

**XUXIAO LI**  
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## EDUCATION

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<b>Tongji University</b> <i>B.S./Aircraft Manufacturing Engineering</i>	Shanghai, China Jun. 2015
<b>University of Utah</b> <i>M.S./Mechanical Engineering</i> <i>Ph.D./Mechanical Engineering</i> , Advisor: Prof. Wenda Tan	Salt Lake City, Utah May 2019 Expected Dec. 2020

## PUBLICATION

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### Journal Articles

- **Li, X.**, Tan, W., 2018. Numerical investigation of effects of nucleation mechanisms on grain structure in metal additive manufacturing. *Computational Material Science*, 153, pp. 159-169.
- Herriott, C.F., **Li, X.**, Kouraytem, N., Tari, V., Tan, W., Anglin, B.S., Rollett, A.D., Spear, A.D., 2018. A multi-scale, multi-physics modeling framework to predict spatial variation of properties in additive-manufactured metals. *Modelling and Simulation in Materials Science and Engineering*, 27, p. 025009.
- Kouraytem, N., **Li, X.**, Cunningham, R., Zhao, C., Parab, N., Sun, T., Rollett, A.D., Spear, A.D., Tan, W., 2019. Effect of laser-matter interaction on molten pool flow and keyhole dynamics. *Physical Review Applied*, 11(6), p.064054.
- Zhao, C., Guo, Q., **Li, X.**, Parab, N., Fezzaa, K., Tan, W., Chen, L., Sun, T., 2019. Bulk-explosion-induced metal spattering during laser processing. *Physical Review X*, 9(2), p.021052.
- **Li, X.**, Zhao, C., Sun, T., Tan, W., 2020. Revealing transient powder-gas interaction in laser powder bed fusion process through multi-physics modeling and high-speed synchrotron X-ray imaging. *Additive Manufacturing*, under review.
- **Li, X.**, Tan, W., 2020. Numerical modeling of powder-gas interaction in laser powder bed fusion process. *Journal of Manufacturing Science and Engineering*, under review.

### Conference Papers

- **Li, X.**, Tan, W., 2016. Numerical investigation of laser absorption by metal powder bed in selective laser sintering processes. *Solid Freeform Fabrication Symposium 2016*, Austin, TX.
- **Li, X.**, Tan, W., 2017. 3-dimensional Cellular Automata simulation of grain structure in metal additive manufacturing processes. *Solid Freeform Fabrication Symposium 2017*, Austin, TX.
- Sun, D., **Li, X.**, Tan, W., 2017. A parametric study on grain structure in selective laser melting process for stainless steel 316L. *Solid Freeform Fabrication Symposium 2017*, Austin, TX.
- Tan, W., **Li, X.**, 2017. Numerical Modeling of Grain Growth in Laser Engineered Net Shaping (LENS) of AISI 316 Stainless Steel. *Manufacturing Science and Engineering Conference 2017*, Las Angeles, CA.

## RESEARCH EXPERINCE

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### Computational Fluid Dynamics (CFD)

- *Solver*: Maintaining an in-house, density-based, finite-volume CFD solver which utilizes a pre-conditioning formulation to solve both incompressible and compressible flows in a unified manner.
- *Multi-phase Flow*: Developed and modularized an interface-capturing framework based on the Level-Set and Ghost Fluid Method. Integrated the interface-capturing module into the CFD solver. Conducted multi-phase flow simulations for laser welding processes.
- *Fluid-Solid Interaction*: Developed and modularized a Lagrangian particle-tracking framework based on the Discrete Element Method. Integrated the particle-tracking module into the CFD solver. Conducted simulations for the gas-powder interaction in metal additive manufacturing processes.

### Computational Material Science

- Developed a Cellular Automata model and conducted simulations for the nucleation and grain growth in metal casting, welding and additive manufacturing processes.

### COMPLETED COURSEWORK

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Optics	Heat Transfer	Manufacturing Processes
Computational Fluid Dynamics	Thermodynamics	Kinetics
Turbulence	Radiation	Numerical Solutions of PDEs
Machine Learning		