

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, 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

** 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)

○ Liguan 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