Lang Yuan, Ph. D., Professor
Department of Mechanical Engineering, University of South Carolina, Columbia, SC 29201
Phone: 803-576-8226; Email: langyuan@cec.sc.edu

PROFESSIONAL PREPARATION

Imperial College London, UK	Materials Science	Ph.D.	04/2010
Tsinghua University, China	Materials Processing and Engineering	M.Sc	05/2006
Tsinghua University, China	Mechanical Engineering	B.Sc	06/2003

APPOINTMENTS

01/2026 – Present	Professor	University of South Carolina, SC, US
08/2018 – 12/2025	Associate Professor	University of South Carolina, SC, US
11/2012 – 08/2018	Lead Research Engineer	GE Research, NY, US
09/2011 – 11/2012	Research Fellow	University of Manchester, UK
04/2010 – 09/2011	Research Associate	Imperial College London, UK

PRODUCTS

Selective publication (Full list @ Google Scholar)

1) Zhang, Z., Dorari, E., Minisandram, R., Krishnamoorthi, S., & **Yuan, L.** (2026). Bridging 2D and 3D computational modeling of vacuum arc remelting: Capturing rotating arc dynamics in axisymmetric simulations. *Journal of Materials Research and Technology*, 41, 3492.
2) Karna, S., **Yuan, L.**, Zhang, T., Al-Aridi, R., Gross, A. J., Morrall, D., Krentz, T., & Hitchcock, D. (2025). Microstructural analysis and defect characterization of additively manufactured AA6061 aluminum alloy via laser powder bed fusion. *Journal of Materials Science & Technology*, 219, 288.
3) Kang, K., **Yuan, L.**, Sun, C., Miranda, J., & Phillion, A. B. (2025). Cellular Automaton simulation of grain and sub-grain evolution with eutectic growth in laser scanned and rescanned Al–10Si, with experimental validation. *Materials & Design*, 256, 114244.
4) Karna, S., **Yuan, L.**, Zhang, T., Gross, A. J., Morrall, D., Krentz, T., & Hitchcock, D. (2025). On the microstructure evolution of AA6061 with pulsed laser powder bed fusion. *Materials Research Letters*, 13(5), 439.
5) Fu, Y., Downey, A. R. J., **Yuan, L**., Huang, H.-T., & Ogunniyi, E. A. (2025). Simulation-in-the-loop additive manufacturing for real-time structural validation and digital twin development. *Additive Manufacturing*, 98, 104631.
6) **Yuan, L**., Fattebert, J.-L., Sun, C., & Sabau, A. S. (2024). Uncovering grain and subgrain microstructure at the scale of additive manufacturing melt tracks with a scalable cellular automaton solidification model. *Additive Manufacturing*, 92, 104401.
7) Kang, K., **Yuan, L.**, & Phillion, A. B. (2024). A 3D simulation of grain structure evolution during powder bed fusion additive manufacturing and subsequent laser rescanning process. *Journal of Materials Processing Technology*, 333, 118603.
8) Fu, Y., Downey, A. R. J., **Yuan, L**., & Huang, H.-T. (2023). Real-time structural validation for material extrusion additive manufacturing. *Additive Manufacturing*, *65*, 103409.
9) **Yuan, L.,** Ju, S., Huang, S., Spinelli, I., Shen, C., Mohr, L., Hosseinzadeh, H., Bhaduri, A., Brennan, M., Sun, C.,& Kitt A. (2023). Validation and application of cellular automaton model for microstructure evolution in IN718 during directed energy deposition. *Computational Materials Science*, 230:112450.
10) Zhang, T., **Yuan, L.** (2022). Understanding surface roughness on vertical surfaces of 316 L stainless steel in laser powder bed fusion additive manufacturing. *Powder Technology*, 411:117957.

Software

1) Lead developer, Open-Source code (muMatScale), https://github.com/lang-yuan/muMatScale

Selected Patents

1) Carter, W.T., Gambone, J.J., **Yuan, L.**, Bogdan, D.C., & Jones, M.G. "Additive manufacturing system and method of forming an object in a powder bed" US Patent 12,059,748, issued August 13, 2024.
2) **Yuan, L.,** Zhou, N., "Systems and methods for controlling microstructure of additively manufactured components." US Patent 10,821,512, issued November 3, 2020.
3) Graham, M.E., **Yuan, L.** "Systems and methods for fabricating a component with at least one laser device." US Patent 10,695,865, issued June 30, 2020.
4) Carter, W.T., Marshall, G.J., **Yuan, L.,** Zhou, N., & Duclos, S.J. "Control of solidification in laser powder bed fusion additive manufacturing using a diode laser fiber array." US Patent 10,532,556, issued January 14, 2020.
5) Roychowdhury, S., Hoebel, M., **Yuan, L.,** Singh, P., Graham, M.E., Filkins, R.J., Etter, T., & Roerig. F.M.. "Systems and methods for dynamic shaping of laser beam profiles for control of micro-structures in additively manufactured metals." US Patent 10,814,429, issued October 27, 2020.

SIGNIFICANT ACCOMPLISHMENTS AND CONTRIBUTIONS

2025	Research Progress Award, University of South Carolina, SC, US
2024	Third Place Best Paper Award, Liquid Metal Processing & Casting Conference, Austria
2018	Best Paper Winner, Manufacturing USA, MSEC 2018, US
2017	Excellent Review Recognition, Metallurgical and Materials Transactions, TMS, US
2017	Patent Innovation Award, GE Global Research, US
2016	Extraordinary Performance Recognition Award, GE Global Research, US
2012	Young Researcher's Award, Royal Society of Chemistry Particle Characterization, UK
2011	McLean Medal Award, Imperial College London, UK

SELECTED SYNERGISTIC ACTIVITIES

2024 – Present	Chair of Solidification Committee, TMS, USA
2022 – Present	Editorial Board Member, Materials Science in Additive Manufacturing; Engineering Science in Additive Manufacturing
2022 – Present	Council Member, Materials Processing & Manufacturing Division, TMS, USA
2022 – Present	Editorial Board Member, Frontiers in Materials; Computers, Materials & Continua
2021 – Present	Committee member, UofSC NSF Graduate Research Fellowships Program
2016 – Present	Editorial Board Member, Journal of Smart and Sustainable Manufacturing Systems, ASTM International, USA
2022 – 2024	Vice Chair of Solidification Committee, TMS, USA
2019 –2022	Secretary of Solidification Committee, TMS, USA
2017	Organizing committee, Modeling of Powder Dynamics in Metal Additive Manufacturing, Advanced Manufacturing Office, DoE
2017	Organizer and Session Chair, Advances in Modelling on Additive Manufacturing, ASM Symposium, ASM International
2017 – 2018	Organizer and Session Chair, TMS Annual Meeting: Application of Solidification Fundamentals to Challenges in Metal Additive Manufacturing, TMS, USA