

# Zefang Li (he/him)

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## EDUCATION

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| <b>Johns Hopkins University (JHU)</b> Baltimore, MD                          | Aug. 2023- present   |
| Doctor of Philosophy in Civil and Systems Engineering                        |                      |
| <b>Advisor: Jochen Mueller</b>                                               |                      |
| <b>Carnegie Mellon University (CMU)</b> Pittsburgh, PA                       | Aug. 2021- May 2023  |
| Master of Science in Mechanical Engineering - Research                       |                      |
| <b>Advisor: Carmel Majidi, Gina Olson</b>                                    |                      |
| <b>Shanghai Jiao Tong University (SJTU)</b> Shanghai, China                  | Sept. 2017-Aug. 2021 |
| Bachelor of Engineering in Mechanical Engineering, Minor in Computer Science |                      |
| <b>Advisor: Yongxing Shen</b>                                                |                      |

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## AERA OF EXPERTISE

**Research Keywords:** 3D Printing, Additive Manufacturing, Digital Fabrication, Soft Robotics, Soft Electronics.

### Experimental Research

- Experienced in synthesis of 3D printing polymers (especially thiol-ene polymers) and liquid metals.
- Material characterization: Differential scanning calorimetry, Dynamic mechanical analysis, Thermogravimetric analysis, Nanoindentation, Scanning electron microscopy & Energy-dispersive X-ray spectroscopy, Micro-Computed Tomography, Rheometry, Material testing (Instron, MTS).
- Experienced in fabrication: 3D printing (Familiar with major printers including Aerotech, Hyrel, and Voltera for direct ink writing, Phrozen, Prusa, Formlabs, Objet), soft lithography, manual fabrication.

### Simulation/Computational Research

- Geometry processing: Path planning and slicing algorithms, Thermal simulation for 3D printing, Surrogate models.
- CAD/CAM: SOLIDWORKS, COMSOL, ANSYS, EAGLE.
- Programming: Python, MATLAB, C/C++; PyTorch, Taichi.

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## PUBLICATIONS (\*: equal contribution; h-index = 5; i10-index = 4; citations = 95)

- **Zefang Li**, Jochen Mueller, “Print Path Planning and Nozzle Offset Design for Multimaterial Lattices,” *Virtual and Physical Prototyping*, 21(1), e2694273.
- **Zefang Li**, Rohit Berlia, Timothy Weihs, Jochen Mueller, “Effect of Processing Parameters on Microstructure and Hardness in Metal Extrusion Additive Manufacturing of Thin-Walled 4043 Aluminum,” *International Manufacturing Science and Engineering Conference*, 2026.
- **Zefang Li**, Rohit Berlia, Colin Goodman, Mark Foster, Timothy Weihs, Jochen Mueller, “A Thermally Informed Framework for Stable Metal Extrusion Additive Manufacturing of Thin-Walled Aluminum Alloys,” *Journal of Manufacturing Processes*, 172, 630-655.
- Kaveh Barri, Michael Lapera, **Zefang Li**, Thao D. Nguyen, Jochen Mueller, “Residual-Stress Programming Enables Reciprocal Multistability in 3D-Printed Architected Materials,” *Advanced Functional Materials*, 36 (42), e75011.
- Zach Kutschke, **Zefang Li**, Rohit Berlia, Kevin Hemker, Timothy Weihs, Jochen Mueller, “Metal Extrusion Additive Manufacturing: A Unified Framework and Comprehensive Review of an Emerging Technology,” *Journal of Manufacturing Processes*, 156, 206-218.
- **Zefang Li**, Leshan Zhao, Christos Kakogiannis, Timothy Weihs, Jochen Mueller, “3D-Printable Oil-in-Liquid Metal Foam Emulsions,” *Matter*, 8 (12).
- **Zefang Li**, Ziyang Xu, Sarah Propst, Zachariah A. Page, Yun Chen, Carmel Majidi, Jochen Mueller, “Ultrawide Property Range Thiol-Ene Photopolymers for 3D Printing,” *Advanced Materials Technologies*, 10 (17), e00422.
- Yiwen Song\*, **Zefang Li**\*, Mason Zadan, Jingxian Wang, Swarun Kumar, Carmel Majidi, “Frequency-selective actuation of liquid crystalline elastomer actuators with radiofrequency,” *Nature Communications*, 16 (1), 7292.
- Yichi Luo, Dinesh K. Patel, **Zefang Li**, Yafeng Hu, Hao Luo, Lining Yao, Carmel Majidi. “Intrinsically Multistable Soft Actuator Driven by Mixed-Mode Snap-Through Instabilities,” *Advanced Science*, 11 (18), 2307391.
- **Zefang Li**, Gina Olson, Dinesh K. Patel, Lining Yao, Carmel Majidi, “Electrically Controlled Liquid Crystal Elastomer

Surfaces for Dynamic Wrinkling,” *Advanced Intelligent Systems*, 6 (2), 2200402.

- Yiwen Song, Mason Zadan, Kushaan Misra, **Zefang Li**, Jingxian Wang, Carmel Majidi, Swarun Kumar, “Navigating Soft Robots through Wireless Heating,” *2023 IEEE International Conference on Robotics and Automation (ICRA)*, 2598-2605.
- Xufei Suo\*, Tingkang Wang\*, **Zefang Li**, Yongxing Shen, “Elastic Solution for a Rotating Bi-material Ring with Thermal Mismatch,” *Mechanics Research Communications*, 113, 103695.

## CONFERENCE PRESENTATIONS

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- “Metal Extrusion Additive Manufacturing of Thin-Walled Aluminum Alloys”, 2026 Annual International Solid Freeform Fabrication Symposium.
- “Effect of Processing Parameters on Microstructure and Hardness in Metal Extrusion Additive Manufacturing of Thin-Walled 4043 Aluminum”, 2026 21st International Manufacturing Science and Engineering Conference.
- “Metal Extrusion Additive Manufacturing”, 2026 MSEE Annual Technical Review (JHU).
- “3D-Printable Oil-in-Liquid Metal Foam Emulsion”, 2026 HEMI day (JHU).
- “Metal Extrusion Additive Manufacturing”, 2025 MSEE Annual Technical Review (JHU).
- “Ultrawide Property Range Thiol-Ene Photopolymers for 3D Printing”, 2025 DOM/WSE Research Retreat and Poster Session (JHU).
- “A Polymeric 3D Printing Material System Exhibiting an Extensive Range of Mechanical Properties”, 2024 MRS Fall Meeting & Exhibit.

## SERVICES

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- Invited reviewer for: Advanced Materials, Nature Communications Materials
- Mentored 4 undergraduate students and 2 master’s students for research credits or internship.

## AWARDS & HONORS

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| Richard D. Hickman Fellowship, JHU                                                                  | Sept. 2025      |
| Joseph Meyerhoff Fellowship, JHU                                                                    | Sept. 2023      |
| MechE MS Summer Research Fellowship, CMU                                                            | May 2022        |
| Outstanding Teaching Assistant Award, SJTU                                                          | June 2021       |
| Outstanding Graduate of Shanghai, Shanghai Municipal of Education                                   | May 2021        |
| B-Class Undergraduate Scholarship for Academic Excellence, SJTU                                     | Nov. 2019, 2020 |
| Undergraduate Academic Progress Scholarship, SJTU                                                   | Nov. 2019       |
| University of Michigan - Shanghai Jiao Tong University Joint Institute Volunteer Spirit Scholarship | Mar. 2018       |

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