

Geoff Wehmeyer
Assistant Professor
Department of Mechanical Engineering
William Marsh Rice University
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Education

University of California, Berkeley Ph.D. in Mechanical Engineering Major: Heat transfer. Minors: Electron microscopy, solid state physics.	08/13 – 07/18
The University of Texas at Austin B.S. in Mechanical Engineering. Highest honors.	08/09 - 05/13

Professional Experience

Assistant Professor, Dept. of Mechanical Engineering, Rice University	07/18 - present
Graduate researcher, UC Berkeley	08/13 - 07/18
Undergraduate researcher, UT Austin	08/11 - 06/13
Intern, Samsung Austin Semiconductor	06/12 – 08/12

Honors and Awards

NSF CAREER Award (2022-2027)
NASA Early Career Faculty Award (2019-2022; awarded to 9 faculty nationwide in 2019)
Sophia Meyer Farb Prize for Teaching (2021; awarded to 2 Rice junior faculty members in 2021)
National Science Foundation Graduate Research Fellow (2013 -2018)
Berkeley Graduate Fellowship (2013 - 2015)

Peer-Reviewed Journal Articles

(* indicates Wehmeyer lab member, # indicates co-first author, + indicates co-corresponding author)

- 1) T.J. Shimokusu*, A. Nathani, Z. Liu, T.F. Yap, D. J. Preston⁺, **G. Wehmeyer⁺**. Teflon AF–coated nanotextured aluminum surfaces for jumping droplet thermal rectification. (in revision)
- 2) N. Marquez Peraca*, Q. Zhu*, J. Kono, **G. Wehmeyer**. Thermal analysis of thermoelectric active cooling including external thermal resistances. *Applied Physics Letters* **123**, 243901 (2023).
- 3) L. Castelli*, A. Garg*, Q. Zhu*, P. Sashital*, T.J. Shimokusu*, **G. Wehmeyer**. A thermal regulator using passive all-magnetic actuation. *Cell Reports Physical Science* **4**(9), 101556 (2023)
- 4) T.J. Shimokusu*, B. Drolen, C. Wilson, J. Didion⁺, **G. Wehmeyer⁺**. Strain gauge measurements of an oscillating heat pipe from startup to stable operation. *Applied Thermal Engineering* **233**, 121118 (2023).
- 5) Y. Song*, **G. Wehmeyer**. Phonon ray tracing calculations of ballistic temperature and heat flux profiles in nanostructures. *Materials Today Physics* **33**, 101040. (2023)
- 6) Q. Zhu*, T.J. Shimokusu*, **G. Wehmeyer**. Thermal Analysis of Oscillating Thermomagnetic Devices Beyond the Lumped Approximation. *International Journal of Heat and Mass Transfer* **205**, 123876 (2023).

- 7) L. Castelli*, Q. Zhu*, T.J. Shimokusu*, **G. Wehmeyer**. A three-terminal magnetic thermal transistor. *Nature Communications* **14**, 390 (2023).
- 8) Q. Zhu*, K. Zdrojewski*, L. Castelli*, **G. Wehmeyer**. Oscillating gadolinium thermal diode leveraging temperature-dependent magnetic forces. *Advanced Functional Materials* **32**, 2206733 (2022).
- 9) D. Lee, S.G. Kim, S. Hong, C. Madrona, Y. Oh, M. Park, N. Komatsu, L. W. Taylor, B. Chung, J. Kim, J. Y. Hwang, J. Yu, D.S. Lee, H. S. Jeong, N. H. You, N. D. Kim, D.-Y. Kim, H. S. Lee, K.-H. Lee, J. Kono, **G. Wehmeyer**, M. Pasquali, J. J. Vilatela, S. Ryu, B.-C. Ku. Ultrahigh strength, modulus, and conductivity of graphitic fibers by macromolecular coalescence. *Science Advances* **8**, eabn0939 (2022).
- 10) T.J. Shimokusu*[#], Q. Zhu*[#], N. Rivera*, **G. Wehmeyer**. Time-periodic thermal rectification in heterojunction thermal diodes. *International Journal of Heat and Mass Transfer* **182**, 122035 (2022)
- 11) N. Komatsu, Y. Ichinose, O.S. Dewey, L. W. Taylor, M. Trafford, Y. Yomogida, **G. Wehmeyer**, M. Pasquali, K. Yanagi, J. Kono. Macroscopic weavable fibers of carbon nanotubes with giant thermoelectric power factor. *Nature Communications* **12**, 4931 (2021).
- 12) Y. Song*, **G. Wehmeyer**. Maximizing and minimizing the boundary scattering mean free path in diameter-modulated coaxial cylindrical nanowires. *Journal of Applied Physics* **130**, 045104 (2021).
- 13) L.W. Taylor, O.S. Dewey, R.J. Headrick, N. Komatsu, N.M. Peraca, **G. Wehmeyer**, J. Kono, M. Pasquali. Improved Properties, Increased Production, and the Path to Broad Adoption of Carbon Nanotube Fibers. *Carbon* **171**, 689-694 (2021).
- 14) S.M. Rehn, T.M. Gerrard-Anderson, L. Qiao, Q. Zhu*, **G. Wehmeyer**, M. R. Jones. Mechanical Reshaping of Inorganic Nanostructures with Weak Nanoscale Forces, *Nano Letters* **21**, 130-135 (2021).
- 15) **G. Wehmeyer**. Modeling ballistic phonon transport from a cylindrical electron beam heat source. *Journal of Applied Physics* **126**, 124306 (2019).
- 16) O. Kwon, **G. Wehmeyer**, C. Dames. Modified ballistic–diffusive equations for obtaining phonon mean free path spectrum from ballistic thermal resistance. Part II. Derivation of integral equation based on ballistic thermal resistance. *Nanoscale and Microscale Thermophysical Engineering* **4**, 334-347 (2019).
- 17) O. Kwon, **G. Wehmeyer**, C. Dames. Modified ballistic–diffusive equations for obtaining phonon mean free path spectrum from ballistic thermal resistance. Part I: Introduction and Validation of the Equations. *Nanoscale and Microscale Thermophysical Engineering* **3**, 259-273 (2019).
- 18) H.S. Choe[#], R. Prabhakar[#], **G. Wehmeyer**[#], F.I. Allen, W. Lee, L. Jin, Y. Li, P. Yang, C. Qiu, C. Dames, M. Scott, A. M. Minor, J.-H. Bahk, and J. Wu. Ion write micro-thermotics: programing thermal metamaterials at the microscale. *Nano Letters* **19** (6), 3830-3837 (2019).
- 19) **G. Wehmeyer**, K. Bustillo, A.M. Minor, and C. Dames. Measuring temperature-dependent thermal diffuse scattering using scanning transmission electron microscopy. *Applied Physics Letters* **113**, 253101 (2018). (Featured article)
- 20) **G. Wehmeyer**, A.D. Pickel, and C. Dames. Onsager reciprocity relation for ballistic phonon heat transport in anisotropic thin films of arbitrary orientation. *Physical Review B* **98**, 014304 (2018).
- 21) **G. Wehmeyer**, T. Yabuki, C. Monachon, J. Wu, and C. Dames. Thermal diodes, regulators, and switches: physical mechanisms and potential applications. *Applied Physics Reviews* **4**, 041304 (2017).
- 22) J. Lee[#], W. Lee[#], **G. Wehmeyer**[#], S. Dhuey, D. Olynick, S. Cabrini, C. Dames, J. Urban, and P. Yang. Investigation of phonon coherence and backscattering using silicon nanomeshes. *Nature Communications* **8**, 14054 (2017).

- 23) Z. Wei, **G. Wehmeyer**, C. Dames, and Y. Chen. Geometric tuning of thermal conductivity in three-dimensional anisotropic phononic crystals. *Nanoscale* **8**, 16612-16620 (2016).
- 24) S.D. Lubner, J. Choi, **G. Wehmeyer**, B. Waag, V. Mishra, H. Natesan, J.C. Bischof, and C. Dames. Reusable bi-directional 3ω sensor to measure thermal conductivity of 100- μm thick biological tissues. *Review of Scientific Instruments* **86**, 014905 (2015).

Conference Presentations

- 1) S. Liao, Y. Song, S. Yu, O. Dewey, M. Pasquali, J. Kono, **G. Wehmeyer**, D. Natelson. Probing the Variance of Seebeck Coefficient of Carbon Nanotube Fibers Using Photothermoelectric Effect. APS March Meeting 2024, Minneapolis MN, May 3-8th 2024
- 2) S. Yu, H. Xu, J. Doumani, J. Khoury, **G. Wehmeyer**, M. Pasquali, M. Foster, D. Natelson, J. Kono. Anisotropic Electron Transport in Highly Aligned Carbon Nanotube Films. APS March Meeting 2024, Minneapolis MN, May 3-8th 2024
- 3) A. Abbas, T.J. Shimokusu, G. Wells, **G. Wehmeyer**, K. Sefiane, D.J. Preston, D. Orejon. Controlling Droplet Size Density during Dropwise Condensation on Silicone Oil Grafted Surfaces. APS Division of Fluid Dynamics Meeting, Nov. 19-21st 2023.
- 4) L. Castelli, Q. Zhu, T.J. Shimokusu, **G. Wehmeyer**. A three-terminal magnetic thermal transistor. ASME IMECE, New Orleans LA, Oct. 30-Nov. 2nd, 2023
- 5) L. Castelli, A. Garg, Q. Zhu, P. Sashital, T.J. Shimokusu, **G. Wehmeyer**. Passive thermal control of spacecraft utilizing temperature dependent magnetic forces. Thermal & Fluids Analysis Workshop, College Park MD, August 21-25th, 2023.
- 6) T.J. Shimokusu, B. Drolen, C. Wilson, J. Didion, **G. Wehmeyer**. Strain gauge measurements of an oscillating heat pipe from startup to stable operation. Thermal & Fluids Analysis Workshop, College Park MD, August 21-25th, 2023.
- 7) Y. Song, **G. Wehmeyer**. Phonon Ray Tracing Calculations of Ballistic Temperature and Heat Flux Profiles in Nanostructures. ASME Summer Heat Transfer Conference, Washington D.C., July 10-12th 2023
- 8) T.J. Shimokusu, A. Nathani, Z. Liu, T.F. Yap, D.J. Preston, **G. Wehmeyer**. Aluminum Surfaces for Jumping Droplet Thermal Diodes. ASME Summer Heat Transfer Conference, Washington D.C., July 10-12th 2023
- 9) Y. Song, **G. Wehmeyer**. Molecular aspect ratio controls thermal transport in high-conductivity carbon nanotube fibers. Carbon Hub 2023 Spring Meeting, Houston TX, May 2nd-3rd 2023 (poster, 2nd place poster award out of 18 posters).
- 10) N. Rivera, **G. Wehmeyer**, Techno-Economic Analysis of Carbon Nanotube Fiber Overhead Power Lines, Carbon Hub 2023 Spring Meeting, Houston TX, May 2nd-3rd 2023 (poster).
- 11) L. Castelli, Q. Zhu, T.J. Shimokusu, **G. Wehmeyer**. A three-terminal magnetic thermal transistor. MRS Spring Meeting, San Francisco CA, April 10th-14th, 2023. (poster)
- 12) Q. Zhu, K. Zdrojewski, L. Castelli, **G. Wehmeyer**. Oscillating gadolinium thermal diode leveraging temperature-dependent magnetic forces. MRS Spring Meeting, San Francisco CA, April 10th-14th, 2023.
- 13) Q. Zhu, K. Zdrojewski, L. Castelli, **G. Wehmeyer**. Oscillating gadolinium thermal diode leveraging temperature-dependent magnetic forces. ASME IMECE, Columbus OH, Oct. 31-Nov. 3rd, 2022.
- 14) T.J. Shimokusu, Q. Zhu, N. Rivera, **G. Wehmeyer**. Frequency-Dependent Rectification in Heterojunction Thermal Diodes. ThermoMeta22 Conference on Thermodynamics and Thermal Metamaterials, August 18-19th, 2022 (virtual conference).

- 15) T.J. Shimokusu, Q. Zhu, N. Rivera, **G. Wehmeyer**. Frequency-Dependent Rectification in Heterojunction Thermal Diodes. ASME Summer Heat Transfer Conference, Philadelphia PA, July 13, 2022.
- 16) Y. Song, **G. Wehmeyer**. Modeling phonon backscattering in diameter-modulated coaxial cylindrical nanowires. ASME Summer Heat Transfer Conference, Philadelphia PA, July 13, 2022.
- 17) N. Komatsu, N. M. Peraca, Y. Ichinose, X. Li, O.S. Dewey, L.W. Taylor, M. Trafford, A. Mojibpour, Y. Yomogida, **G. Wehmeyer**, K. Yanagi, M. Pasquali, M. Foster, J. Kono. Thermoelectric and Electronic Transport Studies of Ultrahigh-Conductivity Aligned Carbon Nanotube Assemblies. 241st Electrochemical Society Meeting, Vancouver BC, May 29-June 2nd 2023.
- 18) T.J. Shimokusu, Q. Zhu, N. Rivera, **G. Wehmeyer**. Modeling the Frequency-Dependent Response of Heterojunction Thermal Diodes for AC-to-DC Thermal Rectification. MRS Spring Meeting, Honolulu HI, May 8-13 2022. (poster)
- 19) Y. Song, **G. Wehmeyer**. Maximizing and minimizing the boundary scattering mean free path in diameter-modulated coaxial cylindrical nanowires. APS March Meeting, Chicago IL, March 12-16, 2022.
- 20) N. Komatsu, N. M. Peraca, X. Li, O. Dewey, L. Taylor, A. Mojibpour, **G. Wehmeyer**, M. Pasquali, M. Foster, J. Kono. Electronic transport in ultrahigh-conductivity aligned carbon nanotube assemblies. APS March Meeting, Chicago IL, March 12-16, 2022.
- 21) Y. Song, **G. Wehmeyer**. Geometric parameters to maximize or minimize the thermal conductivity of periodic coaxial cylindrical nanowires. MRS Fall Meeting, Boston MA, Nov. 30-Dec. 2, 2021.
- 22) Y. Song, **G. Wehmeyer**. Optimal geometric parameters to maximize or minimize phonon boundary scattering in periodic coaxial cylindrical nanowires. 21st Symposium on Thermophysical Properties, June 20-25, 2021 (virtual conference)
- 23) **G. Wehmeyer**. Modeling the Quasiballistic Phonon Thermal Resistance During Electron Beam Heating of Thin Films. MRS Spring Meeting, April 20, 2021 (virtual conference).
- 24) **G. Wehmeyer**. Boltzmann equation modeling of quasiballistic phonon transport from a cylindrical electron beam heat source. APS March Meeting, March 13-18, 2021. (virtual conference).
- 25) **G. Wehmeyer**, Probing nanoscale heat transfer using the scanning transmission electron microscope. Poster presentation, NSF New Frontiers in Thermal Transport Workshop, Dec. 14-16, 2020. (virtual workshop)
- 26) **G. Wehmeyer**. Boltzmann equation modeling of quasiballistic phonon transport from a cylindrical electron beam heat source. ASME Summer Heat Transfer Conference, Orlando, FL, July 13-15, 2020. (virtual conference).
- 27) **G. Wehmeyer**, Modeling quasiballistic phonon transport from a cylindrical electron beam heat source. APS March Meeting (virtual conference), March 2-6, 2020.
- 28) **G. Wehmeyer**. Boltzmann transport equation modeling of electron beam heating in thin samples. ASME Summer Heat Transfer Conference, Bellevue, WA, July 14-17, 2019.
- 29) **G. Wehmeyer**, K.C. Bustillo, A.M. Minor, and C. Dames. Temperature-dependent thermal diffuse scattering measurements using scanning transmission electron microscopy. 2019 Spring MRS Meeting, Phoenix, AZ, April 22-26, 2019.
- 30) **G. Wehmeyer**, A. D. Pickel, and C. Dames. Onsager reciprocity relation for ballistic phonon heat transport in anisotropic thin films of arbitrary orientation. APS March Meeting, Boston MA, March 4-8, 2019.
- 31) **G. Wehmeyer**, A. D. Pickel, and C. Dames. Modeling thin film boundary scattering effects on the off-diagonal elements of the thermal conductivity tensor. ASME Summer Heat Transfer Conference, Bellevue WA, July 9-12, 2017.

- 32) **G. Wehmeyer**, C. Dames. Nanoscale thermometry utilizing thermal diffuse scattering in the scanning transmission electron microscope. Poster session, US-Japan Joint Seminar on Nanoscale Transport Phenomena. Tokyo, Japan, July 3-5, 2017.
- 33) **G. Wehmeyer**, J. Lee, W. Lee, S. Dhuey, D. Olynick, S. Cabrini, J. Urban, P. Yang, C. Dames. Ray tracing simulations of incoherent phonon transport in silicon nanomeshes. Poster session, Materials Research Society Spring Meeting, Phoenix AZ, April 17-21, 2017.
- 34) **G. Wehmeyer**, K. Bustillo, A.M. Minor, and C. Dames. Measuring temperature using the thermal diffuse scattering in transmission electron microscope diffraction patterns. Poster, Molecular Foundry User Meeting 2016, Lawrence Berkeley National Laboratory, August 11-12 2016.
- 35) **G. Wehmeyer**, W.B. Chang, B. Russ, J.J. Urban, R.A. Segalman, and C. Dames. Ligand Length Effect on the Thermal Conductivity of Nanocrystal Arrays. IMECE2014-38659, Montreal, Canada, September 14-20, 2014.
- 36) C. Miers, **G. Wehmeyer**, and C.H. Hidrovo. A novel thermo-hydraulic test platform for micropillared array thermal wick optimization. 10th Annual ASME International Conference on Nanochannels, Microchannels, and Minichannels, Rio Grande, Puerto Rico, July 8-12, 2012

Invited Presentations

- 1) **G. Wehmeyer**, Heat switching using thermomagnetic devices and carbon nanotube macromaterials, Wright State University Physics Seminar, October 6th 2023.
- 2) **G. Wehmeyer**, Heat switching using thermomagnetic devices and carbon nanotube macromaterials, University at Buffalo Electrical Engineering Seminar, Sept. 15th 2023.
- 3) **G. Wehmeyer**, Thermal properties of aligned carbon nanotube (CNT) fibers, PIRE:JUNCTIONS 2023 Kickoff Meeting, Yokohama JP, May 22nd 2023.
- 4) **G. Wehmeyer**, Thermal Conductivity and Thermal Diffusivity of Carbon Nanotube (CNT) Fibers, Carbon Hub 2023 Spring Meeting, Houston TX, May 2nd-3rd 2023.
- 5) **G. Wehmeyer**. Thermal Properties of High-Conductivity Carbon Nanotube Fibers. DOE CABLE Workshop, Thermal Properties session, Argonne National Laboratory, Chicago, IL, July 20-21st 2022.
- 6) **G. Wehmeyer**, Passive thermal control devices using temperature-dependent magnetic forces. NASA Goddard Space Flight Center (GSFC) Technical Presentation, Greenbelt, MD. July 19th 2022.
- 7) **G. Wehmeyer**, Axial thermal conductivity and thermal diffusivity measurements in high-conductivity aligned carbon nanotube fibers. NT22, The 22nd International Conference on the Science and Applications of Nanotubes and Low-Dimensional Materials (virtual presentation). June 24th, 2022.
- 8) **G. Wehmeyer**, Multiscale optimization of electrical and thermal transport in carbon nanotube conductors for power cable applications. Carbon Hub 2022 Summer Meeting, Houston TX, May 31st-June 1st 2022.
- 9) **G. Wehmeyer**, Passive heat switching using temperature-dependent magnetic forces. University of Rochester Department of Mechanical Engineering Remote Seminar, February 26, 2021.
- 10) **G. Wehmeyer**, Passive heat switching using temperature-dependent magnetic forces. Washington University in St. Louis Department of Mechanical Engineering and Materials Science Remote Seminar, December 3, 2020.
- 11) **G. Wehmeyer**, Probing heat conduction in complicated nanostructures using simulations and experiments. Kansas State Department of Mechanical and Nuclear Engineering Seminar, Manhattan KS, February 25, 2020.
- 12) **G. Wehmeyer**. Temperature-Dependent Thermal Diffuse Scattering for Scanning Transmission Electron Microscope Thermometry. 236th Meeting of the ElectroChemical Society, Atlanta GA, October 13-17, 2019.

- 13) **G. Wehmeyer**. Characterizing thermal performance of materials with high spatial resolution. AMPT Symposium, Rice University, August 15, 2019.
- 14) **G. Wehmeyer**. Developing nanoscale thermometry techniques using scanning transmission electron microscopy. 2019 Telluride Science Research Conference: Thermal Transport at the Nanoscale, Telluride, CO, June 16-20, 2019.
- 15) **G. Wehmeyer**. Probing thermal properties of materials using transmission electron microscopy (Keynote). ASM Houston Chapter Seminar, Rice University, May 2 2019.
- 16) **G. Wehmeyer**. Understanding heat transfer in complicated nanostructures: simulations and experiment. Rice University Department of Materials Science and Nanoengineering Seminar, November 1 2018.
- 17) C. Dames and **G. Wehmeyer**, Thermal diodes, regulators, and switches: Physical mechanisms and potential applications (Keynote). Tunable Thermal Materials Workshop, Charlottesville VA, July 16-17, 2018.
- 18) **G. Wehmeyer**. Thermal Conductivity Size Effects in Silicon Nanomeshes. San Jose State University Department of Physics and Astronomy Seminar, November 5 2015.

Teaching

Course	Level	Year	Enroll-ment	Student evaluation (Scale 1-5, 1 = Outstanding)	
				Course Evaluation: “Overall, I would rank the quality of this class as...”	Instructor Evaluation: “Overall, I feel the instructor’s effectiveness as a teacher was”
MECH 481: Heat Transfer	Junior, req’d.	Sp. 2019	45	1.10 (Rice mean 1.78)	1.05 (Rice mean 1.64)
		Sp. 2020	47	1.03 (Rice mean 1.69)	1.05 (Rice mean 1.59)
		Sp. 2021	54	1.20 (Rice mean 1.73)	1.16 (Rice mean 1.61)
		Sp. 2022	43	1.18 (Rice mean 1.71)	1.05 (Rice mean 1.60)
		Sp. 2023	45	1.10 (Rice mean 1.72)	1.10 (Rice mean 1.61)
MECH 484/584: Micro. Thermo. & Transport	Grad. /Senior, elective	Fall 2019	8	1.17 (Rice mean 1.76)	1.67 (Rice mean 1.67)
		Fall 2020	13	1.08 (Rice mean 1.69)	1.08 (Rice mean 1.58)
		Fall 2021	17	1.18 (Rice mean 1.75)	1.06 (Rice mean 1.63)
		Fall 2022	24	1.09 (Rice mean 1.73)	1.05 (Rice mean 1.62)
		Fall 2023	27	-	-

Service

University service:

- Faculty Fellow for Center for Teaching Excellence (Fall 2021-present)
- Divisional Associate for Engineering at McMurry College (Fall 2022-present)
- Associate at McMurry College (Fall 2019-present)

School of Engineering service:

- CHBE Faculty Search Committee External Member (Fall 2022, Spring 2023)
- MECH DEI Committee Representative (Spring 2023)
- Program assessment participant for Engineering Design program (Spring 2023)
- Freshman Design Mentor for ENGI 120 (Spring 2020, Fall 2021, Fall 2023)
- AMPT Center PhD Recruitment Award Committee (Spring 2021)

Department service:

- Mechanical Engineering Lecturer Search Committee (Summer 2022, Summer 2023)
- Rice Mechanical Engineering Graduate Committee Member (Fall 2018 – present)
 - Lead mentor for Undergraduate Teaching Fellows Program (Fall 2022- present)
- Rice Mechanical Engineering Seminar Series Committee Member (Spring 2021-present)
- Faculty Liaison to MECH Undergraduate Committee on DEI (Fall 2020) and MECH representative to SOE DEI Committee (Fall 2022-present).
- Ph.D. Qualifying Exam Committee Member :
 - AY '18-'19 : Austin Ward, Marcelo Fernandes, Kenechi Agbim
 - AY '19-'20: Danielle Perdue, Nick Jean-Louis
 - AY '20-21: Trevor Shimokusu, Yingru Song, Te Faye Yap, Zhen Liu, Rawand Rasheed, Boyu Zhang, Mohammad Sajadi.
 - AY '21-22 : Marquise Bell, Barclay Jumet, Clarke Wilkirson, Desh Dixit, Natsumi Komatsu, Nick Jean-Louis
 - AY '22-'23 : Lorenzo Castelli, Rick Fontenot, Ognyan Stefanov, Bongki Shin
 - AY '23-'24: Ariel Whitehead, Kashif Liaqat
- MECH Senior Design Project Mentor (Fall 2019)

Professional Activities

- Member of ASME, MRS, and APS.
- Leadership positions:
 - Vice Chair of ASME HTD K-9 Committee on Nanoscale Thermal Transport (2023-2025)
 - Secretary of ASME HTD K-9 Committee on Nanoscale Thermal Transport (2021-2023)
- Conference Activities / Session Chair :
 - Session Chair for ASME 2023 Summer Heat Transfer Conference: “K9-02 Thermal Transport in Nanomaterials/Across Interfaces 2”, and “Raymond Viskanta Memorial Symposium 07: Heat Conduction”.
 - Session Organizer for APS 2022 March Meeting Focus Topic 13.01.02: “Electron, Exciton, and Phonon Transport in Nanostructures”
 - Session Organizer for ASME 2020 Summer Heat Transfer Conference: Session 09-06 “Modeling and Simulation” (virtual conference).
 - Session Chair for MRS 2021 Fall Meeting, Session EN.05 “Phonon Transport”, Dec. 1st 2021, Boston MA.
 - Session Chair for IEEE ITherm 2022, “Automotive, Batteries and Thermal Storage I”, May 31st – June 3rd 2022, San Diego CA.
 - Poster Session Committee Chair, Carbon Hub 2023 Spring Meeting, May 2nd 2023, Houston TX.

- Reviewer for Smalley-Curl Institute Symposium Oral Presentation sessions, Summer 2022 and 2023.
- Workshop Organizer, PIRE:JUNCTIONS Summer 2023 Workshop at Rice University, July 27th 2023.
- Grant reviewer for NSF CBET TTP (2x), NSF GRFP, and ACS DNI PRF.
- Journal article reviewer:

ACS Macro Letters	Materials Today
ACS Nano	Materials Today Physics
Advanced Energy Materials	Micron
Advanced Materials Interfaces	Nature Sustainability
Advanced Materials Technology	Nano. and Micro. Thermophysical Engineering
Advanced Science	National Science Review
Applied Energy	Physica E
Applied Physics A	Physical Review Applied
Applied Physics Letters	Physical Review B
Carbon	Physical Review E
European Physical Journal Plus	Physical Review Letters
Intern. Comms. in Heat and Mass Transfer	Physical Review Materials
Intern. Journal of Heat and Mass Transfer	Science
Journal of Applied Physics	Science Advances
Journal of Heat Transfer	Soft Matter
Journal of Thermal Science and Engineering Applications	Ultramicroscopy
Joule	

Outreach

- Research Mentor for Nano-REU program **Summers '21-'23**
- Mentoring local community-college students Andrea Fabila ('21), Alexa Reyes ('22), Eduardo Garcia ('23) working 40 hrs/week in research lab for 10 weeks.
- Co-chair of science program Students for Environmental Energy Development **08/13 – 05/17**
- Led biweekly energy science outreach program at Berkeley High School for three years
 - Coordinated 31 graduate students for >900 mentoring hours
- Berkeley Engineering Research Experience for Teachers (BERET) mentor **Summer '14, '15**
- Supervised two undergraduates (Rachael Klaiss and Conor Carroll) and two high school science teachers (Kurt Osmer and Stephanie Morgado) on summer research projects

Postdoctoral Scholars Supervised

1. Zade, Vishal. (2021-2022). 7 month postdoctoral appointment. Next position: Intel R&D.
2. Nazari, Mojdeh (2020). 4 month postdoctoral appointment. Next position: LAM Research.
3. Zhu, Qing (2020-2023). 3 year postdoctoral appointment. Next position: Helix Earth Technologies.

Students Supervised

Ph.D. Advisees (In Progress)

1. Song, Yingru. Expected May 2024.
2. Shimokusu, Trevor. Expected August 2024. NASA NSTGRO Research Fellow (2020-2024).

3. Castelli, Lorenzo. Expected May 2026. DOE BTO iBUILD Research Fellow (2023-2026).
4. Stefanov, Ognyan. Expected May 2026.
5. Whitehead, Ariel. Expected May 2027.
6. Vijay Kumar, Monisha. Expected May 2027.

M.S. Advisees

1. Garg, Ajay (MECH). *Passive Magnetic Heat Switch for Thermal Management of Lunar Spacecraft*. December 2022. Next position: Blue Origin.

Visiting Scholars

1. Ishikawa, Yutaka. University of Tokyo M.S. student, 4 month visiting appointment.

Committee Member

1. Li, Wenbin (PhD, Mohite). *Understanding structural dynamics using in-situ correlated measurements for halide perovskites*. October 2023.
2. Rasheed, Rawand (PhD, Preston). *Multiplexed Inertial Coalescence Filters*. August 2023.
3. Marquez Peraca, Nicolas (PhD, Kono). *New Frontiers in Quantum Simulation of an Extended Dicke Model and Active Cooling*. July 2023.
4. Schmid, William (MS, Alabastri). *Large-Scale Decentralized Solar-Driven Photothermal Desalination: A Blueprint to Make Efficient Off-Grid Technologies a Reality*. June 2023.
5. Prasad, Ciril (MS, Naik). *Thermal radiation control by engineering permittivity, symmetry and topology in thermal emitters*. May 2023.
6. Dewey, Oliver (PhD, Pasquali). *Rheology and sustainable, scalable, low-cost fiber spinning of carbon nanotube solutions*. April 2023.
7. Zhang, Boyu (PhD, Lou). *Additive manufacturing and mechanical properties of 2D h-BN reinforced nanocomposite*. November 2022
8. Jean-Louis, Nick (PhD, Schaefer). *System-scale Analysis of a Parabolic Trough Concentrated Solar Power Plant with Hybrid Thermal Storage*. July 2022.
9. Komatsu, Natsumi (PhD, Kono). *Thermoelectric and Electronic Transport Studies of Ultrahigh-Conductivity Carbon Nanotube Fibers*. April 2022.
10. Petrosius, Timothy (PhD, Schaefer). *Refinement and Development of the Finite Volume Discrete Boltzmann Method in 2-D and 3-D*. April 2022.
11. Sajadi, Seyed Mohammad (PhD, Ajayan). *Direct 3D Printing of Complex Materials*. December 2021.
12. Li, Wenbin (MS, Mohite). *Understanding the structural properties in two-dimensional halide perovskites under external stimuli*. August 2021.
13. Zhang, Hao (MS, Mohite). *Direct visualization of ultrafast lattice ordering via resonant electron-phonon coupling in 2D hybrid perovskites*. August 2021
14. Singer, Amanda (PhD, Robinson). *Magnetolectric Materials for Wireless Power Delivery to Miniature Bioelectronic Implants*. April 2021.
15. Perdue, Danielle (PhD, Schaefer). *Flow and Thermal Modeling for Enhanced Direct Contact Membrane Distillation Performance*. April 2021.
16. Doiron, Chloe (PhD, Naik). *Alternative Materials for Harnessing Symmetry and Topology in Thermal Light Sources for Thermophotovoltaics*. Nov. 2020.
17. Agbim, Kenechi (PhD, Schaefer). *Simulation of Property Variation in Thermoresponsive Hydrogels*. April 2020.

Undergraduate Research Supervised

11 women, 9 students from underrepresented backgrounds (i.e. Hispanic or African-American), 6 went on to pursue engineering graduate degrees directly after graduation.

1. Wright, Wesley (MECH). *Finite-element modeling of bundle-bundle thermal interactions in carbon nanotube fibers*. Fall 2023 –present.
2. Hart, Katie (MECH). *Surface wettability patterning quantification on aluminum surfaces*. Fall 2023-present.
3. Garcia, Eduardo (MECH). *Thermoelectric measurements of aligned carbon nanotube films*. Summer 2023. Nano-REU participant, Houston Community College.
4. Flemister, Callum (MECH). *Magnetic force measurements in thermomagnetic devices*. Summer 2023, Fall 2023.
5. Doherty, Kate (MECH). Summer 2023. *Design and fabrication of an inverted thermal switch*. Summer 2023.
6. Gonzalez Alcocer, Rolando (MECH). *Carbon nanotube fibers for hot-wire anemometry applications*. Summer 2023.
7. Thakkar, Hemish (MECH). *Heterogeneous patterning of surface wettability on aluminum surfaces*. Summer 2023-present.
8. Tomita, Lilica. (MECH). *Heat flow in multi-leg active cooling devices*. Spring 2023. TOMODACHI student participant, Waseda University.
9. Wright, Lindsay (MECH). *Design and testing of inverted magnetic thermal switches*. Spring 2023-present.
10. Sashital, Pooja (MECH). *Finite element modeling of thermal transistors*. Fall 2022-present. Co-author on *CRPS* manuscript.
11. Reyes, Alexa (MECH). *Demonstration of half-wave rectification using oscillating gadolinium thermal diodes*. Nano-REU participant, San Jacinto Community College. Summer 2022
12. Webb, Alisa (MECH). *Finite-element modeling of passive magnetic heat switches*. Fall 2021-Spring 2022. Awarded NSF GRFP award in Spring ‘22. Next position Ph.D. student at MIT.
13. Pitts, Tyler (MECH). *Portable smartphone thermal imaging experiments and analysis*. Fall 2021-Spring 2022. Next position M.S. student at Georgia Tech.
14. Walker, Edward (MECH). *Numerical modeling of pulsed thermoelectric heat switch systems*. Fall 2021-Spring 2023. Next position Ph.D. student at Purdue.
15. Ueyema-Burke, Dylan (MECH). *Development of thermal switches for refrigeration applications*. Fall 2021 - Spring 2023.
16. Fabila Mireles, Andrea Yamilez (MECH). *Finite-element thermal modeling of passive magnetic heat switch*. Summer 2021. Nano-REU participant, UT Tyler. Awarded “People’s Choice” award for poster presentation at SCI 2021 Summer Research Symposium.
17. Rivera, Natan (MECH), *System integration of carbon nanotube fibers for power transmission*. Summer 2021 - Spring 2023. Awarded 2021 OURI Summer Research Fellowship. Co-author on *IJHMT* manuscript.
18. Yao, Audrey (MECH), *Data mining of first-principles thermal conductivity accumulation functions*. Spring 2021.
19. Zdrojewski, Kaitlyn (MECH), *Time-periodic thermal switching using oscillating heat switch*. Fall 2020 - Spring 2023. Co-author on *Advanced Functional Materials* manuscript.
20. Martinez Cordeiro, Juan Pablo (MECH). *Analysis of pulsed thermoelectric heat switches*. Summer 2020-Spring 2021. Next position Ph.D. student at University of Texas at Austin.
21. Landa, Hociel (MECH). *Geometric design of additively manufactured heat sinks*. Summer 2020-Summer 2021. Awarded “Best Engineering Poster Presentation” at 2021 Rice Undergraduate Research Symposium. Awarded 2020 OURI Summer Research Fellowship. Next position M.M.E. student at Rice University.
22. Onyeagoro, Chidera (MECH). *Optimization of phase-change thermal energy storage devices for time-periodic thermal response*. Summer 2020.

23. Adiole, Chima (MECH). *Visualization of thermoelectric module heating and cooling*. Spring 2020-Summer 2020.
24. Liu, Harry (MECH). *Extracting local and heterogeneous thermal conductivity using deep learning*. Spring 2019-Spring 2020. Next position Ph.D. student at Purdue University.
25. Song, Jacob (MECH). *Gravity-driven thermal rectification using thermosiphons*. Spring 2019.