

MATTHEW L. MCCOY

Additive Manufacturing Technical Lead | Machine Architecture & Process Development | Product Launch & Scale
Atlanta, GA

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I build and architect industrial powder-bed additive manufacturing systems from first principles and lead multidisciplinary engineering teams that turn them into reliable, scalable products. At Formlabs—the world’s largest supplier of professional SLA and SLS systems—I became a printer-wide technical authority in SLS R&D across materials, process physics, optics, thermals, inert-gas handling, hardware, controls, calibration, and software. I held engineering sign-off authority for the 30+ engineer Fuse 1+ 30W launch, owning process architecture, requirements, verification, factory software, and machine acceptance; the Fuse 1/1+ family now represents over 55% of SLS printers sold worldwide. I then returned to lead early Fuse X1 optical and thermal architecture. For my Ph.D., I invented a polymer powder-bed process and built its machine, multiphysics design software, and fully matched RF heating network. **I bring the technical depth to make system-level decisions and the leadership to drive complex printer programs through production.**

SELECTED PROOF

- **Engineering authority:** led technical execution for a 30+ engineer program and 130+ ECOs; owned engineering sign-off for launch gates, factory acceptance, and shipment release on the fastest product launch in Formlabs history.
- **Printer-wide technical depth:** developed SLS materials, process physics, optics, thermal and inert-gas systems, hardware, controls, calibration, and factory and customer software.
- **First-principles range:** invented a polymer powder-bed process and built its custom machine and multiphysics design software; taught myself RF heating-network design and produced a fully matched operating network.

EXPERIENCE

Formlabs

May–Sep. 2019; May 2021 – Sep. 2023

Selective Laser Sintering Research & Development

Somerville, MA

Senior Optical and Thermal Systems Engineer (P3)

Apr. 2023 – Sep. 2023

- * Owned early Fuse X1 optical architecture; reduced the laser, spot-size, hatch, material, smoke, and thermal design space to a few characterized options and presented the system recommendation to engineering leadership and the C-suite.
- * Translated process physics into requirements, verification, and executive trade studies; contributed patent disclosures, mentored and hired engineers, and was later offered technical leadership of a five-engineer product-incubation team.

Print Process Engineer (Core R&D) & Technical Program Manager (P2)

May 2021 – Apr. 2023

- * Engineering authority for the 30+ engineer Fuse 1+ 30W redesign and 130+ ECOs; approved EVT/DVT/PVT gates and production release in nine months. Fuse 1/1+ now represents over 55% of SLS printers sold worldwide.
- * Owned process architecture, requirements, verification, factory-test software, and acceptance of contract-manufactured machines in China; trained factory teams, debugged launch issues across time zones, and held shipment-release authority.
- * Developed SLS materials, process parameters and controls, upgraded thermal architecture, and a recirculating inert-gas system; created calibration tools that cut dimensional error $3\times$ (± 300 to $\pm 100\ \mu\text{m}$) and enabled LEGO’s global Fuse rollout.

Mechanical Engineering & Print Process Intern, Fuse SLS

May 2019 – Sep. 2019

- * Resolved a laser-coordinate failure that had become a critical beta-testing bottleneck for part fitment; improved pre-launch Fuse geometry accuracy 25% through laser and calibration studies.
- * Designed core Fuse Sift powder-processing functions and built the first working Fuse Blast automated media-blasting prototype, selected for later commercialization.

Georgia Institute of Technology – RFAM Inventor & Lead Developer

Sep. 2023 – Present

Ph.D. Candidate, Digital Design and Manufacturing Lab | NSF GRFP

Atlanta, GA

- Invented RFAM, a polymer powder-bed process that patterns conductive dopant and volumetrically sinters parts with RF energy; secured ~\$150K and built the machine architecture, powder handling, high-viscosity jetting, controls, instrumentation, safety systems, and 600 W RF energy-delivery architecture.
- Built and finite-difference-verified HEATR, a coupled electrothermal, phase-change, and densification platform with an adjoint pipeline that converts part geometry into filtered, 4-bit printable material maps; designs outperformed uniform material on every benchmark geometry and the best prior compensation method in 72% of cases.
- Entered niche RF heating-network design without prior domain experience and produced a fully matched operating network; co-authored peer-reviewed WAAM and hybrid WAAM/powder-blown DED research, including a 2025 *npj Advanced Manufacturing* paper; three journal manuscripts are in preparation, with two additional studies planned for 2027.

EDUCATION

Georgia Tech Ph.D. Mechanical Engineering | Minor: Industrial Design | NSF Graduate Research Fellow

Sept. 2023 – Dec. 2026

Dissertation: Advancing Volumetric Additive Manufacturing via Radio Frequency Energy Delivery: Process Development & Characterization

Northern Illinois University B.S. Mechanical Engineering | Summa Cum Laude

Aug. 2017 – May 2021

Minor: Music | GPA: 3.95/4.00 | DeKalb, IL