




Lu WANG

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Department of Mechanical Engineering, National University of Singapore, Singapore 117578

EDUCATION

National University of Singapore (NUS)

Ph.D. Mechanical Engineering

Singapore

Aug. 2019 – Jun. 2023(expected)

- **Supervisor:** Dr. Wentao Yan and Prof. Heow Pueh Lee
- **Research Interest:** Metal Additive Manufacturing, Computational Fluid Dynamics, Thermal Fluid Flow Simulation

Huazhong University of Science and Technology (HUST)

M.Eng. Engineering, Design & Manufacturing of Ship and Marine Structure

Wuhan, China

Sep. 2013 – Jun. 2016

Huazhong University of Science and Technology (HUST)

B.Eng. Naval Architecture & Ocean Engineering

Wuhan, China

Sep. 2009 – Jun. 2013

EMPLOYMENT

Teaching Assistant

National University of Singapore (NUS)

Aug. 2020 – Jul. 2021

Singapore

- Tutoring 4 class students in ME2112 Strength of Materials;
- Teaching 4 class students experiments in ME2142 Feedback Control Systems;

Research Associate

Huazhong University of Science and Technology (HUST)

Jan. 2019 – Jul. 2019

Wuhan, China

- Studying the influence of laser parameters on L-PBF part quality through experiments
- Studying the physical phenomena in L-PBF and building the thermal-fluid flow model.
- Maintaining the home-made L-PBF machine.

PUBLICATIONS

Google Scholar: 257 citations; 8 h index.

Invited Reviewer: *Additive Manufacturing, Materials & Design, Journal of Alloys and Compounds, 3D Printing and Additive Manufacturing*

[1] **Lu Wang**, Yanming Zhang, Hou Yi Chia, Wentao Yan, Mechanism of keyhole pore formation in metal additive manufacturing. *npj Computational Materials*, 2022, 8(1), 1-11.

[2] **Lu Wang**, Wentao Yan, Thermoelectric magnetohydrodynamic model for laser-based metal additive manufacturing. *Physical Review Applied*, 2021, 15.6: 064051.

[3] **Lu Wang**, Yanming Zhang, Wentao Yan, Evaporation model for keyhole dynamics during additive manufacturing of metal. *Physical Review Applied*, 2020, 14.6 : 064039.

[4] **Lu Wang**, Shuhao Wang, Yanming Zhang, Wentao Yan, Multi-phase flow simulation of powder streaming in laser-based directed energy deposition. *International Journal of Heat and Mass Transfer* (Accepted).

[5] Sheng Zhang, Minglu Ding, **Lu Wang**, Wenjun Ge, Wentao Yan, Laser powder bed fusion of diamond/N6 MMCs enabled by Ni-Ti coated diamond particles. *Materials & Design*, 2022, 217, 110635. (Co-first author)

[6] Yicheng Han, **Lu Wang**, Ke Liu, Wentao Yan, Numerical modeling of laser powder bed fusion of metallic glasses: Prediction of crystallization. *Journal of Micromechanics and Molecular Physics*, 2020, 5(04), 2050013. (Co-first author)

[7] Chia Hou Yi, **Lu Wang**, Wentao Yan, Influence of oxygen content on melt pool dynamics in metal additive manufacturing: High-fidelity modeling with experimental validation. *Acta Materialia*, 2023, 249: 118824.

- [8] Min Yang, **Lu Wang**, Wentao Yan, Phase-field modeling of grain evolutions in additive manufacturing from nucleation, growth, to coarsening. *npj Computational Materials* 2021, 7.1: 1-12.
- [9] Dafan Du, **Lu Wang**, Anping Dong, Wentao Yan, Guoliang Zhu, Baode Sun, Promoting the densification and grain refinement with assistance of static magnetic field in laser powder bed fusion. *International Journal of Machine Tools and Manufacture*, 2022, 183: 103965.
- [10] Yefeng Yu, **Lu Wang**, Jun Zhou, Hongxin Li, Yang Li, Wentao Yan, Feng Lin, Impact of fluid flow on the dendrite growth and the formation of new grains in additive manufacturing. *Additive Manufacturing*, 2022, 102832.
- [11] Min Yang, **Lu Wang**, Wentao Yan, Phase-field modeling of grain evolution in additive manufacturing with addition of reinforcing particles. *Additive Manufacturing*, 2021, 47: 102286.
- [12] Yanming Zhang, Yefeng Yu, **Lu Wang**, Yang Li, Feng Lin, Wentao Yan, Dispersion of reinforcing micro-particles in the powder bed fusion additive manufacturing of metal matrix composites. *Acta Materialia*, 2022, 118086.
- [13] Daijun Hu, Nicolò Grilli, **Lu Wang**, Min Yang, Wentao Yan, Microscale residual stresses in additively manufactured stainless steel: Computational simulation. *Journal of the Mechanics and Physics of Solids*, 2022, 161, 104822.

CHAPTERS & INVENTIONS

- [1] **Lu Wang**, Yefeng Yu, Daijun Hu, Wentao Yan, “Chapter 9: Multiscale modeling applied to additive manufacturing”, *Fundamentals of Multiscale Modeling of Structural Materials*, W. Xia, Ed., 1st Edition, Elsevier, 2022, pp. 333–388.
- [2] **Lu Wang**, Wentao Yan, Thermoelectric Magnetohydrodynamic Model for Metal Additive Manufacturing. ILO Ref: 2022-052. (Software Invention Disclosure)

TALKS & CONFERENCES

- [1] Simulation of Molten Pool Dynamics during Metal Additive Manufacturing. Invited talk at Huazhong University of Technology and Science, Wuhan, China, 2022. (Host: Prof. Shengyong Pang)
- [2] Simulation of Molten Pool Dynamics during Metal Additive Manufacturing. Invited talk at Wuhan University of Technology, Wuhan, China, 2022.
- [3] **Lu Wang**, Wentao Yan, Simulation of Molten Pool Dynamics during Metallic Additive Manufacturing. TMS2022, California, US, 2022.
- [4] **Lu Wang**, Wentao Yan, Evaporation Model for Keyhole Dynamics during Additive Manufacturing of Metal. International Solid Freeform Symposium, Texas, US, 2021.
- [5] **Lu Wang**, Yanmin Zhang, Wentao Yan, Simulation of molten pool dynamics in metallic additive manufacturing. Materials for Humanity (MH21), Online, 2021.

HONORS & AWARDS

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| • Three 1st and four 2nd places in AM-Bench 2023, NIST, 2023 | • The Lloyd’s Scholarship, HUST, 2011 |
| • Research scholarship for PhD candidate, NUS, 2019-2023 | • National Scholarship for Encouragement, HUST, 2011 |
| • Academic Scholarship for Graduate, HUST, 2014-2016 | • Outstanding Graduate, HUST, 2016 |
| | • Outstanding Undergraduate, HUST, 2013 |

RESEARCH SKILLS

Languages: Fortran, Matlab, Python, C/C++

Developer Tools: Flow3D, Visual Studio, VS Code, Matlab, AutoCAD, Catia, Solidworks

Languages: Chinese, English