

Michael Cullinan

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EDUCATION

Massachusetts Institute of Technology

Ph.D., Mechanical Engineering

Thesis: Design and Fabrication of Precision Carbon Nanotube-based Flexural Transducers

Cambridge, MA

Feb. 2008 – Feb. 2011

Massachusetts Institute of Technology

S.M., Mechanical Engineering

Thesis: Control of Carbon Nanotube Stiffness via Tunable Fabrication Process Parameters that Determine CNT Geometry

Cambridge, MA

July 2006 – Jan. 2008

Swarthmore College

B.S., Engineering, High Honors; B.A., Economics

Thesis: Design of a Crossflow Turbine for a Hydroelectric Roller-Compacted Concrete Gravity Dam

Swarthmore, PA

Sept. 2002 – June 2006

Academic Employment

University of Texas at Austin

Associate Chair for Graduate Studies, Department of Mechanical Engineering

Associate Professor, Department of Mechanical Engineering

Assistant Professor, Department of Mechanical Engineering

Director of Nanoscale Design and Manufacturing Laboratory

Austin, TX

Sept. 2023-Present

Sept. 2020 - Present

Aug. 2013-Aug. 2020

National Institute of Standards and Technology

National Research Council Postdoctoral Associate, Engineering Laboratory,

Intelligent Systems Division, Production Systems Group

Gaithersburg, MD

Jan. 2012 – Aug.

2013

Massachusetts Institute of Technology

Research Assistant, Department of Mechanical Engineering

Cambridge, MA

July 2006 – May 2011

Massachusetts Institute of Technology

Teaching Assistant, 2.72 Elements of Mechanical Design

Cambridge, MA

Jan. 2010 – May 2010

National Nanotechnology Infrastructure Network

NSF Research Experiences for Undergraduates at the University of California at Santa Barbara

Santa Barbara, CA

June 2005 – Aug.

2005

University of Minnesota, Department of Mechanical Engineering

NSF Research Experiences for Undergraduates

Minneapolis, MN

June – Aug. 2004

HONORS AND AWARDS

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
2 nd 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 (My share since joining UT-Austin: \$4,262,580)

1. **Cullinan, M.** (PI), “Fingerprinting Topological Transition in SEM Datasets using a Self-Supervised Learning Approach,” Sandia National Lab, \$20,000, June 2021-September 2021.
2. **Cullinan, M.** (PI), “Scalable Additive Manufacturing Techniques for Producing High Quality Telescope Mirrors,” Triton Systems Inc and Air Force Research Lab, \$60,000, September 2022 – June 2023.
3. **Cullinan, M.** (PI), Chang, C (Co-PI), Baldea, M. (Co-PI), Page, Z. (Co-PI), Menon, R. (Co-PI, Utah), Jackson, N (Co-PI, UIUC) “FMRG: Cyber: Manufacturing USA: Cyber-Enabled, High-Throughput Manufacturing of Multi-Material, 3D Nanostructures,” National Science Foundation, \$2,999,732 (My share: \$791,887), October 2022 – September 2026.
4. **Cullinan, M. (PI)**, Tehrani, M. (Co-PI), “Ultra-Conductive Copper Wires for LUNAR HVPT,” NASA, \$650,000 (My Share: \$242,076), January 2022 – January 2025.
5. **Cullinan, M. (PI)**, “PFI-TT: Additive Manufacturing of High-Density and Freeform Metal Interconnects,” National Science Foundation, \$249,985, February 2022 – January 2024.
6. **Cullinan, M. (PI)**, “I-Corps: Market Research and Customer Discovery for the Microscale Selective Laser Sintering Process,” National Science Foundation, \$50,000, September 2021-August 2022.
7. **Cullinan, M. (PI)**, “In-Situ Characterization and Nanomechanics,” Sandia National Laboratory, \$10,000, June 2021-September 2021.
8. **Cullinan, M.** (PI), “3D Printed Biodegradable Implants for Single-Inoculation of Multiple-Dose Vaccines,” The University of Texas at Austin – Associate Professor Experimental, \$50,000, January 2021-December 2021
9. **Cullinan, M.** (PI), “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, \$50,000, January 2021-December 2021
10. **Cullinan, M.** (PI), “Redesigning the Freshman Introduction to Mechanical Engineering Experience,” The University of Texas at Austin – Academic Development Funds Grant, \$32,821, September 2020 – August 2021
11. **Cullinan, M.** (PI), “Investigation of Failure Modes of Multilayer Graphene Films with Applications in Acoustic and Ultrasonic Transducers,” GraphAudio Inc., \$61,500, September 2020 - September 2022
12. **Cullinan, M.** (Co-PI), “NanoStim - Nanomaterials for Wearable-based Integrated Biostimulation,” UT Austin-Portugal Alliance, \$792,662 (My Share: \$396,331), June 2020 – May 2023

13. **Cullinan, M.** (PI), “Determining the Fundamental Sensing Limits of Mode-Localized MEMS Resonators,” National Institute of Standards and Technology, \$343,186, Aug. 2019 – Aug. 2022.
14. **Cullinan, M.** (PI), “Calibration and Analysis of Large Area Atomic Force Profilometry Scans,” Canon Nanotechnologies, Inc., \$60,000, June 2019 – June 2020.
15. **Cullinan, M.** (PI), “Understanding the Mechanisms that Limit the Resolution and Throughput of μ -SLS,” Seed Grant, Department of Mechanical Engineering, UT-Austin, \$25,000, April 2019 – September 2019.
16. **Cullinan, M.** (PI), “Custom Designed Microelectromechanical Systems based Sensors for Direct Metrology of Additively Manufactured Parts,” Lawrence Livermore National Laboratory, \$23,171, October 18, 2018 – February 4, 2019.
17. **Cullinan, M.** (PI) “Exfoliation of Single Crystal Silicon Wafers,” NASCENT Center, UT-Austin, \$78,119, Sep. 2018 – Aug. 2019.
18. **Cullinan, M.** (PI) “Large-Area Probe-based Metrology Systems of Nanomanufacturing Applications,” NASCENT Center, UT-Austin, \$23,406, Sep. 2018 – Aug. 2019.
19. **Cullinan, M.** (PI) “Integration of NI Student Project Center into CSE Courses,” UT-Austin, \$63,858, Jan. 2018 – Dec. 2018.
20. **Cullinan, M.** (PI), “Custom Designed Microelectromechanical Systems based Sensors for Direct Metrology of Additively Manufactured Parts,” Lawrence Livermore National Laboratory, \$50,000, October 1, 2017 – September 30, 2018.
21. **Cullinan, M.** (PI) “Exfoliation of Single Crystal Silicon Wafers,” NASCENT Center, UT-Austin, \$29,471, Sep. 2017 – Aug. 2018.
22. **Cullinan, M.** (PI) “Large-Area Probe-based Metrology Systems of Nanomanufacturing Applications,” NASCENT Center, UT-Austin, \$86,848, Sep. 2017 – Aug. 2018.
23. **Cullinan, M.** (PI) “GOALI: Manufacturing USA: Determining the Role of Nanoscale Physics in the Microscale Selective Laser Sintering Process using a Multiscale Computational Modeling Approach,” National Science Foundation, \$391,354, Aug. 2017 – Jul. 2020.
24. **Cullinan, M.** (PI) “Exfoliation of Single Crystal Silicon Wafers,” NASCENT Center, UT-Austin, \$28,708, Apr. 2017 – Aug. 2017.
25. **Cullinan, M.** (PI) “Large-Area Probe-based Metrology Systems of Nanomanufacturing Applications,” NASCENT Center, UT-Austin, \$88,471, Sep. 2016 – Aug. 2017.
26. **Cullinan, M.** (PI), “Custom designed microelectromechanical systems based sensors for direct metrology of additively manufactured parts,” Lawrence Livermore National Laboratory, \$85,288, October 1, 2016 – September 30, 2017.
27. **Cullinan, M.** (PI), “Microelectromechanical Systems Based Sensors for Direct Metrology of Additively Manufactured Parts,” Lawrence Livermore National Laboratory, \$41,009, March 14, 2016 – September 30, 2016.
28. **Cullinan, M.** (PI), Crawford, R. (Co-PI), Bahadur, V. (Co-PI) “Development of Finite Element Modules for the Mechanical Engineering Undergraduate Curriculum,” Academic Development Funds, University of Texas at Austin, \$46,624, September 1, 2016 – August 31, 2017.
29. **Cullinan, M.** (PI) “Large-Area Probe-based Metrology Systems of Nanomanufacturing Applications,” NASCENT Center, UT-Austin, \$87,619, Sep. 2015 – Aug. 2016.
30. **Cullinan, M.** (PI), Crawford, R. (Co-PI), Rylander, N. (Co-PI) “Development of Finite Element Modules for the Mechanical Engineering Undergraduate Curriculum,” Academic Development Funds, University of Texas at Austin, \$47,199, September 1, 2015 – August 31, 2016.
31. **Cullinan, M.** (PI) “Selective Micro Laser Sintering for Packaging Applications,” Freescale Semiconductor Inc., \$289,581, January 23, 2015 - January 15, 2018.
32. **Cullinan, M.** (PI) “Large-Area Probe-based Metrology Systems of Nanomanufacturing Applications,” NASCENT Center, UT-Austin, \$81,346, Sep. 2014 – Aug. 2015.
33. **Cullinan, M.** (PI) “Development of Novel Nanomanufacturing Processes and Equipment,” Summer Research Assignment, University of Texas at Austin, \$19,862, Summer 2014.

34. **Cullinan, M.** (PI) “Wafer-Scale Nanomanufacturing of Graphene-Based Electromechanical Devices” Engineering Laboratory Exploratory Research Project, National Institute of Standards and Technology, \$140,000, Oct. 2012-Sep. 2013.

BOOK CHAPTERS

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

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

58. *Behera, D., Liao, A., and **Cullinan, M.**, “Characterizing Process Window for Microscale Selective Laser Sintering” *Manufacturing Letters*, Vol. 37, pp. 39-44, July 2023. <https://doi.org/10.1016/j.mfglet.2023.06.004>
57. *Grose, J., Dibua, O., Behera, D., Foong, C., and **Cullinan, M.**, “Simulation and Property Characterization of Nanoparticle Thermal Conductivity for a Microscale Selective Laser Sintering System.” *Journal of Heat Transfer*, Vol. 145, pp. 052501, May 2023. <https://doi.org/10.1115/1.4055820>
56. Lopes, C., Veloso, H., Hayes, M., Vaz, F., and **Cullinan, M.**, “Nanostructured (Ti,Cu)N Dry Electrodes for Advanced Control of the Neuromuscular Activity.” *IEEE Sensors Journal*, Vol. 23, no. 4, pp. 3629-3639, February 2023, <https://doi.org/10.1109/JSEN.2022.3232264>.
55. *Behera, D., Liao, A., and **Cullinan, M.** “Passive Intensity Modulation of a Pattern for Fabricating Near-net Shaped Features in Microscale Metal Additive Manufacturing.” *Manufacturing Letters*, Vol. 35, pp. 63-67, January 2023. <https://doi.org/10.1016/j.mfglet.2022.12.002>.
54. *Ward, M., Behera, D., and **Cullinan, M.**, “Precision Silicon Exfoliation Tool Design”, *Journal of Manufacturing Science and Engineering*, Vol. 145, pp. 024501, August 2022. <https://doi.org/10.1115/1.4055320>
53. *Dibua, O., Foong, C.S., and **Cullinan, M.** “Calibration uncertainty in nanoparticle sintering simulations” *Manufacturing Letters*, Vol. 31, pp. 69-73, January 2022. <https://doi.org/10.1016/j.mfglet.2021.07.010>
52. *Cho, J., Cayll, D., Behera, D., and **Cullinan, M.** “Towards Repeatable, Scalable Graphene Integrated Micro-Nano Electromechanical Systems (MEMS/NEMS)”, *Micromachines*, Vol. 13, pp. 27 December 2021. <https://doi.org/10.3390/mi13010027>
51. *Behera, D., Chizari, S., Shaw, L., Porter, M., Hensleigh, R., Xu, A., Connolly, L., Roy, N., Panas, R., Saha, S., Zheng, X., Hopkins, J., Chen, S., and **Cullinan, M.**, “Current challenges and potential directions towards precision microscale additive manufacturing – Part IV: Future perspectives,”

- Precision Engineering, Vol. 68, pp. 197-205, March 2021. <https://doi.org/10.1016/j.precisioneng.2020.12.014>
50. *Chizari, S., Shaw, L., Behera, D., Roy, N., Zheng, X., Panas, R., Hopkins, J., Chen, S., and **Cullinan, M.**, “Current challenges and potential directions towards precision microscale additive manufacturing – Part III: Energy induced deposition and hybrid electrochemical processes,” Precision Engineering, Vol. 68, pp. 174-186, March 2021. <https://doi.org/10.1016/j.precisioneng.2020.12.013>
49. *Behera, D., Chizari, S., Shaw, L., Porter, M., Hensleigh, R., Xu, A., Roy, N., Connolly, L., Zheng, X., Saha, S., Hopkins, J., and **Cullinan, M.**, “Current challenges and potential directions towards precision microscale additive manufacturing – Part II: Laser-based curing, heating, and trapping processes,” Precision Engineering, Vol. 68, pp. 301-318, March 2021. <https://doi.org/10.1016/j.precisioneng.2020.12.012>
48. *Behera, D., and **Cullinan, M.**, “Current challenges and potential directions towards precision microscale additive manufacturing – Part I: Direct ink writing/jetting processes,” Precision Engineering, Vol. 68, pp. 326-337, March 2021. <https://doi.org/10.1016/j.precisioneng.2020.12.009>
47. *Behera, D., Liao, D., and **Cullinan, M.**, “Slot Die Coating Operability Window for Nanoparticle Bed Deposition in a Microscale Selective Laser Sintering Tool,” ASME Journal of Micro and Nano-Manufacturing, January 2021. <https://doi.org/10.1115/1.4049668>
46. *Cho, J., Seo, Y., Dolocan, A., Hall, N. and **Cullinan, M.**, “Monolayer Graphene Grown on Nanoscale Pt films Deposited on TiO₂ substrates for Micro and Nanoelectromechanical Systems,” ACS Applied Nano Materials, September 2020, <https://doi.org/10.1021/acsanm.0c01839>
45. *Yuksel, A., Yu, E., **Cullinan, M.**, and Murthy, J., “Electromagnetic Thermal Energy Transfer in Nanoparticle Assemblies Below Diffraction Limit,” Journal of Thermal Science and Engineering Applications, Vol 13, pp. 021018, August 2020. <https://doi.org/10.1115/1.4047631>
44. *Yuksel, A., Yu, E., **Cullinan, M.**, and Murthy, J., “Investigation of Heat Transfer Modes in Plasmonic Nanoparticles.” International Journal of Heat and Mass Transfer. Vol. 156, pp. 119869, August 2020. <https://doi.org/10.1016/j.ijheatmasstransfer.2020.119869>
43. *Yuksel, A., **Cullinan, M.**, Yu, E., Murthy, J. “Near-Field Plasmonics of Gold Nanoparticles in Dielectric Media”, Journal of Quantitative Spectroscopy and Radiative Transfer, Vol. 254, pp. 107207, July 2020. <https://doi.org/10.1016/j.jqsrt.2020.107207>
42. *Yuksel, A., Yu, E., **Cullinan, M.**, and Murthy, J., “The Effects of Variability in Plasmonic Nanoparticle Packing on Optical Scattering and Extinction Cross Section.” IEEE Transactions on Components, Packaging and Manufacturing Technology, Vol. 10, pp. 1388 – 1393, June 2020. <https://doi.org/10.1109/TCPMT.2020.3005339>
41. *Cayll, D., Ladner, I., Cho, J.H., Saha, S. and **Cullinan, M.**, “A MEMS Dynamic Mechanical Analyzer for *In Situ* Viscoelastic Characterization of 3D Printed Nanostructures.” Journal of Micromechanics and Microengineering, Vol. 30, pp. 075008, May 2020. <https://doi.org/10.1088/1361-6439/ab8bc8>
40. *Yuksel, A., Yu, E., Murthy, J. and **Cullinan, M.**, “Thermal Transport in Nanoparticle Packings under Laser Irradiation.” Journal of Heat Transfer, vol. 142, pp. 032501, March 2020, <https://doi.org/10.1115/1.4045731>

39. *Roy, N., Behera, D., Dibua, O., Foong, C.S. and **Cullinan, M.**, “A Novel Microscale Selective Laser Sintering (μ -SLS) Process for the Fabrication of Microelectronic Parts.” *Microsystems and Nanoengineering*, vol. 5, pp. 64, December 2019, <https://doi.org/10.1038/s41378-019-0116-8>
38. *Luo, C., Song, Y., Zhao, C., Thirumalai, S., Ladner, I., **Cullinan, M.**, Hopkins, J., “Design and Fabrication of a Three-Dimensional Meso-Sized Robotic Metamaterial with Actively Controlled Properties.” *Materials Horizons*, Vol. 7, pp. 229-235, September 2019. <https://doi.org/10.1039/c9mh01368g>
37. *Yao, T.F., Connolly, L., and **Cullinan, M.**, “Expanded Area Metrology for Tip-based Wafer Inspection in the Nanomanufacturing of Electronic Devices.” *Journal of Micro/Nanolithography, MEMS, and MOEMS*, vol. 18, pp. 034003, September 2019. <https://doi.org/10.1117/1.JMM.18.3.034003>
36. *Ladner, I., **Cullinan, M.**, and Saha, S., “Tensile properties of polymer nanowires fabricated via two-photon lithography.” *RSC Advances*, vol. 9, pp. 28808–28813, August 2019. <https://doi.org/10.1039/C9RA02350J>
35. *Moser, D., **Cullinan, M.**, and Murthy, J., “Multi-Scale Computational Modeling of Residual Stress in Selective Laser Melting with Uncertainty Quantification.” *Additive Manufacturing*, vol. 29, pp. 100770, October 2019. <https://doi.org/10.1016/j.addma.2019.06.021>
34. *Connolly, L., Yao, T.F., Chang, A., and **Cullinan, M.**, “A Tip-Based Metrology Framework for Real-Time Process Feedback of Roll-to-Roll Fabricated Nanopatterned Structures.” *Precision Engineering*, vol. 57, pp. 137-148, May 2019. <https://doi.org/10.1016/j.precisioneng.2019.04.001>
33. *Ward, M. and **Cullinan, M.**, “A Fracture Model for Exfoliation of Thin Silicon Films.” *International Journal of Fracture*, Vol. 216, pp. 161-171, April 2019. <https://doi.org/10.1007/s10704-019-00350-4>
32. *Cho, J., Na, S., Park, S., Akinwande, D., Liechti, K., and **Cullinan, M.**, “Controlling the Number of Layers in Graphene using the Growth Pressure.” *Nanotechnology*, Vol. 30, pp. 235602, March 2019. <https://doi.org/10.1088/1361-6528/ab0847>
31. *Ward, M and **Cullinan, M.**, “Design of Tool for Exfoliation of Monocrystalline Micro-Scale Silicon Films.” *Journal of Micro and Nano-Manufacturing*, Vol. 7, pp. 011003, March 2019. <https://doi.org/10.1115/1.4043420>
30. *Yuksel, A., Yu, E., Murthy, J., and **Cullinan, M.** “Effect of Particle Size and Distribution on Near-Field Thermal Energy Transfer within the Nanoparticle Packings.” *Journal of Photonics for Energy*, Vol.6, 2019, pp. 032707.
29. *Roy, N., Behera, D., Dibua, O. Foong, C.S., and **Cullinan, M.**, “Experimental Study of the Subsystems in a Microscale Additive Manufacturing Process.” *JOM*, Vol. 71, 2019, pp 974–983.
28. *Dibua, O., Yuksel, A., Roy, N., Foong, C.S., and **Cullinan, M.**, “Nanoparticle Sintering Model, Simulation and Calibration Against Experimental Data.” *Journal of Micro and Nanomanufacturing*, Vol. 6, 2018, pp. 041004.
27. *Roy, N. and **Cullinan, M.**, “Fast Trajectory Tracking of a Flexure-based, Multi-Axis Nanopositioner with 50 mm Travel.” *IEEE/ASME Transactions on Mechatronics*, Vol 23, 2018, pp. 2805 - 2813.

26. *Roy, N., Behera, D., Dibua, O., Foong, C.S., and **Cullinan, M.**, “Single shot, large area metal sintering with micrometer level resolution.” *Optics Express*, Vol. 26, 2018, pp. 25534-25544
25. *Moser, D., Yuksel, A., **Cullinan, M.**, and Murthy, J., “Use of detailed particle melt modeling to calculate effective melt properties for powders.” *Journal of Heat Transfer*, Vol. 140, 2018, pp. 052301.
24. *Roy, N., Dibua, O., and **Cullinan, M.**, “Effect of Bed Temperature on the Laser Energy Required to Sinter Copper Nanoparticles.” *JOM*, Vol. 70, 2018, pp 401–406.
23. *Roy, N., Foong, C.S., and **Cullinan, M.** “Effect of Size, Morphology, and Synthesis Method on the Thermal and Sintering Properties of Copper Nanoparticles for use in Microscale Additive Manufacturing Processes.” *Additive Manufacturing*, Vol. 21, 2018, pp. 17-29.
22. *Roy, N. and **Cullinan, M.** “Design and characterization of a two-axis, flexure-based nanopositioning stage with 50 mm travel and reduced higher order modes.” *Precision Engineering*, Vol. 53, 2018 pp. 236-247.
21. Jeong, J., Chen, K., Walker, E., Roy, N., He, F., Liu, P., Willson, C., **Cullinan, M.**, Bank, S. and Wang, Y., “In-plane Thermal Conductivity Measurement with Nanosecond Grating Imaging Technique.” *Nanoscale and Microscale Thermophysical Engineering*, Vol. 22, 2018, pp. 83-96.
20. *Roy, N., Dibua, O., Jou, W., He, F., Jeong, J. Wang, Y, and **Cullinan, M.** “A Comprehensive Study of Copper Nanoparticles using Femtosecond, Nanosecond and Continuous Wave Lasers.” *Journal of Micro and Nanomanufacturing*, Vol. 6, 2018, pp. 010903.
19. *Yuksel, A., Yu, E., Murthy, J., and **Cullinan, M.** “Effect of Substrate and Nanoparticle Spacing on Plasmonic Enhancement in 3D Nanoparticle Structures.” *Journal of Micro and Nanomanufacturing*, Vol. 5(4), 2017, pp. 040903.
18. *Cho, J and **Cullinan, M.** “Graphene Growth on and Transfer from Platinum Thin Films.” *Journal of Micro and Nanomanufacturing*, Vol. 6, 2017, pp. 024501.
17. *Cho, J.H., Gorman, J., Na, S., and **Cullinan, M.** “Growth of monolayer graphene on nanoscale copper-nickel alloy thin films.” *Carbon*, Vol. 118, 2017, pp. 441–448.
16. *Yao, T.F., Duenner, A., and **Cullinan, M.** “In-Line Metrology of Nanoscale Features in Semiconductor Manufacturing Systems.” *Precision Engineering*, Vol. 47, 2017, pp. 147-157.
15. *Yao, T.F., Duenner, A., and **Cullinan, M.** “In-Line Dimensional Metrology for Nanomanufacturing Systems Enabled By a Passive Semiconductor Wafer Alignment Mechanism.” *Journal of Micro and Nano-Manufacturing*, Vol. 5, 2017, pp. 011001.
14. *Duenner, A. Yao, T.F., De Hoyos, B., Gonzales, M. Riojas, N. and **Cullinan, M.** “A Low-Cost, Automated Wafer Loading System with Sub-Micron Alignment Accuracy for Nanomanufacturing and Nanometrology Applications.” *Journal of Micro and Nano-Manufacturing*, Vol. 4, 2016, pp. 041006.
13. *Yuksel, A. and **Cullinan, M.** “Modeling of Nanoparticle Agglomeration and Powder Bed Formation in Microscale Selective Laser Sintering Systems.” *Journal of Additive Manufacturing*, Vol. 12, 2016, pp. 204-215.

12. **Cullinan, M.** and Culpepper, M. “Nanomanufacturing Methods for the Reduction of Noise in Carbon Nanotube-Based Piezoresistive Sensor Systems.” *Journal of Micro and Nano-Manufacturing*, Vol. 1, 2013, pp. 011011.
11. **Cullinan, M.** and Culpepper, M. “Effects of Chirality and Impurities on the Performance of Carbon Nanotube-Based Piezoresistive Sensors.” *Carbon*, Vol. 51, 2013, pp. 59.
10. **Cullinan, M.**, Panas, R., and Culpepper, M. “A Multi-Axis MEMS Sensor with Integrated Carbon Nanotube-Based Piezoresistors for Nanonewton Level Force Metrology.” *Nanotechnology*, Vol. 23, 2012, pp. 325501.
9. **Cullinan, M.**, Panas, R., DiBiasio, C., and Culpepper, M. “Scaling Electromechanical Sensors Down to the Nanoscale.” *Sensors and Actuators A*, Vol. 187, 2012, pp. 162.
8. Panas, R., **Cullinan, M.**, and Culpepper, M. “Design of Piezoresistive-based MEMS Sensor Systems for Precision Microsystems.” *Precision Engineering*, Vol. 36, 2012, pp. 44.
7. Eusner, T., **Cullinan, M.**, Ruggiero, C., Zarrouati, N., and Chepko, A. “Measurement of Human Response to Tactile Temperature Sensing Using Stochastic System Identification.” *Measurement*, Vol. 44, 2011, pp. 965.
6. **Cullinan, M.** and Culpepper, M. “Carbon Nanotubes as Piezoresistive Microelectromechanical Sensors: Theory and Experiment.” *Physical Review B*, Vol. 82, 2010, pp. 115428.
5. Howell, L.L., DiBiasio, C.M., **Cullinan, M.A.**, Panas, R., Culpepper, M.L. “A Pseudo-Rigid-Body Model for Large Deflections of Fixed-Guided Carbon Nanotubes.” *Journal of Mechanisms and Robotics*, Vol. 2, 2010, pp. 034501.
4. **Cullinan, M.** and Culpepper, M. “Control of Carbon Nanotube Geometry via Tunable Process Parameters.” *Applied Physics Letters*, Vol. 93, 2008, pp. 103106.
3. DiBiasio, C., **Cullinan, M.**, and Culpepper, M. “Difference Between Bending and Stretching Moduli of Single-Walled Carbon Nanotubes that are Modeled as an Elastic Tube.” *Applied Physics Letters*, Vol. 90, 2007, pp. 203116.
2. Hafiz, J., Mukherjee, R., Wang, X., **Cullinan, M.**, Heberlein, J., McMurry, P., and Girshick, S. “Nanoparticle-Coated Silicon Nanowires.” *Journal of Nanoparticle Research*, Vol. 8, 2006, pp. 995.
1. 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.” *Surface and Coatings Technology*, Vol. 200, 2005, pp. 1524.

CONFERENCE PUBLICATIONS

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

97. *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.

96. *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.
95. *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.
94. *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.
93. *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 2022 17th International Manufacturing Science and Engineering Conference, New Brunswick, NJ, June 14, 2023.
92. 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.
91. *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.
90. *Liao, A., Grose, J., Tasnim, F., and **Cullinan, M.**, “Additive Manufacturing of Metal Interconnects using Microscale Selective Laser Sintering.” Proceedings of SPIE Photonics West, San Francisco, CA, January 29, 2023.
89. *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.
88. *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.
87. *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.
86. 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.
85. *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.

84. *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.
83. *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.
82. *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.
81. *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.
80. *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.
79. *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.
78. *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.
77. *Grose, J., Diuba, 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.
76. *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.
75. *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.
74. *Connolly, L., Natinski, E., Khusnatdinov, N., Jones, C., Mizuno, M., Meissl, M., Choi, J.; LeBrake, D., and **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.
73. *Behera, D., Roy, N., and **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.

72. *Connolly, L., Dibia, 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.
71. *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.
70. *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
69. *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, Pittsburg, PA, October 28, 2019.
68. *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, Pittsburg, PA, October 28, 2019.
67. *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, Pittsburg, PA, October 28, 2019.
66. *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, Pittsburg, PA, October 28, 2019.
65. *Ward, M., and **Cullinan, M.** “Wafer Scale Exfoliation of Monocrystalline Micro-Scale Silicon Films.” Proceedings of the American Society for Precision Engineering, Pittsburg, PA, October 28, 2019.
64. *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.
63. *Yuksel, A, Yu, E., Murthy, J, and **Cullinan, M.** “Heat Transfer Modeling of Nanoparticle Packings on a Substrate” ASME 2018 International Mechanical Engineering Congress and Exposition, Pittsburg, PA, November 10, 2018, pp. V08BT10A050. <https://doi.org/10.1115/IMECE2018-88642>
62. *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.
61. *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.
60. *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.

59. *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.
58. *Yuskel, 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.
57. *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.
56. *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.
55. *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
54. *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.
53. *Yuskel, 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.
52. *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.
51. *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.
50. *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.
49. *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.
48. *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.
47. *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.

46. *Roy, N., Dubia, O., Foong, C.S. and **Cullinan, M.** “Preliminary Results on the Fabrication of Interconnect Structures using Microscale Selective Laser Sintering.” *Proceedings of the ASME 2017 International Technical Conference and Exhibition on Packaging and Integration of Electronic and Photonic Microsystems*, San Francisco, CA, August 30, 2017.
45. *Cho, J., Ladner, I., Hong, N. and **Cullinan, M.** “Design and Fabrication of a Strain-Based Tunable Graphene NEMS Resonator.” *Proceedings of the Napa Microsystems Workshop*, Napa, CA, August 22, 2017.
44. *Dubia, O., Yuksel, A., Roy, N., Foong, C.S. and **Cullinan, M.** “Modelling Nanoparticle Sintering in a Microscale Selective Laser Sintering Process.” *Proceedings of the Solid Freeform Fabrication Symposium*, Austin, TX, August 8, 2017.
43. *Yuksel, A., Yu, E., Murthy, J., and **Cullinan, M.** “Analysis of Near-Field Thermal Energy Transfer within Nanoparticles.” *Proceedings of SPIE Optics + Photonics*, San Diego, CA, August 9, 2017.
42. *Yuksel, A., Murthy, J., and **Cullinan, M.** “Thermal Energy Transport below the Diffraction Limit in Closed-Packed Metal Nanoparticles.” *Proceedings of the ASME Summer Heat Transfer Conference*, Bellevue, WA, July 10, 2017.
41. *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.” *Proceedings of the ASME Manufacturing Science and Engineering Conference*, Los Angeles, CA, June 6, 2017.
40. *Cho, J. and **Cullinan, M.** “Graphene Growth on and Transfer from Platinum Thin Films.” *Proceedings of the ASME Manufacturing Science and Engineering Conference*, Los Angeles, CA, June 6, 2017.
39. *Connolly, L. and **Cullinan, M.** “Design of a Tip Based, In-Line Metrology System for Roll-to-Roll Manufactured Flexible Electronic Devices.” *Proceedings of the ASME Manufacturing Science and Engineering Conference*, Los Angeles, CA, June 6, 2017.
38. *Yuksel, A., Murthy, J. and **Cullinan, M.** “Effect of Substrate and Nanoparticle Spacing on Plasmonic Enhancement in 3D Nanoparticle Structures.” *Proceedings of the ASME Manufacturing Science and Engineering Conference*, Los Angeles, CA, June 6, 2017.
37. Panas, R., Saha, S., **Cullinan, M.**, and Hopkins, J. “Micro-Nano TLC Overview of Research in Precision Micro- and Nano-Technology.” *Proceedings of the American Society for Precision Engineering*, Portland, OR, October 26, 2016.
36. *Yao, T-F., Duenner, A. and **Cullinan, M.**, “Quick Approach Mechanism For Tip-Based In-line Nanometrology Systems.” *Proceedings of the American Society for Precision Engineering*, Portland, OR, October 26, 2016.
35. *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.” *Proceedings of the American Society for Precision Engineering*, Portland, OR, October 26, 2016.
34. *Duenner, A., DeHoyos, B., Gonzales, M., Riojas, N., and **Cullinan, M.**, “Low-Cost, Automated Wafer Handling System for High-Throughput Nanometrology.” *Proceedings of the American Society for Precision Engineering*, Portland, OR, October 26, 2016.
33. *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.

32. *Yuskel, A. and **Cullinan, M.**, “The Effect of Nanoparticle Clustering on Optoelectronic Property.” *International Solid Freeform Fabrication Symposium*, Austin, Texas, August 8, 2016.
31. *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.
30. *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.
29. *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.
28. *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.
27. *Cho, J., Gorman, J. and Cullinan, M. “Growth of High Quality Graphene on Sub-300 nm Thick Copper Thin Films.” *The 60th International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication*, Pittsburg, PA June 1, 2016.
26. *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.
25. *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.
24. *Sun, G. and **Cullinan, M.** “Design of a MEMS-Based Tunable Graphene Resonator System with Precision Strain and Force Metrology.” *Proceedings of the American Society for Precision Engineering*, Austin, TX, November 5, 2015.
23. *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.
22. *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.
21. *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.
20. *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.
19. *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.

18. **Cullinan, M.**, Cheng, G., Sperling, B., Hight Walker, A., Davydov, A., and Gorman, J., "Transfer-Free Wafer-Scale Growth of Graphene on Thin-Film Copper." *The 58th International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication*, Washington, D.C., May 28th, 2014.
17. **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.
16. **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.
15. Panas R. M., **Cullinan, M.A.**, and Culpepper, M.L. "Non-Lithographically-Based Microfabrication of Precision MEMS Nanopositioning Systems." *Proceedings of the 2011 Annual Meeting of the American Society for Precision Engineering*. Denver, CO, November 13-18, 2011.
14. **Cullinan, M.**, Panas, R., Daniel, C., Gafford, J., and Culpepper, M. "Non-Cleanroom Fabrication of Carbon Nanotube-Based MEMS Force and Displacement Sensors." Accepted in the *Proceedings of the ASME 2011 International Design Engineering Technical Conferences*. Washington D.C., August 29-31, 2011.
13. **Cullinan, M.** and Culpepper, M. "Design and Fabrication of Single Chirality Carbon Nanotube-Based Sensors." Accepted in the *Proceedings of the 11th International Conference on Nanotechnology (IEEE NANO 2011)*. Portland, OR, August 15-18, 2011.
12. **Cullinan, M.**, Panas, R., and Culpepper, M. "Design and Fabrication of a Multi-Axis MEMS Force Sensor with Integrated Carbon Nanotube Based Piezoresistors." *Proceedings of the Nanotech 2011 Conference and Expo*. Boston, MA, June 13-16, 2011.
11. **Cullinan, M.**, Panas, R., and Culpepper, M. "A Multi-Axis MEMS Sensor with Integrated Carbon Nanotube-Based Piezoresistors for Precision Force Metrology." *Proceedings of the 11th International Conference of the European Society for Precision Engineering and Nanotechnology*. Lake Como, Italy, May 23-27, 2011.
10. **Cullinan, M.** and Culpepper, M. "Noise Mitigation Techniques for Carbon Nanotube-based Piezoresistive Sensor Systems." *Proceedings of the 2010 Fall Meeting of the Materials Research Society*. Boston, MA, November 29 – December 3, 2010.
9. 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." *Proceedings of the 2010 Annual Meeting of the American Society for Precision Engineering*. Atlanta, GA, October 31 – November 5, 2010.
8. **Cullinan, M.**, Panas, R., Daniel, C., and Culpepper, M. "Carbon Nanotube-Based Sensors for Small-scale Force and Displacement Sensors." *Proceedings of the 2010 Annual Meeting of American Society for Precision Engineering*. Atlanta, GA, October 31 – November 5, 2010.
7. Panas R. M., **Cullinan, M.A.**, and Culpepper, M.L. "A Systems Approach to Modeling of Piezoresistive MEMS Sensors." *Proceedings of the 2010 American Society for Precision Engineering Control of Precision Systems Conference*. Boston, MA, April 10-13, 2010.
6. **Cullinan, M.**, Panas, R., and Culpepper, M. "Design of Micro-Scale Multi-Axis Force Sensors for Precision Applications." *Proceedings of the 2009 Annual Meeting of the American Society for Precision Engineering*. Monterey, CA, October 4-9 2009.

5. **Cullinan, M.** and Culpepper, M. “Controlling the Stiffness of Carbon Nanotube Based Compliant Mechanisms.” *Proceedings of the 5th International Symposium on Nanomanufacturing*. Singapore, January 23-25, 2008, pp. 47.
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

Invited Talks

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

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 2022 17th 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., Diuba, O. Behera, D. Foon, 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, Pittsburg, 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. *Yuskel, 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 Fransisco 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. *Yuskel, 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. Dubia, 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., Dubia, 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. *Dubia, 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. *Yuskel, 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

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., Natinski, E., Khusnatdinov, 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, Pittsburg, 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, Pittsburg, 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, Pittsburg, 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, Pittsburg, 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. Nanotechweb.org "In Depth" featured article. “Controlling Carbon Nanotube Geometry via Tunable Process Parameters.” October 13, 2008.
2. Sensors Magazine. “Rising Star Engineer Rounds The Bases When It Comes To Research And Discovery.” August 4, 2017.

PATENT FILINGS

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.
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
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
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
2. **Cullinan, M.** and Yao, T.F., “A Plurality of Sensing Probes,” Application Number: US16/60235, Filing Date: November 3, 2016
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

INVENTION DISCLOSURES

9. **Cullinan, M.**, Sun, G., Cho, J., Cayll, D. and Ladner, I. “Graphene MEMS Resonant Gas Sensor.” Patent Disclosure, July 19, 2017.
8. Connolly, L, and **Cullinan, M.** “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 Disclosure, April, 25, 2017.
7. Roy, N., Foong, C.S. and **Cullinan, M.** “Microscale Selective Laser Sintering on Flexible substrates and with Multi-material Capabilities” Patent Disclosure, July 14, 2016.
6. Yao, T-F., Duenner, A., and **Cullinan, M.** “A Method for Rapid Specimen-Setup in Wafer Inspection Systems” Patent Disclosure, October 24, 2015.
5. Yao, T-F, and **Cullinan, M.** “Simultaneously-and-Separately Driving of Multiple AFM Tips” Patent Disclosure, October 23, 2015.
4. Duenner, A. and **Cullinan, M.** “Method for Passive Alignment of Semiconductor Wafers” Patent Disclosure, October 23, 2015.
3. Yuksel, A. and **Cullinan, M.** “Powder-to-Parts Predictive Modeling of Microscale Selective Laser Sintering” Patent Disclosure, October 23, 2015.
2. Ladner, I. and **Cullinan, M.** “MEMS Apparatus for Multi-Axis Characterization, Active Force Controlled Growth, and Assembly of Nanostructures” Patent Disclosure, September 17, 2015.
1. Roy, N. and **Cullinan, M.** “Micro- Selective Laser Sintering System” Patent Disclosure, September 9, 2015.

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

- 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

- 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

- 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

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 Konstany, David Strickland; Spring 2014
8. "Design of a Single Turn Multi-valve System" Cody Rigg, Kathryn 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 Stiuca, 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,
86. ClearCam
87. UTME Printer
88. UTME Microscope
89. UTME Metamaterial
90. UTME MEMS
91. UTME EcoCAR
92. UTME AFM
93. UT CAMDI
94. SLB Geometry

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

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

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

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

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

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

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

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

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

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

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

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

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

Masters Students Graduated:

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

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

Chang Zhao, “Design and Fabrication of a Multi-Directional MEMS Thermal Actuator,” Master’s Student; University of Texas at Austin; 2016-2018

Dipankar Behera, “Design of a Multilayer Slot Die Coating System,” Master’s Student; University of Texas at Austin; 2016-2018

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

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.

Sridharan Thirumalai, “Optimization of a Multi-Axis Nanopositioning Stage” - Master’s Student; University of Texas at Austin; 2016 – 2019

Liam Connolly, “Design of a Roll-to-Roll Tip-based Nanometrology System,” Master’s Student; University of Texas at Austin; 2016 – 2019

Nicholas Piacente, “Fabrication and Testing of a Graphene-based Gas Sensor,” Master’s Student; University of Texas at Austin; 2017 – 2020

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

Eva Natinsky, “Three-dimensional Visualization and Modeling of Large-area, Nanoscale Topography Measurements,” Master’s Student; University of Texas at Austin; 2019 – 2022

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

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

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

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

Arron Liao, “Design and Characterization of a Coating Device to Enable Multilayer Structures in Microscale Selective Laser Sintering” The University of Texas at Austin; 2021 - 2023

Reisner, Darren “Review of Perovskite Solar Cells: Challenges, Opportunities, and Advice for Incoming Researchers” The University of Texas at Austin; 2021 - 2023

Ph.D. Students in Progress:

Joshua Grose, Ph.D. Student; University of Texas at Austin; 2018-Present

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

Eva Natinsky, Ph.D. Student; University of Texas at Austin; 2022-Present

Barbara Groh, Ph.D. Student; University of Texas at Austin; 2022-Present

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

Farzana Tasnim, Ph.D. Student; University of Texas at Austin; 2022-Present

Arron Liao, Ph.D. Student; University of Texas at Austin; 2023-Present

Xiangyu (Sean) Guo, Ph.D. Student; University of Texas at Austin; 2023-Present

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

Masters Students in Progress:

Yohannes Bekele (Co-Advised); Masters Student; University of Texas at Austin; 2022-Present

Rachel Paddock (Co-Advised); Masters Student; University of Texas at Austin; 2023-Present

James Garcia; Masters Student; University of Texas at Austin; 2023-Present

Tyler Watt; Masters Student; University of Texas at Austin; 2023-Present

Ph.D. Committee Member

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

Andres Rodriguez, “Design and Fabrication of a Wire Drawing System”, May 2023 - Present

Orlan Oconar, “Modeling of Fluid Flow through TPMS Heat Exchangers”, May 2023 - Present

Ishan Chhatbar, “Micro-SLS Coating Setup”, January 2023-May 2023

Sofia Frey, “Setup of a MEMS-based AFM”, January 2023 - Present

Noor Khourdy, “A Microfluidic System for Emulsion Polymerization”, May 2023 - Present

Alessandra Grady, “Nanomaterials Testing using AFM”, May 2023 - Present

Nathan Shu, “Selective Laser Sintering Power and Resistivity,” May 2023 – Present

Tyler Watts, “Design of a Flexure Based Nanopositioning System”, September 2022 – May 2023

Quentin Cole Schuelcke, “Motor Control in Roll-to-Roll Manufacturing”, September 2022 - Present

William Li, “Micro-SLS Coating System Design”, September 2022-May 2023

Elisante Msenge, Anoushka Sharma, Jose Saucedo, Samik Singh – “Image Segmentation Analysis” – 2022 Fire Team

Catherine Lacey - "Optimization of Circuitry and Dry Electrode Arrangement for a Biostimulation Device with EMG monitoring", Undergraduate Research Student June 2022- August 2022

Ang Gou, “PDI crystal growth”, September 2022-present

Makenna Hayes, “Nanomaterials for Wearable-based Integrated Biostimulation” September 2020-May 2021

Daniel Moran, “Nanomaterials for Wearable-based Integrated Biostimulation” September 2021-May 2022

Daniel Nguyen, “Non-reciprocal Acoustic MEMs Metamaterials with Spatiotemporal Stiffness Modulation”, September 2021 – May 2022

Steven Kroleski, “Multi-layer Slot Die Coating Simulations”, May 2021-December 2021

Steven Padua, “3D Printed Biodegradable Implants for Single-Inoculation of Multiple-Dose Vaccines”, January 2021 – December 2021

Bolun Zhang, “Testing of Mechanical Metamaterials”, January 2022 – May 2022

REU: Juan Bustos, "Engineering Ni catalysts for growing high quality, mechanically elastic many-layer graphene"

Jermy Boyle, Pranay Srivastav, Sucharita Banerje , and Chieh-An Chen - “Tensile Strength Testing of Multilayer Graphene” – 2020 FIRE Team

Austin Jeong , “Multilayer Graphene Growth on Thin Nickel Foils” January 2022 – May 2022.

Francis Caruso, “Integration of Dynamic Material Properties into Part-Scale Selective Laser Sintering Heat Transfer Model”, January 2022 – May 2022.

Shoshannah Isom, “Functionalization of Graphene”, January 2022 – May 2022.

Yohannes Bekele, “Increasing the Purity of Graphene using Different Molecular Weights of PMMA”, September 2021 – May 2022

Darren Au, Cesar Ayalam, Mateo Valdez, and Rushil Patange “Machine Learning and Neural Networks for Image Processing” – 2021 FIRE Team

REU 2020 - Nadia Hannon, Ashley Baringer, Claire Welton, Gabriel Pohlman - Carbon Sequestration Grand Challenge

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 Nanometeology”, UT Austin; June 2021-August 2021

Nick Martinez – “Assembly of MEMS-based Metamaterial Structures”, UT Austin; January 2020 – June 2020

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

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

Dalton Kaiser – "Design of a fixture for mounting IR heater", UT Austin; November 2019 – Present

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Daniel Hernandez, “Acetone Gas Sensor Testing and Calibration”, University of Texas at Austin; September 2018 - Present

Zulema Jurado, “Project: Design Wafer Holder for Nickle Plating Bath,” University of Texas at Austin; June 2018 – August 2018

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

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

Danny Guo, “Initial Characterization of Silver Nanoparticle Inks”, University of Texas at Austin; January 2018 – May 2018

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

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

Williams Davenport, “Characterization of Exfoliated Silicon Wafers”, University of Texas at Austin; June 2017 - August 2017

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

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

Alex Bohannon, “Fabrication of a Roll-to-Roll Tip-Based Nanometrology System,” University of Texas at Austin; April 2017 – Present

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

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

James Butcher, “Metrology for Silicon Exfoliation,” University of Texas at Austin; January 2017 – May 2017

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

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

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

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

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

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

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

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

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

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

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

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

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 STUDNETS SUPERVISED

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.

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.

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

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

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

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

HIGH SCHOOL TEACHERS SUPERVISED

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

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

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

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

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

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

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

Internal Service

Member, New Faculty Launch Committee, 2023-Present

Chair, 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, Diversity, Equity, and Inclusion 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

Member, Mechanical Engineering Department Chair Search Committee, 2019-2020

Chair, College of Engineering Experiential Learning Committee, 2020

Experiential Learning Ambassador for the Experiential Learning Initiative, 2019 – 2022

Member, University Experiential Learning Committee, 2020

Member, University Independent Inquiry Flag Committee, 2021 – Present

Member, University Undergraduate Research Advisory Committee, 2022 - Present

External Service

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

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 – Present

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

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 – Present

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

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

Professional Society Memberships:

- American Society of Mechanical Engineers
- American Society for Engineering Education
- American Society for Precision Engineering
- Institute of Electrical and Electronics Engineers
- Society of Manufacturing Engineers
- Tau Beta Pi