM) Based Simulation of Continuous Laser Ablation: Surface Temperature and Depth Profile Evolution. In International Manufacturing Science and Engineering Conference (Vol. 84263, p. V002T06A038). American Society of Mechanical Engineers.
6. Zhang, X., **Jiang, L.**, & Qin, H. (2020). Statistical analysis of system parameters in electrohydrodynamic inkjet printing. In IIE Annual Conference. Proceedings (pp. 1044-1049). Institute of Industrial and Systems Engineers (IISE).

Presentations
1. **Jiang, L.**, Qin, H., "Fully-printed flexible humidity sensor based on electrohydrodynamic inkjet printing", conference talk presented at 2022 IISE Annual Conference & Expo, Seattle, Washington, United States, May 21, 2022 – May 24, 2022.
2. **Jiang, L.**, Qin, H., "In space circuits fabrication based on Electrohydrodynamic Inkjet Printing", conference talk presented at 2022 IISE Annual Conference & Expo, Seattle, Washington, United States, May 21, 2022 – May 24, 2022.
3. **Jiang, L.**, Premaratne, P., Huang, Y., Zhang, Z., Qin, H., "Modeling of Droplet Generation in Electrohydrodynamic Inkjet Printing", poster presented at 2021 MSEC Manufacturing Science & Engineering Conference, Cincinnati, Ohio, United States, June 21, 2021 – June 25, 2021. (2021 best poster award)
4. **Zhang, X.**, Jiang, L., Burnett, M., Cai, Y., Qin, H., Virtual Reality Application for the drilling machine, 2020 Institute of Industrial and Systems Engineers. Finalist of 8th IISE data analytics & information systems (DAIS) student mobile app competition

5. **Patents**
6. **Jiang, L.**, Wolf, R., Qin, H., "Groundless Electrohydrodynamic Inkjet Printing System for Anti-Gravity/ Zero Gravity Printing and In-Space Manufacturing", WARF Ref. Number P240310US01
7. Liu, F., Kirscht, T., Marander, M., **Jiang, L.**, Qin, H., Jiang, S. "Metal nanoparticle ink". US Patent App. 18/361,428.

Teaching Experience

Graduate Teaching Assistant, Iowa State University
IE 248 Engineering System Design, Manufacturing Processes and Specifications, Fall 2020
- Responsible for teaching lab of manufacturing processes, management of the TA group, grading, and software maintenance
- Teaching excellent award from the Department of Industrial and Manufacturing Systems Engineering for the contribution of student teaching in the pandemic period

IE 432 Industrial Automation, Fall 2021
- Responsible for the course design for lab sections, lab teaching, grading, and hardware maintenance
- A high score on the student evaluation of teaching was obtained (4.6/5)

Graduate Teaching Assistant, University of Wisconsin Madison
ISyE 605 Computer Integrated Manufacturing, Spring 2024
- A high score on the student evaluation of teaching was obtained (4.42/5)

Service

1. Session Co-chair for Additive Manufacturing section at NAMRC conference, 2022
2. Reviewer for:
   - MSEC/NAMRC conference proceedings
   - Journal of Manufacturing Process
   - Journal of Manufacturing Science and Engineering
   - Journal of Mico and Nano Manufacturing
   - Advanced Materials

Membership

Members of *ASME, SME, IISE,* and *IEEE*