



Thomas Kenny

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

CONTACT INFORMATION

- **Administrator**

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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 Student Affairs, School of Engineering, (2015- present)

HONORS AND AWARDS

- 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

- President, Transducers Research Foundation (2016 - present)
- Board of Directors, Applaud Medical (2015 - present)

PROGRAM AFFILIATIONS

- Stanford SystemX Alliance

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

2018-19

- Discover Engineering: How to Aim High, Embrace Uncertainty, and Achieve Impact: ENGR 193 (Spr)
- Introduction to Mechatronics: EE 118, ME 210 (Win)
- Solid State Physics for Mechanical Engineering Experiments: ME 414 (Sum)
- Want to Be an Engineer?: ENGR 1 (Aut)

2017-18

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

2016-17

- Discover Engineering: How to Aim High, Embrace Uncertainty, and Achieve Impact: ENGR 193 (Spr)
- Introduction to Mechatronics: EE 118, ME 210 (Win)
- Solid State Physics for Mechanical Engineering Experiments: ME 414 (Sum)

2015-16

- Introduction to Mechatronics: EE 118, ME 210 (Win)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Rishi Patel

Postdoctoral Faculty Sponsor

Pierre-Alexandre Gross, Ehsan Sadeghipour

Orals Evaluator

Sonia Baltodano

Doctoral Dissertation Advisor (AC)

Erica Castillo, Seth Cordts

Master's Program Advisor

Frank Charbonier, Kevin Darmawangsa

Doctoral Dissertation Co-Advisor (AC)

Joy Franco

Postdoctoral Research Mentor

Pierre-Alexandre Gross, Ehsan Sadeghipour

Publications

PUBLICATIONS

- **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. 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
- **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
 - **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. L., Heinz, D. B., Flader, I. B., Chen, Y., Shin, D. D., Kenny, T. W., IEEE
IEEE.2017: 1907–10
 - **EPITAXIALLY ENCAPSULATED RESONANT ACCELEROMETER WITH AN ON-CHIP MICRO-OVEN**
Shin, D. D., Chen, Y., Flader, I. B., Kenny, T. W., IEEE
IEEE.2017: 595–98
 - **WAFER-SCALE ENCAPSULATION OF FULLY DIFFERENTIAL ELECTRODES FOR MUTLI-AXIS INERTIAL SENSING**
Flader, I. B., Chen, Y., Gerrard, D. D., Kenny, T. W., IEEE
IEEE.2017: 591–94
 - **TOPOLOGY OPTIMIZATION FOR REDUCTION OF THERMO-ELASTIC DISSIPATION IN MEMS RESONATORS**
Gerrard, D. D., Chen, Y., Chandorkar, S. A., Yu, G., Rodriguez, J., Flader, I. B., Shin, D. D., Meinhart, C. D., Sigmund, O., Kenny, T. W., IEEE
IEEE.2017: 794–97
 - **DIRECT COMPARISON OF STICTION PROPERTIES OF OXIDE COATED POLYSILICON AND SMOOTH SINGLE CRYSTAL SILICON**
Heinz, D. B., Fickler, I. B., Chen, Y., Vukasin, G. D., Ortiz, L., Kenny, T. W., IEEE
IEEE.2017: 1203–6
 - **DUAL-RESONATOR MEMS MAGNETIC SENSOR WITH DIFFERENTIAL AMPLITUDE MODULATION**
Sonmezoglu, S., Flader, I. B., Chen, Y., Shin, D. D., Kenny, T. W., Horsley, D. A., IEEE
IEEE.2017: 814–17
 - **Direct Measurements of Anchor Damping in MEMS Resonators**
Rodriguez, J., Gerrard, D. D., Glaze, G. M., Chandorkar, S., Comenecia, L., Chen, Y., Flader, I. B., Kenny, T. W., IEEE
IEEE.2017: 10–12
 - **Nonlinear damping and dephasing in nanomechanical systems** *PHYSICAL REVIEW B*
Atalaya, J., Kenny, T. W., Roukes, M. L., Dykman, M. I.
2016; 94 (19)
 - **Nonlinearity of Degenerately Doped Bulk-Mode Silicon MEMS Resonators** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Yang, Y., Ng, E. J., Polunin, P. M., Chen, Y., Flader, I. B., Shaw, S. W., Dykman, M. I., Kenny, T. W.
2016; 25 (5): 859-869
 - **Phase Noise Reduction in an MEMS Oscillator Using a Nonlinearly Enhanced Synchronization Domain** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Shoshani, O., Heywood, D., Yang, Y., Kenny, T. W., Shaw, S. W.
2016; 25 (5): 870-876
 - **Parallel preparation of plan-view transmission electron microscopy specimens by vapor-phase etching with integrated etch stops** *ULTRAMICROSCOPY*
English, T. S., Provine, J., Marshall, A. F., Koh, A. L., Kenny, T. W.
2016; 166: 39-47
 - **Experimental Investigation Into Stiction Forces and Dynamic Mechanical Anti-Stiction Solutions in Ultra-Clean Encapsulated MEMS Devices** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Heinz, D. B., Hong, V. A., Ahn, C. H., Ng, E. J., Yang, Y., Kenny, T. W.

2016; 25 (3): 469-478

- **A Unified Epi-Seal Process for Fabrication of High-Stability Microelectromechanical Devices** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Yang, Y., Ng, E. J., Chen, Y., Flader, I. B., Kenny, T. W.
2016; 25 (3): 489-497
- **Characterization of MEMS Resonator Nonlinearities Using the Ringdown Response** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Polunin, P. M., Yang, Y., Dykman, M. I., Kenny, T. W., Shaw, S. W.
2016; 25 (2): 297-303
- **Stable Encapsulated Charge-Biased Resonators** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Ng, E. J., Harrison, K. L., Yang, Y., Ahn, C. H., Hong, V. A., Howe, R. T., Kenny, T. W.
2016; 25 (1): 30-37
- **Investigation of a Vacuum Encapsulated Si-to-Si Contact Microswitch Operated From -60 degrees C to 400 degrees C** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Soon, B. W., Qian, Y., Ng, E. J., Hong, V. A., Yang, Y., Ahn, C. H., Kenny, T. W., Lee, C.
2015; 24 (6): 1906-1915
- **Characterization of Oxide-Coated Polysilicon Disk Resonator Gyroscope Within a Wafer-Scale Encapsulation Process** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Ahn, C. H., Ng, E. J., Hong, V. A., Huynh, J., Wang, S., Kenny, T. W.
2015; 24 (6): 1687-1694
- **Nonhomogeneous morphology and the elastic modulus of aligned carbon nanotube films** *JOURNAL OF MICROMECHANICS AND MICROENGINEERING*
Won, Y., Gao, Y., Guzman de Villoria, R., Wardle, B. L., Xiang, R., Maruyama, S., Kenny, T. W., Goodson, K. E.
2015; 25 (11)
- **Thermal Conduction in Vertically Aligned Copper Nanowire Arrays and Composites.** *ACS applied materials & interfaces*
Barako, M. T., Roy-Panzer, S., English, T. S., Kodama, T., Asheghi, M., Kenny, T. W., Goodson, K. E.
2015; 7 (34): 19251-19259
- **Multifunctional Integrated Sensors for Multiparameter Monitoring Applications** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Roozeboom, C. L., Hill, B. E., Vu Anh Hong, V. A., Ahn, C. H., Ng, E. J., Yang, Y., Kenny, T. W., Hopcroft, M. A., Pruitt, B. L.
2015; 24 (4): 810-821
- **Targeted microbubbles: a novel application for the treatment of kidney stones** *BJU INTERNATIONAL*
Ramaswamy, K., Marx, V., Laser, D., Kenny, T., Chi, T., Bailey, M., Sorensen, M. D., Grubbs, R. H., Stoller, M. L.
2015; 116 (1): 9-16
- **Predicting the closed-loop stability and oscillation amplitude of nonlinear parametrically amplified oscillators** *APPLIED PHYSICS LETTERS*
Zega, V., Nitzan, S., Li, M., Ahn, C. H., Ng, E., Hong, V., Yang, Y., Kenny, T., Corigliano, A., Horsley, D. A.
2015; 106 (23)
- **Temperature Dependence of the Elastic Constants of Doped Silicon** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Ng, E. J., Hong, V. A., Yang, Y., Ahn, C. H., Everhart, C. L., Kenny, T. W.
2015; 24 (3): 730-741
- **Mode-Matching of Wineglass Mode Disk Resonator Gyroscope in (100) Single Crystal Silicon** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Ahn, C. H., Ng, E. J., Hong, V. A., Yang, Y., Lee, B. J., Flader, I., Kenny, T. W.
2015; 24 (2): 343-350
- **Fatigue Experiments on Single Crystal Silicon in an Oxygen-Free Environment** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Hong, V. A., Yoneoka, S., Messina, M. W., Graham, A. B., Salvia, J. C., Branchflower, T. T., Ng, E. J., Kenny, T. W.
2015; 24 (2): 351-359
- **Accurate Modeling of Quality Factor Behavior of Complex Silicon MEMS Resonators** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Ghaffari, S., Ng, E. J., Ahn, C. H., Yang, Y., Wang, S., Hong, V. A., Kenny, T. W.
2015; 24 (2): 276-288
- **Self-induced parametric amplification arising from nonlinear elastic coupling in a micromechanical resonating disk gyroscope** *SCIENTIFIC REPORTS*

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- Nitzan, S. H., Zega, V., Li, M., Ahn, C. H., Corigliano, A., Kenny, T. W., Horsley, D. A.
2015; 5
- **Encapsulated high frequency (235 kHz), high-Q (100 k) disk resonator gyroscope with electrostatic parametric pump** *APPLIED PHYSICS LETTERS*
Ahn, C. H., Nitzan, S., Ng, E. J., Hong, V. A., Yang, Y., Kimbrell, T., Horsley, D. A., Kenny, T. W.
2014; 105 (24)
 - **Fabrication and Characterization of a Vacuum Encapsulated Curved Beam Switch for Harsh Environment Application** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Soon, B. W., Ng, E. J., Hong, V. A., Yang, Y., Ahn, C. H., Qian, Y., Kenny, T. W., Lee, C.
2014; 23 (5): 1121-1130
 - **Zippering, entanglement, and the elastic modulus of aligned single-walled carbon nanotube films** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Won, Y., Gao, Y., Panzer, M. A., Xiang, R., Maruyama, S., Kenny, T. W., Cai, W., Goodson, K. E.
2013; 110 (51): 20426-20430
 - **Experimental Validation of Topology Optimization for RF MEMS Capacitive Switch Design** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Philippine, M. A., Zareie, H., Sigmund, O., Rebeiz, G. M., Kenny, T. W.
2013; 22 (6): 1296-1309
 - **The effect of the temperature-dependent nonlinearities on the temperature stability of micromechanical resonators** *JOURNAL OF APPLIED PHYSICS*
Lee, H. K., Melamud, R., Kim, B., Chandorkar, S., Salvia, J. C., Kenny, T. W.
2013; 114 (15)
 - **Lorentz force magnetometer using a micromechanical oscillator** *APPLIED PHYSICS LETTERS*
Li, M., Ng, E. J., Hong, V. A., Ahn, C. H., Yang, Y., Kenny, T. W., Horsley, D. A.
2013; 103 (17)
 - **Vacuum encapsulated resonators for humidity measurement** *SENSORS AND ACTUATORS B-CHEMICAL*
Hennessy, R. G., Shulaker, M. M., Messana, M., Graham, A. B., Klejwa, N., Provine, J., Kenny, T. W., Howe, R. T.
2013; 185: 575-581
 - **Crystallographic effects in modeling fundamental behavior of MEMS silicon resonators** *MICROELECTRONICS JOURNAL*
Ghaffari, S., Ahn, C. H., Ng, E. J., Wang, S., Kenny, T. W.
2013; 44 (7): 586-591
 - **Stability of Silicon Microelectromechanical Systems Resonant Thermometers** *IEEE SENSORS JOURNAL*
Ng, E. J., Lee, H. K., Ahn, C. H., Melamud, R., Kenny, T. W.
2013; 13 (3)
 - **Topology Optimization of Stressed Capacitive RF MEMS Switches** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Philippine, M. A., Sigmund, O., Rebeiz, G. M., Kenny, T. W.
2013; 22 (1): 206-215
 - **RESONANT PRESSURE SENSOR WITH ON-CHIP TEMPERATURE AND STRAIN SENSORS FOR ERROR CORRECTION** *26th IEEE International Conference on Micro Electro Mechanical Systems (MEMS)*
Chiang, C., Graham, A. B., Lee, B. J., Ahn, C. H., Ng, E. J., O'Brien, G. J., Kenny, T. W.
IEEE.2013: 45-48
 - **Quantum limit of quality factor in silicon micro and nano mechanical resonators.** *Scientific reports*
Ghaffari, S., Chandorkar, S. A., Wang, S., Ng, E. J., Ahn, C. H., Hong, V., Yang, Y., Kenny, T. W.
2013; 3: 3244-?
 - **Bidirectionally tuning Kapitza conductance through the inclusion of substitutional impurities** *JOURNAL OF APPLIED PHYSICS*
Duda, J. C., English, T. S., Piekos, E. S., Beechem, T. E., Kenny, T. W., Hopkins, P. E.
2012; 112 (7)
 - **Phase and thickness dependent modulus of Ge₂Sb₂Te₅ films down to 25 nm thickness** *APPLIED PHYSICS LETTERS*
Won, Y., Lee, J., Asheghi, M., Kenny, T. W., Goodson, K. E.
2012; 100 (16)
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- **Electrical and Thermal Conduction in Atomic Layer Deposition Nanobridges Down to 7 nm Thickness** *NANO LETTERS*
Yoneoka, S., Lee, J., Liger, M., Yama, G., Kodama, T., Gunji, M., Provine, J., Howe, R. T., Goodson, K. E., Kenny, T. W.
2012; 12 (2): 683-686
- **Mechanical characterization of aligned multi-walled carbon nanotube films using microfabricated resonators** *CARBON*
Won, Y., Gao, Y., Panzer, M. A., Dogbe, S., Pan, L., Kenny, T. W., Goodson, K. E.
2012; 50 (2): 347-355
- **Reduction of Initial Stress Stiffening by Topology Optimization** *Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS (DTIP)*
Philippine, M. A., Sigmund, O., Rebeiz, G. M., Kenny, T. W.
IEEE COMPUTER SOC.2012: 148-153
- **ANHARMONIC PHONON DISPERSION RELATIONS, GROUP VELOCITIES, AND BRANCH-DEPENDENT SPECIFIC HEAT CAPACITIES MEASURED DIRECTLY FROM MOLECULAR DYNAMICS SIMULATIONS AT FINITE TEMPERATURES** *ASME Summer Heat Transfer Conference (SHTC)*
English, T. S., Kenny, T. W., Smoyer, J. L., Baker, C. H., Le, N. Q., Duda, J. C., Norris, P. M., Hopkins, P. E.
AMER SOC MECHANICAL ENGINEERS.2012: 617-624
- **A SINGLE PROCESS FOR BUILDING CAPACITIVE PRESSURE SENSORS AND TIMING REFERENCES WITH PRECISE CONTROL OF RELEASED AREA USING LATERAL ETCH STOP** *25th IEEE International Conference on Micro Electro Mechanical Systems (MEMS)*
Chiang, C., Graham, A. B., O'Brien, G. J., Kenny, T. W.
IEEE.2012
- **Crust Removal and Effective Modulus of Aligned Multi-walled Carbon Nanotube Films** *13th IEEE InterSociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems (ITherm)*
Won, Y., Gao, Y., de Villoria, R. G., Wardle, B. L., Kenny, T. W., Goodson, K. E.
IEEE.2012: 1070-1076
- **Electrostatic Tuning to Achieve Higher Stability Microelectromechanical Composite Resonators** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Lee, H. K., Melamud, R., Kim, B., Hopcroft, M. A., Salvia, J. C., Kenny, T. W.
2011; 20 (6): 1355-1365
- **Stable Operation of MEMS Oscillators Far Above the Critical Vibration Amplitude in the Nonlinear Regime** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Lee, H. K., Melamud, R., Chandorkar, S., Salvia, J., Yoneoka, S., Kenny, T. W.
2011; 20 (6): 1228-1230
- **Influence of the temperature dependent nonlinearities on the performance of micromechanical resonators** *APPLIED PHYSICS LETTERS*
Lee, H. K., Kim, B., Melamud, R., Hopcroft, M. A., Salvia, J. C., Kenny, T. W.
2011; 99 (19)
- **Orientation angle and the adhesion of single gecko setae** *JOURNAL OF THE ROYAL SOCIETY INTERFACE*
Hill, G. C., Soto, D. R., Peattie, A. M., Full, R. J., Kenny, T. W.
2011; 8 (60): 926-933
- **AC Polarization for Charge-Drift Elimination in Resonant Electrostatic MEMS and Oscillators** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Bahl, G., Salvia, J. C., Melamud, R., Kim, B., Howe, R. T., Kenny, T. W.
2011; 20 (2): 355-364
- **Wafer-Level Epitaxial Silicon Packaging for Out-of-Plane RF MEMS Resonators with Integrated Actuation Electrodes** *IEEE TRANSACTIONS ON COMPONENTS PACKAGING AND MANUFACTURING TECHNOLOGY*
Chen, K., Wang, S., Salvia, J. C., Melamud, R., Howe, R. T., Kenny, T. W.
2011; 1 (3): 310-317
- **3-D visualization of flow in microscale jet impingement systems** *INTERNATIONAL JOURNAL OF THERMAL SCIENCES*
Won, Y., Wang, E. N., Goodson, K. E., Kenny, T. W.
2011; 50 (3): 325-331
- **Motional Impedance of Resonators in the Nonlinear Regime** *5th Joint Conference of the 65th IEEE International Frequency Control Symposium/25th European Frequency and Time Forum*
Lee, H. K., Melamud, R., Chandorkar, S., Qu, Y. Q., Salvia, J., Kenny, T. W.

IEEE.2011: 372–377

- **Stability Measurements of Silicon MEMS Resonant Thermometers** *10th IEEE Conference on Sensors*
Ng, E. J., Lee, H. K., Ahn, C. H., Melamud, R., Kenny, T. W.
IEEE.2011: 1257–1260
- **Active Electrostatic Compensation of Micromechanical Resonators Under Random Vibrations** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Yoneoka, S., Salvia, J. C., Bahl, G., Melamud, R., Chandorkar, S. A., Kenny, T. W.
2010; 19 (5): 1270-1272
- **Effect of fibril shape on adhesive properties** *APPLIED PHYSICS LETTERS*
Soto, D., Hill, G., Parness, A., Esparza, N., Cutkosky, M., Kenny, T.
2010; 97 (5)
- **Characterization of Encapsulated Micromechanical Resonators Sealed and Coated With Polycrystalline SiC** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Yoneoka, S., Roper, C. S., Candler, R. N., Chandorkar, S. A., Graham, A. B., Provine, J., Maboudian, R., Howe, R. T., Kenny, T. W.
2010; 19 (2): 357-366
- **What is the Young's Modulus of Silicon?** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Hopcroft, M. A., Nix, W. D., Kenny, T. W.
2010; 19 (2): 229-238
- **A Method for Wafer-Scale Encapsulation of Large Lateral Deflection MEMS Devices** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Graham, A. B., Messana, M. W., Hartwell, P. G., Provine, J., Yoneoka, S., Melamud, R., Kim, B., Howe, R. T., Kenny, T. W.
2010; 19 (1): 28-37
- **Real-Time Temperature Compensation of MEMS Oscillators Using an Integrated Micro-Oven and a Phase-Locked Loop** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Salvia, J. C., Melamud, R., Chandorkar, S. A., Lord, S. F., Kenny, T. W.
2010; 19 (1): 192-201
- **Model and Observations of Dielectric Charge in Thermally Oxidized Silicon Resonators** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Bahl, G., Melamud, R., Kim, B., Chandorkar, S. A., Salvia, J. C., Hopcroft, M. A., Elata, D., Hennessy, R. G., Candler, R. N., Howe, R. T., Kenny, T. W.
2010; 19 (1): 162-174
- **INFLUENCE OF THE TEMPERATURE DEPENDENT A-F EFFECT ON THE DESIGN AND PERFORMANCE OF MEMS OSCILLATORS** *23rd IEEE International Conference on Micro Electro Mechanical Systems (MEMS 2010)*
Lee, H. K., Salvia, J., Bahl, G., Melamud, R., Yoneoka, S., Qu, Y. Q., Chandorkar, S., Hopcroft, M. A., Kim, B., Kenny, T. W.
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