Michael Cullinan

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EDUCATION

Massachusetts Institute of Technology — Cambridge, MA
Ph.D., Mechanical Engineering — Feb. 2008 – Feb. 2011
Thesis: Design and Fabrication of Precision Carbon Nanotube-based Flexural Transducers

Massachusetts Institute of Technology — Cambridge, MA
S.M., Mechanical Engineering — July 2006 – Jan. 2008
Thesis: Control of Carbon Nanotube Stiffness via Tunable Fabrication Process Parameters that Determine CNT Geometry

Swarthmore College — Swarthmore, PA
B.S., Engineering, High Honors; B.A., Economics — Sept. 2002 – June 2006
Thesis: Design of a Crossflow Turbine for a Hydroelectric Roller-Compacted Concrete Gravity Dam

Employment

University of Texas at Austin — Austin, TX
Professor, Department of Mechanical Engineering — Aug. 2026 - Present
Interim Assistant Vice President for Research for Research Core Facilities — June 2025 - May 2026
Director, Semiconductor Science and Engineering Program — Sep. 2024 - Present
Associate Chair for Graduate Studies, Department of Mechanical Engineering — Sep. 2023-Present
Associate Professor, Department of Mechanical Engineering — Sep. 2020–Aug. 2026
Assistant Professor, Department of Mechanical Engineering — Aug. 2013-Aug. 2020
Director of Nanoscale Design and Manufacturing Laboratory — Aug. 2013-Present

Texas Microsintering, LLC — Austin, TX
President and Founder — Aug. 2018 - Present

Supra Elemental Recovery Inc. — Austin, TX
Co-Founder and Scientific Advisor - Engineering — May 2025 - Present

National Institute of Standards and Technology — Gaithersburg, MD
National Research Council Postdoctoral Associate, Engineering Laboratory, Intelligent Systems Division, Production Systems Group — Jan. 2012 – Aug. 2013

Massachusetts Institute of Technology — Cambridge, MA
Research Assistant, Department of Mechanical Engineering — July 2006 – May 2011

Massachusetts Institute of Technology — Cambridge, MA
Teaching Assistant, 2.72 Elements of Mechanical Design — Jan. 2010 – May 2010

National Nanotechnology Infrastructure Network — Santa Barbara, CA
NSF Research Experiences for Undergraduates at the University of California at Santa Barbara — June 2005 – Aug. 2005

University of Minnesota, Department of Mechanical Engineering — Minneapolis, MN
NSF Research Experiences for Undergraduates — June – Aug. 2004

HONORS AND AWARDS

University Innovator Award, Texas Innovation Conference and Awards	2026
Outstanding Teaching by an Associate or Full Professor, Walker Department of Mechanical Engineering, UT- Austin	2024
Selected for the Provost's Distinguished Leadership Service Academy, UT-Austin	2024
Selected for UT-Austin Aspiring Leaders Academy	2023
American Society for Precision Engineering Early Career Award	2021
Selected as Temple Foundation Endowed Faculty Fellowship No. 3	2021
ASME Kornel F. Ehmann Manufacturing Medal	2020
Walker Scholar, Department of Mechanical Engineering	2019
Experiential Learning Ambassador, University of Texas at Austin	2019
Best Poster Award, American Society for Precision Engineering Annual Meeting	2018
Outstanding Teaching by an Assistant Professor, Department of Mechanical Engineering	2017
2017 Rising Star Award, Sensors Expo and Conference	2017
Best Poster Award, American Society for Precision Engineering Annual Meeting	2017
Selected by UT-Austin College of Engineering to attend the National Effective Teaching Institute (NETI) hosted by the American Society for Engineering Education	2017
Outstanding Young Manufacturing Engineer Award, Society of Manufacturing Engineers	2016
Top Ranked Proposal in August 2011 NIST-NRC Postdoctoral Fellowship Review	2011
2nd Prize, de Florez Award Competition, Graduate Science Division	2010
Best Student Poster, MIT Manufacturing Summit	2007
MIT Neil Pappalardo Fellowship	2006
Tau Beta Pi, National Engineering Honor Society	2006
Sigma Xi, The Scientific Research Society	2006

RESEARCH GRANTS RECEIVED: Total - $910,942,096 (My Share - $13,321,337)

External Grants and Contracts: Total - $910,383,539 (My Share - $12,934,356)

Co-Investigators	Title	Agency	Grant Total (My Share)	Grant Period
PI	Beyond Robust, Adaptable Production via Intelligent Data Science (Beyond-RAPID) Solutions for Resilient Manufacturing	Sandia National Lab	$283,000 ($283,000)	10/1/2026 – 9/30/2029
Co-PI Mangolini, F (PI, UT-Austin) Liechti, K. (Co-PI, UT-Austin) Lu, N. (Co-PI, UT-Austin)	MRI: Track #1 Acquisition of an Environmental, Multimodal, and High-Resolution MEMS-Based Nanoindenter for Fundamental and Applied Materials Research, Education, and Outreach	NSF	$600,678 ($150,170)	8/2026 - 8/2027
Co-PI Page, Z. (PI, UT-Austin) Sessler, J. (Co-PI, UT-Austin)	Supra Elemental	Supra Elemental Recovery Inc.	$760,389 ($200,221)	11/2025-12/2026

Senior Personnel Li, X. (PI, UT-Austin) Li, Xiaoqin E (Co-PI, UT-Austin) Incorvia, J. (Co-PI, UT-Austin) Fan, L. (Co-PI, UT-Austin) Hunter-Jones, N. (Co-PI, UT-Austin) Shankar, S. (Senior Personnel, UT-Austin) Jia, Y. (Senior Personnel, UT-Austin) Das, P. (Senior Personnel, UT-Austin) Hendren, K. (Senior Personnel, UT-Austin)	NSF NRT-QL: Quantum Cross-platform Advanced Training for Future Innovators (Q-CAT)	NSF	$3,000,000 ($300,000)	9/2025 – 8/2031
PI Chapman, D. (Co-PI, UT-Austin) Hutter, T. (Co-PI, UT-Austin)	Conference: 2025 CHIPS for Science Workshop	NSF	$95,000 ($95,000)[1]	6/2025 – 5/2026
Co-PI Roberts, S. (PI, UT-Austin) Aluru, N. (Co-PI, UT-Austin)	Developing Structure-Function Relationships for Singlet Fission and Exciton Transport in Molecular Crystals via Selective Application of Strain	NSF	$750,687 ($173,301)	4/2025 – 3/2028
PI Chang, C (Co-PI, UT-Austin) Page, Z. (Co-PI, UT-Austin) Menon, R. (Co-PI, Utah) Foong, C. (Co-PI, NXP) Gutierrez, A. (Co-PI, Northrop Grumman) Roy, N. (Co-PI, Texas Microsintering) Walker, B. (Co-PI, Electroninks) Panas, R. (Co-PI, Bright Silicon Technologies) Davenport, R. (Co-PI, Applied Materials)	Simultaneous Volumetric 3D Printing Multi-material Conductive and Insulating Nanostructures for Electronics Packaging Applications Using Holographic Metasurface Nanolithography (HMNL)	DARPA	$14,525,424 ($3,512,421)	12/2024 – 12/2026
PI Okwudire, C. (Co-PI, Michigan) Al Kontar, R. (Co-PI, Michigan) Foong, CS (Co-PI, NXP)	GOALI: Uncertainty Aware Modeling and Control of the Microscale Selective Laser Sintering Process	NSF	$609,991 ($279,991)	9/1/2024-8/31/2027

[1] Conference award where money was allocated to PI account instead of divided among Co-PIs because Co-PI Hutter moved to industry before start of award and Co-PI Chapman did not have faculty status

Co-PI Sreenivasan, S. (PI) Raja, L. (Co-PI, UT-Austin) Moser, R. (Co-PI, UT-Austin) Wilcox, K. (Co-PI, UT-Austin) Ghattas, O. (Co-PI, UT-Austin) Shi, L. (Co-PI, UT-Austin) Li, X. (Co-PI, UT-Austin) Chang, C. (Co-PI, UT-Austin) Hutter, T. (Co-PI, UT-Austin) Huang, R. (Co-PI, UT-Austin) Bahadur, V. (Co-PI, UT-Austin) Kulkarni, J. (Co-PI, UT-Austin) Orshansky, M. (Co-PI, UT-Austin) Li, S. (Co-PI, UT-Austin) Banerjee, S. (Co-PI, UT-Austin) Akinwande, D. (Co-PI, UT-Austin) Dodabalapur, A. (Co-PI, UT-Austin) Yu, E. (Co-PI, UT-Austin) Fan, L. (Co-PI, UT-Austin)	Next-Generation Microelectronics Manufacturing	DARPA	$840,000,000 ($1,763,132)	9/1/2024- 8/31/2029
PI	CINT Research Initiative Program	Sandia National Lab	$ 19,782 ($19,782)	6/1/2024- 9/30/2024
PI	Efficient Self-Powered Nanomaterial Systems to Map Muscle Microactivity through Biomechanical Energy Harvesting and Storage	UT Austin-Portugal Alliance	$134,426 ($134,426)	3/16/2024 – 12/31/2025
Co-PI Kovar, D. (PI, UT-Austin) Chang, C (Co-PI, UT-Austin) Zha, Z. (Co-PI, UT-Austin)	Convergent Manufacturing for Electronic and Structural Applications	Army Research Lab	$1,150,000 ($295,838)	2/8/2024 – 2/7/2026
PI	Augmented Reality Waveguide Fabrication	SDS Nano, Inc.	$181,303 ($181,303)	2/1/2024- 1/31/2025
PI Kovar, D. (Co-PI, UT-Austin) Beaman, J. (Co-PI, UT-Austin) Li, S. (Co-PI, UT-Austin) Salamone, S. (Co-PI, UT-Austin)	Embedded, Chipless RFID Sensors for Structural Health Monitoring of Additively Manufactured Parts	DARPA	$1,000,000 ($510,845)	1/19/2024 – 1/18/2026
PI	Fingerprinting Topological Transition in SEM Datasets using a Self-Supervised Learning Approach	Sandia National Lab	$20,000 ($20,000)	6/1/2023- 9/30/2023
PI	Scalable Additive Manufacturing Techniques for Producing High Quality Telescope Mirrors	Triton Systems Inc DoD - Air Force Research Lab (AFRL)	$560,000 ($560,000)	9/26/2022 - 12/31/2025

PI Chang, C (Co-PI, UT-Austin) Baldea, M. (Co-PI, UT-Austin) Page, Z. (Co-PI, UT-Austin) Menon, R. (Co-PI, Utah) Jackson, N (Co-PI, UIUC)	FMRG: Cyber: Manufacturing USA: Cyber-Enabled, High-Throughput Manufacturing of Multi-Material, 3D Nanostructures	NSF	$3,080,132 ($872,287)	10/1/2022 – 9/30/2027
PI Liu, Y. (Co-PI, UT-Austin) Tehrani, M. (Co-PI, UC San Diego)	Ultra-Conductive Copper Wires for LUNAR HVPT	NASA	$650,000 ($242,076)	1/1/2022-8/31/2025
PI	PFI-TT: Additive Manufacturing of High-Density and Freeform Metal Interconnects	NSF	$249,985 ($249,985)	2/1/2022-1/1/2024
PI	I-Corps: Market Research and Customer Discovery for the Microscale Selective Laser Sintering Process	NSF	$50,000 ($50,000)	9/1/2021-8/31/2022
PI	In-Situ Characterization and Nanomechanics, and The Nanophotonics and Optical Nanomaterials	Sandia National Lab	$20,000 ($10,000)	6/1/2021-9/30/2021
PI	Investigation of Failure Modes of Multilayer Graphene Films with Applications in Acoustic and Ultrasonic Transducers	GraphAudio Inc.	$61,500 ($61,500)	9/2020-9/2022
Co-PI Biros, G (PI, UT-Austin)	NanoStim - Nanomaterials for Wearable-based Integrated Biostimulation	UT Austin-Portugal Alliance	$792,662 ($396,331)	6/2020-5/2023
PI	Determining the Fundamental Sensing Limits of Mode-Localized MEMS Resonators	National Institute of Standards and Technology	$343,186 ($343,186)	8/2019-8/2022
PI	Calibration and Analysis of Large Area Atomic Force Profilometry Scans	Canon Nanotechnologies, Inc.	$60,000 ($60,000)	6/2019 – 6/2020
PI	Custom Designed Microelectromechanical Systems Based Sensors for Direct Metrology of Additively Manufactured Parts	Lawrence Livermore National Laboratory	$23,171 ($23,171)	10/2018 – 2/2019
PI	Wafer-scale Exfoliation of Silicon Thin Films	NSF NASCENT Center at UT Austin	$79,119 ($79,119)	10/2018 – 9/2019

PI	Large-Area Probe-based Metrology Systems of Nanomanufacturing Applications	NSF NASCENT Center at UT Austin	$23,406 ($23,406)	10/2018 – 1/2019
PI	Custom Designed Microelectromechanical Systems Based Sensors for Direct Metrology of Additively Manufactured parts	Lawrence Livermore National Laboratory	$50,000 ($50,000)	10/2017 – 9/2018
PI	Wafer-scale Exfoliation of Silicon Thin Films	NSF NASCENT Center at UT Austin	$29,471 ($29,471)	10/2017 – 9/2018
PI	Large-Area Probe-based Metrology Systems of Nanomanufacturing Applications	NSF NASCENT Center at UT Austin	$86,848 ($86,848)	10/2017 – 9/2018
PI Foong, C.S. (co-PI, NXP Semiconductor)	GOALI: Manufacturing USA: Determining the Role of Nanoscale Physics in the Microscale Selective Laser Sintering Process using a Multiscale Computational Modeling Approach	NSF	$391,354 ($391,354)	8/2017-8/2020
PI	Wafer-scale Exfoliation of Silicon Thin Films	NSF NASCENT Center at UT Austin	$28,708 ($28,708)	4/2017 – 9/2017
PI	Custom Designed Microelectromechanical Systems Based Sensors for Direct Metrology of Additively Manufactured Parts	Lawrence Livermore National Laboratory	$85,288 ($85,288)	10/2016 – 9/2017
PI	Large-Area Probe-based Metrology Systems of Nanomanufacturing Applications	NSF NASCENT Center at UT Austin	$88,471 ($88,471)	8/2016 – 9/2017
PI	Microelectromechanical Systems Based Sensors for Direct Metrology of Additively Manufactured Parts	Lawrence Livermore National Laboratory	$41,009 ($41,009)	3/2016 – 9/2016
PI	Large-Area Probe-based Metrology Systems of Nanomanufacturing Applications	NSF NASCENT Center at UT Austin	$87,619 ($87,619)	8/2015 – 9/2016
PI	Selective Micro Laser Sintering for Packaging Applications*	Freescale Semiconductor Inc. (Now NXP Semiconductor Inc.)	$289,581 ($289,581)	1/2015-1/2018

PI	Large-Area Probe-based Metrology Systems of Nanomanufacturing Applications	NSF NASCENT Center at UT Austin	$81,349 ($81,349)	8/2014 – 9/2015
Co-PI SV Sreenivasan (PI), ME Sanjay Banerjee (Co-PI), ECE Roger Bonnecaze (Co-PI), ChE Ananth Dodabalapur (Co-PI), ECE Wei Li (Co-PI), ME Li Shi (Co-PI), ME Carlton Willson (Co-PI), ChE Deji Akinwande, (Co-PI), ECE Kenneth Liechti, (Co-PI), AE/EM Delia Milliron (Co-PI), ChE Outside UT: Steven Brueck, Tito Busani and Randall Schunk at University of New Mexico; Ali Javey, Vivek Subramanian and Hayden Taylor at UC Berkeley; Venkat Selvamanickam at University of Houston	NSF Nanosystems Engineering Research Center for Nanomanufacturing Systems for Mobile Computer Enabled Technologies (NASCENT)	National Science Foundation	$40,000,000 ($784,167)	10/2012-10/2022

* Contract with Freescale also includes direct payment of stipends to two graduate students for 3 years (approximate value of $150,000) as well as ~800 Sq. ft of lab space at Freescale semiconductor in South Austin dedicated to this project. In addition, the contract includes the full time support of one Freescale engineer. Therefore, the value of this contract is significantly greater than the direct payment to UT indicates.

Internal Grants: Total - $558,557 (My Share - $386,981)

Co-Investigators	Title	Agency	Grant Total (My Share)	Grant Period
PI Christina Naify (Co-PI, UT:ARL)	Embedded, Chipless RFID Sensors for Structural Health Monitoring of Additively Manufactured Parts	The University of Texas at Austin – OVPR Creating Connections Program	$75,000 ($62,700)	9/2025-9/2026
Co-PI Tilton, M. (PI, UT-Austin) Sha, Z. (Co-PI, UT-Austin) Allison, J. (Co-PI, UT-Austin)	Redesign of the Additive Manufacturing (AM) Course Initiative for an Additive Manufacturing Certificate Program	The University of Texas at Austin – Academic Development Funds Grant	$44,946 ($11,236)	8/2024-8/2025
PI Zhang, F. (co-PI, UT-Austin)	3D Printed Biodegradable Implants for Single-Inoculation of Multiple-Dose Vaccines	The University of Texas at Austin – Associate Professor Experimental	$100,000 ($50,000)	1/2021-12/2021
PI Roberts, S. (co-PI, UT-Austin)	Pulling and Pushing on Molecules: A Mechanical Platform for Discovery of Fundamental Material Properties and Design of Molecular Electronics	The University of Texas at Austin – Associate Professor Experimental	$100,000 ($50,000)	1/2021-12/2021

PI Rylander, C. (co-PI, UT-Austin)	Redesigning the Freshman Introduction to Mechanical Engineering Experience	The University of Texas at Austin – Academic Development Funds Grant	$36,068 ($32,821)	9/2020 – 8/2021
PI	Understanding the Mechanisms that Limit the Resolution and Throughput of μ-SLS	Seed Grant, Department of Mechanical Engineering, UT-Austin	$25,000 ($25,000)	4/2019 – 8/2019
PI Tao, T. (co-PI, UT-Austin)	Integration of NI Student Project Center into CSE Courses	The University of Texas at Austin	$63,858 ($47,893)	1/2018-6/2019
PI Crawford, R. (co-PI, UT-Austin) Bahadur, V. (co-PI, UT-Austin)	Development of Finite Element Modules for the Mechanical Engineering Undergraduate Curriculum	The University of Texas at Austin – Academic Development Funds Grant	$46,624 ($43,849)	9/2016 – 8/2017
PI Crawford, R. (co-PI, UT-Austin) Rylander, N. (co-PI, UT-Austin)	Development of Finite Element Modules for the Mechanical Engineering Undergraduate Curriculum	The University of Texas at Austin – Academic Development Funds Grant	$47,199 ($43,620)	9/2015 – 8/2016
PI	Development of Novel Nanomanufacturing Processes and Equipment	The University of Texas at Austin – Faculty Development Grant	$19,862 ($19,862)	6/2014 -7/2014

RESEARCH GRANTS PENDING:

Co-Investigators	Title	Agency	Grant Total (My Share)	Grant Period

BOOKS (1)

1. Vasilevskyi, O., and **Cullinan, M.** *Quantitative Evaluation of Measurement Uncertainty: Theory and Practice*, Taylor & Francis, 2026.

EDITED VOLUMES (1)

1. Djurdjanovic, D., Chang, C., **Cullinan, M.**, Li, W., Sha, Z., and Tilton, M. (Eds.) *Proceedings of the 59th CIRP Conference on Manufacturing Systems (CIRP CMS 2026)*, Procedia CIRP, Vol. 146, pp. 1–880, Elsevier, 2026.

BOOK CHAPTERS (3)

3. **Cullinan, M.** "Design and Fabrication of the Mechanical Systems for a Remote Control Car—A Design Project Case Study." *Fundamentals of Machine Component Design*, Sixth Edition, Wiley, 2017.

2. **Cullinan, M.** "Micro/Nanoscale Machine Elements." *Fundamentals of Machine Component Design*, Sixth Edition, Wiley, 2017.

1. **Cullinan, M.** "Nanoscale Sensors and Actuators for MEMS and NEMS." *Dekker Encyclopedia of Nanoscience and Nanotechnology*, Third Edition, Taylor & Francis, 2013.

PUBLICATIONS IN REFEREED JOURNALS (85)

*** Paper with Student or Researcher from Nanoscale Design and Manufacturing Laboratory as Lead Author**

85. *Gao, X., Mason, K., Gülçür, M., Paddock-Lamb, R., Fofanah, P., Page, Z., **Cullinan, M.** "Modular Critical Element Recycling Platform Using a Nanoporous Additively Manufactured Gyroid." Advanced Engineering Materials, August 13, 2026. http://doi.org/10.1002/adem.202600003

84. Lin, D., Chen, X., O'Dea, C., Kim, J., Mason, K., Groh, B., Lee, K., Majumder, A., Chang, C., **Cullinan, M.**, Page, Z., and Menon, R. "Single-exposure holographic 3D printing via inverse-designed phase masks" Science Advances, August 12, 2026. https://doi.org/10.1126/sciadv.aec3536

83. *Natinsky, E., Khan, R.M., Wang, Q., Morris, D., **Cullinan, M.**, and Dingreville, R. "AFM-net: machine learning acceleration of atomic force microscopy nanometrology from scarce data and fast scans." npj Computational Materials, June 8, 2026. https://doi.org/10.1038/s41524-026-02179-7

82. *Vasilevskyi, O., Jones, M., **Cullinan, M.** "Effect of powder particle size on in situ process quality in laser powder bed fusion of 316 L stainless steel." International Journal of Advanced Manufacturing Technology, April 28, 2026. https://doi.org/10.1007/s00170-026-18187-2

81. *Bae, K., Sim, S., Han, H., **Cullinan, M.**, Kim, J., "Integration of carbon nanotubes for MEMS and flexible electronics: Advances in fabrication and applications," Chemical Engineering Journal, April 2, 2026. https://doi.org/10.1016/j.cej.2026.175685.

80. *Tasnim, F., Grose, J., Dibua, O., Foong, C.S., **Cullinan, M.** "A Physics-Informed Scaling Framework for Predictive Process Mapping Between Microscale Laser and Furnace Sintering of Copper." Precision Engineering, March 6, 2026. https://doi.org/10.1016/j.precisioneng.2026.03.001

79. *Paddock-Lamb, R., Bekele, Y., Gao, X., Rodriguez, Andres, **Cullinan, M.**, Tehrani, M. "Fabrication and Characterization of Graphene-Copper Composite Wires using Chemical Vapor Deposition and Roller Drawing Techniques." Journal of Manufacturing Science and Engineering, pp 1-31, February 26, 2026. https://doi.org/10.1115/1.4071230

78. *Gülçür, M, Vo, Z., Gao, X., Garcia, J., Groh, B., Aguirre, L., Gibbons, G., **Cullinan, M.** "Microfabrication of rapid micro-moulds for microfluidics combining additive manufacturing and a custom ultraviolet-LED photolithography tool." Journal of Micro and Nano Science and Engineering pp. 1-29, January 14, 2026. https://doi.org/10.1115/1.4070897

77. *Grose, J., Liao, A., Foong, C.S., and **Cullinan, M.** "Part-Scale Simulation of Heat Affected Zone Evolution and Part Formation in a Microscale Metal Additive Manufacturing System." Journal of Manufacturing Science and Engineering, pp 1-29, January 29, 2026. https://doi.org/10.1115/1.4070850

76. *Gülçür, M., Griffiths, O., Rich, A., Gao, X., Groh, B., Garcia, J., Aguirre, L., Gibbons, G. and **Cullinan, M.** "Parametric assessment of injection dynamics for metal and polymer rapid-tooling using in-line process measurements and modelling of micro-injection moulding." Advances in Industrial and Manufacturing Engineering, December 30, 2025 https://doi.org/10.1016/j.aime.2025.100179

75. *Paddock-Lamb, R., Khanbolouki, P., **Cullinan, M.**, and Tehrani, M. "Near-Infrared Laser Powder Bed Fusion of Pure Copper: Post-Processing and Structure–Property Relationships." Journal of Materials Research and Technology, December 22,2025 https://doi.org/10.1016/j.jmrt.2025.12.227

74. *Bekele, Y., Lamb, R., Eckstrom, J., Gao, X., Tehrani, M., and **Cullinan, M.** "Thermally stable electrical conductor via copper-graphene stacking", 2D Materials, December 9, 2025 https://doi.org/10.1088/2053-1583/ae2a4c

73. *Vasilevskyi, O., Woods, A., Jones, M. and **Cullinan, M.** "In Situ Monitoring and Quality Assessment of Laser Powder Bed Fusion Process for 316L Stainless Steel", International Journal of Advanced Manufacturing Technology, September 30, 2025. https://doi.org/10.1007/s00170-025-16448-0

72. Kim, J., Allen, M., Recker, E., Stevens, L., Cater, H., Uddin, A., Gao, A., Eckstrom, W., Arrowood, A., Sanoja, G., **Cullinan, M.**, Freeman, B., and Page, Z. "Hybrid Epoxy-Acrylate Resins for Wavelength-Selective Multimaterial 3D Printing", Nature Materials, 24, pp. 1116–1125, June 30, 2025. https://doi.org/10.1038/s41563-025-02249-z

71. *Vasilevskyi, O., Woods, A., and **Cullinan, M.** "In-Situ Monitoring and Quality Evaluation of the Powder Bed Fusion Process of IN718 Alloy Powder", IEEE Transactions on Instrumentation and Measurement. May 23, 2025,. https://doi.org/10.1109/TIM.2025.3572966

70. *Vasilevskyi, O., Woods A, Jones, M., and **Cullinan, M.** "Quantitative Methodology for Assessing the Quality of Direct Laser Processing of 316L Steel Powder Using Type I and Type II Control Errors." Electronics. 14(7), pp. 1476. April 7, 2025. https://doi.org/10.3390/electronics14071476

69. *Vasilevskyi, O., Allison, J., and **Cullinan, M.**, "Methodology for determination of the emissivity of metal powders and uncertainty quantification using an infrared camera and thermocouples" Measurement Science and Technology, January 2, 2025. https://doi.org/10.1088/1361-6501/ada4c6

68. Venkatesan, S., **Cullinan, M.**, and Baldea, M., "Recent Advances in Continuous Nanomanufacturing: Focus on Machine Learning-Driven Process Control", Reviews in Chemical Engineering, December 9, 2024. https://doi.org/10.1515/revce-2024-0029

67. *Natinsky, E., Connolly, L., and **Cullinan, M.**, "Three-dimensional Visualization of Large-area, Nanoscale Topography Measurements", Nanotechnology, September 2024, https://doi.org/10.1088/1361-6528/ad8165

66. *Vasilevskyi, O., **Cullinan, M.**, and Allison, J., "Theoretical Approach for Determining an Emissivity of Solid Materials and Its Comparison with Experimental Studies on the Example of 316L Powder Steel", Informatyka, Automatyka, Pomiary W Gospodarce I Ochronie Środowiska, 14(3), 5–8. September 2024, https://doi.org/10.35784/iapgos.6289

65. Xiao, Z., Zhang, C., Paddock, R., **Cullinan, M.**, Tehrani, M., Liu, Y. "Effects of Graphene Doping on the Electrical Conductivity of Copper", Advanced Functional Materials, pp. 2407569, August 2024, https://doi.org/10.1002/adfm.202407569

64. *Natinsky, E., Khan, R., **Cullinan, M.**, and Dingreville, R., "Reconstruction of High-Resolution Atomic Force Microscopy Measurements from Fast-Scan Data Using a Noise2Noise Algorithm", Measurement, Vol. 227, pp. 114263, March 2024, https://doi.org/10.1016/j.measurement.2024.114263

63. *Cho, J., Cayll, D., Ladner, I., Gorman, J. and **Cullinan, M.**, "In-situ Fracture Toughness Measurement of Multilayer Graphene", Engineering Fracture Mechanics, Vol. 295, pp. 109798, Jan. 2024. https://doi.org/10.1016/j.engfracmech.2023.109798

62. *Dibua, O., Tasnim, F., Liao, A., Grose, J., Behera, D., Foong, C., and **Cullinan, M.**, "Predicting Electrical Resistivity of Sintered Copper Nanoparticles from Simulations for the Microscale Selective Laser Sintering Process", Journal of Micro and Nanomanufacturing, Vol. 11, pp. 011004, Jan. 2024. https://doi.org/10.1115/1.4064389

61. *Grose, J., Liao, A., Foong, C., **Cullinan, M.**, "Data-Efficient Surrogate Model for Rapid Prediction of Temperature Evolution in a Microscale Selective Laser Sintering System" Journal of Micro and Nanomanufacturing, Vol. 11, pp. 011003, Jan. 2024. https://doi.org/10.1115/1.4064106

60. *Luo, C., Hopkins, J., and **Cullinan, M.**, "Response Speed Characterization of a Thermally Actuated Programmable Metamaterial", Journal of Microelectromechanical Systems, Vol. 33, pp. 6-8, Nov. 2023. https://doi.org/10.1109/JMEMS.2023.3332595

59. Lee, K., Chien, K., Groh, B., Chen, T., **Cullinan, M.**, and Chang, C., "Characterization of Porosity in Periodic 3D Nanostructures using Spectroscopic Scatterometry", Journal of Vacuum Science and Technology B, Vol. 41, pp. 064001, Oct. 2023. https://doi.org/10.1116/6.0003035

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4. **Cullinan, M.**, DiBiasio, C., Howell, L, Culpepper, M., and Panas, R. "Modeling of a Clamped-Clamped Carbon Nanotube Flexural Element for use in Nanoelectromechanical Systems." *The 13th National Conference on Mechanisms and Machines*, Bangalore, India, December 12, 2007.

3. Culpepper, M., DiBiasio, C., Panas, R., and **Cullinan, M.** "Modeling and Design of Carbon Nanotube-based Flexures and Compliant Mechanisms for Nanomechanical Devices." *Proceedings of the 4th International Symposium on Nanomanufacturing,* Cambridge, MA, November 1-4, 2006, pp. 253.

2. Hafiz, J., Mukherjee, R., Wang, X., Marshall, M., Twesten, N., **Cullinan, M.**, Heberlein, J., McMurry, P., and Girshick, S. "Effect of Process Parameters on the Structure of Si-Ti-N Nanostructured Coatings Deposited by Hypersonic Plasma Particle Deposition." *Proceedings of the International Conference on Metallurgical Coatings and Thin Films*. San Diego, CA, February 5, 2005.

1. **Cullinan, M.**, Ward, M., and MacDonald, N. "Porous Nanostructured Titania." *NNIN REU Research Accomplishments*, Vol. 8, August 11, 2005, pp. 24.

PRESENTATIONS (213)

Invited Talks

46. **Cullinan, M.** "Building the Advanced Packaging Workforce at Scale: Education, Research, and Industry Partnerships at UT Austin," IMAPS Onshoring Advanced Packaging and Assembly 2026 (IMAPS/Global Electronics Association Workshop), Arlington, VA, August 31, 2026.

45. **Cullinan, M.** "Virtual Metrology and Digital Twins for Advanced Packaging", Proceedings of the Hilton Head Workshop 2026: A Solid-State Sensors, Actuators and Microsystems Workshop, Hilton Head, SC, June 3, 2026.

44. **Cullinan, M.** "3D Holographic Metasurface Nanolithography: Process and Metrology", 2026 IEEE 76th Electronic Components and Technology Conference, Orlando, FL, May 26, 2026.

43. **Cullinan, M.** "3D Holographic Metasurface Nanolithography: Process and Metrology", TMS 2026 Annual Meeting & Exhibition, San Diego, CA, March 18, 2026.

42. **Cullinan, M.** "Additive Manufacturing of Interconnect Structures for Microelectronics Packaging Applications", TMS 2026 Annual Meeting & Exhibition, San Diego, CA, March 17, 2026.

41. **Cullinan, M.** "Enhancing High-Temperature Performance of Copper-Graphene Composites for Advanced Electrical Applications", 50th International Conference & Exposition on Advanced Ceramics & Composites, Daytona Beach, FL, January 29, 2026.

40. **Cullinan, M.** "Micro and Nanoscale Additive Manufacturing for Electronics Packaging Applications", IEEE Electronic Devices Flexible Electronics and Displays Seminar Series, Virtual, October 23, 2025.

39. **Cullinan, M.** "Micro and Nanoscale Additive Manufacturing for Electronics Packaging Applications", Chicago Future Manufacturing Seminar Series, Chicago, IL, September 25, 2025.

38. **Cullinan, M.** "Micro and Nanoscale Additive Manufacturing for Electronics Packaging Applications", 36th Annual Electronics Packaging Symposium, Niskayuna, NY, September 3, 2025.

37. **Cullinan, M.** "Selective Microscale Sintering for Next Generation Bump Fabrication", The Future of Electronics Reshaped Workshop, Boston, MA, June 11, 2025

36. **Cullinan, M.** "Advanced Packaging Status and Roadmap", Advanced Data Analytics and Machine Learning for Semiconductor Industry Seminar Series, Carnegie Mellon University, Pittsburgh, PA, April 8, 2025.

35. **Cullinan, M.** "Precision Engineering Challenges in Advanced Semiconductor Packaging", Emerging Technologies (EmTech) Institute, Silicon Valley, CA, December 17, 2024

34. **Cullinan, M.** "Precision Engineering Challenges in Advanced Semiconductor Packaging", Lawrence Livermore National Laboratory Precision Engineering Group Seminar Series, Livermore, CA, December 12, 2024

33. **Cullinan, M.** "Precision Engineering Challenges in Advanced Semiconductor Packaging", Annual Meeting of the American Society for Precision Engineering, Houston, TX, November 7, 2024

32. **Cullinan, M.** "Research in the Nanoscale Design and Manufacturing Laboratory at UT-Austin", University of Minho, Guimarães, Portugal, October 31st, 2024

31. **Cullinan, M.** "Machine Learning-enabled Nanometrology and Process Control," Sandia National Laboratory/Los Alamos National Laboratory, Center for Integrated Nanotechnologies Annual User Meeting, Santa Fe, NM, September 17th, 2024

30. **Cullinan, M.** "A Review of the State-of-the-Art and Precision Engineering Challenges in Micro/Nanoscale Additive Manufacturing," ASPE-EUSPEN Topical Meeting on Advancing Precision in Additive Manufacturing, Golden, CO, July 17, 2024.

29. **Cullinan, M**, "Copper-Graphene-Based Composite Conductors for Aerospace Applications," NASA Glenn Materials Chemistry and Physics Seminar, Cleveland, OH, June 10, 2024

28. **Cullinan, M.** "Manufacturing and Metrology of 3D Holographic Structure Nanopatterns in Roll-to-Roll Fabrication" SPIE Advanced Lithography + Patterning 2024, San Jose, CA, February 27th, 2024.

27. **Cullinan, M.** "Challenges and Opportunities in the Fabrication and Packaging of Next Generation Electronic and Nanostructured Devices", Sandia National Laboratory, Center for Integrated Nanotechnologies, Albuquerque, NM, January 11th, 2024

26. **Cullinan, M.** "Challenges and Opportunities in the Fabrication and Packaging of Next Generation Electronic and Nanostructured Devices", National Institute of Standards and Technology, Gaithersburg, MD, June 27th, 2024

25. **Cullinan, M.** "Additive Manufacturing of Metal Interconnects using Microscale Selective Laser Sintering." TechBlick's Virtual Conference on Digital & 3D Printed Electronics, March 29, 2023.

24. **Cullinan, M.** "Additive Manufacturing of Metal Interconnects using Microscale Selective Laser Sintering." SPIE Photonics West, San Francisco, CA, January 29, 2023.

23. **Cullinan, M.** "Microscale Additive Manufacturing of Microscale Interconnects using Microscale Selective Laser Sintering." Center for Nanophase Materials Science (CNMS) User Executive Committee (UEC) at Oak Ridge National Lab, Oak Ridge, TN, August 11, 2022.

22. **Cullinan, M**. "Microscale Additive Manufacturing of Metal Interconnects using Microscale Selective Laser Sintering" The 65th International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication, New Orleans, LA, June 1, 2022.

21. **Cullinan, M.** "A Review of the State-of-the-Art and Precision Engineering Challenges in Micro/Nanoscale Additive Manufacturing," European Society for Precision Engineering and Nanotechnology Advancing Precision in Additive Manufacturing Conference, St. Gallen, Switzerland, September 20, 2021.

20. **Cullinan, M.** "Introduction to the Nanoscale Design and Manufacturing Laboratory." Pi Tau Sigma Mechanical Engineering Honors Society Seminar Series, Austin, Texas, December 1, 2020.

19. **Cullinan, M.** "Introduction to the Nanoscale Design and Manufacturing Laboratory." NASCENT Seminar Series, Austin, Texas, October 23, 2020.

18. **Cullinan, M.** "Introduction to the Nanoscale Design and Manufacturing Laboratory." UT-Austin ASME Student Chapter Seminar Series, Austin, Texas, September 11, 2020.

17. **Cullinan, M.** "Challenges and Opportunities in the Packaging and Integration of Next Generation Electronic Devices," University of Michigan, Ann Arbor, MI, April 19, 2019

16. **Cullinan, M.** "High Throughput, Tip-based Nanometrology for Roll-to-Roll Manufactured Flexible Electronics," 3M, St. Paul, MN, November 11, 2018

15. **Cullinan, M.** "Engineering Mechanics Challenges and Opportunities in Micro and Nanomanufacturing," University of Texas at Austin, Austin, TX, April 24, 2018

14. **Cullinan, M.** "Design and Modeling of a Microscale Selective Laser Sintering System." University of Texas at San Antonio, San Antonio, TX, October 10th, 2017

13. **Cullinan, M.** "Microscale Selective Laser Sintering of Copper Nanoparticles," Sandia National Laboratory, Albuquerque, NM, May 16, 2016.

12. **Cullinan, M.** "Additive Manufacturing for Microelectronics Packaging Applications," Central Texas Electronics Association Electronics Design, Manufacturing & Test Symposium, Austin, TX, May 10, 2016

11. **Cullinan, M.** "Opportunities and Changes in Micro and Nanomanufacturing," 3M Lunch and Learning Lecture Series, Austin, TX, September 18, 2015.

10. **Cullinan, M.** "Nanomanufacturing of Carbon-based Materials for Nanoelectromechanical Sensor Systems," Center for Nano- and Molecular Science, University of Texas, Austin, TX, November 19, 2014.

9. **Cullinan, M.** "Nanomanufacturing of Carbon-based Materials for Nanoelectromechanical Sensor Systems" Department of Mechanical Engineering, University of Illinois, Urbana, IL, April, 2013.

8. **Cullinan, M.** "Nanomanufacturing of Carbon-based Materials for Nanoelectromechanical Sensor Systems" Department of Mechanical Engineering, University of Texas, Austin, TX, March 25, 2013.

7. **Cullinan, M.** "Nanomanufacturing of Carbon-based Materials for Nanoelectromechanical Sensor Systems" Department of Mechanical Engineering, University of California, Berkeley, CA, March 12, 2013.

6. **Cullinan, M.** "Carbon Nanotube-Based Piezoresistive Sensors for Precision Force and Displacement Measurements." Department of Mechanical and Industrial Engineering Seminar Series, University of Massachusetts, Amherst, Amherst, MA, February 28, 2011.

5. **Cullinan, M.** "Design and Fabrication of Carbon Nanotube-Based Piezoresistive Sensors for Precision Force Measurements" Department of Mechanical Engineering and Mechanics, Drexel University, Philadelphia, PA, February 23, 2011.

4. **Cullinan, M.** "Precision Force and Displacement Metrology Using Carbon Nanotube-Based Piezoresistive Sensors" Department of Mechanical Engineering, University of Utah, Salt Lake City, UT, February 11, 2011.

3. **Cullinan, M.** "Design of High-Precision Carbon Nanotube-Based Flexural Transducers." Presentation, Laboratory for Manufacturing and Productivity Student Seminar Series, Cambridge, MA, February 16, 2010.

2. **Cullinan, M.** "Challenges in Incorporating Carbon Nanotubes into MEMS and NEMS Devices." Presentation, MIT Micro/Nano Seminar Series, Cambridge, MA, November 4, 2009.

1. **Cullinan, M.** "Controlling the Stiffness of Carbon Nanotube-Based Compliant Mechanisms." Presentation, Laboratory for Manufacturing and Productivity Student Seminar Series, Cambridge, MA, August 12, 2008.

Contributed Oral Presentations

***Presented by Student in NDML**

97. *Bamido, E., and **Cullinan, M.** "Investigating the Effect of Disturbances on the Dimensional Quality of Parts from Directed Energy Deposition (DED)," 37th Annual International Solid Freeform Fabrication Symposium, Austin, TX, August 3, 2026.

96. *Tasnim, F., Shui, D., Koirala, P., and **Cullinan, M.** "Hardware-Constrained DMD Mask Optimization for Uniform Microscale Selective Laser Sintering of Copper Nanoparticle Films," 37th Annual International Solid Freeform Fabrication Symposium, Austin, TX, August 3, 2026.

95. *Lamb, R., Garlapati, N., Makuvise, M., Gao, X., and **Cullinan, M.** "Altering the Concentration Profiles of Porous Polymer Membranes using Vat Photopolymerization and Phase Separation," 54th SME North American Manufacturing Research Conference (NAMRC 54), State College, PA, June 17, 2026.

94. *Gao, X., Lamb, R., Gulcur, M., and **Cullinan, M.** "Additively Manufactured Dual-Scale Gyroid Structures for Modular Recycling of Critical Elements," ASME 2026 21st International Manufacturing Science and Engineering Conference, State College, PA, June 15, 2026.

93. Yap, T., Singh, K., Chen, X., O'Dea, C., Crawford, N., Bae, K., Page, Z., and **Cullinan, M.** "Inversely Designed Projection Image Generation for Vat Photopolymerization in a Machine Learning Framework," ASME 2026 21st International Manufacturing Science and Engineering Conference, State College, PA, June 15, 2026.

92. Crawford, N., Wang, J., Holoman, D., Bealer, J., Lee, S., Garcia, J., Page, Z., and **Cullinan, M.** "Rapid Additive Manufacturing of Multi-Layered RDL and Interconnects Enabled by Hybrid Metal-Polymer", Proceedings of The 2026 IEEE 76th Electronic Components and Technology Conference, Orlando, FL, May 29, 2026.

91. Li, Z., Crawford, N., Yap, T., Bae, K., Stafford, G., **Cullinan, M.** and Chang, C. "Enhanced Penetration for Metallic 3D Lithography using Self-Healing Bessel Beams Generated by Micro-Axicons", The 69th International Conference on Electron, Ion and Photon Beam Technology and Nanofabrication (EIPBN), Denver, CO, May 28, 2026.

90. Yap, T., Singh, K., Chen, X., O'Dea, C. Bae, K., Crawford, N., Stafford, G., Page, Z., and **Cullinan, M.** "Holographic Metasurface Nanolithography for Volumetric Vat Polymerization", The 69th International Conference on Electron, Ion and Photon Beam Technology and Nanofabrication (EIPBN), Denver, CO, May 27, 2026.

89. Venkatesan, S., Groh, B., Lee, K., Aguirre, L, Chang, C., **Cullinan, M.**, and Baldea, M. "High-Fidelity AFM Image Reconstruction from Fast Noisy Scans Corrupted by Line-Scar Artefacts", Proceedings of the 59th CIRP Conference on Manufacturing Systems, Austin, TX, May 21, 2026.

88. Bae, K., Stafford, G., Yap, T., Crawford, N., and **Cullinan, M.** "Comparing fabrication methods of an optical metasurface for 405 nm-wavelength", Proceedings of the 59th CIRP Conference on Manufacturing Systems, 2026, Austin, TX, May 21, 2026.

87. Vasilevskyi, O., Woods, A., Jones, M., and **Cullinan, M.** "Experimental methodology for investigating metal powder fusion in the EOSINT M280 additive manufacturing system", Proc. SPIE 14009, Photonics Applications in Astronomy, Communications, Industry, and High Energy Physics Experiments 2025, 140090N, Lublin, Poland December 30, 2025

86. Aguirre, L., Oss, D., Knapp, B., Garcia, J., Groh, B., and **Cullinan, M.** "Ultraprecision Spindle Motorization with Frameless Slotted Motors." 40th Annual Meeting of the American Society for Precision Engineering, San Diego, CA, November 6, 2025.

85. Gulcur, M., Vo, Z., Gao, X., Garcia, J., Groh, B., Aguirre, L., Gibbons, G. and **Cullinan, M.** "Precision Prototyping Micromoulds for Microfluidics Using Custom UV-LED Photolithography." 40th Annual Meeting of the American Society for Precision Engineering, San Diego, CA, November 6, 2025.

84. Fan, Y., Gray, A., Eckstrom, W., and **Cullinan, M.**., "Spatiotemporal Stiffness Modulation Design based on Electrostatic Actuation for Actively Tuned Non-Reciprocity with Genetic Algorithm Analysis." 2025 Society of Engineering Science Annual Technical Meeting, Atlanta, GA, October 14, 2025.

83. *Gray, A., Sainaghi, P., Hopkins, J., and **Cullinan, M.** "Mechanical Neural Networks: Thermally Actuated Programmable MEMS Metamaterial with Real Time Tunable Stiffness." 2025 Society of Engineering Science Annual Technical Meeting, Atlanta, GA, October 13, 2025.

82. *Garcia, J. and **Cullinan, M.** "Design of a r-θ Projection Micro Stereolithography System for Large Area Optics Fabrication." ASPE-EUSPEN Topical Meeting on Advancing Precision in Additive Manufacturing, Berlin, Germany, October 7, 2025.

81. *Gulcur, M., Vo, Z., Gao, X., Garcia, J., Groh, B., Aguirre, L., Gibbons, G. and **Cullinan, M.** "Microfabrication of Rapid Micro-Moulds Combining Additive Manufacturing and Custom UV-LED Photolithography Tool." World Congress on Micro and Nanomanufacturing, Valletta, Malta, September 15, 2025.

80. *Groh, B., Aguirre, L., Connolly, L., Gao, X., Garcia, J., and **Cullinan, M.**, "Nanoscale Control of a Flexure-Mounted Atomic Force Microscope for Moving Substrate Metrology," 2025 ASPE Topical Meeting on Precision Design, Berkeley, CA, July 14, 2025.

79. *Aguirre, L., Groh, B., Lee, K., Gao, X., Chang, C., and **Cullinan, M.** "Towards Roll-to-Roll Manufacturing of Holographic Nanopatterning by Leveraging Laser Diode Arrays Contained within an UVT Acrylic Roller", The 68th International Conference on Electron, Ion and Photon Beam Technology and Nanofabrication (EIPBN), Savannah, GA, May 30, 2025.

78. Lin, D., Chen, X. O'Dea, C., Lee, K., Majumder, A., **Cullinan, M.**, Chang, C., Page, Z. and Menon, R. "Single-exposure Volumetric Holographic Additive Manufacturing", The 68th International Conference on Electron, Ion and Photon Beam Technology and Nanofabrication (EIPBN), Savannah, GA, May 30, 2025.

77. Wang, Q., Natinsky, E., Groh, B., Torres, C., Werber, J., **Cullinan, M.** and Morris, D. "Application of Noise2Noise algorithm for high-throughput AFM imaging of polymer membranes", ACS Spring 2025 Meeting & Expo, San Diego, CA, March 26, 2025

76. *Paddock, R., Tehrani, M., and **Cullinan, M.**, "Manufacturing and Characterization of Multilayer Graphene-Copper Wires" 49th International Conference & Exposition on Advanced Ceramics & Composites, Daytona Beach, FL, January 30, 2025.

75. *Bekele, Y., Tehrani, M., and **Cullinan, M.**. "Graphene-Based Composite Conductors for Aerospace Applications." 49th International Conference & Exposition on Advanced Ceramics & Composites, Daytona Beach, FL, January 30, 2025.

74. *Aguirre, L., Groh, B., Lee, K., Venkatesan, S., Baldea, M., Chang, C. and **Cullinan, M.**, "Towards Manufacturing and Metrology of Roll-to-Roll Holographic Nanostructures", Annual Meeting of the American Society for Precision Engineering, Houston, TX, November 7, 2024.

73. *Liao, A., Grose, J., Kim, H., Okwudire, C., and **Cullinan, M.**, "Spatiotemporal Modulation of Light in Microscale Selective Laser Sintering for Enhanced Process Resolution Using a Digital Micromirror," 2024 Annual International Solid Freeform Fabrication Symposium, Austin, TX, August 14, 2024.

72. *Paddock, R., Khanbolouki, P., LeBlanc, S., **Cullinan, M.**, and Tehrani, M., "Laser Powder Bed Fusion Copper: Post-Processing, Structure, Property," 2024 Annual International Solid Freeform Fabrication Symposium, Austin, TX, August 13, 2024.

71. *Tasnim, F., Grose, J., Sheu, N., Dingreville, R., and **Cullinan, M.**, "Predicting Microstructure Properties Using Transfer Learning", 2024 Annual International Solid Freeform Fabrication Symposium, Austin, TX, August 12, 2024.

70. Stone, R., Gammage, M., Wang, J., **Cullinan, M.**, Kovar, D., Sha, Z., "Multi-Nozzle Cooperation for Micro-Cold Spray", 2024 Annual International Solid Freeform Fabrication Symposium, Austin, TX, August 14, 2024.

69. Lee, K., Aguirre, L., Groh, B., Chen, I., Lin, D., Menon, R., **Cullinan, M.**, and Chang, C., "Investigation of Contrast Degradation due to Varying Incident Angles in Phase-Shift Lithography," Proceedings of The 67th International Conference on Electron, Ion and Photon Beam Technology and Nanofabrication (EIPBN), San Diego, CA, May 30, 2024.

68. Lin, D., Lyu, F., Majumder, A., Kim, J., O'dea, C., Lee, C., **Cullinan, M.**, Chang, C., Page, Z. and Menon, A., "Single-exposure Millimeter-scale Volumetric Holographic Additive Manufacturing," Proceedings of The 67th International Conference on Electron, Ion and Photon Beam Technology and Nanofabrication (EIPBN), San Diego, CA, May 30, 2024.

67. *Paddock, R., Tehrani, M., and **Cullinan, M.**, "Creation and Characterization of Multilayer Graphene – Copper Wires" 48th International Conference & Exposition on Advanced Ceramics & Composites, Daytona Beach, FL, February 1, 2024.

66. *Bekele, Y., **Cullinan, M.**, and Tehrani, M. "A Study in the Effect of High-Graphene Content Loading on Copper Composite Conductors." 48th International Conference & Exposition on Advanced Ceramics & Composites, Daytona Beach, FL, February 1, 2024.

65. *Groh, B., Lee K., **Cullinan, M.**, and Chang, C. "Development of Joint Manufacturing and In-Line Metrology System for the Patterning of 3D Holographic Structures in Roll-To-Roll Processes." World Congress on Micro and Nano Manufacturing, Evanston, IL, September 20, 2023.

64. *Tasnim, F., Grose, J., Dibua, O., Liao, A., Foong, C.S., and **Cullinan, M.**, "Investigating Process-Property Relationships in Microscale Selective Laser Sintering Using Electrical Resistivity Measurements." World Congress on Micro and Nano Manufacturing, Evanston, IL, September 19, 2023.

63. *Grose, J., Tasnim, F., and **Cullinan, M.,** "Part-scale Thermal Model for Parameter Optimization in a Microscale Selective Laser Sintering System." 2023 Annual International Solid Freeform Fabrication Symposium, Austin, TX, August 15, 2023.

62. *Liao, A., Behera, D., and **Cullinan, M.,** "A Novel Coating Method Used to Enable Multilayer Structures with Microscale Selective Laser Sintering." 2023 Annual International Solid Freeform Fabrication Symposium, Austin, TX, August 15, 2023.

61. *Groh, B., Behera, D., Rylander, C. and **Cullinan, M.,** "Project-Focused Redesign of a First-Year Engineering Design Course for CAD and CAM in a Modern Era." Proceedings of the 130th Annual Conference of the American Society for Engineering Education, June 27, 2023.

60. *Grose, J., Annaluru, R., Foong, C., and **Cullinan, M.,** "Regression-Based Surrogate Model for Rapid Prediction of Temperature Evolution in a Microscale Selective Laser Sintering System." Proceedings of the ASME 2023 18th International Manufacturing Science and Engineering Conference, New Brunswick, NJ, June 14, 2023.

59. Lee K., Chien, K., Groh, B., **Cullinan, M.,** and Chang, C. "Metrology of Periodic 3D Nanostructures using Spectroscopic Scatterometry, Kwon Sang Lee, Kun-Chieh Chien, Michael Cullinan, Chih-Hao Chang, Barbara Groh" Proceedings of the 66th International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication, San Francisco, CA, June 2nd, 2023.

58. *Groh, B., Connolly, L., and **Cullinan, M.,** "Towards Quasi-real-time, Tip-based Process Control in Roll-to-Roll Nanomanufacturing." Proceedings of the 66th International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication, San Francisco, CA, June 2nd, 2023.

57. *Connolly, L., Groh, B., Garcia, J., and **Cullinan, M.,** "Design Concerns for Tip-Based Measurement Towards Process Metrology in Roll-to-Roll Nanomanufacturing." Proceedings of the American Society for Precision Engineering, Bellevue, WA, October 13, 2022.

56. Kim, H., Grose, J., Liao, A., Okwudire, C. and **Cullinan, M.,** "A Model-based Control Framework for Microscale Selective Laser Sintering" Proceedings of the American Society for Precision Engineering, Bellevue, WA, October 11, 2022.

55. *Dibua, O., Liao, A., Grose, J., Behera, D., Foong, C. and **Cullinan, M.,** "A Study of the Electrical Resistivity of Sintered Copper Nanoparticles" 2022 Annual International Solid Freeform Fabrication Symposium, Austin, TX, July 25, 2022.

54. *Dibua, O., Foong, C., and **Cullinan, M.,** "Electrical Resistance Metrology in Nanoparticle Sintering Simulations." Proceedings of the ASME 2022 17th International Manufacturing Science and Engineering Conference, West Lafayette, IN, June 28, 2022.

53. Grose, J., Dibua, O., Liao, A., Caruso, F., Foong, C., and **Cullinan, M.,** "Part Scale Simulation of Heat Affected Zones for Parameter Optimization in a Microscale Selective Laser Sintering System." Proceedings of the 2022 Summer Topical Meeting Advancing Precision in Additive Manufacturing, Knoxville, TN, July 12, 2022.

52. Natinsky, E., Dingreville, R., and **Cullinan, M.,** "Signal Reconstruction of Sparse, Nano-scale Metrology Data using Neural Networks" Electronic Imaging Symposium 2022 (Virtual), January 24, 2022.

51. *Groh, B., Connolly, L., and **Cullinan, M.,** "Leveraging the Photoelastic Effect for the Evaluation of Strain in Tensioned Substrates for Roll-to-Roll Nanomanufacturing." Proceedings of the 2021 International Conference on Micro- and Nano-devices Enabled by R2R Manufacturing (Virtual), December 16, 2021.

50. *Connolly, L. and **Cullinan, M.,** "Design Considerations for Quasi-Continuous, Inline Measurement in Roll-to-Roll Nanomanufacturing." Proceedings of the 2021 International Conference on Micro- and Nano-devices Enabled by R2R Manufacturing (Virtual), December 16, 2021.

49. *Behera, D., Liao, A., and **Cullinan, M.,** "Experimental Characterization of Heat Affected Zones for Fabricating Near-net Shaped Microscale Features." Proceedings of the American Society for Precision Engineering, Minneapolis, MN, November 4, 2021.

48. *Grose, J., Dibua, O. Behera, D. Foong, C., and **Cullinan, M.**, "Simulation and Characterization of Nanoparticle Thermal Conductivity for a Microscale Selective Laser Sintering System." Proceedings of the ASME 2021 16th International Manufacturing Science and Engineering Conference (Virtual), June 21, 2021.

47. *Dibua, O., Foong, C., and **Cullinan, M.** "Advances in Nanoparticle Sintering Simulation: Multiple Layer Sintering and Sintering Subject to a Heat Gradient." Proceedings of the ASME 2021 16th International Manufacturing Science and Engineering Conference (Virtual), June 21, 2021.

46. *Behera, D., Roy, N., **Cullinan, M.** "Towards 3D Part Fabrication Using a Micro-Scale Additive Manufacturing Tool." Proceedings of the American Society for Precision Engineering, Minneapolis, MN (Virtual), October 20, 2020.

45. *Connolly, L., Dibua, O., and **Cullinan, M.** "Heuristically Optimized H-Infinity Synthesis for the Realtime Positioning of a Tip-Based Measurement Device." 2020 ASPE Spring Topical Meeting on Design and Control of Precision Mechatronic Systems, Boston, MA, May 7, 2020.

44. *Yuksel, A, **Cullinan, M.**, Yu, E., and Murthy, J. "Enhanced Plasmonic Behavior of Metal Nanoparticles Surrounded With Dielectric Shell." ASME 2019 International Mechanical Engineering Congress and Exposition, Salt Lake City, UT, November 11, 2019.

43. *Yuksel, A, **Cullinan, M.**, Yu, E., and Murthy, J. "Plasmonic Waveguiding in Subwavelength Particles Suspended in Various Dielectric Media." ASME 2019 Heat Transfer Summer Conference, Bellevue, WA, July 15, 2019

42. *Luo, C., Song, Y., Jayatilaka, G., Ladner, I., Hopkins, J., and **Cullinan, M.** "Design, Fabrication, and Calibration of a Stiffness Programmable Metamaterial." Proceedings of the American Society for Precision Engineering, Pittsburgh, PA, October 28, 2019.

41. *Connolly, L., and **Cullinan, M.** "The Role of Tip-Based Measurement in a Hybrid Metrology Framework for Roll-to-Roll Nanofabrication." 2019 International Conference on Nanoimprint and Nanoprint Technologies, Boston, MA, October 16, 2019.

40. **Cullinan, M.**, "Overview from Winter Topical Meeting." *Proceedings of the American Society for Precision Engineering*, Las Vegas, NV, November 7, 2018.

39. *Ward, M., and **Cullinan, M.**, "Wafer Scale Exfoliation of Monocrystalline Micro-scale Silicon Films." *Proceedings of the American Society for Precision Engineering*, Las Vegas, NV, November 7, 2018.

38. *Connolly, L., Garcia, J., and **Cullinan, M.**, "A Roll-to-roll System for In-line, Tip Based Nanometrology of Patterned Materials and Devices." *Proceedings of the American Society for Precision Engineering*, Las Vegas, NV, November 7, 2018.

37. *Roy, N., Behera, D., and **Cullinan, M.**, "Sub-system Level Overview of Micro-scale Selective Laser Sintering Tool." *Proceedings of the American Society for Precision Engineering*, Las Vegas, NV, November 7, 2018.

36. *Yuksel, A, Yu, E., Murthy, J, and **Cullinan, M.** "Effect of Interfacial Thermal Conductance between the Nanoparticles." 2018 International Technical Conference and Exhibition on Packaging and Integration of Electronic and Photonic Microsystems (InterPACK), San Francisco CA, August 29, 2018.

35. *Dibua, O., Yuksel, A., Roy, N., Foong, C., and **Cullinan, M.** "Experimental Calibration of Nanoparticle Sintering Simulation." 2018 Annual International Solid Freeform Fabrication Symposium, Austin, TX, August 14, 2018.

34. *Behera, D., Roy, N., Foong, C., and **Cullinan, M.** "Powder Bed Deposition by Slot Die Coating for Microscale Selective Laser Sintering," 2018 Annual International Solid Freeform Fabrication Symposium, Austin, TX, August 14, 2018.

33. *Roy, N., Behera, D., Dibua, O., Foong, C., and **Cullinan, M.** "Experimental Study of the Sub-Systems in a Microscale Additive Manufacturing Process," 2018 Annual International Solid Freeform Fabrication Symposium, Austin, TX, August 14, 2018.

32. *Dibua, O., Yuksel, A., Roy, N., Foong, C., and **Cullinan, M.** "Nanoparticle Sintering Model, Simulation, and Calibration Against Experimental Data." ASME Manufacturing Science and Engineering Conference, College Station, TX, June 20, 2018

31. *Yuksel, A, Yu, E., Murthy, J, and **Cullinan, M.** "Uncertainty Analysis of Near-Field Thermal Energy within Nanoparticle Packings." The Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems, San Diego CA, May 30, 2018.

30. *Ladner, I., Cao, A., Saha, S., and **Cullinan, M.**, "Design of High Resolution and High Force MEMS Tensile Testers for Direct Metrology of Submicron Polymer Features." *Proceedings of the American Society for Precision Engineering*, Charlotte, NC, November 1, 2017.

29. *Roy, N., and **Cullinan, M.**, "Design of a Long-Travel, Flexure-Based Nanopositioner with Reduced Higher Order Resonant Modes." *Proceedings of the American Society for Precision Engineering*, Charlotte, NC, November 2, 2017.

28. *Roy, N. Dibua, O. Foong, C.S. and **Cullinan, M.** "Preliminary Results on the Fabrication of Interconnect Structures using Microscale Selective Laser Sintering." ASME 2017 International Technical Conference and Exhibition on Packaging and Integration of Electronic and Photonic Microsystems, San Francisco, CA, August 30, 2017.

27. *Roy, N., Dibua, O., and **Cullinan, M.**, "Effect of Bed Temperature on the Laser Energy Required to Sinter Copper Nanoparticles." Solid Freeform Fabrication Symposium, Austin, TX, August 9, 2017.

26. *Dibua, O. Yuksel, A., Roy, N., Foong, C.S. and **Cullinan, M.** "Modelling Nanoparticle Sintering in a Microscale Selective Laser Sintering Process." Solid Freeform Fabrication Symposium, Austin, TX, August 8, 2017.

25. Yuksel, A. Murthy, J. and Cullinan, M. "Experimental and Analytical Analysis of Nanoparticle Assemblies for High-throughput Nanomanufacturing." Solid Freeform Fabrication Symposium, Austin, TX, August 8, 2017.

24. *Yuksel, A. Murthy, J., and **Cullinan, M.** "Thermal Energy Transport below the Diffraction Limit in Closed-Packed Metal Nanoparticles." ASME Summer Heat Transfer Conference, Bellevue, WA, July 10, 2017.

23. Roy, N., Jou, W., He, F., Jeong, J., Wang, Y., and **Cullinan, M.** "Laser Sintering of Copper Nanoparticles: A Simplified Model for Fluence Estimation and Validation." ASME Manufacturing Science and Engineering Conference, Los Angeles, CA, June 6, 2017

22. Cho, J and **Cullinan, M.** "Graphene Growth on and Transfer from Platinum Thin Films MSEC." ASME Manufacturing Science and Engineering Conference, Los Angeles, CA, June 6, 2017

21. Connolly, L. and **Cullinan, M.** "Design of a Tip Based, In-Line Metrology System for Roll-to-Roll Manufactured Flexible Electronic Devices." ASME Manufacturing Science and Engineering Conference, Los Angeles, CA, June 6, 2017

20. *Yuksel, A., Murthy, J. and **Cullinan, M.** "Effect of Substrate and Nanoparticle Spacing on Plasmonic Enhancement in 3D Nanoparticle Structures." ASME Manufacturing Science and Engineering Conference, Los Angeles, CA, June 6, 2017

19. *Yao, T-F., Duenner, A. and **Cullinan, M.**, "Quick Approach Mechanism For Tip-Based In-line Nanometrology Systems." American Society for Precision Engineering, Portland, OR, October 26, 2016.

18. *Moser, D., **Cullinan, M.**, and Murthy, J., "Particle-Scale Melt Modeling of the Selective Laser Melting Process." International Solid Freeform Fabrication Symposium, Austin, Texas, August 8, 2016.

17. *Yuksel, A. and **Cullinan, M.**, "The Effect of Nanoparticle Clustering on Optoelectronic Property." International Solid Freeform Fabrication Symposium, Austin, Texas, August 8, 2016.

16. *Roy, N., Foong, C.S., and **Cullinan, M.** "Design of a Micro-scale Selective Laser Sintering System." International Solid Freeform Fabrication Symposium, Austin, Texas, August 8, 2016.

15. Roy, N., Yuksel, A., and **Cullinan, M.** "Design and Modeling of a Microscale Selective Laser Sintering System." ASME Manufacturing Science and Engineering Conference, Blacksburg, VA, June 27, 2016.

14. Cho, J., Sun, G., and **Cullinan, M.** "A Method to Manufacture Repeatable Graphene-Based NEMS Devices at the Wafer Scale." ASME Manufacturing Science and Engineering Conference, Blacksburg, VA, June 27, 2016.

13. Yao, T-F., Duenner, A., and **Cullinan, M.** "In-Line Dimensional Metrology for Nanomanufacturing Systems." ASME Manufacturing Science and Engineering Conference, Blacksburg, VA, June 27, 2016.

12. *Sun, G. and **Cullinan, M.** "Design of a MEMS-Based Tunable Graphene Resonator System with Precision Strain and Force Metrology." American Society for Precision Engineering, Austin, TX, November 5, 2015.

11. *Ladner, I. and **Cullinan, M.** "Carbon Nanotube Growth Force Detection on Multi-Axis MEMS Sensor with Integrated Microheater." Proceedings of the American Society for Precision Engineering, Austin, TX, November 5, 2015.

10. *Roy, N., Yuksel, A., and **Cullinan, M.** "μ-SLS of Metals: Physical and Thermal Characterization of Cu Nanopowders." International Solid Freeform Fabrication Symposium, Austin, Texas, August 12th, 2015.

9. **Cullinan, M.** and Gorman, J., "Transfer-Free, Wafer-Scale Manufacturing of Graphene-Based Electromechanical Resonant Devices." March Meeting of the American Physical Society, Baltimore, MD, March 20, 2013.

8. **Cullinan, M.**, "Carbon Nanotube-Based Piezoresistive Sensors for Precision Force and Displacement Measurements." Intelligent Systems Division Seminar, National Institute of Standards and Technology, Gaithersburg, MD, March 12, 2012.

7. **Cullinan, M.**, Panas, R., Daniel, C., Gafford, J., and Culpepper, M. "Non-Cleanroom Fabrication of Carbon Nanotube-Based MEMS Force and Displacement Sensors." ASME 2011 International Design Engineering Technical Conferences. Washington D.C., August 29, 2011.

6. **Cullinan, M.** and Culpepper, M. "Design and Fabrication of Single Chirality Carbon Nanotube-Based Sensors." 11th International Conference on Nanotechnology (IEEE NANO 2011). Portland, OR, August 16, 2011

5. **Cullinan, M.** and Culpepper, M. "'Effects of Chirality and Impurities on the Performance of Carbon Nanotube-Based Piezoresistive Sensors" International Conference on the Science and Application of Nanotubes 2011. Cambridge, England, July 12, 2011.

4. **Cullinan, M.** "Design and Fabrication of a Multi-Axis MEMS Force Sensor with Integrated Carbon Nanotube Based Piezoresistors." Nanotech 2011 Conference and Expo. Boston, MA, June 15, 2011.

3. **Cullinan, M.** "A Multi-Axis MEMS Sensor with Integrated Carbon Nanotube-Based Piezoresistors for Precision Force Metrology." 11th International Conference of the European Society for Precision Engineering and Nanotechnology. Lake Como, Italy, May 24, 2011.

2. **Cullinan, M.** "Controlling the Stiffness of Carbon Nanotube-Based Compliant Mechanisms." Presentation, 5th International Symposium on Nanomanufacturing, Singapore, January 25, 2008.

1. **Cullinan, M.** "Porous Nanostructured Titania." Presentation, 2005 NNIN REU Convocation, Stanford University, August 11, 2005.

Poster Presentations

***Presented by Student in NDML**

79. *Stafford, G., and **Cullinan, M.** "3D Holographic Metasurface Nanolithography for Advanced Packaging and Heterogeneous Integration," IMAPS Onshoring Advanced Packaging and Assembly 2026 (IMAPS/Global Electronics Association Workshop), Arlington, VA, August 31, 2026.

78. Burlison, S., Gao, A., and **Cullinan, M.** "A Multiscale Simulation Study of the Cu-SiO2 Hybrid Bonding Process," IMAPS Onshoring Advanced Packaging and Assembly 2026 (IMAPS/Global Electronics Association Workshop), Arlington, VA, August 31, 2026.

77. *Bamido, E., and **Cullinan, M.** "Investigating the Effect of Disturbances on the Dimensional Quality of Parts from Directed Energy Deposition (DED)," 37th Annual International Solid Freeform Fabrication Symposium, Austin, TX, August 4, 2026.

76. *Lamb, R., Garlapati, N., Gao, X., Makuvise, M., and **Cullinan, M.** "Diffusion Study on Highly Porous 3D Printed Structures Made Using Vat Photopolymerization and In-Situ Phase Separation," 37th Annual International Solid Freeform Fabrication Symposium, Austin, TX, August 4, 2026.

75. Yap, T., Chen, X., Page, Z., and **Cullinan, M.** "Simulating Oxygen Diffusion in Vat Photopolymerization," 2026 ASPE-euspen Summer Topical Meeting: Advancing Precision in Additive Manufacturing, Charlotte, NC, July 7–10, 2026.

74. *Stafford, G., Yap, T., and Cullinan, M. "Voxel-Scale Misalignment Detection for Orthogonal Metasurface-produced Holograms via Error-Compensated Volumetric Imaging," 26th International Conference and Exhibition of the European Society for Precision Engineering and Nanotechnology, Krakow, Poland, June 9, 2026.

73. Bae, K, Crawford, N., and **Cullinan, M.** "Embedded Three-Dimensional Conductive Silver Networks Fabricated by Two-Photon Photoreduction", Proceedings of the Hilton Head Workshop 2026: A Solid-State Sensors, Actuators and Microsystems Workshop, Hilton Head, SC, June 3, 2026.

72. Sainaghi, P., Gray, A., Yang, Z., **Cullinan, M.**, and Hopkins, J. "Meso-Scale, Thermally-Actuated Architecture for Mechanical Neural Networks." 40th Annual Meeting of the American Society for Precision Engineering, San Diego, CA, November 6, 2025.

71. *Frey, S., Grady, A., Nguyen, D., Groh, B., and **Cullinan, M.** "Measuring Accumulation Effects of Atomic Force Microscopy." 40th Annual Meeting of the American Society for Precision Engineering, San Diego, CA, November 6, 2025.

70. *Groh, B., Aguirre, L., Connolly, L., Gao, X., Garcia, J., and **Cullinan, M.**, "Moving Substrate Metrology using Flexure-Mounted MEMS-Based Atomic Force Microscopy." 40th Annual Meeting of the American Society for Precision Engineering, San Diego, CA, November 6, 2025.

69. *Stafford, G. and **Cullinan, M.** "Precision Alignment of Orthogonal Holographic Metasurfaces for Volumetric Lithography." 40th Annual Meeting of the American Society for Precision Engineering, San Diego, CA, November 6, 2025.

68. *Cielo, J. and **Cullinan, M.** "A New MEMS-Based Interfacial Force Microscope." 40th Annual Meeting of the American Society for Precision Engineering, San Diego, CA, November 6, 2025.

67. *Aguirre, L., Groh, B., Lee, K., Gao, X., Chang, C. and **Cullinan, M.** "Towards Roll-to-Roll Manufacturing of Holographic Nanopatterning by Leveraging Laser Diode Arrays Contained within an UVT Acrylic Roller", The 68th International Conference on Electron, Ion and Photon Beam Technology and Nanofabrication (EIPBN), Savannah, GA, May 30, 2024.

66. *Liao, A., Grose, J., and **Cullinan, M.**, "Spatiotemporal Modulation of Light in Microscale Selective Laser Sintering for Enhanced Process Resolution", 39th Annual Meeting of the American Society for Precision Engineering, Houston, TX, November 7, 2024.

65. *Gray, A., Sainaghi, P., Luo, C., Hopkins, J., and **Cullinan, M.**, "Design and Fabrication of a Meso-sized, Thermal Linear Transducer for Active Metamaterials", 39th Annual Meeting of the American Society for Precision Engineering, Houston, TX, November 7, 2024.

64. *Bamido, E. and **Cullinan, M.**, "Evaluation of Sources and Effects of Process Dynamics in Directed Energy Deposition," 2024 Annual International Solid Freeform Fabrication Symposium, Austin, TX, August 13, 2024.

63. *Garcia, J. and **Cullinan, M.**, "Challenges in Additive Manufacturing and Characterization of DLP for Optical Applications" 2024 Annual International Solid Freeform Fabrication Symposium, Austin, TX, August 13, 2024.

62. *Garcia, J. and **Cullinan, M.**, "Challenges of Additive Manufacturing for Optical Applications," ASPE-euspen Topical Meeting on Advancing Precision in Additive Manufacturing, Golden, CO, July 16, 2024.

61. Venkatesan, S., Baldea, M., and **Cullinan, M.**, "Towards Automated Defect Classification in Atomic-Resolution Images Via Image Augmentation," Proceedings of The 67th International Conference on Electron, Ion and Photon Beam Technology and Nanofabrication (EIPBN), San Diego, CA, May 30, 2024.

60. *Groh, B., Lee, K., Venkatesan, S., Aguirre, L., Frey, S, Connolly, L., Baldea, M., Chang, C., and **Cullinan, M.**, "Combining In-Line Atomic Force Microscopy and Scatterometry for Metrology of 3D

Holographic Patterns in Roll-to-Roll Nanoscale Manufacturing", The 2024 International Conference on Frontiers of Characterization and Metrology for Nanoelectronics (FCMN), Monterey, CA, April 17, 2024.

59. *Luo, C., Hopkins, J., and **Cullinan, M.**, "Desired Stiffness Verification on Programmable MEMS Metamaterial", IEEE 37th International Conference on Micro Electro Mechanical Systems (MEMS), Austin, TX, January 23, 2024.

58. *Garcia, J. and **Cullinan, M.**, "Manufacturing of Smooth Surfaces using Photopolymer Resins", 38th Annual Meeting of the American Society for Precision Engineering, Boston, MA, November 15, 2023.

57. *Groh, B., Lee, K., Frey, S., Grady, A., Chang, C. and **Cullinan, M.**, "Developing In-line Metrology of 3D Holographic Patterns During Roll-to-Roll Manufacturing Processes" 38th Annual Meeting of the American Society for Precision Engineering, Boston, MA, November 15, 2023.

56. *Grose, J., Kim, H., Liao, A., Okwudire, C., and **Cullinan, M.**, "Model Based Optimization of Digital Laser Masks for Part Shape Improvement in a Microscale Selective Laser Sintering System", 38th Annual Meeting of the American Society for Precision Engineering, Boston, MA, November 15, 2023.

55. *Liao, A. and **Cullinan, M.**, "Multilayer Structures with Microscale Selective Laser Sintering Enabled by a Blade Coating Approach", 38th Annual Meeting of the American Society for Precision Engineering, Boston, MA, November 15, 2023.

54. *Groh, B., Lee K., **Cullinan, M.** and Chang, C. "Development of Joint Manufacturing and In-Line Metrology System for the Patterning of 3D Holographic Structures in Roll-to-Roll Processes." 2023 Annual International Solid Freeform Fabrication Symposium, Austin, TX, August 15, 2023.

53. *Lacey, C., Groh, B., and **Cullinan, M.** "Optimization of Circuitry and Dry Electrode Placement for a Biostimulation Devices with EMG Monitoring." Biomedical Engineering Society Annual Meeting, San Antonio, Texas, October 13th, 2022.

52. *Groh, B., Connolly, L., and **Cullinan, M.** "Functional Analysis of a Polariscope Tool for the Evaluation of Strain in Roll-to-Roll Nanofabrication." Proceedings of the American Society for Precision Engineering, Bellevue, WA, October 12, 2022.

51. *Liao, A., Behera, D., and **Cullinan, M.** "Development of a Meniscus Dragging Coating Approach for Microscale Selective Laser Sintering." Proceedings of the American Society for Precision Engineering, Bellevue, WA, October 12, 2022.

50. *Cho, J., **Cullinan, M.**, and Gorman, J. "Mode Localization and Tunable Overlap in A Closed Chain Micromechanical Resonator Array." Hilton Head Workshop 2022: A Solid-State Sensors, Actuators and Microsystems Workshop, Hilton Head, SC, June 8, 2022.

49. *Cayll, D., Wilson, L., and **Cullinan, M.**, Membrane and Plate Mechanical Model Effects on Linearity in MEMS Microphones" Hilton Head Workshop 2022: A Solid-State Sensors, Actuators and Microsystems Workshop, Hilton Head, SC, June 8, 2022.

48. *Groh, B., Connolly, L., and **Cullinan, M.** "Design of a Polariscope Tool for the Evaluation of Strain in Roll-to-roll Nanofabrication." Proceedings of the American Society for Precision Engineering, Minneapolis, MN, November 4, 2021.

47. *Connolly, L. and **Cullinan, M.** "In-line Applications of Atomic Force Microscope Based Topography Inspection for Emerging Roll to Roll Nanomanufacturing Processes." SPIE Advanced Lithography Conference (Virtual), February 22, 2021

46. *Connolly, L., Natinsky, E., Khusnatdinzov, N., Jones, C., Mizuno, M., Meissl, M., Choi, J.; LeBrake, D., **Cullinan, M.** "The Role of Visualization and Error Correction in Very Large Area, Tip-based Topography Measurement." Proceedings of the American Society for Precision Engineering, Minneapolis, MN (Virtual), October 20, 2020.

45. *Connolly, L., and **Cullinan, M.** "Towards Embedded High-Speed Control for Dynamic Tip-Based Nanometrology in Roll-To-Roll Manufacturing." Proceedings of the American Society for Precision Engineering, Pittsburgh, PA, October 28, 2019.

44. *Cayll, D., Ladner, I., Cho, J., Saha, S., and **Cullinan, M.** "MEMS Dynamic Mechanical Analyzer for In Situ Viscoelastic Characterization of 3D Printed Microstructures." Proceedings of the American Society for Precision Engineering, Pittsburgh, PA, October 28, 2019.

43. *Behera, D., and **Cullinan, M.** "Addressing Precision Challenges to Fabricate 3D Parts Using Microscale Selective Laser Sintering." Proceedings of the American Society for Precision Engineering, Pittsburgh, PA, October 28, 2019.

42. *Ward, M., and **Cullinan, M.** "Wafer Scale Exfoliation of Monocrystalline Micro-Scale Silicon Films." Proceedings of the American Society for Precision Engineering, Pittsburgh, PA, October 28, 2019.

41. *Cayll, D., Ladner , I., Hyung C., and **Cullinan, M.**, "MEMS-based Graphene Resonant Gas Sensor for Health Monitoring." *Proceedings of the American Society for Precision Engineering*, Las Vegas, NV, November 7, 2018.

40. *Ladner, I, Cho, J., Cayll, D., Nguyen, V., **Cullinan, M.**, and Saha, S. "Mechanical Characterization of Additively Manufactured Microstructures using a Process Integrated MEMS Tensile Tester." Solid-State Sensors, Actuators and Microsystems Workshop Hilton Head, SC, June 6, 2018.

39. *Yao, T-F., and **Cullinan, M.**, "Large Area Inspection Using a Multi-point, Tip-Based Nanometrology System." *Proceedings of the American Society for Precision Engineering*, Charlotte, NC, October 31, 2017.

38. *Connolly, L., and **Cullinan, M.**, "In-Line, Tip Based Nanometrology for Roll-to-Roll Manufactured Materials and Electronic Devices." *Proceedings of the American Society for Precision Engineering*, Charlotte, NC, October 31, 2017.

37. *Ward, M., and **Cullinan, M.**, "Wafer Scale Exfoliation of Monocrystalline Micro-Scale Silicon Films." *Proceedings of the American Society for Precision Engineering*, Charlotte, NC, October 31, 2017.

36. *Zhao, C., Ladner, I., Song, A., Hopkins, J., and **Cullinan, M.**, "Design and Modelling of a Bidirectional MEMS Thermal Actuator." *Proceedings of the American Society for Precision Engineering*, Charlotte, NC, October 31, 2017.

35. *Cho, J., Ladner, I., Hong, N. and **Cullinan, M.** "Design and Fabrication of a Strain-Based Tunable Graphene NEMS Resonator." Napa Microsystems Workshop, Napa, CA, August 22, 2017.

34. *Yuksel, A, Yu, E., Murthy, J., and **Cullinan, M.** "Analysis of Near-Field Thermal Energy Transfer within Nanoparticles." SPIE Optics + Photonics, San Diego, CA, August 9, 2017.

33. *Roy, N. and **Cullinan, M.**, "Design of a Flexure Based XY Precision Nanopositioner with a Two Inch Travel Range for Micro-Scale Selective Laser Sintering." American Society for Precision Engineering, Portland, OR, October 26, 2016.

32. *Duenner, A., DeHoyos, B., Gonzales, M., Riojas, N., and **Cullinan, M.**, "Low-Cost, Automated Wafer Handling System for High-Throughput Nanometrology." American Society for Precision Engineering, Portland, OR, October 26, 2016.

31. *Cho, J., Sun, G., and **Cullinan, M.** "A Method to Manufacture Repeatable Graphene-Based NEMS Devices at the Wafer Scale." ASME Manufacturing Science and Engineering Conference, Blacksburg, VA, June 27, 2016.

30. Sun, G., Cho, J, and **Cullinan, M.**, "Design and Fabrication of a Highly Tunable Graphene-Based Nanoelectromechanical Resonator System." Solid-State Sensors, Actuators, and Microsystems Workshop, Hilton Head, SC, June 8, 2016.

29. *Yao, T-F. and **Cullinan, M.** "In-line, Wafer-Scale Inspection in Nano-Fabrication Systems." Proceedings of the American Society for Precision Engineering, Austin, TX, November 5, 2015.

28. *Duenner, A. and **Cullinan, M.** "Passive Semiconductor Wafer Alignment Mechanism to Support In-line Atomic Force Microscope Metrology." Proceedings of the American Society for Precision Engineering, Austin, TX, November 5, 2015.

27. *Roy, N. and **Cullinan, M.** "Design of the Powder Spreading System and the Powder Bed Actuation." International Solid Freeform Fabrication Symposium, Austin, Texas, August 11th, 2015.

26. Ladner, I. and **Cullinan, M.** " Design of a Multi-Axis MEMS Force Sensor for Evaluating the Effectiveness of Drug Coatings for Implantable Devices." Workshop on Enabling Nanofabrication for Rapid Innovation, Napa, CA, August 22, 2015.

25. Ladner, I., Sun, J., and **Cullinan, M.** "Design and Fabrication of a MEMS Transducer for In-Situ Force Spectroscopy of CVD Growth Processes." Transducers 2015, Anchorage, AK, June 22, 2015.

24. *Ladner, I. and **Cullinan, M.** "Localized Growth and Force Detection of Carbon Nanotubes on Multi-axis MEMs Sensor." Proceedings of the American Society for Precision Engineering, Boston, MA, November 11, 2014.

23. Ladner, I. and **Cullinan, M.**, "Direct Printing of Carbon Nanotubes: Tool Design and Fabrication." Solid-State Sensors, Actuators, and Microsystems Workshop, Hilton Head, SC, June 8, 2014.

22. **Cullinan, M.** and Gorman, J., "Transfer-Free, Wafer-Scale Fabrication of Suspended Graphene Nanoelectromechanical Structures." Workshop on Enabling Nanofabrication for Rapid Innovation, Napa, CA, August 20, 2013

21. **Cullinan, M.** and Gorman, J., "Transfer-Free, Wafer-Scale Manufacturing of Graphene-Based Nanoelectromechanical Resonant Devices." Workshop on Nano and Micro Manufacturing, Dearborn, MI, May 22, 2013.

20. **Cullinan, M.** and Gorman, J., "Transfer-Free, Wafer-Scale Fabrication of Graphene-Based Nanoelectromechanical Resonators." Microsystems for Measurement and Instrumentation, Gaithersburg, MD, May 14, 2013.

19. **Cullinan, M.** and Gorman, J. "Transfer-Free, Wafer-scale Manufacturing of Graphene-Based Nanoelectromechanical Resonant Devices." NIST Sigma Xi 20th Annual Postdoctoral Poster Presentation, Gaithersburg, MD, February, 27, 2013.

18. **Cullinan, M.** and Culpepper, M. "Carbon Nanotube-Based Piezoresistive Transducers for MEMS Sensing Applications." Solid-State Sensors, Actuators, and Microsystems Workshop Hilton Head, SC, June 6, 2012.

17. **Cullinan, M.** and Culpepper, M. "Noise Mitigation Techniques for Carbon Nanotube-Based Piezoresistive Sensor Systems." 2010 Fall Meeting of the Materials Research Society, Boston, MA, December 1, 2010.

16. Gafford, J., Panas, R., **Cullinan, M.**, and Culpepper, M. "Design principles and Best Practices for Rapid Prototyping of Meso- and Micro-scale Flexures via Micromilling." 2010 Annual Meeting of the American Society for Precision Engineering, Atlanta, GA, November 2, 2010.

15. **Cullinan, M.**, Panas, R., Garcia, L., and Culpepper, M. "Carbon Nanotube-Based Sensors for Small-scale Force and Displacement Sensors." 2010 Annual Meeting of American Society for Precision Engineering, Atlanta, GA, November 2, 2010.

14. **Cullinan, M.** and Culpepper, M. "Carbon Nanotube-Based Piezoresistive MEMS Sensors." De Florez Award Competition, Cambridge, MA, May 5, 2010. (2nd Place)

13. **Cullinan, M.**, Panas, R., and Culpepper, M. "CNT-Based Piezoresistive MEMS Sensors." MIT Manufacturing Summit, Cambridge, MA, April 22, 2010.

12. Panas, R., **Cullinan, M.**, and Culpepper, M. "Design of Multi-Axis MEMS Force Sensors." MIT Manufacturing Summit, Cambridge, MA, April 22, 2010.

11. **Cullinan, M.**, Panas, R, and Culpepper, M. "Design of Micro-Scale Multi-Axis Force Sensors for Precision Applications." 2009 Annual Meeting of the American Society for Precision Engineering, Monterey, CA, October 4, 2009.

10. **Cullinan, M.**, Panas, R., and Culpepper, M. "CNT Printing with Force Feedback." MIT Manufacturing Summit, Cambridge, MA, April 23, 2009.

9. **Cullinan, M.** and Culpepper, M. "Controlling the Stiffness of Carbon Nanotube-Based Compliant Mechanisms." MIT Manufacturing Summit, Cambridge, MA, September 28, 2007.

8. **Cullinan, M.**, DiBiasio, C., Panas, R. and Culpepper, M. "Modeling and Design of Carbon Nanotube-Based Compliant Mechanisms." MIT Manufacturing Summit, Cambridge, MA, September 28, 2007. (First Prize)

7. **Cullinan, M.** and Culpepper, M. "Controlling the Stiffness of Carbon Nanotube-Based Compliant Mechanisms." MIT Precision Engineering Center Open House, Cambridge, MA, August 15, 2007.

6. **Cullinan, M.,** Ward, M., and MacDonald, N. "Porous Nanostructured Titania." 2005 Swarthmore Summer Research Convocation, Swarthmore, PA, October 10, 2005.

5. **Cullinan, M.**, Ward, M., and MacDonald, N. "Porous Nanostructured Titania." 2005 NNIN REU Convocation, Stanford University, August 12, 2005.

4. **Cullinan, M.**, Ward, M., and MacDonald, N. "Porous Nanostructured Titania." 2005 University of California - Santa Barbara Summer Research Convocation, Santa Barbara, CA, August 3, 2005.

3. **Cullinan, M.**, Hafiz, J., Wang, X., Mukherjee, R., McMurry, P., Heberlein, J., and Girshick, S. "Analysis of Superhard Nanostructured Thin Films." Swarthmore Summer Research Convocation, Swarthmore, PA, November 8, 2005.

2. **Cullinan, M.**, Hafiz, J., Wang, X., Mukherjee, R., McMurry, P., Heberlein, J., and Girshick, S. "Analysis of Superhard Nanostructured Thin Films." University of Minnesota Summer Research Convocation, Minneapolis, MN, August 10, 2004.

1. **Cullinan, M.**, Hafiz, J., Wang, X., Mukherjee, R., McMurry, P., Heberlein, J., and Girshick, S. "Analysis of Superhard Nanostructured Thin Films", University of Minnesota Department of Mechanical Engineering Summer Research Summit, Minneapolis, MN, August 10, 2004.

FEATURED ARTICLES

1. ThomasNet, "Engineers Look to Transform Semiconductor Production with 3D Printing." December 22, 2025. https://www.thomasnet.com/insights/semiconductor-manufacturing-3d-printing/

2. 3D Natives, "UT Austin Unveils New 3D Printing Method for Advanced Electronics." December 17, 2025. https://www.3dnatives.com/en/researchers-unveil-3d-printed-chip-packages-that-could-transform-semiconductor-manufacturing-10122025/

3. Electronics360, "3D printing method enables faster, more efficient chipmaking." December 10, 2025. https://electronics360.globalspec.com/article/23145/3d-printing-method-enables-faster-more-efficient-chipmaking

4. Tech Briefs, "Revolutionizing the Production of Semiconductor Chips." December 9, 2025. https://www.techbriefs.com/component/content/article/54361-revolutionizing-the-production-of-semiconductor-chips

5. 3D Printing Industry, "New 3D Printing Method for Electronics." December 9, 2025. https://3dprintingindustry.com/news/new-3d-printing-method-for-electronics-247163/

6. UT News, "3D Printed Chip Packages Could Supercharge Semiconductor Manufacturing." December 3, 2025. https://news.utexas.edu/2025/12/03/3d-printed-chip-packages-could-supercharge-semiconductor-manufacturing/

7. Texas Mechanical Engineer Magazine, "Chipping In: The Future of Semiconductor Science." February 15, 2025

8. Texas Engineer Magazine, "Chips Ahoy: Texas is the capital of the U.S. semiconductor revolution and UT the engine behind it." January 15, 2025. https://magazine.engr.utexas.edu/2024/chips-ahoy

9. Cockrell School of Engineering. "New Semiconductor Master's Program Will Offer Hands-on Experience in Rapidly Growing Industry" March 20, 2024. https://cockrell.utexas.edu/news/archive/9822-new-semiconductor-masters-program-will-offer-hands-on-experience-in-rapidly-growing-industry

10. American Society of Mechanical Engineering. "Getting Closer to the Ability to 3D Print Tiny Structures." June 29,2023

11. Cockrell School of Engineering. "New Nanoscale 3D Printing Technique Could Solve Vexing Bottlenecks in High-Throughput Nanomanufacturing", November 3, 2022. https://cockrell.utexas.edu/news/archive/9585-new-nanoscale-3d-printing-technique-could-solve-vexing-bottlenecks-in-high-throughput-nanomanufacturing

12. Nature Microsystems and Nanoengineering. "A method for microscale metal 3D Printing", December 30, 2019.

13. Sensors Magazine. "Rising Star Engineer Rounds The Bases When It Comes To Research And Discovery." August 4, 2017.

14. Nanotechweb.org "In Depth" featured article. "Controlling Carbon Nanotube Geometry via Tunable Process Parameters." October 13, 2008.

PATENT FILINGS

18. Fan, Y. and **Cullinan, M.** "Spatiotemporally Modulated MEMS Device for Acoustic Signal Routing," U.S. Provisional Patent Application, filed September 2, 2026

17. Sreenivasan, S., Ajay, P., Sayal, A., Mcdermott, M., Singhal, S., Abed, O., Dunn, L., Goyal, V., and **Cullinan, M.**, "Heterogeneous Integration of Components onto Compact Devices using Moiré Based Metrology and Vacuum Based Pick-and-Place," Patent Number: 12,308,275, Award Date: May 20, 2025.

16. Sreenivasan, S., Ajay, P., Sayal, A., Mcdermott, M., Singhal, S., Abed, O., Dunn, L., Goyal, V., and **Cullinan, M.**, "Heterogeneous Integration of Components onto Compact Devices using Moiré Based Metrology and Vacuum Based Pick-and-Place," Patent Number: 12,009,247, Award Date: June 11, 2024.

15. Cullinan, M. and Bae, K. "Systems and Methods for Three-Dimensional Conductive Networks by Two Photon Photoreduction" U.S. Provisional Patent Application 64/072,461, filed May 22, 2026

14. Ekoi, E., **Cullinan, M.**, and Kovar, D. "Systems and Methods for Producing Masks with Microscale Features in Patterned Films" U.S. Provisional Patent Application No. 63/880,615, filed September 12, 2025

13. Meade, R., and **Cullinan, M.** "Co-Packaged Optics Photonic Connector," U.S. Provisional Application No. 63/773,750, filed on March 18, 2025

12. Sessler, J., Page, Z. **Cullinan, M.**, Mason, K., and Huang, D. "3D Printed Porous Supramolecular Sorbents." U.S. Provisional Application No. 63/531,908, filed on August 10, 2024 (Licensed to Supra Elemental Recovery)

11. Sainaghi, P., Gray, A., Luo, C., **Cullinan, M.** and Hopkins, J. "Mechanical Neural Network Driven by Flexure-Based, Meso-Scale, Bi-Directional Thermal Actuators." U.S. Provisional Application No. 63/678,886, filed on August 2, 2024

10. **Cullinan, M.**, Chang, C., Page, Z. and Menon, R. "Simultaneous Volumetric 3D Printing of Multi-Material Conductive and Insulating Nanostructures using Holographic Metasurface Nanolithography," U.S. Patent Application No. 63/658,163, filed on June 10, 2024. (Licensed to Texas Microsintering)

9. Saha, S., Panas, R., **Cullinan, M.**, and Ladner, I., "Microscale sensors for direct metrology of additively manufactured features." Patent Number 10,451,539, Award Date: October 22, 2019.

8. **Cullinan, M.**, Cho, J., Cayll, D., and Ladner, I., "Graphene Microelectromechanical System (MEMS) Resonant Gas Sensor." Patent Number: 11228294, Award Date: January 18, 2022. (Licensed to Deep Breath Inc.)

7. **Cullinan, M.**, and Connolly, L., "Coupled Multiscale Positioning of Arrays of Parallel, Independently Actuated and Simultaneously Driven Modular AFM Probes for Nanoscale Measurement of Flexible, Large Area, and Roll-to-Roll Processes." Patent Number: 10,649,003, Award Date: May 12, 2020. (Licensed to ICSPI Inc.)

6. **Cullinan, M.**, Roy, N., Yuksel, A., and Foong, C.S. "Micro-Selective Sintering Laser Systems and Methods Thereof," Patent Number: 10,722,947, Award Date: July 22, 2020 (Licensed to Texas Microsintering)

5. **Cullinan, M.**, Yuksel, A., and Roy, N., "Modeling of Nanoparticle Agglomeration and Powder Bed Formation in Microscale Selective Laser Sintering Systems," Application Number: 15/475,807, Filing Date: March 31, 2017 (Licensed to Texas Microsintering)

4. Sreenivasan, S., Ajay, P., Sayal, A., Mcdermott, M., Singhal, S., Abed, O., Dunn, L., Goyal, V., and **Cullinan, M.**, "Heterogeneous Integration of Components onto Compact Devices using Moiré Based Metrology and Vacuum Based Pick-and-Place," Patent Number: 11,469,131, Award Date: October 11, 2022. (Licensed to: Silicon Metamaterials, Inc.)

3. **Cullinan, M.** and Duenner, A., "Systems and Methods for Passive Alignment of Semiconductor Wafers," Application Number: US16/60236, Filing Date: November 3, 2016 (Licensed to ICSPI Inc.)

2. **Cullinan, M.** and Yao, T.F., "A Plurality of Sensing Probes," Application Number: US16/60235, Filing Date: November 3, 2016 (Licensed to ICSPI Inc.)

1. **Cullinan, M.** and Yao, T.F, Duenner, A., "Metrology Devices for Rapid Specimen Setup," Patent Number: 10,712,364, Award Date: July 14, 2020 (Licensed to ICSPI Inc.)

TEACHING EXPERIENCE

ME338: Machine Elements - Fall 2013, Spring 2014, Fall 2014, Spring 2017, Spring 2018, Spring 2019, Summer 2019, Spring 2020, Summer 2020, Spring 2021, May 2024

- Core junior level course including the design and analysis of mechanical systems using both analytical methods and CAD modeling
- Developed a new project for the course that involves the design and fabrication of an RC car using the analysis tools developed in the course

ME397: Precision Machine Design - Spring 2015, Spring 2016, Spring 2017, Spring 2018, Fall 2018, Fall 2019, Fall 2020, Fall 2022, Fall 2023, Fall 2024

- Graduate level course including the design and analysis of precision mechanical systems using both analytical methods and CAD modeling
- Develop tools for modeling error motions in mechanical systems
- Students design, build, and measure the error motions of a desktop lathe over the course of the semester

ME350: Machine Tool Operation for Engineers - Fall 2015, Fall 2016, Fall 2017, Fall 2018, Spring 2019, Fall 2019, Spring 2020, Fall 2020, Spring 2021, Fall 2022, Fall 2023, Spring 2024, Fall 2024, Spring 2025

- Undergraduate level elective course including the principles of machine tool operation, the role of machine tools in manufacturing and manufacturing systems
- Develop hands on skills in using manual and CNC machine tools
- Students build several complex parts from raw materials in accordance with tight tolerance specifications

ME266K: Senior Design (Project Advisor) - Fall 2013, Spring 2014, Fall 2014, Spring 2015
Fall 2015, Spring 2016, Fall 2016, Spring 2017, Summer 2017, Fall 2017, Spring 2018, Fall 2018, Spring 2019, Fall 2019, Spring 2020, Summer 2020, Fall 2020, Spring 2021, Fall 2021, Spring 2022, Fall 2022, Spring 2023, Fall 2023, Spring 2024, Fall 2024, Fall 2026

1. "Design of a Stapleless Paper Stapler", Phillip Le, Michael Lowder, Mr. Dan Nguyen; Fall 2013
2. "NASA Telescope Focuser" Hanna Yancy, Eric Bishop, Jared Imm, Chelsea Kaplun; Spring 2014
3. "NASA Enclosure", Karina Bonin, Richard North, James Kendrick, Vineet Raman; Spring 2014
4. "Collector for Electrospinning of Nano Fibers", John Kramer, Li He, Luke Nicolini, Keh Farn Tan; Spring 2014
5. "O-Ring Groove Designs for Face Seals" Federico Cueva, Daniel Carrizales, Arnold Hechanova, Javier Martinez; Spring 2014
6. "Wheelchair Mount for iPhone or iPad" Colton Kolaja, Patrick Creamer, Trinidad Gaytan, Spencer Huble; Spring 2014
7. "Design and CAD Validation of a Novel Shutter System for an Infrared Camera" Mason Davidson, Logan Herbort, Leland Konstanty, David Strickland; Spring 2014
8. "Design of a Single Turn Multi-valve System" Cody Rigg, Kathyn Leahy, William Rogers, Nurbolat Yerlanov; Fall 2014
9. "Static Friction in Telescopes" Austin Davis, Greg Kline, Mathew Nagle, Jillian Wurz; Fall 2014
10. "Trunnion Ball Valve Bearing Redesign" Hannah Jones, Jonathan Parsons, Enakshi Wikramanayake, Nuryasmin Yusri; Spring 2015
11. "Metal Seal Acceptance Criteria Basis and Testing" Rose Anthraper, Mudeer Habeeb, Harun Hersi, Seyedsiavash Zamani; Spring 2015
12. "Design of an excel based design/calculation macro and prototype assemblies" Maimouna Diop, Maimouna Diop, Luis Alejandro Arias, Robert Noriega; Fall 2015
13. "Design of a Rotating Sonar Test Structure" Brittany Barker, Adam Bowers, Wynn Cary, Blake Hamilton; Spring 2016
14. "Design of a Glove Cut Resistance Demonstration Device" Claire Campbell, Monica Karlins, Eder Medina, Thomas Myers; Spring 2016
15. "Design of a High Frequency Torque Sensor for Drilling Rigs" Eishaan Gakhar, Matthew Howsmon, Kent Jaco, Kevin Kuney; Spring 2016
16. "Automation of Wafer Handling to Support In-Line Metrology in Semiconductor Manufacturing" Bruno De Hoyos, Andrew Duenner, Marianna Gonzales, Nathan Riojas, Spring 2016
17. Applied Materials - Luis Machado, Matthew Milan, Andrew Myers, Austin Simon; Fall 2016
18. Provenance - Matthew Ashorn, Ashley Gripka, Kyle Ray, McKenzie Teeters; Fall 2016
19. "Design of Automatic Push-Button, Self-Wringing Microfiber Sponge" Yu-Chuen Chang, Eysa Lee, Eley Ng, Tram Nguyen, Adam Pettinger, Spring 2017
20. Dell Inc. - Yu-Chuen Chang, Olisemeke Amudo, Parker Blome, Nicholas Esrock, Hayden Messamore, Spring 2017
21. "Design of a Progressive Cavity Pump Element Core Deflection Measurement Tool" - Adrian Hawk, Madhukar Mantravadi, Camilo Neira, Mihail Stiurca, Summer 2017
22. "Design of PCP Elastomer Internal Diameter Measurement Tool" - Jack Beadle, Christopher Bellows, Wesam Khawaji, Dillon Schmidt, Summer 2017
23. "Design of Flange Seal Setup" - Andre Abraham, Christian Benjamin, Neel Bhatt, Diego Hernandez, Summer

2017
24. "Design of Six DOF Robotic Manipulator" - Hammad Afzal, John Griffith, Michael Hentrich, Ryan Menz, Summer 2017
25. "Accessory Mounting System for Picatinny Rail" - Jessie Baicy, Kyle Lottinville, Kevin Oram, Marc Pichon, Fall 2017
26. "Design of Internal Wind Turbine Hoisting Device for Lifting Parts and Tools" - Arturo Cantu-Chavez, Emily Crowell Yuen, Forrest Hopkins, Megan Wooley, Fall 2017
27. "Gland Redesign for a Dynamic O-Ring Sealing Assembly" - Derek Orji, Kevin Song, EJ Uzor, Fall 2017
28. "Development of Single Axis Solar Tracker for Solar Soiling Measurement" - Ryan Clegg, Peter Haloulos, Adil Moosani, John Vorsten, Fall 2017
29. "Tension Control in Roll-to-Roll Nanometrology" - Ribka Balakrishnan, Alexia Bohannon, Sophia Davis, Breanna Simpson, Spring 2018
30. "Design of Optical Polarizer Mount" - Benjamin Graber, Viola Holman, Charles Tindall, Sara Witz, Spring 2018
31. "Automated Manufacturing Technologies" - Michael Bettati, Ezekiel Hsieh, Allison Huynh, Vaidehi Narayan, Spring 2018
32. "Design of Modular Tool Connection Device for Teleoperated Robotic Manipulator" - Luis Fernandez, Andrea Gibke, Chao An Huang, Andy Yi, Spring 2018
33. "Design of Interchangeable Steering Wheel for FSAE Racecars" - Frederick Cook, Kyle Scott, Evan Thomason, Spring 2018
34. "Design of One-Wheeled Pull Behind Motorcycle Trailer" - Kielor Bjerga, Benjamin Summers, Tina Tran, Annie Ung, Spring 2018
35. "Design and Execution of Flange Seal Experiments" - Christopher Palmer, Mohammd Radwan, Blake Simon, Matthew Webb, Spring 2018
36. "Adjustable Center of Gravity Rack Loading Mechanism" - Paulo de Souza, Justin Liu, Matthew Millman, and Ahmed Wael, Fall 2018
37. "Design of the Punching Pillow" - Levi Downing, Patrick Lyons, Evan McCall, Trevor Taimuty, Fall 2018
38. "Development of Warm Body Simulator Bio-Chamber" - Samuel George Barre, William Paul McNulty, Kyle Thompson Prochazka, Benjamin Michael Rindler, Spring 2019
39. "Design of Disk Pump Water Processing System for Underserved Communities" - Nicolas Cole Baker, Kevin Michael Debes, Bernardo Manuel Miranda, Emmanuel Chukwuma Okeke
40. "Efficiency Improvement of Piñata Manufacturing Process" - Keerat Kaur Baweja, Desirae C. Friesenhahn, Shelby Nicole Rose, Steven Salazar, Spring 2019
41. "Design of Positioning Metrology Setup for Microscale Selective Laser Sintering" - Keith Waikit Chan, An V. Chung, William Lu, Brian David Yeang, Spring 2019
42. "Design of Sweet Potato Cuber" - Maneill Manish Parekh, Paul Robert Reid, Zacharias Edwin Shepard, Justin Peter Tabarini, Spring 2019
43. "Digital Image Correlation for Measurement of Microscale Strain Fields" - Alexander Eugene Choi, Christopher C. Easterby, Dylan Cody Lee, Salem Shou-Hsin Long, Spring 2019
44. "Design of Reciprocating Dynamic Test Fixture" - Denise Lin, Arvind K. Ramachandra, Bjorn Michael Rose, Yuke Zhao, Spring 2019
45. "Design of a Test Setup for Polymer Barrier Rings" - Jose De La Garza Evia, Elizabeth MacNary, Mitchell Sommer, Ivan Villalobos, Fall 2019
46. "Fixture for Display Measurements of Notebook Devices" – Sophie Belton, Martin Pham, Harrison Schmidt, Kevin Yu, Fall 2019
47. "Design of a Neutron Radiography Robotic Positioning System" – James Calcagnini, Cruz Delgado, Jorge Rosales, Kyungsup Lee, Fall 2019
48. "Generative Design of Two Degree-of-Freedom Nanopositioning System" – Michal Bennett, Spencer Everson, Prapti Ghiya, Ryan Rhodes, Spring 2020
49. "Automated Curvature Correction of Energy Meter Locking Rings" – Harrison Frende, Christine Lin, Morgan Sherry, Mick Yoon, Spring 2020
50. "Gravitational Energy Storage" – Matthew Ho, Pierce Kotarski, Clay McPherson, John Mellinger, Spring 2020
51. "Mechanical Flight Acceleration Switch (FAS)" – Robert Durfee, Garrett Evanston, Brett Lester, Paul Yeric, Spring 2020
52. "Fatigue Testing with Corrosive Fluid" – Nicholas Cheesman, Jessica Nifong, Riley Orr, Austin Wyatt, Spring 2020
53. "Design of Experiments to Test Polymer Barrier Rings" – Anya Bezprozvanny, Patrick Fanning, Matthew Favre, Gabrielle Montemayor, Spring 2020
54. "Development of a VBA Macro for the Design of Miniature Springs" - David Mogilevsky, Keegan Morrison, Isabela Ramos Lacourt, John Tanir, Spring 2020
55. "Design of a Cyclic Rapid Sample Transfer System"- Shreya Dhar, Eric Sanchez, Brian Tulaba Jr., Uksang Yoo, Spring 2020
56. "Design of a Flexure Based Spherical Joint for Alignment of a Voice Coil Actuator" - Thiago de Sousa Burgani, Thomas Madden, Kyle Massey, Jordin Perry, Spring 2020

57. "Design and Computational Modeling of Acoustic Metamaterials" – Gehan Jayatilaka, Neil McHenry, Michael Phan, Rohit Swaminathan, Spring 2020
58. "Generation/Validation of Modified Geometries for Micro-SLS Pattern Correction" – Bonnie Chan, Seokpil Kim, Daniel Liao, Siobhan Miwantani-Minter, Summer 2020
59. NASA Mount, Fall 2020
60. SLB Springs, Fall 2020
61. UTME Damping, Fall 2020
62. UTME Nanopositioner, Fall 2020
63. UTME Implant, Spring 2021
64. NASA Dryer, Spring 2021
65. TCME Motorboat, Spring 2021
66. UTME Nanopositioner, Spring 2021
67. UTME Damping, Spring 2021
68. DayLyte Membrane, Spring 2021
69. Team Vosseller, Spring 2021
70. SLB ROP, Spring 2021
71. SLB Springs, Spring 2021
72. UTME NanoStim, Spring 2021
73. UTME Implant, Summer 2021
74. LaLa, Fall 2021
75. Unravl, Fall 2021
76. UT-NETL, Spring 2022
77. CesiumAstro Antenna, Spring 2022
78. CesiumAstro Gimbal, Spring 2022
79. UTME Dust, Spring 2022
80. UTME Coating, Spring 2022
81. UTME Profilometer, Spring 2022
82. UTME Spinner, Spring 2022
83. Cameron, Fall 2022
84. Harmonic Bionics, Fall 2022
85. UTME Stiffness, Spring 2023
86. ClearCam, Spring 2023
87. UTME Printer, Spring 2023
88. UTME Microscope, Spring 2023
89. UTME Metamaterial, Spring 2023
90. UTME MEMS, Spring 2023
91. UTME EcoCAR, Spring 2023
92. UTME AFM, Spring 2023
93. UT CAMDI, Spring 2023
94. SLB Geometry, Spring 2023
95. Revsource, Fall 2023
96. Samsung, Fall 2023
97. UTME Conductivity, Spring 2024
98. SLB DFM, Spring 2024
99. TIW Respirator, Spring 2024
100. MISUMI USA, Fall 2024
101. Supra Elemental Recovery – Designing and Scaling Critical Mineral Recovery Systems, Fall 2026
102. Supra Elemental Recovery – Designing & Scaling Systems to Recover High-Purity Gallium from Industrial Waste, Fall 2026

UGS 303: How Things Work
- Guest lecture on semiconductor manufacturing processes

ME 302: Introduction to Engineering Design and Graphics
- Guest lecture on geometric dimensioning and tolerancing

2.72: Elements of Mechanical Design at MIT (Teaching Assistant)
- Responsibilities: Advising students on class project (design of a desktop lathe), helping students measure runout of lathe spindle and crossfeed, teaching lab component of class, designing and fabricating setup to measure runout of lathe spindle and crossfeed

GRADUATE RESEARCH STUDENTS SUPERVISED

Ph.D. Students Graduated (18):

1. Daniel Moser, "Multi-Scale Computational Modeling of Selective Laser Sintering for Process Improvements" Ph.D. Student; University of Texas at Austin; 2015 – 2017

2. Anil Yuksel, "Modeling of the Microscale Selective Laser Sintering Process," Ph.D. Student; University of Texas at Austin; 2014-2017

3. Nilabh Roy, "Design of a Nanoscale Selective Laser Sintering System," Ph.D. Student; University of Texas at Austin; 2014-2018.

4. Tsung-Fu Yao, "Large-Area Probe-based Metrology Systems of Nanomanufacturing Applications," Ph.D. Student; University of Texas at Austin; 2014-2018.

5. Ian Ladner, "Mechanical Characterization of Two-photon Polymerization Submicron Features," Ph.D. Student; University of Texas at Austin; 2013-2018.

6. Joon Hyong Cho, "Wafer-scale fabrication of Graphene-based Nanoelectromechanical Resonators," Ph.D. Student; University of Texas at Austin; 2014-2019.

7. Martin Ward, "Wafer Scale Exfoliation of Single Crystal Silicon Thin Films for Flexible Electronics," Ph.D. Student; University of Texas at Austin; 2015-2020

8. Liam Connolly, "Design of a Roll-to-Roll Tip-based Nanometrology System," Ph.D. Student; University of Texas at Austin; 2016 – 2022

9. Dipankar Behera, "Additive Manufacturing of 3D Parts with Microscale Resolutions," Ph.D. Student; University of Texas at Austin; 2018-2022

10. Obehi Dibua, "Analysis and Modeling of the Sintering Mechanism in Microscale Selective Laser Sintering." Ph.D. Student; University of Texas at Austin; 2018 – 2022

11. David Cayll, ""Multilayer Graphene-based Capacitive Micromachined Ultrasonic Transducer Design, Manufacturing, and Characterization"." Ph.D. Student; University of Texas at Austin; 2017 – 2023

12. Chenyang Luo, "Mechanical Metamaterials with Tunable Stiffness," Ph.D. Student; University of Texas at Austin; 2018-2023

13. Joshua Grose, "Multi-Scale Simulation of Heat Affected Zone Development and Part Formation in a Microscale Selective Laser Sintering System," Ph.D. Student; University of Texas at Austin; 2018-2024

14. Barbara Groh, "Integration of Atomic Force Microscopy for In-Line Inspection Within R2R Nanopattern Manufacturing of 3D Holographic Structures" Ph.D. Student; University of Texas at Austin; 2020-2025

15. Aaron Liao, "Multilayer Part Fabrication in a Microscale Selective Laser Sintering System" Ph.D. Student; University of Texas at Austin; 2020-2025

16. Eva Natinsky, "Three-Dimensional Visualization and Modeling of Large-Area, Nanoscale Topography Measurements" Ph.D. Student; University of Texas at Austin; 2020-2025

17. Xiangyu (Sean) Gao, "Additively Manufactured Dual-Scale Triply Periodic Minimal Surface Structures for Modular Ion Capture of Critical Elements", Ph.D. Student; University of Texas at Austin; 2023-2026

18. Farzana Tasnim, "Predictive Process Control in Microscale Selective Laser Sintering: Physics-Informed Scaling, Deep Learning, and Spatial Optimization for Copper Nanoparticles," Ph.D. Student; University of Texas at Austin; 2022-2026

Masters Students Graduated (24):

1. Guoao Sun, "Design and Fabrications of Tunable Graphene Resonators," Masters Student; University of Texas at Austin; 2014-2016.

2. Martin Ward, "Wafer Scale Exfoliation of Single Crystal Silicon Thin Films for Flexible Electronics," Ph.D. Student; University of Texas at Austin; 2015-2018

3. Chang Zhao, "Design and Fabrication of a Multi-Directional MEMS Thermal Actuator," Master's Student; University of Texas at Austin; 2016-2018

4. Dipankar Behera, "Design of a Multilayer Slot Die Coating System," Master's Student; University of Texas at Austin; 2016-2018

5. Tiffany Varughese, "A Novel Surgical Tool for Stimulation Paddle Delivery to the Dorsal Root Ganglion of the Spine", Master's Student; University of Texas at Austin; 2016-2018

6. Obehi Dibua, "Simulation, Experimentation and Calibration of Nanoparticle Sintering for a Microscale Selective Laser Sintering Process", Master's Student; University of Texas at Austin; 2016-2018.

7. Sridharan Thirumalai, "Optimization of a Multi-Axis Nanopositioning Stage", Master's Student; University of Texas at Austin; 2016 – 2019

8. Liam Connolly, "Design of a Roll-to-Roll Tip-based Nanometrology System," Master's Student; University of Texas at Austin; 2016 – 2019

9. Nicholas Piacente, "Fabrication and Testing of a Graphene-based Gas Sensor," Master's Student; University of Texas at Austin; 2017 – 2020

10. Joshua Grose, "Simulation and Characterization of Nanoparticle Thermal Conductivity for a Microscale Selective Laser Sintering System", Master's Student; University of Texas at Austin; 2018 – 2021

11. Eva Natinsky, "Three-dimensional Visualization and Modeling of Large-area, Nanoscale Topography Measurements," Master's Student; University of Texas at Austin; 2019 – 2022

12. Barbara Groh, "Development of a Tool for the Analysis of Photoelastic Properties of Polymer Substrates for the Purpose of Improving Metrology in Roll-to-Roll Nanofabrication", Master's Student; University of Texas at Austin; 2020 – 2022

13. Makenna Hayes, "Analysis of Polymeric Based Electrodes Coated with Metallic Thin Films for Biopotential Applications", Master's Student; University of Texas at Austin; 2020 – 2022 5/2022

14. David Spitler, "A Novel Method of Inter- and Intra-Building Package Transport Created within a Startup Ecosystem", Master's Student; University of Texas at Austin; 2020 – 2022

15. Eric Spitler, "Application of a Time Series Analysis to Characterize a Company Based on Stock Performance", Master's Student; University of Texas at Austin; 2020 – 2022

16. Aaron Liao, "Design and Characterization of a Coating Device to Enable Multilayer Structures in Microscale Selective Laser Sintering", Master's Student; University of Texas at Austin; 2021 - 2023

17. Daren Reisner, "Review of Perovskite Solar Cells: Challenges, Opportunities, and Advice for Incoming Researchers", Master's Student; University of Texas at Austin; 2021 – 2023

18. Tyler Watts, "Design and Optimization of a Long Travel, Two-Axis Flexural Nanopositioning Stage", Master's Student; University of Texas at Austin; 2022 – 2024

19. Rachel Paddock, "Manufacturing and Characterization of Graphene-Copper Wires", Master's Student; University of Texas at Austin; 2022 – 2024

20. Yohannes Bekele, "Graphene-Based Composite Conductors for Aerospace Applications", Master's Student; University of Texas at Austin; 2022 – 2024

21. Adhvayith Sriram, "Fabrication and Mechanical Testing of Embedded Features in Laser Powder Bed Fusion Parts", Masters Student; University of Texas at Austin; 2023-2024

22. Yifang Liao, "Design and Fabrication of an Eddy Current Damper for a Flexure-based Nanopositioning Stage", Masters Student; University of Texas at Austin; 2023-2024

23. Andrew Gray, "High Aspect Ratio Deep Silicon Etching with Notch-less SOI Interfaces", Masters Student; University of Texas at Austin; 2023-2025
24. Luis Moncada, "Creation of Microfluidic Chip with Optical Fiber Integration Using Alternate and Low-Cost Fabrication Techniques", Masters Student; University of Texas at Austin; 2025-2026

Research Scientists (3):

Current (1)
1. Oleksandr Vasilevskyi (2023 - Present)

Former (2)
1. Jarrett Bealer (2025-2026)
2. David Shui (2026-2026)

Postdoctoral Researchers (12):

Current (5)
1. Kyubin Bae (2025 – Present)
2. Zhichao Li (2025-Present) (Co-Advised with Chih-Hao Chang in Mechanical Engineering)
3. Pratik Koirala (2025-Present)
4. Natalya Kublik Crawford (2025-Present)
5. Scott Burlison (2025-Present)

Former (7)
1. Joshua Grose (2024-2025)
2. Liam Connolly (2022-2024)
3. Joon Hyong Cho (2019-2022)
4. Martin Ward (2020)
5. Emmanuel Ekoi (2024-2026) (Co-Advised)
6. Mert Gulcur (2024-2026)
7. Timothy Yap (2025-2026)

Ph.D. Students in Progress (18):

Students admitted to candidacy (6):

1. Yuanjun Fan, Ph.D. Student; University of Texas at Austin; 2020-Present

2. Wyatt Eckstrom, (Materials Science and Engineering) Ph.D. Student; University of Texas at Austin; 2022-Present

3. Emmanuel Bamido, Ph.D. Student; University of Texas at Austin; 2023-Present

4. Sohail Shad, Ph.D. Student; University of Texas at Austin; 2023-Present

5. Yohannes Bekele (Co-Advised); Ph.D. Student; University of Texas at Austin; 2024-Present

6. Rachel Paddock (Co-Advised); Ph.D. Student; University of Texas at Austin; 2024-Present

Students preparing to do their thesis proposal (6):

1. James Garcia; Ph.D. Student; University of Texas at Austin; 2023-Present

2. Luis Aguirre, Ph.D. Student; University of Texas at Austin; 2023-Present

3. Andrew Gray, Ph.D. Student; University of Texas at Austin; 2023-Present

4. Joshua Cielo, Ph.D. Student; University of Texas at Austin; 2023-Present

5. Gavin Stafford, Ph.D. Student; University of Texas at Austin; 2024-Present
6. Aref Asghari (Electrical and Computer Engineering), Ph.D. Student; University of Texas at Austin; 2022-Present

Students preparing to take Ph.D. qualifying exam (6):

1. Ang Gao, Ph.D. Student; University of Texas at Austin; 2024-Present

2. Seungjun Lee (ChE, Co-Advised with Dr. Page), Ph.D. Student; University of Texas at Austin; 2024-Present

3. Jaden Wang (Materials Science and Engineering, Co-Advised with Dr. Page), Ph.D. Student; University of Texas at Austin; 2025-Present

4. Daria Holoman; Ph.D. Student; University of Texas at Austin; 2025-Present

5. Jarrett Bealer; Ph.D. Student; University of Texas at Austin; 2026-Present

6. David Shui; Ph.D. Student; University of Texas at Austin; 2026-Present

M.S. Students in Progress (5):

1. Stan Ellison, Masters Student; University of Texas at Austin; 2025-Present

2. Jose Vera, Masters Student; University of Texas at Austin; 2025-Present

3. Bryan Suarez Luviano, Masters Student; University of Texas at Austin; 2025-Present

4. Minji Choi, Masters Student; University of Texas at Austin; 2025-Present
5. Dongjun Oh, Masters Student; University of Texas at Austin; 2025-Present

Ph.D. Committee Member (32)

Mohan Dronadula	University of Texas at Austin	2026
Mehmet Kepenekci	University of Texas at Austin	2026
Gehan Jayatilaka	University of Texas at Austin	2025
Ian Hayman	University of Texas at Austin	2025
Sydni Cobb	University of Texas at Austin	2025
Vijay Premnath	University of Texas at Austin	2025
Shashank Venkatesan	University of Texas at Austin	2026
Saurav Mohanty	University of Texas at Austin	2025
Mehroz Ahmed	University of Texas at Austin	2025
Raul Lema	University of Texas at Austin	2025
Noah Graff	University of Texas at Austin	2024
Ziam Ghaznavi	University of Texas at Austin	2024
Sivasakthy Mohan	University of Texas at Austin	2024
Yufei Wang	University of Texas at Austin	2024
Crystal Barrera	University of Texas at Austin	2023
Hyungmok Joh	University of Texas at Austin	2024
Zhihan Chen	University of Texas at Austin	2024
Keldy Mason	University of Texas at Austin	2024
Siddharth Rath	University of Michigan	2023
Kyoungho Ha	University of Texas at Austin	2022
Nan Hong	University of Texas at Austin	2022
Nick Rodriguez	University of Texas at Austin	2022
Paras Ajay	University of Texas at Austin	2022
Mike Lee	University of Texas at Austin	2020
Byoungdo Lee	University of Texas at Austin	2020
Yoonho Seo	University of Texas at Austin	2020
Milo Holt	University of Texas at Austin	2019
Praveen Joseph	University of Texas at Austin	2017
Hao Xin	University of Texas at Austin	2017
Alvin Lee	University of Texas at Austin	2016
Bradley Camburn	University of Texas at Austin	2015
Bailey Yin	University of Texas at Austin	2015

UNDERGRADUATE RESEARCH STUDENTS SUPERVISED (130)

Current Students (15):

1. Jack Boucek, "Holographic Lithography Alignment and Near-Infrared Sources for 3D Silver Printing", July 2026 - Present

2. Thomas LaMotte, "Sensors and Mechatronics", August 2026 - Present

3. Soham Mule, "PCB Design for Amplifiers and Prototype Hardware", August 2026 - Present

4. Paul Lee, "Finite Element Modeling of Hybrid Bonding for 3D Integrated Circuits", August 2026 - Present

5. Uma Bhadra, "Machine Learning Surrogate Models to Accelerate Simulations", September 2026 - Present

6. Aidan Abraham, "Integrated Vapor Chambers by Microscale Selective Laser Sintering", September 2026 - Present

7. Nabeel Merchant, "Apparatus for Emissivity Measurement in Additive Manufacturing", September 2026 - Present

8. Manish Chander, "Custom DLP Printing", September 2026 - Present

9. Jax Latham, "Strain Engineering of the Optomechanical Properties of 2D Materials", September 2026 - Present

10. Akram Badaoui-Najjar, "Fabrication of a Rotational Projection System for Additive Manufacturing", May 2025 - Present

11. Kyle Chong, "Optical Alignment in Holographic Lithography", January 2025 - Present

12. Nikitha Garlapati, "Testing the Diffusion Properties of Polymerization Induced Phase Separation Structures," September 2023 – Present

13. Sofia Castro, "Modeling of MEMS Actuators" January 2025 - Present

14. Michael Sibille, "Measurement of Muscle Response using Dry Electrodes," May 2025 - Present

15. Casey Hawthorne, "Modeling of Thermomechanical Stress in Hybrid Bonding", January 2025 - Present

<u>Former Undergraduate Students (115):</u>

1. Carson Nguyen, "Control of a Rotational Projection System for Additive Manufacturing", May 2025 – August 2026

2. Gus Flemming-Wood, "Design of a Heat Sink for MEMS Devices," May 2025 – August 2026

3. Hasan Khan, "Modeling of the Interfaces in Hybrid Bonding", September 2025 – August 2026

4. Samiksh Medudula, "Design of a Roll-to-Roll metrology Frame", May 2025 – August 2026

5. Sebastian Londono, "Fabrication of a Rotational Projection System for Additive Manufacturing", May 2025 – August 2026

6. Sofia Frey, "Setup of a MEMS-based AFM", January 2023 – August 2026

7. Eric Brooks, "Multi-Material Resin Development", May 2025 – August 2026

8. Anoushka Sharma, "Design and fabrication of a Critical Mineral Recovery System", May 2025 – August 2026

9. Aran Onthuam, "Optimization of Glass Resin Formulations for Microscale 3D printing", September 2025 – August 2026

10. Daniel Chen, "Effect of light dose on silver curing" May 2025 – August 2026

11. Pranav Rohan Tejomurtula, "Micro-SLS Process Optimization", May 2025 – August 2026

12. Alan Do, "Mechanical Testing of 3D Printed Multi-Material Structures", September 2024 – May 2025

13. Brooklynn Petty, "Towards In-Line Confocal Microscopy for Thickness Measurement of Roll-to-Roll Polymer Web", January 2024 – May 2025

14. Akash Jape, "Development of a Digital Micromirror Device Graphical Interface for Customized Spatiotemporal Intensity Modulation in Microscale Selective Laser Sintering", July 2024-May 2025

15. Brian Lee, "Towards In-Line Confocal Microscopy for Thickness Measurement of Roll-to-Roll Polymer Web" – May 2024 – May 2025
16. Prince Fofanah, "3D printing TPMS Polymerization Induced Phase Separation Structures, September 2023 – May 2025
17. Alessandra Grady, "Nanomaterials Testing using AFM", May 2023 – May 2025
18. Nathan Shu, "Selective Laser Sintering Power and Resistivity," May 2023 – May 2025
19. Kushaal Singh, "Modeling of Curing in DLP Printing", May 2025 – May 2026
20. Philip Bortolotti, "Design of a Rotational Projection System for Additive Manufacturing", May 2025 – May 2026
21. Alexandra Woods, "Design and Fabrication of a Furnace for Powder Emissivity Measurements," January 2024 – December 2025
22. Dongyeong Kim, "Glass Additive Manufacturing", June 2025-August 2025
23. Aita Sharifi, "Design of a Tunable Stiffness MEMS Electrostatic Actuator", July 2025 – August 2025
24. Kendra Hernandez, "Straining PID Crystals", January 2024 – August 2025
25. Daria Holoman, "Electrical Performance Characterization of Titanium Dioxide Nanomaterial Arrays for Triboelectric Nanogenerators," June 2024 – May 2025.
26. Erick Ivan Lara, "Electromagnetic Damping of a Flexure-based Nanopositioning System", June 2024 – May 2025
27. Makayla Makuvise, "Testing the Diffusion Properties of Polymerization Induced Phase Separation Membranes," September 2023 – May 2025
28. Nikhil Pai, "Thermal Camera Metrology of Nanoparticle Bed Heating in Microscale Selective Laser Sintering" September 2024-May 2025
29. Jacob Norris, "Dry Graphene Transfer", June 2023 – May 2025
30. Jacob Haider Khan, "Design of Chiplet Assembly Systems", September 2023 – May 2025
31. Andres Rodriguez, "Design and Fabrication of a Wire Drawing System", May 2023 – January 2025
32. Orlan Oconar, "Modeling of Fluid Flow through TPMS Heat Exchangers", May 2023 – January 2025
33. Quentin Cole Schuelcke, "Motor Control in Roll-to-Roll Manufacturing", September 2022 – January 2025
34. Adhvayith Sriram, "Mechanical Testing of LPBF Parts with Embedded Sensors", January 2024 – August 2024
35. Kushaal Singh, "Photoelastic Imaging of Nanopatterned Thin Film" September 2023 – December 2023
36. Connor Chua, "Photoelastic Imaging of Nanopatterned Thin Film" September 2023 – December 2023
37. Ishan Chhatbar, "Micro-SLS Coating Setup", January 2023-May 2023
38. Noor Khourdy, "A Microfluidic System for Emulsion Polymerization", May 2023 – December 2023

39. Tyler Watts, “Design of a Flexure Based Nanopositioning System”, September 2022 – May 2023
40. William Li, “Micro-SLS Coating System Design”, September 2022-May 2023
41. Elisante Msenge, “Image Segmentation Analysis” – September 2022 – December 2022
42. Anoushka Sharma, “Image Segmentation Analysis” – September 2022 – December 2022
43. Jose Saucedo, “Image Segmentation Analysis” – September 2022 – December 2022
44. Samik Singh, “Image Segmentation Analysis” – September 2022 – December 2022
45. Catherine Lacey - "Optimization of Circuitry and Dry Electrode Arrangement for a Biostimulation Device with EMG monitoring", Undergraduate Research Student, June 2022- August 2022
46. Ang Gao, “PDI crystal growth”, September 2022- December 2023
47. Makenna Hayes, “Nanomaterials for Wearable-based Integrated Biostimulation” September 2020-May 2021
48. Daniel Moran, “Nanomaterials for Wearable-based Integrated Biostimulation” September 2021-May 2022
49. Daniel Nguyen, “Non-reciprocal Acoustic MEMs Metamaterials with Spatiotemporal Stiffness Modulation”, September 2021 – May 2022
50. Steven Kroleski, “Multi-layer Slot Die Coating Simulations”, May 2021-December 2021
51. Steven Padua, “3D Printed Biodegradable Implants for Single-Inoculation of Multiple-Dose Vaccines”, January 2021 – December 2021
52. Bolun Zhang, “Testing of Mechanical Metamaterials”, January 2022 – May 2022
53. Juan Bustos, "Engineering Ni catalysts for growing high quality, mechanically elastic many-layer graphene", June 2022 – August 2022
54. Austin Jeong , “Multilayer Graphene Growth on Thin Nickel Foils” January 2022 – May 2022.
55. Francis Caruso, “Integration of Dynamic Material Properties into Part-Scale Selective Laser Sintering Heat Transfer Model”, January 2022 – May 2022.
56. Shoshannah Isom, “Functionalization of Graphene”, January 2022 – May 2022.
57. Yohannes Bekele, “Increasing the Purity of Graphene using Different Molecular Weights of PMMA”, September 2021 – May 2022
58. Darren Au, “Machine Learning and Neural Networks for Image Processing” University of Texas at Austin; September 2020 – December 2020
59. Cesar Ayalam, “Machine Learning and Neural Networks for Image Processing” University of Texas at Austin; September 2020 – December 2020
60. Mateo Valdez, “Machine Learning and Neural Networks for Image Processing” University of Texas at Austin; September 2020 – December 2020
61. Rushil Patange, “Machine Learning and Neural Networks for Image Processing” University of Texas at Austin; September 2020 – December 2020

62. Ava Lindquist-Sher, "Development of a Software Architecture for Calibration and Analysis of Polariscope Image Data for Real-Time Measurement of Localized Strain in Thin Webs for R2R Nanometrology", UT Austin; June 2021-August 2021

63. Jermy Boyle, "Tensile Strength Testing of Multilayer Graphene" University of Texas at Austin; September 2020 – December 2020

64. Pranay Srivastav, "Tensile Strength Testing of Multilayer Graphene" University of Texas at Austin; September 2020 – December 2020

65. Sucharita Banerjee, "Tensile Strength Testing of Multilayer Graphene" University of Texas at Austin; September 2020 – December 2020

66. Chieh-An Chen, "Tensile Strength Testing of Multilayer Graphene" University of Texas at Austin; September 2020 – December 2020

67. Nadia Hannon, "Carbon Sequestration Grand Challenge" University of Texas at Austin; May 2020 – August 2020

68. Ashley Baringer, "Carbon Sequestration Grand Challenge" University of Texas at Austin; May 2020 – August 2020

69. Nadia Hannon, Ashley Baringer, Claire Welton, "Carbon Sequestration Grand Challenge" University of Texas at Austin; May 2020 – August 2020

70. Gabriel Pohlman, "Carbon Sequestration Grand Challenge" University of Texas at Austin; May 2020 – August 2020

71. Nick Martinez – "Assembly of MEMS-based Metamaterial Structures", UT Austin; January 2020 – June 2020

72. Sonia Lopez - "Testing and Measurement of MEMS Thermal Actuators", UT Austin; January 2020 – June 2020

73. Gehan Jayatilaka, "Tunable Stiffness MEMS Meta-Materials Piezo Sensor Design," University of Texas at Austin; May 2019 – December 2019

74. James Garcia, "Mounting Bracket Fabrication for a Roll-to-Roll Nanometrology System", University of Texas at Austin; January 2018 – May 2022

75. Robert Pavlovic - "In-situ Measurement of Micro-scale Stresses in Flexible Webs for Roll-to-Roll Manufacturing", UT Austin; November 2019 – May 2020

76. Dalton Kaiser – "Design of a fixture for mounting IR heater", UT Austin; November 2019 – May 2020

77. Alison Stutzman – "Modeling and Simulation of Nanoparticle Sintering", UT Austin; January 2019 – May 2019

78. Reymundo Elvira – "Removing the Tensile Layer for in Exfoliated Thin Film Silicon" UT Austin; November 2019 – May 2020

79. Samuel Lee – "Finding the Appropriate Etch Barrier for Tensile Layer for in Exfoliated Thin Film Silicon", UT Austin; January 2019 – May 2019

80. Allison Li – "Nanoparticle Layer Drying using an Infrared Heat Lamp," University of Texas at Austin; May 2019 – August 2019

81. Ahsen Siddiqui, "Drying Profile Optimization on Spin-coated wafers with Silver Nanoparticle Inks," University of Texas at Austin; January 2019 – May 2019

82. Sameer Walia, "Design of a z-axis Decoupling Compliant Mechanism for the Microscale SLS Machine," University of Texas at Austin; January 2019 – May 2019

83. Daniel Liao, "Multilayer Slot Die Coating Simulation for Understanding Interlayer Characteristics in Nanoparticle Inks," University of Texas at Austin; March 2019 – December 2019

84. Barbara Groh, "Design of an In-line Polariscope for Measurement of Dynamic Web Stresses in Roll-to-Roll Nanofabrication," University of Texas at Austin; May 2019 – August 2019

85. Mahdi Koubaa, "Design of a Flexure-based Voice Coil Alignment Mechanism for Nanopositioning Stages," University of Texas at Austin; September 2018 – May 2019

86. Gary Lei, "Optimizing the Simulation Analysis Box," University of Texas at Austin; September 2018 – May 2019

87. Daniel Guzman, "Acetone Concentration Modeling for Precision Gas Sensor Test Rig," University of Texas at Austin; September 2018 – May 2019

88. Wyatt Eckstrom, "Graphene Functionalization for Applications in Gas Sensing," University of Texas at Austin; September 2018 – May 2020

89. David Sullivan, "Functional and User Friendly Breath Analysis Tool Design", University of Texas at Austin; September 2018 – May 2019

90. Daniel Hernandez, "Acetone Gas Sensor Testing and Calibration", University of Texas at Austin; September 2018 – May 2019

91. Zulema Jurado, "Project: Design Wafer Holder for Nickel Plating Bath," University of Texas at Austin; June 2018 – August 2018

92. George Zhou, "Data analysis: Created MATLAB Algorithm to Sort Through the Results of a Simulation and Present the Results in a Logical Manner", University of Texas at Austin; January 2018 – May 2018

93. Danny Guo, "Initial Characterization of Silver Nanoparticle Inks", University of Texas at Austin; January 2018 – May 2018

94. Michael Bettati, "Roller fabrication for a Roll-to-Roll Manufacturing System", University of Texas at Austin; September 2017 – May 2018

95. Reid Goins, "Design and Fabrication of Mounting Brackets for a Two-Axis Flexure System", University of Texas at Austin; June 2017 - August 2017

96. Williams Davenport, "Characterization of Exfoliated Silicon Wafers", University of Texas at Austin; June 2017 - August 2017

97. Chukwubuikem Ume-Ugwa, "Data Visualization for Microscale SLS simulations", University of Texas at Austin; June 2017 - August 2017

98. Luisa Espinosa "Design of a Stage Elevator for a Tip-based Nanometrology System", University of Texas at Austin; June 2017 - August 2017

99. Alex Bohannon, "Fabrication of a Roll-to-Roll Tip-Based Nanometrology System," University of Texas at Austin; April 2017 – May 2018

100. Cynthia Wu, "Electronic Circuit Design for Roll-to-Roll Tip-Based Nanometrology," University of Texas at Austin; January 2017 – May 2017

101. Daniel Penley, "Mechatronics for Roll-to-Roll Tip-Based Nanometrology," University of Texas at Austin; January 2017 – Present

102. James Butcher, "Metrology for Silicon Exfoliation," University of Texas at Austin; January 2017 – May 2017

103. Godson Inikori, "Design of a Robotic Wafer Handling System," University of Texas at Austin; September 2016 – May 2017

104. John Marshall, "Growth of Graphene on Platinum Thin Films." University of Texas at Austin; September 2016 – May 2017

105. Jeff Hou, "Copper Nanoparticle Sintering using Ultrafast Lasers." University of Texas at Austin; September 2016 – May 2017

106. William Jou, "Measurement of the Optical Properties of Copper Nanoparticles," University of Texas at Austin; Summer 2016.

107. Phillip Wang, "Modeling of thermal Flows in MEMS Systems"; University of Texas at Austin; Summer 2016.

108. David Cayll, "Transfer of Graphene Grown on Thin Films" as part of NASCENT summer REU program; Summer 2016.

109. Amey Joshi, "Mechanical Modeling of Graphene-based NEMS Resonators," University of Texas at Austin; Summer 2016.

110. Nan Hong, "Design of an Electronics Setup for Testing Graphene-based NEMS Resonators," University of Texas at Austin; Summer 2016.

111. Andrew Duenner, "Design of a Passive Precision Wafer Alignment System," University of Texas at Austin; January 2015 - May 2016

112. Jessica Sun, "Design and Fabrication of Polysilicon Piezoresistors," as part of NASCENT summer REU program; Summer 2014

113. Cody Daniel, "Fabrication of Non-photolithographic MEMS Devices," as part of the Undergraduate Research Opportunities Program at MIT; Summer 2010.

114. Lina Garcia, "Design of Non-photolithographic MEMS Devices," as part of the Undergraduate Research Opportunities Program at MIT; Spring 2010.

115. Ming Leong, "Design and Fabrication of a Measurement Setup to Determine Error Motions of the Carriage in a Desktop Lathe," as part of the Undergraduate Research Opportunities Program at MIT; Spring 2008

HIGH SCHOOL STUDENTS SUPERVISED (6)

6. Carolina Barboza, "Graphene Growth and Transfer onto Microelectromechanical Sensors for Application in Health Monitoring," as part of the NASCENT High School Scholars Program; Summer 2018.

5. Guillermo Rodriguez, "Graphene Growth and Transfer onto Microelectromechanical Sensors for Application in Health Monitoring," as part of the NASCENT High School Scholars Program; Summer 2018.

4. Briana Palacios, "Fabrication of Atomically Sharp Tips on MEMS Motion Stages," as part of the NASCENT High School Scholars Program; Summer 2016.

3. Moises Arevalo Moran, "Fabrication of Atomically Sharp Tips on MEMS Motion Stages," as part of the NASCENT High School Scholars Program; Summer 2016.

2. Ava Lindquist-Sher, "Fabrication of Atomically Sharp Tips on MEMS Motion Stages," as part of the NASCENT High School Scholars Program; Summer 2016.

1. Krishna Sathyanarayan, "Design of a Robotic Lift Mechanism for the In-Line Tip-Based Nanometrology System," Summer 2016.

HIGH SCHOOL TEACHERS SUPERVISED (7)

7. Zachary Wilborn, "Spectroscopy and Morphology of Perylene Diimides" as part of the NASCENT summer RET program; Summer 2022.

6. Melinda Wright, "Spectroscopy and Morphology of Perylene Diimides" as part of the NASCENT summer RET program; Summer 2022.

5. Cameo Taylor, "Analysis of Strain in Thin-Films Under Polarized Light," as part of the NASCENT summer RET program; Summer 2021.

4. Bradley Angermeier, "Analysis of Strain in Thin-Films Under Polarized Light," as part of the NASCENT summer RET program; Summer 2021.

3. Bradley Angermeier, "Design of a Breath Analysis Tool," as part of the NASCENT summer RET program; Summer 2018.

2. Kirsten Cole Christopherson, "Design of Experiments for Wafer Scale Exfoliation of Monocrystalline Silicon Films," as part of the NASCENT summer RET program; Summer 2018.

1. Rikki Foster, "Design of a Robotic Lift Mechanism for the In-Line Tip-Based Nanometrology System," as part of the NASCENT summer RET program; Summer 2016.

ACADEMIC AND PROFESSIONAL ACTIVITIES

UNIVERSITY COMMITTEE ASSIGNMENTS:

Departmental-	Member, New Faculty Launch Committee	2023-2024
	Chair, Mechanical Engineering Graduate Program Committee	2023-Present
	Chair, Mechanical Engineering Graduate Admissions Committee	2023-Present
	Member, Mechanical Engineering Faculty Search Committee	2014, 2018-23
	Member, Chair's Advisory Committee	2021 - Present
	Member, Graduate Program Committee	2022 – 2023
	Member, Community, Culture, and Wellness Committee	2022-Present
	Member, Mechanical Engineering Graduate Admissions Committee	2014 - 2023
	Member, Mechanical Engineering Department Chair Search Committee	2019-2020
	Member, Mechanical Engineering Introduction to Engineering Design and Graphics Committee	2018 – 2020
	Member, Mechanical Engineering Machine Shop Committee	2015
	Member, Mechanical Engineering Computing Committee	2014
College-	Chair, Semiconductor Science and Engineering Graduate Studies Committee	2024-Present

	Chair, Semiconductor Science and Engineering Graduate Admissions Committee	2024-Present
	Member, Advocacy Network for Graduate Students and Postdoctoral Scholars	2023-present
	Member, Mechanical Engineering Department Chair Search Committee	2019-2020
	Chair, College of Engineering Experiential Learning Committee	2020
University-	Experiential Learning Ambassador for the Experiential Learning Initiative	2019 – 2022
	Member, University Experiential Learning Committee	2020
	Member, University Independent Inquiry Flag Committee	2021 – 2024
	Member, University Undergraduate Research Advisory Committee	2022 - Present

PROFESSIONAL SOCIETY/GOVERNMENT SERVICE AND TECHNICAL COMMITTEES:

Session Chair, American Society for Precision Engineering Annual Meeting, 2026
Session Chair, American Society for Precision Engineering Annual Meeting, 2025

Conference Chair, NSF Chips for Science Workshop, Hosted at UT-Austin, 2025

International Scientific Committee and Session Chair, World Congress on Micro and Nano Manufacturing, 2025

Academic Co-Chair, NSF Nanoscale Science and Engineering Grantees Conference session on AI for Nanomanufacturing, 2024

Session Chair, American Society for Precision Engineering Annual Meeting, 2024

Session Chair, American Society of Mechanical Engineers International Design Engineering Technical Conferences, 2024

Session Chair, American Society for Precision Engineering Topical Meeting on Advancing Precision in Additive Manufacturing, 2024

Session Chair, American Society for Precision Engineering Annual Meeting, 2023

International Scientific Committee and Session Chair, World Congress on Micro and Nano Manufacturing, 2023

Member, Organizing Committee for the Solid Freeform Fabrication Symposium, 2023 - Present

Session Chair, The 66th International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication, 2023

Session Chair, American Society for Precision Engineering Annual Meeting, 2022

Session Chair, American Society for Precision Engineering Topical Meeting on Advancing Precision in Additive Manufacturing, 2022

Member, American Society for Precision Engineering Topical Meeting on Advancing Precision in Additive Manufacturing Organizing Committee, 2022 - Present

Session Chair, The 65th International Conference on Electron, Ion and Photon Beam Technology and Nanofabrication, 2022

Associate Editor, International Conference on Micro and Nanodevices Enabled by Roll-to-Roll Manufacturing, 2021

Session Chair, International Conference on Micro and Nanodevices Enabled by Roll-to-Roll Manufacturing, 2021

Session Chair, American Society for Precision Engineering Annual Meeting, 2021

Session Chair, European Society for Precision Engineering and Nanotechnology Advancing Precision in Additive Manufacturing Conference, 2021

Session Chair, American Society for Precision Engineering Annual Meeting, 2020

Advisor, UT-Austin Chapter of Pi Tau Sigma, 2020 - Present

Guest Editor for Micromachines, Special Issue on "MEMS Devices for Nanomanufacturing", 2020 – 2023

Conference Chair, 2020 Winter Topical Meeting on Precision Engineering for Micro and Nanotechnology, American Society for Precision Engineering, Austin, Texas, January 16-17, 2020

Session Chair, American Society for Precision Engineering Annual Meeting, 2019

Advisor, UT-Austin Student Chapter of the American Society for Precision Engineering, 2019-Present

Session Chair, American Society for Precision Engineering Annual Meeting, 2018

Guest Editor for the ASME Journal of Micro- and Nano Manufacturing, Special Issue on Metrology for Micro- and Nanomanufacturing, 2018 – 2021

Associate Editor for Precision Engineering - Journal of the International Societies for Precision Engineering and Nanotechnology, 2018 – Present

Chair, American Society for Precision Engineering Micro- and Nano-Technologies Technical Leadership Committee, 2018 - Present

Member, American Society for Precision Engineering Annual Meeting Scientific Committee, 2015 - Present

Member, American Society for Precision Engineering Handbook Committee, 2015 - Present

Co-Chair, American Society for Precision Engineering Micro- and Nano-Technologies Technical Leadership Committee, 2015 - 2018

Member, American Society for Precision Engineering Student Competition Committee, 2014 – 2017

Organizer, MIT Laboratory for Manufacturing and Productivity Student Seminar Series, 2008-2010

Review Panelist:
- NSF Advanced Manufacturing Peer Review Panel
- NSF SBIR Peer Review Panel
- NSF Nanomanufacturing Peer Review Panel
- NIST Engineering Laboratory External Proposal Review Panel
- DOE Technology Commercialization Fund Proposal Review Panel
- ConTex Proposal Review Panel

Referee for:
- IEEE Transactions on Electron Devices
- Smart Materials and Structures
- Advanced Functional Materials
- Journal of Heat Transfer
- ASME International Design Engineering Technical Conferences

- ASME Manufacturing Science and Engineering Conference
- ASME Journal of Micro and Nanomanufacturing
- ASME Journal of Dynamic Systems, Measurement and Control
- Precision Engineering
- Carbon
- Sensors and Actuators: A
- Additive Manufacturing
- Kentucky Science and Technology Corporation
- Mechatronics
- CIRP

COMMUNITY ACTIVITIES: (Non-technical activities, Include dates)

Competition Judge, Texas Alliance for Minorities in Engineering Design Project, 2018-2020
High School Senior Design Advisor, George Bush High School, 2018 - 2020
Toy Reverse Engineering, UT-Explore, 2014-2017

VITA:

Dr. Cullinan is a Professor and the Associate Department Chair for Graduate Studies in the Walker Department of Mechanical Engineering at The University of Texas at Austin. He is also the director of UT-Austin's Semiconductor Science and Engineering program. Prior to joining The University of Texas, Dr. Cullinan was a National Research Council Postdoctoral Associate at the National Institute of Standards and Technology in Gaithersburg, Maryland. Dr. Cullinan received his Ph.D. in Mechanical Engineering from the Massachusetts Institute of Technology (MIT) in 2011. Dr. Cullinan also holds an MS (2008) in Mechanical Engineering from MIT as well as a BS in Engineering and a BA in Economics from Swarthmore College (2006). Dr. Cullinan's research focuses on the development of novel nanomanufacturing systems and on finding ways to exploit nanoscale physical phenomena in order to improve existing macroscale devices and to create novel micro- and nanoscale devices for energy and sensing applications. His research interests include the design and development of nanomanufacturing processes and equipment, metrology of micro and nanomanufacturing, the application of nanoscale science in engineering, the engineering of thin films, nanotubes and nanowires, the manufacturing and assembly of nanostructured materials, and the design of micro/nanoscale machine elements for mechanical sensors and energy systems. Dr. Cullinan also teaches classes on design and manufacturing including Precision Machine Design, Machine Elements, and Machine Tool Operation. Dr. Cullinan has received many awards for his research and teaching including the American Society for Precision Engineering Early Career Award (2021), the ASME Kornel F. Ehmann Manufacturing Medal (2020) the Outstanding Young Manufacturing Engineer Award from the Society of Manufacturing Engineers (2016), the Rising Star Award from the Sensors Expo and conference (2017), multiple Best Poster Awards from the American Society for Precision Engineering (2017, 2018), and the Outstanding Teaching by an Assistant Professor Award (2017) and by an Associate or Full Professor (2024) from the Department of Mechanical Engineering at The University of Texas at Austin (2017). In 2019, Dr. Cullinan was named an Experiential Learning Ambassador for the Experiential Learning Initiative at The University of Texas due to his work in creating active learning environments throughout the Mechanical Engineering curriculum at UT-Austin. Dr. Cullinan is also an associate editor for Precision Engineering and previously served as an associate editor for the ASME Journal of Micro and Nanomanufacturing. In addition, he is also the chair of the Micro and Nanotechnology Technical Leadership Committee for the American Society for Precision Engineering and a member of the Scientific Committee for the Annual Meeting of the Society for Precision Engineering. Overall, Dr. Cullinan has published over 215 peer-reviewed journal papers, conference proceedings, book chapters, and technical reports. Fifteen patents have also been filed based on his research and his work has been featured in news outlets such as Sensors Magazine and Physics World.