

Malik A. Blackman

PhD

Staff Consultant



Dr. Malik Blackman is a Staff Consultant based in the Aurora, Illinois office with an extensive background in materials science and mechanical engineering.

A doctoral graduate of the Georgia Institute of Technology, Dr. Blackman's research focussed on polymer thermal characterization, and polymer process-structure-property relationships in additive manufacturing systems. His work encompassed a broad suite of thermal and material characterization techniques — including DSC, Fast Scanning Calorimetry, TGA, DMA, FTIR, and SEM and led to the development of novel thermal screening protocols for thermoset and thermoplastic powder materials. His research has been published in several peer-reviewed journal and presented at national conferences, including the American Chemical Society (ACS) National Conference, where he was selected for the Excellence in Graduate Polymer Research Symposium.

Prior to his doctoral degree, Dr. Blackman earned a Master of Science in Mechanical Engineering from Carnegie Mellon University and a Bachelor of Science in Mechanical Engineering from the University of Illinois at Chicago. He has held research appointments at Savannah River National Laboratory, Massachusetts Institute of Technology, and Fermi National Accelerator Laboratory.

At ESi, Dr. Blackman applies his expertise in polymer thermal analysis and materials characterization to forensic failure investigations across industries including consumer products, plumbing, construction materials, etc.

Contact Information

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ESi Aurora

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Areas of Specialization

- Materials Science
- Polymer Science
- Materials Testing
- Additive Manufacturing Systems
- Analytical Testing
- Mechanical Testing
- Failure Analysis
- Thermal Sciences
- Computational Simulations

Education

B.S., Mechanical Engineering. University of Illinois at Chicago.
2019

M.S., Mechanical Engineering. Carnegie Mellon University. 2021

Ph.D., Materials Science & Engineering. Georgia Institute of Technology. 2026

Positions Held

Engineering Systems Inc., Aurora, Illinois

- Staff Consultant, 2026 – Present

Savannah River National Laboratory, Aiken, South Carolina

- Graduate Research Intern, 2023

Massachusetts Institute of Technology, Boston, Massachusetts

- Undergraduate Research Intern, 2018

John Deere, Waterloo, Iowa

- Undergraduate Intern, 2017

Fermi National Accelerator Laboratory, Batavia, Illinois

- SIST Intern, 2015–2016

Professional Affiliations/Honors

Society of Plastics Engineers

- Member, 2024 – Present

Publications

"Investigating Fast Scanning Calorimetry and Differential Scanning Calorimetry as Screening Tools for Thermoset Polymer Material Compatibility with Laser-Based Powder Bed Fusion." **Blackman, M.A.**, Shofner, M.L., Chatham, C.A., ACS Applied Polymer Materials (2025).

"A Monolithic 3D Printed Axisymmetric Co-Flow Single and Compound Emulsion Generator." Ghaznavi, A., Lin, Y., Douvidzon, M., Szmelter, A., Rodrigues, A., **Blackman, M.**, et al., Micromachines 13(2) (2022).

"Plasmonic absorption-induced haze suppression in random scattering media." Zhao, L., **Blackman, M.**, et al., Applied Physics Letters 114.25 (2019).

Presentations

"Investigating the Potential and Limitations of Fast Scanning Calorimetry to Simulate the Laser Powder Bed Fusion Coalescence Process." **Blackman, M.A.**, Shofner, M.L., Chatham, C.A. ACS National Conference, San Diego, CA (2025). [Selected for Excellence in Graduate Polymer Research Symposium]

"Exploring Fast Scanning Calorimetry as a Materials Screening Tool for Laser Powder Bed Fusion." **Blackman, M.A.**, Shofner, M.L., Chatham, C.A., Polymer Additive Manufacturing Consortium, Boston, MA (2024).

"Characterization of Thermoset Feedstocks for Laser Powder Bed Fusion." **Blackman, M.A.**, Shofner, M.L., Chatham, C.A. 34th Annual Solid Freeform Fabrication Symposium, Austin, TX (2023).

"Decoupling Thermal and Nonthermal Effects During Microwave Assisted Synthesis." **Blackman, M.**, Jayan, R., Malen, J. PhD Research Symposium, Carnegie Mellon University Pittsburgh, PA (2020, 2021).