





## Beth L. Pruitt

Professor of Bioengineering and of Mechanical Engineering

 NIH Biosketch available Online

 Curriculum Vitae available Online

### CONTACT INFORMATION

- **Alternate Contact**

Doreen Wood

**Email** doreen@stanford.edu

**Tel** 650-723-4133

### Bio

---

#### BIO

We seek to understand the role of mechanics in biology and force sensitive pathways in cell-cell adhesion and subcellular organization, the role of mechanical environment on the structure and function of stem cell derived cardiomyocytes as biophysical models of health and disease, and to develop models of mechanical signaling underlying the sense of touch and hearing. Our research in cell biomechanics and mechanobiology includes development and application of custom microfabricated sensors and systems, new diagnostic tools and analysis systems, and robust manufacture and application of force sensors in harsh environments. We leverage microscale tools to answer novel questions in our lab in the areas of physiology, biology, stem cells, neuroscience and cardiology with an eye toward quantitative and fundamental biophysics.

#### ACADEMIC APPOINTMENTS

- Professor, Bioengineering
- Professor, Mechanical Engineering
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Child Health Research Institute
- Faculty Fellow, Stanford ChEM-H
- Member, Stanford Neurosciences Institute

#### HONORS AND AWARDS

- Best Poster Award - Ohi Dibua, ASME IMECE (2017)
- Fellow, AIMBE (2016)
- Fellow, ASME (2015)
- Best Poster Awards (2), 2014 ASME NEMB Meeting (2014)
- Stanford Faculty Scholars, Stanford University (2013-2014)
- Best Poster, MEMS in Medicine and Biology meeting (2013)

- Best Abstract Postdoc Research, GRC on Biointerfaces (2012)
- Silas H. Palmer Faculty Scholar in Mechanical Engineering, Stanford University (2010-2014)
- Stanford Clayman Fellow, Stanford University (2010-2011)
- Denice Denton Emerging Leader Award, Anita Borg Institute (2010)
- Best Abstract Award, MEMS in Medicine and Biology meeting (2009)
- Young Faculty Award, DARPA (2009)
- Best Poster, ASME IMECE meeting (2005)
- CAREER Award, NSF (2005)
- Fellowship, Hertz Foundation (1997-2002)
- Future Professors of Manufacturing Fellowship, Stanford University (1997-2002)
- Navy Commendation Medal for teaching and performance excellence, U.S. Naval Academy (1997)
- Integrated Manufacturing Association Fellowship, Stanford University (1991)

## PROFESSIONAL EDUCATION

- PhD, Stanford , Mechanical Engineering (2002)
- M.Sc, Stanford University , Manufacturing Systems (1992)
- BS, MIT , Mechanical Engineering (1991)

## LINKS

- Microsystems Laboratory: <http://microsystems.stanford.edu>

## Research & Scholarship

---

### CURRENT RESEARCH AND SCHOLARLY INTERESTS

The Pruitt microsystems lab works on custom measurements and analysis systems for small scale metrologies including scanning probe microscopy, biomechanics and mechanotransduction assays. We study the mechanics and biology of the sense of touch in *C. elegans*, the mechanisms and forces of cell adhesion, and the development and response of stem cells and cardiac myocytes to mechanical loading. We design and fabricate most of our own tools and sensors and are interested in the reliable manufacture and operation of micromachined sensors and actuators in harsh environments, measuring nanoscale mechanical behavior, and the analysis, design, and control of integrated electro-mechanical systems. We leverage new tools and answer novel questions in our lab in the areas of physiology, biology, stem cells, neuroscience and cardiology with an eye toward quantitative and fundamental biophysics.

## Teaching

---

### COURSES

#### 2017-18

- Bioengineering Departmental Research Colloquium: BIOE 393 (Aut, Win, Spr)

#### 2016-17

- Introduction to Sensors: ME 220 (Spr)
- Italian Design from the Renaissance to the Present Day: OSPFLOR 60 (Aut)
- Mechanobiology and Biofabrication Methods: BIOPHYS 342A (Win, Sum)

#### 2015-16

- How Stuff Is Made: ME 14N (Aut)

- Introduction to Sensors: ME 220 (Spr)
- Mechanobiology and Biofabrication Methods: BIOPHYS 342A, ME 342A (Win, Sum)

#### 2014-15

- Brazil Technology and Engineering: OSPGEN 137 (Sum)
- Brazil Technology and Engineering: OSPGEN 37 (Sum)
- How Stuff Is Made: ME 14N (Aut)
- MEMS Laboratory II: ENGR 342 (Win)
- Mechanobiology and Biofabrication Methods: ME 342A (Sum)
- Micro/Nano Systems Design and Fabrication: ENGR 341 (Aut)

### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Ohiremen Dibua

#### Orals Chair

Kevin Hart

#### Postdoctoral Faculty Sponsor

Cheavar Blair

#### Doctoral Dissertation Advisor (AC)

Erica Castillo, Aleksandra Denisin, Joy Franco, Adam Nekimken, Robin Wilson

#### Postdoctoral Research Mentor

Leeya Engel, Anna Kim

### GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biophysics (Phd Program)
- Cardiovascular Medicine (Fellowship Program)

## Publications

---

### PUBLICATIONS

- **Controlling cell shape on hydrogels using lift-off protein patterning** *PLoS ONE*  
Moeller, J., Denisin, A. K., Sim, J., Wilson, R. E., Ribeiro, A. J., Pruitt, B. L.  
2018; 13 (1): e0189901
- **Forces applied during classical touch assays for *Caenorhabditis elegans*** *PLOS ONE*  
Nekimken, A. L., Mazzochette, E. A., Goodman, M. B., Pruitt, B. L.  
2017; 12 (5)
- **Multi-Imaging Method to Assay the Contractile Mechanical Output of Micropatterned Human iPSC-Derived Cardiac Myocytes** *CIRCULATION RESEARCH*  
Ribeiro, A. J., Schwab, O., Mandegar, M. A., Ang, Y., Conklin, B. R., Srivastava, D., Pruitt, B. L.  
2017; 120 (10): 1572-?
- **Rise time reduction of thermal actuators operated in air and water through optimized pre-shaped open-loop driving** *JOURNAL OF MICROMECHANICS AND MICROENGINEERING*  
Larsen, T., Doll, J. C., LOIZEAU, F., Hosseini, N., Peng, A. W., Fantner, G. E., Ricci, A. J., Pruitt, B. L.  
2017; 27 (4)

- **Pneumatic stimulation of *C. elegans* mechanoreceptor neurons in a microfluidic trap.** *Lab on a chip*  
Nekimken, A. L., Fehlauer, H., Kim, A. A., Manosalvas-Kjono, S. N., Ladpli, P., Memon, F., Gopisetty, D., Sanchez, V., Goodman, M. B., Pruitt, B. L., Krieg, M.  
2017
- **Disease Model of GATA4 Mutation Reveals Transcription Factor Cooperativity in Human Cardiogenesis** *CELL*  
Ang, Y., Rivas, R. N., Ribeiro, A. J., Srivas, R., Rivera, J., Stone, N. R., Pratt, K., Mohamed, T. M., Fu, J., Spencer, C. I., Tippens, N. D., Li, M., Narasimha, et al  
2016; 167 (7): 1734-?
- **Microfabricated electrochemical gas sensor** *MICRO & NANO LETTERS*  
Gross, P., Larsen, T., Loizeau, F., Jaramillo, T., Spitzer, D., Pruitt, B.  
2016; 11 (12): 798-802
- **Increasing  $\beta$ -catenin/Wnt3A activity levels drive mechanical strain-induced cell cycle progression through mitosis.** *eLife*  
Benham-Pyle, B. W., Sim, J. Y., Hart, K. C., Pruitt, B. L., Nelson, W. J.  
2016; 5
- **Single Molecule Force Measurements in Living Cells Reveal a Minimally Tensioned Integrin State.** *ACS nano*  
Chang, A. C., Mekhdjian, A. H., Morimatsu, M., Denisin, A. K., Pruitt, B. L., Dunn, A. R.  
2016: -?
- **Tuning the Range of Polyacrylamide Gel Stiffness for Mechanobiology Applications** *ACS APPLIED MATERIALS & INTERFACES*  
Denisin, A. K., Pruitt, B. L.  
2016; 8 (34): 21893-21902
- **Distilling complexity to advance cardiac tissue engineering** *SCIENCE TRANSLATIONAL MEDICINE*  
Ogle, B. M., Bursac, N., Domian, I., Huang, N. F., Menasche, P., Murry, C. E., Pruitt, B., Radisic, M., Wu, J. C., Wu, S. M., Zhang, J., Zimmermann, W., Vunjak-Novakovic, et al  
2016; 8 (342)
- **Time-dependent evolution of functional vs. remodeling signaling in induced pluripotent stem cell-derived cardiomyocytes and induced maturation with biomechanical stimulation** *FASEB JOURNAL*  
Jung, G., Fajardo, G., Ribeiro, A. J., Kooiker, K. B., Coronado, M., Zhao, M., Hu, D., Reddy, S., Kodo, K., Sriram, K., Insel, P. A., Wu, J. C., Pruitt, et al  
2016; 30 (4): 1464-1479
- **For whom the cells pull: Hydrogel and micropost devices for measuring traction forces.** *Methods*  
Ribeiro, A. J., Denisin, A. K., Wilson, R. E., Pruitt, B. L.  
2016; 94: 51-64
- **Tissue mechanics govern the rapidly adapting and symmetrical response to touch.** *Proceedings of the National Academy of Sciences of the United States of America*  
Eastwood, A. L., Sanzeni, A., Petzold, B. C., Park, S., Vergassola, M., Pruitt, B. L., Goodman, M. B.  
2015; 112 (50): E6955-63
- **Tissue mechanics govern the rapidly adapting and symmetrical response to touch** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Eastwood, A. L., Sanzeni, A., Petzold, B. C., Park, S., Vergassola, M., Pruitt, B. L., Goodman, M. B.  
2015; 112 (50): E6955-E6963
- **Contractility of single cardiomyocytes differentiated from pluripotent stem cells depends on physiological shape and substrate stiffness** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Ribeiro, A. J., Ang, Y., Fu, J., Rivas, R. N., Mohamed, T. M., Higgs, G. C., Srivastava, D., Pruitt, B. L.  
2015; 112 (41): 12705-12710
- **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
- **Self-sensing cantilevers with integrated conductive coaxial tips for high-resolution electrical scanning probe metrology** *JOURNAL OF APPLIED PHYSICS*  
Haemmerli, A. J., Harjee, N., Koenig, M., Garcia, A. G., Goldhaber-Gordon, D., Pruitt, B. L.  
2015; 118 (3)

- **Mechanotransduction: use the force(s)** *BMC BIOLOGY*  
Paluch, E. K., Nelson, C. M., Biais, N., Fabry, B., Moeller, J., Pruitt, B. L., Wollnik, C., Kudryasheva, G., Rehfeldt, F., Federle, W.  
2015; 13
- **Spatial distribution of cell-cell and cell-ECM adhesions regulates force balance while maintaining E-cadherin molecular tension in cell pairs** *MOLECULAR BIOLOGY OF THE CELL*  
Sim, J. Y., Moeller, J., Hart, K. C., Ramallo, D., Vogel, V., Dunn, A. R., Nelson, W. J., Pruitt, B. L.  
2015; 26 (13): 2456-2465
- **Mechanical strain induces E-cadherin-dependent Yap1 and beta-catenin activation to drive cell cycle entry** *SCIENCE*  
Benham-Pyle, B. W., Pruitt, B. L., Nelson, W. J.  
2015; 348 (6238): 1024-1027
- **Cell adhesion. Mechanical strain induces E-cadherin-dependent Yap1 and  $\beta$ -catenin activation to drive cell cycle entry.** *Science*  
Benham-Pyle, B. W., Pruitt, B. L., Nelson, W. J.  
2015; 348 (6238): 1024-1027
- **Mechano-transduction: from molecules to tissues.** *PLoS biology*  
Pruitt, B. L., Dunn, A. R., Weis, W. I., Nelson, W. J.  
2014; 12 (11)
- **Mechano-Transduction: From Molecules to Tissues** *PLOS BIOLOGY*  
Pruitt, B. L., Dunn, A. R., Weis, W. I., Nelson, W. J.  
2014; 12 (11)
- **Stable, Covalent Attachment of Laminin to Microposts Improves the Contractility of Mouse Neonatal Cardiomyocytes** *ACS APPLIED MATERIALS & INTERFACES*  
Ribeiro, A. J., Zaleta-Rivera, K., Ashley, E. A., Pruitt, B. L.  
2014; 6 (17): 15516-15526
- **Stable, covalent attachment of laminin to microposts improves the contractility of mouse neonatal cardiomyocytes.** *ACS applied materials & interfaces*  
Ribeiro, A. J., Zaleta-Rivera, K., Ashley, E. A., Pruitt, B. L.  
2014; 6 (17): 15516-15526
- **Shielded piezoresistive cantilever probes for nanoscale topography and electrical imaging** *JOURNAL OF MICROMECHANICS AND MICROENGINEERING*  
Yang, Y., Ma, E. Y., Cui, Y., Haemmerli, A., Lai, K., Kundhikanjana, W., Harjee, N., Pruitt, B. L., Kelly, M., Shen, Z.  
2014; 24 (4)
- **Multifunctional integrated sensor in a 2x2 mm epitaxial sealed chip operating in a wireless sensor node**  
Roozeboom, C. L., Hong, V. A., Ahn, C. H., Ng, E. J., Yang, Y., Hill, B. E., Pruitt, B.  
2014
- **Planar patterned stretchable electrode arrays based on flexible printed circuits** *JOURNAL OF MICROMECHANICS AND MICROENGINEERING*  
Taylor, R. E., BOYCE, C. M., Boyce, M. C., Pruitt, B. L.  
2013; 23 (10)
- **MEMS-based shear characterization of soft hydrated samples** *JOURNAL OF MICROMECHANICS AND MICROENGINEERING*  
Higgs, G. C., Simmons, C. S., Gao, Y., Fried, A. T., Park, S., Chung, C., Pruitt, B. L.  
2013; 23 (8)
- **Nanomechanical actuation of a silicon cantilever using an azo dye, self-assembled monolayer.** *Langmuir*  
Rastegar, A. J., Vosgueritchian, M., Doll, J. C., Mallon, J. R., Pruitt, B. L.  
2013; 29 (23): 7118-7124
- **Integrated Multifunctional Environmental Sensors** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*  
Roozeboom, C. L., Hopcroft, M. A., Smith, W. S., Sim, J. Y., Wickeraad, D. A., Hartwell, P. G., Pruitt, B. L.  
2013; 22 (3): 779-793
- **MEMS-based force-clamp analysis of the role of body stiffness in C. elegans touch sensation.** *Integrative biology*  
Petzold, B. C., Park, S., Mazzochette, E. A., Goodman, M. B., Pruitt, B. L.

2013; 5 (6): 853-864

- **Spatially Resolved Study of Backscattering in the Quantum Spin Hall State** *PHYSICAL REVIEW X*  
Koenig, M., Baenninger, M., Garcia, A. G., Harjee, N., Pruitt, B. L., Ames, C., Leubner, P., Bruene, C., Buhmann, H., Molenkamp, L. W., Goldhaber-Gordon, D.  
2013; 3 (2)
- **Spatial patterning of endothelium modulates cell morphology, adhesiveness and transcriptional signature** *BIOMATERIALS*  
Huang, N. F., Lai, E. S., Ribeiro, A. J., Pan, S., Pruitt, B. L., Fuller, G. G., Cooke, J. P.  
2013; 34 (12): 2928-2937
- **Sacrificial layer technique for axial force post assay of immature cardiomyocytes** *BIOMEDICAL MICRODEVICES*  
Taylor, R. E., Kim, K., Sun, N., Park, S., Sim, J. Y., Fajardo, G., Bernstein, D., Wu, J. C., Pruitt, B. L.  
2013; 15 (1): 171-181
- **Microactuator device for integrated measurement of epithelium mechanics** *BIOMEDICAL MICRODEVICES*  
Mukundan, V., Nelson, W. J., Pruitt, B. L.  
2013; 15 (1): 117-123
- **Characterization of the Biophysical Origins of Mechanical Homeostasis at Cellular Adhesions** *57th Annual Meeting of the Biophysical-Society*  
Mekhdjian, A. H., Morimatsu, M., Borghi, N., Pruitt, B. L., Weis, W. I., Nelson, W. J., Dunn, A. R.  
CELL PRESS.2013: 491A-491A
- **Abnormal Calcium Handling Properties Underlie Familial Hypertrophic Cardiomyopathy Pathology in Patient-Specific Induced Pluripotent Stem Cells** *CELL STEM CELL*  
Lan, F., Lee, A. S., Liang, P., Sanchez-Freire, V., Nguyen, P. K., Wang, L., Han, L., Yen, M., Wang, Y., Sun, N., Abilez, O. J., Hu, S., Ebert, et al  
2013; 12 (1): 101-113
- **Formation of composite polyacrylamide and silicone substrates for independent control of stiffness and strain** *LAB ON A CHIP*  
Simmons, C. S., Ribeiro, A. J., Pruitt, B. L.  
2013; 13 (4): 646-649
- **Piezoresistor Design and Applications**  
Doll, J. C., Pruitt, B. L.  
Springer.2013
- **The Yin-Yang of Rigidity Sensing: How Forces and Mechanical Properties Regulate the Cellular Response to Materials** *ANNUAL REVIEW OF MATERIALS RESEARCH, VOL 43*  
Schoen, I., Pruitt, B. L., Vogel, V.  
2013; 43: 589-618
- **Microsystems AND Functional Assay for Mechanobiology**  
Pruitt, B., L., Doll, J., C., Park, S., J., Harjee, N., Petzold, B., C.  
2013
- **Spatial patterning of endothelium modulates cell morphology, adhesiveness and transcriptional signature** *Biomaterials*  
Huang, N., F., Lai, E., S., Ribeiro, A., J., Pan, S., Pruitt, B., L., Fuller, G., G.  
2013; 34 (12): 2928-37
- **Spatially Resolved Study of Backscattering in the Quantum Spin Hall State** *Physical Review X*  
Koenig, M., Baenninger, M., Garcia, A., G. F., Harjee, N., Pruitt, B., L., Ames, C.  
2013; 3: 21003
- **A Real Time Imaging System for Tracking Freely Moving C. elegans in Touch Assays**  
Mazzochette, E., A., Yen, C., Fang, Goodman, M., B., Pruitt, B., L.  
2013
- **Ultra-Thin Atomic Layer Deposition Films for Corrosion Resistance**  
Haemmerli, A., J., Doll, J., C., Provine, J., Howe, R., T., Pruitt, B., L.  
2013
- **Inducing variations in the shortening of single cardiomyocytes with localized mechanical stimulation**

- Higgs, G., C., Ribeiro, A., J. S., Zaleta, K., Ashley, E., A., Pruitt, B., L.  
2013
- **The Yin-Yang of Rigidity Sensing: How Forces and Mechanical Properties Regulate the Cellular Response to Materials** *Annual Review of Materials Research*  
Schoen, I., Pruitt, B., L., Vogel, V.  
2013
  - **MEMS-based force-clamp analysis of the role of body stiffness in C. elegans touch sensation** *Integrative Biology*  
Petzold, B., C., Park, S. -J., Mazzochette, E., A., Goodman, M., B., Pruitt, B., L.  
2013; 5 (6): 853-64
  - **MEMS-based shear characterization of soft hydrated samples** *Journal of Micromechanics and Microengineering*  
Higgs, G., C., Simmons, C., S., Gao, Y., Fried, A., T., Park, S., J., Chung, C., Pruitt, B.  
2013; 8 (23): 85001
  - **Planar patterned stretchable electrode arrays based on flexible printed circuits** *Journal of Micromechanics and Microengineering*, 23, 105004 (2013) \*Article chosen for IOP Select Distribution due to its novelty, significance and potential impact on future research  
Taylor, R., E., Boyce, C., M., Boyce, M., C., Pruitt, B., L.  
2013; 23: 105004
  - **Nanomechanical Actuation of a Silicon Cantilever Using an Azo Dye, Self-Assembled Monolayer** *Langmuir*  
Rastegar, A., Joseph, Vosgueritchian, M., Doll, J., C., Mallon, J., R., Pruitt, B., L.  
2013; 23 (29): 6779-7178
  - **Spontaneous cardiomyocyte differentiation of mouse embryoid bodies regulated by hydrogel crosslink density** *BIOMATERIALS SCIENCE*  
Chung, C., Pruitt, B. L., Heilshorn, S. C.  
2013; 1 (10): 1082-1090
  - **Integrated Sensor Cross-Sensitivity Analysis**  
Roozeboom, C., L., Salgado, J., F., Hopcroft, M., A., Pruitt, B., L.  
2013
  - **Spontaneous cardiomyocyte differentiation of mouse embryoid bodies regulated by hydrogel crosslink density** *Biomaterials Science*  
Chung, C., Pruitt, B., L., Heilshorn, S., C.  
2013; 10 (1): 1082 - 1090
  - **Piezoresistor Design and Applications**  
Doll, J. C., Pruitt, B. L.  
Springer.2013
  - **PIEZORESISTIVE CANTILEVER PROBES FOR SIMULTANEOUS NANOSCALE TOPOGRAPHY AND CONDUCTIVITY IMAGING** *26th IEEE International Conference on Micro Electro Mechanical Systems (MEMS)*  
Yang, Y., Ma, Y., Haemmerli, A., Lai, K., Kundhikanjana, W., Harjee, N., Pruitt, B., Li, X., Kelly, M., Shen, Z.  
IEEE.2013: 323-326
  - **Faster than the Speed of Hearing: Nanomechanical Force Probes Enable the Electromechanical Observation of Cochlear Hair Cells** *NANO LETTERS*  
Doll, J. C., Peng, A. W., Ricci, A. J., Pruitt, B. L.  
2012; 12 (12): 6107-6111
  - **High-bandwidth piezoresistive force probes with integrated thermal actuation**  
Doll, J. C., Pruitt, B. L.  
IOP PUBLISHING LTD.2012
  - **E-cadherin is under constitutive actomyosin-generated tension that is increased at cell-cell contacts upon externally applied stretch** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Borghi, N., Sorokina, M., Shcherbakova, O. G., Weis, W. I., Pruitt, B. L., Nelson, W. J., Dunn, A. R.  
2012; 109 (31): 12568-12573
  - **Low-impedance shielded tip piezoresistive probe enables portable microwave impedance microscopy** *MICRO & NANO LETTERS*  
Haemmerli, A. J., Nielsen, R. T., Kundhikanjana, W., HARJEE, N., Goldhaber-Gordon, D., Shen, Z. X., Pruitt, B. L.

2012; 7 (4): 321-324

- **SPECIAL SECTION: MICRO AND NANO TECHNOLOGIES FOR PROBE-BASED MICROSCOPY** *MICRO & NANO LETTERS*  
Curri, L., Fedder, G., Pruitt, B. L.  
2012; 7 (4): 296-296
- **Hydrogel crosslinking density regulates temporal contractility of human embryonic stem cell-derived cardiomyocytes in 3D cultures** *SOFT MATTER*  
Chung, C., Anderson, E., Pera, R. R., Pruitt, B. L., Heilshorn, S. C.  
2012; 8 (39): 10141-10148
- **Influence of body mechanics on force thresholds for touch sensation in C. elegans**  
Petzold, B., C., Park, S. -J., Ponce, P., Roozeboom, C., Powell, C., Goodman, M., B., Pruitt, B.  
2012
- **Body mechanics regulate the force threshold for gentle touch sensation in the nematode C. elegans**  
Petzold, B., C., Park, S. -J., Goodman, M., B., Pruitt, B., L.  
2012
- **Low-Impedance Shielded Tip Piezoresistive Probe Enables Portable Microwave Impedance Microscopy** *Micro & Nano Letters*  
Haemmerli, A., J., Nielsen, R., T., Kundhikanjana, W., Harjee, N., Goldhaber-Gordon, D., Shen, Z., X., Pruitt, B.  
2012; 7 (4): 321-324
- **Sacrificial layer technique for axial force post assay of immature cardiomyocytes** *Biomedical Microdevices*  
Taylor, R., Kim, K., Sun, N., Park, S.-j., Sim, J., Y., Fajardo, G., Pruitt, B.  
2012; 15 (1): 171-181
- **Covalent Attachment of Bioactive Molecules to PDMS for Cardiomyocyte Adhesion**  
Ribeiro, A., J.S., Rastegar, A., J., Zaleta, K., Ashley, E., A., Pruitt, B., L.  
2012
- **Effects of substrate mechanics on contractility of cardiomyocytes generated from human pluripotent stem cells** *International Journal of Cell Biology*  
Hazeltine, L., Simmons, C., S., Salick, M., Lian, X., Badur, M., Han, W., Pruitt, B.  
2012: 508294
- **High bandwidth piezoresistive force probes with integrated thermal actuation** *Journal of Micromechanics and Microengineering*  
Doll, J., C., Pruitt, B., L.  
2012; 22 (9): 95012
- **Formation of composite polyacrylamide and silicone substrates for independent control of stiffness and strain** *Lab Chip*  
Simmons, C., S., Ribeiro, A., J.S., Pruitt, B., L.  
2012; 13: 646-649
- **Piezoresistive Cantilevers for Biological Force Measurements**  
Doll, J., C., Park, S. -J., Harjee, N., Petzold, B., C., Pruitt, B., L.  
2012
- **MEMS force probes for cell mechanobiology at the microsecond scale**  
Doll, J., C., Pruitt, B., L.  
2012
- **Changes in Cell Traction Forces in Response to Uniaxial Loading**  
Sim, J., Y., Borghi, N., Kim, K., Simmons, C., S., Ribeiro, A., J.S., Pruitt, B., L.  
2012
- **MULTI-FUNCTIONAL INTEGRATED SENSORS FOR THE ENVIRONMENT** *25th IEEE International Conference on Micro Electro Mechanical Systems (MEMS)*  
Roozeboom, C. L., Sim, J. Y., Wickeraad, D., Dura, B., Smith, W. S., Hopcroft, M. A., Hartwell, P. G., Williams, R. S., Pruitt, B. L.  
IEEE.2012
- **UNIAXIAL CELL STRETCHER ENABLES HIGH RESOLUTION LIVE CELL IMAGING** *25th IEEE International Conference on Micro Electro Mechanical Systems (MEMS)*



- Sim, J. Y., Borghi, N., RIBEIRO, A., Sorokina, M., Shcherbakova, O., Ramallo, D., Dunn, A., NELSON, W. J., Pruitt, B. L.  
IEEE.2012
- **LOW-IMPEDANCE SHIELDED TIP PIEZORESISTIVE PROBE ENABLES PORTABLE MICROWAVE IMPEDANCE MICROSCOPY** *25th IEEE International Conference on Micro Electro Mechanical Systems (MEMS)*  
Haemmerli, A. J., Nielsen, R. T., Kundhikanjana, W., HARJEE, N., Lai, K., Yang, Y. L., Goldhaber-Gordon, D., Shen, Z. X., Pruitt, B. L.  
IEEE.2012
  - **High bandwidth piezoresistive force probes with integrated thermal actuation.** *Journal of micromechanics and microengineering : structures, devices, and systems*  
Doll, J. C., Pruitt, B. L.  
2012; 22 (9)
  - **Low-Impedance Shielded Tip Piezoresistive Probe Enables Portable Microwave Impedance Microscopy** *Micro Nano Letters*  
A.J. Haemmerli, R.T. Nielsen, W. Kundhikanjana, N. Harjee, D. Goldhaber-Gordon, Z.X. Shen, B.L. Pruitt  
2012; 7 (4): 321-324
  - **Effects of substrate mechanics on contractility of cardiomyocytes generated from human pluripotent stem cells.** *International journal of cell biology*  
Hazeltine, L. B., Simmons, C. S., Salick, M. R., Lian, X., Badur, M. G., Han, W., Delgado, S. M., Wakatsuki, T., Crone, W. C., Pruitt, B. L., Palecek, S. P.  
2012; 2012: 508294-?
  - **Microsystems for biomimetic stimulation of cardiac cells** *LAB ON A CHIP*  
Simmons, C. S., Petzold, B. C., Pruitt, B. L.  
2012; 12 (18): 3235-3248
  - **DEG/ENaC but Not TRP Channels Are the Major Mechanoelectrical Transduction Channels in a C. elegans Nociceptor** *NEURON*  
Geffeney, S. L., Cueva, J. G., Glauser, D. A., Doll, J. C., Lee, T. H., Montoya, M., Karania, S., Garakani, A. M., Pruitt, B. L., Goodman, M. B.  
2011; 71 (5): 845-857
  - **Patterned cracks improve yield in the release of compliant microdevices from silicon-on-insulator wafers** *JOURNAL OF MICROMECHANICS AND MICROENGINEERING*  
Hill, G. C., Padovani, J. I., Doll, J. C., Chui, B. W., Rugar, D., Mamin, H. J., HARJEE, N., Pruitt, B. L.  
2011; 21 (8)
  - **Self-heating in piezoresistive cantilevers** *APPLIED PHYSICS LETTERS*  
Doll, J. C., Corbin, E. A., King, W. P., Pruitt, B. L.  
2011; 98 (22)
  - **Stretchable microelectrode array using room-temperature liquid alloy interconnects** *JOURNAL OF MICROMECHANICS AND MICROENGINEERING*  
Wei, P., Taylor, R., Ding, Z., Chung, C., Abilez, O. J., Higgs, G., Pruitt, B. L., Ziaie, B.  
2011; 21 (5)
  - **Integrated strain array for cellular mechanobiology studies** *JOURNAL OF MICROMECHANICS AND MICROENGINEERING*  
Simmons, C. S., Sim, J. Y., Baechtold, P., Gonzalez, A., Chung, C., Borghi, N., Pruitt, B. L.  
2011; 21 (5)
  - **Calibrated micropost arrays for biomechanical characterisation of cardiomyocytes** *MICRO & NANO LETTERS*  
Kim, K., Taylor, R., Sim, J. Y., Park, S., Norman, J., Fajardo, G., Bernstein, D., Pruitt, B. L.  
2011; 6 (5): 317-322
  - **MEMS in biology and medicine** *JOURNAL OF MICROMECHANICS AND MICROENGINEERING*  
Pruitt, B. L., Herr, A. E.  
2011; 21 (5)
  - **Caenorhabditis elegans Body Mechanics Are Regulated by Body Wall Muscle Tone** *BIOPHYSICAL JOURNAL*  
Petzold, B. C., Park, S., Ponce, P., Roozeboom, C., Powell, C., Goodman, M. B., Pruitt, B. L.  
2011; 100 (8): 1977-1985
  - **Piezoresistive cantilever force-clamp system** *REVIEW OF SCIENTIFIC INSTRUMENTS*  
Park, S., Petzold, B. C., Goodman, M. B., Pruitt, B. L.  
2011; 82 (4)

- **Effects of substrate mechanics on yield and contractility of cardiomyocytes generated from pluripotent stem cells** *241st National Meeting and Exposition of the American-Chemical-Society (ACS)*  
Hazeltnine, L., Simmons, C., Salick, M., Crone, W., Pruitt, B., Palecek, S.  
AMER CHEMICAL SOC.2011
- **Self-heating in piezoresistive cantilevers.** *Applied physics letters*  
Doll, J. C., Corbin, E. A., King, W. P., Pruitt, B. L.  
2011; 98 (22): 223103
- **The functional importance of the MEC-4 transmembrane domain in force activation of the channel**  
Eastwood, A., L., Petzold, B., C., Park, S. -J., Pruitt, B., L., Goodman, M., B.  
2011
- **Stretchable microelectrode array using room-temperature-liquid alloy interconnects** *JMM*  
Wei, P., Taylor, R., Ding, Z., Chung, C., Abilez, O., J., Higgs, G., Pruitt, B.  
2011; 5 (21): 54015
- **Micropost-based Functional Assay of Adult Heart Cells: Does Mechanosensing Limit Force Production?**  
Taylor, R., E., Ribeiro, A., Fajardo, G., Razavi, H., Bernstein, D., Pruitt, B., L.  
2011
- **Integrated strain array for cellular mechanobiology studies** *Integrated strain array for cellular mechanobiology studies JMM*  
Simmons, C., S., Sim, J., Y., Baechtold, P., Gonzalez, A., Chung, C., Borghi, N., Pruitt, B.  
2011; 5 (21): 54016
- **Calibrated micropost arrays for biomechanical characterization of cardiomyocytes** *Micro and Nano Letters*  
Kim, K., Taylor, R., Sim, J., Y., Park, S. -J., Norman, J., J., Fajardo, G., Pruitt, B.  
2011; 5 (6): 317-322
- **Parametric Analysis of Strain Effects on Cell-Cell Junctions**  
Sim, J., Y., Simmons, C., Borghi, N., Baechtold, P., Pruitt, B., L.  
2011
- **Adhesion Proteins for Mechanotransduction Assays**  
Martin, E., F., Chung, C., Sim, J., Y., Pruitt, B., L.  
2011
- **Tools for studying biomechanical interactions in cells** *in Mechanobiology of Cell-Cell and Cell-Matrix Interactions Handbook*  
Taylor, R., E., Mukundan, V., Pruitt, B., L.  
Springer.2011
- **The MEMS Design Process** *in Handbook of MEMS Materials and Processes*  
Lamers, K., L., Pruitt, B., L.  
Springer.2011
- **Piezoresistive cantilever force-clamp system** *Review of Scientific Instruments*  
Park, S. -J., Petzold, B., C., Goodman, M., B., Pruitt, B., L.  
2011; 82 (4): 43703
- **Characterization of Adhesion Proteins for Cell Mechanotransduction Assays**  
Martin, E., F., Chung, C., Pruitt, B., L.  
2011
- **An Electrically-Addressable, Liquid Release Well Array for a Hand-held, Scent Dispense System** *Micro Nano Lett.*  
Lamers, K., L., Chiang, P., Ruby, R., Pruitt, B., L.  
2011; 6 (1): 37-38
- **Media:Hill\_2011\_JMM.pdf** **Patterned cracks improve yield in the release of compliant microdevices from silicon-on-insulator wafers** *Journal of Micromechanics and Microengineering*  
Hill, G., C., Padovani, J., I., Doll, J., C., Chui, B., W., Rugar, D., Mamin, H., J., Pruitt, B.

2011; 21

- **Self-sensing, coaxial-tip piezoresistive probes for scanning gate and microwave microscopy**  
Harjee, N., Haemmerli, A., König, M., Goldhaber-Gordon, D., Pruitt, B., L.  
2011
- **DEG/ENaC but not TRP Channels are the major mechano-electrical transduction channels in a *C. elegans* nociceptor** *Neuron*  
Geffeney, S., L., Cueva, J., G., Glauser, D., A., Doll, J., C., Lee, T., H. C., Montoya, M., Pruitt, B.  
2011; 71 (5)
- **Effects of crosslinking density on viability and maintenance of human embryonic stem cell-derived cardiomyocytes in elastin-like hydrogels**  
Chung, C., Marchand, M., Pruitt, B., Heilshorn, S.  
2011
- **Self-heating in piezoresistive cantilevers** *Applied Physics Letters*  
Doll, J., C., Corbin, E., A., King, W., P., Pruitt, B., L.  
2011; 98 (22)
- **PATTERNED CRACKS IN THE BURIED OXIDE LAYER IMPROVE YIELD IN DEVICE RELEASE FROM SOI WAFERS** *24th IEEE International Conference on Micro Electro Mechanical Systems (MEMS)*  
Hill, G. C., Padovani, J. I., Chui, B. W., Mamin, H. J., Rugar, D., HARJEE, N., Doll, J. C., Pruitt, B. L.  
IEEE.2011: 300-303
- **New Devices for Investigating Hair Cell Mechanical Properties** *11th International Workshop on the Mechanics of Hearing*  
Doll, J. C., Peng, A., Ricci, A., Pruitt, B. L.  
AMER INST PHYSICS.2011
- **Electrically addressable, liquid release well array for a hand-held, scent-dispense system** *MICRO & NANO LETTERS*  
Lamers, T., Chiang, P., Ruby, R., Pruitt, B.  
2011; 6 (1): 37-38
- **Integrated strain array for cellular mechanobiology studies.** *Journal of micromechanics and microengineering : structures, devices, and systems*  
Simmons, C. S., Sim, J. Y., Baechtold, P., Gonzalez, A., Chung, C., Borghi, N., Pruitt, B. L.  
2011; 21 (5): 54016-25
- **Design of piezoresistive versus piezoelectric contact mode scanning probes** *JOURNAL OF MICROMECHANICS AND MICROENGINEERING*  
Doll, J. C., Pruitt, B. L.  
2010; 20 (9)
- **Strain array for cell culture: cyclic strain affects epithelial cell spreading**  
Simmons, C., Sim, J. Y., Baechtold, P., Pruitt, B.  
FEDERATION AMER SOC EXP BIOL.2010
- **Aluminum nitride on titanium for CMOS compatible piezoelectric transducers** *JOURNAL OF MICROMECHANICS AND MICROENGINEERING*  
Doll, J. C., Petzold, B. C., Ninan, B., Mullapudi, R., Pruitt, B. L.  
2010; 20 (2)
- **Piezoresistive Cantilever Performance-Part I: Analytical Model for Sensitivity** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*  
Park, S., Doll, J. C., Pruitt, B. L.  
2010; 19 (1): 137-148
- **Piezoresistive Cantilever Performance-Part II: Optimization** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*  
Park, S., Doll, J. C., Rastegar, A. J., Pruitt, B. L.  
2010; 19 (1): 149-161
- **Role of surface roughness in hysteresis during adhesive elastic contact** *PHILOSOPHICAL MAGAZINE LETTERS*  
Kesari, H., Doll, J. C., Pruitt, B. L., Cai, W., Lew, A. J.  
2010; 90 (12): 891-902
- **Microfabricated calibration tool for direct shear stiffness measurements with applications in cell mechanics**  
Higgs, G., C., Simmons, C., S., Fried, A., F., Pruitt, B., L.

2010

- **Parametric Analysis of Cyclic Strain Effects on Cell-cell Adhesions**  
Sim, J., Simmons, C., Baechtold, P., Borghi, N., Pruitt, B., L.  
2010
- **Parametric analysis of cyclic strain effects on cell-cell adhesions**  
Sim, J., Y., Simmons, C., Baechtold, P., Borghi, N., Pruitt, B., L.  
2010
- **Piezoresistive cantilevers optimized for kilohertz force sensing in aqueous solutions**  
Doll, J., C., Petzold, B., C., Goodman, M., B., Pruitt, B., L.  
2010
- **Development of 3-dimensional Test Beds to Investigate Cell Matrix Interactions in vitro**  
Chung, C., Sim, J.-Y., Heilshorn, S., Pruitt, B., L.  
2010
- **Micromechanical Environments for Imaging Mechanobiology**  
Pruitt, B., L., Taylor, R., Simmmons, C., Sim, J., Y., Higgs, G., Chung, C.  
2010
- **Behavioral Thresholds for Force-sensation Determined by an Integrated Video Tracking and Force-clamp System**  
Park, S. -J., Petzold, B., C., Fung, J., Pruitt, B., L., Goodman, M., B.  
2010
- **Force sensing optimization and applications** *book chapter in Advanced Materials and Technologies for Micro/Nano-Devices, Sensors and Actuators*  
Doll, J., C., Park, S. -J., Rastegar, A., J., Harjee, N., Mallon Jr., J., R., Hill, G., Pruitt, B.  
Springer.2010
- **Piezoresistive cantilever performance, part II: optimization** *Journal of Microelectromechanical Systems*  
Park, S. -J., Doll, J., C., Rastegar, A., J., Pruitt, B., L.  
2010; 19 (1): 149 - 161
- **Role of surface roughness in hysteresis during adhesive elastic contact** *Philosophical Magazine Letters*  
Kesari, H., Doll, J., C., Pruitt, B., L., Cai, W., Lew, A., J.  
2010
- **The Contribution of Body Wall Muscles to C. Elegans Body Mechanics Determined Using Piezoresistive Microcantilevers**  
Petzold, B., C., Park, S. -J., Ponce, P., Goodman, M., B., Pruitt, B., L.  
2010
- **Self-Assembling Single Cells Across Microposts: First Axial Force Measurements in Immature Cardiomyocytes**  
Taylor, R., E., Kim, K., Pruitt, B., L.  
2010
- **Design of Piezoresistive vs. Piezoelectric Contact Mode Scanning Probes** *Journal of Micromechanics and Microengineering*,  
Doll, J., C., Pruitt, B., L.  
2010
- **Microcantilever Force-Clamp and Optogenetics to Evaluate the Role of Body Mechanics in C. elegans Touch Sensation**  
Park, S. -J., Petzold, B., Fung, J., Goodman, M., Pruitt, B., L.  
2010
- **Cardiomyocyte Suspension Bridges: First Measurements of Axial Force-Generation in Single Immature Heart Cells**  
Taylor, R., E., Kim, K., Pruitt, B., L.  
2010
- **Aluminum Nitride on Titanium for CMOS Compatible Piezoelectric Transducers** *Journal of Micromechanics and Microengineering*  
Doll, J., C., Petzold, B., C., Ninan, B., Mullapudi, R., Pruitt, B., L.

2010; 20: 25008

- **Novel MEMS System for Calibrating Traction Force Substrates for Cell Culture**  
Higgs, G., Simmons, C., Fried, A., Pruitt, B., L.  
2010
- **Piezoresistive cantilever performance, part I: analytical model for sensitivity** *Journal of Microelectromechanical Systems*  
Park, S. -J., Doll, J., C., Pruitt, B., L.  
2010; 19 (1): 137 - 148
- **FORCE SENSING OPTIMIZATION AND APPLICATIONS** *NATO Advanced Research Workshop on Advanced Materials and Technologies for Micro/Nano-Devices Sensors and Actuators*  
Doll, J. C., Park, S., Rastegar, A. J., Harjee, N., Mallon, J. R., Hill, G. C., Barlian, A. A., Pruitt, B. L.  
SPRINGER.2010: 287–298
- **COAXIAL TIP PIEZORESISTIVE SCANNING PROBES FOR HIGH-RESOLUTION ELECTRICAL IMAGING** *23rd IEEE International Conference on Micro Electro Mechanical Systems (MEMS 2010)*  
HARJEE, N., Garcia, A. G., Koenig, M., Doll, J. C., Goldhaber-Gordon, D., Pruitt, B. L.  
IEEE.2010: 344–347
- **Optimization with Process Limits and Application Requirements for Force Sensors** *2010 IEEE Sensors Conference*  
Park, S., Doll, J. C., Harjee, N., Pruitt, B. L.  
IEEE.2010: 1946–1949
- **Coaxial Tip Piezoresistive Scanning Probes with Sub-Nanometer Vertical Displacement Resolution** *2010 IEEE Sensors Conference*  
Harjee, N., Haemmerli, A., Goldhaber-Gordon, D., Pruitt, B. L.  
IEEE.2010: 1962–1966
- **Aluminum nitride on titanium for CMOS compatible piezoelectric transducers.** *Journal of micromechanics and microengineering : structures, devices, and systems*  
Doll, J. C., Petzold, B. C., Ninan, B., Mullapudi, R., Pruitt, B. L.  
2010; 20 (2): 25008
- **Sidewall epitaxial piezoresistor process and characterisation for in-plane force sensing applications** *MICRO & NANO LETTERS*  
Barlian, A. A., HARJEE, N., Pruitt, B. L.  
2009; 4 (4): 204-209
- **Design optimization of piezoresistive cantilevers for force sensing in air and water** *JOURNAL OF APPLIED PHYSICS*  
Doll, J. C., Park, S., Pruitt, B. L.  
2009; 106 (6)
- **Modeling and characterization of electrostatic comb-drive actuators in conducting liquid media** *JOURNAL OF MICROMECHANICS AND MICROENGINEERING*  
Mukundan, V., Ponce, P., Butterfield, H. E., Pruitt, B. L.  
2009; 19 (6)
- **SU-8 force sensing pillar arrays for biological measurements** *LAB ON A CHIP*  
Doll, J. C., Harjee, N., Klejwa, N., Kwon, R., Coulthard, S. M., Petzold, B., Goodman, M. B., Pruitt, B. L.  
2009; 9 (10): 1449-1454
- **MEMS Electrostatic Actuation in Conducting Biological Media** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*  
Mukundan, V., Pruitt, B. L.  
2009; 18 (2): 405-413
- **Review: Semiconductor Piezoresistance for Microsystems** *PROCEEDINGS OF THE IEEE*  
Barlian, A. A., Park, W., Mallon, J. R., Rastegar, A. J., Pruitt, B. L.  
2009; 97 (3): 513-552
- **Design optimization of piezoresistive cantilevers for force sensing in air and water.** *Journal of applied physics*  
Doll, J. C., Park, S. J., Pruitt, B. L.  
2009; 106 (6): 64310

- **A STRETCHABLE CELL CULTURE PLATFORM WITH EMBEDDED ELECTRODE ARRAY** *22nd International Conference on Micro Electro Mechanical Systems (MEMS)*  
Wei, P., Taylor, R., Ding, Z., Higgs, G., Norman, J. J., Pruitt, B. L., Ziaie, B.  
IEEE.2009: 407–410
- **PIEZORESISTIVE CANTILEVER-BASED FORCE-CLAMP SYSTEM FOR THE STUDY OF MECHANOTRANSDUCTION IN C. ELEGANS** *22nd International Conference on Micro Electro Mechanical Systems (MEMS)*  
Park, S., Petzold, B., Goodman, M. B., Pruitt, B. L.  
IEEE.2009: 188–191
- **A Stretchable Cell Culture Platform with Embedded Electrode Array**  
Wei, P., Taylor, R., Ding, Z., Higgs, G., Norman, J. J., Pruitt, B., L.  
2009
- **MEMS Electrostatic Actuation in Conducting Biological Media** *Journal of Microelectromechanical Systems*  
Mukundan, V., Pruitt, B., L.  
2009; 18 (2): 405 - 413
- **Modeling and Characterization of Electrostatic Comb-drive Actuators in Conducting Liquid Media** *Journal Micromechanics and Microengineering*  
Mukundan, V., Ponce, P., Butterfield, H., E., Pruitt, B., L.  
2009; 19: 65008
- **Piezoresistive Cantilever Optimization and Applications** *invited paper, Materials Research Society Fall Meeting*  
Doll, J., C., Park, S., J., Harjee, N., Rastegar, A., J., Mallon, J., R., Petzold, B., C., Pruitt, B.  
2009
- **Design optimization of piezoresistive cantilevers for force sensing in air and water** *Journal of Applied Physics*  
Doll, J., C., Park, S. -J., Pruitt, B., L.  
2009; 106 (6): 64310
- **The Contribution of Body Wall Muscles to C. elegans Body Mechanics Determined Using Piezoresistive Microcantilevers**  
Petzold, B., C., Park, S. -J., Ponce, P., Goodman, M., B., Pruitt, B., L.  
2009
- **Synchronized Mechanical and Electrical Stimulation of Primary Heart Cells with a Stretchable Microelectrode Array**  
Taylor, R., Lue, S., J., Gumerlock, K., Fajardo, G., Higgs, G., Norman, J., J., Pruitt, B.  
2009
- **Strain Array for Cell Culture**  
Bächtold, P., Simmons, C., S., Sim, J., Y., Haniff, S., Pruitt, B., L.  
2009
- **Semiconductor Piezoresistance for Microsystems**  
Barlian, A., A., Park, W. -T., Mallon Jr., J., R., Rastegar, A., J., Pruitt, B., L.  
2009
- **Piezoresistive Cantilever-based Force clamp System for the Study of Mechanotransduction in C. elegans**  
Park, S. -J., Petzold, B., Goodman, M., B., Pruitt, B., L.  
2009
- **On-chip Micromechanical Testing System for Studying Cell Mechanics**  
Mukundan, V., Pruitt, B., L.  
2009
- **Measuring Thresholds for Touch Sensation in C. elegans**  
Doll, J., C., Muntwyler, S., Beyeler, F., Geffeny, S., Goodman, M., B., Nelson, B., J., Pruitt, B.  
2009
- **A High d33 CMOS Compatible Process for Aluminum Nitride on Titanium**  
Doll, J., C., Petzold, B., C., Ninan, B., Mullapudi, R., Pruitt, B., L.

2009

- **Sidewall epitaxial piezoresistor process and characterization for in-plane force sensing applications** *Micro and Nano Letters*  
Barlian, A., A., Harjee, N., Pruitt, B., L.  
2009; 4 (4): 204-209
- **High Frequency Force Sensing with Piezoresistive Cantilevers**  
Doll, J., C., Petzold, B., C., Ghale, P., Goodman, M., B., Pruitt, B., L.  
2009
- **Nano and the Future of Endovascular Medicine** *Endovascular Today, supp.*  
Taylor, R., Norman, J., J., Simmons, C., Abilez, O., J., Zarins, C., K., Pruitt, B., L.  
2009: 27-31
- **Modeling and Characterization of Electrostatic Comb-drive Actuators in Conducting Liquid Media.** *Journal of micromechanics and microengineering : structures, devices, and systems*  
Mukundan, V., Ponce, P., Butterfield, H. E., Pruitt, B. L.  
2009; 19 (6): 1-9
- **Artificial dirt: Microfluidic substrates for nematode neurobiology and behavior** *JOURNAL OF NEUROPHYSIOLOGY*  
Lockery, S. R., Lawton, K. J., Doll, J. C., Faumont, S., COULTHARD, S. M., Thiele, T. R., Chronis, N., McCormick, K. E., Goodman, M. B., Pruitt, B. L.  
2008; 99 (6): 3136-3143
- **Suspension of nanoparticles in SU-8: Processing and characterization of nanocomposite polymers** *European Nano System Conference (ENS '05)*  
Chiamori, H. C., Brown, J. W., Adhiprakasha, E. V., Hantsoo, E. T., Straalsund, J. B., Melosh, N. A., Pruitt, B. L.  
ELSEVIER SCI LTD.2008: 228-36
- **Low 1/f noise, full bridge, microcantilever with longitudinal and transverse piezoresistors** *APPLIED PHYSICS LETTERS*  
Mallon, J. R., Rastegar, A. J., Barlian, A. A., Meyer, M. T., Fung, T. H., Pruitt, B. L.  
2008; 92 (3)
- **Sidewall epitaxial piezoresistor process for in-plane sensing applications** *21st IEEE International Conference on Micro Electro Mechanical Systems (MEMS 2008)*  
Barlian, A. A., HARJEE, N., Mukundan, V., Fung, T. H., Park, S., Pruitt, B. L.  
IEEE.2008: 331-334
- **Application of a modified quality function deployment method for MEMS** *ASME International Mechanical Engineering Congress and Exposition*  
Lamers, T. L., David, M., Goodson, K., Ishii, K., Pruitt, B. L.  
AMER SOC MECHANICAL ENGINEERS.2008: 159-168
- **Vapor-venting, micromachined heat exchanger for electronics cooling** *ASME International Mechanical Engineering Congress and Exposition*  
David, M. P., Khurana, T., Hidrovo, C., Pruitt, B. L., Goodson, K. E.  
AMER SOC MECHANICAL ENGINEERS.2008: 951-960
- **Ion Implanted Piezoresistive Cantilever Design and Performance**  
Park, S. -J., Rastegar, A., J., Mallon, J., R. J., Barlian, A., A., Fung, T., H., Pruitt, B., L.  
2008
- **Microsystems for biomechanical measurements** *Pediatr Res*  
Norman, J., J., Mukundan, V., Bernstein, D., Pruitt, B., L.  
2008; 63 (5): 576-83
- **Mechanical Strain Promotes Organization and Contractility of Human Embryonic-Derived Cardiomyocytes in Engineered Myocardial Tissue**  
Blundo, J., Abilez, O., Cao, F., Zarins, C., Wu, J., Pruitt, B., L.  
2008
- **Molecular Imaging of Cardiac Constructs Derived from Human Embryonic Stem Cell**  
Blundo, J., Abilez, O., Cao, F., Zarins, C., Wu, J., Pruitt, Beth.  
2008
- **Artificial dirt: Microfluidic substrates for nematode neurobiology and behavior** *J Neurophysiol*

- 
- Lockery, S., R., Lawton, K., J., Doll, J., C., Faumont, S., Coulthard, S., M., Thiele, T., R., Pruitt, B.  
2008; 99 (6): 3136-43
- **Suspension of nanoparticles in SU-8 and characterization of nanocomposite polymers** *Microelectronics Journal*  
Chiamori, H., C., Brown, J., W., Adhiprakasha, E., V., Hantsoo, E., T., Straalsund, J., B., Melosh, N., A., Pruitt, B.  
2008; 39: 228-236
  - **Modeling and Experimental Validation of Electrostatic Actuation in Aqueous Ionic Media**  
Mukundan, V., Ponce, P., Butterfield, H., E., Pruitt, B., L.  
2008
  - **Modeling and validation of electrostatic actuation in aqueous ionic media** *21st IEEE International Conference on Micro Electro Mechanical Systems (MEMS 2008)*  
Mukundan, V., Ponce, P., Butterfield, H. E., Pruitt, B. L.  
IEEE.2008: 467-470
  - **In vivo imaging and evaluation of different biomatrices for improvement of stem cell survival** *JOURNAL OF TISSUE ENGINEERING AND REGENERATIVE MEDICINE*  
Cao, F., Rafie, A. H., Abilez, O. J., Wang, H., Blundo, J. T., Pruitt, B., Zarins, C., Wu, J. C.  
2007; 1 (6): 465-468
  - **Analysis of nematode mechanics by piezoresistive displacement clamp** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Park, S., Goodman, M. B., Pruitt, B. L.  
2007; 104 (44): 17376-17381
  - **SU-8 MEMS Fabry-Perot pressure sensor** *SENSORS AND ACTUATORS A-PHYSICAL*  
Hill, G. C., Melamud, R., Declercq, F. E., Davenport, A. A., Chan, I. H., Hartwell, P. G., Pruitt, B. L.  
2007; 138 (1): 52-62
  - **Biocompatible coatings for CMUTs in a harsh, aqueous environment** *JOURNAL OF MICROMECHANICS AND MICROENGINEERING*  
Zhuang, X., Nikoozadeh, A., Beasley, M. A., Yaralioglu, G. G., Khuri-Yakub, B. T., Pruitt, B. L.  
2007; 17 (5): 994-1001
  - **Design and characterization of microfabricated piezoresistive floating element-based shear stress sensors** *ASME International Mechanical Engineering Congress and Exposition*  
Barlian, A. A., Park, S., Mukundan, V., Pruitt, B. L.  
ELSEVIER SCIENCE SA.2007: 77-87
  - **Transparent SU-8 three-axis micro strain gauge force sensing pillar arrays for biological applications** *14th International Conference on Solid-State Sensors, Actuators and Microsystems/21st European Conference on Solid-State Transducers*  
Klejwa, N., Harjee, N., Kwon, R., COULTHARD, S. M., Pruitt, B. L.  
IEEE.2007
  - **Characteristics of Parylene Coatings for CMUTs in a Harsh, Aqueous Environment** *Journal of Micromechanics and Microengineering*  
Zhuang, X., Nikoozadeh, A., Beasley, M., A., G, Y., Khuri-Yakub, B., T., Pruitt, B., L.  
2007; 17: 994-1001
  - **Biological measurements of C. Elegans touch sensitivity with microfabricated force sensors**  
Doll, J., C., Harjee, N., Klejwa, N., Kwon, R., Coulthard, S., M., Pruitt, B., L.  
2007
  - **Application of a modified quality function deployment method for MEMS**  
Lamers, T., L., David, M., Goodson, K., Ishii, K., Pruitt, B., L.  
2007
  - **Characterization of the DRIE Process for ETWI for Piezoresistive Inertial Sensors** *NNIN REU Research Accomplishments*  
Suggs, M., Barlian, A., Harjee, N., Pruitt, B., L.  
2007: 88-89
  - **In vivo imaging and evaluation of different biomatrices for improvement of stem cell survival** *J Tissue Eng Regen Med.*



- 
- Cao, F., Rafie, A., H. Sadrzadeh, Abilez, O., J., Wang, H., Blundo, J., T., Pruitt, B., L.  
2007; 1 (6): 465-8
- **A Vapor-venting, micromachined heat exchanger for electronics cooling**  
David, M., P., Khurana, T., Hidrovo, C., Pruitt, B., L., Goodson, K., E.  
2007
  - **Differential electrode design for electrostatic actuator in conducting media** *14th International Conference on Solid-State Sensors, Actuators and Microsystems/21st European Conference on Solid-State Transducers*  
Mukundan, V., Pruitt, B.  
IEEE.2007
  - **Biomems platform for electromechanical stimulation of cell culture** *ASME Summer Bioengineering Conference*  
Blundo, J., Chua, G., Abilez, O., Park, Y., Rastegar, A., Cao, F., Zairins, C., Wu, J., Pruitt, B.  
AMER SOC MECHANICAL ENGINEERS.2007: 63-64
  - **Pulsatile pressure system for cellular mechanical stimulation** *ASME Summer Bioengineering Conference*  
Taylor, R., Abilez, O., Cao, F., Wu, J., Xu, C., Zarins, C., Pruitt, B.  
AMER SOC MECHANICAL ENGINEERS.2007: 1009-1010
  - **Special Issue on Life Science Automation** *IEEE TRANSACTIONS ON AUTOMATION SCIENCE AND ENGINEERING*  
Zhang, M. J., Felder, R. A., Kim, E. S., Nelson, B., Zurich, E., Pruitt, B. L., Zheng, Y. F., Meldrum, D.  
2006; 3 (2): 137-140
  - **Piezoresistive MEMS underwater shear stress sensors** *19th IEEE International Conference on Micro Electro Mechanical Systems (MEMS 2006)*  
Barlian, A. A., Narain, R., Li, J. T., Quance, C. E., Ho, A. C., Mukundan, V., Pruitt, B. L.  
IEEE.2006: 626-629
  - **Experimental Characterization of Frequency Dependent Electrostatic Actuator for Aqueous Media**  
Mukundan, V., Pruitt, B., L.  
2006
  - **A Biocompatible Coating for Capacitive Micromachined Ultrasonic Transducers**  
Beasley, M., A., Zhuang, X., Nikoozadeh, A., Khuri-Yakub, B., T., Pruitt, B., L.  
2006
  - **Development of an Imaging System for On-Line Assessment of Human Embryonic Stem-Cell Derived Cardiomyocytes**  
Abilez, O., J., Cao, F., Blundo, J., T., Wu, J., C., Pruitt, B., L., Zarins, C., K.  
2006
  - **NSF/NASA-GSFC MEMS Education Workshop Outcomes**  
Pruitt, B., L., Saif, M., T. A., Ghodssi, R., Turner, K., L., Judy, J., W., Schmidt, M., A.  
2006
  - **Micro and Nano Scale Education at Stanford University**  
Barlian, A., A., Kovacs, G., T. A., Howe, R., T., Pruitt, B., L.  
2006
  - **Mechanical Properties of Wild Type and Mutant Caenorhabditis Elegans using a Closed Loop Piezoresistive Cantilever Indentation System**  
Park, S. -J., Goodman, M., B., Pruitt, B., L.  
2006
  - **Design of BioMEMS device for electromechanical stimulation of hESC**  
Blundo, J., T., Abilez, O., J., Zarins, C., K., Wu, J., C., Pruitt, B., L.  
2006
  - **Design of a Low Noise, Temperature Compensated, Piezoresistive Cantilever**  
Mallon Jr., J., R., Barlian, A., A., Davenport, A., A., Lim, P., Pruitt, B., L.  
2006

- **A microfabricated direct methanol fuel cell with integrated electroosmotic pump** *19th IEEE International Conference on Micro Electro Mechanical Systems (MEMS 2006)*  
Buie, C. R., BANIN, Y., Tang, C. Y., Santiago, J. G., Prinz, F. B., Pruitt, B. L.  
IEEE.2006: 938–941
- **Development of an SU-8 Fabry Perot blood pressure sensor** *18th IEEE International Conference on Micro Electro Mechanical Systems (MEMS)*  
Melamud, R., Davenport, A. A., Hill, G. C., Chan, I. H., Declercq, F., Hartwell, P. G., Pruitt, B. L.  
IEEE.2005: 810–813
- **Noise studies in implanted piezoresistors** *ASME International Mechanical Engineering Congress and Exposition*  
Davenport, A. A., Pruitt, B., Lim, P.  
AMER SOC MECHANICAL ENGINEERS.2005: 87–93
- **Measurement of mechanical properties of Caenorhabditis elegans with a piezoresistive microcantilever system** *3rd IEEE/EMBS Special Topic Conference on Microtechnology in Medicine and Biology*  
Park, S. J., Goodman, M. B., Pruitt, B. L.  
IEEE.2005: 400–403
- **Integration of K-12 Outreach with Design Projects in an Introductory Mechanical Engineering Course**  
Bailey, T., L., Tung, A., T., Pruitt, B., L.  
2005
- **Noise Studies in Implanted Piezoresistors**  
Davenport, A., Lim, P., Pruitt, B., L.  
2005
- **Characterization of modified polymers for high elongation strain sensing**  
Hantsoo, E., T., Zhao, Y., Chial, V., Chan, K., Wu, K., Rose, K., A., Pruitt, B.  
2005
- **Measurement of mechanical properties of Caenorhabditis elegans with a piezoresistive microcantilever system**  
Park, S., J., Goodman, M., B., Pruitt, B., L.  
2005
- **Design, fabrication, and characterization of piezoresistive MEMS shear stress sensors** *ASME International Mechanical Engineering Congress and Exposition*  
Barlian, A. A., Park, S., Mukundan, V., Pruitt, B. L.  
AMER SOC MECHANICAL ENGINEERS.2005: 531–536
- **Strain transduction in conductor-modified polymers** *Symposium on Micro- and Nanosystems held at the 2005 MRS Spring Meeting*  
Hantsoo, E. T., Chial, V. B., Zhao, Y., Chan, K. C., Rose, K. A., Wu, K. S., Pruitt, B. L.  
MATERIALS RESEARCH SOCIETY.2005: 49–54
- **Measurement system for low force and small displacement contacts** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*  
Pruitt, B. L., Park, W. T., Kenny, T. W.  
2004; 13 (2): 220-229
- **presentation: Piezoresistive MEMS Underwater Shear Stress Sensor**  
Barlian, A., A., Badi, M., H., Mukundan, V., Park, S. -J., Davenport, A., A., Pruitt, B., L.  
2004
- **Fundamental noise in MEMS force sensors** *Conference on Noise and Information in Nanoelectronics, Sensors and Standards II*  
Kenny, T. W., Liang, Y. C., Pruitt, B. L., Harley, J. A.  
SPIE-INT SOC OPTICAL ENGINEERING.2004: 143–151
- **Piezoresistive cantilevers and measurement system for characterizing low force electrical contacts** *SENSORS AND ACTUATORS A-PHYSICAL*  
Pruitt, B. L., Kenny, T. W.  
2003; 104 (1): 68-77
- **Piezoresistive Cantilevers and Measurement System for Characterizing Low Force Electrical Contacts** *Sens. Actuators A, Phys., Sensors and Actuators A (Physical)*

Pruitt, B., L., Kenny, T., W.

2003; 104 (1): 68 - 77

● **Low Force Contact Resistance Measurements of Thin Film Gold Using Micromachined Piezoresistive Cantilevers**

Pruitt, B., L., Park, W. -T., Choi, D. -H., Nix, W., D., Kenny, T., W.

2001

● **Low force electrical contact measurements using piezoresistive MEMS cantilevers to characterize thin-film metallization** *11th International Conference on Solid-State Sensors and Actuators*

Pruitt, B., Choi, D. H., Florando, J., Martens, R., Wenzel, S., Reynolds, C., Nix, W., Kenny, T.

SPRINGER-VERLAG BERLIN.2001: 1032-1035

● **Low force electrical contact measurements using piezoresistive cantilevers to characterize thin-film metallization**

Pruitt, B., L., Choi, D., H., Florando, J., Martens, R., Wenzel, S., Reynolds, C.

2001

● **A Three-Axis Micromachined Force Sensor for Studying Cockroach Biomechanics**

Bartsch, M., Partridge, A., Pruitt, B., L., Full, R., Kenny, T.

2000

● **Design of piezoresistive cantilevers for low force electrical contact measurements**

Pruitt, B., L., Partridge, A., Bartsch, M., Liang, Y., Kenny, T., W., Wenzel, S.

2000

● **Layered Manufacturing with Embedded Components: Process Planning Considerations**

Cham, J., G., Pruitt, B., L., Cutkosky, M., R., Binnard, M., Weiss, L., E., Neplotnik, G.

1999

● **Velocity Measurements in the Flow Around an Rotating End Mill**

Flack, K., Pruitt, B., L., Callari, M.

1998

● **Monitoring End Mill Contact Using Acoustic Emission**

Pruitt, B., L., Dornfeld, D., A.

1996

● **IMPROVEMENT OF SYMPTOMS IN TOURETTE SYNDROME BY PIQUINDONE, A NOVEL DOPAMINE-2 RECEPTOR ANTAGONIST** *INTERNATIONAL CLINICAL PSYCHOPHARMACOLOGY*

UHR, S. B., Pruitt, B., Berger, P. A., Stahl, S. M.

1986; 1 (3): 216-220

● **CASE-REPORT OF 4 PATIENTS WITH TOURETTE SYNDROME TREATED WITH PIQUINDONE, A D2 RECEPTOR ANTAGONIST** *JOURNAL OF CLINICAL PSYCHOPHARMACOLOGY*

UHR, S. B., Pruitt, B., Berger, P. A., Stahl, S. M.

1986; 6 (2): 128-130

● **TREATMENT OF TOURETTES SYNDROME WITH RO22-1319, A D-2-RECEPTOR ANTAGONIST** *NEW ENGLAND JOURNAL OF MEDICINE*

UHR, S. B., Berger, P. A., Pruitt, B., Stahl, S. M.

1984; 311 (15): 989-989