Vinod Narayanan
Curriculum Vitae

Professor, Mechanical and Aerospace Engineering, University of California-Davis
Director, UC Davis Western Cooling Efficiency Center
Sempra chair in Energy Efficiency
vnarayanan@ucdavis.edu

Areas of Interest

1. Building energy efficiency and HVAC technologies
2. Renewable energy- solar thermal and solar fuels
3. Datacenter cooling design
4. Process intensification and energy efficiency applied to industrial processes
5. Microscale flow and heat transfer applied to energy efficiency, thermal management, chemical reactions, catalytic combustion, cryogenic heat transfer, absorption refrigeration, hydrogen storage, supercritical CO_2 heat exchangers, and phase-change heat transfer for space applications
6. Jet impingement flow and heat transfer- single phase and phase-change
7. Passive means to augment heat and mass transfer
8. Experimental diagnostic techniques in heat transfer and fluid mechanics - infrared thermography and optical flow measurements.

Education

1997-2001	Texas A&M University, College Station, PhD, Mechanical Engineering (Jamal Yagoobi)
1995-1997	Texas A&M University, College Station, MS, Mechanical Engineering (Jamal Yagoobi & Robert H Page)
1991-1995	National Institute of Technology, Karnataka, Surathkal, India, BE, Mechanical Engineering

Professional Experience

March 2015-present	Professor, Mechanical and Aerospace Engineering, University of California, Davis
July 2021-present	Director, UC Davis Western Cooling Efficiency Center
August 2019-July 2022	Chair (designate) of the MAE Graduate Program & Department Vice Chair for Graduate Studies

March 2015-June 2021	Associate Director, UC Davis Western Cooling Efficiency Center, UC Davis
2011-2016	University Associate, Curtin Institute of Technology, Perth, Australia
September 2014-March 2015	Professor, School of Mechanical Industrial and Manufacturing Engineering, Oregon State University, Corvallis
September 2008 - 2014	Associate Professor, School of Mechanical Industrial and Manufacturing Engineering, Oregon State University, Corvallis
June 2013-May 2014	Associate Director of Thermal Energy Systems, Microproducts Breakthrough Institute
June 2010-August 2010	ASEE Summer Faculty Fellow at the Air Force Research Labs/Edwards Air Force Base
Sept. 2001-August 2008	Assistant Professor, School of Mechanical, Industrial, & Manufacturing Engineering, Oregon State University, Corvallis

Honors & Awards

2024	International Space Station Research and Development Conference (ISSRDC)- Compelling Results award- Physical Sciences and Material Development, along with S. H. Bhavnani and K. Sridhar, for the investigation titled "Thermally Activated Directional Mobility of Vapor Bubbles."
2023-present	Sempra Chair in Energy Efficiency
2023	Graduate Program Advising and Mentoring Award, UC Davis, 2023
2023	E. Rasouli, E. Fricke, V. Narayanan- Best journal paper of 2022 published in ASHRAE research journal, Science and Technology for the Built Environment for the paper titled "High-efficiency 3-D Printed Microchannel Polymer Heat Exchangers for Air Conditioning Applications"
2021	Karthik Sridhar, V. Narayanan, S. H. Bhavnani- Prof. Avram Bar-Cohen Best Paper in Component Level Thermal Management for "Development of Microgravity Boiling Experiments aboard the International Space Station from Terrestrial Adverse Gravity Outcomes for a Ratcheted Microstructure with Engineered Nucleation Sites," IEEE ITherm 2021virtual conference, June 1-4, 2021, San Diego, CA.
2020	Fellow, American Society of Mechanical Engineers
2013-15	Welty Faculty Fellow, inaugural holder, Oregon State University
2013-16	International Collaboration Award- Australian Research Council on proposal titled

	"The phenomenology of unsteady impinging jets: fluid dynamics and heat transfer," with Curtin University of Technology, Perth
2014	Outstanding Leadership Award, ASME International Conference on Nano-, Micro-, and Mini-channels, Chicago IL
2010	ASEE Air Force Summer Faculty Fellowship
2008	National Science Foundation CAREER Award (CBET division)
2001	George W. Kunze Prize, Texas &M University, "for excellence in scholarship and service to Texas A&M University and the community", awarded annually to a single graduate student in the University

Student Honors and Awards

Gutta Prudhvi Reddy- Best Overall Poster Award for "Assessment of bubble pump model for fluid directional motion from asymmetric heated ratchets" 2024 IEEE ITherm conference, Denver, CO, May 26-30, 2024. Co-authors: R. Safarkoolan, S. H. Bhavnani, V. Narayanan

Ines Noelly-Tano, E. Rasouli, T. Ziev, J. Seo, N. Lamprinakos, P. Vaishnav, A. Rollett, Z. Wu and V. Narayanan**-** Outstanding Student Paper award in Advanced Energy Systems and Solar Energy Divisions for "A Scalable Compact Additively-manufactured Molten-salt to Supercritical Carbon Dioxide Heat Exchanger for Solar Thermal Application," ASME Energy Sustainability Conference in Philadelphia from July 11-13, 2022

Emily Fricke- 3rd place**,** Best student paper award, for "Comparison of the Performance of a Solar Thermal Absorption Chiller and a Novel Sub Wet-Bulb Evaporative Chiller for Cooling Processes in Food Manufacturing," 2021 ASME Energy Sustainability Conference, June 16-18th 2021, virtual online. Co-author: V. Narayanan.

Antash Najib- 2019 ASHRAE Kirk T Mescher award given to research in heat pumps and geothermal systems.

Thomas L'Estrange- Best Student Poster Award at InterPACK/ICNMM 2015 under the category of Thermal/Fluid Applications and Development for the poster titled: "High Flux Microscale Solar Thermal Receiver for Supercriticial Carbon Dioxide Cycles". Co-authors: Truong, E., Rymal, C., Rasouli, E., Narayanan, V., Apte, S., and Drost, M. K.

Thiagarajan, N.- First Place in Fluid Physics Category, "Gravitational Effects on Bubble Dynamics in Pool Boiling on Asymmetric Surfaces," 2012 American Society of Gravitational and Space Research (ASGSR) Meeting, November 28-Dec 2nd, 2012, New Orleans; co-authors: Strid, L., Narayanan, V., and Bhavnani, S. H. (student's major advisor)

Mani, P. - Second place, Best student poster competition, "Submerged Jet Impingement Boiling on a Non-uniformly Heated Polished Silicon Surface," Interpack2011-52042, ASME 2011 Pacific Rim Technical Conference and Exposition on Packaging and Integration of Electronic and Photonic Systems, Interpack 2011, Portland, OR, July 2011. Co-authors: Cardenas, R., and Narayanan, V.

Publications

Journals publications

2025 Tano, I.-N., Rasouli, E., Seo, J., Raikar, S., Hildreth, O., Rollett, A., and Narayanan, V., 2025, "Assessment of the relative impacts of feature accuracy and surface roughness on fluid flow across additively manufactured pin arrays," Journal of Thermal Science and Engineering Progress, Vol. 64 (2025), 103769, https://doi.org/10.1016/j.tsep.2025.103769

2024 Rasouli, E., Tano, I.-N., Aboud, A., Seo, J., Lamprinakos, N., Rollett, A., and Narayanan, V., 2025, "Experimental characterization of an additively manufactured heat exchanger for high temperature and pressure applications," Applied Thermal Engineering, Vol. 264, (2025), 125412, https://doi.org/10.1016/j.applthermaleng.2025.125412

2024 Rasouli, E., Mande, C. W., Fronk, B. M., Narayanan, V., Dogan, O. N., Rozman, K. A., and Carl, M. A. Micro-laminated pin array solar receivers for high flux heating of supercritical carbon dioxide part 2- On-sun performance," Journal of Solar Energy, 273, 112700, https://doi.org/10.1016/j.solener.2024.112700

2024 Fronk, B. M., Siefering, B. J., Paul, B. K., Pratte, W. H., Dogan, O. N., Rozman, K. A., Rasouli, E., and Narayanan, V. Micro-laminated pin array solar receivers for high flux heating of supercritical carbon dioxide part 1- Design and fabrication methods. Journal of Solar Energy, 273, 112403, https://doi.org/10.1016/j.solener.2024.112403

2024 Das, S., Rasouli, E., Ziev, T., Lamprinakos, N., Seo, J., Rollett, A., Vaishnav, P., and Narayanan, V. Design and Techno economic optimization of an additively manufactured heat exchanger for high temperature and high pressure applications. Applied Thermal Engineering, 245, 122778, https://doi.org/10.1016/j.applthermaleng.2024.122778

2024 Sridhar, K., Narayanan, V., and Bhavnani, S. H. Directional vapor mobility from asymmetric microstructured surfaces in an adverse gravity orientation. Experimental Thermal and Fluid Science, 155, 111203, https://doi.org/10.1016/j.expthermflusci.2024.111203

2024 Sridhar, K., Narayanan, V., and Bhavnani, S. H. Enhanced heat transfer in microgravity from asymmetric sawtooth microstructure with engineered cavities.

International Journal of Heat and Mass Transfer, 222, 125158, https://doi.org/10.1016/j.ijheatmasstransfer.2023.125158

2024 Prataviera, E., Zarrella, A., Morejohn, J., and Narayanan, V. Exploiting district cooling network and urban building energy modeling for large-scale integrated energy conservation analysis. Applied Energy, 356, 122368, https://doi.org/10.1016/j.apenergy.2023.122368

2023 Tracey Ziev, Erfan Rasouli, Ines-Noelly Tano, Ziheng Wu, Srujana Rao Yarasi, Junwon Seo Nicholas Lamprinakos, Vinod Narayanan, Anthony Rollett, Parth Vaishnav. Cost of Using Laser Powder Bed Fusion to Fabricate a Molten Salt-to-Supercritical Carbon Dioxide Heat Exchanger for Concentrating Solar Power. 3D Printing and Additive Manufacturing Journal, DOI: 10.1089/3dp.2022.0188

2023 Ines-Noelly Tano, I.-N., Rasouli, E., Ziev T. L., Seo, J., Lamprinakos, N., Vaishnav, P., Rollett,, A. D., Wu, Z., Narayanan, V. A Scalable Compact Additively Manufactured Molten Salt to Supercritical Carbon di-oxide Heat Exchanger for Solar Thermal Application. ASME Journal of Solar Energy Engineering, SOL-23-1002 https://doi.org/10.1115/1.4063081

2023 Chakraborty, S., Vernon, D., Jha, A., and Narayanan, V. Performance Characterization of an M-cycle Indirect Evaporative Cooler and Heat Recovery Ventilator for Commercial Buildings- Experiments and Model. Energy and Buildings, 281: 112762.

2022 Odele, R. P., Rasouli, E., and Narayanan, V., Performance Model of an Additively Manufactured Micro-Pin Array Solar Thermal Central Receiver. Journal of Solar Energy, 241: 621-636.

2022 Rasouli, E., Fricke, E & Narayanan, V. High efficiency 3-D printed microchannel polymer heat exchangers for air conditioning applications. Science and Technology for the Built Environment, 28: 289-306.

2022 Tano, I.-N., Rasouli, E., Ziev, T. L., Wu, Z., Lamprinakos, N., Seo, J., Balhorn, L., Vaishnav, P., Rollett, A. D., Narayanan, V. An Additively-Manufactured Molten Salt-to-Supercritical Carbon Di-oxide Primary Heat Exchanger For Solar Thermal Power Generation – Design And Techno-Economic Performance. Journal of Solar Energy, 234: 152-169.

2022 Najib, A., Zarella, A., and Narayanan, V. Development of g-functions for large diameter shallow bore helical ground heat exchanger. Applied Thermal Engineering, 200: 117620.

2021 Li, J., Narayanan, V., Kebreab, E., Dikmen, S., and Fadel, J. G. A Mechanistic Thermal Balance Model of Dairy Cattle. Biosystems Engineering, 209: 256-270.

2021 Sridhar, K., Narayanan, V., and Bhavnani, S. H. Asymmetric Sawtooth Microstructure Induced Vapor Mobility for Suppressed Buoyancy Conditions: Terrestrial Experiment and Design for ISS Experiments. IEEE Transactions on Components, Packaging, and Manufacturing Technology, 11(10): 1625-1633.

2020 Drwencke, A., Tresoldi, G., Stevens, M., Narayanan, V., Carrazco, A., Mitloehner, F., Pistochini, T., and Tucker, C. Innovative cooling strategies: dairy cow responses, water and energy use. Journal of Dairy Science, 103(6): 5440-5454.

2020 Yang, Y., Narayanan, V., Pistochini, T. E., and Ross, D. An Experimentally-validated model of a cross-flow sub-wet bulb evaporative chiller. ASME Journal of Thermal Science and Engineering Applications, 13(2): 021006 (12 pages).

2020 Chen, E., Narayanan, V., Pistochini, T. E., and E. Rasouli, E. Transient Simultaneous Heat and Mass Transfer to Estimate Drying Time from a Wetted Fur of a Cow. Journal of Biosystems Engineering, 195: 116-135.

2020 Najib, A., Zarella, A., Narayanan, V., Bourne, R., Harrington, C. Techno-economic parametric analysis of large diameter shallow ground heat exchanger in California climates. Energy and Buildings, 228: 110444.

2019 Naderi, C., Rasouli, E., and Narayanan, V., Horend, C. Design and Performance of a Microscale Supercritical CO2 Recuperator with Integrated Header Architecture. Journal of Enhanced Heat Transfer, 26(4): 365-392.

2019 Bhavnani, S. H., Thiagarajan, N., Narayanan, V., and Strid, L. Passive directional motion of fluid during boiling driven by surface asymmetry in a dielectric fluid. Journal of Enhanced Heat Transfer, 26(4): 393-413.

2019 Najib, A., Zarrella, A., Narayanan, V., Grant, P., and Harrington, C. A revised capacitance resistance model for large diameter shallow bore ground heat exchanger. Applied Thermal Engineering, 162: 114305.

2018 Rasouli, E., Naderi, C., Narayanan, V. Pitch and Aspect Ratios Effects on Single-Phase Heat Transfer through Microscale Pin Fin Heat Sinks. International Journal of Heat and Mass Transfer, 118: 416-428.

2018 Chaugule, V., Narayanaswamy, R., Lucey, A. D., Narayanan, V., Jewkes, J. Particle Image Velocimetry of Turbulent Jet Impingement on an Oscillating Surface. Experimental Thermal and Fluid Science, 98: 576-593.

2017 Natesh, S., Truong, E., Narayanan, V., and Bhavnani, S. H. Directional Passive Condensate Film Drainage on a Horizontal Surface with Periodic Asymmetric Structures. ASME Journal of Heat Transfer, 139(11): #111507.

2017 Natesh, S., Truong, E., Narayanan, V., and Bhavnani, S. H. Condensation on a horizontal surface with periodic asymmetric structures- transient film growth. International Journal of Heat and Mass Transfer, 108(A): 1126-1139.

2017 Rasouli, E., Narayanan, V. Phase-Change Heat Transfer Characterization in Microscale Pin Fin Heat Sinks. International Journal of Transport Phenomena, 14(4): 255-281.

2016 Rasouli, E., Narayanan, V. Single-Phase Cryogenic Flows through Microchannel Pin Fin Heat Sinks. Heat Transfer Engineering Journal, 37(11): 994-1011.

2015 Thiagarajan, N., Bhavnani, S. H., and Narayanan, V. Self-Propelled Sliding Bubble Motion Induced by Surface Microstructure in Pool Boiling of a Dielectric Fluid Under Microgravity. ASME Journal of Electronics Packaging, 137(2): 021009 (8 pages).

2014 Cardenas, R. and Narayanan, V. A Generalized Critical Heat Flux Correlation for Submerged and Free Surface Jet Impingement Boiling. ASME Journal of Heat Transfer, 136(091501-1): 9 pages.

2014 Kapsenberg, F., Strid, L., Thiagarajan, N., Narayanan, V., and Bhavnani, S.H. On the Lateral Fluid Motion During Pool Boiling via Preferentially Located Cavities. Applied Physics Letters, 104: 154105.

2013 Ghazvini, M. and Narayanan, V. A Microscale Combustor Recuperator and Oil Heat Exchanger Design and Performance Analysis. International Journal of Heat and Mass Transfer, 64: 988-1002.

2012 Drost, K.J., Eilers, B., Apte, S.V., Narayanan, V., and Schmitt, J. Design of a Microchannel Based Solar Receiver/Reactor for Biofuel Processing. International Journal of Micro-Nano Scale Transport, 3(1-2): 53-67.

2012 Abishek, S., Narayanaswamy, R., and Narayanan, V. Effect of Heater Size and Reynolds Number on the Partitioning of Surface Heat Flux in Subcooled Jet Impingement Boiling. International Journal of Heat and Mass Transfer, 59: 247-261.

2012 Cardenas, R., and Narayanan, V. Comparison of Deionized Water and FC-72 in Pool and Jet Impingement Boiling Thermal Management. IEEE Transactions on Components, Packaging and Manufacturing Technology, 2(11): 1811-1823.

2012 Cardenas, R. and Narayanan, V. Critical Heat Flux in Submerged Jet Impingement Boiling of Water at Sub-Atmosphere Conditions. ASME Journal of Heat Transfer, 134: 081502.

2012 Thiagarajan, N, Kapsenberg, F., Narayanan, V., Bhavnani, S.H. and Ellis, C.D. Development of a Heat Sink with Periodic Asymmetric Structures using Gray Scale Lithography and Deep Reactive Ion Etching. Electron Devices Letters, 33(7): 03-0571.

2012 Cardenas, R. and Narayanan, V. Heat Transfer Characteristics of Submerged Jet Impingement Boiling of Saturated FC-72. International Journal of Heat and Mass Transfer, 55(15-16): 4217-4231.

2012 Mani, P., Cardenas, R., and Narayanan, V. Comparison of Area-Averaged and Local Boiling Curves in Pool and Jet Impingement Boiling. International Journal of Multiphase Flow, 42: 115-127.

2012 Cardenas, R. and Narayanan, V. Submerged Jet Impingement Boiling of Water Under Sub-Atmospheric Conditions. ASME Journal of Heat Transfer, 134: 020909-1-9.

2011 Cardenas, R., and Narayanan, V. Heat and Mass Transfer Characteristics of a Constrained Thin-Film Ammonia-Water Bubble Absorber. International Journal of Refrigeration, 34(1): 113-128.

2010 Cardenas, R. and Narayanan, V. A Numerical Model for Ammonia-Water Absorption into a Constrained Microscale Film. International Journal of Thermal Science, 49(9): 1787-1798.

2010 Heymann, D., Pence, D., and Narayanan, V. Optimization of Fractal Like Branching Microchannel Heat Sinks for Single-Phase Flows. International Journal of Thermal Science, 49(8): 1383-1393.

2010 Krebs, D., Narayanan, V., Liburdy, J.A. and Pence, D.V. Spatially-Resolved Wall Temperature Measurements During Flow Boiling in Microchannels. Experimental Thermal and Fluid Science, 34(4): 434-445.

2009 Shen, J. Liburdy, J.A., Pence, D.V. and Narayanan, V. Droplet Impingement Dynamics: Effect of Surface Temperature During Boiling and Non-Boiling Conditions. Journal of Physics: Condensed Matter, 21(464133): 14 pages.

2009 Kwak, Y., Pence, D.V., Liburdy, J.A. and Narayanan, V. Gas-Liquid Flows in a Microscale Fractal-Like Branching Flow Network. International Journal of Heat and Fluid Flow, 30(5): 868-876.

2009 Narayanan, V., Linke, H., and Taormina, M. Visualization of Thermally Actuated Pumping in the Leidenfrost Regime by Surface Asymmetry. Heat Transfer Photogallery, ASME Journal of Heat Transfer, 131: 080904-1.

2009 Shen, J., Graber, C., Liburdy, J.A., Pence, D.V. and Narayanan, V. Simultaneous Droplet Impingement Dynamics and Heat Transfer on Nano-Structured Surfaces. Experimental Thermal and Fluid Science, 34(4): 496-503.

2009 Jain, K., Wu, C.L., Atre, S.V., Jovanovic, G., Narayanan, V., Kimura, S., and Sprenkle, V. Synthesis of Silicon Nitride Nanoparticles in High Temperature Ceramic Microreactors: Design, Fabrication and Testing. International Journal of Applied Ceramic Technology, 6(3): 410-419.

2009 Jenks, J., and Narayanan, V. Effect of Channel Geometry Variations on the Performance of a Constrained Microscale Film Ammonia-Water Bubble Absorber. ASME Journal of Heat Transfer, 130(11): 112402.

2008 Narayanan, V., Kanury, A.M., and Jenks, J. Heat Exchanger Analysis Modified to Account for a Heat Source. ASME Journal of Heat Transfer, 130(12): 124502.

2008 Shen, J., Graber, C., Pence, D.V., Liburdy, J.A., Narayanan, V. Simultaneous Droplet Impingement Dynamics and Boiling Heat Transfer. Heat Transfer Photogallery, ASME Journal of Heat Transfer, 130: 080902.

2007 Narayanan, V. Oscillatory Thermal Structures in a Reattaching Jet Flow. Journal of Visualization, 10(4): 389-396.

2007 Narayanan, V., and Patil, V.A. Oscillatory Thermal Structures Induced by Unconfined Slot Jet Impingement. Experimental Thermal and Fluid Science, 32: 682-695.

2007 Cullion, R., Pence, D.V., Liburdy, J.A., and Narayanan, V. Void Fraction Variations in a Fractal-Like Branching Microchannel Network. Heat Transfer Engineering, 28(10): 806-816.

2006 Linke, H., Aleman, B., Melling, L., Taormina, M., Francis, M., Dow-Hygelund, C., Narayanan, V., Taylor, R.P., and Stout, A. Self-Propelled Leidenfrost Droplets. Physical Review Letters, 96: 154502.

2006 Patil, V.A. and Narayanan, V. Spatially Resolved Temperature Measurement in Microchannels. Microfluidics and Nanofluidics Journal, 2(4): 291-300.

2005 Patil, V.A., and Narayanan, V. Spatially Resolved Heat Transfer Rates in an Impinging Circular Microscale Jet. Micrscale Thermophysical Engineering Journal, 9: 183-197.

2005 Patil, V.A. and Narayanan, V. Application of Heated Thin Foil Thermography Technique to External Convective Microscale Flows. Measurement Science and Technology, 16: 472-476.

2004 Narayanan, V., Seyed-Yagoobi, J., and Page, R.H. Transient Thermal Structure, Turbulence, and Heat Transfer in a Reattaching Slot Jet Flow. International Journal of Heat and Mass Transfer, 47(24): 5219-5234.

2004 Narayanan, V., Seyed-Yagoobi, J., and Page, R.H. An Experimental Study of Fluid Mechanics and Heat Transfer in an Impinging Slot Jet Flow. International Journal of Heat and Mass Transfer, 47: 1827-1845.

2003 Narayanan, V., Page, R.H., and Sayed-Yagoobi, J. A Technique to Visualize Air Flow Using Infrared Thermography. Experiments in Fluids, 34: 275-284.

1998 Narayanan, V., Seyed-Yagoobi, J. and Page, R.H. Heat Transfer Characteristics of a Slot Jet Reattachment Nozzle. ASME Journal of Heat Transfer, 120: 348-356.

1998 Seyed-Yagoobi, J., Narayanan, V., and Page, R.H. Comparison of Heat Transfer Characteristics of Radial Jet Reattachment Nozzle to In-Line Impinging Jet Nozzle. ASME Journal of Heat Transfer, 120: 335-341.

1998 Alam, S.A., Seyed-Yagoobi, J., Narayanan, V., and Page, R.H. Drying Characteristics of Slot Jet Reattachment Nozzle and Comparison with a Slot Jet Nozzle. Drying Technology, 16(8): 1585-1607.

Refereed conference proceedings

2024 Fricke, E., Arredondo, V. A., Rasouli, E., and Narayanan, V., Design and testing of a novel microchannel polymer heat exchanger for applications in residential cooling, ASHRAE Winter conference, Chicago, IL, January 20-24, 2024

2024 Prudhvi Reddy, G., Safarkoolan, R., Bhavnani, S. H., and Narayanan, V., Assessment of bubble pump model for fluid directional motion from asymmetric heated ratchets, 2024 IEEE ITherm conference, Denver, CO, May 28th – 31st 2024

2023 Fricke, E., and Narayanan, V. System-level performance modeling of a sub-wet bulb evaporative chiller coupled to a microchannel polymer heat exchanger for residential cooling applications. 2023 ASHRAE Winter Conference, Atlanta, GA February 4-8, 2023.

2023 Raykar, S., and Narayanan, V. Simulation of PCM-integrated wall designs for buildings in Sacramento. Paper 43246, 2023 ASHRAE Winter Conference, Atlanta, GA February 4-8, 2023.

2023 Sridhar, K., Narayanan, V., and Bhavnani, S. H. Asymmetric sawtooth and cavity-enhanced nucleation-driven transport (ASCENT) Experiment aboard the International Space Station- Microgravity Outcomes. 22nd IEEE THERM conference.

2023 Bahrami, L., Yurkovetsky, S. M., Rasouli, E., Narayanan, V., Fronk, B. M. Simulation of the Performance of a High Temperature Solar Thermal Receiver Comprised of Parallel Micro-Pin Unit-Cells Fabricated via Additive Manufacturing. ES2023-107525.

2022 Tano, I.-N., Rasouli, E., Narayanan, V., Wu, Z., Lamprinakos, N., Seo, J., Rollett, A. D., Ziev, T. L., and Vaishnav, P. A Scalable Compact Additively-Manufactured Molten-Salt to sCO2 Primary Heat Exchanger for Solar Thermal Applications. ES2022-84122, ASME 16th International Conference on Energy Sustainability, Philadelphia, PA, July 11-13, 2022.

2022 Ines-Noelly Tano, Erfan Rasouli, Caton Mande, Vinod Narayanan, Ziheng Wu, Nick Lamprinakos, Srujana Rao Yarasi, Junwon Seo, Anthony D. Rollett. Thermal and Hydraulic Characterization of supercritical CO2 flow in Additively Manufactured Pin-fin Heat Sinks. 7th International Supercritical CO2 Power Cycles Symposium, San Antonio, TX, February 21-24, 2022.

2021 Fricke, E., and Narayanan, V.,. Comparison of the Performance of a Solar Thermal Absorption Chiller and a Novel Sub-wet Bulb Evaporative Chiller for Cooling Processes in Food Manufacturing. Paper ES2021-62308, Proceedings of the ASME 2021 15th International Conference on Energy Sustainability, ES2021, Virtual, Online, June 16-18, 2021.

2021 Sridhar, K., Narayanan, V., and Bhavnani, S. H. Development of Microgravity Boiling Experiments aboard the International Space Station from Terrestrial Adverse Gravity Outcomes for a Ratcheted Microstructure with Engineered Nucleation Sites. 2021 20th IEEE Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems (iTherm), Virtual, Online, June 1-4 2021, DOI: 10.1109/ITherm51669.2021.

2020 Safarkoolan, R., Ozen, E., Narayanan, V., and Bhavnani, S. H. Assessment of Thermally Actuated Pumping in an Open-ended Channel with Multi-scale Surface Asymmetry. Proceedings of the 18th International conference of Nanochannels, Microchannels and Minichannels, ICNMM 2020, Orlando, FL, July 12-15, 2020.

2020 Rasouli, E., Strong, A., and Narayanan, V. High Efficiency Microchannel Polymer Heat Exchangers for Heating and Cooling Applications. 2020 ASHRAE Virtual Summer Conference, June 29th- July 2nd 2020., Paper number 31230.

2020 Najib, A., Harrington, C., Springer, D., Slater, M., Zarella, A., and Narayanan, V. Field Test of Large Diameter Shallow Bore Helical Ground Heat Exchangers with Simulated Heating Loads. 2020 ASHRAE Virtual Summer Conference, June 29th- July 2nd 2020., Paper number 27196.

2020 Sridhar, K., Smith, R., Narayanan, V., and Bhavnani, S. H.,. Phase change cooling of spacecraft electronics- Terrestrial reference experiments prior to ISS microgravity experiments. ITHERM 2020 (virtual) conference, July 21-23, 2020.

2019 Rasouli, E., Mande, C. W., Stevens, M. M., and Narayanan, V. On-sun characterization of microchannel supercritical carbondioxide solar thermal receivers- preliminary findings. Proceedings of the ASME 2019 13th International Conference on Energy Sustainability, ES2019, Bellevue, WA, July 15-17, 2019, ES2019-3898.

2019 Safarkoolan, R., Mu, X., and Narayanan, V. A Compact Condenser for Thermal Desalination: Experimental Characterization and System Level Impact. Proceedings of the 17th International conference of Nanochannels, Microchannels

and Minichannels, ICNMM 2019, St. Johns, Canada, June 23-26, 2019, ICNMM2019-4252.

2019 Najib, A., Zarella, A., Narayanan, V., Grant, P., Harrington, C., and Larson, R. Modeling and Parametric Study of Large Diameter Shallow Bore Helical Ground Heat Exchanger. 2019 ASHRAE Winter conference, Atlanta, GA, January 12-16, 2019, Paper number 38.

2017 Rasouli, E., Horend, C., Naderi, C., and Narayanan, V.,. Design and cycle performance of a microchannel supercritical carbondioxide recuperator. Proceedings of the 24th National and 2nd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2017), BITS Pilani, Hyderabad, India, December 27-30, 2017., IHMTC2017-09-0832.

2017 Bhavnani, S. H., Thiagarajan, N., Narayanan, V., Strid, L., Kapsenberg, F., and Truong, E. Passive directional motion of fluid during boiling driven by surface asymmetry. Proceedings of the 24th National and 2nd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2017), BITS Pilani, Hyderabad, India, December 27-30, 2017., IHMTC2017-06-1010.

2016 Erfan Rasouli, Samikshya Subedi, Vinod Narayanan, Anthony Rollett, Jack Beuth, Kevin Drost. Design Of Compact Heat Exchangers For Supercritical Carbondioxide Cycles. Proceedings of the First Pacific Rim Thermal Engineering Conference, PRTECMarch 13-17, 2016, Hawaii's Big Island, USA, PRTEC-15173.

2015 Wilson, A., and Narayanan, V. Enhanced Jet Impingement Boiling Using Self-Sustained High Frequency Flow Oscillations. 9th International Conference on Boiling and Condensation Heat Transfer, April 26-30, 2015 –Boulder, Colorado.

2014 Pilli, A.K., Abishek, S., Narayanaswamy, R., Jewkes, J., Lucey, A.D., and Narayanan, V. Computational Analysis of the Fluid Dynamics and Heat Transfer Characteristics of a Vibrating Heated Plate. Proceedings, 19th Australian Fluid Mechanics Conference, Dec. 8-11.

2014 Chaugule, V, Narayanaswamy, R., Narayanan, V., Jewkes, J., Lucey, A.D. A Novel Flow Control Valve for Pulsating Flows. Proceedings, 19th Australian Fluid Mechanics Conference, Dec. 8-11.

2014 Thiagarajan, N., Bhavnani, S.H., Narayanan, V. Sliding Bubble-Pumped Motion Induced by Surface Mircrostructure in Boiling in Dielectric Fluids Under Reduced Gravity. Proceedings, ASME International Mechanical Engineering Congress & Exposition (IMECE), IMECE2014-37714.

2014 Natesh, S., Narayanan, V., and Bhavnani, S.H. A Numerical Study on Condensation on Asymmetric Microstructures. Proceedings, 15th International Heat Transfer Conference, IHTC15-9958.

2014	Abishek, S., Narayanaswamy, R., and Narayanan, V. Experimental Study of Pulsed and Steady State Confined Submerged Jet Impingement Boiling of FC-72. Proceedings, 15th International Heat Transfer Conference, IHTC 15-8439.
2014	Rasouli, E., and Narayanan, V. Single-Phase Cryogenic Flows Through Microchannel Heat Sinks. Proceedings, ASME 4th US-European Fluids Engineering Division Summer Meeting and the 12th International Conference on Nanochannels, Microchannels, and Minichannels, FEDSM2014-21275.
2014	Abishek, S., Narayanaswamy, R., and Narayanan, V. Suitability Evaluation of Bubble Departure Diameter and Frequency Models for the Simulation of Subcooled Confined Jet Impingement Boiling. Proceedings, ASME 4th US-European Fluids Engineering Division Summer Meeting and the 12th International Conference on Nanochannels, Microchannels, and Minichannels, FEDSM2014-21498.
2014	Rymal, C.J., Apte, S.V., Narayanan, V., and Drost, K. Numerical Design of a Planar High-Flux Microchannel Solar Receiver. Proceedings, ASME 8th International Conference on Energy Sustainability, ES-FuelCell: 2014-6637.
2013	Abishek, S., Narayanaswamy, R., Narayanan, V. Experimental Study of Low Frequency Pulsating Liquid Jet Impingement Cooling in a Confined Planar Geometry. Proceedings, 22nd National and 11th ISHMT-ASME Heat and Mass Transfer Conference.
2013	Truong, E.D., Rasouli, E., and Narayanan, V. Cryogenic Single-Phase Heat Transfer in a Microscale Pin Fin Heat Sink. Proceedings, ASME Summer Heat Transfer Conference, HT2013: 17660-13 pages.
2013	Ghazvini, M., and Narayanan, V. Design of a Microscale Combustor-Heat Exchanger for Low Temperature Applications. Proceedings, ASME Summer Heat Transfer Conference, HT2013: 17543-12 pages.
2013	Rymal, C., Apte, S.V., Narayanan, V., and Drost, K. Numerical Design of a High-Flux Microchannel Solar Receiver. Proceedings, ASME 7th International Conference on Energy Sustainability, ES-FuelCell: 2013-18353-9 pages.
2012	Abishek, S., Narayanaswamy, R., and Narayanan, V. Effect of Standoff Distance on the Partitioning of Surface Heat Flux During Confined Subcooled Boiling of an Impinging Turbulent Water Jet. Proceedings, 18th Australian Fluid Mechanics Conference, 4 pages.
2012	Mani, P., and Narayanan, V. Thermal and Flow Visualization of Submerged Jet Impingement Boiling with FC-72. Proceedings, ASME Summer Heat Transfer Conference, HT2012: 58384-12 pages.

2012 Cardenas, R., and Narayanan, V. A Correlation for Critical Heat Flux in Submerged Jet Impingement Boiling. Proceedings, ASME Summer Heat Transfer Conference, HT2012: 58376-14 pages.

2012 Abishek, S., Narayanaswamy, R., and Narayanan, V. Effect of Heater Size on Confined Subcooled Jet Impingement Boiling. Proceedings, ASME Summer Heat Transfer Conference, HT2012: 58205-10 pages.

2012 Kapsenberg, F., Thiagarajan, N, Narayanan, V., and Bhavnani, S.H. Lateral Motion of Bubbles from Surfaces with Mini-Ratchet Topography Modifications During Pool Boiling Experiments and Preliminary Model. Proceedings, ITHERM, 3062-11 pages.

2011 Drost, K., Apte, S.V., Schmitt, J. and Narayanan, V. Design of a Microchannel Based Solar Receiver/Reactor for Biofuel Processing. Proceedings, 21st National and 10th ISHMT-ASME Heat and Mass Transfer Conference, ISHMT-USA: 018-7 pages.

2011 Abishek, S., Narayanaswamy, R., and Narayanan, V. Transient Characteristics of Confined Submerged Laminar Jet Impingement Heat Transfer from a Vibrating Heater. Proceedings, 21st National and 10th ISHMT-ASME Heat and Mass Transfer Conference, ISHMT-USA: 12 pages.

2011 Haley, D.B., and Narayanan, V. Performance Characterization of a Microscale Hydrogen Combustor Recuperator and Oil Heat Exchanger. Proceedings, ASME IMECE Conference, IMECE2011: 64176-11 pages.

2011 Thiagarajan, N., Kapsenberg, F., Narayanan, V., Bhavnani, S.H. and Ellis, C. On the Lateral Motion of Bubbles Generated from Reentrant Cavities Located on Asymmetrically Structured Surfaces. Proceedings, ASME Pacific Rim Technical Clonference and Exposition on Packaging and Integration of Electronic and Photonic Systems, Interpack, Interpack2011: 52056.

2011 Mani, P., Cardenas, R., and Narayanan, V. Submerged Jet Impingement Boiling on a Polished Silicon Surface. Proceedings, ASME Pacific Rim Technical Clonference and Exposition on Packaging and Integration of Electronic and Photonic Systems, Interpack, Interpack2011: 52042.

2011 Cardenas, R., and Narayanan, V. Critical Heat Flux During Submerged Jet Impingement Boiling of Saturated Water at Sub-Atmosphere Conditions. Proceedings, ASME Pacific Rim Technical Clonference and Exposition on Packaging and Integration of Electronic and Photonic Systems, Interpack, Interpack2011: 52043.

2011 Cardenas, R., Mani, P., and Narayanan, V. Sub-Atmospheric Mini-Jet Impingement Boiling of Water Under Saturated and Subcooled Conditions.

	Proceedings, ASME/JSME 8th Thermal Engineering Joint Conference, AJTEC2011: 44388.
2011	Eilers, B., Narayanan, V., Apte, S. and Schmitt, J. Steam-Methane Reforming in a Microchannel Under Constant and Variable Axial Surface Temperature Conditions. Proceedings, ASME/JSME 8th Thermal Engineering Joint Conference, AJTEC2011: 44390.
2011	Ghazvini, M., and Narayanan, V. Performance Characterization of a Microscale Integrated Combustor, Recuperator Oil Heat Exchanger. Proceedings, ASME/JSME 8th Thermal Engineering Joint Conference, AJTEC2011: 44633.
2011	Drost, K, Eilers, B., Peterson, D., Apte, S., Narayanan, V., and Schmitt, J. Detailed Numerical Modeling of a Microchannel Reactor for Methane-Steam Reforming. Proceedings, ASME/JSME 8th Thermal Engineering Joint Conference, AJTEC2011: 44664.
2010	Cardenas, R., Mani, P., and Narayanan, V. Submerged Jet Impingement Boiling of Saturated Water Under Sub-Atmospheric Conditions. Proceedings, ASME 3rd Joint US-European Fluids Engineering Summer Meeting and 8th International Conference on Nanochannels, Microchannels and Minichannels.
2010	Peterson, D., Apte, S., Narayanan, V., and Schmitt, J. Design of a Microchannel-Based Receiver and Development of Scalable Catalytic Microchannel Reactors for Biofuels Processing. Proceedings, ASME 3rd Joint US-European Fluids Engineering Summer Meeting and 8th International Conference on Nanochannels, Microchannels and Minichannels.
2008	Cardenas, R. and Narayanan, V. A Numerical Study of Ammonia-Water Absorption into a Constrained Microscale Film. Proceedings, 2008 IMECE, IMECE2008: 67021.
2008	Liburdy, J., Pence, D. and Narayanan, V. Flow Boiling Characteristics in a Fractal-Like Branching Microchannel Network. Proceedings, 2008 IMECE, IMECE2008: 69239.
2008	Krebs, D. Narayanan, V., Liburdy, J., and Pence, D. Local Wall Temperature Measurements in Microchannel Flows using Infrared Thermography. Proceedings, ASME Summer Heat Transfer Conference, HT2008: 56253.
2008	Shen, J., Liburdy, J., Pence, D., and Narayanan, V. Single Droplet Impingement: Effect of Nanoparticles. Proceedings, ASME Fluids Engineering Division Summer Conference, FEDSM2008: 55192.

2008	Cardenas, R.. Jenks, J., Jo, M-C, and Narayanan, V. Performance of a Microscale Film Bubble Absorber Under System Operating Conditions. Proceedings, ASME Energy Sustainability Conference, ES2008: 54125.
2008	Jo, M-C, and Narayanan, V. Thermally-Acutated Pumping by Rayleigh-Bernard Convection Using Surface Asymmetry. Proceedings, ASME Fluids Engineering Division Summer Conference, FEDSM2008: 55118.
2008	Jenks, J. and Narayanan, V. Ammonia/Water Bubble Absorption into a Constrained Microscale Liquid Film. Proceedings, 19th National and 8th ISHMT-ASME Heat and Mass Transfer Conference, HMTC2008: HMT-15.
2007	Kwak, Y., Pence, D., Liburdy, J. and Narayanan, V. Liquid and Gas-Phase Velocity Measurements for Two-Phase Flow in a Branching Microchannel Network. Proceedings, ASME International Mechanical Engineering Congress & Exposition (IMECE), IMECE 2007-41621.
2007	Jenks, J., and Narayanan, V. Effect of Channel Geometry Variations on the Performance of a Microscale Bubble Absorber. Proceedings, ASME-JSME Thermal Engineering Summer Heat Transfer Conference, HT2007-33445.
2007	Heymann, D., Kwak, Y., Edward, L., Narayanan, V., Liburdy, J., and Pence, D. Void Fraction Analysis of Flow Boiling in a Microscale Branching Channel Network. Proceedings, ASME-JSME Thermal Engineering Summer Heat Transfer Conference, HT2007-33517.
2007	Narayanan, V., Kanury, A.M., and Jenks, J. Modified Heat Exchanger Analysis Accounting for Heat Generation. Proceedings, ASME-JSME Thermal Engineering Summer Heat Transfer Conference, HT2007-33444.
2006	Jenks, J., and Narayanan, V. An Experimental Study of Ammonia-Water Bubble Absorption in a Large Aspect Ratio Microchannel. Proceedings, ASME International Mechanical Engineering Congress & Exposition (IMECE), IMECE 2006-14036.
2006	Narayanan, V., and Patil, V.A. Analysis of Temperature Fluctuations Induced by Slot Jet Impingement. Proceedings, AIAA/ASME Summer Heat Transfer Conference, AIAA-2006-3267-305.
2005	Patil, V.A., and Narayanan, Y. Measurement of Near-Wall Liquid Temperatures in Single Phase Flows through Silicon Microchannels. Proceedings, 3rd International Conference on Microchannels and Minichannels (ICMM).
2003	Narayanan, V. Time-Resolved Thermal Flow Structures in Impinging Slot Jet Flows. Proceedings, Summer Heat Transfer Conference, HT2003-47493.

2003 Narayanan, V. Temperature Measurements and Surface Visualization in Microchannel Flows using Infrared Thermography. Proceedings, 1st International Conference on Microchannels and Minichannels, ICMM2003-1117: 879-886.

2001 Narayanan, V., Seyed-Yagoobi, J. and Page, R.H. Experimental Flow Field and Heat Transfer Study of a Slot Jet Reattachment Nozzle Impinging on a Flat Plate. Proceedings, ASME IMECE.

1998 Narayanan, V., Seyed-Yagoobi, J., and Page, R.H. Representation of Local Heat Transfer Coefficient for Slot and Radial Jet Reattachment Nozzles. Proceedings, ASME IMECE, 361(1): 229-236.

1998 Alam, S.A., Seyed-Yagoobi, J., Narayanan, V., and Page, R.H. Drying Characteristics of Slot Jet Reattachment Nozzles. Proceedings, 11th International Drying Symposium, A: 565-572.

1997 Narayanan, V., Seyed-Yagoobi, J., Page, R.H., and Alam, S.A. Effect of Exit Angle on the Heat Transfer Characteristics of a Slot Jet Reattachment Nozzle. Proceedings, ASME 32nd National Heat Transfer Conference, 347(9): 119-127.

1996 Narayanan, V., Seyed-Yagoobi, J., and Page, R.H. Comparison of Heat Transfer Characteristics of a Slot Jet Reattachment Nozzle and a Conventional Slot Jet Nozzle. Proceedings, ASME ICEME/WAM Conference, 2: 151-157.

1996 Seyed-Yagoobi, J., Narayanan, V., Page, R.H., and Wirtz, J.W. Comparison of Heat Transfer Characteristics of Radial Jet Reattachment Nozzle to In-Line Impinging Jet Nozzle. Proceedings, ASME 31st National Heat Transfer Conference, 324: 85-92.

Invited articles/ Book Chapters

2018 Narayanan, V., Fronk, B., L'Estrange, T., and Rasouli, E.: Supercritical Carbon dioxide Solar Thermal Power Generation- Overview of the Technology and Microchannel Receiver Development, H. Tyagi et al., (ed), ISEES 2018 Monograph #5 on Advances in Solar Energy, Springer Energy, Environment and Sustainability series., Vol. 5 (ch. 11), Springer, pp. 333-355

2014 Bhavani, S., Narayanan, V., Qu, W., Jensen, M., Kandlikar, S., Kim, J., and Thome, J.: Boiling Augmentation with Micro/Nanostructured Surfaces: Current Status and Research Outlook, Nanoscale and Microscale Thermophysical Engineering, Vol. 18(3), pp. 197-222.

2013 Narayanan, V., Liburdy, J. and Pence, D.: Thermal Applications of Microchannel Flows, R. Blockley and W. Shyy, (ed), Encyclopedia of Aerospace Engineering, John Wiley: Chinchester.

Books Edited

2016 Vinod Narayanan: Selected Papers from the Thirteenth International Conference on Nanochannels, Microchannels and Minichannels, Heat Transfer Engineering Journal.

Patents Granted

2024 T. E. Pistochini, E. Chen, V. Narayanan. Method and Apparatus for Optimizing Energy and Water Used for Cooling Livestock, U.S. Patent 12,137,666 B2, Nov 12th 2024.

2024 V. Narayanan, E. Rasouli,. Low-drag, High-Efficiency Microchannel Polymer Heat Exchangers, U.S. Patent 12,066,197 B2, August 20th 2024

2020 M. K. Drost, S. Apte, T. L'Estrange, V. Narayanan, C. Rymal, E. Truong, E. Rasouli, K. R. Zada, and B. M. Fronk. High Flux Thermal Receiver Method and Use, U.S. patent 10,619,890 issued Apr 14, 2020

2008 M. K. Drost, V. Narayanan, D. V. Pence. Droplet Desorption Process and System, U.S. patent 7,434,411 issued Oct 1, 2008

Sample presentations

2024 Tensions in the energy ecosystem- from renewables to datacenters, Talk at National Academy of Engineers Northern California meeting, May 30th 2024

2024 Micro-pin array receivers for power generation and high-temperature process heating, US Department of Energy Solar Energy Technologies Office Receivers and Reactors Workshop (virtual), Thursday, February 15th 2024.

2023 Impact of thermal management on carbon neutrality and sustainability of modular datacenters, ITherm 2023 Tech Talk, 2023 IEEE Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems, Orlando, FL, May 30-June 2, 2024

2019 Industrial processes needing high temperatures: An overview, UC Solar thermal symposium, Davis CA, 11/15/2019.

2019 UC Davis Industrial Energy Efficiency Symposium, Organizing committee, moderator for Thermal efficiency, generation and storage panel, Davis CA, 07/31/2019.

2018 Additive Manufacturing of sCO_2 Heat Exchangers- Opportunities and Challenges, Invited Speaker, conference of academic, government and industry participants,

The 6th International Supercritical CO2 Power Cycles Symposium, Pittsburgh, PA, March 27-29, 2018, 100 Attendees.

2016-25 Graduate seminars at Arizona State (2022), Georgia Tech (2021), U Wisconsin (2024), Worcester Polytechnic Institute (2025), Naval Postgraduate School (2017), Drexel (2016)

Service

Department

2016-2017	Space Use Committee - met sparsely to discuss use of space in MAE and the possible metrics to allocate lab space.
2016-2017	Committee Member in Search for Faculty in Energy Engineering - Reviewed applications; shortlisted candidates; participated in skype and on-campus interviews.
2016-2017	UGSG committee member - reviewed petitions from undergraduate students and provided recommendations to the committee Chair.
2016-2019	MAE Awards Committee Chair - find opportunities for MAE enhancing faculty and graduate student recognition.
2017-2018	undergraduate program assessment committee - review completed ABET course assessment.
2019	member of organizing committee for UC Solar Thermal Symposium - https://energy.ucdavis.edu/outreach/events/solar-thermal-symposium/.
2019	member of organizing committee, UC Davis Industrial Energy Efficiency Symposium - https://energy.ucdavis.edu/outreach/events/industrial-energy-efficiency-symposium-2019/.
2019-2022	Chair, Graduate Studies Committee - monthly meetings of GSC; developed charge for committee with input from members.
2022-2023	member, Space Use Committee MAE - allocation of space.
2023-24	Search committee co-chair, WUI combustion search
2024-25	Search committee, Open MAE search

College/Campus

2016-2019	Member of College Awards Committee - Participate in meetings; review candidates for College level graduate student and faculty

awards.

2016-2017	Graduate Program Review Committee member - Discussed graduate program reviews and developed reports on the program reviews to be sent to stakeholders.
2019	Chair, Biological and Agricultural Engineering Graduate Program Review Committee
2019	EEI Director Search, committee member
2019-2020	Member of Search committee for Director of California Lighting Technology Center
2020	Member, Graduate Council - Academic Planning and Development Subcommittee

Service to the Professional Community

2013-2015	Chair of the ASME K-13 committee on Heat Transfer in Multiphase Systems - hold two committee meetings per year in ASME conferences; propose sessions in upcoming conferences.
2015	Conference Chair, International conference on nanochanels microchannels and minichannels - Chair of the 2015 ASME ICNMM conference which was jointly held with 2015 InterPACK conference in San Francisco. The two conference chairs and co-chairs worked over a period of several months to present an integrated program to the community. The integrated InterPACK/ICNMM conference had 580 presentations in 13 technical tracks and included a large student poster competition with over 85 participants.
2016-2020	Leadership committee of ICNMM conferences - plan for future ICNMM series conferences; discuss ways in which to keep the conference relevant and interesting; assist upcoming conference chairs as needed.
2016-2020	Chair, ICNMM awards committee - Chaired the ICNMM Awards committees; solicited nominations; formulated a committee; the committee reviewed and selected awardees for Prominent Researcher, Outstanding Early Career Award, and Outstanding Leadership awards.
2021-2022	Chair of Awards Committee - Microscale Flow and Interfacial Phenomena Conference series.

Editorial and Advisory Boards

2016	Guest editor, Heat Transfer Engineering Journal. , managed review of selected papers from the 2015 ICNMM conference
2020-26	Associate Editor of the ASME Journal of Thermal Science and Engineering Applications.

Service at Oregon State University

University-level Service

1. Associate Director of Thermal Energy Systems, Microproducts Breakthrough Institute, 2013-14
2. Member of Search Committee, Associate Dean of Graduate School, 2012
3. Member of Search Committee, Director of Academic Programs, Assessment and Accreditation, 2012
4. OSU Graduate Council, Member 2008-12
5. Judge, University Honors College Thesis Fair, 2008, 2009, 2014
6. OSU Research Council, Member 2007-08
7. Faculty Panels for Hearing Committees, Alternate member (Committee B), Fall 2004-06
8. Graduate Council Representative on several MS and PhD committees
9. Reviewer for Oregon NASA Space Grant Scholarships

School-level Service

1. Mechanical Engineering Program ABET co-ordinator, May 2009-2015
2. Mechanical Engineering Undergraduate Program Committee, 2009-10
3. Awards Committee, Chair, 2006 – 2008; Member, 2005 - 2006
4. Search Committee, Thermal-Fluid Sciences, February-May 2005, April-May 2004
5. Space Use Committee, Fall 2004 – August 2005
6. Search Committee, Mechanical Engineering Operations Manager; Fall 2004
7. Equipment Committee, Chair from 2002 to 2003; Member from 2001 to 2002.