|  |  |  |
| --- | --- | --- |
| [LinkedIn](https://www.linkedin.com/in/amy-elliott-03073880/): amy-elliott-03073880 | **Amy M. Elliott** | [elliottam@ornl.gov](mailto:elliottam@ornl.gov) |
|  | 615-585-8383 (cell) |

# Education

***PhD: Mechanical Engineering, Virginia Tech Blacksburg, VA***

August 2009–March 2014

*Dissertation:**Additively Manufactured Physical Unclonable Functions: The Effects of Quantum Dot Nanoparticles on PolyJet Direct 3D Printing*

*Advisor: Christopher B. Williams*

*Certificate: Engineering Education*

***BS: Mechanical Engineering, Tennessee Tech University (Minor in Mathematics) Cookeville, TN***

August 2004–May 2009

# Scientific Profile (As of June 2023)

|  |  |
| --- | --- |
| * Career h index (Scopus/Google): 26 * I10-index (Scopus/Google):36 * Journal Articles: 40 * Citations (Scopus/Google): 2717 | * Field-Weighted Citation Impact (SciVal): 2.17 * Patents (Google Patents): 17 * Funding History (As lead PI): $20M (estimated) |

# Summary of Skills

* 10 years’ experience as a lead researcher at ORNL’s Manufacturing Demonstration Facility, a manufacturing research institution that is world-renown for innovation in manufacturing
* Specific expertise in additive manufacturing (AM), including inkjet-based polymer and metal systems, including various densification routes such as infiltration and sintering.
* Innovator as demonstrated by 15+ patents, many of which are interdisciplinary
* Productive researcher and collaborator as demonstrated by 40 journal articles (despite applied focus)
* Experienced mentor as demonstrated by 20+ student mentees (list available upon request)
* Demonstrated ability to manage research projects and personnel to meet research targets as demonstrated by approx. $20M in funding over 10 years, 2 R&D awards, and numerous licensing agreements
* Demonstrated aptitude for public engagement in scientific and technical presentations as demonstrated by media work (Science Channel and others), invited talks, and feature a STEM role model with a life-sized statue in the Smithsonian in 2022 (AAAS IF/Then Ambassadorship).

# Research Experience

**Oak Ridge National Laboratory’s (ORNL) Manufacturing Demonstration Facility**

***Group Leader, Robotics and Intelligent Systems Group, December 2020–Present***

* Lead a team of 10+ researchers and technical staff members to further advanced manufacturing technology, prioritize safety, and advance their careers
* Manage a research portfolio more than $1.5 million on an annual basis
* Work with minority serving institutions (MSIs) in building a hiring pipeline between MSIs and ORNL

***Research Staff Member, August 2015–Present***

* Serve as principal investigator in binder jet technology—budget authority greater than $1 million
* Conduct research tasks related to binder jet AM, including printing experimental powder systems and maintaining and modifying research equipment
* Consult industry and fellow scientists at ORNL on how best to utilize AM technology
* Mentor student interns and develop workforce pipeline

***Postdoctoral Research Associate, April 2014–August 2015***

* Served as lead researcher in inkjet-based AM, specifically focusing on metal binder jetting with ExOne systems. Managed machines and developed new technology for new materials
* Collaborated with industry partners to identify research avenues, consulted on appropriate AM technologies for specific applications, and educated visitors on AM technologies and applications

**Virginia Tech Mechanical Engineering DREAMS Lab**

***Research Associate, August 2009–June 2013***

* Worked extensively with a variety of AM technologies, including Stratasys, Objet, and SinterStations
* Led the DreamVendor project, the first unit of its kind in which users may insert a 3D model file and watch their model being printed.

# Current Projects

* **Advanced Manufacturing Office Annual Operating Plan – Binder Jet Additive Manufacturing**
  + Current project: automation of binder jet depowdering ($500M annual budget)
  + Lead annual projects around binder jetting technology developments including developing new binder systems, new powders, and automation solutions.
  + Manage lab space, technicians, and interns to complete experiments
  + 2 R&D 100 Awards, over 10 patents, and 4 company licenses
* **Dimensional Energy Solar Energy Technology Office Award ($500k annual budget):** My role in this project is to serve as project manager to ensure these goals are met:
  + SiC content is increased above current level (low-90’s)
  + Large artifacts (greater than 6” in size) are printed and densified.
* **Dimensional Energy ARPA-E ($500k annual budget)**: My role in this project is to serve as project manager to ensure these goals are met:
  + SiC content is increased above current level (low-90’s)
* **Phase 3D Tech Collab, Phase 2:** lead and conduct R&D related to a layer-imaging system developed by Phase 3D startup. ($240K budget) Goals include:
  + Implement the system on a binder jet printer and collect data to prove feasibility
  + Identify at least 1 type of build error or feature that the Phase 3D technology can find that the current imaging systems cannot.
* **Emissol Tech Collab, Phase 2:** lead and conduct R&Dtoward manufacturing Emissol’s proprietary emission control geometry with ceramic powder. ($240K budget) The tasks for the project are:
  + Investigate numerous powder feedstocks and manufacturing techniques to reach resolution goal of 100 micron walls from an Emissol geometry that has been depowdered.
  + Investigate binders and depowdering technique that allow for depowdering of the channels
* **Emissol SBIR – Novel, Efficient Contactor Technology ($300K budget)** lead and conduct R&Dtoward manufacturing Emissol’s proprietary emission control geometry with ceramic powder.
  + Similar to above, developing printing and depowdering technology to enable the extremely fine and tortuous channel printing and depowdering.
* **SNS Collimators ($100k annual budget):** R&D on collimator fabrication for the Spallation Neutron Source Second Target Station. Accomplishments thus far include:
  + Printing boron carbide (B4C) powder in numerous collimator geometries
  + Developing binding technique with cyanoacrylate to combine multi-part assemblies
  + Investigate and establish aluminum infiltration capability for future, high-durability collimators
* **Shape Memory Alloy (SMA) via Binder Jet ($100K annual budget):** lead R&D on printing and sintering of SMA alloy.
  + Advise graduate student at U. of Toledo on printing and sintering of SMA and controlled study on the effects of each process step
  + Complete study on chemistry changes throughout printing process
  + Sinter 1 sample and analyze porosity, chemistry
* **NNSA Minority Serving Institutions and Partnerships Program ($100K annual budget):** My role in this project is to serve as ORNL representative in the following:
  + Lead research collaborations with MSIP universities,
  + mentor students and projects, serve on graduate committees,
  + provide outreach to students in the form of talks.
  + Attend meetings with MSIP institutions, recruit students from MSI’s

# Selected Professional Societies, Conference Leadership, Workshops, etc.

* ***Society of Manufacturing Engineers (SME) Additive Manufacturing Technical Community Leadership Committee***, 2022-2028.
* ***Scientific Organizing Committee Member***, “Sinter-Based Symposium,” ASTM International Conference on Additive Manufacturing 2021, 2022, 2023.
* ***Technology Track Organizer/Lead***, Women in 3D Printing TIPE (Technology, Industry, People, Economics) 2022 Conference, January 18-20, 2021 (virtual).
* ***Host Institution Conference Chair***, 2021 National Academy of Engineers German-American Frontiers of Engineering Symposium, March 17–19, 2021 (virtual).
* ***Technology Track Organizer/Lead***, Women in 3D Printing TIPE (Technology, Industry, People, Economics) 2021 Conference, February 27–28, 2021 (virtual).
* ***Invited Workshop Developer (3 hours)***, “METAL AM TUTORIAL: Powder Processing: Quality, Handling & Safety for Performance,” POWDERMET2021, June 20, 2021, Orlando, Florida.
* ***Session Chair (3 sessions)***, AMPM, POWDERMET2021
  + “Advanced Synthesis and Powder Processing,” June 21, 2021
  + “Metal AM Build Processes II,” June 22, 2021
  + “Atomized Feedstock for AM,” June 23, 2021
* ***Invited Webinar Speaker***, “Principles of Debinding and Sintering,” ASTM AAM CoE Webinar Series, May 26, 2021.

# Media and Outreach

* “Amy Elliott, 3D Printing Scientist,” **TV segment**, *Mission Unstoppable*, CBS, January 22, 2022.
* **One of 120 women featured** in the IfThenSheCan exhibit at the Smithsonian Castle, 2022, as highlighted by more than 15 news pieces, including the following:
  + [WBIR](https://www.wbir.com/article/news/local/oak-ridge-anderson/smithsonian-exhibit-honors-ornl-female-scientist-with-life-sized-statue/51-d36667e7-b2e9-4111-aff9-a90196d99630), [The Smithsonian](https://www.si.edu/womensfutures), [FOX 17](https://fox17.com/news/local/3d-printed-statue-of-tennessee-scientist-on-display-in-dc), [AP News](https://apnews.com/article/science-technology-tennessee-oak-ridge-899f972313634f25e6a8ca1eab37051c), [U.S. News](https://www.usnews.com/news/best-states/tennessee/articles/2022-03-15/3d-printed-statue-of-tennessee-scientist-on-display-in-dc), [Newswise](https://www.newswise.com/doescience/smithsonian-exhibit-honors-ornl-s-amy-elliott-with-life-sized-statue-recognizing-women-in-stem), [Manufacturing Business Technology](https://www.mbtmag.com/business-intelligence/news/22118551/smithsonian-displays-3d-printed-statue-of-manufacturing-scientist), [Manufacturing](https://www.manufacturing.net/additive-manufacturing/news/22118551/smithsonian-displays-3d-printed-statue-of-manufacturing-scientist), [WVLT](https://www.wvlt.tv/2022/03/17/ornl-scientist-honored-with-life-sized-smithsonian-statue/), and [Tennessee Tech](https://www.tntech.edu/news/releases/21-22/alumna-named-ambassador-for-american-association-for-the-advancement-of-science-featured-in-smithsonian-exhibit.php)
* Dobriyanova, T., “Using 3D printed sand, these structures become stronger than concrete,” **podcast interview,** *Mashable*, December 14, 2021. [Mashable](https://mashable.com/video/3d-printing-sand-construction?jwsource=twi)
* Berman, J., “3D Printing Scientist Uses Million Dollar Machines to Research Energy-Efficient Manufacturing Methods at Oak Ridge National Laboratory, with Amy Elliott,” **podcast interview**, *Women with Cool Jobs*, July 15, 2021. [Women with Cool Jobs](https://womenwithcooljobs.com/podcast)
* “Energy Innovation – Trends in the Next Decade,” **radio interview**, *More Living with Jim Brogan*, Newstalk 98.7 WOKI, Knoxville, April 24, 2021
* **AAAS IF/Then Ambassador** to make women STEM role models more visible through social media coaching and targeted outreach initiative, 2019-Present
* **On-camera host** for *RobotNation TV*’s Robosub and RobotX Competitions, 2014–2019. [RobotNation](https://robonation.org/)
* **On-camera host** for *The Science Channel*’s “Outrageous Acts of Science,” a show that features viral videos and explains the science behind them, 2013–2019. [IMDb](https://www.imdb.com/title/tt2857312)
* **Contestant and 2nd place finalist** on *The Discovery Channel*’s “The Big Brain Theory,” an engineering competition show where engineers design, build, and compete with machines to solve big problems, 2013. [IMDb](https://www.imdb.com/title/tt2865850/)

# Publications and Patents

## Books and Book Chapters

* **Invited chapter in book:** Gradl, P. R., Protz, C. S., le Corre, M., Mireles, O. R., Medina, F., Kottman, M., Norfolk, M., Ajdelsztajn, L., Allison, P., Elliott, A., & Bandari, Y. (2022). Metal Additive Manufacturing Processes and Selection. In *Metal Additive Manufacturing for Propulsion Applications* (pp. 49–186). American Institute of Aeronautics and Astronautics, Inc. https://doi.org/10.2514/5.9781624106279.0049.0186
* **Invited book chapter:** **Elliott, A. M.**, C. L. Cramer, P. Nandwana, M. Chmielus, and A. Mostafaei. 2022. “Binder Jet-Metals.” *Encyclopedia of Materials: Metals and Alloys*, 120–133. Elsevier.
* **Invited book chapter:** **Elliott, A. M.**, P. Nandwana, C. L. Cramer, A. Mostafaei, and M. Chmielus. 2022. “Metal Additive Manufacturing Processes and Selection.” P. R. Gradl, O. R. Mireles, C. S. Protz, and C. P. Garcia, eds., *Metal Additive Manufacturing for Propulsion Applications*. AIAA.
* **Invited book chapter:** **Elliott, A. M.** 2021. “Inkjet-Based 3D Printing: From Quantum Dots to Steel Tools.” S. M. DelVecchio, ed., *Women in 3D Printing: From Bones to Bridges and Everything in Between*, 47–62. Springer.
* **Elliott, A.**, and C. Cramer. 2020. “Binder Jetting and Sintering in Additive Manufacturing.” *Additive Manufacturing Processes*, 239–246. ASM International.
* **Elliott, A.**, and C. Waters. 2019. *Additive Manufacturing for Designers: A Primer*. SAE International.
* Fidan, I., **A. Elliott,** M. Cossette, T. Singer, and E. Tackett. 2018. “The Development and Implementation of Instruction and Remote Access Components of Additive Manufacturing.” *Cyber-Physical Laboratories in Engineering and Science Education*, 331–342. Cham: Springer International Publishing.
* Ivanova, O., **A. Elliott,** T. Campbell, and C. Williams. 2012. “Additive Manufacturing (AM) of Quantum Dot Nano-Inks.” *Nanotechnology 2012: Electronics, Devices, Fabrication, MEMS, Fluidics, and Computational*, 275–278. CRC Press.

## Journal Articles

Han, L., D. B. Gilmer, **A. Elliott**, and T. Saito. 2023. “Spray Coating for Washout Tooling by Binder Jet Additive Manufacturing.” *Composites Part B: Engineering* 250(February), 110436.

* Mudanyi, R. K., C. L. Cramer, **A. M. Elliott**, and K. Dhananjay. 2022. “Effect of W and C addition on the microstructure and phase composition of W–ZrC composites prepared by using Zr2Cu alloy and variant reactant compositions.” *Open Ceramics* 12, 100305.
* Cramer, C. L., Armstrong, B. L., Trofimov, A. A., Wang, P. L., Siddel, D. H., Wang, H., Cakmak, E., Klett, J. W., & **Elliott, A. M.** (2021). Alumina-based filters made via binder jet 3D printing of alumina powder, colloidal silica infiltration, and sintering. *International Journal of Applied Ceramic Technology*, *18*(6), 1960–1968. <https://doi.org/https://doi.org/10.1111/ijac.13852>
* Cramer, C. L., **Elliott, A. M.,** Lara-Curzio, E., Flores-Betancourt, A., Lance, M. J., Han, L., Blacker, J., Trofimov, A. A., Wang, H., Cakmak, E., & Nawaz, K. (2021). Properties of SiC-Si made via binder jet 3D printing of SiC powder, carbon addition, and silicon melt infiltration. *Journal of the American Ceramic Society*, *104*(11), 5467–5478. https://doi.org/https://doi.org/10.1111/jace.17933
* Gilmer, D. B., . . . , **A. M. Elliott**, et al. 2021. “Additive manufacturing of strong silica sand structures enabled by polyethyleneimine binder.” *Nature Communications* 12(1), 5144.
* Haberl, B., Molaison, J. J., Frontzek, M., Novak, E. C., Granroth, G. E., Goldsby, D., Anderson, D. C., & **Elliott, A. M.** (2021). 3D-printed B4C collimation for neutron pressure cells. *Review of Scientific Instruments*, *92*(9), 093903. https://doi.org/10.1063/5.0055095
* Islam, F., J. Lin, T. Huegle, I. Lumsden, D. Anderson, **A. Elliott**, B. Haberl, and G. Granroth. 2020. “Computational Optimization of a 3D Printed Collimator.” *Journal of Neutron Research* 22(2–3), 155–168.
* Mudanyi, R. K., C. L. Cramer, **A. M. Elliott**, K. A. Unocic, Q. Guo, and D. Kumar. 2021. “W-ZrC Composites Prepared by Reactive Melt Infiltration of Zr2Cu Alloy into Binder Jet 3D Printed WC Preforms.” *International Journal of Refractory Metals and Hard Materials* 94(January), 105411.
* Gilmer, D., L. Han, E. Hong, D. Siddel, A. Kisliuk, S. Cheng, D. Brunermer, **A. Elliott**, and T. Saito. 2020. “An In-Situ Crosslinking Binder for Binder Jet Additive Manufacturing.” *Additive Manufacturing* 35(October), 101341.
* Cramer, C. L., **A. M. Elliott**, et al. 2021. “Properties of SiC‐Si Made via Binder Jet 3D Printing of SiC Powder, Carbon Addition, and Silicon Melt Infiltration.” *Journal of the American Ceramic Society* 104, 5467–5478.
* Mostafaei, A., **A. M. Elliott**, J. E. Barnes, F. Li, W. Tan, C. L. Cramer, P. Nandwana, and M. Chmielus. 2021. “Binder Jet 3D Printing—Process Parameters, Materials, Properties, Modeling, and Challenges.” *Progress in Materials Science* 119, 100707.
* Cramer, C. L., H. Armstrong, A. Flores‐Betancourt, L. Han, **A. M. Elliott**, E. Lara‐Curzio, T. Saito, and K. Nawaz. 2020. “Processing and Properties of SiC Composites Made via Binder Jet 3D Printing and Infiltration and Pyrolysis of Preceramic Polymer.” *International Journal of Ceramic Engineering & Science* 2(6), 320–331.
* Sauter, A., Nasirov, A., Fidan, I., Allen, M., Elliott, A., Cossette, M., Tackett, E., & Singer, T. (2021). Development, implementation and optimization of a mobile 3D printing platform. *Progress in Additive Manufacturing*, *6*(2), 231–241. https://doi.org/10.1007/s40964-020-00154-2
* Gilmer, D., L. Han, E. Hong, D. Siddel, A. Kisliuk, S. Cheng, D. Brunermer, **A. Elliott**, and T. Saito. 2020. “An in-situ crosslinking binder for binder jet additive manufacturing.” *Additive Manufacturing* 35, 101341.
* Kass, M., M. Biruduganti, B. Kaul, J. Storey, D. Longman, **A. Elliott**, and D. Siddel. 2020. “Performance of a Printed Bimetallic (Stainlessstoich Steel and Bronze) Engine Head Operating under Stoichiometric and Lean Spark Ignited (SI) Combustion of Natural Gas.” *SAE International*. SAE Technical Paper No. 2020-01-0770.
* Mucha, N. R., Som, J., Choi, J., Shaji, S., Gupta, R. K., Meyer, H. M., Cramer, C. L., **Elliott, A. M**., & Kumar, D. (2020). High-Performance Titanium Oxynitride Thin Films for Electrocatalytic Water Oxidation. *ACS Applied Energy Materials*, *3*(9), 8366–8374. https://doi.org/10.1021/acsaem.0c00988
* Cramer, C. L., T. G. Aguirre, N. R. Wieber, R. A. Lowden, A. A. Trofimov, H. Wang, J. Yan, M. P. Paranthaman, and **A. M. Elliott**. 2020. “Binder jet printed WC infiltrated with pre-made melt of WC and Co.” *International Journal of Refractory Metals and Hard Materials* 87, 105137.
* Cramer, C. L., P. Nandwana, J. Yan, S. F. Evans, **A. M. Elliott**, C. Chinnasamy, and M. P. Paranthaman. 2019. “Binder jet additive manufacturing method to fabricate near net shape crack-free highly dense Fe-6.5 wt.% Si soft magnets.” *Heliyon* 5(11), e02804.
* J. M. Arnold, C. L. Cramer, **A. M. Elliott**, P. Nandwana, and S. S. Babu. 2019. “Microstructure evolution during near-net-shape fabrication of NixAly-TiC cermets through binder jet additive manufacturing and pressureless melt infiltration.” *International Journal of Refractory Metals and Hard Materials* 84, 104985.
* C. L. Cramer, **A. M. Elliott**, J. O. Kiggans, B. Haberl, and D. C. Anderson. 2019. “Processing of complex-shaped collimators made via binder jet additive manufacturing of B4C and pressureless melt infiltration of Al.” *Materials & Design* 180, 107956.
* C. L. Cramer, A. D. Preston, **A. M. Elliott**, and R. A. Lowden. 2019. “Highly dense, inexpensive composites via melt infiltration of Ni into WC/Fe preforms.” *International Journal of Refractory Metals and Hard Materials* 82, 255–258.
* C. L. Cramer, P. Nandwana, R. A. Lowden, and **A. M. Elliott**. 2019. “Infiltration studies of additive manufacture of WC with Co using binder jetting and pressureless melt method.” *Additive Manufacturing* 28, 333–343.
* Cramer, C. L., Wieber, N. R., Aguirre, T. G., Lowden, R. A., & Elliott, A. M. (2019). Shape retention and infiltration height in complex WC-Co parts made via binder jet of WC with subsequent Co melt infiltration. *Additive Manufacturing*, *29*, 100828. https://doi.org/https://doi.org/10.1016/j.addma.2019.100828
* Fidan, I., . . . , **A. Elliott**, et al. 2019. “The trends and challenges of fiber reinforced additive manufacturing.” *International Journal of Advanced Manufacturing Technology* 102, 1801–1818.
* Mostafaei, C. Hilla, E. L. Stevens, P. Nandwana, **A. M. Elliott**, and M. Chmielus. 2018. “Comparison of characterization methods for differently atomized nickel-based alloy 625 powders.” *Powder Technology* 333, 180–192.
* Cramer, C. L., Edwards, M. S., McMurray, J. W., Elliott, A. M., & Lowden, R. A. (2019). Lightweight TiC–(Fe–Al) ceramic–metal composites made in situ by pressureless melt infiltration. *Journal of Materials Science*, *54*(19), 12573–12581. <https://doi.org/10.1007/s10853-019-03792-2>
* Pawlowski, E., D. A. Splitter, T. R. Muth, A. Shyam, J. K. Carver, R. B. Dinwiddie, and **A. M. Elliott**. 2017. “Producing hybrid metal composites by combining additive manufacturing and casting.” *Advanced Material Processes* 175(7), 16–21.
* M. B. Stone, D. H. Siddel, **A. M. Elliott**, D. Anderson, and D. L. Abernathy. 2017. “Characterization of plastic and boron carbide additive manufactured neutron collimators.” *Review of Scientific Instruments* 88(12), 123102.
* Z. Cordero, D. Siddel, W. Peter, and **A. Elliott**. 2017. “Strengthening of ferrous binder jet 3D printed components through bronze infiltration.” *Additive Manufacturing* 15, 87–92.
* L. Li, B. Post, V. Kunc, **A. Elliott**, and P. Paranthaman. 2017. “Additive manufacturing of near-net-shape bonded magnets: prospects and challenges.” *Scripta Materialia* 135(7), 100–104.
* P. Nandwana, **A. Elliott**, D. Siddel, A. Merriman, W. Peter, and S. Babu. 2017. “Powder bed binder jet 3D printing of Inconel 718: Densification, microstructural evolution and challenges.” *Current Opinion in Solid State & Materials Science* 21(4), 207–218.
* Pawlowski, E., . . . , **A. M. Elliott**, et al. 2017. “Damage-tolerant metal-metal composites via melt infiltration of additively manufactured preforms.” *Materials & Design* 127, 346–351.
* Li, L., . . . , **A. M. Elliott**, et al. 2017. “A novel method combining additive manufacturing and alloy infiltration for NdFeB bonded magnet fabrication.” *Journal of Magnetism and Magnetic Materials* 438, 163–167.
* Shafer, C., D. Siddel, and **A. Elliott**. 2017. “Cleated Print Surface for Fused Deposition Modeling.” *Journal of Mechanical Engineering and Automation* 7, 39–43.
* Levy, A., Miriyev, A., Elliott, A., Babu, S. S., & Frage, N. (2017). Additive manufacturing of complex-shaped graded TiC/steel composites. *Materials & Design*, *118*, 198–203. https://doi.org/https://doi.org/10.1016/j.matdes.2017.01.024
* **Elliott**, S. AlSalihi, A. Merriman, and M. Basti. 2016. “Infiltration of Nanoparticles into Porous Binder Jet Printed Parts.” *American Journal of Applied Sciences* 9(1), 128–133.
* Paranthaman, P., . . . , **A. M. Elliott**, et al. 2016. “Binder Jetting: A Novel NdFeB Bonded Magnet Fabrication Process.” *JOM* 68(7), 1978–1982.
* N. Meisel, **A. Elliott**, and C. Williams. 2015. “A procedure for creating actuated joints via embedding shape memory alloys in PolyJet 3D printing.” *Journal of Intelligent Material Systems and Structures* 26(12), 1498–1512.
* Love, L., . . . , **A. Elliott**, et al. 2014. “The importance of carbon fiber to polymer additive manufacturing.” *Journal of Materials Research* 29(17), 1893–1898.
* **Elliott**, O. Ivanova, C. Williams, and T. Campbell. 2013. “Inkjet Printing of Quantum Dots in Photopolymer for Use in Additive Manufacturing of Nanocomposites.” *Advanced Engineering Materials* 15(10), 903–907.
* Ivanova, O., **Elliott, A.,** Campbell, T., & Williams, C. B. (2014). Unclonable security features for additive manufacturing. *Additive Manufacturing*, *1–4*, 24–31. ttps://doi.org/https://doi.org/10.1016/j.addma.2014.07.001

## Conference Presentations

* C. Cramer, **A. Elliott**, and J. Klett. 2019. “Oxides, Carbides (and Carbon), and Where to Print Them.” *AMUG*.
* **Elliott**, T. Kurfess, and V. Paquit. 2019. “The Digital Factory: Democratization of Manufacturing Through Hybrid Technologies and the Effective Use of Data.” *AMUG*.
* Cramer, P. Paranthaman, H. Wang, K. Nawaz, and **A. Elliott**. 2019. “Binder Jetting Materials for Energy Applications.” *TMS Annual Meeting & Exhibition*.
* Gilmer, M. Lehmann, **A. Elliott**, and T. Saito. 2019. “Binder Development for Binder Jet Additive Manufacturing.” *TMS Annual Meeting & Exhibition*.
* Siddel, C. Shafer, D. Goldsby, and **A. Elliott**. 2019. “The Effect of Powder Characteristics on the Binder Jet Process.” *TMS Annual Meeting & Exhibition*.
* Gilmer, M. Lehmann, **A. Elliott**, and T. Saito. 2019. “Binder Development in Binder Jet Additive Manufacturing for Sand-casting.” *TMS Annual Meeting & Exhibition*.
* C. Cramer, **A. Elliott**, D. Goldsby, B. Haberl, G. Granroth, and D. Anderson. 2019. “Net-shaping and Densification of Boron Carbide via Binder Jetting Followed by Pressureless Infiltration.” *TMS Annual Meeting & Exhibition*.
* P. Nandwana, D. Siddel, C. Shafer, and **A. Elliott**. 2019. “Densification of H13 Tool Steel Components Fabricated via Binder Jet Additive Manufacturing for Tooling Applications.” *TMS Annual Meeting & Exhibition*.
* C. Cramer and **A. Elliott**. 2019. “Binder Jet Additive Manufacturing and Pressureless Melt Infiltration of Large, Complex WC-Co Parts.” *TMS Annual Meeting & Exhibition*.
* C. Cramer, P. Nandwana, **A. Elliott**, D. Siddel, C. Shafer, and R. Lowden. 2018. “Fabrication of WC-Co Metal Matrix Composites via Melt Infiltration Using Binder Jet Additive Manufacturing.” *TMS Annual Meeting & Exhibition*.
* P. Nandwana, D. Siddel, C. Shafer, and **A. Elliott**. 2018. “Supersolidus Liquid Phase Sintering of H13 Tool Steel Fabricated via Binder Jet Additive Manufacturing.” *TMS Annual Meeting & Exhibition*.
* C. Cramer, P. Nandwana, R. Lowden, P. Prichard, and **A. Elliott**. 2018. “Development of Cermets Made with Binder Jet AM and Pressureless Melt Infiltration.” *AMUG*.
* **Elliott, A.**, M. Benedict, and A. Momen. 2018. “Additive Manufacturing of Highly Reactive Lanthanides.” *TMS Annual Meeting & Exhibition*.
* Gilmer, D., et al. 2018. “Enhanced Green Part Strength in Binder Jet Additive Manufacturing.” *55th ACS National Meeting & Exposition*.
* Gilmer, D., et al. 2018. “Binder Development for Enhancing Green Part Strength in Binder Jet Additive Manufacturing.” *MRS Spring Meeting & Exhibit*.
* **Elliott, A.**, D. Siddel, and C. Shafer. 2017. “Net Shaping of Steel-Tungsten Metal Hybrid via Binder Jet Additive Manufacturing.” *TMS Annual Meeting & Exhibition*.
* **Elliott, A.** 2017. “Roadmap for Binder Jet AM and Traditional Powdered Metal Part Production.” *AMPM*.
* **Elliott, A.** 2017. “The Science of Additive Manufacturing and What the Future Holds.” *Manufacturing Leadership Summit*.
* Pawlowski, E., et al. 2017. “Additive Manufacturing of Interpenetrating Phase Composites with Exceptional Damage-tolerance.” *MS&T*.
* Waters, B. Ilogebde, M. Khan, and **A. Elliott**. 2017. “Surface Morphology of Additive Manufactured Metal Matrix Composites.” *MS&T*.
* **Elliott**, P. Nandwana, C. Shackleford, and C. Waters. 2017. “Roadmap for Metal Hybrids Net-Shaped via Binder Jet Additive Manufacturing.” *MS&T*.
* Z. Cordero, D. Siddel, R. Dinwiddie, and **A. Elliott**. 2017. “Slumping During the Sintering of Cantilevered Beams: Experiments and Theory.” *MS&T*.
* Shackleford, J. Arnold, P. Nandwana, **A. M. Elliott**, and C. K. Waters. 2017. “Metal Matrix Composites formed by Titanium Carbide and Aluminum Net Shaped via Binder Jetting.” *The 28th Annual International Solid Freeform Fabrication Symposium*.
* J. Arnold, P. Nandwana, **A. Elliott**, and S. Babu. 2017. “Near Net-shape Fabrication of NixAly-TiCx Cermets by Binder Jet Additive Manufacturing and Pressureless Melt Infiltration.” *The 28th Annual International Solid Freeform Fabrication Symposium*.
* P. Nandwana, D. Siddel, and **A. Elliott**. 2017. “Development of Sintering Parameters for Full Densification of H13 Tool Steel Printed via Binder Jet Additive Manufacturing.” *The 28th Annual International Solid Freeform Fabrication Symposium*.
* **Elliott**, P. Nandwana, D. Siddel, and C. Shafer. 2017. “Net Shaping of Steel-tungsten Metal Hybrid via Binder Jet Additive Manufacturing.” *The 28th Annual International Solid Freeform Fabrication Symposium*.
* Shafer, **A. Elliott**, D. Siddel, G. Jatana, and W. Partridge Jr. 2017. “Accuracy and Variation in Small Channels Produced by Bronze Infiltration of Binder Jet Prints.” *The 28th Annual International Solid Freeform Fabrication Symposium*.
* **Elliott, A.**, C. Shackleford, and C. Waters. 2017. “Roadmap for Metal Matrix Composite Development for Binder Jetting.” *The 28th Annual International Solid Freeform Fabrication Symposium*.
* Siddel, P. Nandwana, and **A. Elliott**. 2017. “Guidelines for Developing Binder Jet Printing Parameters for Various Powder Feedstocks.” *The 28th Annual International Solid Freeform Fabrication Symposium*.
* **Elliott, A.**, P. Nandwana, J. Billings, and T. Saito. 2017. “Roadmap for Binder Jet Additive Manufacturing.” *The 28th Annual International Solid Freeform Fabrication Symposium*.
* M. French et al. 2017. “Hypervelocity Impact of Additively Manufactured A356/316L Interpenetrating Phase Composites.” *The 28th Annual International Solid Freeform Fabrication Symposium*.
* Levy, A. Miriyev, **A. Elliott**, and S. Babu. 2017. “Additive manufacturing of complex-shape graded TiC-steel composites.” *41st International Conference and Expo on Advanced Ceramics and Composites*.
* **Elliott, A.** 2017. “Opportunities in Additive Manufacturing.” *Music City Center*.
* P. Nandwana, A. McAlister, **A. Elliott**, W. Peter, and S. Babu. 2017. “Supersolidus Liquid Phase Sintering of Binder Jet 3D Printed Inconel 718.” *POWDERMET*.
* P. Nandwana, **A. Elliott**, W. Peter, and S. Babu. 2016. “Supersolidus Liquid Phase Sintering of Inconel 718.” *MS&T*.
* **Elliott, A.**, P. Nandwana, D. Siddel, and B. Compton. 2016. “A Method for Measuring Powder Bed Density in Binder Jet Additive Manufacturing Process and the Powder Feedstock Characteristics Influencing the Powder Bed Density.” *The 27th Annual International Solid Freeform Fabrication Symposium*, 1031–1037.
* **Elliott** and L. Love. 2016. “Operator Burden in Metal Additive Manufacturing.” *27th Annual International Solid Freeform Fabrication Symposium*, 1890–1899.
* Shafer, D. Siddel, A. Merriman, and **A. Elliott**. 2016. “Cleated Print Surface for Fused Deposition Modeling.” *27th Annual International Solid Freeform Fabrication Symposium*, 1359–1365.
* Bailey, A. Merriman, **A. Elliott**, and M. Basti. 2016. “Preliminary Testing of Nanoparticle Effectiveness in Binder Jetting Applications.” *27th Annual International Solid Freeform Fabrication Symposium*, 1069–1077.
* **Elliott, A.**, A. Momen, M. Benedict, and J. Kiggans. 2015. “Experimental Study of the Maximum Resolution and Packing Density Achievable in Sintered and Non-Sintered Binder-Jet 3D Printed Steel Microchannels.” *Proceedings of the ASME International Mechanical Engineering Congress and Exposition* 2A.
* **Elliott**, O. Ivanova, C. Williams, and T. Campbell. 2012. “An Investigation of the Effects of Quantum Dot Nanoparticles on Photopolymer Resin for use in PolyJet Direct 3D Printing.” *The 23rd Annual International Solid Freeform Fabrication Symposium*, 988–998.
* L. Stiltner, **A. Elliott**, and C. Williams. 2011. “A Method for Creating Actuated Joints via Fiber Embedding in a Polyjet 3D Printing Process.” *The 22nd Annual International Solid Freeform Fabrication Symposium*, 583–592.

## Technical Reports

* Marquez, A., B. Armstrong, **A. Elliott**, and E. Lara-Curzio. 2017. *Additive Manufacturing of Dense Hexagonal Boron Nitride Objects*. ORNL/TM-2017/244, Oak Ridge National Laboratory.
* Momen, A., et al. 2016. *Magnetocaloric Refrigerator Milestone 3.1.2.10: Identify testing procedures including processes to produce comparable beds for establishing performance*. ORNL/LTR-2016/161, Oak Ridge National Laboratory.
* Momen, A., et al. 2016. *Magnetocaloric Refrigerator Final Report*. ORNL/TM-2016/700, Oak Ridge National Laboratory.
* Cordero, Z., and **A. Elliott**. 2016. *Collaboration for the Advancement of Indirect 3D Printing Technology*. ORNL/TM-2016/262, Oak Ridge National Laboratory.
* Nuttall, D., **A. Elliott**, B. Post, and L. Love. 2016. *Advanced Infusion Techniques with 3-D Printed Tooling*. ORNL/TM-2016/192, Oak Ridge National Laboratory.
* Momen, A., **A. Elliott**, and J. Kiggans Jr. 2015. *Magnetocaloric Refrigerator Q3 Report*. ORNL/TM-2015/628, Oak Ridge National Laboratory.

## Patents

1. Rios, Orlando…**A.M.Elliott**. 2023. “Reactive matrix infiltration of powder preforms, [US-11565318-B2](https://patents.google.com/patent/US11565318B2/en?oq=US-11565318-B2).
2. Lara-Curzio, Edgar… **A.M.Elliott.** 2023. “Compliant heat exchangers, heat pipes and methods for making same.” [US-11633789-B2](https://patents.google.com/patent/US11633789B2/en?oq=US-11633789-B2).
3. Schroder, Michael… A.M. Elliott. 2022. “Systems and Methods for Additively Manufacturing Caloric Microstructures.” [US-20220055308-A1](https://patents.google.com/patent/US20220055308A1/en?oq=US-20220055308-A1).
4. Anderson, David A… **AM. Elliott.** 2022 “Method for producing collimators and other components from neutron absorbing materials using additive manufacturing.” [US-11404180-B2](https://patents.google.com/patent/US11404180B2/en?oq=US-11404180-B2).
5. Anderson, D. C., **A. M. Elliott**, B. Haberl, and G. E. Granroth. 2022. “Additive manufacturing of composite neutron absorbing components.” US11538597B2.
6. Cramer, C. L., R. A. Lowden, K. A. Unocic, J. W. McMurray, and **A. M. Elliott**. 2022. “Indirect additive manufacturing process for producing SiC—B4C—Si composites.” US11364654B2.
7. Pawlowski, A. E., A. Shyam, D. A. Splitter, **A. M. Elliott**, and Z. C. Cordero. 2022. “Additive manufactured interpenetrating phase composite.” US11325206.
8. Klett, J. W., **A. M. Elliott**, M. S. Edwards, K. L. Hedrick, R. K. Duncan, A. G. Hessler, and C. L. Cramer. 2021. “Apparatus and method for three-dimensional metal printing.” US11090726.
9. Lara-Curzio, E., C. L. Cramer, **A. M. Elliott**, B.A. Fricke, Prashant K.
10. Saito, T., L. Han, **A. M. Elliott**, and D. B. Gilmer. 2021. “Water soluble barrier coatings for washout tooling for a composite layup.” US11524427B2.
11. T. Saito, **A. M. Elliott**, D. T. Brunermer, D. B. Gilmer, M. Lehmann, and H. Yu. 2020. “Indirect additive manufacturing process using amine-containing adhesive polymers.” US11254617B2.
12. **Elliott, A.** 2019. “Method for producing mechanical engagement between a build platform and additive manufacturing prints.” US10245781B2.
13. **Shroeder, Michael…** AM. Elliott 2018. “Method for forming a Caloric Regenerator.” US-20180195775-A1
14. Elliott, A.M. 2018. “Build platform that provides mechanical engagement with additive manufacturing prints.” [US-20180147774-A1](https://patents.google.com/patent/US20180147774A1/en?oq=US-20180147774-A1)
15. Tatum, P. F. III, and **A. M. Elliott**. 2015. “Thermal Powered Reciprocating-Force Motor.” US8938965B1.
16. Williams, C., **A. Elliott**, D. McCarthy, and N. Meisel. 2014. “3D Printing Vending Machine.” US20140288699A1.

# Invited Talks and Lectures

* Presentation, “Metal Additive Manufacturing at Oak Ridge National Laboratory.” Holistic Innovations in Additive Manufacturing. University of Waterloo, June 2, 2021.
* Seminar, “Principles of Debind and Sintering.” Webinar series, Sinter-Based AM. ASTM Center of Excellence, May 26, 2021.
* Keynote, “Additive Manufacturing: The Future of Tools,” and panelist on additive manufacturing applications for forging, Forge Fair 2019, May 21–23, 2019.
* Presentation, “Understanding 3D Printing Technology & its Impact on Product Development & Manufacturing.” Atlanta Technology Angels Educational Meeting, May 20, 2019.
* Presentation, “From Dust to Dreams: Shaping Powder into Parts with Additive Manufacturing.” Oak Ridge Chapter of ASM International Executive Committee Meeting, April 25, 2019.
* Presentation, “From Dust to Dreams: Shaping Powder into Parts with Additive Manufacturing.” Energy and Environmental Sciences Energy Talks, April 11, 2019.
* Presentation, “Opportunities in Additive Manufacturing.” Department of Materials Science and Engineering at the University of Tennessee, Knoxville, April 9, 2019.
* Invited talk, “Advanced Manufacturing at ORNL.” Oak Ridge Civic Music Association Chamber Concert, February 9, 2019.
* Presentation, “Binder Jet Additive Manufacturing.” Oak Ridge Postdoc Association Seminar, December 5, 2018.
* Presentation, “The Science of Additive Manufacturing and What the Future Holds.” UTC/CESC Distinguished Speakers Series, February 23, 2018.
* Keynote, “Advanced Manufacturing at ORNL.” Tennessee Tech University’s Manufacturing Day Summit, October 6, 2017.
* Keynote, “Additive Manufacturing, Innovation, and Cool Stuff I Do.” ASME E-Fest at Tennessee Tech University, April 22, 2017.
* Presentation, “Research in Additive Manufacturing at Oak Ridge National Lab.” Women in Manufacturing Summit, Nashville, Tennessee, September 19–21, 2016.
* 3D Metal Printing Experience and Tech Tour, “Research in Metal Additive Manufacturing at Oak Ridge National Lab.” Livonia, Michigan, August 19, 2016.
* Presentation, “Inkjet-based Additive Manufacturing: Versatility in 3D Printing.” ORNL’s Physical Sciences Directorate’s Chemical & Materials Sciences Seminar, September 9, 2015.
* Alumni lecture, “Amy, Additive Manufacturing, and the MDF.” Tennessee Tech University, Cookeville, Tennessee, March 19, 2015.
* Presentation, “Additive Manufacturing: Past, Present, and Future.” ASME Holston Section monthly meeting, Kingsport, Tennessee, June 2, 2015.
* Presentation, “The Next Generation of Materials that will Energize Your Creativity.” Cannon Trade Show, New York City, New York, June 10, 2015, and Toronto, Ontario, June 16, 2015.
* Virginia Tech TEDx, “Re-fostering Innovation in America.” Dec. 13th, 2013.
* Keynote, “My Path in STEM.” SWCC Governor’s School for Science and Technology, October 26, 2013.

# Awards and Honors

* Society of Manufacturing Engineers Outstanding Young Manufacturing Engineer, 2022
* ORNL Outstanding Scholarly Output Award, 2022
* ORNL Science Communicator Award, 2021
* Knoxville’s 40 under 40, 2021
* ASTM International Additive Manufacturing Young Professional Award, 2021
* Tennessee Valley YWCA Tribute To Women Science, Technology, and Environment Honoree, 2021
* Society of Manufacturing Engineers Top 20 Women in Robotics, 2021
* AAAS IF/Then Ambassador, 2019–Present
* ORNL Innovator, 2019
* R&D100 Award, High Strength Binder System for Additive Manufacturing, 2019
* R&D100 Award, Additively Printed High-Performance Magnets, 2017
* Tennessee Tech Engineering Young Alumnus of Achievement Award, 2017
* Minority Serving Institutions and Partnerships Program Significant Contribution Award, ORNL, 2016
* ORNL Significant Event Award, 2014