

Lu WANG

✉ wang_lu@u.nus.edu | 🌐 [Personal Website](#) |  [Wang Lu](#) |  [Wang Lu](#) | 📞 +65 8942 0646
College of Design and 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

Research Fellow

National University of Singapore (NUS)

Jun. 2023 – Now

Singapore

- High-fidelity Multi-physics Modeling of Molten Pool Dynamics in Metal Additive Manufacturing

Teaching Assistant

National University of Singapore (NUS)

Jan. 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
- Maintaining and conducting experiments on the independently developed L-PBF machine.

PUBLICATIONS

- [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. **(IF 12.25, highly cited)**
- [2] **Lu Wang**, Wentao Yan, Thermoelectric magnetohydrodynamic model for laser-based metal additive manufacturing. *Physical Review Applied*, 2021, 15.6: 064051. **(IF 4.93)**
- [3] **Lu Wang**, Yanming Zhang, Wentao Yan, Evaporation model for keyhole dynamics during additive manufacturing of metal. *Physical Review Applied*, 2020, 14.6: 064039. **(IF 4.93)**
- [4] **Lu Wang**, Shuhao Wang, Yanming Zhang, Wentao Yan, Multi-phase flow simulation of powder stream-
ing in laser-based directed energy deposition. *International Journal of Heat and Mass Transfer* 2023,
212: 124240. **(IF 5.43)**
- [5] Yinchuan Wang, **Lu Wang**, Dazhi Liu, Bozun Miao, Han Wu, Jia Pei, Wentao Yan, Guangyin Yuan,
Shuhao Wang, Mechanisms of processing map difference between laser powder bed fusion of Mg solid
cubes and lattice structures. *Additive Manufacturing* 2023, 103773. **(IF 11.63, Co-first author)**
- [6] Sheng Zhang, Minglu Ding, **Lu Wang**, Wenjun Ge, Wentao Yan, Laser powder bed fusion of dia-
mond/N6 MMCs enabled by Ni-Ti coated diamond particles. *Materials & Design*, 2022, 217, 110635.
(IF 9.41, Co-first author)
- [7] 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)**
- [8] 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. **(IF 9.20)**

[9] 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. (IF 12.25)

[10] 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. (IF 10.33)

[11] 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. (IF 11.63)

[12] 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. (IF 11.63)

[13] 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. (IF 9.20)

[14] 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. (IF 5.58)

[15] Ziyuan Xie, Fan Chen, **Lu Wang**, Wenjun Ge, Wentao Yan. Data-driven prediction of keyhole features in metal additive manufacturing based on physics-based simulation. *Journal of Intelligent Manufacturing*, 2023: 1-14. (IF 7.13)

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

Google Scholar: 346 citations; 9 h index; 9 i10 index.

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] High-fidelity Multi-physics Modeling of Molten Pool Dynamics in Metal Additive Manufacturing. *Invited talk* at **Norwegian University of Science and Technology**, Trondheim, Norway, 2023. (Host: Assoc. Prof. Jun Ma)

[2] 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)

[3] Simulation of Molten Pool Dynamics during Metal Additive Manufacturing. *Invited talk* at **Wuhan University of Technology**, Wuhan, China, 2022.

[4] **Lu Wang**, Wentao Yan, Modeling of Molten Pool Dynamics in Additive Manufacturing with External Magnetic Fields. **SIM-AM 2023**, Munich, Germany, 2023.

[5] **Lu Wang**, Wentao Yan, Simulation of Molten Pool Dynamics during Metallic Additive Manufacturing. **TMS2022**, California, US, 2022.

[6] **Lu Wang**, Wentao Yan, Evaporation Model for Keyhole Dynamics during Additive Manufacturing of Metal. **International Solid Freeform Symposium**, Texas, US, 2021.

HONORS & AWARDS

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| • Chinese Government Award for Outstanding Self-financed Students Abroad , 2022 | 2019-2023 |
| • Three 1st and four 2nd places in AM-Bench 2023 , NIST, 2023 | • Academic Scholarship for Graduate, HUST, 2014-2016 |
| • Research scholarship for PhD candidate, NUS, | • Outstanding Graduate, HUST, 2016 |