CARLOS H. HIDROVO CHAVEZ, PH.D.

Associate Professor, Mechanical & Industrial Engineering Department, Northeastern University
207 Snell Eng. Ctr., MC 334, 360 Huntington Ave., Boston, MA 02115-5000
Tel: (617) 373-7520, Fax: (617) 373-2921, Email: hidrovo@northeastern.edu
Website: www.coe.northeastern.edu/research/hidrovo

ACADEMIC PREPARATION

Massachusetts Institute of Technology	Mechanical Engineering	Ph.D.	2001
University of Illinois, Urbana-Champaign	Mechanical Engineering	M.S.	1996
Massachusetts Institute of Technology	Mechanical Engineering	S.B.	1995

APPOINTMENTS

Associate Professor	Northeastern University Boston, MA, USA	July 2020 – present
MIE Director of Global Programs	Northeastern University Boston, MA, USA	Sept. 2025 – present
Visiting Associate Professor	Royal Melbourne Institute of Technology (RMIT University) Melbourne, VIC, AU	Jan. 2023 – May 2023
Visiting Associate Professor	Griffith University Nathan, QLD, AU	Nov. 2022 – Dec. 2022
Assistant Professor	Northeastern University Boston, MA, USA	Jan. 2014 – June 2020
Assistant Professor	The University of Texas at Austin Austin, TX, USA	Sept. 2007 – Dec. 2013
Research Associate	Stanford University Stanford, CA, USA	Sept. 2003 – Aug. 2007
Research Scientist	Massachusetts Institute of Technology Cambridge, MA, USA	Jun. 2001 – Aug. 2003

HONORS AND AWARDS

- 2023 Fulbright Future Scholarship (funded by The Kinghorn Foundation) in Australia
- 2018 American Society of Mechanical Engineers (ASME) International Mechanical Engineering Congress & Exposition (IMECE) Micro and Nano Fluid Dynamics Technical Committee (MNFDTC) Best Paper Award
- 2017 American Society of Mechanical Engineers (ASME) 15th International Conference on Nanochannels, Microchannels, and Minichannels, Invited Keynote Speaker

- 2017 Society of Engineering Science (SES) 54th Annual Technical Meeting, Invited Keynote Speaker
- 2017 Gordon Research Conferences (GRC) on Micro and Nanoscale Phase Change Heat Transfer, Invited Speaker
- 2016 NEU College of Engineering Martin W. Essigmann Outstanding Teaching Award Nominee
- 2012 National Science Foundation (NSF) CAREER Award Recipient
- 2012 UT Austin Cockrell School of Engineering Dean's Award for Outstanding Engineering Teaching by an Assistant Professor, Mechanical Engineering Nominee
- 2012 American Society for Engineering Education (ASEE) Outstanding New Mechanical Engineering Educator Award, UT Austin Nominee
- 2012 Society of Hispanic Professional Engineers (SHPE) Conference, Invited Keynote Speaker
- 2012 American Society of Mechanical Engineers (ASME) 10th International Conference on Nanochannels, Microchannels, and Minichannels, Invited Keynote Speaker
- 2009 Gordon Research Conferences (GRC) Carl Storm Underrepresented Minority Fellowship Recipient
- 2008 Defense Advanced Research Programs Agency (DARPA) Young Faculty Award (YFA) Recipient
- 2001 American Society of Mechanical Engineers (ASME) Robert T. Knapp Award Recipient

MEMBERSHIP IN PROFESSIONAL AND HONORARY SOCIETIES

- American Chemical Society (ACS)
- American Physical Society - Division of Fluid Dynamics (APS-DFD)
- American Society of Mechanical Engineers (ASME)
- National Academy of Inventors (NAI)
- The Optical Society of America (OSA)
- Sigma Xi: The Scientific Research Society

For all the scholarly work that follows the following type font is used for the different authorships: ***bold and italic for C. H. Hidrovo***, *italic for NU or UT Austin postdoc*, **bold and underlined for NU or UT Austin graduate student** and underlined for NU or UT Austin undergraduate student.

JOURNAL PUBLICATIONS

1. Ratanpara, A., *Kim, M.*, Kim, Y. J. and ***Hidrovo, C. H.***, "Spectral Characteristics of Water-Soluble Rhodamine Derivatives for Laser-Induced Fluorescence", Journal of Fluorescence, 2024.
2. **Rabiei, N.** and ***Hidrovo C. H.***, "Hydrodynamic Characteristics of Textured Microchannel Flow", *Journal of Fluids Engineering*, Vol. 145, No. 5, 051301, 2023.

3. **Tirandazi, P.** and ***Hidrovo, C. H.***, "Study of drag reduction using periodic spanwise grooves on incompressible viscous laminar flows", *Physical Review Fluids*, Vol. 5, No. 6, 064102, 2020.
4. **Salamat, Y.** and ***Hidrovo, C. H.***, "Significance of the micropores electro-sorption resistance and non-electrostatic adsorption in capacitive deionization systems", *Water Research*, Vol. 169, Article: 115286, 2020.
5. **Bedding, D. C.** and ***Hidrovo, C. H.***, "Dual fluorescence ratiometric technique for micromixing characterization", *Experiments in Fluids*, Vol. 59, No. 11, Article: 167, 2018.
6. **Tirandazi, P.** and ***Hidrovo, C. H.***, "An integrated gas-liquid droplet microfluidic platform for digital sampling and detection of airborne targets", *Sensors and Actuators B: Chemical*, Vol. 267, pp. 279-293, 2018.
7. **Salamat, Y.** and ***Hidrovo, C. H.***, "A parametric study of multiscale transport phenomena and performance characteristics of capacitive deionization systems", *Desalination*, Vol. 438, No. 7, pp. 24-36, 2018.
8. **Tirandazi, P.** and ***Hidrovo, C. H.***, "Liquid-in-gas droplet microfluidics; experimental characterization of droplet morphology, generation frequency, and monodispersity in a flow-focusing microfluidic device", *Journal of Micromechanics and Microengineering*, Vol. 27, No. 7, pp. 075020-9, 2017.
9. Narayanan, S., Kim, H., Umans, A., Yang, S., Li, X., Schiffres, S. N., Rao, S. R., McKay, I. A., *Rios Perez, C. A.*, ***Hidrovo, C. H.*** and Wang, E. N., "A thermophysical battery for storage-based climate control", *Applied Energy*, Vol. 189, pp. 31-43, 2017.
10. **Salamat, S.**, *Rios Perez, C. A.* and ***Hidrovo, C.***, "Performance Improvement of Capacitive Deionization for Water Desalination Using a Multistep Buffered Approach", *Journal of Energy Resources Technology*, Vol. 193, No. 3, pp. 032003-6, 2016.
11. **Salamat, S.**, *Rios Perez, C. A.* and ***Hidrovo, C.***, "Performance Characterization of a Capacitive Deionization Water Desalination System With an Intermediate Solution and Low Salinity Water", *Journal of Energy Resources Technology*, Vol. 138, No. 3, pp. 032003-5, 2016.
12. **Shahriari, A.**, *Kim, M.*, Zamani, S., Phillip, N., **Nasouri, B.** and ***Hidrovo, C. H.***, "Flow Regime Mapping of High Inertial Gas-Liquid Droplet Microflows in Flow-Focusing Geometries", *Microfluidics and Nanofluidics*, Vol. 20, No. 1, pp. 1-13, 2016.
13. **King, A. C.** and ***Hidrovo, C. H.***, "Development and Evaluation of a Mass Conservation Laboratory Module in a Microfluidics Environment", *Advances in Engineering Education*, Vol. 4, No. 4, pp. 10.1-10.21, 2015.
14. **Kim, T. J.**, *Kim, M.*, Hann, S., Trejo, J. and ***Hidrovo, C. H.***, "Thermal Characterization of Microheated Microchannels with Spatially Resolved Two-Color Fluorescence Thermometry", *Journal of Microelectromechanical Systems*, Vol. 24, No. 1, pp. 115-125, 2015.
15. Buongiorno, J., Cahill, D. G., ***Hidrovo, C.***, Moghaddam, S., Schmidt, A. J. and Shi, L., "Micro- and Nanoscale Measurement Methods for Phase Change Heat Transfer on Planar and Structured Surfaces", *Nanoscale and Microscale Thermophysical Engineering*, Vol. 18, No. 3, pp. 270-287, 2014.
16. **Hale, R. S.,** Ranjan, R. and ***Hidrovo, C. H.***, "Capillary flow through rectangular micropillar arrays", *International Journal of Heat and Mass Transfer*, Vol. 75, pp. 710-717, 2014.

17. *Kim, M.*, Huang, Y., Choi, K. and ***Hidrovo, C. H.***, "The Improved Resistance of PDMS to Pressure-Induced Deformation and Chemical Solvent Swelling for Microfluidic Devices", *Microelectronic Engineering*, Vol. 124, pp. 66-75, 2014.
18. **Demirer, O. N.,** and ***Hidrovo, C. H.***, "Laser Induced Fluorescence Visualization of Ion Transport in a Pseudo-Porous Capacitive Deionization Microstructure", *Microfluidics and Nanofluidics*, Vol. 16, No. 1-2, pp. 109-122, 2014.
19. **Hale, R.**, Bonnecaze, R. T. and ***Hidrovo, C. H.***, "Optimization of capillary flow through square micropillar arrays", *International Journal of Multiphase Flow*, Vol. 58, pp. 39-51, 2014.
20. *Kim, M.*, Moon, B. U. and ***Hidrovo, C.***, "Enhancement of the Thermo-Mechanical Properties of PDMS Molds for Hot Embossing of PMMA Microfluidic Devices", *Journal of Micromechanics and Microengineering*, Vol. 23, No. 9, pp. 095024-10, 2013.
21. Sheble, E., **Bickle, S.** and ***Hidrovo, C.***, "Wind Energy Lab Module for Mechanical Engineering Undergraduate Curricula", *International Journal of Engineering Education*, Vol. 29, No. 5, pp. 1294–1308, 2013.
22. Chhabra, A., Kanapuram, R., **Kim, T. J.**, Geng, J., da Silva, A., Bielawski, C. and ***Hidrovo, C.,*** "Humidity Effects on the Wetting Characteristics of Poly(N-isopropylacrylamide) During a Lower Critical Solution Transition", *Langmuir*, Vol. 29, No. 25, pp. 8116-8124, 2013.
23. **Carroll, B.** and ***Hidrovo, C.***, "Droplet Detachment Mechanism in High-Speed Gaseous Microflow", *Journal of Fluids Engineering*, Vol. 135, No. 7, pp. 071206-8, 2013.
24. **Demirer, O. N.**, Clifton, R. L., **Rios Perez, C. A.**, Naylor, R. M. and ***Hidrovo, C.***, "Characterization of Ion Transport and –Sorption in a Carbon Based Porous Electrode for Desalination Purposes", *Journal of Fluids Engineering* Vol. 135, No. 4, pp. 041201-8, 2013.
25. **Demirer, O. N.**, Naylor, R. M., **Rios Perez, C. A.**, Wilkes, E. and ***Hidrovo, C.***, "Energetic performance optimization of a capacitive deionization system operating with transient cycles and brackish water", *Desalination*, Vol. 314, pp. 130-138, 2013.
26. **Rios Perez, C. A.**, **Demirer, O. N.**, Clifton, R. L., Naylor, R. M. and ***Hidrovo, C. H.***, "Macro Analysis of the Electro-Adsorption Process in Low Concentration NaCl Solutions for Water Desalination Applications", *Journal of The Electrochemical Society*, Vol. 160, No. 3, pp. E13-E21, 2013.
27. **Carroll, B.** and ***Hidrovo, C.***, "Experimental Investigation of Inertial Mixing in Colliding Droplets", *Heat Transfer Engineering*, Vol. 34, No. 2-3, pp. 120-130, 2013.
28. **Kim, T. J.**, Kanapuram, R., Chhabra, A. and ***Hidrovo, C.***, "Thermo-Wetting and Friction Reduction Characterization of Microtextured Superhydrophobic Surfaces", *Journal of Fluids Engineering*, Vol. 134, pp. 114501-5, 2012.
29. **Kim, T. J.** and ***Hidrovo, C.***, "Pressure and partial wetting effects on superhydrophobic friction reduction in microchannel flow", *Physics of Fluids*, Vol. 24, No. 11, pp. 112003-18, 2012.
30. **Carroll, B.** and ***Hidrovo, C.***, "Droplet collision mixing diagnostics using single fluorophore LIF", *Experiments in Fluids*, Vol. 53, No. 5, pp. 1301-1316, 2012.
31. Steinbrenner, J. E., Lee, E. S., ***Hidrovo, C. H.***, Eaton, J. K. and Goodson, K. E., "Impact of Channel Geometry on Two-Phase Flow in Fuel Cell Microchannels", *Journal of Power Sources*, Vol. 196, No. 11, pp. 5012-5020, 2011.

32. Gilbert, A., ***Hidrovo, C.***, Biegalski, S., and Deinert, M., "Neutron Radiography of Water Freezing in the Gas Diffusion Layer of a Hydrogen Fuel Cell", *Transactions of the American Nuclear Society*, Vol. 101, pp. 331-332, 2009.
33. Fang, C., ***Hidrovo, C.***, Wang, F.-M., Eaton, J. and Goodson, K., "3-D Numerical Simulation of Contact Angle Hysteresis for Microscale Two Phase Flow", *International Journal Of Multiphase Flow*, Vol. 34, No. 7, pp. 690-705, 2008.
34. Steinbrenner, J. E., ***Hidrovo, C. H.***, Wang, F.-M., Lee, E. S., Vigneron, S., Kramer, T. A., Cheng, C.-H., Eaton, J. K. and Goodson, K. E., "Measurement and Modeling of Liquid Film Thickness Evolution in Stratified Two-Phase Microchannel Flows", *Applied Thermal Engineering*, Vol. 27, No. 10, pp. 1722-1727, 2007.
35. Wang, F.-M., Steinbrenner, J. E., ***Hidrovo, C. H.***, Kramer, T. A., Lee, E. S., Vigneron, S., Cheng, C.-H., Eaton, J. K. and Goodson, K. E., "Investigation of Two-Phase Transport Phenomena in Microchannels Using a Microfabricated Experimental Structure", *Applied Thermal Engineering*, Vol. 27, No. 10, pp. 1728-1733, 2007.
36. ***Hidrovo, C.*** and Lundy, T., "Three Dimensional Imaging of Structure and Flow – Critical to Advances in Microfluidics", *Microscopy Today*, Vol. 15, No. 6, pp. 18-23, 2007.
37. ***Hidrovo, C. H.***, Kramer, T. A., Wang, E. N., Vigneron, S., Steinbrenner, J. E., Koo, J.-M., Wang, F.-M., Fogg, D. W., Flynn, R. D., Lee, E. S., Cheng, C.-H., Kenny, T. W., Eaton, J. K. and Goodson, K. E., "Two-Phase Microfluidics for Semiconductor Circuits and Fuel Cells", *Heat Transfer Engineering*, Vol. 27, No. 4, pp. 53-63, 2006.
38. Kenny, T. W., Goodson, K. E., Santiago, J. G., Wang, E. N., Koo, J.-M., Jiang, L., Pop, E., Sinha, S., Zhang, L., Fogg, D. W., Yao, S., Flynn, R., Cheng, C.-H., ***Hidrovo, C. H.***, "Advanced Cooling Technologies for Microprocessors", *International Journal Of High Speed Electronics and Systems*, Vol. 16, No. 1, pp. 301-313, 2006.
39. Wang, E. N., Devasenathipathy, S., Lin, H., ***Hidrovo, C. H.***, Santiago, J. G., Goodson, K. E. and Kenny, T. W., "A Hybrid Method for Bubble Geometry Reconstruction in Two-Phase Microchannels", *Experiments in Fluids*, Vol. 40, No. 6, pp. 847-858, 2006.
40. ***Hidrovo, C. H.***, Brau, R. R. and Hart, D. P., "Excitation Nonlinearities in Emission Reabsorption Laser-Induced Fluorescence Techniques", *Applied Optics*, Vol. 43, No. 4, 2004.
41. ***Hidrovo, C. H.*** and Hart, D. P., "2-D Thickness and Temperature Mapping of Fluids by Means of a Two Dye Laser Induced Fluorescence Ratiometric Scheme", *Journal of Flow Visualization And Image Processing*, Vol. 9, No. 2&3, pp. 467-477, 2002.
42. Saeki, S., Hart, D. P. and ***Hidrovo, C. H.***, "Spectroscopic Study on YAG(532) Laser Dyes using DELIF for Oil Film Thickness and Temperature Measurement", *Journal of the Visualization Society of Japan*, Vol. 21, No. 2 Supplement, pp. 19-20, 2001.
43. ***Hidrovo, C. H.*** and Hart, D. P., "Emission Reabsorption Laser Induced Fluorescence (ERLIF) Film Thickness Measurement", *Measurement Science and Technology*, Vol. 12, No. 4, pp. 467-477, 2001.

BOOKS AND BOOK CHAPTERS

1. ***Hidrovo, C. H.*** and Goodson, K. E., "Active Microfluidic Cooling Of Integrated Circuits", *Integrated Interconnect Technologies For 3D Nanoelectronic Systems*, pp. 293-330, edited by Bakir, M. S., Meindl, J. D., Artech House, 2009.

REFEREED CONFERENCE PROCEEDINGS

1. **Rabiei, N.**, McDonough, G., and ***Hidrovo, C. H.,*** "Investigating the Potential Drag Reduction and Thermal Transport Improvement in Textured Microchannels", *ASME 2021 Fluids Engineering Division Summer Meeting,* Online Event, August 10-12, 2021.
2. **Rabiei, N.**, and ***Hidrovo, C. H.***, "Effect of Wetted Microtexturing on Friction in Microchannel Flow", *18th ASME International Conference on Nanochannels, Microchannels, and Minichannels,* Online Event, July 13-15, 2020.
3. **Tirandazi, P.**, Healy, J., and ***Hidrovo, C. H.***, "A parametric study on drag reduction using engineered microtextures in viscous laminar flow", *4TH ASTFE Thermal and Fluids Engineering Conference*, Las Vegas, NV, April 14-17, 2019.
4. **Tirandazi, P.**, Healy, J., **Arroyo, J. D.** and ***Hidrovo, C. H.***, "Investigation of in-air droplet generation in confined PDMS microchannels operating in the jetting regime", *16th ASME International Conference on Nanochannels, Microchannels, and Minichannels*, Dubrovnik, Croatia, June 10-13, 2018.
5. **Tirandazi, P.**, Tomic, G. and ***Hidrovo, C. H.***, "An Ultra-High-Throughput Flow-Focusing Microfluidic Device for Creation of Liquid Droplets in Air", *15th ASME International Conference on Nanochannels, Microchannels, and Minichannels*, Boston, MA, August 27-30, 2017.
6. **Bedding, D.** and ***Hidrovo, C. H.***, "Investigation of Mixing in Colliding Droplets Generated in Flow-Focusing Configurations Using Laser Induced Fluorescence", *14th ASME International Conference on Nanochannels, Microchannels, and Minichannels*, Washington, DC, July 10-14, 2016.
7. **Tirandazi, P.** and ***Hidrovo, C. H.***, "Generation of Uniform Liquid Droplets in a Microfluidic Chip using a High-speed Gaseous Microflow", *14th ASME International Conference on Nanochannels, Microchannels, and Minichannels*, Washington, DC, July 10-14, 2016.
8. **Salamat, S.**, *Rios Perez, C. A.* and ***Hidrovo, C.***, "Performance Improvement of Capacitive Deionization for Water Desalination Using a Multistep Buffered Approach", *FEDSM2016: 2016 ASME Fluids Engineering Summer Conference*, Washington, DC, July 10-14, 2016.
9. **Tirandazi, P.** and ***Hidrovo, C. H.***, "Experimental Investigation of Geometrical Parameters for Gas-Liquid Droplet Generation in Flow-Focusing Configurations", *13th ASME International Conference on Nanochannels, Microchannels, and Minichannels*, San Francisco, CA, July 6-9, 2015.
10. **Salamat, S.**, *Rios Perez, C. A.* and ***Hidrovo, C.***, "Performance Characterization of a Capacitive Deionization Water Desalination System With an Intermediate Solution and Low Salinity Water", *13th ASME International Conference on Nanochannels, Microchannels, and Minichannels*, San Francisco, CA, July 6-9, 2015.
11. Miers, C., Wehmeyer, G., and ***Hidrovo, C. H.***, "A Novel Thermo-Hydraulic Test Platform for Micropillared Array Thermal Wick Optimization", *10th ASME International Conference on Nanochannels, Microchannels, and Minichannels*, San Juan, PR, July 8-12, 2012.
12. Clifton, R. L., **Rios Perez, C.**, Naylor, R. and ***Hidrovo, C.***, "Characterization of Ion Transport and –Sorption in a Carbon Based Porous Electrode for Desalination Purposes", *10th ASME*

International Conference on Nanochannels, Microchannels, and Minichannels, San Juan, PR, July 8-12, 2012.

13. **Carroll, B.** and ***Hidrovo, C.***, "Experimental Investigation of Inertial Mixing in Droplets", *9th ASME International Conference on Nanochannels, Microchannels, and Minichannels*, Edmonton, Canada, June 19-22, 2011.
14. **Kim, T. J.**, Kanapuram, R., Chhabra, A., Glass, P. and ***Hidrovo, C. H.***, "Thermo-Wetting and Friction Reduction Characterization of Microtextured Superhydrophobic Surfaces", *8th ASME/JSME Thermal Engineering Joint Conference*, Honolulu, HI, March 13-17, 2011.
15. **Carroll, B.** and ***Hidrovo, C.***, "Quantification of Inertial Droplet Collision Mixing Rates in Confined Microchannel Flows using Differential Fluorescence Measurements", *8th ASME International Conference on Nanochannels, Microchannels, and Minichannels*, Montreal, Canada, August 1-5, 2010.
16. **Kim, T. J.** and ***Hidrovo, C. H.***, "Stability Analysis of Cassie-Baxter State under Pressure Driven Flow", *8th ASME International Conference on Nanochannels, Microchannels, and Minichannels*, Montreal, Canada, August 1-5, 2010.
17. **Zhang, C.** and ***Hidrovo, C. H.***, "Characterization of Capillary Flow within a Homogeneously Dispersed Array of Vertical Micropillars", *8th ASME International Conference on Nanochannels, Microchannels, and Minichannels*, Montreal, Canada, August 1-5, 2010.
18. **Carroll, B.** and ***Hidrovo, C.***, "An Experimental Investigation of Droplet Detachment in High-speed Microchannel Air Flow", *2nd ASME Micro/Nanoscale Heat & Mass Transfer International Conference*, Shanghai, China, December 18-21, 2009.
19. **Kim, T. J.** and ***Hidrovo, C. H.***, "Superhydrophobic Friction Reduction Microtextured Surfaces", *2nd ASME Micro/Nanoscale Heat & Mass Transfer International Conference*, Shanghai, China, December 18-21, 2009.
20. **Zhang, C.** and ***Hidrovo, C. H.***, "Investigation of Nanopillar Wicking Capabilities for Heat Pipes Applications", *2nd ASME Micro/Nanoscale Heat & Mass Transfer International Conference*, Shanghai, China, December 18-21, 2009.
21. **Zhang, C.** and ***Hidrovo, C. H.***, "Nanoscale Wicking Structures", *2009 ASME Heat Transfer Summer Conference*, San Francisco, CA, July 19-23, 2009.
22. **Gilbert, A.**, ***Hidrovo, C.***, Biegalski, S., Kapsimalis, R. and Deinert, M., "In-situ Neutron Radiography of Water Freezing in a GDL", *ASME 2009 7th International Fuel Cell Science, Engineering and Technology Conference*, Newport Beach, CA, June 8-10, 2009.
23. Steinbrenner, J.E., Lee, E.S., Wang, F.M., Fang, C., ***Hidrovo, C. H.*** and Goodson, K.E., "Flow Regime Evolution in Long Serpentine Microchannels with a Porous Carbon Paper Wall", *IMECE08: ASME 2008 International Mechanical Engineering Conference*, October 31-November 6, 2008.
24. David, M. P., Khurana, T., ***Hidrovo, C. H.***, Pruitt, B. L. and Goodson, K. E., "Vapor-venting, Micromachined Heat Exchanger for Electronics Cooling", *IMECE07: ASME 2007 International Mechanical Engineering Conference*, Seattle, WA, November 11-15, 2007.
25. Lee, E. S., ***Hidrovo, C. H.***, Goodson, K. E. and Eaton, J. K., "Gas-Liquid Flow in Microchannels Bounded by a Porous Wall", *ICMF2007: 6th International Conference on Multiphase Flow*, Leipzig, Germany, July 9-13, 2007.

26. Fang, C., ***Hidrovo, C.***, Wang, F.-M., Steinbrenner, J., Lee, E. So., Kim, D. R., Eaton, J. and Goodson, K., "3-D Numerical Simulation of Contact Angle Hysteresis for Slug Flow in Microchannel", *ICNMM2007: 5th International Conference on Nanochannels, Microchannels and Minichannels*, Puebla, Mexico, June 18-20, 2007.
27. Kim, D. R., Koo, J.-M., Fang, C., Steinbrenner, J. E., Lee, E. S., Wang, F.-M., ***Hidrovo, C. H.***, Eaton, J. K. and Goodson, K. E., "Compact Model of Slug Flow in Microchannels", *ICNMM2007: 5th International Conference on Nanochannels, Microchannels and Minichannels*, Puebla, Mexico, June 18-20, 2007.
28. David, M. P., Fogg, D. W., ***Hidrovo, C.***, Flynn, R. and Goodson, K. E., "Development and Calibration of a Two-Dye Fluorescence System for Use in Two-Phase Micro Flow Thermometry", *ITHERM 2006: Intersociety Conference On Thermal And Thermomechanical Phenomena In Electronic Systems*, San Diego, CA, May 30-June 02, 2006.
29. Lee, E. S., ***Hidrovo, C. H.***, Steinbrenner, J. E., Wang, F.-M., Vigneron, S., Eaton, J. K. and Goodson, K. E., "Flow Structures and Frictional Characteristics on Two-Phase Flow in Microchannels in PEM Fuel Cells", *FEDSM2005: 2005 ASME Fluids Engineering Summer Conference*, Houston, Texas, June 19-23, 2005.
30. ***Hidrovo, C. H.***, Kramer, T. A., Wang, E. N., Vigneron, S., Steinbrenner, J. E., Koo, J.-M., Wang, F.-M., Fogg, D. W., Flynn, R. D., Lee, E. S., Cheng, C.-H., Kenny, T. W., Eaton, J. K. and Goodson, K. E., "Two-Phase Microfluidics for Semiconductor Circuits and Fuel Cells", *ICMM2005: 3rd International Conference on Microchannels and Minichannels*, Toronto, Ontario, Canada, June 13-15, 2005.
31. ***Hidrovo, C. H.***, Wang, F.-M., Steinbrenner, J. E., Lee, E. S., Vigneron, S., Cheng, C.-H., Eaton, J. K. and Goodson, K. E., "Water Slug Detachment in Two-Phase Hydrophobic Microchannel Flows", *ICMM2005: 3rd International Conference on Microchannels and Minichannels*, Toronto, Ontario, Canada, June 13-15, 2005.
32. Steinbrenner, J. E., ***Hidrovo, C. H.***, Wang, F.-M., Lee, E. S., Vigneron, S., Kramer, T. A., Cheng, C.-H., Eaton, J. K. and Goodson, K. E., "Measurement and Modeling of Liquid Film Thickness Evolution in Stratified Two-Phase Microchannel Flows", *Heat SET 2005: Heat Transfer in Components and Systems for Sustainable Energy Technologies*, Grenoble, France, April 5-7, 2005.
33. Wang, F.-M., Steinbrenner, J. E., ***Hidrovo, C. H.***, Kramer, T. A., Lee, E. S., Vigneron, S., Cheng, C.-H., Eaton, J. K. and Goodson, K. E., "Investigation of Two-Phase Transport Phenomena in Microchannels Using a Microfabricated Experimental Structure", *Heat SET 2005: Heat Transfer in Components and Systems for Sustainable Energy Technologies*, Grenoble, France, April 5-7, 2005.
34. ***Hidrovo, C. H.***, Wang, F.-M., Lee, E. S., Vigneron, S., Steinbrenner, J. E., Paidipati, J. V., Kramer, T. A., Eaton, J. K. and Goodson, K. E., "Experimental Investigation and Visualization of Two-Phase Flow and Water Transport in Microchannels", *IMECE04: ASME 2004 International Mechanical Engineering Conference*, Anaheim, CA, November 13-19, 2004.
35. Kramer, T. A., Flynn, R. D., Fogg, D. W., Wang, E. N., ***Hidrovo, C. H.***, Prasher, R. S., Chau, D. S., Narasimhan, S. and Goodson, K. E., "Microchannel Experimental Structure for Measuring Temperature Fields During Convective Boiling", *IMECE04: ASME 2004 International Mechanical Engineering Conference*, Anaheim, CA, November 13-19, 2004.

36. Vigneron, S., ***Hidrovo, C. H.***, Wang, F.-M., Lee, E. S., Steinbrenner, J. E., Paidipati, J. V., Kramer, T. A., Eaton, J. K. and Goodson, K. E., "1D Homogeneous Modeling of Microchannel Two-Phase Flow with Distributed Liquid Water Injection from Walls", *IMECE04: ASME 2004 International Mechanical Engineering Conference*, Anaheim, CA, November 13-19, 2004.
37. Fogg, D., Flynn, R., ***Hidrovo, C.***, Zhang, L. and Goodson, K., "Fluorescent Imaging of Void Fraction in Two-Phase Microchannels", *3rd International Symposium on Two-Phase Flow Modeling and Experimentation*, Pisa, Italy, September 22-24, 2004.
38. Wang, E., Devasenathipathy, S., ***Hidrovo, C. H.***, Fogg, D. W., Koo, J. M., Santiago, J. G., Goodson, K. E. and Kenny, T. W., "Liquid Velocity Field Measurements in Two-Phase Microchannel Convection", *3rd International Symposium on Two-Phase Flow Modeling and Experimentation*, Pisa, Italy, September 22-24, 2004.
39. Schmitt, H. A., Barker, D. L., Shah, N. N., Rosenwald, R. D., Waagen, D. E., Barbastathis, G., Jurga, S. M., ***Hidrovo-Chavez, C. H.***, Buchner and T., Streinu, L., "Cognitive Microsystems: Geometry of Computation and Sensing", *2004 5th Asian Control Conference*, Melbourne, Australia, Vol. 2, July 20-23, 2004.
40. Shih, W. C., ***Hidrovo, C.***, Kim, S. G. and Barbastathis, G., "Optical Diversity by Nanoscale Actuation", *3rd IEEE Conference on Nanotechnology*, San Francisco, CA, August 12-14, 2003.
41. Jurga, S. M., ***Hidrovo, C. H.***, Niemczura, J., Smith, H. I. and Barbastathis, G., "Nanostructured Origami", *3rd IEEE Conference on Nanotechnology*, San Francisco, CA, August 12-14, 2003.
42. ***Hidrovo, C. H.*** and Hart, D. P., "2-D Thickness and Temperature Mapping of Fluids by Means of a Two Dye Laser Induced Fluorescence Ratiometric Scheme", *3rd Pacific Symposium on Flow Visualization and Image Processing*, Maui, HI, March 18-21, 2001.
43. ***Hidrovo, C. H.*** and Hart, D. P., "Dual Emission Laser Induced Fluorescence Technique (DELIF) for Oil Film Thickness and Temperature Measurement", *ASME Fluids Engineering Division Summer Meeting 2000*, Boston, MA, June 11-15, 2000.
44. ***Hidrovo, C. H.*** and Hart, D. P., "Development of a Dual Purpose Visualization Technique for the Study of Rotating Shaft Seals", *3rd ASME/JSME Joint Fluids Engineering Conference*, San Francisco, CA, July 18-23, 1999.

INVITED KEYNOTE TALKS AND SEMINARS

1. ***Hidrovo, C.***, "Gas-Liquid Droplet Microfluidics: Fundamentals and Applications".
   i. *Lecture for 10.677 – Topics in Applied Microfluidics course*, *Massachusetts Institute of Technology (MIT)*, Cambridge, MA, October 8, 2024.
   ii. *Microfluidics Consortium Open Day Meeting*, *Centre for Business Innovation (CfBI)*, Boston, MA, June 27, 2024.
   iii. *STEM College Seminar, RMIT University*, Melbourne, Victoria, Australia, April 5, 2023.
   iv. *Queensland Micro- and Nanotechnology Centre Seminar, Griffith University*, Nathan, Queensland, Australia, November 16, 2022.
   v. *GALCIT Colloquium Series, California Institute of Technology (CalTech)*, Online Event, November 20, 2020.

6. ***Hidrovo, C. H.***, "Gas-Liquid Droplet Microfuidics: The Exciting Side of the Annoying Leaky Faucet*".*
   i. *15th ASME International Conference on Nanochannels, Microchannels, and Minichannels*, Boston, MA, August 27-30, 2017 (***Invited Keynote Talk***).
   ii. *54th Annual Technical Meeting of the Society of Engineering Science*, Boston, MA, July 25-28, 2017 (***Invited Keynote Talk***).
8. ***Hidrovo, C.***, "Interaction of Transport Timescales in Capacitive Deionization for Water Desalination", *Department of Mechanical Engineering Seminar Series, UMass Lowell*, Lowell, MA, May 4, 2018.
9. ***Hidrovo, C.***, "Gas-Liquid Droplet Microfluidics: Fundamentals and Applications", *Squishy Physics Seminar Series, Harvard University*, Cambridge, MA, February 28, 2018.
10. ***Hidrovo, C.***, "Probing the Dynamics of Mixing", *Gordon Research Conference (GRC) on "Micro and Nanoscale Phase Change Heat Transfer"*, Galveston, TX, January 8-13, 2017 (***Invited Keynote Talk***).
11. ***Hidrovo, C. H.***, "Microscale Transport with Large Advective Dynamics".
    i. *Northeastern University, Department of Mechanical and Industrial Engineering Seminar Series*, Boston, MA, March 29, 2013.
    ii. *Vanderbilt University, Mechanical Engineering Department Seminar Series*, Nashville, TN, February 25, 2013.
13. ***Hidrovo, C. H.***, "Gas-Liquid Multiphase Flows for High Speed Microfluidics", *SHPE Conference 2012*, Fort Worth, TX, November 16, 2012 (***Invited Keynote Talk***).
14. ***Hidrovo, C. H.***, "Nano and Microscale Transport for Sustainability", *10th ASME International Conference on Nanochannels, Microchannels, and Minichannels*, San Juan, PR, July 8-12, 2012 (***Invited Keynote Talk***).
15. ***Hidrovo, C. H.***, "Superhydrophobic Surfaces Friction Reduction under Partial and Complete Wetting", *University of Washington, Mechanical Engineering Department Seminar Series*, Seattle, WA, October 23, 2012.
16. ***Hidrovo, C. H.***, "Gas-Liquid Multiphase Flows for High Speed Microfluidics".
    i. *University of Maryland*, *Department of Mechanical Engineering Seminar*, College Park, MD, May 31, 2012.
    ii. *Johns Hopkins University, Center for Environmental and Applied Fluid Mechanics (CEAFM) Seminar*, Baltimore, MD, May 30, 2012.
    iii. *Georgia Institute of Technology*, *The George W. Woodruff School of Mechanical Engineering Seminary*, Atlanta, GA, May 29, 2012.
    iv. *University of California, Los Angeles, Mechanical and Aerospace Engineering Department Seminar Series*, Los Angeles, CA, May 25, 2012.
    v. *Stanford University, Mechanical Engineering Department Thermosciences Group Seminar*, Stanford, CA, May 17, 2012.
    vi. *University of California, Santa Barbara, Center for Interdisciplinary Research in Fluids (CIRF) Seminar Series*, Santa Barbara, CA, May 16, 2012.
    vii. *Massachusetts Institute of Technology, Department of Mechanical Engineering Micro Nano Seminar*, Cambridge, MA, April 5, 2012.

viii. *The University of Texas at Austin, Department of Aerospace Engineering and Engineering Mechanics Seminar Series*, Austin, TX, March 29, 2012.

24. ***Hidrovo, C. H.***, "An Overview of Microscale Transport Research at the Multiscale Thermal Fluids Laboratory", *Massachusetts Institute of Technology, Hatsopoulos Microfluids Laboratory 10th Anniversary Workshop*, Cambridge, MA, April 4, 2012 (***Invited Keynote Talk***).
25. ***Hidrovo, C. H.***, "Mechanics of Two-Phase Flow in Microchannels".
    i. *The University of Texas at Austin, Department of Mechanical Engineering*, Austin, TX, April 18, 2007.
    ii. *George Washington University, Mechanical and Aerospace Engineering Department*, Washington, D.C., May 4, 2007.
    iii. *Lawrence Livermore National Laboratory*, Livermore, CA, February 16, 2007.
28. ***Hidrovo, C. H.***, "Two-Phase Microfluidics in Fuel Cells", *University of California, Los Angeles, Mechanical and Aerospace Engineering Department Seminar Series*, Los Angeles, CA, April 21, 2005.
29. ***Hidrovo, C. H.***, "Emission Reabsorption Laser Induced Fluorescence (ERLIF) Film Thickness Measurement".
    i. *Rochester Institute of Technology, Department of Mechanical Engineering Seminar Series*, Rochester, NY, April 21, 2003.
    ii. *University of Toronto, Mechanical and Industrial Engineering Department Seminar Series*, Toronto, Ontario, Canada, March 31, 2003.
    iii. *University of South Florida, Department of Mechanical Engineering Seminar Series*, Tampa Bay, FL, February 24, 2003.
    iv. *Northeastern University, Department of Mechanical and Industrial Engineering Seminar Series*, Boston, MA, February 7, 2003.
    v. *University of Wisconsin-Madison, Engine Research Center Charles Lindbergh Lecture Series*, Madison, WI, December 5, 2002.
    vi. *Tulane University, Department of Mechanical Engineering Seminar Series*, October 16, 2002, New Orleans, LA.
35. ***Hidrovo, C. H.*** and Hart, D. P., "Novel Optical Film Thickness Measurement", *Massachusetts Institute of Technology, Hatsopoulos Microfluids Laboratory Seminar Series*, Cambridge, MA, November 7, 2000.
36. ***Hidrovo, C. H.*** and Hart, D. P., "Novel Optical Film Thickness Measurement", *Massachusetts Institute of Technology, Sloan Automotive and Reacting Gas Dynamics Laboratory Seminar Series*, Cambridge, MA, October 26, 2000.

ORAL PRESENTATIONS

1. **Meng, Z.**, **Maddila, S. H.** and ***Hidrovo, C.***, "A Local Dispersion Approach to Gas-Liquid Microfluidic Flow Instability and Droplet Formation", 77th *Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Salt Lake City, UT, November 24-26, 2024.

2. **Maddila, S. H.**, **Meng, Z.** and ***Hidrovo, C.***, "High-Speed Droplet Generation in 3D Gas-Liquid Droplet Microfluidic Systems", 77th *Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Salt Lake City, UT, November 24-26, 2024.
3. **Meng, Z.** and ***Hidrovo, C. H.***, "Size and Frequency Analysis of the Jetting Regime in a Gas-liquid Co-flowing Device", *Micro Flow and Interfacial Phenomena (μFIP) 2022 Conference*, Irvine, CA, June 20-23, 2022.
4. **Rabiei, N.**, DiMuzio, M., and ***Hidrovo, C. H.***, "Study of drag reduction potential in textured microchannels", 74th *Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Phoenix, AZ, November 21-23, 2021.
5. **Rabiei, N.**, McDonough, G. and ***Hidrovo, C.***, "Effect of Wetted Microtexturing on Hydrodynamic and Thermal Characteristics in Microchannel Flow", *73rd Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Online Event, Nov. 22-24, 2020.
6. **Tirandazi, P.**, Arroyo, J. D. and ***Hidrovo, C. H.***, "Dynamics of High-speed Droplet Generation in Gas-liquid Microfluidic Systems", *72nd Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Seattle, WA, November 23-26, 2019.
7. **Rabiei, N.**, and ***Hidrovo, C. H.***, "Friction Reduction Effects of Wetted Microtexturing in Microchannel Flow", *72nd Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Seattle, WA, November 23-26, 2019.
8. **Tirandazi, P.**, Healy, J. and ***Hidrovo, C. H.***, "A parametric study on drag reduction using engineered microtextures in viscous laminar flow", *71th Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Atlanta, GA, November 18-20, 2018.
9. **Tirandazi, P.**, **Arroyo, J. D.**, Ho, D.-D. and ***Hidrovo, C. H.***, "Pushing the boundaries of microfluidics; an experimental study on high-speed droplet formation in confined microchannels using air as the continuous phase", *71th Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Atlanta, GA, November 18-20, 2018.
10. **Tirandazi, P.**, **Arroyo, J. D.**, Ho, D.-D. and ***Hidrovo, C. H.***, "Study of Gas-Liquid Droplet Microfluidics in Confined Flow Focusing Geometries for Enhanced Droplet Generation", *2018 ASME International Mechanical Engineering Congress & Exposition (IMECE),* Pittsburgh, PA, November 9-15, 2018.
11. **Tirandazi, P.**, **Bedding, D.** and ***Hidrovo, C. H.***, "Convective Heat Transfer of Microtextured Surfaces for Friction Reduction", *16th ASME International Conference on Nanochannels, Microchannels, and Minichannels*, Dubrovnik, Croatia, June 10-13, 2018.
12. **Salamat, Y.** and ***Hidrovo, C.***, "Comprehensive Study of Performance and Efficiency of Water Desalination with Capacitive Deionization for Various System Configurations", *70th Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Denver, CO, November 19-21, 2017.
13. Healy, J., **Tirandazi, P.** and ***Hidrovo, C. H.***, "Ultrahigh throughput microfluidic platform for in-air production of microscale droplets", *70th Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Denver, CO, November 19-21, 2017.
14. **Bedding, D.** and ***Hidrovo, C.***, "Laser Induced Dual Fluorescence Ratiometric Technique for Mixing Characterization in Microfluidic Systems", *69th Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Portland, OR, November 20-22, 2016.

15. *Rios Perez, C. A.*, **Venkataramanan, A.** and ***Hidrovo, C. H.***, "Design and development of low pressure evaporator/condenser unit for water-based adsorption type climate control systems", *69th Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Portland, OR, November 20-22, 2016.
16. **Salamat, Y.** and ***Hidrovo, C.***, "Capacitive Deionization: a coupled 2D electro-adsorption/convective-diffusive simulation for various system configurations", *69th Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Portland, OR, November 20-22, 2016.
17. **Tirandazi, P.** and ***Hidrovo, C. H.***, "An Integrated microfluidic platform for liquid droplet in gas flow generation with in liquid flow collection and manipulation", *69th Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Portland, OR, November 20-22, 2016.
18. *Rios Perez, C.*, **Venkataramanan, A.**, LeClair, M. and ***Hidrovo, C.***, "Designing a Low-pressure Water Evaporation/Boiling System for Refrigeration Systems", *2016 ASME Heat Transfer Summer Conference,* Washington, DC, July 10-14, 2016.
19. *Rios Perez, C.*, Wilkes, E. and ***Hidrovo, C.***, "Characterization of Desalination Performance of CDI Electrode Materials Using Extended Electroimpedance Spectroscopy", *68th Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Boston, MA, November 22-24, 2015.
20. **Salamat, Y.**, *Rios Perez, C.*, Gurijala, A., Erb, R. and ***Hidrovo, C.***, "Capacitive Deionization: Performance Improvement Using Multistep Buffered Arrangement and Ordered Mesoporous Carbon Electrodes", *68th Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Boston, MA, November 22-24, 2015.
21. **Tirandazi, P.** and ***Hidrovo, C.***, "Generation of Monodisperse Liquid Droplets in a Microfluidic Chip Using a High-Speed Gaseous Microflow", *68th Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Boston, MA, November 22-24, 2015.
22. *Kim, T. J.* and ***Hidrovo, C.***, "Fluorescence Thermometry Characterization of Microchannel Cooling Performance with Sidewall Heating", *67th Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, San Francisco, CA, November 23-25, 2014.
23. *Rios Perez, C.*, Wilkes, E., Gutierrez, L. and ***Hidrovo, C.***, "Transport and electrochemistry based characterization of porous electrodes for CDI applications and comparison with desalination performance", *67th Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, San Francisco, CA, November 23-25, 2014.
24. *Kim, T. J.* and ***Hidrovo, C.***, "Characterization of Heat Transfer in Superhydrophobic Microchannels under Different Wetting Modes", *66th Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Pittsburgh, PA, November 24-26, 2013.
25. **Hale, R.** and ***Hidrovo, C.***, "Optimization of Micropillar Arrays for Heat Pipe Applications", *66th Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Pittsburgh, PA, November 24-26, 2013.
26. Lee, E. S., Steinbrenner, J., ***Hidrovo, C.***, Goodson, K. and Eaton, J., "Two-Phase Flow Frictional Characteristics in Porous Wall Bounded Microchannels", *66th Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Pittsburgh, PA, November 24-26, 2013.

27. **Carroll, B.** and ***Hidrovo, C.***, "Mixing Diagnostics in Confined, High-Speed Droplet Collisions", *65th Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, San Diego, CA, November 18-20, 2012.
28. Chhabra, A., Kanapuram, R., Leva, H., Trejo, J., **Kim, T. J.** and ***Hidrovo, C.***, "Surface Characterization of pNIPAM Under Varying Absolute Humidity", *65th Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, San Diego, CA, November 18-20, 2012.
29. **Kim, T. J.**, Hann, S. Y. and ***Hidrovo, C.***, "Pressure and Heating Effects on Superhydrophobic Friction Reduction", *65th Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, San Diego, CA, November 18-20, 2012.
30. **Rios Perez, C.**, **Demirer, O.**, Clifton, R., Naylor, R. and ***Hidrovo, C.***, "Macro analysis of the electro adsorption process in a capacitive deionization cell during water desalination at developing and fully developed concentration regimes", *65th Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, San Diego, CA, November 18-20, 2012.
31. **Kim, T. J.**, Kanapuram, R., Chhabra, A. and ***Hidrovo, C. H.***, "Thermal Effects on Superhydrophobic Friction Reduction", *10th ASME International Conference on Nanochannels, Microchannels, and Minichannels*, San Juan, PR, July 8-12, 2012.
32. ***Hidrovo, C. H.*** and ***Carroll, B.***, "Gas-Liquid Droplet Microfluidics", *64th Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Baltimore, MD, November 20-22, 2011.
33. **Carroll, B.** and ***Hidrovo, C. H.***, "Measuring Convective and Diffusive Mixing in Inertial Droplet-Pair Collisions", *64th Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Baltimore, MD, November 20-22, 2011.
34. **Kim, T. J.** and ***Hidrovo, C. H.***, "Effect of Partially Wetted Cavities on Superhydrophobic Friction Reduction", *64th Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Baltimore, MD, November 20-22, 2011.
35. **Van Noordt, P.**, Bergman, M. and ***Hidrovo, C. H.***, "Mass-Spring-Damper Dynamic System Modeling for Predicting Drop-Pair Interaction Outcomes", *63rd Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Long Beach, CA, November 21-23, 2010.
36. Glass, P., Chhabra, A., Kanapuram, R., **Kim, T. J.** and ***Hidrovo, C. H.***, "Heating Effects In Very Rough Polymeric Microchannels", *63rd Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Long Beach, CA, November 21-23, 2010.
37. **Zhang, C.**, Jursic, D., Hunt, K. and ***Hidrovo, C. H.***, "Boiling Phenomena of Capillary Flow in Heat Pipe Applications", *63rd Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Long Beach, CA, November 21-23, 2010.
38. **Carroll, B.**, Robinson, B. and ***Hidrovo, C. H.***, "Inertial Droplet Mixing in a Confined Microchannel Gas Flow", *63rd Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Long Beach, CA, November 21-23, 2010.
39. Bergman, M., **Kim, T. J.** and ***Hidrovo, C. H.***, "High Speed Droplet Interactions with Heated Microtextured Surfaces", *63rd Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Long Beach, CA, November 21-23, 2010.
40. Robinson, B., **Carroll, B.** and ***Hidrovo, C. H.***, "Droplet and Slug Detachment and Entrainment in Microchannel Gas Flows", *63rd Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Long Beach, CA, November 21-23, 2010.

41. **Kim, T. J.** and ***Hidrovo, C. H.***, "Stability Analysis of Superhydrophobic Friction Reduction Polymeric Microchannels", *63rd Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Long Beach, CA, November 21-23, 2010.
42. **Rios Perez, C.**, Sweeney, M., Kanapuram, R., Chhabra, A., Bowman, J. and ***Hidrovo, C. H.***, "Ionic Transport Characterization of Carbon-Based Porous Materials", *63rd Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Long Beach, CA, November 21-23, 2010.
43. Chhabra, A., Kanapuram, R., **Kim, T. J.**, and ***Hidrovo, C. H.***, "Surface Energy Characterization of Superhydrophobic Surfaces under Varying Ambient Temperatures", *63rd Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Long Beach, CA, November 21-23, 2010.
44. **Carroll, B.** and ***Hidrovo, C. H.***, "Droplet Dynamics in Two Phase Microflows", *62nd Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Minneapolis, MN, November 22-24, 2009.
45. **Kim, T. J.** and ***Hidrovo, C. H.***, "Friction Reduction in Superhydrophobic Microchannels", *62nd Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Minneapolis, MN, November 22-24, 2009.
46. **Van Noordt, P.** and ***Hidrovo, C. H.***, "A New Approach to Modeling Drop-Pair Collisions: Predicting the Outcome through a Mass-Spring-Damper System", *62nd Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Minneapolis, MN, November 22-24, 2009.
47. **Zhang, C.** and ***Hidrovo, C. H.***, "Capillary Flow Limitations of Nanowicks", *62nd Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, Minneapolis, MN, November 22-24, 2009.
48. **Van Noordt, P.** and ***Hidrovo, C.***, "The Effect of Surface Deformation on Droplet Collisions", *61st Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, San Antonio, Texas, November 23-25, 2008.
49. **Zhang, C.** and ***Hidrovo, C. H.***, "Nanoscale Wicking Structures", *61st Annual Meeting of the American Physical Society Division of Fluid Dynamics (APS-DFD)*, San Antonio, Texas, November 23-25, 2008.
50. ***Hidrovo, C. H.***, Ong, W., Paidipati, J., Vigneron, S., Wang, F. M., Kramer, T. A. and Goodson, K. E., "Two-Phase Flow and Transport in Microchannels for Fuel Cell Applications", *Stanford University Department of Mechanical Engineering Thermal and Fluid Sciences Affiliates (TFSA) Program for Industrial/Academic Cooperation*, Stanford CA, February 4-6, 2004.
51. Shih, W., ***Hidrovo, C. H.*** and Barbastathis, G., "Microspectrometer Without Moving Parts", *Optical Society of America (OSA) Annual Meeting*, Orlando, FL, September 29-October 1, 2002.
52. ***Hidrovo, C. H.*** and Hart, D. P., "Emission Re-absorption LIF for Temperature and Film Thickness", *Massachusetts Institute of Technology, Industrial Liaison Program (ILP) New Directions in Imaging, Characterization and Measurement Conference*, Cambridge, MA, December 5-6, 2001.

PATENTS

1. **Tirandazi Khalilabad, P.** and ***Hidrovo Chavez, C. H.***, "Platform for Liquid Droplet Formation and Isolation", US10654040B2, 2020.

2. McKay, I. S., Miers, C., Narayanan, S., Wang, E. N., ***Hidrovo Chavez, C. H.*** and Wehmeyer, G., "Monolithically Integrated Bi-Directional Heat Pump", US20140157815A1, 2014.

GRANTS

Funded External Grants (Northeastern University and UT Austin)

1. "Analysis, Evaluation, and Design of a Two-Phase Micro-cooler for Microelectronics", *Rogers Corporation*, Dates: 10/1/2023 – 5/31/2023, $50,000 (***PI: Carlos Hidrovo Chavez, NU, 100%***).
2. "Thermal management investigations into device-level thermal management with PCMs", *Raytheon Company (ARL BAA)*, Dates: 3/25/2020 – 6/30/2021, $99,990 (***PI: Carlos Hidrovo Chavez, NU, 65%***; Co-PI: Laura Lewis, NU, 35%).
3. "Numerical Modeling and Novel PCM Materials for Transient Heat Load Applications", *Raytheon Company*. Dates: 9/11/2019 – 4/10/2021, $85,000 (***PI: Carlos Hidrovo Chavez, NU, 50%***; Co-PI: Laura Lewis, NU, 25%; Co-PI: Yung Joon Jung, NU, 25%).
4. "Formation and Transport Dynamics of High Speed Gas-Liquid Droplet Microfluidics", *National Science Foundation (NSF), Fluid Dynamics (FD)*. Dates: 7/1/18 – 6/30/21. Total Award: $291,001 (***PI: Carlos Hidrovo Chavez, NU, 100%***).
5. "The Role of Electrode Microscale Topology in Electro-Diffusion and its Coupling to Macroscale Convection in Capacitive Deionization (CDI) Systems for Water Desalination", *Bureau of Reclamation (BoR)*. Dates: 3/1/18 – 9/30/19. Total Award: $150,000 (***PI: Carlos Hidrovo Chavez, NU, 66%***; Co-PI, Randall Erb, NU, 34%).
6. "Elucidating the True Role of Surface Microtexturing in Friction Reduction and Enhanced Convective Heat Transfer", *National Science Foundation (NSF), Thermal Transport Processes (TTP)*. Dates: 9/1/17 – 8/31/20. Total Award: $ 308,860 (***PI: Carlos Hidrovo Chavez, NU, 100%***).
7. "Noninvasive Infrared Thermodetection (NIT) of Erectile Function", American Academy of Psychiatry and the Law (AAPL). Dates: N/A. Total Award: $25,000 (PI: Renee Sorrentino, MGH, 22%; ***Co-PI: Carlos Hidrovo Chavez, NU, 78%***).
8. "Advanced Thermo-Adsorptive Battery Climate Control System (ATB) – Plus Up (Continuation)", *Advanced Research Projects Agency – Energy (ARPA-E)*. Dates: 3/12/15 – 9/11/16. Total Award: $856,689 (PI: Evelyn Wang, MIT, 77%; ***Co-PI: Carlos Hidrovo Chavez, NU, 23%***).
9. "CAREER: Inertial Two-Phase Gas-Liquid Droplet Microflows", *National Science Foundation (NSF), Fluid Dynamics (FD) CAREER Award*. Dates: 3/1/12 – 2/28/18. Total Award: $400,000 (***PI: Carlos Hidrovo Chavez, UT Austin/NU, 100%***).
10. "Advanced Thermo-Adsorptive Battery Climate Control System (ATB)", *Advanced Research Projects Agency – Energy (ARPA-E)*. Dates: 12/15/11 – 12/14/14. Total Award: $2,700,000 (PI: Evelyn Wang, MIT, 49%; Co-PI: Omar Yaghi, UCLA, 22%; ***Co-PI: Carlos Hidrovo Chavez, UT Austin, 14%***; Co-PI: Gang Chen, MIT, 11%; Co-PI: Michael Levin, Ford Motor Corp., 4%).
11. "Capillary and Boiling Limits of Micropillared Thermal Wicks", *National Science Foundation (NSF), Thermal Transport Processes (TTP)*. Dates: 9/1/11 – 8/31/14. Total Award: $300,000 (***PI: Carlos Hidrovo Chavez, UT Austin, 100%***).

12. "Micro Cooling Systems with Variable Wettability Based on Thermo-Activated Nano Polymeric Coatings", *Texas Higher Education Coordinating Board (THECB), Norman Hackerman Advanced Research Program (NHARP)*. Dates: 7/1/2010 – 8/31/2012. Total Award: $197,220 (PI: Alexandre da Silva, UT Austin, 34%; ***Co-PI: Carlos Hidrovo Chavez, UT Austin, 33%***; Christopher Bielawski, UT Austin, 33%).
13. "High Speed Droplet Flows: Microscale Total Analysis and Thermal Management Systems Applications", *Defense Advanced Research Projects Agency (DARPA), 2008 Young Faculty Award (YFA)*. Dates: 5/6/08 – 11/6/10. Total Award: $150,000 (***PI: Carlos Hidrovo Chavez, UT Austin, 100%***).

Funded Internal Grants (Northeastern University and UT Austin)

1. "Engineering Optimal Nanoparticle-Based Formulation for Targeted Pulmonary Drug", *Northeastern University (NEU) TIER 1: Seed Grant/Proof of Concept Program*. Dates: 7/1/18 – 9/30/19. Total Award: $50,000 (***PI: Carlos Hidrovo Chavez, NU, 40%***; Co-PI: Jessica Oakes, NU, 40%; Co-PI, Mansoor Amiji, NU, 20%).
2. "Electric Field Mediated Tunable Friction for Microfluidic Flow Control", *The University of Texas at Austin Graduate School, Summer Research Assignment (SRA)*. Dates: 6/1/2011 – 7/31/2011. Total Award: 2 months of summer salary (***PI: Carlos Hidrovo Chavez, UT Austin, 100%***).

PH.D. AND M.S. STUDENTS SUPERVISIONS

Northeastern University (5 Ph.D. and 5 M.S.)

1. Zihao Meng, Ph.D., Mechanical Engineering, Summer 2020 – current.
2. Sri Harsha Maddila, Ph.D., Mechanical Engineering, Fall 2019 – current.
3. Kyle Wheeler, M.S., Mechanical Engineering, "Hydrodynamic Characteristics of Microchannel Flow with Circular Spanwise Trenches", completed Spring 2025.
4. Nastaran Rabiei, Ph.D., Mechanical Engineering, "Hydrodynamic and thermal characteristics of flow in textured microchannel", completed Spring 2023.
5. Luke Xu, M.S., Mechanical Engineering, "Novel Regime Map Approach to Phase Change Material Thermal Buffering Behavior Using Material Properties and System Parameters Considerations", completed Fall 2021
6. Pooyan Tirandazi, Ph.D., Mechanical Engineering, "Microscale Fluids Engineering for Droplet Microfluidics and Drag Reduction", completed Spring 2020.
7. Yasamin Salamat, Ph.D., Mechanical Engineering, "A Study on The Multiscale Mechanisms of Transport in Water Desalination Systems Using Capacitive Deionization", completed Summer 2019.
8. Julian D. Arroyo Orejula, M.S., Mechanical Engineering, "Gas-Liquid Droplet Microfluidics Under Confined 3D Flow-Focusing Geometries for Droplet Generation Under the Jetting Regime", completed Spring 2019.
9. Arjun Venkataramanan, M.S., Mechanical Engineering, "Design and development of a low pressure evaporator/condenser unit for water-based adsorption type climate control systems", completed Summer 2016.

10. Jiaqi Li, M.S., Mechanical Engineering, "Redesign and Fabrication of an Evaporator for the Advanced Thermo-Adsorptive Battery Climate Control System", completed Spring 2015.

UT Austin (3 Ph.D. and 8 M.S.)

1. Renee Hale, Ph.D., Chemical Engineering, "Enhancing the Cooling Capacity of Heat Pipes: Wicking in Micropillar Arrays and Electrowetting Droplet Pumping", completed Spring 2016
2. Tao Yu, M.S., Mechanical Engineering, "Development of an Integrated Expansion Evaporator and Condenser Unit for an Advanced Thermal Battery System", completed Summer 2014.
3. Andrew King, M.S., Mechanical Engineering, "Development and Evaluation of a Mass Conservation Lab Module in a Microfluidics Environment", completed Summer 2013.
4. Onur Demirer, M.S., Mechanical Engineering, "Two New Perspectives on Capacitive Deionization Process: Transient Performance Optimization and Flow Visualization", completed Summer 2013.
5. Tae Jin Kim, Ph.D., Mechanical Engineering, "Pressure and Thermal Effects on Superhydrophobic Friction Reduction in a Microchannel Flow", completed Summer 2013 (currently postdoctoral fellow in the Radiation Oncology Department at Stanford University).
6. Brian Carroll, Ph.D., Mechanical Engineering, "Droplet Generation and Mixing in Confined Gaseous Microflows", completed Fall 2012 (currently Thermal/Fluids Engineer in the Advanced Projects/Research and Development, Thermal and Cryogenic Engineering Section of NASA Jet Propulsion Laboratory).
7. Kena Pierce, M.A., UTeach*Engineering* Masters of Arts in Science and Engineering Education (MASEE), "Electrode Separation Effects in Capacitive Deionization (CDI) Desalination Systems", completed Summer 2012.
8. Neil Shah, M.S., Mechanical Engineering, "COMSOL Modeling of End Effects in Superhydrophobic Microchannels for Frictional Reduction", completed Summer 2010.
9. Conan Zhang, M.S., Mechanical Engineering, "Analytical and Experimental Investigation of Capillary Forces Induced by Nanopillars for Thermal Management Applications", completed Spring 2010.
10. Andrew Gilbert, M.S., Mechanical Engineering, "Quantification of Fluid Phase Change using Neutron Radiography", completed Spring 2010.
11. Paul Van Noordt, M.S., Mechanical Engineering, "A New Approach to Modeling Drop-Pair Collisions: Predicting the Outcome through a Fluidic-Mechanical System Analogy", completed Summer 2009.

POSTDOCTORAL FELLOWS SUPERVISIONS

Northeastern University

1. Dr. A-Andrew Jones, *NEU Future Faculty Fellow*, Ph.D. in Mechanical Engineering from the Massachusetts Institute of Technology in 2017, 11/01/17 – 8/31/19 (currently Assistant Professor in the Civil and Environmental Engineering Department at Duke University).
2. Dr. Carlos Rios-Perez, Ph.D. in Mechanical Engineering from The University of Texas at Austin in 2013, 01/23/14 – 07/31/16 (currently Adjunct Professor at the University of Engineering and Technology, UTEC, Lima, Peru).

3. Dr. Tae Jin Kim, Ph.D. in Mechanical Engineering from The University of Texas at Austin in 2013, 01/23/14 – 06/23/14 (currently Mechanical Senior Principal Engineer at Dell Technologies).

UT Austin

1. Dr. Myeongsub Kim, Ph.D. in Mechanical Engineering from The Georgia Institute of Technology in 2011, 09/01/12 – 08/30/14 (currently Associate Professor in the Mechanical Engineering Department at Florida Atlantic University).

TEACHING

Northeastern University

1. ME 4570: Thermal Systems Analysis and Design (undergraduate class; 12 offerings)
2. ME 7295: Multiscale Flow and Transport Phenomena (graduate class; 8 offerings)
3. ME 3480: International Applications of Fluid Mechanics (undergraduate class; 3 offerings)
4. ME 4699: Special Topics in Mechanical Engineering: Fluid Mechanics Engineering Analysis within the Socio-Cultural, Political and Economic History of Panama (undergraduate class; 3 offerings)
5. MEIE 4702: Capstone Design 2 (undergraduate class; 4 offerings)
6. ME 7290: Convective Heat Transfer (graduate class; 1 offering)

Summary of Course Evaluation Survey (CES) Scores

Term	Course	Enrollment	Instructor	Course
Fall 2025	ME4570: Thermal Systems Analysis and Design (UG)	58	N/A	N/A
Summer2 2025	ME3480: International Applications of Fluid Mechanics (UG)	11	4.5	5.0
Summer2 2025	ME4699: Special Topics in Mechanical Engineering (UG)	11	4.5	4.0
Spring 2025	ME7295: Multiscale Flow and Transport Phenomena (G)	8	4.0	4.5
Fall 2024	ME4570: Thermal Systems Analysis and Design (UG)	50	4.0	4.5
Fall 2024	MEIE4702: Capstone Design 2 (UG)	16	5.0	5.0
Summer1 2024	ME3480: International Applications of Fluid Mechanics (UG)	14	3.9	4.6
Summer1 2024	ME4699: Special Topics in Mechanical Engineering (UG)	14	3.2	4.0
Spring 2024	ME7295: Multiscale Flow and Transport Phenomena (G)	8	4.5	4.0
Fall 2023	ME4570: Thermal Systems Analysis and Design (UG)	40	4.0	4.5
Fall 2023	MEIE4702: Capstone Design 2 (UG)	16	3.2	4.0
Summer1 2023	ME3480: International Applications of Fluid Mechanics (UG)	15	4.7	4.8
Summer1 2023	ME4699: Special Topics in Mechanical Engineering (UG)	15	4.6	4.6
Spring 2022	ME4570: Thermal Systems Analysis and Design (UG)	49	4.6	4.7
Fall 2021	ME4570: Thermal Systems Analysis and Design (UG)	22	4.5	4.5
Fall 2021	MEIE4702: Capstone Design 2 (UG)	14	4.6	4.9
Summer1 2021	ME3480: International Applications of Fluid Mechanics (UG)	14	4.0	4.3
Summer1 2021	ME4699: Special Topics in Mechanical Engineering (UG)	14	4.7	4.7
Spring 2021	ME7295: Multiscale Flow and Transport Phenomena (G)	3	N/A	N/A
Fall 2020	ME4570: Thermal Systems Analysis and Design (UG)	20	4.6	4.5
Fall 2020	MEIE4702: Capstone Design 2 (UG)	14	4.4	4.5
Spring 2020	ME4570: Thermal Systems Analysis and Design (UG)	49	4.8	4.7
Spring 2020	ME7295: Multiscale Flow and Transport Phenomena (G)	8	4.5	4.7
Fall 2019	ME4570: Thermal Systems Analysis and Design (UG)	19	4.8	4.8
Spring 2019	ME7295: Multiscale Flow and Transport Phenomena (G)	6	4.7	4.7
Fall 2018	ME4570: Thermal Systems Analysis and Design (UG)	41	4.1	4.5
Spring 2018	ME7295: Multiscale Flow and Transport Phenomena (G)	9	4.4	4.9
Fall 2017	ME4570: Thermal Systems Analysis and Design (UG)	43	4.6	4.5
Spring 2017	ME4570: Thermal Systems Analysis and Design (UG)	36	4.6	4.4
Fall 2016	ME7295: Multiscale Flow and Transport Phenomena (G)	4	N/A	N/A

Spring 2016	ME4570: Thermal Systems Analysis and Design (UG)	39	4.7	4.7
Fall 2015	ME7295: Multiscale Flow and Transport Phenomena (G)	7	4.7	4.8
Spring 2015	ME4570: Thermal Systems Analysis and Design (UG)	36	4.9	5.0
Fall 2014	ME7290: Convective Heat Transfer (G)	7	4.5	4.5
Spring 2014	ME7295: Multiscale Flow and Transport Phenomena (G)	5	5.0	5.0
		Total: 736	**Avg.: 4.4**	**Avg.: 4.6**

UT Austin

1. ME 330: Fluid Mechanics (undergraduate class; 7 offerings)
2. ME130L: Experimental Fluid Mechanics (undergraduate class; 6 offerings)
3. ME397/ME381P.4: Multiscale Flow and Transport Phenomena (graduate class; 3 offerings)
4. ME381P.1: Fundamentals of Incompressible Flow (graduate class; 2 offering)

Summary of Course Evaluation Survey (CES) Scores

Term	Course	Enrollment	Instructor	Course
Fall 2013	ME381P.1: Fundamentals of Incompressible Flow (G)	26	3.6	3.4
Spring 2013	ME130L: Experimental Fluid Mechanics (UG)	144	4.1	3.6
Spring 2013	ME381P.4: Multiscale Flow and Transport Phenomena (G)	20	3.9	3.8
Fall 2012	ME381P.1: Fundamentals of Incompressible Flow (G)	29	4.3	3.9
Spring 2012	ME130L: Experimental Fluid Mechanics (UG)	136	3.8	3.5
Fall 2011	ME330: Fluid Mechanics (UG)	102	4.3	3.9
Fall 2011	ME130L: Experimental Fluid Mechanics (UG)	96	3.8	3.2
Spring 2011	ME397: Multiscale Flow and Transport Phenomena (G)	7	4.4	4.4
Fall 2010	ME330: Fluid Mechanics (UG)	122	4.0	3.8
Fall 2010	ME130L: Experimental Fluid Mechanics (UG)	122	3.9	3.4
Spring 2010	ME330: Fluid Mechanics (UG)	49	4.0	3.6
Spring 2010	ME130L: Experimental Fluid Mechanics (UG)	134	3.7	3.4
Fall 2009	ME397: Multiscale Flow and Transport Phenomena (G)	12	4.3	3.8
Spring 2009	ME130L: Experimental Fluid Mechanics (UG)	137	3.9	3.5
Fall 2008	ME330: Fluid Mechanics (UG)	70	4.1	3.9
Fall 2008	ME330: Fluid Mechanics (UG)	22	4.6	4.3
Spring 2008	ME330: Fluid Mechanics (UG)	48	4.3	3.9
Spring 2008	ME330: Fluid Mechanics (UG)	51	3.9	3.6
		Total: 1,327	**Avg.: 4.1**	**Avg.: 3.7**

ADMINISTRATIVE SERVICE

- MIE faculty member representative in the College of Engineering Faculty Council (FC) at Northeastern University (Fall 2020 – Spring 2023).
- Chair of the Mechanical and Industrial Engineering Department Research Affairs Committee (RAC) at Northeastern University (Fall 2020 – Spring 2023).
- Faculty member of the College of Engineering Research Affairs Committee (RAC) at Northeastern University (Summer 2020 – Spring 2023).
- Faculty member of the Mechanical and Industrial Engineering Department Thermal Fluids Area Fluid Dynamics Faculty Search Committee at Northeastern University (Fall 2019 – Spring 2020).
- Faculty member of the Mechanical and Industrial Engineering Department Research Affairs Committee (RAC) at Northeastern University (Fall 2018 – present).

- Faculty member of the Mechanical Engineering Graduate Student Recruiting and Admissions Committee (GSRAC) at The University of Texas at Austin (Spring 2010 – Fall 2013).
- Faculty member of the Thermal-Fluid Systems (TFS) Space Committee of the Mechanical Engineering Department at The University of Texas at Austin (Fall 2009 – Fall 2013).
- Faculty member of the Thermal-Fluids Systems (TFS) Graduate Curriculum Committee of the Mechanical Engineering Department at The University of Texas at Austin (Fall 2008 - Fall 2013).

ACADEMIC SERVICE

- Developed and conducted a Dialogue of Civilizations (DOC) study abroad program on International Applications of Fluid Mechanics – Panama at Northeastern University.
- Gordon Engineering Leadership Program Challenge Project Committee Member at Northeastern University.
- Project sponsor for senior design capstone project class (MEIE 701-702) at Northeastern University.
- Development of class content for the Experimental Fluid Mechanics (ME130L) course in Mechanical Engineering at The University of Texas at Austin through Project-Centered Education in Mechanical Engineering (PROCEED) program.
- Volunteer Faculty Advisor for undergraduate project related courses at The University of Texas at Austin: Mechanical Engineering Design Project (ME266K) and Projects in Mechanical Engineering (ME377K).
- Outreach activities: Voluntary participant to Explore UT, the Austin's Children Museum "Engineer It!" Summer Camp, the Women in Engineering Program (WEP) "Introduce a Girl to Engineering Day", the "PNS (PSP, NSBE, SHPE) Lab Tours", and the Equal Opportunity in Engineering (EOE) Program's First-Year Interest Group.

PROFESSIONAL SERVICE

- Archival manuscript reviewer for Biomicrofluidics, Desalination, Environmental Science & Technology, Experiments in Fluids, International Journal for Numerical Methods in Fluids, International Journal of Thermal Sciences, Journal of Applied Fluid Mechanics, Journal of Colloid and Interface Science, Journal of Heat Transfer, Lab on a Chip, Langmuir, Microfluidics and Nanofluidics, Nanoscale and Microscale Thermophysical Engineering, Physical Review Fluids, and Physics of Fluids.
- Proposal reviewer for the National Science Foundation (NSF) Thermal Transport Processes (TTP) program, and the American Chemical Society (ACS) Petroleum Research Funds (PRF) New Directions (ND) program.
- Member of the American Physical Society (APS) Division of Fluid Dynamics (DFD) Nominating Committee (2019 – 2020)
- Member of the American Physical Society (APS) Division of Fluid Dynamics (DFD) Acrivos Award Selection Committee (2017 – 2018)

- Chair of the American Physical Society (APS) Division of Fluid Dynamics (DFD) Committee on Educational and Career Outreach (2016)
- Vice Chair of the American Physical Society (APS) Division of Fluid Dynamics (DFD) Committee on Educational and Career Outreach and organizer of the Fluids Education Lunch Workshop at APS-DFD annual meeting in Boston (2015)
- Conference session chair for the American Physical Society (APS) Division of Fluid Dynamics (DFD) Annual Meeting (2008 – 2015), the ASME International Conference of Nanochannels, Microchannels and Minichannels (ICNMM) (2008 – 2015), and the International Mechanical Engineering Congress and Exposition (IMECE) (2008).

INVITED SHORT COURSES

- "International Course in Computational Fluids Dynamics", Technological University of Panama (UTP), Panama City, Panama, August 17-21, 2009.

CONSULTING

- FireFly LED Lighting Inc., PAR 38 light bulb heat sink thermal performance characterization, March, 2010.
- Pulsar Energy, Solar Thermo Electric (STE) system due diligence analysis, in association with Philip S. Schmidt, Ph.D., P.E., September, 2008.

COLLABORATORS

- Prof. Christopher Bielawski (UT Austin, UNIST), Prof. Roger Bonnecaze (UT Austin), Prof. Gang Chen (MIT), Prof. Alexandre da Silva (UT Austin, UFSC), Prof. Mark Deinert (UT Austin, CSM), Prof. Randall Erb (NEU), Prof. Laura Lewis (NEU), Prof. Omar Yaghi (UC Berkeley), Prof. Yung Joon Jung (NEU), Prof. Evelyn Wang (MIT).