



- Sigma Xi Best Ph.D. Dissertation Award Nominee, Georgia Tech Chapter 2008
- International IEEE Ultrasonics Symposium, Best Student Paper Award 2005 and 2007

## **RESEARCH INTERESTS**

- 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



*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 (21)

- Adam Major, A Non-Invasive, Label-Free Acoustic Microfluidics Separation Device: An Experimental Study 2023 – Present
- Teehran Francis, Concrete Inspection on Bridges with an Ultrasonic Transducer Integrated to a Tire 2022 – 2023
- Matthew Moss, Does Metacognition and Reflection Increase Student Learning in an Undergraduate STEM Course? 2021 – 2023
- 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

- 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

**PUBLICATIONS (May 2024,**

- J4** K. Ettini, J. Cotter, and R. Guldiken, "Analytical, Simulation, and Experimental Verification of Acoustic Thermometry Technique" *Applied Acoustics*, vol 207, 109345, 2023
- J5** R. Clark, A. Kaw, and R. Guldiken, "Metacognition instruction and repeated reflection in a fluid mechanics course: Reflective themes and student outcomes," *International Journal of Mechanical Engineering Education*, vol 51 (4), pp. 243-269, 2023
- J6** S. Alhumaid, D. Hess, and R. Guldiken, "A Noncontact Magneto-Piezo Harvester



**J20** 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,”



- J50** 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)
- J51** 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, 2<sup>nd</sup> 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**

*\* Students supervised in my research group are underlined*

- C1** S. Donatus, R. Guldiken, and J. Wang "The Effect of Bottom Electrode Patterning on Residual Stress and Acoustic Output of Piezoelectric Actuators" ASME IMECE 2024-144993, Portland, Oregon
- C2** M. Demirci and R. Guldiken, "Thermography With an Ultrasonic Transducer and Buffer Rod" ASME IMECE 2023-119965, New Orleans, Louisiana
- C3** R. Clark, M. Moss, A. Kaw, and R. Guldiken, "Community as "Surroundings" in a Classroom Ecosystem" Proceedings of the ASEE Annual Conference 2023, Baltimore, Maryland
- C4** S. Alhumaid, D. Hess and R. Guldiken, "A Noncontact Magneto-Piezo Harvester-Based Vehicle Regenerative Suspension System: An Experimental Study" ASME IMECE 2022-96938, Columbus, Ohio
- C5** K. Ettini, J. Cotter and R. Guldiken, "Employing Contactless Acoustic Thermometry for Additive Manufacturing: An Experimentally Verified Simulation Study" ASME IMECE 2022-95434, Columbus, Ohio
- C6** R. Clark, A. Kaw, and R. Guldiken, "Do Metacognitive Instruction and Repeated Reflection Improve Outcomes?" Proceedings of the ASEE Annual Conference 2022, Minneapolis, Minnesota
- C7** 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



**C24** M. Trapuzzano

- C40** A. Ahmad, O. Onen, R. Guldiken, and N. Gallant, "Surface Functionalization of an Ovarian Cancer Diagnostic Biosensor," ASME IMECE 2011-64311, Denver, CO
- C41** N. Crane, Q. Ni, and R. Guldiken, "Ultrasonic Excitation Induced Wenzel to Cassie Transition," ASME IMECE 2011-64391, Denver, CO
- C42** O. Onen and R. Guldiken, "Detailed Investigation of Capacitive Micromachined Ultrasound Transducer Design Space for Optimal Operation," ASME IMECE 2011-62816, Denver, CO
- C43** 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
- C44** 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
- C45** M.C. Jo and R. Guldiken, "An Acoustic Microfluidic Platform for Size and Density-Based Cell Separation," IEEE International Ultrasonics Symposium, 2011, Orlando, FL
- C46** 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
- C47** 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
- C48** 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
- C49** 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
- C50** 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
- C51** 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
- C52** J. Zahorian, R. 612 79 ZaQz@QD0GJ57.aE1600E\$HV3LOWUV\$

- C55** 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
- C56** 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
- C57** 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)
- C58** 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
- C59** 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
- C60** 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
- C61** 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
- C62** R. O. Guldiken, M. Balantekin, and N. A. E. o B

**C69** 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

**C70**







- Sloan University Center of Exemplary Mentoring Steering Committee 2019 – present
- Task Force for Initiating the College of AI, Cybersecurity and Computing 2024
- Strategic College of Engineering Task Force for Envisioning the Future 2024
- Chair of the Search Committee for the Assistant Dean for Academic Outreach and Innovation in USF Undergraduate Studies 2024
- Strategic Enrollment Planning Work Group 2023
- Search Advisory Committee for the Associate Vice President and Executive Director of Career Services 2022
- Workgroup to Optimize Centralized Instructional Space for Success 2022
- Graduate Program Director, Mechanical Engineering Department 2015 – 2021
- ABET Assessment Committee, Mechanical Engineering Department 2019 – 2021
- Outstanding Undergraduate Teaching Award Evaluation Committee 2020
- Administrator/Staff Search Committee Member  
Mechanical Engineering Department 2018, 2019, 2020
- Faculty Task Force to Develop an Improved Process to Evaluate Faculty Teaching 2019
- Faculty Search Committee Member 2012, 2019
- Graduate Council, Member of Policy and Fellowship Committee 2016 – 2019
- Graduate Student Research Symposium Judge 2010, 2017– 2019
- Chair of the Faculty Search Committee

- American Association for the Advancement of Science (AAAS), Member

## **DISSERTATION AND THESIS COMMITTEE MEMBERSHIP**

- Doctoral Dissertation (70)
  - Liguang Li, Ph.D. Student in Electrical Engineering Current
  - Vishvajitsinh Kosamiya, Ph.D. Candidate in Electrical Engineering Current
  - Donald McCleary, Ph.D. Candidate in Mechanical Engineering Current
  - Sohan Nagaraj, Ph.D. Candidate in Mechanical Engineering Current
  - Zongze Li, Ph.D. Candidate in Mechanical Engineering Current
  - Asad Elmagarhe, Ph.D. Candidate in Civil Engineering Current
  - Anthony Perez, Ph.D. Candidate in Civil Engineering Current
  - Daniel Ramirez, Ph.D. in Electrical Engineering, Chair 2024
  - Fahad Alshehri, Ph.D. in Civil Engineering 2024
  - Ting-Hung Liu, Ph.D. in Electrical Engineering 2024
  - Javad Zeidi, Ph.D. in Civil Engineering 2023
  - Juan Penalosa Gutierrez, Ph.D. in Civil Engineering 2023
  - Md Rubayat-E Tanjil, Ph.D. in Mechanical Engineering 2023
  - Walid Elsiwi, Ph.D. in Civil Engineering 2023
  - Ting-Hung Liu, Ph.D. Candidate in Electrical Engineering 2023
  - Kuvvat Garayev, Ph.D. in Mechanical Engineering 2023
  - Hai Zhu, Ph.D. in Civil Engineering 2023
  - Ali Alshamrani, Ph.D. in Mechanical Engineering 2022
  - Ali Aljumah, Ph.D. in Electrical Engineering 2022
  - Sanjib Gurung, Ph.D. in Mechanical Engineering 2022
  - Abdullah Alburidy, Ph.D. in Electrical Engineering 2022
  - Abdulhakim Alsaif, Ph.D. in Electrical Engineering 2022
  - Palak Dave, Ph.D. in Computer Science and Engineering, Chair 2022
  - Jonas Mendoza, Ph.D. in Electrical Engineering 2022
  - Kyle Cogswell, Ph.D. in Chemical Engineering 2022
  - Mehdi Hojatmadani, Ph.D. in Mechanical Engineering 2021
  - Ali Al Dasouqi, Ph.D. in Mechanical Engineering 2021
  - Mustafa Fincan, Ph.D. in Mechanical Engineering 2021
  - Poonam Lathiya, Ph.D. in Electrical Engineering 2021
  - Abdulrahman Alsolami, Ph.D. in Electrical Engineering 2021
  - Sulaiman Almutairi, Ph.D. in Electrical Engineering 2021
  - Mohammed Alqahtani, Ph.D. in Electrical Engineering 2021
  - Xu Han, Ph.D. in Electrical Engineering 2021
  - Ferhat Karakas, Ph.D. in Mechanical Engineering 2020
  - Ahmet Manisali, Ph.D. in Chemical Engineering 2020
  - Kawsher Roxy, Ph.D. in Electrical Engineering 2020
  - Fatemeh Khorramshahi, Ph.D. in Electrical Engineering 2020
  - Enrique Gonzalez, Ph.D. in Electrical Engineering 2020
  - Adnan Zaman, Ph.D. in Electrical Engineering 2020



- Peter Griffiths, M.S. in Mechanical Engineering 2014
- Weiwei Xu, M.S. in Mechanical Engineering 2013
- Minh Nguyen, M.S. in Mechanical Engineering 2013
- Daniel Perez, M.S. in Mechanical Engineering 2013
- Maria Echeverria Molina, M.S. in Mechanical Engineering 2012
- FNU Atiquzzaman, M.S. in Mechanical Engineering 2012
- Seyed Najafi, M.S. in Mechanical Engineering 2012
- Caroline Liberti, M.S. in Mechanical Engineering 2011
- William Keese, M.S. in Mechanical Engineering 2011
- Robert Cole, M.S. in Mechanical Engineering 2010
- Corey Lynch, M.S. in Mechanical Engineering 2010
- Francy Sinatra, M.S. in Mechanical Engineering 2010
- Ajay Rajgadkar, M.S. in Mechanical Engineering 2010
- Ejiro Ojada, M.S. in Mechanical Engineering 2009