Huseyin Bostanci, Ph.D.

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ACADEMIC DEGREES

Ph.D. Mechanical Engineering, University of Central Florida, Orlando, FL 2010
Dissertation: "*High Heat Flux Spray Cooling with Ammonia on Enhanced Surfaces*"
Advisor: Prof. L.C. Chow

M.S. Nuclear Engineering, University of New Mexico, Albuquerque, NM 2001
Thesis: "*Effects of Inclination Angle and Subcooling on Nucleate Boiling and Critical Heat Flux of HFE-7100*"
Advisor: Prof. M.S. El-Genk

B.S. Mechanical Engineering, Istanbul Technical University, Istanbul, Turkey 1998
Graduation Project: *Cogeneration Technologies and System Design*
Rank: 5th out of 154 graduates

PROFESSIONAL EXPERIENCE

Associate Chair for Graduate Programs 2023 – present
Department of Mechanical Engineering, University of North Texas, Denton, TX

Leads recruiting, admissions, advising, and policy development/revision, and supports course scheduling and TA assignments for Master's programs in Mechanical and Energy Engineering, and Engineering Management, as well as Grad Track program.

Co-Director 2022 – present
UNT Industrial Assessment Center, University of North Texas, Denton, TX

Co-leads the U.S. DOE funded program in conducting energy and productivity assessments at qualified manufacturing plants, training undergraduate and graduate students, performing assessment-inspired, applied energy research, and engaging with stakeholders.

Graduate Program Coordinator - Master's 2021 – 2023
Department of Mechanical Engineering, University of North Texas, Denton, TX

Coordinated recruiting, admissions, advising, and policy development/revision, and supports course scheduling and TA assignments for Master's program. (Coordinated two additional MS programs in Engineering Technology and Engineering Management through the end of 2022 with enrollment reaching 300+ students).

Undergraduate Program Coordinator - MEET 2020 - 2021
Department of Mechanical Engineering, University of North Texas, Denton, TX

Coordinated advising and ABET accreditation related efforts, and supported course scheduling and TA assignments for Mechanical Engineering Technology (MEET) program.

Associate Professor 2020 – present
Department of Mechanical Engineering, University of North Texas, Denton, TX

Directs the Thermal Management Lab, performs research in thermal-fluids and energy areas, manages sponsored research projects, mentors graduate students, teaches undergrad/grad courses (e.g., Experimental Thermal Sciences, Senior Design I/II, Thermal Management).

Associate Professor of Mechanical Engineering Technology 2018 - 2020
Assistant Professor of Mechanical Engineering Technology 2012 - 2018
Department of Engineering Technology, University of North Texas, Denton, TX

Established and directed the Thermal Management Lab, performed research in thermal-fluids and energy areas, managed sponsored research projects, mentored graduate students, taught undergrad/grad courses (e.g., Thermodynamics, Fluid Mechanics, Statics, Project Management).

Adjunct Faculty 2012
Department of Mechanical and Aerospace Engineering, University of Central Florida, Orlando, FL

Taught an undergrad Thermodynamics course.

Lead Research & Development Engineer 2011 - 2012
Research & Development Engineer 2001 - 2010
RINI Technologies Inc., Oviedo, FL

Conducted fundamental and applied research in two-phase heat transfer and demonstrated technology feasibility in various projects for the U.S. military, government agencies, and prime defense contractors. Led R&D projects on spray cooling and miniature refrigeration for advanced thermal management of high-power lasers and electronics found in military tactical platforms and hybrid electric vehicles.

Graduate Research Assistant 1999 - 2001
Institute for Space & Nuclear Power Studies, University of New Mexico, Albuquerque, NM

Designed and conducted experimental research on boiling heat transfer with application to direct immersion cooling of electronic chips, analyzed test samples using FEA software.

Mechanical Engineer & Quality Assurance Representative 1998 - 1999
Tetisan Industrial Air Conditioning Systems Ltd., Istanbul, Turkey

Participated in projects related to design and manufacturing of air conditioning and cleanroom systems for industrial applications. Served as QA Management Representative, established procedures, and oversaw implementation of ISO-9001 quality system.

RESEARCH INTERESTS

- High-heat-flux **thermal management** with two-phase cooling techniques (nucleate boiling, spray cooling, enhanced heat transfer surfaces, miniature refrigeration cycles, bulk and nanoencapsulated phase change materials) *for applications in computing, power electronics, electro-optics*
- **Microgravity transport phenomena**, particularly phase separation, and heat and mass transfer *for applications in spacecraft/space habitat life support (air revitalization) systems*
- **Stirling cycle-based energy conversion** technologies (innovative rotary displacer Stirling engine) *for applications in distributed power generation and waste heat recovery*

HONORS and AWARDS

- UNT Nominee, Gordon and Betty Moore Foundation- Moore Inventor Fellows, 2017
- New Investigator Award, NASA Texas Space Grant Consortium, 2013
- Graduate Research Assistantship, Institute for Space and Nuclear Power Studies – UNM, 1999-2001
- Scholarship for graduate study and research, Japanese Government Scholarship (Monbukagakusho:MEXT, formerly known as Monbusho), 1999 (attended UNM instead)
- Merit Scholarship, Istanbul Technical University, 1997-1998

PUBLICATIONS and SCHOLARLY PRODUCTS

Summary:	***23 journal articles, 1 book chapter, 34 conference proceedings, 2 patents*** ***26 publications with student co-authors*** *(specified with superscript *)* ***Citations: 1091, h-index: 15, i10-index: 18*** *(Google Scholar as of 1/31/2024)*

Refereed Journal Articles

- Bagheri, A.*, **Bostanci, H.**, "Comprehensive Analyses of an Innovative Rotary Displacer Stirling Engine- Part I: Thermodynamic and Kinematic Analyses," Energy, *manuscript under review*
- Bagheri, A.*, **Bostanci, H.**, "Comprehensive Analyses of an Innovative Rotary Displacer Stirling Engine- Part II: CFD Analysis," Energy, *manuscript under review*

1. Sarvadi, A.*, **Bostanci, H.**, Kurwitz, C., Belancik, G., "Investigation of Microgravity Vortex Phase Separator for Spacecraft Liquid Amine CO2 Removal System," Acta Astronautica, 215(2), pp. 698-707, 2024. https://doi.org/10.1016/j.actaastro.2023.12.056

2. **Bostanci, H.**, Yata, V.V.R.*, Kaluvan, S., "Flow-Controlled Spray Cooling Approaches for Dynamic Thermal Management," Journal of Electronic Packaging, 143(3), pp. 031004, 2021. https://doi.org/10.1115/1.4049174

3. Almahmoud, K., Mahadevan, T., Du, J., **Bostanci, H.**, Zhao, W., "Investigation of Thermal Transport Properties of Copper-Supported Pillared-Graphene Structure Using Molecular Dynamics Simulations," MRS Communications, 10(4), pp. 695-701, 2020. https://doi.org/10.1557/mrc.2020.85

4. Almahmoud, K., Mahadevan, T., Barhemmati-Rajab, N., Du, J., **Bostanci, H.**, Zhao, W., "Investigation of Thermal Transport Properties in Pillared-Graphene Structure using Nonequilibrium Molecular Dynamics Simulations," MRS Communications, 10(3), pp. 506-511, 2020. https://doi.org/10.1557/mrc.2020.58

5. Bagheri, A.*, **Bostanci, H.**, "Comparative Approaches to Isothermal Analysis of Rotary Displacer Stirling Engines," International Journal of Energy for a Clean Environment, 21 (3), pp. 183–199, 2020. https://doi.org/10.1615/InterJEnerCleanEnv.2020030326

6. Bagheri, A.*, Mullins, W.C.*, Foster, P.R., **Bostanci, H.**, "Experimental Characterization of an Innovative Low-Temperature Small-Scale Rotary Displacer Stirling Engine," Journal of Energy Conversion and Management, 201, pp. 112073, 2019. https://doi.org/10.1016/j.enconman.2019.112073

7. Ghotli, R.A., Abbasi, M.R., Bagheri, A.*, Raman, A.A.A., Ibrahim, S., **Bostanci, H.**, "Experimental and Modeling Evaluation of Droplet Size in Immiscible Liquid-Liquid Stirred Vessel using Various Impeller Designs", Journal of the Taiwan Institute of Chemical Engineers, 100, 26-36, 2019. https://doi.org/10.1016/j.jtice.2019.04.005

8. **Bostanci, H.**, Altalidi, S.S.*, Nasrazadani, S., "Two-Phase Spray Cooling with HFC-134a and HFO-1234yf on Practical Enhanced Surfaces," Journal of Applied Thermal Engineering, 131, pp. 150-158, 2018. https://doi.org/10.1016/j.applthermaleng.2017.11.142

9. Bagheri, A.*, Nasrazadani, S., **Bostanci, H.**, "Impact of Internal Pipe Grooves on Flow Accelerated Corrosion of Small-Bore A-106 Carbon Steel Pipes", Journal of Failure Analysis and Prevention, 17 (3), pp. 417–425, 2017. https://doi.org/10.1007/s11668-017-0237-z

10. **Bostanci, H.**, He, B., Chow, L.C., "Spray Cooling with Ammonium Hydroxide," International Journal of Heat and Mass Transfer, vol. 107, pp. 45-52, 2017. https://doi.org/10.1016/j.ijheatmasstransfer.2016.11.035

11. **Bostanci, H.**, Rini, D.P., Kizito, J.P., Singh, V., Seal, S., Chow, L.C., "High Heat Flux Spray Cooling with Ammonia: Investigation of Enhanced Surfaces for HTC," International Journal of Heat and Mass Transfer, vol. 75, pp. 718-725, 2014. https://doi.org/10.1016/j.ijheatmasstransfer.2014.04.019

12. **Bostanci, H.**, Singh, V., Kizito, J.P., Rini, D.P., Seal, S., Chow, L.C., "Micro Scale Surface Modifications for Heat Transfer Enhancement," ACS Applied Materials and Interfaces, 5 (19), pp. 9572-9578, 2013. https://doi.org/10.1021/am402512f

13. Wu, W., **Bostanci, H.**, Chow, L.C., Hong, Y., Ding, S.J., Su, M., Kizito, J.P., "Jet Impingement Heat Transfer Using Air-Laden Nanoparticles with Encapsulated Phase Change Materials," ASME Journal of Heat Transfer, vol. 135 (5), pp. 052202, 2013. https://doi.org/10.1115/1.4023563

14. Wu, W., **Bostanci, H.**, Chow, L.C., Hong, Y., Wang, C.M., Su, M., Kizito, J.P., "Heat Transfer Enhancement of PAO in Microchannel Heat Exchanger using Nano-Encapsulated Phase Change Indium Particles," International Journal of Heat and Mass Transfer, vol. 58 (1), pp. 348–355, 2013. https://doi.org/10.1016/j.ijheatmasstransfer.2012.11.032

15. **Bostanci, H.**, Van Ee, D., Saarloos, B.A, Rini, D.P., Chow, L.C, "Thermal Management of Power Inverter Modules at High Fluxes via Two-Phase Spray Cooling," IEEE Transactions on Components, Packaging and Manufacturing Technology, vol. 2 (9), pp. 1480-1485, 2012. https://doi.org/10.1109/TCPMT.2012.2190933

16. **Bostanci, H.**, Rini, D.P., Kizito, J.P., Singh, V., Seal, S., Chow, L.C., "High Heat Flux Spray Cooling with Ammonia: Investigation of Enhanced Surfaces for CHF," International Journal of Heat and Mass Transfer, vol. 55 (13-14), pp. 3849-3856, 2012. https://doi.org/10.1016/j.ijheatmasstransfer.2012.03.040

17. Vretenar, N., Newell, T.C., Carson, T., Peterson, P., Lucas, T., Latham, W. P., **Bostanci, H.**, Huddle-Lindauer, J.J., Saarloos, B.A., Rini, D.P., "Cryogenic Ceramic 277 Watt Yb: YAG Thin-Disk Laser," Optical Engineering, vol. 51(1), pp. 014201-1, 2012. https://doi.org/10.1117/1.OE.51.1.014201

18. Wu, W., **Bostanci, H.**, Chow, L.C., Ding, S.J., Hong, Y., Su, M., Kizito, J.P., Gschwender, L., Snyder, C.E., "Jet Impingement and Spray Cooling Using Slurry of Nanoencapsulated Phase Change Materials," International Journal of Heat and Mass Transfer, vol. 54, pp. 2715–2723, 2011. https://doi.org/10.1016/j.ijheatmasstransfer.2011.03.022

19. Wu, W., Du, J.H., Lin, Y.R., Chow, L.C., **Bostanci, H.**, Saarloos, B.A., Rini, D.P, "Evaluation of Compact and Effective Air-cooled Carbon Foam Heat Sink," ASME Journal of Heat Transfer, vol.133(5), pp. 054504, 2011. https://doi.org/10.1115/1.4003193

20. Wu, W., **Bostanci, H.**, Chow, L.C., Hong, Y., Su, M., Kizito, J.P., "Nucleate Boiling Heat Transfer Enhancement for Water and FC-72 on Titanium Oxide and Silicon Oxide Surfaces," International Journal of Heat and Mass Transfer, vol. 53(9), pp. 1773–1777, 2010. https://doi.org/10.1016/j.ijheatmasstransfer.2010.01.013

21. **Bostanci, H.**, Rini, D.P., Kizito, J.P., Chow, L.C., "Spray Cooling with Ammonia on Microstructured Surfaces: Performance Enhancement and Hysteresis Effect," ASME Journal of Heat Transfer, vol.131(7), pp. 071401, 2009. https://doi.org/10.1115/1.3089553

22. El-Genk, M.S., **Bostanci, H.**, "Combined Effects of Subcooling and Surface Orientation on Pool Boiling of HFE-7100 from a Simulated Electronic Chip," Journal of Experimental Heat Transfer, vol.16(4), pp. 281-301, 2003. https://doi.org/10.1080/08916150390242244

23. El-Genk, M.S., **Bostanci, H.**, "Saturation Boiling of HFE-7100 from a Copper Surface, Simulating a Microelectronic Chip," International Journal of Heat and Mass Transfer, vol.46(10), pp. 1841-1854, 2003. https://doi.org/10.1016/S0017-9310(02)00489-1

To be submitted

- Bagheri, A.*, **Bostanci, H.**, "Analytical and Computational Optimization of an Innovative Rotary Displacer Stirling Engine," Energy, *manuscript in preparation*

- **Bostanci, H.,** Patlolla, S.R.*, Obuladinne, S.S.*, "Two-Phase Spray Cooling with 2-Propanol/Water Binary Mixture: Roles of Mass Diffusion Resistance and Marangoni Effect on Performance," International Journal of Heat and Mass Transfer, *manuscript in preparation*

- Bali, D.*, **Bostanci, H.**, "Two-Phase Spray Cooling with Zeotropic and Azeotropic Binary Mixtures for Thermal Management of Automotive Power Electronics," Journal of Enhanced Heat Transfer, *manuscript in preparation*

Book Chapters

1. Arik, M., Kosar, A., **Bostanci, H.**, Bar-Cohen, A., "Pool Boiling Critical Heat Flux in Dielectric and Nanofluids," Advances in Heat Transfer Vol. 43, pp. 1-76, Elsevier, 2011. https://doi.org/10.1016/B978-0-12-381529-3.00001-3

Refereed Conference Proceedings

- Byanjankar, C.*, **Bostanci, H.**, Kurwitz, C., Belancik, G., "Assessment of Humidity Absorption and Desorption Capabilities of [EMIM][EtSO4] for High Efficiency Humidity Control in Microgravity," 53nd International Conference on Environmental Systems (ICES 2024), Louisville, Kentucky, July 21-25, 2024, *abstract accepted*

- Byanjankar, C.*, **Bostanci, H.**, Kurwitz, C., Belancik, G., "Design, Development, and Initial Testing of Microgravity Vortex Phase Separator-Based Spacecraft Cabin Air Humidity Control Subsystem for CO2 Removal System," 53nd International Conference on Environmental Systems (ICES 2024), Louisville, Kentucky, July 21-25, 2024, *abstract accepted*

1. Sarvadi, A.*, **Bostanci, H.**, Kurwitz, C., Belancik, G., "Design, Modeling, and Initial Characterization of a Subscale Variable Conductance Radiator-Based CO2 Deposition System in Deep Space Transit," 52nd International Conference on Environmental Systems (ICES 2023), Calgary, Canada, July 16-20, 2023. https://hdl.handle.net/2346/94769

2. Byanjankar, C.*, Sarvadi, A.*, **Bostanci, H.**, Kurwitz, C., Belancik, G., "Preliminary Investigation of Vortex Phase Separator-Based Spacecraft Cabin Air Dehumidification Subsystem for CO2 Removal," 52nd International Conference on Environmental Systems (ICES 2023), Calgary, Canada, July 16-20, 2023. https://hdl.handle.net/2346/94771

3. **Bostanci, H.**, Boubekri, N., "An Experiential Education Framework to Train Next-Generation Energy-Conscious Engineers through UNT Industrial Assessment Center," 2023 ASEE-GSW Annual Conference, Denton, TX, March 15-17, 2023

4. **Bostanci, H.**, Manzo, M., "An Outreach Program for Introducing Nuclear Power through Training STEM Educators," 2023 ASEE-GSW Annual Conference, Denton, TX, March 15-17, 2023

5. Manzo, M., **Bostanci, H.**, "Toward the Digital Twin Education: Arduino Microcontroller Training for STEM Educators," 2023 ASEE Conference for Industry and Education Collaboration (CIEC), North Charleston, SC, February 8-10, 2023

6. Jourdan, A., Sarvadi, A.*, Siller, H. R., **Bostanci, H.**, "Additively Manufactured Liquid-Cooled Heat Sink: Gyroid-Based Design, Fabrication and Testing," ASME International Technical Conference and Exhibition on Packaging and Integration of Electronic and Photonic Microsystems (InterPACK 2022), Garden Grove, CA, October 25-27, 2022. https://doi.org/10.1115/IPACK2022-97476

7. Sarvadi, A.*, **Bostanci, H.**, Kurwitz, C., Belancik, G., Jan D., "Preliminary Investigation of Microgravity Vortex Phase Separator for Liquid Amine CO2 Removal System," 51st International Conference on Environmental Systems (ICES 2022), Saint Paul, MN, July 10-14, 2022. https://hdl.handle.net/2346/89707

8. Giron, B.*, **Bostanci, H.**, Kurwitz, C., Belancik, G., Jan D., "Preliminary Tests with Variable Conductance Radiator for CO2 Deposition in Deep Space Transit," 51st International Conference on Environmental Systems (ICES 2022), Saint Paul, MN, July 10-14, 2022. https://hdl.handle.net/2346/89804

9. Yaqub, M., Rahman, M., Pournorouz, Z., **Bostanci, H.**, Ganta, D., Xu, Y., "Optimizing Energy Infrastructure of Autonomous Electric Vehicles," Institute of Industrial and Systems Engineers (IISE) Annual Conference, New Orleans, LA, November 1-3, 2020.

10. **Bostanci, H.**, Shareef, M. A.*, Tuma, P.E., "Immersion Cooled ARM-Based Computer Clusters towards Low-Cost High-Performance Computing," IEEE Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems (ITherm 2020), Orlando, FL, July 21-23, 2020. https://doi.org/10.1109/ITherm45881.2020.9190494

11. **Bostanci, H.**, Nasrazadani, S., "Use of Direct Airside Economizers in Thermal Management of Data Centers: Opportunities and Challenges," IEEE Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems (ITherm 2019), Las Vegas, NV, May 28-31, 2019. https://doi.org/10.1109/ITHERM.2019.8757297

12. **Bostanci, H.**, Obuladinne, S.S.*, "Numerical Investigation of Spray Cooling-Based Thermal Management of Extreme Power Densities Using Anisotropic Composite Heat Spreaders," IEEE Intersociety Conference on

Thermal and Thermomechanical Phenomena in Electronic Systems (ITherm 2019), Las Vegas, NV, May 28-31, 2019. https://doi.org/10.1109/ITHERM.2019.8757351

13. Heydari, M., Bagheri, A.*, Sadat, H., **Bostanci, H.**, Nasrazadani, S., "Numerical Investigation on Simultaneous Effects of Surface Roughness and Variable Properties on Laminar Flow in Annular Tubes," ASME International Mechanical Engineering Congress and Exposition (IMECE 2018), Pittsburgh, PA, November 9-15, 2018. https://doi.org/10.1115/IMECE2018-88288

14. Bagheri, A.*, Mullins, W.C.*, Foster, P.R., **Bostanci, H.**, "Adiabatic Analysis of Rotary Displacer Stirling Engine," ASME International Mechanical Engineering Congress and Exposition (IMECE 2018), Pittsburgh, PA, November 9-15, 2018. https://doi.org/10.1115/IMECE2018-87758

15. Bagheri, A.*, Williams, P.J.I.*, Foster, P.R., **Bostanci, H.**, "Effect of Using Different Equations of State in the Analysis of Rotary Displacer Stirling Engine," 2018 ASME Power and Energy Conference and Exhibition, Lake Buena Vista, FL, June 24-28, 2018. https://doi.org/10.1115/POWER2018-7221

16. Yata, V.V.R.*, **Bostanci, H.**, "Investigation of Spray Cooling Schemes for Dynamic Thermal Management," IEEE Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems (ITherm 2017), Orlando, FL, May 30-June 2, 2017. https://doi.org/10.1109/ITHERM.2017.7992560

17. Sexton, A.J.*, Caparelli, P.*, **Bostanci, H.**, Davis, J., "Failure Analysis of Spiral Tube Heat Exchanger," 2017 ASEE-GSW Annual Conference, Richardson, TX, March 12-15, 2017.

18. Obuladinne, S.S.*, **Bostanci, H.**, "Two-Phase Spray Cooling with Water/2-Propanol Binary Mixture: Investigation of Mass Diffusion Resistance," ASME International Mechanical Engineering Congress and Exposition (IMECE 2016), Phoenix, AZ, November 11-17, 2016. https://doi.org/10.1115/imece2016-67514

19. Kurwitz, R.C., **Bostanci, H.**, Yang, X., Poston, J., Peddicord, K., "Systems Engineering Initiative-Undergraduate Education Enhancement in a Regional Education Network," 3rd IAEA International Conference on Nuclear Knowledge Management, Vienna, Austria, November 7-11, 2016.

20. Bagheri, A.*, Kondapally, S., **Bostanci, H.**, Foster, P.R., Yu, C., "Simulation and Visualization of an Innovative Rotary Displacer Stirling Engine Operation," 2016 ASEE-GSW Annual Conference, Fort Worth, TX, March 6-8, 2016.

21. Harikrishnan, M.S., Hayes, R.G., **Bostanci, H.**, Barbieri, E., "Control and Automation of a Heat Shrink Tubing Process," 2016 ASEE-GSW Annual Conference, Fort Worth, TX, March 6-8, 2016.

22. **Bostanci, H.**, Joshua, N.E.*, "Nucleate Boiling of Dielectric Liquids on Hydrophobic and Hydrophilic Surfaces," ASME International Mechanical Engineering Congress and Exposition (IMECE 2015), Houston, TX, November 13-29, 2015. https://doi.org/10.1115/imece2015-53604

23. Bagheri, A.*, **Bostanci, H.**, Foster, P.R., "Preliminary Analysis of an Innovative Rotary Displacer Stirling Engine," ASME International Mechanical Engineering Congress and Exposition (IMECE 2015), Houston, TX, November 13-29, 2015. https://doi.org/10.1115/IMECE2015-52455

24. Yaddanapudi, S.J.*, **Bostanci, H.**, "Spray Cooling with HFC-134a and HFO-1234yf for Thermal Management of Automotive Power Electronics," ASME International Mechanical Engineering Congress and Exposition (IMECE 2015), Houston, TX, November 13-29, 2015. https://doi.org/10.1115/imece2015-52312

25. Joshua, N.E.*, Ajakumar, D.K.*, **Bostanci, H.**, "Nucleate Boiling of Dielectric Liquids on Hydrophobic-Patterned Surfaces," ASME International Mechanical Engineering Congress and Exposition (IMECE 2014), Quebec, Canada, November 14-20, 2014. https://doi.org/10.1115/IMECE2014-37513

26. Yousefi-Darani, S., Joshua, N.E.*, **Bostanci, H.**, Barbieri, E., "Automating a Heat Shrink Tubing Process," 4th IAJC/ISAM Joint International Conference, Orlando, FL, September 25-27, 2014. ISBN 978-1-60643-379-9

27. Vretenar, N., Carson, T., Lucas, T., Newell, T., Latham, W. P., Peterson, P., **Bostanci, H.**, Lindauer, J.J., Saarloos, B.A., Rini, D.P., "Cryogenic Yb:YAG Thin-Disk Laser," 2011 SPIE Security + Defense, Volume 8187, Prague, Czech Republic, October 5, 2011. https://doi.org/10.1117/12.903731

28. Wu, W., **Bostanci, H.**, Chow, L.C., Hong, Y., Su, M., Kizito, J.P., "Jet Impingement Heat Transfer with Air-borne Nanoencapsulated Phase Change Materials," 2011 MRS Spring Meeting, San Francisco, CA, April 25-29, 2011.

29. **Bostanci, H.**, Van Ee, D., Saarloos, B.A, Rini, D.P., Chow, L.C, "Spray Cooling of Power Electronics Using High Temperature Coolant and Enhanced Surface," 2009 IEEE Vehicle Power and Propulsion Conference, Dearborn, MI, September 7-10, 2009. https://doi.org/10.1109/VPPC.2009.5289793

30. **Bostanci, H.**, Rini, D.P., Kizito, J.P., Chow, L.C., "Hysteresis in Spray Cooling of Micro-Structured Surfaces," ASME 2008 Heat Transfer Summer Conference, Jacksonville, FL, August 10-14, 2008. https://doi.org/10.1115/HT2008-56384

31. **Bostanci, H.**, Saarloos, B.A, Rini, D.P., Kizito, J.P., Chow, L.C., "Spray Cooling with Ammonia on Micro-Structured Surfaces," IEEE Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems (ITherm 2008), Orlando, FL, May 28-31, 2008. https://doi.org/10.1109/ITHERM.2008.4544282

32. El-Genk, M.S., **Bostanci, H.**, "Saturation Pool Boiling of HFE-7100 Dielectric Liquid in a Simulated Reduced Gravity," 2002 Space Technology and Applications International Forum (STAIF 2002), Albuquerque, NM, February 13-17, 2002. https://doi.org/10.1063/1.1449723

33. El-Genk, M.S., **Bostanci, H.**, "Pool Boiling Experiments for HFE-7100 Dielectric Liquid," Thermal Challenges in Next Generation Electronic Systems (THERMES), Santa Fe, NM, January 13-17, 2002. ISBN 90-77017-03-8

34. **Bostanci, H.**, El-Genk, M.S., "Effects of Inclination Angle and Sub-cooling on Nucleate Boiling and Critical Heat Flux of HFE-7100," 12th International Heat Transfer Conference (IHTC), Grenoble, France, August 18-23, 2002. http://dx.doi.org/10.1615/IHTC12.4520

Intellectual Property

1. Prasad, V., Wang, G.X., John, K., **Bostanci, H.**, Sadat, H., Almara, L., "Method and Conditions for Intra- and Inter-Continental Transport of Supercritical Natural Gas (SNG) via Pipelines through Land, Underground, Water Bodies, and/or Ocean," US Patent Application # 18/364,386 and PCT Application # PCT/US2023/029564, August 2023; based on the Provisional Patent Application # 63/375,085, September 2022.

2. Prasad, V., Zhang, Z., Banerjee, D., Wang, G.-X., Sadat, H., **Bostanci, H.**, Almara, L., "Process and System for Heat Exchange Process," US Patent Application # 18/320,727, May 2023; based on "Method and Systems

using a Mixture of Supercritical Fluid Prepared Selectively for Heat Dissipation at Very-low to Very-high Temperatures and Pipeline Transport," Provisional Patent Application # 63/344,429, May 2022.

Selected Technical Reports

1. Barbe, L.*, Castro, G.*, Vu, M.*, Asencio, J.*, Joblin, J.*, Byanjankar, C.*, **Bostanci, H.**, Kurwitz, C., "Regenerable Liquid Desiccants for High-Efficiency Humidity Control in Microgravity," NASA Moon-to-Mars Exploration Systems & Habitation (X-Hab) Academic Innovation Challenge, 2023.

2. Seaver, T.*, Lira, E.*, De La Torre, J.*, Pezzulli, A.*, Giron, B.*, **Bostanci, H.**, Kurwitz, C., "Thermal Radiator for CO_2 Deposition in Deep Space Transit," NASA Moon-to-Mars Exploration Systems & Habitation (X-Hab) Academic Innovation Challenge, 2021.

3. Sarvadi, A.*, Whitehead, H.*, Primo, F.*, Giron, B.*, Frease, N.*, **Bostanci, H.**, Kurwitz, C., "Microgravity Gas/Liquid Separator for the CO_2 Revitalization System," NASA Exploration Systems & Habitation (X-Hab) Academic Innovation Challenge, 2020.

4. **Bostanci, H**., Obuladinne, S.S.*, "Spray Cooling System," American Science and Engineering, Inc. (AS&E), 2015.

5. Huddle-Lindauer, J.J., **Bostanci, H.**, Van Ee, D., Saarloos, B.A., Rini, D.P., "Liquid Nitrogen Spray Cooling for Cryogenic Solid State Lasers," U.S. Air Force SBIR PIII, 2010.

6. **Bostanci, H.**, Huddle-Lindauer, J.J., Saarloos, B.A., Rini, D.P., "Two-Phase Thermal Management Technology for Aerospace Application: Spray Cooled Diode Array Package Demonstration," U.S. Air Force SBIR PIII, 2010.

7. **Bostanci, H.**, Van Ee, D., Huddle-Lindauer, J.J., Saarloos, B.A., Rini, D.P., "Two-Phase Thermal Management Technology for Aerospace Application: Evaporative Spray Cooling for High Heat Flux Sources," U.S. Air Force SBIR PIII, 2009.

8. **Bostanci, H.**, Rini, D.P., "Passive Thermal Management System for High-Temperature Military Aircraft Actuation Systems," U.S. Air Force SBIR PII, 2008.

9. **Bostanci, H.**, Rini, D.P., "Innovative Two-Phase Cooling Approach for Full Authority Digital Engine Control (FADEC)," U.S. Air Force SBIR PI, 2008.

10. Rini, D.P., **Bostanci, H.**, Saarloos, B.A., Huddle-Lindauer, J.J., Carman, B.G., "Compact and Efficient Cooling Techniques for High Energy Solid-State Lasers," Dept. of Defense, Defense Advanced Research Projects Agency (DARPA) SBIR PII, 2007.

Conference Presentations

1. Sarvadi, A.*, **Bostanci, H.**, Kurwitz, C., Belancik, G., "Design, Modeling, and Initial Characterization of a Subscale Variable Conductance Radiator-Based CO2 Deposition System in Deep Space Transit," 52nd International Conference on Environmental Systems (ICES 2023), Calgary, Canada, July 18, 2023

2. Byanjankar, C.*, Sarvadi, A.*, **Bostanci, H.**, Kurwitz, C., Belancik, G., "Preliminary Investigation of Vortex Phase Separator-Based Spacecraft Cabin Air Dehumidification Subsystem for CO2 Removal," 52nd International Conference on Environmental Systems (ICES 2023), Calgary, Canada, July 20, 2023

3. **Bostanci, H.**, Boubekri, N., "An Experiential Education Framework to Train Next-Generation Energy-Conscious Engineers through UNT Industrial Assessment Center," 2023 ASEE-GSW Annual Conference, Denton, TX, March 17, 2023

4. **Bostanci, H.**, Manzo, M., "An Outreach Program for Introducing Nuclear Power through Training STEM Educators," 2023 ASEE-GSW Annual Conference, Denton, TX, March 17, 2023

5. Giron, B.*, **Bostanci, H.**, Kurwitz, C., Belancik, G., Jan D., "Preliminary Tests with Variable Conductance Radiator for CO2 Deposition in Deep Space Transit," 51st International Conference on Environmental Systems (ICES 2022), Saint Paul, MN, July 12, 2022.

6. **Bostanci, H.**, Shareef, M. A.*, Tuma, P.E., "Immersion Cooled ARM-Based Computer Clusters towards Low-Cost High-Performance Computing," IEEE Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems (ITherm 2020), Orlando, FL, July 21, 2020 (online).

7. **Bostanci, H.**, Nasrazadani, S., "Use of Direct Airside Economizers in Thermal Management of Data Centers: Opportunities and Challenges," IEEE Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems (ITherm 2019), Las Vegas, NV, May 29, 2019.

8. **Bostanci, H.**, Obuladinne, S.S.*, "Numerical Investigation of Spray Cooling-Based Thermal Management of Extreme Power Densities Using Anisotropic Composite Heat Spreaders," IEEE Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems (ITherm 2019), Las Vegas, NV, May 31, 2019.

9. **Bostanci, H.**, Obuladinne, S.S.*, "Spray Cooling-Based Thermal Management of Extreme Power Densities Using Orthotropic Composite Heat Spreaders," ASME International Mechanical Engineering Congress and Exposition (IMECE 2018), Pittsburgh, PA, November 12, 2018.

10. Yata, V.V.R.*, **Bostanci, H.**, "Investigation of Spray Cooling Schemes for Dynamic Thermal Management," IEEE Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems (ITherm 2017), Orlando, FL, June 2, 2017.

11. Obuladinne, S.S.*, **Bostanci, H.**, "Two-Phase Spray Cooling with Water/2-Propanol Binary Mixture: Investigation of Mass Diffusion Resistance," ASME International Mechanical Engineering Congress and Exposition (IMECE 2016), Phoenix, AZ, November 16, 2016.

12. **Bostanci, H.**, Joshua, N.E.*, "Nucleate Boiling of Dielectric Liquids on Hydrophobic and Hydrophilic Surfaces," ASME International Mechanical Engineering Congress and Exposition (IMECE 2015), Houston, TX, November 17, 2015.

13. Yaddanapudi, S.J.*, **Bostanci, H.**, "Spray Cooling with HFC-134a and HFO-1234yf for Thermal Management of Automotive Power Electronics," ASME International Mechanical Engineering Congress and Exposition (IMECE 2015), Houston, TX, November 16, 2015.

14. Joshua, N.E.*, Ajakumar, D.K.*, **Bostanci, H.**, "Nucleate Boiling of Dielectric Liquids on Hydrophobic-Patterned Surfaces," ASME International Mechanical Engineering Congress and Exposition (IMECE 2014), Quebec, Canada, November 16, 2014.

15. **Bostanci, H.**, Yaddanapudi, S.*, "Advanced Thermal Management of Automotive Power Electronics via Two-Phase Spray Cooling," SAE Thermal Management Systems Symposium, Denver, CO, September 23, 2014.

16. **Bostanci, H.**, Van Ee, D., Saarloos, B.A, Rini, D.P., Chow, L.C, "Spray Cooling of Power Electronics Using High Temperature Coolant and Enhanced Surface," 2009 IEEE Vehicle Power and Propulsion Conference, Dearborn, MI, September 7-10, 2009.

17. **Bostanci, H.**, Rini, D.P., Kizito, J.P., Chow, L.C., "Hysteresis in Spray Cooling of Micro-Structured Surfaces," ASME 2008 Heat Transfer Summer Conference, Jacksonville, FL, August 10-14, 2008.

18. **Bostanci, H.**, Saarloos, B.A, Rini, D.P., Kizito, J.P., Chow, L.C., "Spray Cooling with Ammonia on Micro-Structured Surfaces," IEEE Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems (ITherm 2008), Orlando, FL, May 28-31, 2008.

Invited Talks

1. **Bostanci, H.**, "Innovative CO2 Removal Technologies for Spacecraft Air Revitalization," UNT Department of Mechanical Engineering, ME Seminar, September 15, 2023, Denton, TX (seminar presentation).

2. **Bostanci, H.**, "Academic Transitions: Pathways to an Engineering Degree," 2023 ASEE-GSW Annual Conference, March 15, 2023, Denton, TX (panel discussion).

3. **Bostanci, H.**, "High Heat Flux Thermal Management with Two-Phase Cooling Techniques," UNT Department of Mechanical Engineering, ME Seminar, October 15, 2021, Denton, TX (seminar presentation).

4. **Bostanci, H.**, "High Heat Flux Thermal Management with Two-Phase Cooling Techniques," UNT Department of Mechanical and Energy Engineering, MEE Seminar, February 13, 2020, Denton, TX (seminar presentation).

5. **Bostanci, H.**, "Thermal Management and Stirling Engine Research at ETEC," UNT Department of Engineering Technology, ENGR 1030 Research Panel, October 15, 2018, Denton, TX (guest lecture).

6. **Bostanci, H.**, "Thermal Management and Stirling Engine Research at ETEC," UNT Department of Engineering Technology, ENGR 1030 Research Panel, April 19, 2018, Denton, TX (guest lecture).

7. **Bostanci, H.**, "Thermal Management and Stirling Engine Research at ETEC," UNT Department of Engineering Technology, ENGR 1030 Research Panel, April 4, 2017, Denton, TX (guest lecture).

8. **Bostanci, H.**, "An Innovative Stirling Engine for Distributed Power Generation and Waste Heat Recovery Applications," ARL Adelphi Laboratory Center, March 8, 2017, Adelphi, MD (invited presentation).

9. **Bostanci, H.**, "Thermal Management and Stirling Engine Research at ETEC," UNT Department of Engineering Technology, ENGR 1030 Research Panel, November 17, 2016, Denton, TX (guest lecture).

10. **Bostanci, H.**, "Advanced Thermal Management for High Heat Flux Systems," CENG Research Discovery Workshop, August 22, 2016, Denton, TX (workshop presentation).

11. **Bostanci, H.**, "Innovative Stirling Engine Based Power Generation," CENG Research Discovery Workshop, August 22, 2016, Denton, TX (workshop presentation).

12. **Bostanci, H.**, "Thermal Management with Two-Phase Cooling Techniques," UNT Department of Engineering Technology, ETEC Seminar, September 21, 2015, Denton, TX (seminar presentation).

13. **Bostanci, H.**, "High-Heat-Flux Thermal Management," UNT Department of Engineering Technology, ETEC Seminar, October 6, 2014, Denton, TX (seminar presentation).

14. **Bostanci, H.** "Spray Cooling: Fundamentals, Performance Enhancement and Applications," UNT Department of Mechanical and Energy Engineering, MEEN Seminar, February 21, 2014, Denton, TX (seminar presentation).

15. **Bostanci, H.** "Spray Cooling: Fundamentals, Performance Enhancement and Applications," UNT Department of Engineering Technology, ETEC Seminar, November 18, 2013, Denton, TX (seminar presentation).

16. **Bostanci, H.** "Spray Cooling: Fundamentals, Performance Enhancement and Applications," NASA Texas Space Grant Consortium Annual Meeting, November 4, 2013, Austin, TX (invited presentation).

Posters

1. Sarvadi, A.*, **Bostanci, H.**, Kurwitz, C., Belancik, G., Jan, D., "Investigation of Vortex Phase Separator for Spacecraft Cabin Air Dehumidification," American Society for Gravitational and Space Research Annual Meeting 2021 (ASGSR 2021), November 3-6, 2021, Baltimore, MD.

2. Sarvadi, A.*, **Bostanci, H.**, Kurwitz, C., Belancik, G., Jan, D., "Preliminary Tests with Microgravity Vortex Phase Separator for Liquid Amine CO_2 Removal System," 50th International Conference on Environmental Systems (ICES 2021), July 13, 2021, Lisbon, Portugal (virtual conference) (2^{nd} Prize in poster competition).

3. Giron, B.*, Seaver, J.*, Pezzulli, A.*, De La Torre, J.*, Lira, E.*, **Bostanci, H.**, Kurwitz, C., Belancik, G., Jan, D., "Development of a Prototype Thermal Radiator for CO_2 Deposition in Deep Space Transit," 50th International Conference on Environmental Systems (ICES 2021), July 13, 2021, Lisbon, Portugal (virtual conference).

4. Sexton, A.J.*, Caparelli, P.*, Davis, J., **Bostanci, H.**, "Failure Analysis of Spiral Tube Letdown Heat Exchanger," Showcase of Undergraduate Research in Engineering, November 4, 2016, Denton, TX.

5. Jongleartrakull, P.*, **Bostanci, H.**, "Hot Spot Thermal Management with Two-Phase Spray Cooling," UNT SUPER (Summer Undergraduate Program in Engineering Research) Poster Competition, July 28, 2016, Denton, TX.

6. Soupramongkol, P.*, Joshua, N.E.*, **Bostanci, H.**, "Nucleate Boiling of Ethanol on Hydrophobic Patterned Surface," UNT SUPER (Summer Undergraduate Program in Engineering Research) Poster Competition, May 22, 2014, Denton, TX.

RESEARCH FUNDING

Summary:	***26 External and 4 Internal Grants/Contracts ; 21 as PI and 8 as Co-PI*** ***Total Amount: $3,018,420 ; Bostanci Share: $1,716,610*** *(External: $2,976,460 + Internal: $41,960)*

Awarded

1. "Collaborative Research: Supercritical Fluids and Heat Transfer - Delineation of Anomalous Region, Ultra-long Distance Gas Transport without Recompression, and Thermal Management," V. Prasad (PI), **H. Bostanci (Co-PI, 24%)**, H. Sadat (Co-PI), G.-X. Wang (PI, Univ. of Akron), NSF, 2023-2026, $515,891

2. "University of North Texas Industrial Assessment Center," N. Boubekri (PI), **H. Bostanci (Co-PI, 50%)**, DOE EERE (Office of Energy Efficiency and Renewable Energy), 9/2022-8/2026, $1,400,000

3. "EAGER: Experimental Methods and Measurements of Anomalous Properties of Supercritical Fluids and their Mixtures," V. Prasad (PI), **H. Bostanci (Co-PI, 50%)**, NSF, 8/2022-7/2023, $150,000

4. "Variable Conductance Radiator for CO_2 Deposition in Deep Space Transit," **H. Bostanci (sole PI)**, NASA Space Technology Research Grant (STRG-NSTGRO), 8/2022-7/2024, $146,528.

5. "Regenerable Liquid Desiccants for High-Efficiency Humidity Control in Microgravity," **H. Bostanci (PI, 100%)**, C. Kurwitz (Co-PI, TAMU), NASA Moon-to-Mars X-Hab 2023 Academic Innovation Challenge, 8/2022-5/2023, $50,000

6. "NPI-UNT Partnership on Outreach Programs," **H. Bostanci (PI, 50%)**, M. Manzo (Co-PI), Nuclear Power Institute-Texas A&M Engineering Experiment Station, 4/2022-8/2022, $25,000

7. "NPI-UNT Partnership on Research Experiences Programs," **H. Bostanci (sole PI)**, Nuclear Power Institute-Texas A&M Engineering Experiment Station, 8/2021-9/2021, $25,000

8. "Design and Development of Laboratory Equipment for an Emerging Data Center Thermal Management Technology: Single-Phase Liquid Cooling," **H. Bostanci (PI, 50%)**, M. Manzo (Co-PI), ASHRAE Undergraduate Program Equipment Grant 9/2021-5/2022, $5,000

9. "Microgravity Vortex Phase Separator for Liquid Amine CO_2 Removal System," **H. Bostanci (sole PI)**, NASA Space Technology Research Grant (STRG-NSTGRO), 8/2020-7/2022, $140,794

10. "Thermal Radiator for CO_2 Deposition in Deep Space Transit," **H. Bostanci (PI, 100%)**, C. Kurwitz (Co-PI, TAMU), NASA Moon-to-Mars X-Hab 2021 Academic Innovation Challenge, 8/2020-5/2021, $49,994

11. "NPI-UNT Partnership on Research Experiences and Outreach Programs," **H. Bostanci (PI, 50%)**, L. Anaya (Co-PI), M. Manzo (Co-PI), Nuclear Power Institute-Texas A&M Engineering Experiment Station, 5/2020-8/2021, $149,740

12. "Evaluation of Hybrid Manufacturing Processes for Advanced Small Modular Reactor (SMR) Components," H. Siller (PI), **H. Bostanci (Co-PI, 25%)**, R. Mirshams (Co-PI), S. Nasrazadani (Co-PI), C. Kurwitz (Co-PI, TAMU), UNT AMMPI, 1/2020-8/2020, $16,960

13. "Microgravity Gas-Liquid Separator for the Liquid Amine CO_2 Removal System," **H. Bostanci (sole PI)**, NASA X-Hab 2020 Academic Innovation Challenge, 8/2019-6/2020, $29,965

14. "AVID, Autonomous Vehicles Infrastructure Development," M. Yaqub (PI, Texas A&M Commerce), D. Ganta (Co-PI, Texas A&M International University), **H. Bostanci (Co-PI, 20%)**, Z. Pournotouz (Co-PI, Tarleton State University), Y. Xu (Co-PI, Prairie View A&M University), Texas A&M Engineering Experiment Station Annual Research Conference Project Award, 6/2019-8/2020, $2,500

15. "Design and Development of Laboratory Equipment for an Emerging Data Center Thermal Management Technology: Two-Phase Immersion Cooling," **H. Bostanci (PI, 50%)**, M. Manzo (Co-PI), ASHRAE Undergraduate Program Equipment Grant, 8/2019-5/2020, $5,000

16. "NPI-UNT Partnership on Nuclear Education, Systems Engineering Initiative, and Outreach Programs," **H. Bostanci (sole PI)**, Nuclear Power Institute-Texas A&M Engineering Experiment Station, 12/2018-7/2019, $60,049

17. "Smart Fire Suppression Mechanical Apparatus," M. Manzo (PI), **H. Bostanci**, Water Therapy at Avalon, Inc, 8/2018-5/2019, $8,000

18. "Pump/Turbine Generator Workbench," L. Anaya (PI), **H. Bostanci (Co-PI, 50%)**, ASHRAE Undergraduate Program Equipment Grant, 8/2018-5/2019, $3,500

19. "Missile Defense Agency Boosting Engineering Science and Technology (BEST) Robotics Grant: Kits 2018," L. Anaya (PI), **H. Bostanci (Co-PI, 50%)**, DOD MDA (Missile Defense Agency), 9/2018-4/2019, $15,000

20. "NPI-UNT Partnership on Nuclear Education, Systems Engineering Initiative, and Outreach Programs," **H. Bostanci (sole PI)**, Nuclear Power Institute-Texas A&M Engineering Experiment Station, 11/2017-7/2018, $60,856

21. "Innovative Integration of Stirling Engine and Adsorption Cooling System for Combined Cooling Heating & Power", D.E. Demirocak (PI, TAMUK), **H. Bostanci (Co-PI, 50%)**, Texas A&M Engineering Experiment Station Annual Research Conference Project Award, 6/2017-5/2018, $2,500.

22. "NPI-UNT Partnership on Nuclear Education Program and Systems Engineering Initiative Team," **H. Bostanci (sole PI)**, Nuclear Power Institute- Texas A&M Engineering Experiment Station, 9/2015-7/2017, $70,210

23. "Experimental Evaluation of an Innovative Rotary Displacer Stirling Engine as Heat-to-Power Generator," **H. Bostanci (sole PI)**, UNT ORED Research Seed Grant, 2/2016-8/2016, $10,000

24. "Planning for the Establishment of Systems Engineering Initiative Teams at UNT," **H. Bostanci (sole PI)**, Nuclear Power Institute- Texas A&M Engineering Experiment Station, 5/2015-7/2015, $5,000

25. "Spray Cooling System," **H. Bostanci (sole PI)**, American Science & Engineering, Inc., 2/2015-7/2015, $26,577 (Phase I)

26. "Spray Cooling: An Advanced Thermal Management Technique for Space Applications**," H. Bostanci (sole PI)**, NASA Texas Space Grant Consortium New Investigator Program, 9/2013-3/2015, $10,000

27. "Advanced Thermal Management of Hybrid Vehicle Electronics," **H. Bostanci (sole PI)**, UNT ROP (Research Opportunity Program) Grant, 9/2013-8/2014, $7,500

28. "Energy Assessment on a Small-Scale House via Air Infiltration and Thermography Tests," **H. Bostanci (sole PI)**, ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) Senior Undergraduate Project Grant, 9/2013-4/2014, $5,000

29. "Development of an Automated Heat Shrink Harnessing Device," **H. Bostanci (PI, 45%)**, A. Nouri (Co-PI), E. Barbieri (Co-PI), Labinal Power Systems, Inc., 6/2013-11/2013, $14,356 (Phase I)

30. "Development of Novel Surfaces for Enhanced Thermal Management of High Power Devices," **H. Bostanci (PI, 50%)**, M. Young (Co-PI), UNT RIG (Research Initiation Grant), 1/2013-8/2013, $7,500

TEACHING EXPERIENCE

Summary:	***Senior Design Coordinator*** *for MEET program 2019-2023* ***Taught 6 undergraduate and 3 graduate courses*** ***Developed a graduate elective course*** *(MSET 5170 Thermal Management)* ***Developed a short course*** *(Intro to Nuclear Power & Related Thermal-Hydraulics Aspects)* ***Fully revised an existing course*** *(MEET 4360 Experimental Thermal Sciences)*

Courses Taught

University of North Texas

1. MEET 3940 Fluid Mechanics Applications (Fall 2012/13)

   Average score of teaching effectiveness (SETE): 3.35/4.00 in Fall 2013

2. MEET 4360 Experimental Thermal Sciences (Spring 2013/14/15/16/17/18/19/20/21/24)

   Median score (SPOT): 3.8/5.0 Lecture, 3.7/5.0 Lab in Spring 2021

3. MEET 3990 Applied Thermodynamics (Fall 2013/14/15/16/17/18, Summer 19)

   Median score (SPOT): 3.2/5.0 in Fall 2018

4. MSET 5170 Thermal Management (Fall 2014/15/16/17/21/22/23)

   Median score (SPOT): 4.7/5.0 in Fall 2021

5. MSET 5010 Seminar in Engineering Technology (Spring 2015)

   Average score of teaching effectiveness (SETE): 3.35/4.00 in Spring 2015

6. ENGR 2301 Statics (Fall 2018)

   Median score (SPOT): 3.0/5.0 in Fall 2018

7. MSET 5050 Project Supervision in Engineering Technology (Fall 2019/20)

   Median score (SPOT): 3.4/5.0 in Fall 2020

8. MEET/ELET 4780 Senior Design I (Fall 2019/20/21/22)

   Median score (SPOT): 3.6/5.0 in Fall 2021

9. MEET/ELET 4790 Senior Design II (Spring 2020/21/22/23)

   Median score (SPOT): 4.5/5.0 Lecture, 4.1/5.0 Lab in Spring 2022

10. MEEN 2210 Thermodynamics I/MEET 3990 Applied Thermodynamics (Fall 2023)

    Median score (SPOT): 3.1/5.0 in Fall 2023

    University of Central Florida

- EGN 3343 Thermodynamics (Spring 2012)

Courses Developed/Revised

1. MSET 5170 Thermal Management

   Developed a new graduate level technical elective course offering comprehensive review of thermal management technologies. Topics include conventional and emerging methods of air cooling, thermo-electrics, heat pipes, microchannels, immersion cooling, jet impingement and spray cooling, vapor-compression refrigeration; introduction to computational thermal analysis; system-level thermal management architectures for specific applications; and future trends in thermal management. 2016-2018

2. MEET 4360 Experimental Thermal Sciences

   Completely revised the course, introduced new course materials and lab modules addressing major applications in thermal-fluids engineering*:* (1) Convection Heat Transfer, (2) ANSYS Steady-State Thermal Analysis*,* (3) Refrigeration Processes, (4) Air-Conditioning Processes, (5) Heat Exchangers, and (6) Introduction to Data Acquisition and LabView Programming. Initiated the use of newly acquired lab equipment on these applications. 2014-2020

3. MEET 4780/4790 Senior Design I/II

   Revised the course by increasing emphasis on technological innovation and entrepreneurship, streamlining course deliverables (project reports, posters etc.), and initiating 'project pitch day' and a new project team selection process that incorporates student preferences and also aims to form diverse and academically balanced teams. 2019-2022

4. Introduction to Nuclear Power and Related Thermal-Hydraulics Aspects

   Developed and delivered a new short course involving three lectures and a lab session to introduce nuclear power and related thermal-hydraulics aspects to engineering students or STEM students in general. 2021

5. Introduction to Nuclear Power: Energy Conversion, Instrumentation, and Control

   Developed and delivered a new one-day workshop involving lectures, hands-on demonstrations and a lab session to introduce nuclear power and related thermal-hydraulics aspects to K-12 STEM teachers. 2022

ADVISING

Summary:	***3 PhD students*** *(1 graduated, 2 active)* ***16 MS students*** *(10 thesis, 6 project) (15 graduated, 1 active)* ***5 UG researchers, 2 UG interns*** ***13 Senior Design Teams, 5 Systems Engineering Initiative Teams***

Honors and Awards for Advised Students

- Alexander Sarvadi: 2nd Prize winner in ICES (International Conference on Environmental Systems) Poster Competition, 2021

- Alexander Sarvadi: Mechanical Engineering Technology Outstanding Senior Award at UNT College of Engineering, 2020
- Mohammed Awaizulla Shareef: Finalist in UNT 3MT (Three Minute Thesis) Competition, 2017
- AmirHossein Bagheri: Finalist in the Spirit of Innovation Competition sponsored by the US India Chamber of Commerce DFW, 2014

Ph.D. Students

As Major/Co-Major Professor

1. AmirHossein Bagheri, PhD Mechanical and Energy Engineering, "Characterization, Analysis, and Optimization of Rotary Displacer Stirling Engines," Fall 2019
2. Daitva Bali, PhD Mechanical and Energy Engineering, "Investigation of Two-Phase Spray Cooling Approach for Thermal Management of Automotive Power Electronics," Expected graduation Spring 2025
3. Alexander Sarvadi, PhD Mechanical and Energy Engineering, "TBD- Area: Variable Conductance Radiator for CO_2 Deposition in Deep Space Transit," Fall 2022-Summer 2023, discontinued.
4. Laura Almara, PhD Mechanical and Energy Engineering, "TBD- Area: Supercritical Fluids," (Major Prof. V. Prasad, Co-Major Prof. H. Bostanci), TBD

As Dissertation Committee Member

1. Hassan Qandil, PhD Mechanical and Energy Engineering, (Major Prof. W. Zhao), Fall 2019
2. Khaled Almahmoud, PhD Mechanical and Energy Engineering, (Major Prof. W. Zhao), Fall 2020
3. Nastaran Barhemmati-Rajab, PhD Mechanical and Energy Engineering, (Major Prof. W. Zhao), Fall 2020
4. Hossain Ahmed, PhD Mechanical and Energy Engineering, (Major Prof. S. Nasrazadani), Spring 2023
5. Karan Kakroo, PhD Mechanical and Energy Engineering, (Major Prof. H. Sadat), TBD
6. Mishal Reza, PhD Mechanical and Energy Engineering, (Major Prof. H. Sadat), TBD
7. Nazmus Sakib, PhD Mechanical and Energy Engineering, (Major Prof. M. Manzo), TBD

M.S. Students

As Major Professor

1. Ali Alzawwad, MSES Mechanical Systems-Project, "Design of an Experimental Setup for Immersion Cooling", Spring 2013
2. Nihal E. Joshua, MSES Mechanical Systems-Thesis, "Direct Immersion Cooling via Nucleate Boiling of HFE-7100 Dielectric Liquid on Hydrophobic and Hydrophilic Surfaces," Fall 2014
3. Adnan Almuwallad, MSES Mechanical Systems-Project, "Integration of Refrigeration and Spray Cooling Cycles for Electric Drive Vehicles," Fall 2014
4. Surya Chinthalaphani, MSES Mechanical Systems-Project, "Evaluation of Hydrophobic and Hydrophilic Surfaces for Their Durability in Immersion Cooling," Spring 2015
5. Satvik J. Yaddanapudi, MSES Mechanical Systems-Thesis, "Spray Cooling with HFC-134a and HFO-1234yf for Thermal Management of Automotive Power Electronics," Fall 2015
6. AmirHossein Bagheri, MSES Mechanical Systems-Thesis, "Preliminary Analysis of an Innovative Rotary Displacer Stirling Engine," Fall 2015

7. Sandeep Thodupunoori, MSET Mechanical Systems-Project, “Spray Cooling with HFC-134a and HFO-1234yf on Microporous Surfaces”, Fall 2015
8. Sai Sujith Obuladinne, MSET Mechanical Systems-Thesis, “Two-Phase Spray Cooling with Water/2-Propanol Binary Mixture for High Heat Flux Focal Source,” Fall 2016
9. Vishnu V. R. Yata, MSET Mechanical Systems-Thesis, “Investigation of Spray Cooling Schemes for Dynamic Thermal Management,” Spring 2017
10. Sushmitha Patlolla, MSET Mechanical Systems-Project, “Two-Phase Spray Cooling with Water/2-Propanol Binary Mixture: Investigation of Marangoni Effect,” Spring 2017
11. Tribhuvan Mohan Krishna Ramineni, MSET Mechanical Systems-Project, “Experimental Evaluation of an Innovative Rotary Displacer Stirling Engine,” Spring 2017
12. Mohammed Awaizulla Shareef, MSET Mechanical Systems-Thesis, “Investigation of Immersion Cooled ARM-Based Computer Clusters for Low Cost, High Performance Computing,” Graduated Summer 2017
13. Sulaiman S.S. Altalidi, MSET Mechanical Systems-Thesis, “Spray Cooling with HFC-134a and HFO-1234yf on Practical Enhanced Surfaces,” Summer 2017
14. Alexander Sarvadi, MS Mechanical and Energy Engineering-Thesis, “Microgravity Vortex Phase Separator for Liquid Amine CO2 Removal System,” Summer 2022
15. Balmore B. Giron, MS Mechanical and Energy Engineering-Thesis, “Thermal Radiator for CO2 Deposition in Deep Space Transit,” Defended in Fall 2023, official graduation in Spring 2024
16. Chirag Byanjankar, MS Mechanical and Energy Engineering-Thesis, “Vortex Phase Separator-Based Air Dehumidification for Space Life Support Systems,” Expected graduation Spring 2024

As Thesis Committee Member

1. Shahrokh Yousefi Darani, MSES Electrical Systems, (Major Prof. E. Barbieri), Summer 2014
2. Mohamad Yousof, MSES Construction Management, (Major Prof. C. Yu), Summer 2014
3. Javier Barnes, MSES Mechanical Systems, (Major Prof. S. Nasrazadani), Summer 2015
4. Martin Luther Dara, MSES Mechanical Systems, (Major Prof. C. Yu), Fall 2015
5. Haydn Vaughan, MSET Mechanical Systems, (Major Prof. S. Nasrazadani), Spring 2016
6. Zhishan Yan, MSET Construction Management, (Major Prof. C. Yu), Spring 2017
7. Adam Johnson, MSET Construction Management, (Major Prof. C. Yu), Spring 2017
8. Mst. Alpona Akhtar, MSET Mechanical Systems, (Major Prof. S. Nasrazadani), Spring 2018
9. Mohammed Salman Mohiuddin, MS MEE Thermal-Fluid Systems, (Major Prof. W. Zhao), Summer 2018
10. Christopher Haney, MSET Mechanical Systems, (Major Prof. H. Siller), Fall 2019
11. Omar Cavazos, MSET Mechanical Systems, (Major Prof. M. Manzo), Fall 2019
12. Alberto Canales-Cantu, MSET Mechanical Systems, (Major Prof. H. Siller), Fall 2021
13. Megha Bakaraju, MSET Mechanical Systems, (Major Prof. M. Manzo), Spring 2022
14. Andrew Jarrett, MS MEE Thermal-Fluid Systems, (Major Prof. T.-Y. Choi), Summer 2022
15. Chakra B. Chand, MS MEE Energy, (Major Prof. H. Sadat), Spring 2024
16. Chinomso Uneze, MS MEE Thermal-Fluid Systems, (Major Prof. H. Sadat), TBD

Undergraduate Researchers

1. Denesh K. Ajakumar, BS MEET, "Development of Hydrophobic/Hydrophilic Patterned Surfaces for Enhanced Heat Transfer," 2013-2014 AY
2. Pavlina J.I. Williams, BS MEEN, "Analytical Analysis of an Innovative Rotary Displacer Stirling Engine," 2017-2018 AY
3. William Mullins, BS MEEN, "Experimental Investigation of an Innovative Rotary Displacer Stirling Engine," 2017-2019, "Design and Analysis of 2nd-Gen. Rotary Displacer Stirling Engine" 2019, "Fabrication and Testing of 2nd-Gen. Rotary Displacer Stirling Engine" 2020
4. Charles Wang, TAMS, "Design, Fabrication, and Testing of CO_2 Heating/Humidifying Subsystem," 2019-2020 AY
5. Neev Mehra, TAMS, "Design and Fabrication of Experimental Setup for Critical Point Measurement," 2022-2023 AY
6. Carson Fox, BS MEEN, "Design and Fabrication of Experimental Setup for Critical Point Measurement," 2022-2023 AY

Undergraduate Senior Design Teams

1. Abdulkader Alamoudy, Abdulrahman Alsubhi, Nayef Alamoudi, Ahmed Basarih, Cody Walsh, "Energy Assessment on a Small-Scale House via Air Infiltration and Thermography Tests", 2013-2014 AY
2. Peter Caparelli, Tyler Luce, Christopher Goodman, Sulaiman Aljurbua, Benjamin Vetters, "Design and Development of Fluid Power Generation and Consumption System as Educational Lab Equipment", 2017-2018 AY
3. Hassan Alekhwan, Marc Chapman, Hussain Alatwah, Brett Boydston "Design, Analysis, and Development of an Innovative Fire Sprinkler System", 2018-2019 AY (Co-Adviser)
4. Alyssa Sarvadi, Hannah Whitehead, Balmore Giron, Nicholas Frease, Fernando Primo, "Microgravity Gas-Liquid Separator for the Liquid Amine CO2 Removal System", 2019-2020 AY
5. Shelby Maverick, Simbi Kaiboni, Jameel Haddad, Travis Copeland, Xavier Villalobos, Hasan Al Sadiq, "Laboratory Equipment for an Emerging Data Center Thermal Management Technology: Two-Phase Immersion Cooling", 2019-2020 AY
6. Tomi Arenyeka, Joshua Dorsey, Joshua White, Aiman Khan, Gabino Bencomo, Austin Watson, "Modular Data Acquisition Training System for Thermo-Fluids Applications", 2019-2020 AY
7. William Mullins, Drew Reagan, Briar Stott, Glenn Woodard, Ahson Hussain, Steve Sheargill, "Rotary Displacer Stirling Engine (RDSE)", 2020 AY
8. John (Travis) Seaver, Anthony Pezulli, Eric Lira, Jesus De La Torre, "Thermal Radiator for CO2 Deposition in Deep Space Transit", 2020-2021 AY
9. Garrett Spurgeon, Dalton Dodson, Kameron Little, Rakan Alsaawi, Han Lai, "Laboratory Equipment for an Emerging Data Center Thermal Management Technology: Two-Phase Immersion Cooling", 2020-2021 AY
10. Seth Angelone, Jacob Banda, Conner McEllhiney, Tamunomiebaka Nga, Brian Rodriguez, Deisy Yanez, "Laboratory Equipment for Single and Two-Phase Immersion Cooling", 2021-2022 AY
11. Travis Causey, Octavio Silva, Tobechi Iheme, William Novinski, Rodrigo Vivar, "Modular Data Acquisition Training System for Thermal-Fluids Applications", 2021-2022 AY
12. Laura Barbe, Gerardo Castro, Martin Vu, Jeffery Asencio, Joshua Joblin, "Regenerable Liquid Desiccants for High-Efficiency Humidity Control in Microgravity", 2022-2023 AY

13. Brandon Bosch, Dylan Coleman, William Dalrymple, Edric An, Darryan Clark, "Locking Anti-Tamper Handwheel", 2022-2023 AY

Undergraduate Interns

1. Pattarapol Soupramongkol, Chulalongkorn University-Thailand, "Nucleate Boiling of Ethanol on Hydrophobic Patterned Surface," Summer 2014
2. Panus Jongleartrakull, Chulalongkorn University-Thailand, "Hot Spot Thermal Management with Two-Phase Spray Cooling," Summer 2016

Systems Engineering Initiative Teams

1. AJ Sexton, Peter Caparelli, Khoa Bui, "Evaluation of the Flooding Risk due to Cooling Line Bellows Failure", Summer 2016 (Co-advised)
2. AJ Sexton, Peter Caparelli, "Investigation of Thermally Induced Stress and Flow Induced Vibration in a Compact Spiral Heat Exchanger–Phase I", Summer 2016-Fall 2016 (Co-advised)
3. AJ Sexton, Peter Caparelli, Michael Silva, Ara Amen, "Investigation of Thermally Induced Stress and Flow Induced Vibration in a Compact Spiral Heat Exchanger –Phase II", Spring 2017-Summer 2017
4. Samantha Bernal, William Mullins, Elliot Nirider, "Investigation of Thermally Induced Stress and Flow Induced Vibration in a Compact Spiral Heat Exchanger –Phase III", Spring 2018-Summer 2018
5. William Mullins, Alyssa Sarvadi, Simbisai Kaiboni, Abdul Mal, "Exploration of Micro Modular Reactor Designs Incorporating an Innovative Rotary Displacer Stirling Converter", Spring 2019-Summer 2019

PROFESSIONAL SERVICE

Summary:	***Editorial Board Member in 2 journals*** ***Chair and Member in 2 technical committees*** ***Session/Topic Organizer for 6 international conferences*** ***Reviewer for 16 journals*** ***Served/have been serving in 22 academic committees*** *at department and college levels*

Editorial Board Activities

- Associate Editor, Journal of Enhanced Heat Transfer, Begell House, ISSN Print: 1065-5131; ISSN Online: 1563-5074 (2023- date)
- Advisory Editorial Board Member, Journal of Engineering Physics and Thermophysics, Springer, ISSN Print: 1573-871X; ISSN Online: 1062-0125 (2023- date)

Technical Committee Activities

- Inaugural Chair, Thermal Sciences Technical Committee, American Society of Thermal and Fluids Engineers, 2023-date
- Member, ASME K-16 Joint Committee of HTD/EEPD, Heat Transfer in Electronic Equipment, American Society of Mechanical Engineers, 2014-date

Professional Society Memberships

- American Society of Mechanical Engineers (ASME)

- American Society of Thermal and Fluids Engineers (ASTFE)
- American Society of Engineering Education (ASEE)

Conference Organization Activities

- Session Chair, Electronics Cooling, ASTFE TFEC-2024, 9th Thermal and Fluids Engineering Conference, April 21-24, 2024, Corvallis, OR.
- Session Chair, Atomization, ASTFE TFEC-2024, 9th Thermal and Fluids Engineering Conference, April 21-24, 2024, Corvallis, OR.
- Session Chair, Phase Change Cooling Technologies, ASME InterPACK 2022, International Technical Conference and Exhibition on Packaging and Integration of Electronic and Photonic Microsystems, October 25-27, 2022, Garden Grove, CA.
- Session Chair, ASTFE 7th Thermal and Fluids Engineering Conference (Hybrid), May 16-18, 2022, Las Vegas, NV.
- Session Chair, Two-Phase Cooling, ASME InterPACK 2021, International Technical Conference and Exhibition on Packaging and Integration of Electronic and Photonic Microsystems, October 26-28, 2021, Virtual Conference.
- Session Chair, Fundamentals of Boiling, Condensation and Thin Film Evaporation, IEEE ITherm2020, Intersociety Conf. on Thermal and Thermomechanical Phenomena in Electronic Systems, June 21-23, 2020, Orlando, FL.
- Topic and Session Organizer, High Heat Flux Thermal Management, ASME IMECE2015, International Mechanical Engineering Congress and Exhibition, November 13-19, 2015, Houston, TX.
- Session Co-organizer, Phase Change Heat Transfer-2, ASME IMECE2014, International Mechanical Engineering Congress and Exhibition, November 14-20, 2014, Quebec, Canada.

Reviewer for Proposal Review Panels

- NSF CBET Thermal Transport Processes Program
- NASA NSTGRO Environmental Control and Life Support System (ECLSS) Program

Reviewer for Refereed Journals

- International Journal of Heat and Mass Transfer
- ASME Journal of Heat Transfer
- ASME Journal of Thermal Science and Engineering Applications
- ASME Journal of Electronics Packaging
- IEEE Transactions on Components, Packaging and Manufacturing Technology
- IEEE Transactions on Vehicular Technology
- IEEE Transactions on Power Electronics
- International Communications in Heat and Mass Transfer
- International Journal of Thermal Sciences
- Journal of Experimental Heat Transfer
- IAAA Journal of Thermophysics and Heat Transfer

- Applied Thermal Engineering
- Journal of Materials Science and Engineering: B
- ASME Journal of Nanotechnology in Engineering and Medicine
- Nanoscale and Microscale Thermophysical Engineering
- Heat Transfer Asian Research

Reviewer for Refereed Conferences

- ASME IMECE (International Mechanical Engineering Congress and Exhibition), 2014, 2015
- IEEE ITherm (Intersociety Conf. on Thermal and Thermomechanical Phenomena in Electronic Systems), 2012, 2014, 2016, 2017
- IEEE InterPACK (International Electronic Packaging Technical Conference), 2013, 2021, 2022

Department, College, University Level Academic Committee Activities

- Chair, ME Adhoc Committee for Faculty Search (for three positions), Fall 2023-date
- Member, ME Adhoc Committee for Faculty Search, Spring 2022-Spring 2023
- Member/ME Representative, CENG Graduate Curriculum Committee, Fall 2021-date
- Member, ME Graduate Program Committee, Fall 2021-date
- Member, ME Adhoc Committee for Engineering Design Studio, Fall 2021-Spring 2023
- Member, ME ABET Committee, Summer 2021-Fall 2023
- Chair, ME Adhoc Committee for Merger of Instructional Thermal-Fluid Sciences Labs, Summer 2021
- Member, ME Adhoc Committee for Evaluation of Senior Design Courses, Summer 2021
- Member, ME Scholarship Committee, Spring 2021-date
- Member, ME Personnel Affairs Committee, Fall 2020-date
- Member, ME Adhoc Committee for Department Chair Search, Fall 2020-Fall 2021
- Member, ME Adhoc Committee for Department By-Laws and Charter, Fall 2020-Spring 2021
- Member, CENG Adhoc Committee for MEE-ETEC Merger, Fall 2019-Spring 2020
- Member at Large, CENG Personnel Affairs Committee, Fall 2019-Summer 2020
- Member, ETEC Adhoc Committee for Faculty Research Award Nomination, Spring 2019
- Member, ETEC Faculty Search Committee, Spring 2019-Spring 2020
- Member, ETEC Personnel Affairs Committee, Fall 2018-Spring 2020
- Ally, UNT Advocates and Allies Program, Spring 2018-date
- Member, ETEC Strategic Planning Committee, Spring 2014
- Member, MEET Undergraduate Curriculum Committee, Fall 2012-Spring 2020
- Member, CENG DP Art Committee, Spring 2013-Fall 2014
- Member, CENG Library Committee, Fall 2012

Faculty Co-Advisor for Professional Societies

ASME UNT Student Chapter, 2014-2021

Community Service

- Judge, Technical Project Competition- LaGrone Advanced Technology Complex, Denton ISD, 2013, 2014, 2015
- Assistant Director, DC BEST (Denton County Boosting Engineering, Science and Technology) Robotics Competition, 2017-2019

Selected Media Coverage

- "How is UNT creating new technologies to get us to Mars?", video interview in *UNT's The Lab*, October 23, 2023, https://www.youtube.com/watch?v=hhF3tyi7ICM
- "To the Skies and Beyond: Taking a Moonshot", article in *UNT Research Magazine,* vol. 30, 2023, https://issuu.com/universityofnorthtexas/docs/unt_research_magazine_2023
- "Support for Local Manufacturers Coming from UNT and $2 Million Bump for New Center", article in *Denton Record-Chronicle*, October 27, 2022, https://dentonrc.com/education/higher_education/university_of_north_texas/support-for-local-manufacturers-coming-from-unt-and-2-million-bump-for-new-center/article_47435f89-5b99-5038-890d-2996b1b0a942.html
- "UNT gives operational boost to regional manufacturing sector with Department of Energy-backed center", article in *Voice of Denton*, October 9, 2022, https://voiceofdenton.com/unt-boost-to-manufacturing-sector-with-department-of-energy/
- "UNT Alumni and Faculty Foster NASA's Mission", article in *North Texan*, September 30,2022, https://northtexan.unt.edu/issues/2022-fall/unt-alumni-and-faculty-foster-nasas-mission
- "NASA Challenge Helping in Deep Space", article in *UNT Research News*, June 25, 2020, https://research.unt.edu/news/nasa-challenge-helping-deep-space
- "Oxygen for Astronauts", article in *North Texan*, September 27, 2019, https://northtexan.unt.edu/issues/2019-fall/oxygen-astronauts