

Yi Zheng, Ph.D., ASME Fellow

Associate Professor, Mechanical and Industrial Engineering
Affiliated Faculty, Chemical Engineering
Faculty Fellow, College of Engineering
Faculty Fellow, Center for Emerging Markets
Director, Nano Energy Laboratory
Northeastern University, Boston, MA 02115
Office Phone: (617) 373-5558; Email: y.zheng@northeastern.edu
Lab Website: <https://nanoenergy.sites.northeastern.edu/>



HIGHLIGHTS

- Published 90+ peer-reviewed journal papers (h-index of 28 and i10-index of 56)
- Gave 50+ seminar/invited talks and served as conference topic/session chairs 30+ times
- Holding 3 PCT/US patents and 4 US patents pending
- Received multiple federal, state, and industrial research grants totaling over \$4.4M
- Dr. Zheng's innovative cleantech research about carbon-neutral passive cooling and solar-driven water desalination technologies have received tremendous global attention (e.g., US, UK, China, India, New Zealand and South Africa) and have been covered by more than 100 news outlets, including Northeastern University news, AP News, BBC, Science, India Times, Global Leaders Today, Phys.org, The Vanguard (GE News), WaterToday, ASEE Prism Magazine, New York Rural Water Association, Chemical Engineering Magazine, the live radio interview "Top of Mind with Julie Rose" and The Hill's "Changing America."

EDUCATION

2009 – 2014 **Columbia University, New York, NY, United States**
Ph.D. in Mechanical Engineering
M.S. in Mechanical Engineering
Thesis Advisor: Prof. Arvind Narayanaswamy

2005 – 2009 **Tsinghua University, Beijing, China**
B.S. in Mechanical Engineering
Thesis Advisors: Prof. Ying Dong and Prof. Zheng You

EMPLOYMENT & PROFESSIONAL EXPERIENCE

2024 **Faculty Fellow**, College of Engineering, Northeastern University, Boston

2024, 2023, 2021 **Faculty Fellow**, NASA Glenn Research Center, Cleveland, OH

2023 **Faculty Fellow**, Center for Emerging Markets, D'Amore-McKim School of Business, Northeastern University, Boston, MA

2022 – 2024 **Affiliated Faculty**, Department of Chemical Engineering, Northeastern University, Boston, MA

2022 **NSF-sponsored Visiting Professor**, Kavli Institute for Theoretical Physics, University of California, Santa Barbara, CA

2021 **Founder and Chief Technology Officer**, Planck Energies, Boston, MA

2021 **French National Centre for Scientific Research (CNRS) Research Fellow**, Department of Physics, University of Montpellier, France

2019 – 2022 **Affiliated Faculty**, Department of Electrical and Computer Engineering,

2019	Northeastern University, Boston, MA Associate Professor with tenure, Department of Mechanical and Industrial Engineering, Northeastern University, Boston, MA
2017 – 2019	Research Faculty Fellow , Undersea Energy Systems Program, National Institute for Undersea Vehicle Technology, Groton, CT
2014 – 2019	Assistant Professor and Associate Professor with Tenure, Department of Mechanical Engineering, University of Rhode Island, Kingston, RI
2012 – 2014	Research Associate , NSF IGERT Columbia Optics and Quantum Electronics Center, New York, NY

RESEARCH INTERESTS

- Functional energy materials for thermophotovoltaic energy harvesting, passive cooling for infrastructures and vehicles, solar-driven water desalination and purification, waste heat recovery, opto-thermal sensing, and infrared signature suppression
- Cleantech, sustainability, and carbon neutral technologies for addressing the growing global challenges in renewable energy and water scarcity
- Fundamental and applied investigations on nanoscale energy transport and advanced opto-thermal properties of novel metasurfaces and metamaterials
- Advanced functionalities of metamaterials: light manipulation, tunable opto-thermal properties, spectral and angular selectivity, self-adaptivity, high-temperature resistance, anti-scratch, self-cleanness, and super-hydrophobicity
- Electromagnetic fluctuation induced near-field effects and van der Waals/Casimir interactions
- Physics-guided and deep-learning-aided design and nanofabrication of functional materials, for example, photonic metamaterials, phase-transition thermal devices, nanoparticle-nanofiber composites, stretchable and reconfigurable two-/three-dimensional periodic surface gratings

MEDIA AND NEWS COVERAGE WITH LINKS

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| 09/2024 | Northeastern Global News “ <i>Is cooling paint the key to turning down the planet’s temperature dial?</i> ”
(https://news.northeastern.edu/2024/09/06/cooling-paint-earth-temperature/) |
| 07/2024 | Northeastern Global News “ <i>Northeastern researcher developing device to convert wasted heat into energy for spacecrafts and Mars rovers</i> ”
(https://news.northeastern.edu/2024/07/12/space-energy-heat-converter/) |
| 06/2024 | D’Amore-McKim Business News “ <i>Faculty Fellow Yi Zheng organizes Boston Urban Forum on sustainable energy in celebration of World Environment Day</i> ”
(https://damore-mckim.northeastern.edu/news/cem-faculty-fellow-yi-zheng-organizes-boston-urban-forum-on-sustainable-energy-in-celebration-of-world-environment-day/) |
| 11/2023 | Northeastern Global News “ <i>Professor Yi Zheng’s efforts to share science with his community — and the world — garner a Scientist of the Year award</i> ”
(https://news.northeastern.edu/research/archives/yi-zheng-scientist-of-the-year/) |
| 09/2023 | Northeastern CRI News “ <i>Planck Energies is Revolutionizing Cooling Technology with Passive-Cooling Paint</i> ” (https://cri.northeastern.edu/planck-energies-is-revolutionizing-cooling-technology-with-passive-cooling-paint-with-spark-fund-awardee-professor-yi-zheng) |

- 08/2023 **Northeastern COE News** “*Eco-Friendly Passive Cooling with Recycled Packaging Plastics*” (<https://coe.northeastern.edu/news/eco-friendly-passive-cooling-with-recycled-packaging-plastics/>)
- 07/2023 **Center for Research Innovation News** “*Planck Energies: Pioneering Sustainability in the Entrepreneurial Community*” (<https://cri.northeastern.edu/planck-energies-pioneering-sustainability-in-the-entrepreneurial-community-at-northeastern/>)
- 01/2023 **MassVentures News** “*Acorn Innovation Awards Help Massachusetts Research Institutions Commercialize Scientific Breakthroughs*” (<https://coe.northeastern.edu/news/2023-acorn-innovation-awards/>)
- 11/2022 **American Society for Engineering Education Prism Magazine** article “*Hot and Bothered – Cool Tech*” by Thomas Grose (<https://newprism.asee.org/hot-bothered/>)
- 10/2022 **Chemical Engineering Magazine** article “*This Inorganic Fiber-based Paper Passively Cools Buildings, Vehicles and Much More*” interviewed by Mary Bailey (<https://www.chemengonline.com/inorganic-fiber-based-paper/>)
- 07/2022 **Northeastern Global News** “*Northeastern Researchers Design Cooling Paper That Might Lessen Need for AC*” (<https://news.northeastern.edu/2022/07/07/cooling-paper-air-conditioning/>)
- 06/2022 **Massachusetts Innovation Network News** “*The Eddies Award in the CleanTech, GreenTech & Sustainability*” (<https://www.massinnov.org/finalists-2022>)
- 11/2021 **WaterToday Canada News** “*Manure To Fresh Water – Northeastern University Professor leads Research in water desalination going from ‘Nano’ to ‘Bio’*” interviewed by Suzanne Forcese (<https://watertoday.ca/ts-research-manure-to-fresh-water-from-nano-to-bio.asp>)
- 10/2021 **Northeastern Global News** “*Manure Makes Drinking Water? An Unlikely Solution to A Global Crisis*” (<https://news.northeastern.edu/2021/10/20/making-drinking-water-with-manure/>)
- 10/2021 **BBC UK News** “*Scientists find way of using cow poo to turn salty seawater into drinkable water!*” (<https://www.bbc.co.uk/newsround/59011319>)
- 09/2022 **India Times News** “*Nano-Filter Made From Cow Manure Turns Salt Water Into Drinking Water*” by Monit Khanna (<https://www.indiatimes.com/technology/news/cow-manure-filter-turns-salt-water-drinkable-552280>)
- 08/2021 **Radio interview** on “*Cooling paper technique*” with **Top of Mind with Julie Rose**, a daily, live news talk and interview show on 107.9FM (SiriusXM 143). (<https://www.byuradio.org/top-2021-09-30-cooling-paper>)
- 07/2021 **Northeastern Global News** “*How to Keep Cool Without Turning on The A/C*” (<https://news.northeastern.edu/2021/06/07/how-to-keep-cool-without-turning-on-the-ac>)
- 07/2021 **The Vanguard (GE News)** “*The 5 Coolest Things on Earth*” by Will Palmer (<https://www.ge.com/news/reports/the-5-coolest-things-on-earth-this-week-125>)
- 06/2021 **The Hill’s Changing America** featured story “*Inventor creates new material that can keep buildings cool without air conditioning*” (<https://thehill.com/changing-america/sustainability/energy/558489-inventor-creates-new-material-that-can-keep-buildings/>)

AWARDS AND HONORS (PROFESSION)

- 2024 **Raymond Viskanta Award (One of High Honors in Radiative Heat Transfer)**
Elsevier
- 2024 **MassCEC AmplifyMass Award**
Massachusetts Clean Energy Center
- 2024 **ASME Fellow**
American Society of Mechanical Engineers (ASME)
- 2024 **Energies Young Investigator Award**
Energies (a peer-reviewed journal with an impact factor of 3.2)
- 2024 **Constantinos Mavroidis Translational Research Award**
College of Engineering, Northeastern University
- 2023 **NSF Small Business Innovation Research Award**
National Science Foundation, United States
- 2023 **Spirit of I-Corps Award**
National Science Foundation, United States
- 2023 **NASA Glenn Faculty Fellowship**
NASA Glenn Research Center, Cleveland, OH
- 2023 **ASTFE Early Career Researcher Award**
American Society of Thermal and Fluids Engineers
- 2022 **Governor's Recognition of Distinguished Contributions to Research in Sustainability and Renewable Energy**, Governor's Office, Massachusetts
- 2022 **Acorn Innovation Award**
MassVentures
- 2022 **New England Innovation Award (The Eddies – CleanTech Track)**
Massachusetts Innovation Network
- 2022 **U.S. Air Force Research Award**
U.S. Air Force
- 2022 **3M Non-tenured Faculty Award**
3M Corporation
- 2022 **ASTFE President's Honorary Recognition Award**
American Society of Thermal and Fluids Engineers
- 2022 **NSF Partnership for Innovation Award**
National Science Foundation, United States
- 2022 **CRI Spark Fund Award**
Northeastern University, Boston, MA
- 2021 **DARPA SBIR Award**
Defense Advanced Research Projects Agency, United States
- 2021 **NASA Glenn Faculty Fellowship**
NASA Glenn Research Center, Cleveland, OH
- 2020 **Gorlov Innovation Prize**
Alexander Gorlov Foundation, Boston, MA
- 2020 **Soleeva Energy Innovation Award**
Soleeva Energy Inc., San Jose, CA
- 2019 **NSF Faculty Early Career (CAREER) Award**
National Science Foundation, United States

- 2019 **ONR NIUVT Undersea Energy Systems Award**
National Institute for Undersea Vehicle Technology, Groton, CT
- 2018 **NASA EPSCoR Research Infrastructure Development Award**
National Aeronautics and Space Administration, United States
- 2017 **NIH RI-INBRE Early Career Development Award**
National Institutes of Health, United States
- 2017 **Rhode Island Foundation Excellence in Research Award**
Rhode Island Foundation, Providence, RI
- 2016 **Finalist, New Faces of Engineering** (nominated by American Society of
Mechanical Engineers, 3 finalists for professional category nationwide)
- 2015 **Rhode Island Science and Technology Advisory Council Award**
Rhode Island STAC, Providence, RI

AWARDS AND HONORS (CIVIC ENGAGEMENT AND COMMUNITY SERVICE)

- 2024 **BBJ 40 Under 40 Award**
Boston Business Journal
- 2024 **AAPI Leadership for Inclusion and Diversity Award**
Massachusetts AAPI Commission
- 2024 **UCA Outstanding Community Service Award**
United Chinese Americans
- 2023 **APAPA Outstanding Civic Engagement Award**
Asian Pacific Islander American Public Affairs Association (APAPA)
- 2023 **NECAA Year of the Scientist**
New England Chinese American Alliance
- 2023 **President's Volunteer Service Award (Gold Medal)**
United States White House
- 2023 **Massachusetts Governor's Recognition of Outstanding Service to Asian American
Community**, the Governor of Massachusetts Maura Healey
- 2022 **Boston Mayor's Recognition of Commitment and Dedication to Serving the Asian
Community**, the Mayor of Boston Michelle Wu

SEMINARS AND INVITED TALKS

1. 49th International Conference and Expo on Advanced Ceramics and Composites (ICACC2025), Daytona Beach, FL, Invited Talk, January 26, 2025
2. ASME Summer Heat Transfer Conference, Invited Panelist (K9 Committee), July 16, 2024
3. MRS Fall Meeting, Symposium SF05, Boston, MA, Invited Talk, November 28, 2023
4. Case Western Reserve University, Cleveland, OH, Seminar, August 16, 2023
5. 3M NTFA Symposium, Invited Talk, August 9, 2023
6. Carnegie Mellon University, Pittsburg, PA, Seminar, July 26, 2023
7. University of Akron, Akron, OH, Seminar, July 6, 2023
8. Ohio State University, Columbus, OH, Seminar, June 30, 2023
9. State University of New York at Buffalo, Buffalo, NY, Seminar, April 6, 2023
10. Boston Chinese Investment Club, Keynote Speak, January 28, 2023
11. 3M NTFA Symposium, Invited Talk, August 30, 2022
12. MIT, Rohsenow Kendall Heat Transfer Laboratory, Seminar, August 12, 2022
13. Kavli Institute for Theoretical Physics, UC Santa Barbara, Invited Talk, June 21, 2022

14. Imperial College of London, London Center for Nanotechnology, Seminar, April 7, 2022
15. University of Montpellier, Montpellier, France, Seminar, March 23, 2022
16. Northeastern University, COE Internet of Materials, Invited Talk, March 22, 2022
17. Mass Clean Energy Center, Boston, MA, Invited Talk, December 1, 2021
18. Symposium on Thermophysical Properties, Boulder, CO, Invited Talk, June 26, 2021
19. University of Southern California, Los Angeles, CA, Seminar, February 23, 2021
20. SPIE Defense Meeting, Anaheim, California, Invited Talk, April 26, 2020
21. Boston University, Boston, MA, Seminar, November 2019
22. University of Tokyo, Tokyo, Japan, Seminar, May 28, 2019
23. Northeastern University, Boston, MA, Seminar, February 28, 2019
24. Zhejiang University, Zhejiang, China, Seminar, Oct 29, 2018
25. Rhode Island College, Providence, RI, Seminar, Oct 5, 2018
26. University of Rhode Island, Physics, Seminar, September 14, 2018
27. Tsinghua University, Beijing, China, Seminar, July 11, 2018
28. University of Connecticut, Storrs, CT, Seminar, March 9, 2018
29. Case Western Reserve University, Cleveland, Ohio, Seminar, Jan 25, 2018
30. University of Hong Kong, Hong Kong, Seminar, December 29, 2017
31. U.S. Naval Research Laboratory, Washington DC, Seminar, Dec 5, 2017
32. National Tsing Hua University (Hsinchu, Taiwan), Seminar, July 6, 2017
33. Korea Advanced Institute of Science and Technology, Korea, Invited Talk, Jun 28, 2017
34. Brown University, Department of Physics, RI, Seminar, March 9, 2017
35. University of Massachusetts Lowell, MA, Seminar, March 3, 2017
36. University of Massachusetts Dartmouth, MA, Seminar, Oct 28, 2016

PATENTS

1. **Yi Zheng**, Andrew Caratenuto, Kyle Leach, “Fibrous Biocompatible Passive Cooling Paint”, U.S. Application No. 63/535,186, 2024.
2. **Yi Zheng**, Yanpei Tian, “Inorganic Metapaper for Sub-ambient Daytime Cooling”, PCT Patent, PCT/US2022/075569.
3. **Yi Zheng**, Jon Goldsby (Scientist at NASA Glenn Research Center), “Power Generation using Near/Far-field Thermal Radiation between SiC Photovoltaic Cell and BeO/HfC/B₄C/SiC/W Thermal Emitters”, Invention Disclosure filed with NASA NTR on September 21, 2021.
4. **Yi Zheng**, Yanpei Tian, Xiaojie Liu, Yinsheng Wan, “Agricultural Manure and Biomass-derived Photothermal Evaporator for Efficient and Robust Solar Desalination”, US Provisional Patent, 63/159,215, 2021.
5. **Yi Zheng**, Yanpei Tian, Xiaojie Liu, “Fire-retardant and Spectrally Robust Melamine Formaldehyde Photonic Bulk for Efficient Daytime Radiative Cooling”, PCT Patent, PCT/US2022/014487.
6. **Yi Zheng**, Yanpei Tian, Xiaojie Liu, “Recyclable, Self-cleaning Cellulose-fiber-Composites for Passive Radiative Cooling”, PCT Patent, PCT/US21/064310.
7. Ralph Ahlgren, **Yi Zheng**, Mohamed Sonbaty, Gregor Von Huene, Klaus Petry and Ahmad Qazi, “A Method of Extracting Fresh Water from Ocean and Sea Water or Any Other Contaminated Water Source Utilizing a Novel Nanostructured Material Powered by A Variety of Renewable Energy Sources”, US Provisional Patent, 2020.
8. **Yi Zheng**, Ralph Ahlgren, Mohamed Sonbaty, “High-effective All-in-one Evaporator for Solar-driven Water Desalination”, PCT Patent, PCT/US2021/47437.

9. **Yi Zheng**, Xiaojie Liu, Yanpei Tian, Ralph Ahlgren, Mohamed Sonbaty, “Novel Cost-Effective High-Efficiency Solar-Driven Water Desalination Device”, PCT Patent, PCT/US21/45163.
10. **Yi Zheng** and Yinsheng Wan, “Heat Absorption and Retention of Gel-based Therapy Pads with Nanoparticles”, US Provisional Patent, 63/107,995, 2020.
11. **Yi Zheng**, Alok Ghanekar, Gang Xiao, “High Contrast Far-field Radiative Thermal Diode”, US Patent, US10403767B2, 2019.
12. Ying Dong, Zheng You, Wei Gao, **Yi Zheng**, “Electronic Nose Used for Food Safety Monitoring”, China Invention Patent, CN 201010034105.0
13. **Yi Zheng** and Xiaowei Zhan, “Column Type Water-saving Cistern for Water Closet”, China Invention Patent, ZL 200430004125.9

PUBLICATIONS (*: Corresponding Author)

a. Peer-reviewed Articles

1. Youssef Jeyar, Kevin Austray, Minggang Luo, Brahim Guizal, **Yi Zheng**, Riccardo Messina, Rodolphe Vaillon, and Mauro Antezza*, “Effect of Top Metallic Contacts on Energy Conversion Performances for Near-field Thermophotovoltaics”, *Physics Review Letters*, under review, 2025.
2. Xuguang Zhang, Hexiang Zhang, Amjad Almansour, Mrityunjay Singh, James D. Kiser, Hengling Zhu, Michael C. Halbig, and **Yi Zheng***, “A Comprehensive Analysis of Thermal Heat Dissipation for Lithium-ion Battery Packs”, *Energy Advances*, under review, 2025. (Invited Paper)
3. Andrew Caratenuto and **Yi Zheng***, “Critical Assessment of Water Enthalpy Characterization through Dark Environment Evaporation”, *Science Advances*, 10, 38, eadn6368, 2024.
4. Yang Liu, Andrew Caratenuto, Xuguang Zhang, Ying Mu, Youssef Jeyar, Mauro Antezza, and **Yi Zheng***, “Ultrawhite Structural Starch Film for Sustainable Cooling”, *Advanced Functional Materials*, under review, 2024.
5. Xiaoli Li, Xiao Sun, Xuguang Zhang, Marilyn Minus, and **Yi Zheng***, “Ease-of-manufacture Highly Transparent Thin Polyvinyl Alcohol Aerogel”, *Scientific Reports*, 14, 26276, 2024.
6. Xiaoli Li, Xuguang Zhang, Hexiang Zhang, Xiao Sun, Ying Mu, Thomas Barrett, Conor Doyle, and Marilyn Minus, and **Yi Zheng***, “Transparent and Flexible Hierarchical Porous Structure of Polyvinyl Alcohol Aerogel: A Microstructure Study”, *Materials*, 17(21), 5312, 2024.
7. Changmin Shi, Seung-Hyun Kim, Natalie Warren, Na Guo, Xuguang Zhang, Ying Wang, Andes Willemse, Cristina López-Pernía, Yang Liu, Angus Kingon, Hongjie Yan, **Yi Zheng**, Meijie Chen, Emily Sprague-Klein, Brian SheldonZ*, “A Hierarchically Micro- and Nano-structured Polymer via Crystallinity Alteration for Sustainable Environmental Cooling”, *Langmuir*, published online, 2024.
8. Andrew Caratenuto, Sunny Leung, Nathaniel LeCompte, and **Yi Zheng***, “Size-Dispersed Calcium Phosphate-Based Paints for Sustainable, Durable Cool Roof Applications”, *Energies*, 17, 16, 4178, 2024.
9. Yang Liu and **Yi Zheng***, “Reverse-switching Radiative Cooling for Synchronizing Indoor Air Conditioning” *Nanophotonics*, 13, 5, 701-710, 2024. (Invited paper)
10. Xuguang Zhang, Yang Liu, Michael Halbig, Mrityunjay Singh, and **Yi Zheng***, “Hybrid Heat Dissipation System Optimization for Lithium-Ion Batteries”, *Applied Thermal Engineering*, 254, 123912, 2024.

11. Andrew Caratenuto, Kyle Leach, Yang Liu, and **Yi Zheng***, “Nanofibrous Biomaterial-based Passive Cooling Paint Structurally Linked by Alkane-oleate Interactions”, *ACS Applied Materials & Interfaces*, 16, 10, 12717–12730, 2024.
12. Yang Liu and **Yi Zheng***, “Controllable-gradient-porous Cooling Materials Driven by Multistage Solvent Displacement Method”, *Chemical Engineering Journal*, 488, 150657, 2024.
13. Yang Liu and **Yi Zheng***, “Tunable Anisotropic Porous Structure with Enhanced Radiative Cooling”, *Applied Materials Today*, 38, 102184, 2024.
14. Youssef Jeyar, Minggang Luo, Kevin Austray, Brahim Guizal, **Yi Zheng**, H. B. Chan, and Mauro Antezza, “Tunable Nonadditivity in the Casimir-Lifshitz Force between Graphene Gratings”, *Physical Review A*, 108, 062811, 2023.
15. Yang Liu, Xiaojie Liu, Fangqi Chen, Andrew Caratenuto, Ying Mu, Shuang Cui, Marilyn Minus, and **Yi Zheng***, “Eco-friendly Passive Radiative Cooling Using Recycled Packaging Plastics”, *Materials Today Sustainability*, 23, 100448, 2023.
16. Xiaojie Liu, Yanpei Tian, Andrew Caratenuto, Fangqi Chen, and **Yi Zheng***, “Biomass-Based Materials for Sustainably Sourced Solar-Driven Interfacial Steam Generation”, *Advanced Engineering Materials*, 2300778, 2023.
17. Fangqi Chen, Yang Liu, Xiaojie Liu, and **Yi Zheng***, “Multistate Spectral-tunable Manipulation of Mid-infrared Emissivity Using Sb₂S₃/GST/VO₂”, *Applied Physics Letters*, 12, 191702, 2023.
18. Fangqi Chen, Xiaojie Liu, Yang Liu, Yanpei Tian, and **Yi Zheng***, “A Refractory Metal-based Photonic Narrowband Emitter for Thermophotovoltaic Energy Conversion”, *Journal of Materials Chemistry C*, 11, 1988-1994, 2023.
19. Yang Liu, Fangqi Chen, Xiaojie Liu, Yanpei Tian, Andrew Caratenuto, and **Yi Zheng***, “Cool Roofing Tiles Derived from Recycled Corrugated Containers”, *Next Energy*, 1,4, 100063, 2023.
20. Collin Prebenda, Brendan Fernandes, Thomas Griffin, Jonathan Markowitz, Keagan Carson, and **Yi Zheng***, “Determination of Microcystis aeruginosa Concentration Using Two Discrete Wavelengths”, *ASME Open Journal of Engineering*, 2, 021015, 2023.
21. Yang Liu, Xiaojie Liu, Yanpei Tian, Fangqi Chen, Andrew Caratenuto, and Yi Zheng*, “Oil-Paper-Umbrella-Inspired Passive Radiative Cooling Using Recycled Packaging Foam”, *Journal of Materials Chemistry A*, 11, 9152-9159, 2023.
22. Fangqi Chen, Xiaojie Liu, Yanpei Tian, Jon Goldsby, and Yi Zheng*, “Refractory All-Ceramic Thermal Emitter for High-Temperature Near-Field Thermophotovoltaics”, *Energies*, 15, 5, 1830, 2022.
23. Yang Liu, Fangqi Chen, Andrew Caratenuto, Yanpei Tian, Xiaojie Liu, Yitong Zhao, and **Yi Zheng***, “Effective Approximation Method for Nanogratings-induced Near-Field Radiative Heat Transfer”, *Materials*, 15, 3, 998, 2022.
24. Yanpei Tian, Xiaojie Liu, Lijia Xie, Shilin Xu, Fangqi Chen, Ying Mu, Yang Liu, Marilyn L. Minus, and **Yi Zheng***, “Surface Photon-engineered Infrared-black Metametal Enabled Enhancement of Heat Dissipation”, *Advanced Functional Materials*, 2205016, 2022.
25. Xiaojie Liu, Xuguang Zhang, Fangqi Chen, and **Yi Zheng***, “Accelerated Water Transportation Phenomenon through A Hydrophilic Metal Roll”, *ACS Applied Engineering Materials*, 1, 10, 2745–2751, 2023.
26. Xiaojie Liu, Yanpei Tian, Fangqi Chen, Ying Mu, Andrew Caratenuto, Marilyn L. Minus, and **Yi Zheng***, “A Waterbomb Origami Tower for Convertible Photothermal Evaporation”, *Journal of Materials Chemistry A*, 10, 18657-18670, 2022.

27. Andrew Caratenuto, Lijia Xie, Lin Gu, Yanpei Tian, and **Yi Zheng***, “Adobe Bricks as Zero-cost Solar Evaporators for Water-scarce Regions”, *Desalination*, 546, 116199, 2022.
28. Yang Liu, Mauro Antezza, and **Yi Zheng***, “Intelligent Radiative Thermostat Induced by Near-field Radiative Thermal Diode”, *Materials Today Physics*, 27, 100828, 2022.
29. Yanpei Tian, Xiaojie Liu, Ziqi Wang, Jiansheng Li, Ying Mu, Shiyu Zhou, Fangqi Chen, Marilyn L. Minus, Gang Xiao, and **Yi Zheng***, “Subambient Daytime Cooling Enabled by Hierarchically Architected All-inorganic Metapaper with Enhanced Thermal Dissipation”, *Nano Energy*, 96, 107085, 2022.
30. Yang Liu, Andrew Caratenuto, and **Yi Zheng***, “GST-VO₂-based Near-field Multistage Radiative Thermal Rectifier”, *Optical Materials Express*, 12 (6), 2135-2144, 2022.
31. Andrew Caratenuto, Su Li, Yinsheng Wan, and **Yi Zheng***, “Optical Epidermal Mimicry from Ultraviolet to Infrared Wavelengths”, *ACS Applied Bio Materials*, 5, 11, 5231-5239, 2022.
32. Yanpei Tian, Xiaojie Liu, Shilin Xu, Andrew Caratenuto, Ying Mu, Ziqi Wang, Fangqi Chen, Ruizhe Yang, Jun Liu, Marilyn L. Minus, and **Yi Zheng***, “Recyclable and Efficient Ocean Biomass-derived Hydrogel Photothermal Evaporator for Thermally-localized Solar Desalination”, *Desalination*, 523, 115449, 2022.
33. Xiaojie Liu, Yanpei Tian, Yanzi Wu, Andrew Caratenuto, Fangqi Chen, Shuang Cui, Joseph A DeGiorgis, Yinsheng Wan, and **Yi Zheng***, “Seawater Desalination Derived Entirely from Ocean Biomass”, *Journal of Materials Chemistry A*, 9, 22313, 2021. **(Back Cover Image)**
34. Yanpei Tian, Xiaojie Liu, Andrew Caratenuto, Jiansheng Li, Shiyu Zhou, Ran Ran, Fangqi Chen, Ziqi Wang, Kai-tak Wan, Gang Xiao, and **Yi Zheng***, “A New Strategy towards Spectral Selectivity: Selective Leaching Alloy to Achieve Selective Plasmonic Solar Absorption and Infrared Suppression”, *Nano Energy*, 92, 106717, 2021.
35. Xiaojie Liu, Yanpei Tian, Fangqi Chen, Andrew Caratenuto, Joseph A DeGiorgis, Mohamed ELSonbaty, Yinsheng Wan, Ralph Ahlgren, and **Yi Zheng***, “An Easy-to-fabricate 2.5D Evaporator for Efficient Solar Desalination”, *Advanced Functional Materials*, 2100911, 2021.
36. Andrew Caratenuto, Abdulrahman Aljwirah, Yanpei Tian, Xiaojie Liu, Yinsheng Wan, and **Yi Zheng***, “Forest Waste to Clean Water: Natural Leaf-guar-derived Solar Desalinator”, *Nanoscale*, 13, 17754-17764, 2021. **(Front Cover Image)**
37. Yanpei Tian, Xiaojie Liu, Ziqi Wang, Andrew Caratenuto, Fangqi Chen, Yinsheng Wan, and **Yi Zheng***, “Carbonized Cattle Manure-based Photothermal Evaporator with Hierarchically Bimodal Pores for Solar Desalination in High-salinity Brines”, *Desalination*, 520, 115345, 2021.
38. Xiaojie Liu, Yanpei Tian, Yanzi Wu, Fangqi Chen, Ying Mu, Marilyn L. Minus, and **Yi Zheng***, “Fully Biomass-Based Hybrid Hydrogel for Efficient Solar Desalination with Salt Self-Cleaning Property”, *ACS Applied Materials and Interfaces*, 13, 36, 42832-42842, 2021.
39. Fangqi Chen, Yanpei Tian, Xiaojie Liu, Andrew Caratenuto, and **Yi Zheng***, “Mechanically Induced Elastomeric Optical Transmittance Modulator”, *ACS Applied Polymer Materials*, 3, 11, 5434–5440, 2021.
40. Yang Liu, Yanpei Tian, Fangqi Chen, Andrew Caratenuto, Xiaojie Liu, Mauro Antezza, and **Yi Zheng***, “Ultrahigh-rectification Near-field Radiative Thermal Diode Using Infrared-Transparent Film Backsided Phase-transition Metasurface”, *Applied Physics Letters*, 119, 123101, 2021.
41. Yanpei Tian, Xiaojie Liu, Jiansheng Li, Andrew Caratenuto, Shiyu Zhou, Yichen Deng, Gang Xiao, Marilyn L. Minus, and **Yi Zheng***, “Scalable, Fire-retardant, and Spectrally Robust

- Melamine-formaldehyde Photonic Bulk for Efficient Daytime Radiative Cooling”, *Applied Materials Today*, 24, 101103, 2021.
42. Andrew Caratenuto and **Yi Zheng***, “Piston-Type Optical Modulator for Dynamic Thermal Radiation Tuning Applications”, *Materials*, 14(16), 4372, 2021.
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b. Books

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2. **Yi Zheng**, “Fluctuational Electrodynamics: Momentum, Energy and Entropy Transport”, *Scholar’s Press*, Saarbrücken, Germany, 2014, ISBN: 978-3-639-66685-4.

c. Book Chapters

1. Alok Ghanekar, Yanpei Tian, and **Yi Zheng**, “Photonic Metamaterials: Controlling Nanoscale Radiative Thermal Transport”, *Heat Transfer*. Editor Konstantin Volkov. InTech, Rijeka, Croatia, 2018, ISBN 978-953-51-6114-1.
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d. Dissertations

1. **Yi Zheng**, “Near-field Radiative Momentum, Energy and Entropy Transfer in Fluctuational Electrodynamics”, Ph.D. Thesis at Columbia University, New York, NY, July 2014.
2. **Yi Zheng**, “Optimal Design and Pattern Recognition of An Electrothermal Driving Microcantilever Resonator for the Detection of Volatile Organic Compounds”, Bachelor of Science Thesis at Tsinghua University, Beijing, China, July 2009.

e. Abstracts and Oral Technical Presentations

1. **Yi Zheng**, Amjad Almansour, Michael C. Halbig, Mrityunjay Singh, Meelad Ranaiefar, and Zachary Tuchfeld, “Design and Thermal Characterization of 3D-Printed Hybrid Cooling System for Battery Thermal Management Systems”, 4169875, Invited talk, 49th International Conference and Expo on Advanced Ceramics and Composites (ICACC2025), Daytona Beach, FL, January, 2025.
2. Xuguang Zhang, Yang Liu, Michael Halbig, Mrityunjay Singh, and **Yi Zheng**, “Development and Optimization of Hybrid Heat Dissipation System for Lithium-Ion Battery Packs”, IMECE2024-150392, ASME 2024 IMECE Conference, Portland, OR, November, 2024.
3. **Yi Zheng**, “Nanoscale Radiative Heat Transfer for Enhanced Thermal Infrared Energy Conversion and Cooling”, IMECE2024-147890, ASME 2024 IMECE Conference, Portland, OR, November, 2024.
4. **Yi Zheng**, “Intelligent Radiative Thermostat Induced by Near-Field Radiative Thermal Diode”, IMECE2024-146511, ASME 2024 IMECE Conference, Portland, OR, November, 2024.
5. **Yi Zheng**, “Cost-effective Functional Energy Materials for Thermal Radiative Applications”, Invited talk, NanoRad 2024, Sapporo, Hokkaido, Japan, July, 2024.

6. Andrew Caratenuto and **Yi Zheng**, “Critically Evaluating Dark Environment Evaporation Method of Water Enthalpy Characterization”, ASME 2024 Summer Heat Transfer Conference, Anaheim, CA, July, 2024.
7. Andrew Caratenuto and **Yi Zheng**, “Transforming Biocompatible Nanofibers Into a Passive Radiative Cooling Paint”, ASME 2024 Summer Heat Transfer Conference, Anaheim, CA, July, 2024.
8. Yang Liu and **Yi Zheng**, “Intelligent Radiative Thermostat Induced by Near-Field Radiative Thermal Diode”, ASME 2024 Summer Heat Transfer Conference, Anaheim, CA, July, 2024.
9. Yang Liu and **Yi Zheng**, “Intelligent Radiative Thermostat Induced by Near-Field Radiative Thermal Diode”, ASTFE 9th Thermal and Fluids Engineering Conference, Corvallis, OR, April, 2024.
10. Yang Liu and **Yi Zheng**, “Intelligent Radiative Thermostat Induced by Near-Field Radiative Thermal Diode”, 2023 Mall Fall Meeting, Boston, MA, November, 2023.
11. Yang Liu and **Yi Zheng**, “Oil-Paper-Umbrella-Inspired Passive Radiative Cooling using Recycled Packaging Foam”, 2023 Mall Fall Meeting, Boston, MA, November, 2023.
12. **Yi Zheng**, “Functional Metasurfaces and Structures for Thermal Radiative Applications”, Symposium SF05: Infrared Materials and Devices for Thermal Radiation Control, 2023 MRS Fall Meeting, Boston, MA, November, 2023 (Invited Talk).
13. Yang Liu, Fangqi Chen, and **Yi Zheng**, “Oil-Paper-Umbrella-Inspired Passive Radiative Cooling Using Recycled Packaging Foam” ASME 2023 Summer Heat Transfer Conference, Washington DC, July, 2023.
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15. Andrew Caratenuto and **Yi Zheng**, “Adobe Bricks as Zero-cost Solar Evaporators for Water-scarce Regions”, TFEC-2023, 2023 ASTFE 8th Thermal and Fluids Engineering Conference, College Park, March, 2023.
16. Xiaojie Liu, Yanpei Tian, Fangqi Chen, and **Yi Zheng**, “Dynamically Regulated Radiative Cooling with Continuously Variable Emission”, MRS-3781597, 2022 MRS Fall Meeting, Boston, MA, November 27-December 2, 2022.
17. Fangqi Chen, Xiaojie Liu, Yanpei Tian, and **Yi Zheng**, “Mechanical Deformation Induced Tunable Mid-infrared Optical Properties”, MRS-3781598, 2022 MRS Fall Meeting, Boston, MA, November 27-December 2, 2022.
18. Andrew Caratenuto, Abdulrahman Aljwirah, Yanpei Tian, Xiaojie Liu, Yinsheng Wan, and **Yi Zheng**, “Natural Leaf-guar-derived Solar Desalinator for Efficient Clean Water Generation”, TFEC-2022-40674, 2022 ASTFE 7th Thermal and Fluids Engineering Conference, Las Vegas, NV, May, 2022.
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31. Yanpei Tian, Xiaojie Liu, and **Yi Zheng**, “Aluminized Polymethylpentene Thin Film for High-effective Radiative Cooling”, 3453444, 2020 MRS Fall Meeting, Boston, MA, November 28, 2020.
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34. **Yi Zheng** (Invited Speaker), “Active Defense Technology in Selective and Stable Metamaterials”, 2020 SPIE Micro- and Nanotechnology Sensors, Systems, and Applications Conference, Anaheim, CA, April 26, 2020.

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37. Yanpei Tian, Xiaojie Liu, and **Yi Zheng**, “Simple Polymer Microstructure Yields Highly Effective Radiative Cooling”, TFEC-2020-31863, ASTFE 5th Thermal and Fluids Engineering Conference, New Orleans, LA, April 8, 2020.
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43. Alok Ghanekar and **Yi Zheng**, “High Contrast Near-Field Rectification Device Using Phase Change Periodic Gratings”, International Workshop on Nano-Micro Thermal Radiation, Daejeon, Korea, June 2017.
44. Alok Ghanekar and **Yi Zheng**, “Novel Thermal Emitter for Photovoltaic Applications”, TFEC-2016-18707, ASTFE 2nd Thermal and Fluids Engineering Conference, Las Vegas, NV, April 2017.
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60. Arvind Narayanaswamy and **Yi Zheng**, “How Do Different Parts of A Half-space Contribute to Near-field Radiative Energy Transfer and Van der Waals Pressure”, 2nd International Workshop on Micro-Nano Thermal Radiation, Shanghai, China, June 2014.
61. Arvind Narayanaswamy and **Yi Zheng**, “Non-equilibrium Entropy in Near-field Thermal Radiation, 2nd International Workshop on Nano-Micro Thermal Radiation”, Shanghai, China, June 2014.
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63. **Yi Zheng** and Arvind Narayanaswamy, “Surface Patch Contribution to Near-field Thermal Radiation and van der Waals/Casimir Interactions”, ASME-IMECE2013, San Diego, CA, November 2013.
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65. **Yi Zheng** and Arvind Narayanaswamy, “Momentum Transfer in Fluctuational Electrodynamics: van der Waals Energy and Pressure in Dissipative Planar Media”, ASME-IMECE2012, Houston, TX, November 2012.
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- Between Multilayered Objects”, ASME-HT2012, Rio Grande, Puerto Rico, July 2012.
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 69. **Yi Zheng** and Arvind Narayanaswamy, “A First-principles Method of Determining van der Waals Forces in A Dissipative Media”, ASME-MNHMT2012, Atlanta, GA, March 2012.
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 71. **Yi Zheng**, Karthik Sasihithlu, Ning Gu and Arvind Narayanaswamy, “Dyadic Green’s Functions, Thermal Radiation, and Van Der Waals Forces”, MRS Spring meeting and Exhibits, Symposium BB, San Francisco, CA, April 2011.

TEACHING AND ADVISING

a. Courses with Evaluation Scores

1. **ME 4570 Thermal System Analysis and Design**
 Fall 2023 (12 students, TRACE scores: 4.5 (learning) and 4.4 (instructor))
 Fall 2022 (9 students, TRACE scores: 5.0 (learning) and 4.6 (instructor))
2. **ME 7285 Heat Conduction and Thermal Radiation**
 Fall 2023 (9 students, TRACE scores: 4.8 (learning) and 4.8 (instructor))
 Fall 2022 (8 students, TRACE scores: 4.8 (learning) and 4.9 (instructor))
 Fall 2021 (17 students, TRACE scores: 4.4 (learning) and 4.5 (instructor))
 Fall 2020 (16 students, TRACE scores: 4.7 (learning) and 4.8 (instructor))
3. **ME 4702 Capstone Design**
 Summer 2 and Fall 2022 (14 students, TRACE scores: 4.8 (learning) and 4.5 (instructor))
 Summer 2 and Fall 2021 (16 students, TRACE scores: 4.8 (learning) and 4.3 (instructor))
 Summer 2 and Fall 2020 (14 students, TRACE scores: 4.7 (learning) and 4.2 (instructor))
4. **ME 2380 Thermodynamics**
 Spring 2024 (13 students, TRACE scores: (learning) and (instructor))
 Fall 2019 (47 students, TRACE scores: 4.2 (learning) and 3.8 (instructor))
5. **MCE 585 Solar Thermal Engineering**
 Fall 2018 (6 students, evaluation score: 4.8/5.0)
6. **MCE 485 Solar Thermal Engineering (New Course)**
 Fall 2018 (25 students, evaluation score: 4.3/5.0)
7. **MCE 414 Mechanical Engineering Experimentation (Co-instruct with Prof. Arun Shukla)**
 Fall 2018 (115 students, evaluation score: 4.4/5.0)
 Fall 2017 (86 students, evaluation score: 3.7/5.0)
8. **MCE 341 Fundamentals of Thermodynamics**
 Fall 2017 (101 students, evaluation score: 4.0/5.0)
9. **MCE 354 Fluid Mechanics**
 Fall 2016 (57 students, evaluation score: 4.6/5.0)

- Spring 2016 (22 students, evaluation score: 4.7/5.0)
 Fall 2015 (55 students, evaluation score: 3.9/5.0)
 Fall 2014 (51 students, evaluation score: 3.8/5.0)
10. MCE 545 Conduction Heat Transfer
 Spring 2019 (6 students, evaluation score: 4.7/5.0)
 Spring 2018 (11 students, evaluation score: 4.6/5.0)
 Spring 2017 (17 students, evaluation score: 4.5/5.0)
 Spring 2015 (8 students, evaluation score: 4.4/5.0)
 11. EGR 106 Foundations of Engineering II (Matlab lab)
 Spring 2017 (20 students), Spring 2016 (14 students)
 12. EGR 450X Nano Tools (Co-mentor with Geoffrey Bothun, Vinka Craver, Samantha Meenach and Steve Kennedy)
 Spring 2016 (20 students), Spring 2015 (24 students)
 13. MCE 501 Graduate Seminar
 Fall 2015 (17 students), Fall 2016 (16 students)
 14. ELE 480/481 Capstone Design (Co-mentor with Prof. Kunal Mankodiya)
 Spring 2015, Fall 2014
 15. MCE 599 Master's Thesis Research
 Summer 2018 (1 Master), Spring 2018 (1 Master), Fall 2017 (1 Master), Spring 2017 (1 Master), Fall 2016 (1 Master), Summer 2015 (2 Masters)
 16. MCE 491 Special Problems
 Spring 2018 (2 students), Fall 2017 (2 students), Spring 2017 (1 student), Fall 2016 (2 students)
 17. MCE 591 Special Problems
 Fall 2018 (1 Master), Spring 2018 (1 Master), Fall 2017 (1 Master), Spring 2017 (1 Master), Fall 2015 (1 Master), Spring 2015 (2 Masters), Fall 2014 (3 Masters)
 18. MCE 691 Special Problems
 Spring & Fall 2017 (2 Ph.D. students), Fall 2016 (1 Ph.D. student)

b. Graduate Student Advising

1. **Ph.D. Thesis Advisor**, Hanqing Liu, Mechanical Engineering, Northeastern University, Boston, MA, USA, May 2029 (expected).
2. **Ph.D. Thesis Advisor**, Hexiang Zhang, Mechanical Engineering, Northeastern University, Boston, MA, USA, May 2028 (expected).
3. **Ph.D. Thesis Advisor**, Jones Chang, Mechanical Engineering, Northeastern University, Boston, MA, USA, May 2027 (expected).
4. **Ph.D. Thesis Advisor**, Xuguang Zhang, Mechanical Engineering, Northeastern University, Boston, MA, USA, May 2026 (expected).
5. **Ph.D. Thesis Advisor**, Xiaoli Li, Mechanical Engineering, Northeastern University, Boston, MA, USA, December 2024.
6. **Ph.D. Thesis Advisor**, Andrew Caratenuto, Mechanical Engineering, Northeastern University, Boston, MA, USA, August 2024.
7. **Ph.D. Thesis Advisor**, Yang Liu, Mechanical Engineering, Northeastern University, Boston, MA, USA, May 2024.
8. **Ph.D. Thesis Advisor**, Fangqi Chen, Mechanical Engineering, Northeastern University, Boston, MA, USA, May 2023.

9. **Ph.D. Thesis Advisor**, Xiaojie Liu, Mechanical Engineering, Northeastern University, Boston, MA, USA, December 2022.
10. **Ph.D. Thesis Advisor**, Yanpei Tian, Mechanical Engineering, Northeastern University, Boston, MA, USA, December 2021.
11. **Ph.D. Thesis Advisor**, Alok Ghanekar, Mechanical Engineering, University of Rhode Island, Kingston, RI, USA, October 23, 2018.
12. **M.S. Thesis Advisor**, Hengling Zhu, Mechanical Engineering, Northeastern University, Boston, MA, USA, May 2025.
13. **M.S. Thesis Advisor**, Kyle Leach, Mechanical Engineering, Northeastern University, Boston, MA, USA, May 2023.
14. **M.S. Thesis Advisor**, Su Li, Mechanical Engineering, Northeastern University, Boston, MA, USA, May 2022.
15. **M.S. Thesis Advisor**, Jiangshan Gao, Mechanical Engineering, Northeastern University, Boston, MA, USA, May 2022.
16. **M.S. Thesis Advisor**, Mohamed Sonbaty, Mechanical Engineering, Northeastern University, Boston, MA, USA, May 2022.
17. **M.S. Thesis Advisor**, Lijia Xia, Mechanical Engineering, Northeastern University, Boston, MA, USA, December 2021.
18. **M.S. Project Advisor**, Haya Ghandour, Mechanical Engineering, Northeastern University, Boston, MA, USA, April 2024.
19. **M.S. Project Advisor**, Al-Badawi Abdulrahman, Mechanical Engineering, Northeastern University, Boston, MA, USA, December 2023.
20. **M.S. Project Advisor**, Lin Gu, Mechanical Engineering, Northeastern University, Boston, MA, USA, May 2022.
21. **M.S. Thesis Advisor**, Minyue Zhu, Mechanical Engineering, Northeastern University, Boston, MA, USA, May 2021.
22. **M.S. Project Advisor**, Xuguang Zhang, Mechanical Engineering, Northeastern University, Boston, MA, USA, December, 2022.
23. **M.S. Project Advisor**, Kuan-Yu Chen, Mechanical Engineering, Northeastern University, Boston, MA, USA, December 2022.
24. **M.S. Project Advisor**, Prem Mulchandani, Industrial Engineering, Northeastern University, Boston, MA, USA, December 2021.
25. **M.S. Project Advisor**, Abudalrahman Aliwirah, Mechanical Engineering, Northeastern University, Boston, MA, USA, May 2021.
26. **M.S. Project Advisor**, Khalid Alhammadi, Mechanical Engineering, Northeastern University, Boston, MA, USA, May 2021.
27. **M.S. Project Advisor**, Ziqi Wang, Mechanical Engineering, Northeastern University, Boston, MA, USA, May 2021.
28. **M.S. Project Advisor**, Ved Jain, Mechanical Engineering, Northeastern University, Boston, MA, USA, May 2021.
29. **M.S. Project Advisor**, Yanzi Wu, Mechanical Engineering, Northeastern University, Boston, MA, USA, May 2021.
30. **M.S. Project Advisor**, Shilin Xu, Mechanical Engineering, Northeastern University, Boston, MA, USA, May 2021.
31. **M.S. Project Advisor**, Shanshan Chen, Mechanical Engineering, Northeastern University, Boston, MA, USA, May 2021.

32. **M.S. Project Advisor**, Yue Fan, Mechanical Engineering, Northeastern University, Boston, MA, USA, May 2021.
33. **M.S. Project Advisor**, Leqing Xu, Mechanical Engineering, Northeastern University, Boston, MA, USA, December 2020.
34. **M.S. Project Advisor**, Jiansheng Li, Mechanical Engineering, Northeastern University, Boston, MA, USA, December 2020.
35. **M.S. Thesis Advisor**, John Carlin, Mechanical Engineering, University of Rhode Island, Kingston, RI, USA, June 2019.
36. **M.S. Thesis Advisor**, Nicholas Bonatt, Mechanical Engineering, University of Rhode Island, Kingston, RI, USA, August 2018.
37. **M.S. Thesis Advisor**, Christian Mejia, Mechanical Engineering, University of Rhode Island, Kingston, RI, USA, April 2017.
38. **M.S. Thesis Advisor**, Fabian Liebscher, Mechanical Engineering, Technische Universitat Braunschweig, Braunschweig, Germany; University of Rhode Island, Kingston, RI, USA, August 2015.
39. **M.S. Thesis Advisor**, Laura Lin, Mechanical Engineering, Technische Universitat Braunschweig, Braunschweig, Germany; University of Rhode Island, Kingston, RI, USA, July 2015.

c. Undergraduate Student Advising

1. **UPLIFT Program Advisor**, Abdulmalik Eniola, Northeastern University, Boston, MA, USA, Spring 2024
2. **UPLIFT Program Advisor**, Eileen Liu, Northeastern University, Boston, MA, USA, Spring 2024
3. **Capstone Project Advisor**, Thomas Mueller, William Opet, Samantha Bowman, Jared Brauser, Collin Prebenda, Lindsay Skarupa, Northeastern University, Boston, MA, USA, Summer 2 and Fall 2022.
4. **Project-based Co-op Advisor**, Minh Truong, Northeastern University, Boston, MA, USA, Spring 2022.
5. **Capstone Project Advisor**, Kevin Murphy, Natalie Kane, Alexander Munao, Jamin Zheng, Cristina Clark, Northeastern University, Boston, MA, USA, Summer 2 and Fall 2021.
6. **Capstone Project Advisor**, Nicole Heller, Anthony Wilkinson, Samuel Colao, Brian Januzzi, Christopher DeLorenzo, Northeastern University, Boston, MA, USA, Summer 2 and Fall 2021.
7. **Capstone Project Advisor**, Luisa Polito Garcia, Elaina Murphy, Arianna Faria, Wiley Philibert, Eric Mockapetris, Daniel Ilin, Northeastern University, Boston, MA, USA, Summer 2 and Fall 2021.
8. **Capstone Project Advisor**, Matthew Kalpin, Kyle Xiao, Xiangzhou Kong, and Mustafa Al-Ajmi, Northeastern University, Boston, MA, USA, Summer 2 and Fall 2020.
9. **Capstone Project Advisor**, Kevin Hwang, Kerri Lehmann, Victoria Napolitano, John Streed, and John Zukowski, Northeastern University, Boston, MA, USA, Summer 2 and Fall 2020.
10. **Capstone Project Advisor**, Charlie Beurskens, Surabhi Gupta, Melissa Rath, and Meyling Yi, Northeastern University, Boston, MA, USA, Summer 2 and Fall 2020.

d. K-12 Student Advising

1. **Summer Project Advisor**, Youya Wang, 11th Grade, Seattle High School, Summer 2024.
2. **Summer Project Advisor**, Davis Wang, 10th Grade, Seattle High School, Summer 2024.

3. **Summer Project Advisor**, Connor Long, 12th Grade (Admitted to Princeton University in Fall 2023), Dover-Sherborn High School, Summer 2023.
4. **Summer Project Advisor**, Pamela Hao, 11th Grade, Weston High School, Summer 2023.
5. **Summer Project Advisor**, Eva Odio, 10th Grade, Weston High School, Summer 2023.
6. **Summer Project Advisor**, Lila Li, 10th Grade, Weston High School, Summer 2023.
7. **Research Project Advisor**, Jonathan Lan, 10th Grade, Weston High School, Spring and Summer 2023.
8. **Lego Robotics Competition Advisor** (Nuclear Waste Disposal Project), Ethan Zheng, 5th Grade, Daniel Webster Elementary School (New Rochelle, NY), Fall 2022.
9. **Summer Project Advisor**, Aditya Sathishkumar, 11th Grade, Hopkinton High School, Summer 2022.
10. **Summer Project Advisor**, Evan Liu, 11th Grade, Hopkinton High School, Summer 2022.

UNIVERSITY SERVICE

a. University and College Service

1. Member (2022-Present), Research Affairs Committee, College of Engineering, Northeastern University
2. Member (2018-2019), Nano Core Research Committee, College of Engineering, University of Rhode Island
3. Faculty Advisor (2019-present), Northeastern University Chapter (MA-E) of Tau Beta Pi the Engineering Honor Society, Northeastern University

b. Department Service

1. Member (2022-Present), Tenure Committee, Department of Mechanical and Industrial Engineering, Northeastern University
2. Member (2022-Present), Research Affairs Committee, Department of Mechanical and Industrial Engineering, Northeastern University
3. Chair (2020-2021), Biofluids/Mechanobiology Faculty Search Committee, Department of Mechanical and Industrial Engineering, Northeastern University
4. Member (2016-2017), Undergraduate Curriculum Committee, Department of Mechanical, Industrial and System Engineering, University of Rhode Island
5. Member (2016-2017), Research Core Facilities Committee, Department of Mechanical, Industrial and System Engineering, University of Rhode Island

SERVICE AND PROFESSIONAL DEVELOPMENT

a. Service to the Discipline/Profession

Conference Topic Chair/Co-Chair

1. ASME 2024 International Mechanical Engineering Congress and Exposition
Topic Nanoscale Radiative Thermal Transport
2. ASME 2024 Summer Heat Transfer Conference
Topic Nanomaterials and Nanostructures for Radiative Energy Applications
3. ASME 2023 International Mechanical Engineering Congress and Exposition
Topic Investigation of Radiative Thermal Devices with Nanostructured Emitters and Absorbers

4. ASME 2022 International Mechanical Engineering Congress and Exposition
Topic Fundamentals of Radiative Transport and Conduction with Micro/Nano Effects
5. ASME 2020 International Mechanical Engineering Congress and Exposition
Topic Nanoscale Thermal Transport
6. ASME 2017 International Mechanical Engineering Congress and Exposition
Topic Nanoscale Thermal Transport
Topic Nanomaterials for Energy
7. NanoRad 2017 3rd International Workshop on Nano-Micro Thermal Radiation
Topic Near-field Thermal Radiation
8. ASME 2017 Summer Heat Transfer Conference
Topic Fundamentals of Nanomaterials and Nanostructures for Energy Applications
Topic K8/K9 Joint Fundamentals of Micro/Nanoscale Heat Transport
Topic Nanoscale Thermal Radiation
9. ASME 2016 International Mechanical Engineering Congress and Exposition
Topic Radiative Heat Transfer
10. ASME 2016 Summer Heat Transfer Conference
Topic 3-2 Fundamentals of Nanoscale Transport in Flows
Topic 3-3 Fundamentals of Nanomaterials and Nanostructures for Energy Applications
Topic 4-2 Nanoscale Thermal Radiation
11. ASME 2015 International Mechanical Engineering Congress and Exposition
Topic 10-11 Radiative Heat Transfer

Conference Session Chair/Co-Chair

1. ASME 2024 Summer Heat Transfer Conference
Session Nanomaterials for Thermal Emission Control
2. ASME 2023 International Mechanical Engineering Congress and Exposition
Session 11-65-01 Near-field Radiative Heat Transfer and Energy Conversion
3. MRS 2023 Fall Meeting and Exhibit
Session SF05.11 Light/Heat Matter Applications
Session SF05.15 Radiative Cooling II
4. ASME 2022 International Mechanical Engineering Congress and Exposition
Session 11-10-01 Fundamentals of Radiative Transport and Conduction Including
Micro/Nanoscale Effects
5. ASTFE 2022 7th Thermal and Fluids Engineering Conference
Session Advanced Energy Systems
6. ASTFE 2021 6th Thermal and Fluids Engineering Conference
Session Advanced Energy Systems
7. ASTFE 2020 5th Thermal and Fluids Engineering Conference
Session Advanced Energy Systems
Session Electric, Magnetic and Thermal Phenomena in Micro and Nano-Scale Systems
8. ASTFE 2017 2nd Thermal and Fluids Engineering Conference
Session Fundamentals in Heat, Mass and Momentum Transfer
9. ASME 2017 Summer Heat Transfer Conference
Session Fundamentals of Nanomaterials and Nanostructures for Energy Applications
Session Fundamentals of Micro/Nanoscale Heat Transport
Session Fundamentals of Near-field Transport
Session Selective Transport and Energy Conversion

- Session Rectification and Novel Phenomena
10. ASME 2016 International Mechanical Engineering Congress and Exposition
Session Radiative Heat Transfer II
 11. ASME 2015 International Mechanical Engineering Congress and Exposition
Session 10-11-2 Radiative Heat Transfer II
 12. ASTFE 2015 1st Thermal and Fluids Engineering Summer Conference
Session Fundamentals in Heat, Mass and Momentum Transfer IV
Session Thermodynamics and Thermophysical Properties
 13. ASME 2014 International Mechanical Engineering Congress and Exposition
Session 7-23-2 Nanomaterials and Nanostructures for Energy Applications
Session 10-12-1 Fundamentals of Radiative Transport including Nanoscale Effects
Session 10-12-2 Fundamentals of Radiative Transport including Nanoscale Effects – 2
 14. ASME 2013 Summer Heat Transfer Conference
Session 3-2-7 Fundamentals of Nanoscale Heat Transport

Associate Editor

1. Applied Optics (published by OPTICA, 2023-present)
2. ASME Open Journal of Engineering (published by ASME, 2022-present)
3. Journal of Photonics for Energy (published by SPIE, 2018-present)

Editorial Board Member

1. Scientific Reports (published by Nature, 2018-present)
2. Journal of Heat and Mass Transfer (published by ASME, 2015-present)

Guest Editor

Scientific Reports – Special Collection of “Thin Films for Energy Applications” (published by Nature, 2024)

Journal Reviewer

Nature Communications, Nature Sustainability, Advanced Functional Materials, Nano Energy, Physical Review journals, ACS journals, AIP Advances, Applied Physics Letters, Journal of Applied Physics, Scientific Reports, Optics Express, Optics Letter, International Journal of Heat and Mass Transfer, Journal of Quantitative Spectroscopy and Radiative Transfer, ASME Journal of Heat Transfer, ASME Journal of Nanotechnology in Engineering and Medicine, ASME Journal of Thermal Science and Engineering Applications

b. Professional Development

Panelist

1. U.S. National Science Foundation – Partnerships for Innovation, NSF Panel (2023)
2. U.S. National Science Foundation - Thermal Transport Process, NSF CAREER Panel (2023, 2022, 2021)
3. U.S. National Science Foundation - Division of Chemical, Bioengineering, Environmental, and Transport Systems (2020, 2019, 2016)
4. U.S. Department of Energy - Office of Science, Basic Energy Science Program (2018)

c. Professional Committee Chair/Member

1. OPTICA Photonic Metamaterials Technical Group (Vice Chair, 2024-2026)
2. ASTFE Energy and Sustainability Technical Committee (Founding member, 2022-present)
3. ASME K-8 Committee on Fundamentals of Heat Transfer (2014-present)
4. ASME K-9 Committee on Nanoscale Thermal Transport (Vice Chair, 2025-present)
5. International Workshop on Nano-Micro Thermal Radiation (NanoRad) International Scientific Committee (2015-present)
6. US Scientific Committee, The 3rd Pacific Rim Thermal Engineering Conference (ASTFE/JSME/KSME, 2024)