Stanford



Thomas Kenny

Senior Associate Dean for Education and Student Affairs and Richard W. Weiland Professor in the School of Engineering

Mechanical Engineering

CONTACT INFORMATION

- **Administrator**

  Brittany Schwartz - Program Administrator

  Email cofferb@stanford.edu

  Tel (650) 498-4718

Bio

BIO

Kenny's group is researching fundamental issues and applications of micromechanical structures. These devices are usually fabricated from silicon wafers using integrated circuit fabrication tools. Using these techniques, the group builds sensitive accelerometers, infrared detectors, and force-sensing cantilevers. This research has many applications, including integrated packaging, inertial navigation, fundamental force measurements, experiments on bio-molecules, device cooling, bio-analytical instruments, and small robots. Because this research field is multidisciplinary in nature, work in this group is characterized by strong collaborations with other departments, as well as with local industry.

ACADEMIC APPOINTMENTS

- Professor, Mechanical Engineering
- Member, Bio-X

ADMINISTRATIVE APPOINTMENTS

- Senior Associate Dean of Engineering for Education and Student Affairs, School of Engineering, (2015- present)
- The Paul Davies Family University Fellow in Undergraduate Education, Bass Foundation Fellow, (2019-2024)

HONORS AND AWARDS

- Member, National Academy of Engineering (2022-)
- President's Award for Excellence through Diversity, Stanford University (2019)
- Tau Beta Pi Teaching Honor Roll, Tau Beta Pi (2019)
- Daniel Noble Award for Emerging Technologies, IEEE (2018)
- General Chair, Transducers 2015 (2015)
- Technical Achievement Award, IEEE (2011)
- Secretary of Defense Award for Exceptional Public Service, US Department of Defense (2010)
- Program Manager, DARPA Microsystems Technology Office (2006-2010)
- Captain, Ultimate Frisbee Coed World Champions (RFBF) (1999)

- Captain, Ultimate Frisbee Coed National Champions (RFBF) (1998)
- CAREER Award, NSF (1995-1999)
- Robert Bosch Faculty Scholar, Robert Bosch Foundation (1995-1999)
- Terman Fellowship, Stanford University (1995-1998)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- CEO Founder and Board Member, Applaud Medical (2020 - 2022)
- President, Transducers Research Foundation (2016 - present)

PROFESSIONAL EDUCATION

- PhD, UC Berkeley , Physics (1989)

PATENTS

- Robert Grubbs, Marshall Stoller, Hoyong Chung, Alissa Fitzgerald, Thomas Kenny, Renee Thomas. "United States Patent 10,149,906 Targeting Microbubbles", Caltech, Dec 10, 2018
- Thomas Kenny, Mark Munch, Peng Zhou, James Gill Shook, Kenneth Goodson, Dave Corbin, Mark McMaster, James Lovette. "United States Patent US 8,464,781 Cooling Systems Incorporating Heat Exchangers and Thermoelectric Layers", Cooligy, Inc, Jul 18, 2013
- Robert J. Full, Ronald S. Fearing, Thomas W. Kenny, Kellar Autumn. "United States Patent US 6,737,160 Adhesive Microstructure and Method of Forming Same", The Regents Of The University Of California, May 18, 0004

LINKS

- http://mems.stanford.edu: http://mems.stanford.edu

Teaching

COURSES

2026-27

- Develop Your Leadership Toolkit: Aim High, Embrace Uncertainty, and Achieve Impact: ENGR 193 (Spr)
- Introduction to Mechatronics: ME 210 (Win)
- Introduction to Sensors: ME 220 (Spr)
- Want to Be an Engineer?: ENGR 1 (Aut)

2025-26

- Develop Your Leadership Toolkit: Aim High, Embrace Uncertainty, and Achieve Impact: ENGR 193 (Spr)
- Introduction to Mechatronics: EE 118, ME 210 (Win)

2024-25

- Develop Your Leadership Toolkit: Aim High, Embrace Uncertainty, and Achieve Impact: ENGR 193 (Spr)
- Introduction to Mechatronics: EE 118, ME 210 (Win)
- Introduction to Sensors: ME 220 (Spr)
- Want to Be an Engineer?: ENGR 1 (Aut)

2023-24

- Discover Engineering: How to Aim High, Embrace Uncertainty, and Achieve Impact: ENGR 193 (Spr)
- Introduction to Mechatronics: EE 118, ME 210 (Win)
- Introduction to Sensors: ME 220 (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Dan Ilyn, Matthew Maksymowych, Kaveh Pezeshki

Doctoral Dissertation Advisor (AC)

Jiawei Yang

Master's Program Advisor

Dolly Mantle, Conan Zhang

Doctoral Dissertation Co-Advisor (AC)

Ruixin Qiu

Doctoral (Program)

Huy Tran

Publications

PUBLICATIONS

- **Sensing Voltage at Electrically Floating Nodes: A Path Toward Enhancing Performance and Robustness in Capacitive MEMS Resonators** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
  Chugh, D., Kwon, H., Haddon-Vukasin, G. D., Kenny, T. W., Chandorkar, S. A.
  2025
- **ULTRA-STABLE MEMS CLOCK WITH 53 PARTS-PER-TRILLION FRACTIONAL FREQUENCY STABILITY AT 8 HOURS**
  Kim, J., Yan, J., Islam, R., Jing, J., Yang, J., Vukasin, G., Kwon, R., Saxena, S., Kenny, T. W., Hanumolu, P. K., Bahl, G., IEEE
  IEEE.2025: 205-208
- **FULLY DIFFERENTIAL GYRATOR USING A DYNAMICALLY BIASED 20 MHZ LAME MODE RESONATOR**
  Kim, J., Islam, R., Miller, J. M. L., Zhao, J., Vukasin, G., Kwon, R., Saxena, S., Hanumolu, P. K., Kenny, T. W., Bahl, G., IEEE
  IEEE.2024: 1059-1062
- **Deterministic and stochastic sampling of two coupled Kerr parametric oscillators** *PHYSICAL REVIEW RESEARCH*
  Margiani, G., del Pino, J., Heugel, T. L., Bousse, N. E., Guerrero, S., Kenny, T. W., Zilberberg, O., Sabonis, D., Eichler, A.
  2023; 5 (1)
- **Generation and Evolution of Phononic Frequency Combs via Coherent Energy Transfer between Mechanical Modes** *PHYSICAL REVIEW APPLIED*
  Sun, J., Yu, S., Zhang, H., Chen, D., Zhou, X., Zhao, C., Gerrard, D. D., Kwon, R., Vukasin, G., Xiao, D., Kenny, T. W., Wu, X., Seshia, et al
  2023; 19 (1)
- **Extracting the lifetime of a synthetic two-level system** *APPLIED PHYSICS LETTERS*
  Margiani, G., Guerrero, S., Heugel, T. L., Marty, C., Pachlatko, R., Gisler, T., Vukasin, G. D., Kwon, H., Miller, J. M. L., Bousse, N. E., Kenny, T. W., Zilberberg, O., Sabonis, et al
  2022; 121 (16)
- **Effects of Remote Boundary Conditions on Clamping Loss in Micromechanical Resonators** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
  Miller, J. M. L., Vukasin, G. D., Zhang, Z., Kwon, H., Majumdar, A., Kenny, T. W., Shaw, S. W.
  2022
- **INFLUENCE OF CLAMPING LOSS AND ELECTRICAL DAMPING ON NONLINEAR DISSIPATION IN MICROMECHANICAL RESONATORS**
  Miller, J. M. L., Alter, A. L., Bousse, N. E., Chen, Y., Flader, I. B., Shin, D. D., Kenny, T. W., Shaw, S. W., IEEE
  IEEE.2022: 507-510
- **TUNING FREQUENCY STABILITY IN MICROMECHANICAL RESONATORS WITH PARAMETRIC PUMPING**

Bousse, N. E., Miller, J. M. L., Vukasin, G. D., Kwon, H., Shaw, S. W., Kenny, T. W., IEEE
IEEE.2022: 987-990

- **A temperature compensated biaxial eFM accelerometer in Epi-seal process** *SENSORS AND ACTUATORS A-PHYSICAL*
  Shin, S., Kwon, H., Vukasin, G. D., Kenny, T. W., Ayazi, F.
  2021; 330
- **Amplitude stabilization of micromechanical oscillators using engineered nonlinearity** *PHYSICAL REVIEW RESEARCH*
  Miller, J. M. L., Gomez-Franco, A., Shin, D. D., Kwon, H., Kenny, T. W.
  2021; 3 (3)
- **Nonlinear Dissipation in Epitaxial SCS and Polysilicon MEMS Driven at Large Amplitudes (vol 29, pg 1118, 2020)** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
  Alter, A. L., Flader, I. B., Chen, Y., Shin, D. D., Kenny, T. W.
  2021; 30 (2): 330
- **Quantification of Energy Dissipation Mechanisms in Toroidal Ring Gyroscope** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
  Wang, Y., Lin, Y., Glaze, J., Vukasin, G., Shin, D. D., Kwon, H., Heinz, D. B., Chen, Y., Gerrard, D. D., Kenny, T. W., Shkel, A. M.
  2021; 30 (2): 193–202
- **A Novel Spring Disk Resonator Gyroscope for Maximizing Q/F**
  Cameron, C. P., Gerrard, D., Rodriguez, J., Yang, Y., Ng, E., Kenny, T. W., IEEE
  IEEE.2021
- **Bicontinuous Mesoporous Metal Foams with Enhanced Conductivity and Tunable Pore Size and Porosity via Electrodeposition for Electrochemical and Thermal Systems** *ACS APPLIED NANO MATERIALS*
  Katz, J. S., Zhang, C., Barako, M. T., Kim, H. K., Asheghi, M., Kenny, T. W., Goodson, K. E.
  2020; 3 (12): 12408–15
- **Negative Nonlinear Dissipation in Microelectromechanical Beams (vol 29, pg 1, 2020)** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
  Bousse, N., Miller, J., Alter, A., Cameron, C., Kwon, H., Vukasin, G., Kenny, T. W.
  2020; 29 (6): 1582
- **Characterization of Accelerated Fatigue in Thick Epi-Polysilicon Vacuum Encapsulated MEMS Resonators** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
  Alter, A. L., Flader, I. B., Chen, Y., Ortiz, L., Shin, D. D., Kenny, T. W.
  2020; 29 (6): 1483–92
- **Numerical Modelling of Non-Linearities in MEMS Resonators** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
  Zega, V., Gattere, G., Koppaka, S., Alter, A., Vukasin, G. D., Frangi, A., Kenny, T. W.
  2020; 29 (6): 1443–54
- **Nonlinear Dissipation in Epitaxial SCS and Polysilicon MEMS Driven at Large Amplitudes** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
  Alter, A. L., Flader, I. B., Chen, Y., Shin, D. D., Kenny, T. W.
  2020; 29 (5): 1118–20
- **Anchor Design Affects Dominant Energy Loss Mechanism in a Lame Mode MEM Resonator** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
  Vukasin, G. D., Sanchez, V. K., Glaze, J., Bousse, N. E., Bissel, N., Shin, D. D., Kwon, H., Heinz, D., Yen, E., Kenny, T. W.
  2020; 29 (5): 860–66
- **Limits to Thermal-Piezoresistive Cooling in Silicon Micromechanical Resonators** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
  Miller, J. M. L., Zhu, H., Sundaram, S., Vukasin, G. D., Chen, Y., Flader, I. B., Shin, D. D., Kenny, T. W.
  2020; 29 (5): 677–84
- **Quality Factor Extraction and Enhancement Across Temperature in Ring Resonators** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
  Alter, A. L., Gerrard, D. D., Kwon, H., Vukasin, G. D., Kenny, T. W.
  2020; 29 (5): 1124–26

- **Negative Nonlinear Dissipation in Microelectromechanical Beams** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
  Bousse, N., Miller, J., Alter, A., Cameron, C., Kwon, H., Vukasin, G., Kenny, T. W.
  2020; 29 (5): 954–59
- **Crystal Orientation Dependent Dual Frequency Ovenized MEMS Resonator With Temperature Stability and Shock Robustness**
  Kwon, H., Vukasin, G. D., Bousse, N. E., Kenny, T. W.
  IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2020: 1130–31
- **On the effect of linear feedback and parametric pumping on a resonator's frequency stability** *NEW JOURNAL OF PHYSICS*
  Mohammadi, Z., Heugel, T. L., Miller, J. M. L., Shin, D. D., Kwon, H., Kenny, T. W., Chitra, R., Zilberberg, O., Villanueva, L.
  2020; 22 (9)
- **Spectral narrowing of parametrically pumped thermomechanical noise** *APPLIED PHYSICS LETTERS*
  Miller, J. M. L., Shin, D. D., Kwon, H., Shaw, S. W., Kenny, T. W.
  2020; 117 (3)
- **Low-Power Dual Mode MEMS Resonators With PPB Stability Over Temperature**
  Ortiz, L., Kwon, H., Rodriguez, J., Chen, Y., Vukasin, G. D., Heinz, D. B., Shin, D. D., Kenny, T. W.
  IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2020: 190–201
- **Quality factor tuning of micromechanical resonators via electrical dissipation** *APPLIED PHYSICS LETTERS*
  Bousse, N. E., Miller, J. M. L., Kwon, H., Vukasin, G. D., Kenny, T. W.
  2020; 116 (2)
- **AN EPI-SEAL ENCAPSULATED FRANKLIN OSCILLATOR SUSTAINING MORE THAN 200,000,000 ELECTRIC SWITCHING CYCLES**
  Kassie, D. A., Flader, I. B., Shmulevich, S., Kwon, H., Kenny, T. W., Elata, D., IEEE
  IEEE.2020: 230–33
- **Thermal Accelerometer Performance Enhancements through AC Biasing Schemes**
  Kaplan, K. E., Winterkorn, M. M., Kim, H. K., Everhart, C. L. M., Prinz, F. B., Kenny, T. W., IEEE
  IEEE.2020
- **Design Comparison and Survivability of Fipitaxially hncapsulated MFMS Disc Resonating Gyroscopes at High Shock (> 27,000g)**
  Cameron, C. P., Imamura, T., Devmalya, C., Vukasin, G., Alter, A., Kenny, T., IEEE
  IEEE.2020
- **THERMAL STABILITY OF DETF MEMS RESONATORS: NUMERICAL MODELLING AND EXPERIMENTAL VALIDATION**
  Zega, V., Opreni, A., Mussi, G., Kwon, H., Vukasin, G., Gattere, G., Langfelder, G., Frangi, A., Kenny, T. W., IEEE
  IEEE.2020: 1207–10
- **REQUENCY STABILIZATION IN AN ENCAPSULATED HIGH-Q MICROMECHANICAL RESONATOR VIA INTERNAL RESONANCE**
  Yu, J., Kwon, H., Vukasin, G. D., Kenny, T. W., Cho, H., IEEE
  IEEE.2020: 1191–94
- **TEMPERATURE HYSTERESIS IN PIEZORESISTIVE MICROCANTILEVERS**
  Miller, J. M. L., Zhang, Z., Bousse, N. E., Coso, D., Sadat, S., IEEE
  IEEE.2020: 1203–6
- **NONLINEAR MODAL INTERACTIONS AND INTERNAL RESONANCE IN A MICROMACHINED DISK RESONATOR**
  Sun, J., Zhang, H., Chen, D., Pandit, M., Sobreviela, G., Xiao, D., Zhuo, M., Gerrard, D. D., Kwon, R., Vukasin, G., Kenny, T. W., Seshia, A., IEEE
  IEEE.2020: 769–72
- **Thermomechanical-Noise-Limited Capacitive Transduction of Encapsulated MEM Resonators** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
  Miller, J. M. L., Bousse, N. E., Heinz, D. B., Kim, H. K., Kwon, H., Vukasin, G. D., Kenny, T. W.
  2019; 28 (6): 965–76
- **Phase Control of Self-Excited Parametric Resonators** *PHYSICAL REVIEW APPLIED*
  Miller, J. M. L., Shin, D. D., Kwon, H., Shaw, S. W., Kenny, T. W.
  2019; 12 (4)

- **Micro-Tethering for Fabrication of Encapsulated Inertial Sensors With High Sensitivity** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
  Flader, I. B., Chen, Y., Yang, Y., Ng, E. J., Shin, D. D., Heinz, D. B., Ortiz, L., Alter, A. L., Park, W., Goodson, K. E., Kenny, T. W.
  2019; 28 (3): 372–81
- **Electrical Properties of Ultrathin Platinum Films by Plasma-Enhanced Atomic Layer Deposition** *ACS APPLIED MATERIALS & INTERFACES*
  Kim, H. K., Kaplan, K. E., Schindler, P., Xu, S., Winterkorn, M. M., Heinz, D. B., English, T. S., Provine, J., Prinz, F. B., Kenny, T. W.
  2019; 11 (9): 9594–99
- **Direct Detection of Akhiezer Damping in a Silicon MEMS Resonator.** *Scientific reports*
  Rodriguez, J., Chandorkar, S. A., Watson, C. A., Glaze, G. M., Ahn, C. H., Ng, E. J., Yang, Y., Kenny, T. W.
  2019; 9 (1): 2244
- **Direct Detection of Akhiezer Damping in a Silicon MEMS Resonator** *SCIENTIFIC REPORTS*
  Rodriguez, J., Chandorkar, S. A., Watson, C. A., Glaze, G. M., Ahn, C. H., Ng, E. J., Yang, Y., Kenny, T. W.
  2019; 9
- **High-speed video microscopy and numerical modeling of bubble dynamics near a surface of urinary stone.** *The Journal of the Acoustical Society of America*
  Pishchalnikov, Y. A., Behnke-Parks, W. M., Schmidmayer, K. n., Maeda, K. n., Colonius, T. n., Kenny, T. W., Laser, D. J.
  2019; 146 (1): 516
- **Pseudo-Extensional Mode MEMS Ring Gyroscope**
  Prikhodko, I. P., Gregory, J. A., Shin, D., Kwon, R., Kenny, T. W., Judy, M. W., IEEE
  IEEE.2019
- **Dynamic modulation of modal coupling in microelectromechanical gyroscopic ring resonators.** *Nature communications*
  Zhou, X. n., Zhao, C. n., Xiao, D. n., Sun, J. n., Sobreviela, G. n., Gerrard, D. D., Chen, Y. n., Flader, I. n., Kenny, T. W., Wu, X. n., Seshia, A. A.
  2019; 10 (1): 4980
- **NONLINEARITY OF DEGENERATELY DOPED FLEXURAL MODE SILICON MICROMECHANICAL RESONATORS**
  Koppaka, S., Alter, A. L., Vukasin, G. D., Shin, D. D., Flader, I. B., Chen, Y., Kenny, T. W., IEEE
  IEEE.2019: 1897–1900
- **SIGNAL ENHANCEMENT IN MEM RESONANT SENSORS USING PARAMETRIC SUPPRESSION**
  Miller, J. M. L., Bousse, N. E., Shin, D. D., Kwon, H., Kenny, T. W., IEEE
  IEEE.2019: 881–84
- **EFFECT OF SUBSTRATE THICKNESS ON ANCHOR DAMPING IN MEMS DEVICES**
  Vukasin, G. D., Sanchez, V. K., Cameron, C. P., Kwon, H., Rodriguez, J., Flader, I. B., Chen, Y., Kenny, T. W., IEEE
  IEEE.2019: 1843–45
- **EXPERIMENTALLY OBSERVED NONLINEAR DISSIPATION LINKED TO CONTRIBUTIONS FROM GAS DAMPING AND TED IN MEMS FLEXURAL MODE RESONATORS**
  Alter, A. L., Vukasin, G. D., Flader, I. B., Kim, H., Chen, Y., Shin, D. D., Kenny, T. W., IEEE
  IEEE.2019: 2095–98
- **AN OVEN-CONTROLLED MEMS OSCILLATOR (OCMO) WITH SUB 10MW, +/- 1.5 PPB STABILITY OVER TEMPERATURE**
  Kwon, H., Ortiz, L., Vukasin, G. D., Chen, Y., Shin, D. D., Kenny, T. W., IEEE
  IEEE.2019: 2072–75
- **A Dual-Axis Resonant Accelerometer Based on Electrostatic Stiffness Modulation in Epi-Seal Process**
  Shin, S., Wen, H., Kwon, H., Vukasin, G. D., Kenny, T. W., Ayazi, F., IEEE
  IEEE.2019
- **Effective quality factor tuning mechanisms in micromechanical resonators** *APPLIED PHYSICS REVIEWS*
  Miller, J., Ansari, A., Heinz, D. B., Chen, Y., Flader, I. B., Shin, D. D., Villanueva, L., Kenny, T. W.
  2018; 5 (4)
- **Thermal-Piezoresistive Tuning of the Effective Quality Factor of a Micromechanical Resonator** *PHYSICAL REVIEW APPLIED*

Miller, J., Zhu, H., Heinz, D. B., Chen, Y., Flader, I. B., Shin, D. D., Lee, J., Kenny, T. W.
2018; 10 (4)

- **Direct Detection of Anchor Damping in MEMS Tuning Fork Resonators** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
  Rodriguez, J., Chandorkar, S., Glaze, G. M., Gerrard, D. D., Chen, Y., Heinz, D. B., Flader, I. B., Kenny, T. W.
  2018; 27 (5): 800–809
- **Assessing failure in epitaxially encapsulated micro-scale sensors using micro and nano x-ray computed tomography** *MRS COMMUNICATIONS*
  Ortiz, L., Heinz, D. B., Flader, I. B., Alter, A. L., Shin, D. D., Chen, Y., Kenny, T. W.
  2018; 8 (2): 275–82
- **Dielectric barrier layers by low-temperature plasma-enhanced atomic layer deposition of silicon dioxide** *THIN SOLID FILMS*
  Barako, M. T., English, T. S., Roy-Panzer, S., Kenny, T. W., Goodson, K. E.
  2018; 649: 24–29
- **HIGH STABILITY THERMAL ACCELEROMETER BASED ON ULTRATHIN PLATINUM ALD NANOSTRUCTURES**
  Everhart, C. L. M., Kaplan, K. E., Winterkorn, M. M., Kwon, H., Provine, J., Asheghi, M., Goodson, K. E., Prinz, F. B., Kenny, T. W., IEEE
  IEEE.2018: 976–79
- **Experimental observations and numerical modeling of lipid-shell microbubbles with calcium-adhering moieties for minimally-invasive treatment of urinary stones.** *Proceedings of meetings on acoustics. Acoustical Society of America*
  Pishchalnikov, Y. A., Behnke-Parks, W. n., Maeda, K. n., Colonius, T. n., Mellema, M. n., Hopcroft, M. n., Luong, A. n., Wiener, S. n., Stoller, M. L., Kenny, T. n., Laser, D. J.
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- **Lateral Diffusion Doping of Silicon for Temperature Compensation of MEMS Resonators**
  Shin, D. D., Heinz, D. B., Kwon, H., Chen, Y., Kenny, T. W., IEEE
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- **Active Temperature Compensation of Thermal Accelerometer for Improved Stability**
  Kaplan, K. E., Winterkorn, M. M., Everhart, C. L. M., Shin, D. D., O'Brien, G. J., Prinz, F. B., Kenny, T. W., IEEE
  IEEE.2018: 155–56
- **Investigation of Orientation Dependence of the Thermal Expansion Coefficient in Silicon MEMS Resonators**
  Rodriguez, J., Vukasin, G. D., Glaze, G. M., Hopcroft, M. A., Ortiz, L., Ahn, C. H., Ng, E., Park, W., Kenny, T. W., Watson, C. A., IEEE
  IEEE.2018: 108–11
- **High Quality Factor Mode Ordered Dual Foucault Pendulum Gyroscope**
  Asadian, M. H., Askari, S., Flader, I. B., Chen, Y., Gerrard, D. D., Shin, D. D., Kwon, H., Kenny, T. W., Shkel, A. M., IEEE
  IEEE.2018: 1130–33
- **EPITAXIAL ENCAPSULATION OF FULLY DIFFERENTIAL ELECTRODES AND LARGE TRANSDUCTION GAPS FOR MEMS RESONANT STRUCTURES**
  Flader, I. B., Chen, Y., Ahn, C., Shin, D. D., Alter, A. L., Rodriguez, J., Kenny, T. W., IEEE
  IEEE.2018: 483–86
- **EXPERIMENTAL FRACTAL-LIKE INSTABILITY BANDS IN A RESONANT SILICON-SILICON CONTACT PULL-IN VIBRATION DETECTOR**
  Maiwald, V., Flader, I. B., Muller, M., Chen, Y., Pluss, S., Shin, D. D., Roman, C., Heinz, D. B., Kenny, T. W., Hierold, C., IEEE
  IEEE.2018: 984–87
- **TEMPERATURE COMPENSATION OF RESONANT ACCELEROMETER VIA NONLINEAR OPERATION**
  Shin, D. D., Chen, Y., Flader, I. B., Kenny, T. W., IEEE
  IEEE.2018: 1012–15
- **UNANTICIPATED RESULTS IN THE FIRST DIRECT MEASUREMENTS OF ANCHOR DAMPING IN MEMS RESONATORS**
  Rodriguez, J., Gerrard, D. D., Glaze, G. M., Chandorkar, S., Chen, Y., Flader, I. B., Shin, D. D., Kenny, T. W., IEEE
  IEEE.2018: 543–46
- **THERMAL EFFECTS OF OVENIZED CLOCKS ON EPISEAL ENCAPSULATED INERTIAL MEASUREMENT UNITS**

Ortiz, L., Flader, I. B., Vukasin, G. D., Gerrard, D. D., Chandorkar, S. A., Rodriguez, J., Shin, D. D., Kwon, R., Heinz, D. B., Chen, Y., Park, W., Goodson, K. E., Kenny, et al
IEEE.2018: 980–83

- **Robust Method of Fabricating Epitaxially Encapsulated MEMS Devices with Large Gaps** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
  Chen, Y., Flader, I. B., Shin, D. D., Ahn, C., Rodriguez, J., Kenny, T. W.
  2017; 26 (6): 1235–43
- **Measurement of Young's modulus and residual stress of atomic layer deposited Al2O3 and Pt thin films** *JOURNAL OF MICROMECHANICS AND MICROENGINEERING*
  Purkl, F., Daus, A., English, T. S., Provine, J., Feyh, A., Urban, G., Kenny, T. W.
  2017; 27 (8)
- **Phonon conduction in silicon nanobeams** *APPLIED PHYSICS LETTERS*
  Park, W., Shin, D. D., Kim, S., Katz, J. S., Park, J., Ahn, C., Kodama, T., Asheghi, M., Kenny, T. W., Goodson, K. E.
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- **Modeling and Analysis for Thermal Management in Gallium Nitride HEMTs Using Microfluidic Cooling** *JOURNAL OF ELECTRONIC PACKAGING*
  Agarwal, G., Kazior, T., Kenny, T., Weinstein, D.
  2017; 139 (1)
- **EFFECTIVE QUALITY FACTOR AND TEMPERATURE DEPENDENCE OF SELF-OSCILLATIONS IN A THERMAL-PIEZORESISTIVELY PUMPED RESONATOR**
  Miller, J. M. L., Heinz, D. B., Flader, I. B., Chen, Y., Shin, D. D., Kenny, T. W., IEEE
  IEEE.2017: 1907–10
- **MICRO-TETHERING FOR IN-PROCESS STICTION MITIGATION OF HIGHLY COMPLIANT STRUCTURES**
  Flader, I. B., Chen, Y., Shin, D. D., Heinz, D. B., Ortiz, L., Alter, A. L., Park, W., Goodson, K. E., Kenny, T. W., IEEE
  IEEE.2017: 675–78
- **HIGH-G (>20,000g) INERTIAL SHOCK SURVIVABILITY OF EPITAXIALLY ENCAPSULATED SILICON MEMS DEVICES**
  Heinz, D. B., Hong, V. A., Yang, Y., Ahn, C., Kenny, T. W., IEEE
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