RASIM O. GULDIKEN, Ph.D.
Associate Dean for Academic Affairs, College of Engineering
Associate Professor, Department of Mechanical Engineering
University of South Florida
guldiken@usf.edu (813) 974-5628
collegefluidmechanics.com/USFLab
youtube.com/c/collegefluidmechanics

RESEARCH INTERESTS

Acoustics, Ultrasonics, Structural Health Monitoring
Microfluidics, Fluid Mechanics, Engineering Education Research
Sensors and Transducers, Energy Harvesting, Composites

PROFESSIONAL PREPARATION

Georgia Institute of Technology, Atlanta, GA 2008
Ph.D. in Mechanical Engineering
Dissertation Title: Dual-Electrode Capacitive Micromachined Ultrasonic Transducers for Medical Ultrasound Applications

Northeastern University, Boston, MA 2004
M.S. in Mechanical Engineering
Thesis Title: Metrology and Removal of Submicron and Nano Particles from Structured and Flat Substrates

Middle East Technical University, Ankara, Turkey 2002
B.S. in Mechanical Engineering

PROFESSIONAL AND ACADEMIC APPOINTMENTS

Associate Dean for Academic Affairs, College of Engineering 2021 – present
University of South Florida, Tampa, FL

Associate Professor of Mechanical Engineering Department 2014 – present
University of South Florida, Tampa, FL

Graduate Program Director, Mechanical Engineering Department 2015 – 2021
University of South Florida, Tampa, FL

Assistant Professor of Mechanical Engineering Department 2008 – 2014
University of South Florida, Tampa, FL

Graduate Research Assistant, Woodruff School of Mechanical Engineering 2004 – 2008
Georgia Institute of Technology, Atlanta, GA

Graduate Research Assistant, NSF Center for High-rate Nanomanufacturing 2002 – 2004
Northeastern University, Boston, MA

AWARDS AND HONORS

- American Society of Mechanical Engineers (ASME) Fellow 2022

- USF Academic Excellence Award 2022
- USF Academy of Distinguished Engineering Educators, Member 2021
- USF STEER Scholar 2021
- USF College of Engineering Outstanding Undergraduate Teaching Award 2020
- USF University-Wide Outstanding Undergraduate Teaching Award 2012 and 2019
- USF Outstanding Graduate Faculty Mentor, Honorable Mention 2018
- SAE Ralph Teetor Educational Award 2014
- Selected and attended ASEE National Effective Teaching Institute (NETI) 2013
- ASME Florida West Coast Section Engineer of the Year 2012
- One of the top 100 Turkish scientists by the International Turkish Time Magazine 2012
- "Grantee Spotlight" and highlighted on the Florida Department of Health Website 2011
- Sigma Xi Best Ph.D. Dissertation Award Nominee, Georgia Tech Chapter 2008
- International IEEE Ultrasonics Symposium, Best Student Paper Award 2005 and 2007

RESEARCHER SUPERVISION IN MY RESEARCH GROUP (Total: 57 – Current: 8, Alumni: 49)

- Visiting Faculty (1)
  - Dr. Vinayak Ranjan 2012
    Current Position: Department Chair and Professor, Department of Mechanical and Aerospace Engineering, Bennett University, NCR Delhi, India

- Post-Doctoral Fellows (2)
  - Dr. Emre Tufekcioglu 2015 – 2016
    Current Position: Assistant Professor, Eskisehir University, Eskisehir, Turkey
  - Dr. Alper Sisman 2011 – 2012
    Current Position: Assistant Professor, Electrical and Electronics Engineering, Marmara University, Istanbul, Turkey

- Doctoral Students (21)
  - John Cotter, Ph.D. Candidate Ph.D. defense scheduled for August 2022
  - Khaoula Ettini, Ph.D. Candidate Ph.D. expected in Fall 2023
  - Tia Sayers, Ph.D. Student Ph.D. expected in 2024
  - Ozge Uyanik, Ph.D. Student Ph.D. expected in 2024
  - Jose Paul, Ph.D. Candidate, co-advised with A. Kumar Ph.D. expected in 2024
  - Samuel Donatus, Ph.D. Student, co-advised with J. Wang Ph.D. expected in 2025

  - Saleh Alhumaid, Ph.D. in Mechanical Engineering 2022
    Dissertation Title: A Noncontact Magneto-Piezo Harvester-Based Vehicle Regenerative Suspension System, Co-advised with D. Hess
    Current Position: Assistant Professor at University of Hail, Saudi Arabia
  - Joel Cooper, Ph.D. in Mechanical Engineering 2020
    Dissertation Title: Manipulation and Patterning of Mammalian Cells using Vibrations and Acoustic Force, Co-advised with D. Gallant
    Current Position: Project Engineer, Triton Systems, Inc. Chelmsford, MA
  - Hani Alhazmi, Ph.D. in Mechanical Engineering 2020
    Dissertation Title: Experimental Investigation of Liquid Height Estimation and Simulation Verification of Bolt Tension Quantification Using Surface Acoustic Waves
    Current Position: Assistant Professor at Umm Al-Qura University, Saudi Arabia

- Marwan Belaed, Ph.D. in Mechanical Engineering 2020
  Dissertation Title: Simulation and Verification of Phase Change Materials for Thermal Energy Storage, Co-advised with M. Rahman
  Current Position: Solar Engineering Consultant as DBA, Tampa, FL
- Matt Trapuzzano, Ph.D. in Mechanical Engineering 2019
  Dissertation Title: Controlled Wetting Using Ultrasonic Vibration, Co-advised with N. Crane
  Current Position: Mechanical Engineer at Blue Origin, Cape Canaveral, FL
- Mohsen Ziaee, Ph.D. in Mechanical Engineering 2018
  Dissertation Title: Materials and Methods to Fabricate Porous Structures Using Additive Manufacturing Techniques, Co-advised with N. Crane
  Current Position: Additive Manufacturing Engineer at 3DEO, Gardena, CA
- Shantanu Shevade, Ph.D. in Mechanical Engineering 2018
  Dissertation Title: Simulation of Turbulent Air Jet Impingement for Commercial Cooking Applications, Co-advised with M. Rahman
  Current Position: Director of Engineering, Welbilt, Inc., Newport Richey, FL
- Scott Padilla, Ph.D. in Mechanical Engineering 2017
  Dissertation Title: Novel Transducer Calibration and Simulation Verification of Polydimethylsiloxane (PDMS) Channels on Acoustic Microfluidic Device
  Current Position: Project Manager at Neuralink, Austin, TX
- Rafael Rodriguez, Ph.D. in Mechanical Engineering 2017
  Dissertation Title: Experimental Evaluation of Cooling Effectiveness and Water Conservation in a Poultry House Using Flow Blurring Atomizers
  Current Position: Associate Professor at Embry–Riddle Aeronautical University
- Adrian Avila, Ph.D. in Electrical Engineering 2017
  Dissertation Title: Development of MEMS Acoustic Emission Sensors, Co-advised with J. Wang
  Current Position: R&D Engineer at Intel, Chandler, AZ
- Tao Wang, Ph.D. in Mechanical Engineering 2016
  Dissertation Title: Optimization and Characterization of Integrated Microfluidic Surface Acoustic Wave Sensors and Transducers
  Current Position: Microfluidic Engineer at Technicolor SA in Camarillo, CA
- Ahmad Manasrah, Ph.D. in Mechanical Engineering 2016
  Dissertation Title: Application and Analysis of Asymmetrical Hot and Cold Stimuli, Co-advised with K. Reed
  Current Position: Assistant Professor at Al-Zaytoonah University, Jordan
- Eric Tridas, Ph.D. in Mechanical Engineering 2015
  Dissertation Title: Use of FDM Components for Ion Beam and Vacuum Applications, Co-advised with R. Schlaf
  Current Position: Staff R&D Engineer at Pivot, Inc., San Francisco, CA
- Onursal Onen, Ph.D. in Mechanical Engineering 2013
  Dissertation Title: Analytical Modeling, Perturbation Analysis and Experimental Characterization of Guided Surface Acoustic Wave Sensors
  Current Position: Owner and CEO at Metapax Akustik, Turkey
- Myeong Chan Jo, Ph.D. in Mechanical Engineering 2013
  Dissertation Title: An Acoustic-based Microfluidic Platform for Active Separation and Mixing
  Current Position: Vice-President of Development at Innovative Biochips LLC, Houston, TX

- Masters Students (13)
  - Akshay Gulhane, M.S. in Mechanical Engineering 2020
    Thesis Title: Rescue Operations Bot Operating in Water, Co-advised with A. Mujumdar
    Current Position: Engineer at NeilSoft Limited, India
  - Mohammed Al-Busaidi, M.S. in Mechanical Engineering 2019
    Thesis Title: Simulation and Experimental Investigation of Fluid Mixing Enhancement with Orifice Plate
    Current Position: Development Mechanical Engineer in Petroleum Development Oman
  - Robert Bebeau, M.S. in Mechanical Engineering 2018
    Thesis Title: Simulation of Radiation Flux from Thermal Fluid in Origami Tubes
    Current Position: Fatigue Engineer at Boeing, St. Louis, MO
  - Shivaraman Asoda, M.S. in Mechanical Engineering 2018
    Thesis Title: Simulation and Optimization of a Sheathless Size-Based Acoustic Particle Separator
    Current Position: Engineer at Cybel LLC, Allentown, PA
  - Frederick Schousboe, M.S in Mechanical Engineering 2017
    Thesis Title: Media Velocity Considerations in Pleated Air Filtration
    Current Position: Engineering Manager at EnerSys, Tampa, FL
  - Matt Hardy, M.S. in Mechanical Engineering 2017
    Thesis Title: Heat Flux Modeling of Asymmetrically Heated and Cooled Thermal Stimuli, Co-advised with K. Reed
    Current Position: U.S. Navy Civil Engineer Corps Officer, Newport, Rhode Island
  - Senmiao Hu, M.S. in Mechanical Engineering 2016
    Thesis Title: Simulation and Verification of Fluid Jet Polishing
    Current Position: Unknown
  - Jairo Martinez, M.S. in Mechanical Engineering 2012
    Thesis Title: A Novel Ultrasonic Method to Quantify Bolt Tension
    Current Position: Thermal Systems Integration Engineer at Cummins Inc., Milpitas, CA
  - Greeshma Manohar, M.S. in Mechanical Engineering 2012
    Thesis Title: Investigation of Various Surface Acoustic Wave Design Configurations for Improved Sensitivity
    Current Position: Engineer at HARMAN International, Detroit, MI
  - Eric Tridas, M.S. in Mechanical Engineering 2012
    Thesis Title: Experimental and Numerical Investigation of an Electrospray RF Ion Funnel, Co-advised with R. Schlaf
    Current Position: Staff R&D Engineer at Pivot, Inc., San Francisco, CA
  - Ahmad Manasrah, M.S. in Mechanical Engineering 2012
    Thesis Title: Human Motion Tracking for Assisting Balance Training and Control of a Humanoid Robot, Co-advised with K. Reed
    Current Position: Assistant Professor at Al-Zaytoonah University, Jordan
  - Asad Ahmad, M.S. in Mechanical Engineering 2011
    Thesis Title: Surface Functionalization and Analysis Thereof for an Ovarian Cancer Diagnostic Biosensor, Co-advised with N. Gallant
    Current Position: Global Key Accounts, Tempus Labs, Inc. Chicago, Illinois
  - Lynford Davis, M.S. in Mechanical Engineering 2009
    Thesis Title: Investigation of Residual and Thermal Stress on Membrane-Based MEMS Devices
    Current Position: High School Math Teacher, Pasco County, FL

- Undergraduate Students (20)
  - Teehran Francis, Concrete Inspection on Bridges with an Ultrasonic Transducer Integrated to a Tire 2022 – present
  - Matthew Moss, Does Metacognition and Reflection Increase Student Learning in an Undergraduate STEM Course? 2021 – present
  - Rafael Braga Gomes, Coupled Analysis of Powder Bed Interaction with Laser for Laser Melting Process 2020 – 2021
  - Charles Baker, HVAC Design (a Chilled Water System with Hydronic Heating) for Braden River Middle School Classroom Addition 2020
  - Richard Leyton, Performance, Efficiency and Cost Optimization of Custom-designed Camshaft for Mx-5 (NB) 2019
  - Daniel O'Connor, Honor's Thesis, Committee Member, Exploring the SCUBA of Yesterday, Today and Tomorrow 2016 – 2017
  - Joshua Garno, Honor's Thesis Director, Computational Study on Reducing Drag and Boundary Layer Separation in Airfoils 2015 – 2016
  - Marcos Robles, Analysis of a Modular Engine Air Particle Separator for use in Unmanned Aerial Vehicles 2014 – 2015
  - Brandon Demers, Investigation of Redirecting Air to Increase the Normal Load on the Tires for Added Grip 2014
  - Laura Byrnes-Blanco, Ultrasonic Modulation of Protein and Cellular Attachment in Jackson Pratt Drainage System 2013
  - Kimberly Witke, Acoustic Analysis of Venturi Nozzle 2013
  - Alex McCulla, Change in Shear Stress due to Skin-Friction and Aerodynamic Shape Altered by the Surface Roughness, 2012 – 2013
  - Stephen MacNeil, Simulation of a Space Electrical Power System 2012
  - Dean Velasquez, Phased Array Surface Acoustic Wave Transducers for Bolt Tension Measurement 2012
  - Ahmad Hares, Spring Rate and Preload Investigation of Various Valve Sizes using Fluid Transportation Principles 2011
  - Andrew Abney, Drag Reduction on an Arbitrary Shaped Flying Disc and Simulation of Operation Parameters for Capacitive Acoustic Transducers 2011
  - Jaime Pagan, Design and Fabrication of Characterization Setup for High-Frequency Immersion Ultrasonic Transducers 2010
  - Chris Nelson, Simulation of Thermal Effects on Micro Membranes 2010
  - Nathan Rice, Study on Ground Loop Air-Conditioning Systems 2009
  - Momo Kajiwara, High-Intensity Ultrasound for Breast Cancer Treatment 2009

RESEARCH GRANTS AND CONTRACTS

G1 Title: Collaborative Proposal: Structured Use of Metacognitive Activities in a Flipped Undergraduate Engineering Course to Enhance Learning and Professional Skill Development
Source: NSF, Award Number: 2019664, 2020504,
Role: PI, Co-PIs: A. Kaw 10/01/2020 – 09/30/2023
Total Amount: $307K; USF Amount: $206K

G2 Title: Fast Track Ultrasonic Imaging of Concrete Bridge Decks
Source: Transtek International Group LLC (through U.S. DOT) and FHTC
Role: PI, Co-PIs: None 03/17/2021 – 06/16/2023
Amount: $240K (excluding the $900K funding received by industry partner)

G3 Title: I-Corps: Recycled Plastic Lumber Building Material Replacement for Structural Lumber

Source: NSF, Award Number: 2226952,
Role: PI, Co-PIs: None 06/01/2022 – 05/31/2023
Amount: $50K

G4 Title: CHS: Small: Investigation of Dynamic Thermal Perception over Large Skin Areas
Source: NSF, Award Number:1526475,
Role: Co-PI, PI: K. Reed 09/01/2015 – 08/31/2021
Amount: $530K

G5 Title: Controlling Liquid Wetting of Textured Surfaces using Ultrasound
Source: Brigham Young University,
Role: PI, Co-PIs: None 11/1/2018 – 12/31/2019
Amount: $55K

G6 Title: Controlling Liquid Wetting of Textured Surfaces using Ultrasound
Source: NSF, Award Number: 1361919,
Role: Co-PI, PI: N. Crane 01/01/2015 – 10/31/2018
Amount: $375K

G7 Title: I-Corps: An Individualized 3D Printed Silicone Bottle Nipple
Source: NSF, Award Number: 1838368,
Role: PI, Co-PI: None 07/01/2018 – 12/31/2018
Amount: $50K

G8 Title: Large Stroke Microscale Actuators Based on Electrowetting
Source: NSF, Award Number: 1130755,
Role: Co-PI, PI: N. Crane 08/01/2011 – 07/31/2017
Amount: $390K

G9 Title: Microfluidic-Acoustic Biosensing-Multicell Tumoroid (MABMCT) Platform Targeting TME
Source: Florida Department of Health,
Role: Co-PI, PI: S. Mohapatra 04/01/2016 – 03/31/2017
Amount: $100K

G10 Title: EAGER: A Surface Acoustic Wave Device for High-Resolution Atherosclerotic Plaque Inspection
Source: NSF, Award Number: 1135419,
Role: PI, Co-PIs: None 08/01/2011 – 07/31/2014
Amount: $200K

G11 Title: Acoustic Emission on a Chip (AECHIP)
Source: WavesinSolids LLC (through NSF)
Role: PI, Co-PIs: J. Wang 01/01/2013 – 12/31/2013
Amount: $130K (excluding the $300K received by industry partner)

G12 Title: A Novel, Low Cost, Ultra-sensitive Nanosensor for Early Detection of Ovarian Cancer
Source: Florida Department of Health, Award Number: 1BN-04,
Role: PI, Co-PIs: P. Kruk, N. Gallant 07/01/2010 – 06/30/2013
Amount: $400K

PUBLICATIONS (as of July 2022, Google Scholar Citations: 1831, h-index: 25, i-10 index: 36)

(i) Patents (8 Issued, 2 Pending)

** Students supervised in my research group are underlined*

P1 J. Cotter and **R. Guldiken**, "Cost-Effective Bulk Glass Reinforced Composite Columns," U.S. Patent Application 17,675,096, Filed: February 02, 2022, Patent Pending

P2 M. C. Wang, and **R. Guldiken**, "Metals-based Additive Manufacturing Methods and Systems with Thermal Monitoring and Control," U.S. Patent Application 17,388,772, Filed: July 29, 2021, Patent Pending

P3 J. Cotter and **R. Guldiken**, "Arc Melted Glass Piles for Structural Foundations," U.S. Patent 11,021,846, Filed: September 13, 2019, Issued: June 1, 2021

P4 S. S. Mohapatra, S. Mohapatra, **R. Guldiken**, R. Nair and T. Wang, "System and Method of Measuring Cell Viability and Growth," U.S. Patent 11,016,062, Filed: December 20, 2019, Issued: May 25, 2021

P5 S. S. Mohapatra, S. Mohapatra, **R. Guldiken**, R. Nair and T. Wang, "System and Method of Measuring Cell Viability and Growth," U.S. Patent 10,520,472, Filed: August 21, 2017, Issued: December 31, 2019

P6 G. Mumcu, **R. Guldiken,** and A. Gheethan, "Microfluidic Beam Scanning Focal Plane Arrays," U.S. Patent 10,454,166, Filed: July 6, 2017, Issued: October 22, 2019

P7 **R. Guldiken**, M. C. Jo and J. Zhe, "Two-Stage Microfluidic Device for Acoustic Particle Manipulation and Methods of Separation," U.S. Patent 9,821,310, Filed: March 30, 2012, Issued: November 21, 2017

P8 G. Mumcu, **R. Guldiken,** and A. Gheethan, "Microfluidic Beam Scanning Focal Plane Arrays," U.S. Patent 9,716,313, Filed: July 7, 2014, Issued: July 25, 2017

P9 G. Mumcu, T. Palomo and **R. Guldiken**, "Dynamically Reconfigurable Bandpass Filters," U.S. Patent 9,325,047, Filed: March 11, 2014, Issued: April 26, 2016

P10 **R. Guldiken** and J. Martinez Garcia, "Active ultrasonic method of quantifying bolt tightening and loosening," U.S. Patent 9,127,998, Filed: September 3, 2013, Issued: September 8, 2015

(ii) Refereed Journal Publications (46 Published, 3 Under-review)

** Students supervised in my research group are underlined*

J1 K. Ettini, J. Cotter, and **R. Guldiken**, "Analytical, Simulation, and Experimental Verification of Acoustic Thermometry Technique" *Applied Acoustics*, Under-review, 2022

J2 J. Cotter and **R. Guldiken**, "Bulk Glass Reinforced Composite Columns: Physical Testing Results, Analysis, and Discussion," *Journal of Composites, Part B*, Under-review, 2022

J3 R. Clark, A. Kaw, and **R. Guldiken**, "Do Metacognitive Instruction and Repeated Reflection Improve Outcomes?" *Journal of STEM Education*, Under-review, 2022

J4 S. Alhumaid, D. Hess, and **R. Guldiken**, "A Noncontact Magneto-Piezo Harvester-Based Vehicle Regenerative Suspension System: An Experimental Study," *Energies*, vol 15 (12), 4476, 2022

J5 J. Cotter, J. Wang, and **R. Guldiken**, "Intrinsically Patterned Electrical Systems: Physical Requirements and Experimental Demonstration," *Microsystem Technologies*, 27(1), pp. 307-314, 2021

J6 S. Alhumaid, D. Hess and **R. Guldiken**, "Energy Regeneration from Vehicle Unidirectional Suspension System by a Non-contact Piezo-magneto Harvester," *Engineering Research Express*, 3 (1), 015033, 2021

J7 J. Cotter, and **R. Guldiken**, "Vertical Manipulation of Fluids through Electrostatic Formation: Model Development and Experimental Validation," *Microsystem Technologies*, vol. 26 (4), pp. 1301-1315, 2020

J8 J. Cotter, and **R. Guldiken**, "Cost-Effective Bulk Glass Reinforced Composite Columns," *Journal of Composite Sciences*, vol. 4(2), no:47, 2020

J9 H. Alhazmi, and **R. Guldiken**, "Contactless Liquid Height and Property Estimation Using Surface Acoustic Waves," *Acoustics*, vol 2 (2), pp. 366-381, 2020

J10 J. Cotter, and **R. Guldiken**, "Theoretical Design Strategies, Strengths, Costs, and Environmental Impacts of Triple Composite Beams Utilizing Glass Compressive Reinforcement," *Journal of Composite Sciences*, vol. 4 (1), no:22, 2020

J11 M. Belaed, M.M. Rahman, and **R. Guldiken**, "Influence of Optical Thickness on the Melting of a Phase Change Material in a Thermal Energy Storage Module," *Journal of The Minerals, Metals & Materials Society (TMS)*, vol. 71, pp. 2089-2095, 2020

J12 M. Trapuzzano, N.B. Crane, **R. Guldiken** and A. Tejada-Martinez, "Wetting Metamorphosis of Hydrophobic Fluoropolymer Coatings Submerged in Water and Ultrasonically Vibrated" *Journal of Coatings Technology and Research*, vol. 17, pp. 633-642, 2020

J13 M. Trapuzzano, A. Tejada-Martinez, **R. Guldiken** and N.B. Crane, "Volume and Frequency-Independent Spreading of Droplets Driven by Ultrasonic Surface Vibration" *Fluids*, vol 5 (1), 18, 2020

J14 T. Wang, R. Murphy, J. Wang, S. Mohapatra, and S.S. Mohapatra, and **R. Guldiken**, "Perturbation Analysis of a Multiple Guiding Layer Surface Acoustic Wave-based Sensor in a Viscoelastic Environment," *Sensors*, vol 19 (20), 4553, 2019

J15 S. Asoda, and **R. Guldiken**, "Simulation and Optimization of a Sheathless Size-Based Acoustic Particle Separator," *Microsystem Technologies*, vol 25, pp. 2793-2804, 2019

J16 H. Alhazmi, and **R. Guldiken**, "Contactless Quantification of Bolt Tension by Surface Acoustic Waves," *Acoustics*, vol 1 (4), pp. 794-807, 2019

J17 S. Shevade, M. Rahman and **R. Guldiken**, "Optimization of Turbulent Air Jet Impingement for Energy Efficient Commercial Cooking" *Energy Procedia*, vol 160, pp. 691-698, 2019

J18 T. Wang, R. Green, **R. Guldiken**, S. Mohapatra and S.S. Mohapatra, "Multiple-Layer Guided Surface Acoustic Wave (SAW)-based pH Sensing in Longitudinal FiSS-Tumoroid Cultures," *Biosensors and Bioelectronics*, vol 124, pp. 244-252, 2019

J19 T. Wang, R. Green, **R. Guldiken**, J. Wang, S. Mohapatra, and S.S. Mohapatra, "Finite Element Analysis for Surface Acoustic Wave Device Characteristic Properties and Sensitivity," *Sensors*, vol 19 (8), 1749, 2019

J20 A. Manasrah, M. Hojatmadani, **R. Guldiken**, and K. Reed, "Computational Analysis of Asymmetrically Applied Hot and Cold Stimuli," *International Journal of Engineering Research and Innovation*, vol 11 (2), pp.18-27, 2019

J21 S. Padilla, E. Tufekcioglu, and **R. Guldiken**, "Simulation and Verification of Polydimethylsiloxane (PDMS) Channels on Acoustic Microfluidic Devices," *Microsystem Technologies*, vol. 24, pp. 3503-3512, 2018

J22 T. Wang, Q. Ni, N. Crane, and **R. Guldiken**, "Surface Acoustic Wave based Pumping in a Microchannel," *Microsystem Technologies*, vol. 23, pp. 1335-1342, 2017

J23 A. Manasrah, N. Crane, **R. Guldiken** and K. Reed, "Perceived Constant Cooling Using Asymmetrically - Applied Hot and Cold Stimuli*" IEEE Transactions on Haptics,* vol. 10, pg.75-83, 2017

J24 A. Dey, **R. Guldiken** and G. Mumcu, "Microfluidically Reconfigured Wideband Frequency Tunable Liquid Metal Monopole Antenna" *IEEE Transactions on Antennas and Propagation*, vol 6, pp. 2572-2577, 2016

J25 T. Wang, R. Green, R.R. Nair, M. Howell, S. Mohapatra, **R. Guldiken** and S.S. Mohapatra, "Surface Acoustic Waves (SAW)-Based Biosensing for Quantification of Cell Growth in 2D and 3D Cultures," *Sensors*, vol 15, pp. 32045-32055, 2015

J26 E. Tridas, J.M. Anthony, **R. Guldiken,** and R. Schlaf, "Enhanced Simulation of an RF Ion Funnel including Gas Turbulence" *Journal of Mass Spectroscopy*, vol 50, pp. 206-211, 2015

J27 M. Jo, and **R. Guldiken,** "Particle Manipulation by Phase-shifting of Surface Acoustic Waves," *Sensors and Actuators A,* vol 207, pp. 39-42, 2014

J28 O. Onen, and **R. Guldiken,** "Investigation of Guided Surface Acoustic Wave Sensors by Analytical Modeling and Perturbation Analysis," *Sensors and Actuators A,* vol 205, pp.38-46, 2014

J29 M. Jo, and **R. Guldiken**, "Effects of Polydimethylsiloxane (PDMS) Microchannels on Surface Acoustic Wave-based Microfluidic Devices," *Microelectronic Engineering*, vol 113, pp. 98-104, 2014

J30 M. Jo, and **R. Guldiken**, "Dual Surface Acoustic Wave-based Active Mixing in a Microfluidic Channel," *Sensors and Actuators A*, vol 196*,* pp. 1-7, 2013

J31 N. B. Crane, O. Onen, J. Carballo, Q. Ni, and **R. Guldiken**, "Fluidic Assembly at the Microscale: Progress and Prospects," *Microfluidics and Nanofluidics*, vol 14, pp. 383-419, 2013

J32 A. Gheethan, M. Jo, **R. Guldiken** and G. Mumcu, "Microfluidic Based Ka-Band Beam Scanning Focal Plane Array," *IEEE Antennas and Wireless Propagation Letters*, vol 12, pp. 1638-1641, 2013

J33 J. Martinez, A. Sisman, O. Onen, D. Velasquez, and **R. Guldiken,** "A Synthetic Phased Array Surface Acoustic Wave Sensor for Quantifying Bolt Tension," *Sensors,* vol 12, pp. 12265-12278, 2012

J34 M. Jo, and **R. Guldiken**, "Active Density-based Separation using Standing Surface Acoustic Waves," *Sensors and Actuators A*, vol 187, pp. 22-28, 2012

J35 O. Onen, A. Ahmad, **R. Guldiken,** and N. Gallant, "Surface Modification on Acoustic Wave Biosensors for Enhanced Specificity," *Sensors, vol 12,* pp. 12317-12328, 2012

J36 O. Onen, A. Sisman, N. Gallant, P. Kruk, and **R. Guldiken,** "Urinary Bcl-2 Surface Acoustic Wave Biosensor for Early Ovarian Cancer Detection," *Sensors,* vol 12, pp. 7423-7437, 2012

J37 O. Onen, and **R.O. Guldiken,** "Detailed Investigation of Capacitive Micromachined Ultrasonic Transducer Design Space," *Microsystem Technologies,* vol 18, pp. 399-408, 2012

J38 **R.O. Guldiken,** M.C. Jo, N.D. Gallant, U. Demirci and J. Zhe, "Sheathless Size-Based Acoustic Particle Separation," *Sensors*, vol 12, pp. 905-922, 2012

J39 F. Xu, T. D. Finley, M. Turkaydin, Y. Sung, U.A. Gurkan, **R.O. Guldiken**, and U. Demirci "The Assembly of Cell-Encapsulating Microscale Hydrogels using Acoustic Waves." *Biomaterials*, vol 32, pp. 7847-7855, 2011

J40 O. Onen, L.O. Davis, C. Nelson, and **R.O. Guldiken,** "Thermal Stresses on Membrane Based Microdevices," *Microsystem Technologies*, vol 16, pp. 1967-1973, 2010

J41 **R.O. Guldiken**, J. Zahorian, F. Yamaner, and F.L. Degertekin, "Dual Electrode CMUTs with Non-Uniform Membranes for High Electromechanical Coupling Coefficient and High Bandwidth Operation," *IEEE Transactions on Ultrasonics Ferroelectrics and Frequency Control*, vol. 56, pp. 1270-1276, 2009

J42 **R.O. Guldiken**, M. Balantekin, J. Zahorian, and F.L. Degertekin, "Characterization of Dual-Electrode CMUTs: Demonstration of Improved Performance and Pulse-Echo Operation with Dynamic Membrane Shaping," *IEEE Transactions on Ultrasonics Ferroelectrics and Frequency Control*, vol. 55, pp. 2336-2344, 2008

J43 **R.O. Guldiken**, P. Makaram, K. Bakhtari, J. Park, and A.A. Busnaina, "Nanoparticle Scanning and Detection on Flat and Structured Surfaces Using Fluorescence Microscopy," *Microscopy Research and Technique,* vol. 70, pp. 534-538, 2007

J44 **R.O. Guldiken**, J. McLean, and F.L. Degertekin, "CMUTS with Dual-electrode Structure for Improved Transmit and Receive Performance," *IEEE Transactions on Ultrasonics Ferroelectrics and Frequency Control,* vol. 53, pp. 483-491, 2006

J45 F.L. Degertekin, **R.O. Guldiken**, and M. Karaman, "Annular-Ring CMUT Arrays for Forward-Looking IVUS: Transducer Characterization and Imaging," *IEEE Transactions on Ultrasonics Ferroelectrics and Frequency Control,* vol. 53, pp. 474-482, 2006

J46 K. Bakhtari, **O. Guldiken**, A.A. Busnaina, and J.G. Park, "Experimental and Analytical Study of Submicrometer Particle Removal from Deep Trenches," *Journal of the Electrochemical Society,* vol. 153, pp. 603-607, 2006

J47 K. Bakhtari, **O. Guldiken**, P. Makaram, A.A. Busnaina, and J. G. Park, "Experimental and Numerical Investigation of Nanoparticle Removal Using Acoustic Streaming and the Effect of Time," *Journal of the Electrochemical Society,* vol. 153, pp. 846-850, 2006

J48 A.G. Onaran, M. Balantekin, W. Lee, W.L. Hughes, B.A. Buchine, **R.O. Guldiken**, Z. Parlak, C.F. Quate, and F.L. Degertekin, "A New Atomic Force Microscope Probe with Force Sensing Integrated Readout and Active Tip," *Review of Scientific Instruments,* vol. 77, 023501, 2006 (Also in *Virtual Journal of Nanoscale Science & Technology*, Volume 13, Issue 7

J49 **O. Guldiken**, K. Bakhtari, A. Busnaina, and J. Park, "Metrology and Removal of Nanoparticles from 500 microns Deep Trenches," *Journal of Solid State Phenomena,* vol. 103-104, pp. 137-140, 2005

(iii) Invited Book Chapters (2)

** Students supervised in my research group are underlined*

B1. N.B. Crane, J. Carballo, Q. Ni, O. Onen and **R. Guldiken** (2013). Assembly, Fluidic-Assisted. In. D. Li (Ed.) *Encyclopedia of Microfluidics and Nanofluidics, 2nd Edition*. Germany: Springer

B2. **R. Guldiken** and O. Onen (2012). MEMS Ultrasonic Transducers for Biomedical Applications. In S. Bhansali and A. Vasudev (Eds.) *MEMS for Biomedical Applications* (pp.120-149). Cambridge, UK: Woodhead Publishing

(iv) Conference Publications/Presentations (70)

** Students supervised in my research group are underlined*

C1 S. Alhumaid, D. Hess and **R. Guldiken**, "A Noncontact Magneto-Piezo Harvester-Based Vehicle Regenerative Suspension System: An Experimental Study" ASME IMECE 2022- 96938, Colombus, Ohio

C2 K. Ettini, J. Cotter and **R. Guldiken**, "Employing Contactless Acoustic Thermometry for Additive Manufacturing: An Experimentally Verified Simulation Study" ASME IMECE 2022-95434, Colombus, Ohio

C3 R. Clark, A. Kaw, and **R. Guldiken**, "Do Metacognitive Instruction and Repeated Reflection Improve Outcomes?" Proceedings of the ASEE Annual Conference 2022, Minneapolis, Minnesota

C4 R. Clark, A. Kaw, and **R. Guldiken**, "Use of Metacognitive Skills Instruction and Repeated Reflection in a Fluid Mechanics Course to Enhance Outcomes." 2022 American Association for the Advancement of Science (AAAS) Improving Undergraduate STEM Education (IUSE) Summit, Washington, DC

C5 J. Cotter, T. Sayers, and **R. Guldiken**, "Wide Spread of the Acoustical Wavefront of Low Frequency Transducers Utilized for Concrete Inspection" 2022 Eighth World Conference on Structural Control and Monitoring (8WCSCM), Orlando, FL

C6 J. Cotter, T. Sayers, and **R. Guldiken**, "Optimized Wheel Probe for Inspection of Delamination in Highly Attenuating Thick Materials" 2021 Florida Chapter Meeting of Acoustical Society of America, Gainesville, FL

C7 J. Cotter and **R. Guldiken**, "Remote Versus In-Class Active Learning Exercises for an Undergraduate Course in Fluid Mechanics" 2021 ASEE Annual Conference Proceedings, Virtual

C8 C. Garcia, and **R. Guldiken**, "Active Remote Learning or Active No More Learning? A Lessons Learned from an Undergraduate STEM Course in Fluid Mechanics" STEMPowered 2020, Virtual

C9 H. Alhazmi, and **R. Guldiken**, "An Experimental Study of Contactless Fluid Height Estimation Using Surface Acoustic Waves" ASME IMECE 2020-56127, Virtual

C10 J. Cotter, and **R. Guldiken**, "The Utilization of Glass as a Cost-Effective, Compressive Compositing Material in Structural Applications; Finite Element Modeling and Physical Testing" ASME IMECE 2020-56343, Virtual

C11 S. Alhumaid, D. Hess and **R. Guldiken**, "Rotational Energy Harvesting Based on an Integrated Magnetic and Piezoelectric Pair" ASME IMECE 2020-56337, Virtual

C12 M. Trapuzzano, N. Crane, **R. Guldiken** and A. Tejada-Martinez, "Driving Wetting Transitions on Textured Surface Using Ultrasonic Vibration," ASME IMECE 2020-84652, Virtual

C13 M. Al Busaidi, C Garcia, C. Brown, and **R. Guldiken**, "Towards Flipping the Undergraduate Fluid Mechanics Class" ASME IMECE 2019-13944, Salt Lake City, Utah

C14 J. Cotter, N.B. Crane and **R. Guldiken**, "Digitally Defined Patterns for Manufacturing by Utilizing Point-Patterning" ASME IMECE 2019-11525, Salt Lake City, Utah

C15 H. Alhazmi and **R. Guldiken**, "Simulation and Optimization of a Surface Acoustic Wave Transducer for Contactless Bolt Tension Quantification" ASME IMECE 2019-11517, Salt Lake City, Utah

C16 M. Trapuzzano, A. Tejada-Martinez, **R. Guldiken** and N. B. Crane "Controllable Spreading of Microliter-Sized Liquid Droplets Using Ultrasonic Vibration" ASME IMECE 2019-11966, Salt Lake City, Utah

C17 S. S. Shevade, M. Rahman and, **R. Guldiken**, "Turbulent Multi-Jet Impingement for Applications in Commercial Cooking" ASME IMECE 2018-88635, Pittsburgh, PA

C18 S. S. Shevade, M. Rahman and, **R. Guldiken**, "Analysis and Optimization of Controlling Parameters during Impingement of Single Un-bound Jet" Turbulence, Heat and Mass Transfer (THMT-18), Rio de Janeiro, Brasil

C19 M. Trapuzzano, A. Tejada-Martinez, **R. Guldiken**, and N. B. Crane "Control of Droplet Spreading On Ultrasonically Vibrated Hydrophobic Surfaces" APS Division of Fluid Dynamics (DFD) 2018, Atlanta, GA

C20 M. Trapuzzano, N. B. Crane, **R. Guldiken** and A. Tejada-Martinez, "Forced Wetting of Liquids using Ultrasonic Surface Vibration" ASME IMECE 2018-87832, Pittsburgh, PA

C21 M. Trapuzzano, **R. Guldiken**, A. Tejada-Martinez, and N. B. Crane "Degradation of Hydrophobic Surface Coatings under Water Exposure" ASME IMECE 2018-87860, Pittsburgh, PA, *Best Oral Presentation Award*

C22 M. Hojatmadani, M. Hardy, A. Manasrah, **R. Guldiken**, and K. Reed, "Heat Flux Characteristics of Asymmetrically Heated and Cooled Thermal Stimuli" ASME IMECE 2017-71995, Tampa, FL

C23 A. Manasrah, N. Crane, **R. Guldiken** and K. Reed, "Asymmetrically Applied Hot and Cold Stimuli gives Perception of Constant Heat" 2017 IEEE World Haptics Conference, 484-489, Munich, Germany

C24 F. Moloney, C. Wickramaratne, E. Almatrafi, D.Y. Goswami, E. Stefanakos, and **R. Guldiken,** "Experimental Study on Thermal Storage Performance of Cylindrically Encapsulated PCM in a Cylindrical Storage Tank with Axial Flow" ASME IMECE 2016-65730, Houston, TX

C25 M. Trapuzzano, K. Pierre, E. Tufekcioglu, **R. Guldiken**, A. Tejada-Martinez and N.B. Crane, "Comparison of Simulated and Measured Fluid Surface Oscillation Frequencies in a Cylindrical Tube," American Physical Society, Division of Fluid Dynamics, 2016, Portland, OR

C26 J. Cooper, **R. Guldiken,** and N. Gallant, "Spatial Manipulation And Patterning of Micro-Particles and Biological Cells using Acoustic Forces" BMES 2015, Tampa, FL

C27 F. Khalili, F.D. Paoli, and **R. Guldiken**, "Impact Resistance of Liquid Body Armor Utilizing Shear Thickening Fluids: A Computational Study" ASME IMECE 2015-53376, Houston, TX

C28 A. Gheethan, **R. Guldiken,** and G. Mumcu, "Microfluidic Enabled Beam Scanning Focal Plane Arrays," IEEE International Symposium on Antennas and Propagation, Paper#3804, 2013, Orlando, FL

C29 A. Dey, **R. Guldiken** and G. Mumcu, "Wideband Frequency Tunable Liquid Metal Monopole Antenna," IEEE International Symposium on Antennas and Propagation, Paper#3944, 2013, Orlando, FL (Student Paper Finalist)

C30 O. Onen, A. Sisman, P. Kruk and **R. Guldiken**, "A Urinary Biosensor for Early Stage Ovarian Cancer Detection: Experimental Characterization," ASME IMECE 2012-87850, Houston, TX

C31 J. Martinez, O. Onen, A. Sisman, and **R. Guldiken**, "An Ultrasonic Method to Estimate Tension in Bolted Joints," ASME IMECE 2012-87864, Houston TX

C32 G. Manohar, O. Onen, and **R. Guldiken**, "Performance and Sensitivity Comparison of Shear Horizontal Surface Acoustic Wave, Love Wave, Surface Skimming Bulk Acoustic wave and Surface Transverse Wave Sensors," ASME IMECE 2012-87879, Houston, TX

C33 J. Cooper, O. Onen, N. Gallant and **R. Guldiken**, "Spatial Bio-Particle Manipulation Using Acoustic Radiation Force," ASME IMECE 2012-88229, Houston, TX

C34 O. Onen and **R. Guldiken**, "Introduction of Microfluidics to Undergraduate Fluid Mechanics Course," ASEE Annual Conference, 2012-3059, San Antonio, TX

C35 A. Sisman, J. Martinez, and **R. Guldiken**, "A Novel Ultrasonic Method to Quantify Pressure in Bolted Joints," International Symposium on Ultrasound in the Control of Industrial Processes (UCIP), 2012, Madrid, Spain

C36 O. Onen, P. Kruk and **R. Guldiken**, "Design of Urinary Biomarker Sensor for Early Ovarian Cancer Detection," ASME IMECE 2011-62818, Denver, CO

C37 A. Ahmad, O. Onen, **R. Guldiken,** and N. Gallant, "Surface Functionalization of an Ovarian Cancer Diagnostic Biosensor," ASME IMECE 2011-64311, Denver, CO

C38 N. Crane, Q. Ni, and **R. Guldiken**, "Ultrasonic Excitation Induced Wenzel to Cassie Transition," ASME IMECE 2011-64391, Denver, CO

C39 O. Onen and **R. Guldiken**, "Detailed Investigation of Capacitive Micromachined Ultrasound Transducer Design Space for Optimal Operation," ASME IMECE 2011-62816, Denver, CO

C40 M.C. Jo and **R. Guldiken**, "Two-stage Microfluidic Device for Acoustic Particle Manipulation," SPIE Smart Biomedical and Physiological Sensor Technology VIII, 2011, Orlando, FL

C41 M.C. Jo and **R. Guldiken**, "Label-free Cell Separation using Surface Acoustic Waves," IEEE Engineering in Medicine and Biology Society (EMBC), 2011, Boston, MA

C42 M.C. Jo and **R. Guldiken**, "An Acoustic Microfluidic Platform for Size and Density-Based Cell Separation," IEEE International Ultrasonics Symposium, 2011, Orlando, FL

C43 **R. Guldiken,** O. Onen, M. Gul, and F. N. Catbas, "A Structural Health Monitoring System with Ultrasonic MEMS Transducers" SPIE Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace, 2011, San Diego, CA

C44 O. Onen, P.Kruk and **R.O. Guldiken**, "A MEMS Ultrasonic Sensor Design for Early Detection of Ovarian Cancer," SPIE Microfluidics, BioMEMS, and Medical Microsystems IX, 2011, San Francisco, CA

C45 **R. Guldiken**, O. Onen. L.O. Davis, M. Gul and F. N. Catbas "A Non-Destructive Ultrasonic MEMS Structural Health Monitoring System" ASCE Engineering Mechanics Institute (EMI), 2010, Los Angeles, CA

C46 O. Onen, L.O. Davis, R. Sen, and **R.O. Guldiken,** "An Ultrasonic MEMS Corrosion Monitoring System for Bridge Piles in Tidal Waters," ASME IMECE 2010-40554, Vancouver, Canada

C47 O. Onen, L.O. Davis, C. Nelson, and **R.O. Guldiken,** "Effect of Fabrication-related Thermal Stresses on the Operation of Membrane-based MEMS Devices," ASME IMECE 2010-40558, Vancouver, Canada

C48 **R. Guldiken**, J. Zahorian, M. Balantekin, F.L. Degertekin, "Dual-electrode CMUT Optimization for CMUTs with Uniform and Non-uniform Membranes," IEEE Ultrasonics Symposium, 2008, Beijing, China

C49 J. Zahorian, **R. Guldiken**, G. Gurun, M.S. Qureshi, M. Balantekin, P. Hasler, F.L. Degertekin, "Single-Chip CMUT Arrays with Integrated CMOS Electronics: Fabrication Process Development and Experimental Results," IEEE Ultrasonics Symposium, 2008, Beijing, China

C50 G. Gurun, M.S. Qureshi, M. Balantekin, **R. Guldiken**, J. Zahorian, S. Peng, A. Basu, M. Karaman, P. Hasler, F.L. Degertekin, "Front-end CMOS Electronics for Monolithic Integration with CMUT Arrays: Circuit Design and Initial Experimental Results," IEEE Ultrasonics Symposium, 2008,

Beijing, China

C51 **R.O. Guldiken**, J. Zahorian, M. Balantekin, M. Karaman, and F. L. Degertekin, "Multiple Annular Ring Capacitive Micromachined Ultrasonic Transducer Arrays for Forward-looking Intravascular Ultrasound Imaging Catheters" ASME IMECE 2007-42493, Seattle, WA

C52 **R. O. Guldiken**, J. Zahorian, M. Karaman, and F. L. Degertekin, "Dual Electrode Capacitive Micromachined Ultrasonic Transducer Array for 1-D Intracardiac Echocardiography (ICE)," ASME IMECE 2007-42480, Seattle, WA

C53 **R. Guldiken**, J. Zahorian, M. Balantekin, and F. L. Degertekin, "Design and Experimental Characterization of Dual-Electrode CMUT Array for Intra-Cardiac Ultrasound Imaging," IEEE Ultrasonics Symposium, 2007, New York, NY

C54 **R. O. Guldiken**, J. Zahorian, G. Gurun, M. S. Qureshi, M. Balantekin, P. E. Hasler, M. Karaman, S. Carlier, and F. L. Degertekin, "Forward-looking IVUS Imaging Using a Dual-Annular-Ring CMUT Array: Experimental Results," IEEE Ultrasonics Symposium, 2007, New York, NY (Best Student Paper Award)

C55 J. Zahorian, **R. O. Guldiken**, G. Gurun, M. S. Qureshi, M. Balantekin, S. Carlier, M. Karaman, and F. L. Degertekin, "Annular CMUT Arrays for Side Looking Intravascular Ultrasound Imaging," IEEE Ultrasonics Symposium, 2007, New York, NY

C56 F. L. Degertekin, P. E. Hasler, M. Balantekin, M. Karaman, A. Basu, **R. Guldiken**, G. Gurun, P. Sheng-Yu, M. S. Qureshi, and J. Zahorian, "Design Optimization and Integrated Electronics for Dual Electrode CMUTs," IEEE Ultrasonics Symposium, 2007, New York, NY

C57 **R. Guldiken**, J. Zahorian, M. Balantekin, F. L. Degertekin, C. Tekes, A. Sisman, and M. Karaman, "Dual-Annular-Ring CMUT Array for Forward-Looking IVUS Imaging," IEEE Ultrasonics Symposium, 2006, Vancouver, Canada

C58 P. Sheng-Yu, M. S. Qureshi, A. Basu, **R. O. Guldiken**, F. L. Degertekin, and P. E. Hasler, "Floating-Gate Based CMUT Sensing Circuit Using Capacitive Feedback Charge Amplifier," IEEE Ultrasonics Symposium 2006, Vancouver, Canada

C59 **R. O. Guldiken**, M. Balantekin, and F. L. Degertekin, "Analysis and Design of Dual-electrode CMUTs," IEEE Ultrasonics Symposium, 2005, Rotterdam, Netherlands (Best Student Paper Award)

C60 F. L. Degertekin, M. Karaman, and **R. O. Guldiken**, "Forward-looking IVUS Imaging Using an Annular-ring CMUT Array," IEEE Ultrasonics Symposium, 2005, Rotterdam, Netherlands

C61 F. L. Degertekin, **R. Guldiken**, and M. Karaman, "Micromachined Capacitive Transducer Arrays for Intravascular Ultrasound Imaging," SPIE Symposium on MOEMS Display and Imaging Systems, Special Session on Bioimaging, 2005, San Francisco, CA **(Invited)**

C62 **R. O. Guldiken** and F. Levent Degertekin, "Micromachined Capacitive Transducer Arrays for Intravascular Ultrasound Imaging," IEEE MEMS, 2005, Miami, FL

C63 J. McLean, **R. O. Guldiken**, and F. L. Degertekin, "CMUTs with Dual-electrode Structure for Improved Transmit and Receive Performance," IEEE Ultrasonics Symposium, 2004, Montreal, Canada

C64 N. A. Hall, **R. Guldiken**, J. McLean, and F. L. Degertekin, "Modeling and Design of CMUTs Using Higher-Order Vibration Modes," IEEE Ultrasonics Symposium, 2004, Montreal, Canada

C65 K. Bakhtari, **O. Guldiken**, A. A. Busnaina, and J. Park, "Removal of Nano-Particles Using Pulsating Flow in Micro-Scale Trenches," 28th Annual Meeting of the Adhesion Society, 2005, Mobile, AL

C66 K. Bakhtari, **O. Guldiken**, P. Makaram, A. A. Busnaina and J. Park **"**Nano-Scale Particle Removal Using High-Frequency Acoustic Streaming," 28th Annual Meeting of the Adhesion Society, 2005, Mobile, AL

C67 K. Bakhtari, **R.O. Guldiken**, A. A. Busnaina and J. Park "Experimental and Modeling Study of Submicron Particle Removal from Deep Trenches," 10th International CMP MIC Conference, 2005**,** Fremont, CA

C68 **O. Guldiken**, A.A**.** Busnaina, J. Park, G. Zhang, and F. Eschbach, "Metrology and Removal of Nanoparticles from EUV Substrates," 3rd International Symposium on Extreme Ultraviolet Lithography, 2004, Miyazaki, Japan

C69 **O. Guldiken**, A. A. Busnaina and J. Park, "The Removal of Submicron Particles from 500 Micron Deep Trenches," Sematech International Wafer Clean & Surface Prep Conference, 2004, Austin, Texas

C70 A. A. Busnaina, **O. Guldiken**, and J. Park, "Metrology and Removal of Nanoparticles from 500 Micron Deep Trenches," 7th International Symposium on Ultra Clean Processing Of Silicon Surfaces, UCPSS 2004, Brussels, Belgium

INSTRUCTION AND COURSE DEVELOPMENT

** Student assessment of instruction (overall rating of the instructor) are in parenthesis*

- EML3701: Fluid Systems (Total number of students taught: 1740)

  Fall08 (4.47) Spr09 (4.78) Fall09 (4.81) Spr10 (4.85) Fall10 (4.78)
  Spr11 (4.78) Fall11 (4.61) Spr12 (4.79) Fall12 (4.85) Spr13 (4.80)
  Fall13 (4.75) Spr14 (4.84) Spr15 (4.56) Spr16 (4.83) Sum18 (4.64)
  Fall18 (4.79) Sum19 (4.92) Fall19 (4.74) Spr20 (4.73) Sum20 (4.88)
  Fall20 (4.59) Spr21 (4.57, 4.71) Fall21 (4.47) Spr22 (4.47)
  - Made 142 lecture videos freely available on YouTube, including Fundamentals of Engineering (F.E.) exam practice questions; taught the course in a blended modality from 2018 to 2020; teaching the course in a fully-flipped modality since 2020
- EML6713: Advanced Fluid Dynamics (Total number of students taught: 484)

  Fall10 (4.78) Fall11 (4.90) Fall12 (4.62) Fall14 (4.92) Fall15 (4.70)
  Fall16 (4.68) Spr17 (4.67) Fall17 (4.58) Spr18 (4.69) Spr19 (4.48)
  - Taught the course in a blended modality from 2018 to 2019
- EML6069: Advanced Engineering Mathematics (Total number of students taught: 142)

  Spr18 (4.67) Fall18 (4.61) Fall20 (4.68)
  - Made 65 lecture videos freely available on YouTube; taught the course in a blended modality from 2018 to 2019; teaching the course in a fully-flipped modality since 2020
- EGN3343: Thermodynamics (Total number of students taught: 103)

  Sum21 (4.00, 4.25)
  - Made 67 lecture videos freely available on YouTube; teaching the course in a fully-flipped modality since 2021

DISSERTATION AND THESIS COMMITTEE MEMBERSHIP

** Served as a dissertation or thesis committee member for the students listed below*

- Doctoral Dissertation (56)
  - Sanjib Gurung, Ph.D. Candidate in Mechanical Engineering, Major Professor: D. Murphy
  - Zongze Li, Ph.D. Candidate in Mechanical Engineering, Major Professor: D. Murphy
  - Ali Alshamrani, Ph.D. Candidate in Mechanical Engineering, Major Professor: D. Murphy
  - Seyed Zeidi, Ph.D. Candidate in Civil Engineering, Major Professor: A. Tejada-Martinez
  - Asad Elmagarhe, Ph.D. Candidate in Civil Engineering, Major Professor: Q. Lu
  - Ting-Hung Liu, Ph.D. Candidate in Electrical Engineering, Major Professor: J. Wang
  - Ali Aljumah, Ph.D. Candidate in Electrical Engineering, Major Professor: Z. Miao
  - Abdulhakim Alsaif, Ph.D. Candidate in Electrical Engineering, Major Professor: Z. Miao
  - Abdullah Alburidy, Ph.D. Candidate in Electrical Engineering, Major Professor: L. Fan

- Jonas Mendoza, Ph.D. in Electrical Engineering 2022
  Dissertation Title: Mm-Wave Reconfigurable Antenna Arrays, Phase Shifters and Beamforming Networks With Reduced Hardware Complexity Using Integrated Microfluidic Actuation, Major Professor: G. Mumcu
  Current Position: Senior Filter Design Engineer, Qorvo, Inc., NC
- Kyle Cogswell, Ph.D. in Chemical Engineering 2022
  Dissertation Title: Development and Analysis of Green Pathways for Biphasic Extraction of Medically Active Components from Seed Biomass using a Supercritical-Aqueous Solvent Pair, Major Professor: A. Sunol
  Current Position: TBA
- Mehdi Hojatmadani, Ph.D. in Mechanical Engineering 2021
  Dissertation Title: Interrelation of Thermal Stimulation with Haptic Perception, Emotion, and Memory, Major Professor: K. Reed
  Current Position: Senior Thermal Haptic Engineer, Embr Labs, Boston, MA
- Ali Al Dasouqi, Ph.D. in Mechanical Engineering 2021
  Dissertation Title: Formation of Gas Jets and Vortex Rings from Bursting Bubbles: Visualization, Kinematics and Fluid Dynamics, Major Professor: D. Murphy
  Current Position: Consultant, McKinsey & Company, MD
- Mustafa Fincan, Ph.D. in Mechanical Engineering 2021
  Dissertation Title: Sulfate Optimization in the Cement-Slag Blended System, Major Professor: A. Volinsky
- Poonam Lathiya, Ph.D. in Electrical Engineering 2021
  Dissertation Title: Soft Magnetic Composite Substrates for RF/Microwave Applications, Major Professor: J. Wang
  Current Position: Design/Test Engineer, Intel Corporation, AZ
- Abdulrahman Alsolami, Ph.D. in Electrical Engineering 2021
  Dissertation Title: Design and Implementation of Solid/Solid Phononic Crystal Structures in Lateral Extensional Thin-film Piezoelectric on Silicon Micromechanical Resonators, Major Professor: J. Wang
  Current Position: Assistant Professor, King Abdulaziz University, Saudi Arabia
- Sulaiman Almutairi, Ph.D. in Electrical Engineering 2021
  Dissertation Title: Stability Analysis and Operation of Grid-Forming Converters, Major Professor: Z. Miao
  Current Position: Assistant Professor at Prince Sattam bin Abdulaziz University
  Current Position: R&D Engineer, LATICRETE International, CT
- Mohammed Alqahtani, Ph.D. in Electrical Engineering 2021
  Dissertation Title: Phasor Domain Modeling of Type-III Wind Turbines, Major Professor: Z. Miao
  Current Position: Talent Acquisition Manager at Saudi Aramco
- Xu Han, Ph.D. in Electrical Engineering 2021
  Dissertation Title: Piezoelectrically-Transduced ZnO-on-Diamond Resonators with Enhanced Signal-to-Noise Ratio and Power-handling Capability for Sensing and Wireless Communication Applications, Major Professor: J. Wang
  Current Position: Senior Design Engineer Akoustis Technologies, Inc, NC
- Ferhat Karakas, Ph.D. in Mechanical Engineering 2020
  Dissertation Title: Swimming of Pelagic Snails: Kinematics and Fluid Dynamics, Major Professor: D. Murphy
  Current Position: Post-Doc Fellow, University of Florida
- Ahmet Manisali, Ph.D. in Chemical Engineering 2020

Dissertation Title: Isolation of Specific Phospholipids from Nannochloropsis oculata Microalga for Cosmetic Applications, Major Professors: A. Sunol and G. Philippidis
Current Position: Assistant Professor, University of Alabama

- Kawsher Roxy, Ph.D. in Electrical Engineering 2020
  Dissertation Title: Reading and Programming Spintronic Devices for Biomimetic Applications and Fault-tolerant Memory Design, Major Professors: S. Bhanja
  Current Position: Senior Design Automation Engineer, Intel Corporation, OR
- Fatemeh Khorramshahi, Ph.D. in Electrical Engineering 2020
  Dissertation Title: Theory, Fabrication, and Characterization of Perovskite Phototransistor, Major Professors: A. Takshi
  Current Position: Research Scientist, VTT Technical Research Centre of Finland
- Enrique Gonzalez, Ph.D. in Electrical Engineering 2020
  Dissertation Title: Microfluidically Reconfigurable Millimeter-Wave Switches, Beam-Steering Antenna Arrays, and Tunable Bandpass Filters, Major Professors: G. Mumcu
  Current Position: Senior Design Engineer at Qorvo, Inc., FL
- Adnan Zaman, Ph.D. in Electrical Engineering 2020
  Dissertation Title: Piezoelectric Hybrid RF Acoustic Resonators and Arrays with Integrated Capacitive and Piezoelectric Transducers, Major Professor: J. Wang
  Current Position: TBA
- Francesca Moloney, Ph.D. in Mechanical Engineering 2019
  Major Professor: Dr. Yogi Goswami
  Dissertation Title: Solar Thermal Geothermal Hybrid System With a Bottoming Supercritical Organic Rankine Cycle
  Current Position: Innovation Engineer, NextEra Energy Resources, FL
- Eydhah Almatrafi, Ph.D. in Mechanical Engineering 2019
  Dissertation Title: Low-Temperature Multi-Effects Desalination-Mechanical Vapor Compression Powered By Supercritical Organic Rankine Cycle, Major Professor: Y. Goswami
  Current Position: Assistant Professor at King Abdulaziz University
- Anand Santhanakrishna, Ph.D. in Electrical Engineering 2019
  Dissertation Title: Piezoelectric ZnO Nanowires as a Tunable Interface Material for Opto-Electronic Applications, Major Professor: A. Takshi
  Current Position: Senior Engineer, Qualcomm, CA
- Ibrahim Azad, Ph.D. in Electrical Engineering, Defense Chair 2019
  Dissertation Title: Design, Fabrication, and Characterization of Metal-Insulator-Metal Diodes for High-Frequency Rectification, Major Professor: E. Stefanakos
  Current Position: T.D. Module & Integration Yield Engineer, Intel Corporation, OR
- Di Lan, Ph.D. in Electrical Engineering 2018
  Dissertation Title: Development of 3-D Printed Hybrid Packaging for GaAs-MEMS Oscillators based on Piezoelectrically-Transduced ZnO-on-SOI Micromechanical Resonators, Major Professor: J. Wang
  Current Position: R&D MEMS RF Engineer, II-VI Incorporated, NJ
- Denise Lugo, Ph.D. in Electrical Engineering 2018
  Dissertation Title: Multilayer Dielectric Rod Waveguide and Dielectric Rod Antenna with Enhanced Performance, Major Professor: T. Weller
  Current Position: Senior Design Engineer, Qorvo, Inc., NC
- Daniel Romero Rodriguez, Ph.D. in Industrial Engineering, Defense Chair 2018
  Dissertation Title: Physical and Social Systems Resilience Assessment and Optimization, Major Professor: A. Savachkin

Current Position: Professor, Universidad del Norte, Colombia

- Jesudoss Jeyaraj, Ph.D. in Civil Engineering 2018
  Dissertation Title: Evaluation of Self-Consolidating Concrete for Drilled Shafts, Major Professor: A. Mullins
  Current Position: TBA
- Mehdi Zeyghami, Ph.D. in Mechanical Engineering 2017
  Dissertation Title: Development of Structures with Tailored Thermal Radiative Characteristics for Application in Energy Harvesting and Passive Radiative Cooling, Major Professors: Y. Goswami and E. Stefanakos
  Current Position: Senior Mechanical Engineer Pacific Gas and Electric
- Chatura Wickramaratne, Ph.D. in Mechanical Engineering 2017
  Dissertation Title: Experimental Study of High-Temperature Range Latent Heat Thermal Energy Storage, Major Professor: Y. Goswami
  Current Position: Research Engineer Molekule, FL
- Amine Hafsi, Ph.D. in Civil Engineering 2017
  Dissertation Title: Direct numerical simulation of scalar transfer across a wind-driven air-water interface, Major Professor: A. Tejada-Martinez
  Current Position: Project Manager, American Structurepoint, Inc., FL
- Qi Ni, Ph.D. in Mechanical Engineering 2016
  Dissertation Title: Droplet-Based Mechanical Actuation Utilizing Electrowetting Effect, Major Professor: N. Crane
- Abhishek Dey, Ph.D. in Electrical Engineering 2016
  Dissertation Title: Frequency Tunable Antennas and Surface Microwave Imaging System Using Microfluidic Reconfiguration Techniques, Major Professor: G. Mumcu
  Current Position: Principal Electrical Engineer, Skyworks Solutions, Inc., NC
  Current Position: Staff Engineer, Canon Nanotechnologies, TX
- Timothy Palomo, Ph.D. in Electrical Engineering 2016
  Dissertation Title: Microfluidically Reconfigurable Frequency Agile RF Filters with Wide Frequency Tuning Range and High Power Handling Capability, Major Professor: G. Mumcu
  Current Position: Staff Engineer at Resonant Inc., FL
- Jose Carballo, Ph.D. in Mechanical Engineering 2015
  Dissertation Title: Self-Assembly Kinetics of Microscale Components: A Parametric Evaluation, Major Professor: N. Crane
  Current Position: Mechatronics Architect, ASML, NY
- Greeshma Mohan, Ph.D. in Mechanical Engineering 2015
  Dissertation Title: Silicone Elastomer-Based Combinatorial Biomaterial Gradients for High Throughput Screening of Cell-Substrate Interactions, Major Professor: N. Gallant
  Current Position: Senior Medical Writer, Abbott, OR
- Ivan Rivera, Ph.D. in Electrical Engineering 2015
  Dissertation Title: RF MEMS Resonators for Sensing Applications, Major Professor: J. Wang
  Current Position: SPTD Program Integration Lead, Intel, AZ
- Maria Cordoba Erazo, Ph.D. in Electrical Engineering, Defense Chair 2015
  Dissertation Title: Near-field Microwave Microscopy for Surface and Subsurface, Characterization of Materials, Major Professor: T. Weller
  Current Position: Senior Filter Design Engineer, Qorvo Inc., FL
- Tete Tevi, Ph.D. in Electrical Engineering, Defense Chair 2015
  Dissertation Title: Enhancement of Supercapacitor Energy Storage by Leakage Reduction and Electrode Modification, Major Professor: A. Takshi
  Current Position: Instructor at the University of Georgia

- Ashish Chaudhary, Ph.D. in Electrical Engineering, Defense Chair 2014
  Dissertation Title: Miniature Ion Optics Towards a Micro Mass Spectrometer, Major Professor: J. Wang
  Current Position: Founder and CEO Detect-Ion, FL
- Ahmad Gheethan, Ph.D. in Electrical Engineering 2014
  Dissertation Title: Novel Pattern Reconfigurable Antenna Arrays using Engineered Metamaterials and Microfluidic Principles, Major Professor: G. Mumcu
  Current Position: RF/EM Engineering Manager, Skyworks Solutions, Inc, NC
- Saurabh Gupta, Ph.D. in Electrical Engineering, Defense Chair 2014
  Dissertation Title: Miniature Printed Antennas and Filters Using Volumetric Reactive Pins and Lumped Circuit Loadings, Major Professor: G. Mumcu
  Current Position: Design Engineer Manager, Akoustis Technologies, Inc., NC
- Mian Wei, Ph.D. in Electrical Engineering 2014
  Dissertation Title: Development of Electroplated-Ni Structured Micromechanical Resonators for RF Application, Major Professor: J. Wang
  Current Position: Electrical Engineer, Intel, OR
- Rachana Vidhi, Ph.D. in Chemical Engineering, Defense Chair 2014
  Dissertation Title: Organic Fluids and Passive Cooling in a Supercritical Rankine Cycle for Power Generation from Low-Grade Heat Sources, Major Professor: Y. Goswami
  Current Position: Director of Technical Sales, NextEra Energy Resources, FL
- Saeb Besarati, Ph.D. in Chemical Engineering, Defense Chair 2014
  Dissertation Title: Analysis of Advanced Supercritical Carbon Dioxide Power Cycles for Concentrated Solar Power Applications, Major Professor: Y. Goswami
  Current Position: Vice President of Technology, CarbonCapture Inc, CA
- Roozbeh Golshan, Ph.D. in Civil Engineering 2014
  Dissertation Title: Residual-based Variational Multiscale LES with Wall-modeling for Oceanic Boundary Layers in Shallow Water, Major Professor: A. Tejada-Martinez
  Current Position: Data Scientist, C++/Python Developer, Independent Consultant, NJ
- Julio Dewdney, Ph.D. in Electrical Engineering, Defense Chair 2012
  Dissertation Title: Low Loss VHF and UHF filters for Wireless Communications Based on Piezoelectrically Transduced Micromechanical Resonators, Major Professor: J. Wang
  Current Position: Principal Design Engineer, Skyworks Solutions, Inc., NC
- Al-Aakhir Rogers, Ph.D. in Electrical Engineering, Defense Chair 2012
  Dissertation Title: Evanescent Wave Coupling using SW Gratings: Fabrication, Implementation, and Applications, Major Professor S. Bhansali
  Current Position: President and CEO of Rogers Connections, FL
- Qiang Hu, Ph.D. in Mechanical Engineering 2011
  Dissertation Title: Diamond Based Materials: Synthesis, Characterization, and Applications, Major Professor: A. Kumar
  Current Position: TBA
- Christopher Locke, Ph.D. in Electrical Engineering 2011
  Dissertation Title: Stress-Strain Management of Heteroepitaxial Polycrystalline Silicon Carbide Films, Major Professor: S. Saddow
  Current Position: R&D Engineer, Micron Technology, Boise, ID
- Kingsley Lau, Ph.D. Civil Engineering 2010
  Dissertation Title: Corrosion of EpoxyCoated Reinforcement in Marine Bridges with Locally Deficient Concrete, Major Professor: A. Saguez
  Current Position: Associate Professor and Graduate Program Director at FIU

- Master's Thesis (25)
  - Joseph Tarriela, M.S. in Mechanical Engineering 2022
    Thesis Title: Hybrid RANS-LES Hemolytic Power Law Modeling of the FDA Blood Pump, Major Professor: W. Mao
    Current Position: Computational Mechanics Eng II at Raytheon Missiles and Defense, FL
  - Abdullah Akdemir, M.S. in Mechanical Engineering 2021
    Thesis Title: Dynamic Loading Directed Neural Stem Cell Differentiation, Major Professor: S. Zhong
    Current Position: Engineer at General Directorate of Water Management, Turkey
  - Sindhu Reddy Mutra, M.S. in Mechanical Engineering 2021
    Thesis Title: Analysis of Flow Visualization, Size Distribution and Concentration of Aerosols and Its Impact on Covid-19 Infection Risk, Major Professor: D. Murphy
    Current Position: TBA
  - Yunjo Jeong, M.S. in Mechanical Engineering 2020
    Thesis Title: Mitigation of Electromigration in Metal Interconnects Passivated by Ångstrom-Thin 2D Materials, Major Professor: M. Wang
    Current Position: Technical Research Personnel Korea Institute of Science and Technology
  - David Dukeman, M.S. in Mechanical Engineering 2019
    Thesis Title: Device for Imaging Cross-Section of Post-Tensioned Structural Tendons in the Field, Major Professor: A. Saguez
    Current Position: Ph.D. Student, USF
  - Zongze Li, M.S. in Mechanical Engineering 2019
    Thesis Title: Design and Testing of Experimental Langmuir Turbulence Facilities, Major Professor: D. Murphy
    Current Position: Ph.D. Student, USF
  - Ahmet Topcuoglu, M.S. in Mechanical Engineering 2019
    Thesis Title: Design and Testing of a Reciprocating Wind Harvester, Major Professor: D. Murphy
    Current Position: Ph.D. Student, Middle East Technical University, Turkey
  - Dawei She, M.S. in Mechanical Engineering 2018
    Thesis Title: Analysis of Ni and Fe-based Alloys for Turbine Seal Ring Applications, Major Professor: A. Volinsky
    Current Position: TBA
  - Xuan Li, M.S. in Mechanical Engineering 2016
    Thesis Title: Hydrogen Effects on X80 Steel Mechanical Properties Measured by Tensile and Impact Testing, Major Professor: A. Volinsky
    Current Position: Engineer at Micro Materials Inc., FL
  - Federico De Paoli, M.S. in Mechanical Engineering 2015
    Thesis Title: Measuring PDMS Mechanical Properties using Flat Punch Nanoindentation Focusing on Viscoelasticity, Major Professor: A. Volinsky
    Current Position: Project Manager, Goglio S.p.A., Italy
  - Joel Jenkins, M.S. in Mechanical Engineering 2015
    Thesis Title: Viability of Bismuth as a Green Substitute for Lead in Jacketed .357 Magnum Revolver Bullets, Major Professor: S. Wilkinson
    Current Position: Mechanical Engineer, Vanguard Protex Global, FL
  - Peter Griffiths, M.S. in Mechanical Engineering 2014
    Thesis Title: Static and Dynamic Components of Droplet Friction, Major Professor: N. Crane
    Current Position: Ph.D. Candidate, Georgia Tech.
  - Weiwei Xu, M.S. in Mechanical Engineering 2013

Thesis Title: Effect of Bolted Joint Preload on Structural Damping, Major Professor: D. Hess
Current Position: Post-Doc, University of Washington

- Minh Nguyen, M.S. in Mechanical Engineering 2013
  Thesis Title: Reliability Assessment of Ion Contamination Residues on Printed Circuit Board, Major Professor: A. Kumar
  Current Position: Director of Project Strategy, Pall Corporation, FL
- Daniel Perez, M.S. in Mechanical Engineering 2013
  Thesis Title: Shield Design for Maximum Deformation in Shape-Shifting Surfaces, Major Professor: C. Lusk
  Current Position: Project Manager – Global Supply Chain, Cummins Inc., IN
- Maria Echeverria Molina, M.S. in Mechanical Engineering 2012
  Thesis Title: Crack Analysis in Silicon Solar Cells, Major Professor: A. Kumar
  Current Position: Ph.D. Student at University of California, Berkeley
- FNU Atiquzzaman, M.S. in Mechanical Engineering 2012
  Thesis Title: Chemical Mechanical Planarization of Electronic Materials, Major Professors: R. Dubey and A. Kumar
  Current Position: Principal Engineer at Micron Technology, ID
- Seyed Najafi, M.S. in Mechanical Engineering 2012
  Thesis Title: Design and Fabrication of an Actuation Force Measuring Machine, Major Professor: N. Crane
  Current Position: TBA
- Caroline Liberti, M.S. in Mechanical Engineering 2011
  Thesis Title: Self-Alignment of Silicon Microparts on a Hexadecane-Water Interface by Surface Tension, Major Professor: N. Crane
  Current Position: Sales Engineer at Nordex Group, IL
- William Keese, M.S. in Mechanical Engineering 2011
  Thesis Title: A Remotely Operated Multi-Tracked Vehicle for Subterranean Exploration of Gopher Tortoise Burrows, Major Professor: S.Wilkinson
  Current Position: TBA
- Robert Cole, M.S. in Mechanical Engineering 2010
  Thesis Title: Ballistic Penetration of a Sandbagged Redoubt Using Silica Sand and Pulverized Rubber of Various Grain Sizes, Major Professor: S. Wilkinson
  Current Position: Design Engineer, Ferreira Power Group LLC, FL
- Corey Lynch, M.S. in Mechanical Engineering 2010
  Thesis Title: Continuous Electrowetting Actuation Utilizing Current Rectification Properties of Valve Metal Films, Major Professor: N. Crane
  Current Position: Manager of Test Engineering, AST SpaceMobile, FL
- Francy Sinatra, M.S. in Mechanical Engineering 2010
  Thesis Title: "Understanding the Interaction between Blood Flow and an Applied Magnetic Field, Major Professor: R. Dubey
  Current Position: Optomechanical Engineer, Microsoft, WA
- Ajay Rajgadkar, M.S. in Mechanical Engineering 2010
  Thesis Title: Characterization of Dielectric Films for Electrowetting on Dielectric Systems, Major Professor: N. Crane
  Current Position: Senior Research and Development Engineer, IntriPlex, Inc., CA
- Ejiro Ojada, M.S. in Mechanical Engineering 2009
  Thesis Title: Analysis of Mass Transfer by Jet Impingement and Study of Heat Transfer in a Trapezoidal Microchannel, Major Professor: M. Rahman
  Current Position: HSE Engineer Chevron, Nigeria

PROFESSIONAL LEADERSHIP AND SERVICE

- ASME Microelectromechanical Systems (MEMS) Division
  - Past Chair 2020 – 2021
  - Chair 2018 – 2020
  - Vice Chair 2017 – 2018
  - Treasurer 2016 – 2017
  - Program Chair 2015 – 2016
  - Member at Large 2014 – 2015
  - Executive Committee Member 2014 – 2022
- ASME Micro Nano Fluid Dynamics Technical Committee, Fluid Engineering Division
  - Chair 2022 – 2024
  - Vice Chair 2020 – 2022
  - Committee Member 2017 – present
- ASEE Mechanical Engineering Division
  - Member-at-Large 2021 – 2024
  - Committee Member 2017 – present
- Editorial Board, Sensors Journal 2019 – present
- Guest Editor, Sensors Journal
  - Special Issue “Ultrasonic Sensors for Biomedical Applications” 2022
  - Special Issue "Electrostatic Sensors and Actuators" 2020 – 2021
- Track Chair
  - Micro & Nano Fluid Dynamics, ASME Fluid Engineering Division Annual Summer Meeting 2021, 2022
  - Micro- and Nano-Systems Engineering and Packaging, ASME IMECE 2016
- Symposium Chair
  - Microfluidics, ASME IMECE 2022
  - Microfluidics, ASME IMECE 2020
- Topic / Session Chair for several technical sessions in
  - ASME IMECE 2009 – 2022
  - ASME Fluid Engineering Division Annual Summer Meeting 2020 – 2022
  - IEEE EMBC 2011
- External Reviewer for Tenure and Promotion
  - University of Pittsburgh 2022
  - Florida International University 2019
  - Brigham Young University 2018
- National Science Foundation Proposal Panelist
  - Division of Undergraduate Education 2021
  - Chemical, Bioengineering, Environmental, and Transport Systems 2008, 2009 (3), 2010 (2), 2011 (3), 2012, 2013, 2016, 2019 (2), 2020, 2021
  - Graduate Research Fellowship Program 2019, 2020
  - Industrial Innovation and Partnerships 2016 (2), 2017, 2018
  - Emerging Frontiers in Research and Innovation 2011
  - Cyber-enabled Discovery and Innovation 2009
  - Civil, Mechanical and Manufacturing Innovation 2009
- National Defense Science and Engineering Graduate Fellowship Reviewer 2017 – 2022
- KWF Kankerbestrijding (Dutch Cancer Society) Proposal Reviewer 2022
- State of North Carolina Biotechnology Center Proposal Reviewer 2012

- National Institutes of Health Proposal Reviewer 2009
- Invited Textbook New Edition Reviewer
  - Fluid Mechanics: Fundamentals and Applications
    Cengel and Cimbala, 4th Edition, McGraw Hill 2022
  - Fundamentals of Fluid Mechanics
    Munson, Young, Okiishi, 9th edition Wiley 2022
  - Fluid Mechanics
    Hibbeler, Enhanced Online 2nd Edition Pearson 2019
- Journal Paper Reviewer
  - Advances in Engineering Education
  - Analytical Chemistry
  - Applied Sciences
  - Applied Surface Science
  - ASCE Journal of Structural Engineering
  - ASCE Journal of Bridge Engineering
  - ASME Journal of Energy Resources Technology
  - Biomicrofluidics
  - British Journal of Applied Science & Technology
  - Energies
  - IEEE Journal of Microelectromechanical Systems
  - IEEE Sensors
  - IEEE Transactions on Advanced Packaging
  - IEEE Transactions on Electron Devices
  - IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control
  - International Journal of Biomedical Imaging
  - International Journal of Heat and Mass Transfer
  - International Journal of Rotating Machinery
  - Journal of Biosensors & Bioelectronics
  - Journal of Raman Spectroscopy
  - Lab on a Chip
  - Laser Physics
  - Mathematics
  - Micromachines
  - Microsystem Technologies
  - Nanomaterials
  - Nanoscience and Nanotechnology Letters
  - Nature Communications
  - Nature Microsystems and Nanoengineering
  - Non-destructive Testing and Evaluation
  - Physics of Fluids
  - Royal Society of Chemistry Advances
  - Sensors
  - Sensors and Actuators-A Physical
  - Sensors and Actuators-B Chemical
  - Symmetry
  - Ultrasonics Sonochemistry
- Conference Proceeding/Abstract Reviewer
  - ASME IMECE 2009 – 2022

- ASEE Annual Conference 2010, 2012, 2015 – 2022
- ASME Fluid Engineering Division Annual Summer Meeting 2020 – 2022
- IEEE Sensors 2019
- ASME Summer Bioengineering Conference 2009, 2011

INSTITUTIONAL SERVICE

- University-Wide
  - Sloan University Center of Exemplary Mentoring Steering Committee 2019 – present
  - Search Advisory Committee for the Associate Vice President and Executive Director of Career Services 2022
  - Ad Hoc Workgroup to Optimize Centralized Instructional Space Planning and Scheduling to Enhance Faculty and Student Success 2021 – 2022
  - Outstanding Undergraduate Teaching Award Evaluation Committee 2020
  - Ad Hoc Committee to Develop an Improved Process to Evaluate Faculty Teaching Efforts 2019
  - Graduate Council, Member of Policy and Fellowship Committee Representing the College of Engineering 2016 – 2019
  - Graduate Student Research Symposium Judge 2010, 2017 – 2019
  - Research Experiences for Undergraduates Symposium Judge 2009 – 2011

- College of Engineering Level
  - Associate Dean for Academic Affairs 2021 – present
  - Theta Tau, Fundamentals of Engineering (F.E.) Exam, Fluid Mechanics Semesterly Reviews 2020 – present
  - Research Day Poster Competition Judge 2010, 2015, 2016
  - Engineering EXPO Judge 2010, 2015
  - Nanotechnology Research & Education Center Advisory Committee Member 2009 – 2011
  - Eminent Scholars Lecture Series Speaker Selection Committee 2009

- Department of Mechanical Engineering Level
  - Graduate Program Director 2015 – 2021
  - ABET Assessment Committee 2019 – 2021
  - Administrator/Staff Search Committee Member 2018, 2019, 2020
  - Faculty Search Committee Member 2011/12, 2018/19
  - Chair of the Faculty Search Committee 2014/15, 2015/16, 2016/17
  - Undergraduate Curriculum Committee Member 2008 – 2015
  - Departmental Website Design Committee 2011

COMMUNITY ENGAGEMENT

- Led and organized USF Engineering EXPO, Hosted 4,000+ Students from Local Elementary, Middle, and High Schools for 2-days at USF College of Engineering 2022
- Share freely available 270+ educational resources on YouTube (http://youtube.com/c/collegefluidmechanics) 2020 – present
  - Viewed over 165,000 times, watched for 10,000 hours by over 55,000 unique viewers from all over the world in 2021

- Demos and Lab tours to students at Local Homeschool Around Temple Terrace group, Los Robles Elementary School, Robles Elementary School, Plant High School, and Great American Teach-In Program 2009 – present
- Hillsborough County Regional Science & Engineering /STEM Fair Judge 2010, 2014, 2017

PROFESSIONAL AFFILIATIONS (Present)

- American Society of Mechanical Engineers (ASME), Fellow
- American Society of Engineering Education (ASEE), Member
- National Academy of Inventors (NAI), Member
- American Association for the Advancement of Science (AAAS), Member