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Education:

- Ph.D.** **University of California, Berkeley**, Electrical Engineering, December, 1996
Thesis: *"Batch Fabricated Ferromagnetic Microactuators with Silicon Flexures"*
Thesis Committee: Prof. R. S. Muller (advisor), R. M. White, S. Sanders, and T. Sands
- M.S.** **University of California, Berkeley**, Electrical Engineering, December, 1994
M. S. Report - *"Magnetic Microactuation of Polysilicon Flexure Structures"* (Advisor: R. S. Muller)
- B.E.E.** **University of Minnesota, Minneapolis**, Electrical Engineering, December, 1989 (*summa cum laude*)
Honors Project Report - *"Design of a Piezoelectric-Stepper Motor"* (Advisor: D. L. Polla)

Positions and Employment:

2009 (anticipated) Professor of Electrical Engineering, University of California, Los Angeles, California
2006 Fulbright Senior Scholar, University of New South Wales, Sydney, Australia
2005-2007 Thrust Area Leader, California Nanosystems Institute, University of California, Los Angeles, CA
2004-now Director, Neuroengineering Training Program, University of California, Los Angeles, California
2004-now Director, Nanoelectronics Research Facility, University of California, Los Angeles, California
2003-now Associate Professor of Electrical Engineering, University of California, Los Angeles, California
2002-now Chair, MEMS and Nanotechnology Major Field, Electrical Engineering, UCLA, Los Angeles, CA
1999-2004 Co-Chair, Neuroengineering Program, University of California, Los Angeles, California
1998-now Director, Microfabrication Laboratory, University of California, Los Angeles, California
1998-2002 Chair, MEMS Major Field, Electrical Engineering, University of California, Los Angeles, CA
1997-2003 Assistant Professor of Electrical Engineering, University of California, Los Angeles, California
1996-1997 Member of the Technical Staff, Silicon Light Machines, Sunnyvale, California
1991-1991 Summer Inter, IBM Almaden Research Laboratory, Almaden, California
1990-1996 Graduate-Student Researcher, University of California, Berkeley, California
1989-1990 Graduate-Student Researcher, University of Minnesota, Minneapolis, Minnesota
1988-1989 Undergraduate Honor Student, University of Minnesota, Minneapolis, Minnesota
1987-1989 CO-OP Student, Control Data Corporation, Arden Hills, Minnesota

Research Interests:

- Microfabrication technologies, design methods, and applications for MEMS / NEMS
- Microsensors, microactuators, and microsystems
- Ferromagnetic material deposition, characterization, and integration into microdevices
- Biomedical applications of MEMS
- Neuroengineering: new neuroscientific instrumentation, prostheses, and systems

Research Experience:

- University of California, Los Angeles** (Associate Professor) – 2003 to present
- Non-obstructing Magnetic MEMS for Implantable Catheters (NIH)
 - Microsystems for Amplifying, Processing, and Transmitting Many Channels of Neural Signals (NSF)

- Ferromagnetic MEMS Switch Arrays (National Semiconductor)
- Ultimate Scaling Limits of Ferromagnetic Actuators: Ferromagnetic Nanoactuators (UCLA)
- Magnetic-MEMS-Enabled Self-Clearing Micromachined Shunt for Hydrocephalus (Medtronic)
- MRI Microcoils with Integrated Electrodes (UCLA, Epilepsy Foundation)
- Micromachined Probes and Microinstrumentation for Plasma Research (UCLA, DOE)
- 3-D Micromachining of Photostructurable Glass Ceramics (UCLA/Aerospace Corp.)
- Wireless Biosignal Recording and Stimulation System (NSF/IDBR)
- Reliable Brain Machine Interface (UCLA)
- Somatosensory-Cortex Stimulation as a Feedback Signal for Brain-Machine Interfaces (UCLA)
- High-Resolution Micromachined Arrays for Recording from the Spinal Cord (Roman Reed Foundation, NIH)
- Closed-Loop Control of Energy Homeostasis (UCLA)
- Micromachined Amperometric Nitrate Sensor with Integrated Microfluidics for Remote Monitoring of Ground Water Quality
- Micromachined Patch-Clamp Arrays with Integrated Microfluidics for Single-Cell Dose-Response Measurements (NASA)
- Micromachined Probe Arrays for Drosophila Research (UCLA)
- Restoration of Ocular Motility with a Closed-Loop Eye-Movement Control System (NIH/NEI)

University of California, Los Angeles (Assistant Professor) – 1997 to 2003

- Spinal Cord Recording and Stimulation Technologies (Roman Reed Foundation, NIH)
- IC-Compatible Ferromagnetic MEMS (NSF)
- Micromachined Low-Power Magnetometers (DARPA)
- MEMS Tunable Frequency-Selective Surfaces (NSF)
- Development on High Density Electrode Arrays for Retinal Prostheses (NIH)
- Microstimulator System for Chronic Stimulation of the STN (NIH)

Silicon Light Machines, Sunnyvale (Member of the Technical Staff) – 1996 to 1997.

- Designed and tested electrostatic microactuators (deformable diffraction gratings) for use in a MEMS-based projection display system

University of California, Berkeley (Graduate-Student Researcher) – 1991 to 1996.

- Designed, fabricated, and tested magnetic microactuators with polysilicon flexures.
- Present research is focused on improving flexure-based magnetic microactuators and applying them to microphotonic systems.

IBM Almaden Research Laboratory, Almaden, California (Summer Student) – 1991.

- Investigated the application of magnetic materials to MEMS and compared the scaling issues of magnetic and electrostatic microactuators.
- The processes used to fabricate thin-film magnetic recording heads were used to construct magnetic microactuators.

University of California, Berkeley (Graduate-Student Researcher) – 1990 to 1991.

- Joined the Berkeley Sensor & Actuator Center and investigated various methods of microactuation.

University of Minnesota, Minneapolis (Graduate-Student Researcher) – 1989 to 1990.

- Designed, constructed, and tested thermal microactuators and surface-micromachined membrane pumps.

University of Minnesota, Minneapolis (Undergraduate Honor Student) – 1988 to 1989.

- Designed, constructed, and tested cm-scale piezoelectric-stepper motors with sub-mm step size.

Control Data Corporation, Arden Hills, Minnesota (Co-op Student) – Fall 1987, Summers of 1988-89.

- Designed a test board for Control Data's version of the high-speed channel.
- Wrote computer programs to greatly enhance the speed of digital-circuit design simulations.

Teaching Experience:

University of California, Los Angeles - 1997 to present.

Students Advised:

Advisees who have completed their Ph.D. with my guidance:

1. 2003: Pedro Irazoqui-Pastor (BME / Neuroengineering)
2. 2004: Paulo S. Motta (EE / MEMS)
3. 2005: Alejandro Covalin (BME / Neuroengineering)
4. 2006: Andy Hung (BME / Neuroengineering / MEMS)
5. 2006: Brian Matthews (EE / MEMS)
6. 2006: George Scarlatis (BME / Neuroengineering)
7. 2006: Jeff Yee (EE / MEMS)
8. 2006: Shahin Farshchi (EE / MEMS / Neuroengineering)
9. 2006: Gene Fridman (BME / Neuroengineering)
10. 2007: Daniel Vasquez (EE / MEMS)
11. 2007: Calvin Yang (BME / Neuroengineering)
12. 2008: Janet Stillman (EE / MEMS)
13. 2008: Selene Lee (BME / MEMS / Neuroengineering)
14. 2008: Dohyun Kim (EE / MEMS)
15. 2009: Franklin Chiang (EE / MEMS)
16. 2009: Steve Badelt (BME / Neuroengineering)

Advisees who are working toward their Ph.D. with my guidance:

1. 2009: Beverly Eyre (EE / MEMS) - *expected*
2. 2009: Frank Zee (EE / MEMS) - *expected*
3. 2009: Joe Zendejas (EE / MEMS) - *expected*
4. 2009: Debra Strick (BME / Neuroengineering) - *expected*
5. 2009: Andrew Fung (BME / Neuroengineering) - *expected*
6. 2009: Michael Glickman (EE / MEMS) - *expected*
7. 2009: Jun Isobe (BME / Neuroengineering) - *expected*
8. 2009: Rodney Chandler (EE / Circuits) - *expected*
9. 2010: Jaehoon Chose (Neuroscience / Neuroengineering / MEMS) - *expected*
10. 2011: Peter Tseng (EE / MEMS) - *expected*
11. 2011: Hyowon Lee (BME / Neuroengineering / MEMS) - *expected*

Advisees who have completed their M.S. with my guidance:

1. 2001: Xianwen Fang (EE / MEMS)
2. 2002: Brian Matthews (EE / MEMS)
3. 2002: Paulo Motta (EE / MEMS)
4. 2002: Willem Ouborg (EE / MEMS)
5. 2003: Jason Clevenger (BME / Neuroengineering)
6. 2003: Andy Hung (BME / Neuroengineering / MEMS)
7. 2003: Henry Yang (EE / MEMS)
8. 2004: Alejandro Covalin (BME / Neuroengineering)
9. 2004: Dan Vasquez (EE / MEMS)
10. 2004: Jeff Yee (EE / MEMS)
11. 2004: Joe Zendejas (EE / MEMS)
12. 2005: John (Jack) Conner (EE / MEMS)
13. 2005: Selene Lee (BME / Neuroengineering / MEMS)
14. 2005: Shahin Farshchi (EE / MEMS)
15. 2006: Debra Strick (BME / Neuroengineering)
16. 2006: Franklin C. Chiang (EE / MEMS)
17. 2006: Wan-Lun (Helen) Ho (EE) - *student at USC*
18. 2007: Neschae Fernando (EE / MEMS)

19. 2007: David Cao (BME / Neuroengineering / MEMS)
20. 2007: Janet Cruz (BME / Neuroengineering)
21. 2008: Michael Glickman (EE / MEMS)
22. 2008: Peter Tseng (EE / MEMS)

Advisees who are working toward their M.S. with my guidance:

1. 2009: Qing Xu (EE / MEMS) - *expected*
2. 2010: Buddy Aswin (EE / MEMS) - *expected*
3. 2010: Jere Harrison (EE / MEMS) - *expected*
4. 2010: Omeed Paydar (BME / Neuroengineering / MEMS) - *expected*

Courses Created:

- **EE CM150 / CM250A: *Introduction to Micromachining and MEMS***

A 10-week 30-hour lecture course on micromachining and microelectromechanical systems (MEMS). The lecture topics include scaling properties, photolithography, isotropic and anisotropic wet etching, MEMS release etching, stiction, dry etching, physical and chemical vapor deposition, electroplating, metrology, statistical design of experiments, and MEMS device testing. Combined with the laboratory course below (EE M150L), this course prepares students to be active participants in the growing MEMS and microsystems industry.

- **EE CM150L / CM250L: *Introduction to Micromachining and MEMS Laboratory***

A 10-week 40-hour hands-on laboratory course on micromachining and microelectromechanical systems (MEMS). The laboratory is designed to give students an understanding and hands-on experience with photolithography, isotropic and anisotropic wet etching, MEMS release etching, stiction, dry etching, physical and chemical vapor deposition, electroplating, metrology, and MEMS device testing. The layout of the course chip enables students to produce over 100 different devices using both bulk micromachining and surface micromachining. The layout of the chip includes microsensors (accelerometers, pressure sensor, resonant magnetometers), microactuators (torsional magnetic microactuators, optical switches, thermal microactuators), and microstructures (cantilever beams, bridges, neural probes, needles, thin-film stress test structures, bulk micromachining test structures, electrical test structures). Combined with the above lecture course (EE M150), this course prepares students to be active participants in the growing MEMS and microsystems industry.

- **EE 3: *Introduction to Electrical Engineering***

A 10-week course consisting of a single weekly 2-hour lecture. The main point of this course is to teach freshman and junior transfers (i.e., students new to EE) about electrical engineering. This is accomplished by a lecture on the history of electrical engineering and set of lectures that cover 9 major areas of research and courses within electrical engineering in general and at UCLA in particular. This course will help students discover which sub-fields of electrical engineering they find interesting and wish to pursue in terms of elective classes, undergraduate research, and graduate-school applications.

- ***NeuroEngineering Training Program and Curriculum***

(organized in the Fall 1999 and running through to the present):

The objectives of the NeuroEngineering Training Program are: (1) to enable students with a background in biological science to develop and execute projects that make use of state-of-the-art technology, such as microelectromechanical systems (MEMS); (2) to enable students with a background in engineering to develop and execute projects that address problems that have a neuroscientific base, such as locomotion and pattern generation, central control of movement, and the processing of sensory information; and (3) to enable all trainees to develop the capacity for the multidisciplinary teamwork that will be necessary for new scientific insights and dramatic technological progress. The goal of the UCLA NeuroEngineering Training Program is to prepare graduate students to be leaders in the revolutionary technology developments that will affect

neuroscience in the 21st Century. Thus far, the excitement and energy of the neuroengineering students and faculty indicate we are off to a tremendous start.

- **BME M260: *NeuroEngineering*:**

Covers the primary engineering technologies being used in neuroscience now and those new and evolving engineering technologies that are likely to be useful for neuroscience in the future. In addition, we described several of the neuroscientific issues that are currently being addressed (e.g., deafness, epilepsy, etc.) and those we hope to address in the future (e.g., blindness, Parkinson's disease, paralysis, etc.).

- **BME/EE 19: *Fiat Lux: NeuroEngineering*:**

Introduces the field of neuroengineering and its applications to a diverse audience of freshman and undergrads as part of the Chancellor's Fiat Lux initiative.

Courses Taught:

- EE 3: *Introduction to Electrical Engineering*
(Winter 2007, Winter 2008, Winter 2009)

Introduction to field of electrical engineering; research and applications across several areas, such as communications, control, electromagnetics, embedded computing, engineering optimization, integrated circuits, MEMS, nanotechnology, photonics and optoelectronics, plasma electronics, signal processing, and solid-state electronics

- EE 10: *Circuit Analysis I*
(Winter 2008)

Introduction to linear circuit analysis. Resistive circuits, Kirchhoff laws, operational amplifiers, node and loop analysis, Thevenin and Norton theorem, capacitors and inductors, duality, first-order circuits, step response, second-order circuits, natural response, forced response.

- EE 100: *Electrical and Electronic Circuits*
(Spring 2002)

Electrical quantities, linear circuit elements, circuit principles, signal waveforms, transient and steady state circuit behavior, semiconductor diodes and transistors, small signal models, and operational amplifiers.

- EE CM150/CM250A / MAE CM180/CM280A / BME CM150/CM250A:

Introduction to Micromachining and MEMS

(Winter 1998 to 1999, Fall 1999 to 2007):

Introduction to micromachining technologies and microelectromechanical systems (MEMS). Methods of micromachining and how these methods can be used to produce variety of MEMS, including microstructures, microsensors, and microactuators. Students design microfabrication processes capable of achieving desired MEMS device

- EE CM150L/CM250L / MAE CM180L/CM280L / BME CM150L/CM250L:

Introduction to Micromachining and MEMS Laboratory

(Winter 1998 to 1999, Fall 1999 to 2007):

Hands-on introduction to micromachining technologies and microelectromechanical systems (MEMS) laboratory. Methods of micromachining and how these methods can be used to produce variety of MEMS, including microstructures, microsensors, and microactuators. Students go through process of fabricating MEMS device.

- EE M250B (old EE M250A, M251) / MAE M280B (old MAE M280, M281) / BME M250B (old BME M250A, M251):

MEMS Fabrication

(Fall 1998, 1999, Winter 2000 to 2003)

Introduction to micromachining technologies and microelectromechanical systems (MEMS). Methods of micromachining and how these methods can be used to produce variety of MEMS, including microstructures, microsensors, and microactuators. Students design microfabrication processes capable of achieving desired MEMS device.

- EE M252 (old EE M250B) / MAE M282 / BME M252 (old BME M250B):
MEMS Device Physics and Design
(Winter 1999, Spring 2005)
Design methods, design rules, sensing and actuation mechanisms, microsensors, and microactuators. Designing MEMS to be produced with both foundry and nonfoundry processes. Computer-aided design for MEMS.
- EE250C: *Microsensors and Microinstruments*
(Spring 1999)
The integration of MEMS into complete sensor and instrument systems with an emphasis on system-level issues.
- Neuroscience210B: *Introduction to Current Literature in Neuroscience*
(Winter 1999)
Critical discussion of current research literature related to topics of the five core courses in neuroscience graduate curriculum
- BME/EE 19: *Fiat Lux: NeuroEngineering*
(Spring 2004, Fall 2004 to 2006, Winter 2008):
Discussion of and critical thinking about topics of current intellectual importance, taught by faculty members in their areas of expertise and illuminating many paths of discovery at UCLA. Introduces the field of neuroengineering and its applications to a diverse audience of freshman and undergrads as part of the Chancellor's Fiat Lux initiative.
- BME M260 / Neuroscience M206: *Neuroengineering*
(Spring 2000 to 2004, 2007):
Introduction to principles and technologies of bioelectricity and neural signal recording, processing, and stimulation. Topics include bioelectricity, electrophysiology (action potentials, local field potentials, EEG, ECG), intracellular and extracellular recording, microelectrode technology, neural signal processing (neural signal frequency bands, filtering, spike detection, spike sorting, stimulation artifact removal), brain-computer interfaces, deep-brain stimulation, and prosthetics
- BME M261A,B,C / EE M256A,B,C / Neuroscience M212A,B,C:
Evaluation of Research Literature in Neuroengineering
(Fall 2000 to 2004, Winter 2007, Spring 2008)
Critical discussion and analysis of current literature related to neuroengineering research.

ASME Continuing Education - BioMEMS Short Course - Spring 2003 to 2005.

This two-day course attracts attendees who are professionals from a wide variety of backgrounds. The goal of the BioMEMS short course is to give the attendees an in-depth immersion into biomedical MEMS technology (BioMEMS). My contribution is a half-day lecture on the following topics: Neuroengineering, NeuroMEMS Technology, and Micromachined Systems for Neural Stimulation. The Neuroengineering is a field that is rapidly adapting MEMS and BioMEMS technology to enable next-generation neural prostheses and neurophysiological instrumentation.

UCLA Extension - MEMS Short Course - Spring 1998 and 1999.

Organized a five-day course that attracted attendees from the local area and beyond that sought to increase their knowledge of MEMS technology and its present and future applications. After my comprehensive one-day introduction micromachining and MEMS technology, the topics of

subsequent days included: Microsensors, Microactuators, Microsystems, MEMS Reliability, MEMS for use in Space, Microfluidics, and BioMEMS.

National Technological University (NTU) / University of California, Berkeley - Spring 1996.

Course Consultant for NTU IC 731CA / UCB: EE 243: Advanced IC Processing and Layout, a graduate course in electrical engineering taught by Prof. Nathan Cheung, Prof. Andy Neureuther, and Prof. Costos Spanos. The number of IC-processing related subjects covered in this course is extensive. This course, like other NTU courses, is broadcast to participating industrial sites where students, typically engineers working in the field of IC processing, watch the classes and mail in homework and exams. Responsibilities included grading homework and exams, answering student questions with frequent phone conversations that replaced office hours, holding conference calls with the professors before exams, and improving the course materials, most notably creating the web-page interface to simplify the process for students to gain access and use the required CAD programs SAMPLE and SPALT.

University of California, Berkeley - Fall 1994.

Head Graduate-Student Instructor of EECS 143: Processing and Design of Integrated Circuits, an undergraduate course in electrical engineering taught by Prof. Andy Neureuther. This course has its own dedicated clean room for the microfabrication of integrated circuits during laboratory sessions. Responsibilities included organizing the labs, instructing a lab session, maintaining process quality, updating the course materials, and directing review sessions.

University of California, Berkeley - Fall 1991.

Graduate-Student Instructor of EECS 105: Microelectronic Devices and Circuits, an undergraduate course in electrical engineering taught by Prof. Richard S. Muller and Dr. Gani Jusuf. Responsibilities included instructing a laboratory session and a discussion section.

Professional Service:

- Organizer, Invited Speaker Session at the APS Meeting, Los Angeles, 1998
- Program Committee: SPIE: Micromachining and Microfabrication: MEMS Reliability for Critical Applications, 1999 to 2000
- Program Committee: International Symposium on Smart Structures and Microsystems 2000
- Session Chair: International Solid-State Circuits Conference, 2000
- Technical Program Committee: International Solid-State Circuits Conference, 2000 to 2001
- Session Chair: International Solid-State Sensors and Actuators Conference, 1999 to 2001
- Technical Program Committee: Solid-State Sensors and Actuators Workshop, 2001 to 2004
- Rump Session Organizer: Solid-State Sensors and Actuators Workshop, 2004 and 2006
- Chair: IEEE Magnetics Society, Los Angeles Council, 2003 to 2004
- Session Chair: IEEE International Conference on Neural Engineering, 2005
- Technical Program Committee: IEEE International Conference on Neural Engineering, 2005
- Associate Editor: IEEE Journal of Microelectromechanical Systems, 2005 to 2006
- Associate Editor: IEEE Transactions on Neural Systems and Rehabilitative Engineering, 2006 to 2009
- Associate Editor: IEEE Transactions on Biomedical Engineering, 2006 to present
- Session Chair: EMBS Conference, 2006
- Technical Program Committee: EMBS Conference, 2006
- Session Chair: BMES Conference, 2007
- Technical Program Committee: BMES Conference, 2007
- Technical Program Committee: Solid-State Sensor and Actuator Workshop (Hilton Head), 2008
- Session Chair: Solid-State Sensor and Actuator Workshop (Hilton Head), 2008
- Technical Program Committee: EMBS Conference, 2008
- Session Chair: EMBS Conference, 2008
- Executive Program Committee: Transducers, International Conference on Solid-State Sensors, Actuators, and Microsystems, 2009

Awards, Fellowships, and Honors

- Rosemount Instrumentation Award – 1989
- IBM Fellowship – 1991
- NSF Career Award – 1998
- Okawa Foundation – 2002
- Fulbright Senior Scholar in Australia at the University of New South Wales – 2006

Academic Organizations:

- Member of Eta Kappa Nu, Tau Beta Pi, and Phi Kappa Phi

Professional Memberships:

- IEEE – *Member* (1987 to 2002), *Senior Member* (2002 to present)
Societies: *Magnetics, Electron Devices, Engineering in Medicine and Biology*
- Electrochemical Society – *Member*
- Society for Neuroscience – *Member*
- Materials Research Society – *Member*
- American Society for Engineering Education – *Member*

List of Publications

Refereed Journals:

1. Jack W. Judy, Dennis L. Polla, William P. Robbins, "A linear piezoelectric stepper motor with sub-micrometer step size and centimeter travel range," *IEEE Transaction on Ultrasonics, Ferroelectrics and Frequency Control*, vol. UFFC-37, no. 5, September 1990, pp. 428-437.
2. Jack W. Judy, Richard. S. Muller, and Hans. H. Zappe, "Magnetic microactuation of polysilicon flexure structures," *IEEE Journal of Microelectromechanical Systems*, vol. 4, no. 4, December 1995, pp. 162-169.
3. Jack W. Judy and Richard. S. Muller, "Magnetic microactuation of torsional polysilicon structures," *Sensors and Actuators A (Physical)*, vol. A53, no. 1-4, May 1996, pp. 392-396.
4. Jack W. Judy and Richard. S. Muller, "Magnetically Actuated, Addressable Microstructures" *IEEE Journal of Microelectromechanical Systems*, vol. 6, no. 3, September 1997, pp. 249-256.
5. Juno Kim, Yongxi Qian, Guojin Feng, Pingxi Ma, Jack Judy, M. Frank Chang, and Tatsuo Itoh, "A Novel Low-Los Low-Crosstalk Interconnect for Broad-Band Mixed-Signal Silicon MMIC's", *IEEE Trans. Microwave Theory and Techniques*, vol. 47, no. 9, September 1999, pp. 1830-1835.
6. Frank Zee, Jack W. Judy, "Micromachined polymer-based chemical gas sensor array", *Sensors and Actuators B: Chemical*, vol. 72, no. 2, January 2001, pp. 120-128.
7. Xianwen Fang, Nosang Myung, Ken Nobe, and Jack W. Judy, "Modeling the Effect of Etch Holes on Ferromagnetic MEMS", *IEEE Transactions on Magnetics*, vol. 37, no. 4, pt. 1, July 2001, pp. 2637-2639.
8. Jack W. Judy, "Microelectromechanical Systems (MEMS) - Design, Fabrication, and Application", *Journal of Smart Materials*, vol. 10, no. 6, December 2001, pp. 1115-1134.
9. Brian Matthews, Jing Li, Steven Sunshine, Lee Lerner, and Jack W. Judy, "Effects of Electrode Configuration on Polymer Carbon-Black Composite Chemical Vapor Sensor Performance", *IEEE Sensors Journal*, June, vol. 2, no. 3, June 2002, pp. 160-168.
10. Henry Yang, Nosang Myung, Jeff Yee, D.-Y. Park, Bongyoung Yoo, Morton Schwartz, Ken Nobe, and Jack W. Judy, "Ferromagnetic Micromechanical Magnetometer", *Sensors and Actuators, A (Physical)*, vol. A97-A98, July 2002, pp. 88-97.
11. John P. Gianvittorio, Joe Zendejas, Yahya Rahmat-Samii, and Jack W. Judy, "Reconfigurable MEMS-Enabled Frequency Selective Surfaces", *Electronics Letters*, vol. 38, no. 25, December 2002, pp. 1627-1628.
12. Jeffrey K. Yee, Henry H. Yang, and Jack W. Judy, "Shock Resistance of Ferromagnetic Micromechanical Magnetometers", *Sensors and Actuators, A (Physical)*, vol. A103, no. 1-2, January 2003, pp. 242-252.
13. Spencer L. Smith, Jack W. Judy, and Tom S. Otis, "An Ultra Small Array of Electrodes for Stimulating Multiple Inputs into a Single Neuron", *Journal of Neuroscience Methods*, vol. 133, no. 1-2, February 2004, pp. 109-114.
14. Paulo S. Motta and Jack W. Judy, "Multielectrode Microprobes for Deep Brain Stimulation Fabricated with a Customizable 3-D Electroplating Process", *IEEE Transactions on Biomedical Engineering*, vol. 52, no. 5, May 2005, pp. 923-933.
15. Pedro Irazoqui-Pastor, Istvan Mody, and Jack W. Judy, "Recording brain activity wirelessly. Inductive powering in miniature implantable neural recording devices," *IEEE EMBS Magazine*, vol. 24, no. 6, Nov-Dec 2005, pp. 48-54.
16. Brian Matthews and Jack W. Judy, "Design and fabrication of a micromachined planar patch-clamp substrate with integrated microfluidics for single-cell measurements," *IEEE Journal on Microelectromechanical Systems*, vol. 15, no. 1, Feb 2006, pp. 214-222.
17. Joe Zendejas, John Gianvittorio, Yahya Rahmat-Samii, and Jack W. Judy, "Magnetic MEMS Reconfigurable Frequency-Selective Surfaces", *IEEE Journal on Microelectromechanical Systems*, vol. 15, no. 3, June 2006, pp. 613 – 623.
18. P. Pribyl, W. Gekelman, M. Nakamoto, E. Lawrence, F. Chiang, J. Stillman, J. W. Judy, N. Katz, P. Niknejadi, "Debye-size Microprobes for Electric-Field Measurements in Laboratory Plasmas", *Review of Scientific Instruments*, vol. 77, no. 073504, July 2006.
19. Shahin Farshchi, Paul H. Nuyujukian, Aleskey Pesterev, Istvan Mody, Jack W. Judy, "A TinyOS-enabled MICA2-based wireless neural interface", *IEEE Trans Biomed Eng.*, vol. 53, no. 7, Jul 2006, pp. 1416-1424.
20. Dohyun Kim, Ira Goldberg, and Jack W. Judy, "Chronocoulometric determination of nitrate on silver electrode and sodium hydroxide electrolyte", *The Analyst*, vol. 132, no. 4, pp. 350-357, Feb 2007.
21. Dan Vasquez and Jack W. Judy, "Optically-Interrogated Zero-Power MEMS Magnetometer," *IEEE Journal on Microelectromechanical Systems*, vol. 16, no. 2, April 2007, pp. 336 – 343.

22. Shahin Farshchi, Paul Herag Nuyujukian, Aleksey Pesterev, Istvan Mody, and Jack W. Judy, “Bi-Fi: An Embedded Sensor/System Architecture for Remote Biological Monitoring”, *IEEE Transactions on Information Theory in Biomedicine*, vol. 11, no. 6, Nov. 2007 pp. 611 – 618, 2007.
23. Andy Hung, David Zhou, Robert Greenberg, Jack W. Judy, “Pulse-Clamp Technique for Characterizing Neural-Stimulating Electrodes”, *Journal of the Electrochemical Society*, vol. 154, no. 9, pp. C479-C486, 2007.
24. Janet A. Stillman, Jack W. Judy, and Henry Helvajian, “MaTT, An Automatic Toolpath Generator for Laser Patterning High-Aspect-Ratio Microstructures in Photosensitive Materials”, *Int. J. Manufacturing Research*, vol. 3, no. 1, pp. 114–134, 2007.
25. Dohyun Kim, Ira B. Goldberg, Jack W. Judy, “Microfabricated Electrochemical Nitrate Sensor using Double-potential-step Chronocoulometry”, *Sensors and Actuator, B: Chemical*, Vol. 135, pp. 618–624, 2009.
26. Federico G Velez; Jun Isobe; David L Zeale; Jack W Judy; V. Reggie Edgerton; Stephanie Patnode; Hyowon Lee; Brian T Hahn; Arthur L Rosenbaum, “Toward an implantable Functional Electrical Stimulation (FES) device to correct strabismus: Feline model”, *Journal of AAPOS*, 2008.
27. Pradeep Thiyanaratnam, Russel Caflisch, Paulo S. Motta, Jack W. Judy, “Modeling, Simulation, and Design for a Customizable Electrodeposition Process”, *SIAM Journal on Applied Mathematics*, vol. 69, no. 4, pp. 1043-1064, January 2009.

Refereed Conferences:

1. Jack W. Judy, Dennis L. Polla, William P. Robbins, “Experimental model and IC-process design of a nanometer linear piezoelectric stepper motor,” *ASME Winter Meeting, Microstructures, Sensors and Actuators*, DSC-Vol. 19, November 1990. Dallas, 1990, pp. 11-17.
2. Jack W. Judy, Takashi Tamagawa, Dennis, L. Polla, “Surface Micromachined linear thermal microactuator,” *International Electron Devices Meeting Technical Digest*, San Francisco, CA (December 9-12, 1990), pp. 629-632.
3. Jack W. Judy, Takashi Tamagawa, and Dennis, L. Polla, “Surface-Machined Micromechanical membrane pump,” *Proceedings IEEE Micro Electro Mechanical Systems*, Nara, Japan (January 30 - February 2, 1991), pp. 182-186.
4. William P. Robbins, Dennis L. Polla, Takashi Tamagawa, Daniel. E. Glumac, and Jack W. Judy, “Linear motion microactuators using piezoelectric thin films,” *International Solid-State Sensor and Actuator Conference Digest of Technical Papers (Transducers '91)*, San Francisco, CA (June 24-27, 1991), pp. 55-58.
5. Jack W. Judy, Richard. S. Muller, and Hans. H. Zappe, “Magnetic microactuation of polysilicon flexure structures”, *Tech. Dig. Solid-State Sensor and Actuator Workshop (Hilton Head '94)*, Hilton Head Island, SC (June 13-16, 1994), pp. 43-48.
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66. Selene Lee, James Pinney, Elvira Khialeeva, Marvin Bergsneider, and Jack W. Judy, “Functional Evaluation of Magnetic Microactuators for Removing Biological Accumulation: An in Vitro Study”, Proceedings of the 30th

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Conference Abstracts (Presentations and Posters):

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2. Jack W. Judy, "Magnetic MEMS – An Introduction and Review", *8th Joint MMM-Intermag Conference*, San Antonio, TX, January 8-11, 2001, pp. 9-10.
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4. Joe Zendejas, John Gianvittorio, Bongyoung Yoo, Yahya Rahmat-Samii, Ken Nobe, and Jack W. Judy, "Ferromagnetic MEMS Arrays for Reconfigurable Frequency Selective Surfaces", *Seventh International Symposium on Magnetic Materials, Processes, and Devices, 202nd Meeting of the Electrochemical Society*, Salt Lake City, UT (October 20-25, 2002).
5. Jack W. Judy, "UCLA NeuroEngineering Program", *32nd Annual Meeting of the Society for Neuroscience*, Orlando, FL (Nov 2-7, 2002).
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9. Dohyun Kim, Ira B. Goldberg, and Jack W. Judy, "Micromachined Amperometric Nitrate Sensor with an Anion Permeable Membrane", *Sixth International Symposium on Chemical and Biological Sensors and Analytical Systems, 206th Meeting of the Electrochemical Society*, Honolulu, Hawaii (October 3-8, 2004).
10. Yang Zhang, and Jack W. Judy, "Inductive Power for Implantable Electronics", *Proceedings of the BMES 2004 Annual Fall Meeting*, Philadelphia, PA (October 13-16, 2004).
11. Calvin T. Yang, Roland R. Roy, H. Zhong, V. Reggie Edgerton, Jack W. Judy, "Neural Ensemble Activity or Rat Spinal Cord L1/L2 During Fictive Locomotion", *34th Annual Meeting of the Society for Neuroscience*, Program No. 883.10, San Diego, CA (October 23-27), 2004.
12. Shahin Farshchi, Istvan Mody, and Jack W. Judy, "Miniature Mobil Wireless Computation Platform for Neural Recording Based on Tiny-OS", *34th Annual Meeting of the Society for Neuroscience*, Program No. 190.23, San Diego, CA (October 23-27), 2004.
13. Janet Stillman, Jack W. Judy, and Henry Helvajian, "Resolution and Control in Laser Direct-Write Patterned Photostructurable Glass", *4th International Congress on Laser Advanced Materials Processing*, Kyoto, Japan (June 2006).
14. Selene Lee, Marvin Bergsneider, and Jack W. Judy, "Magnetic Microactuators for MEMS-Enabled Ventricular Catheters for Hydrocephalus", *UC Systemwide Bioengineering Symposium*, June 24- 26, 2006, Los Angeles, CA, USA.
15. Janet Cruz, Calvin Yang, Jack W. Judy, V. Reggie Edgerton, "Mapping L1/L2 Spinal Cord Interneuronal Connectivity in the Stepping Intact and the Spinal-Cord-Injured Rat", *UC Systemwide Bioengineering Symposium*, June 24- 26, 2006, Los Angeles, CA, USA.
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18. Steven W. Badelt, Aaron P. Blaisdell, H. Tad Blair, and Jack W. Judy, "Intention and Animal Models for Brain Computer Interfaces" *BMES Annual Fall Meeting*, September 26-29, 2007, Los Angeles, CA, USA.
19. Neschae X. Fernando, Derek N. Macklin, Morris Y. Hsu, and Jack W. Judy, "A Highly Configurable Device for Bi-Directional Wireless Biological Telemetry", *BMES Annual Fall Meeting*, September 26-29, 2007, Los Angeles, CA, USA.
20. Hyowon Lee, Brian Matthews, Timothy Miu, and Jack W. Judy, "Effects of Surface Treatments and Pre-Patch Suction Time on Patch-Clamp Seal Impedance", *BMES Annual Fall Meeting*, September 26-29, 2007, Los Angeles, CA, USA.
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22. Calvin Yang, Jaehoon Choe, Franklin Chiang, Carlos Garcia, I Jimenez, Pablo Rudomin, V Reggie Edgerton, and Jack Judy, "Flexible 2-D Microelectrode Arrays for Assessing Spinal Cord Function After Spinal Cord Injury", *BMES Annual Fall Meeting*, September 26-29, 2007, Los Angeles, CA, USA.
23. Debra Strick, Mark Cohen, Frank Shellock, and Jack Judy, "Intracranial MR and implant safety", *37th Annual Meeting of the Society for Neuroscience*, November 3-7, 2007, San Diego, CA, USA.
24. Hyowon Lee, Brian Matthews, Timothy Miu, and Jack W. Judy, "Effects of Surface Treatments and Pre-Patch Suction Time on Patch-Clamp Seal Impedance." *37th Annual Meeting of the Society for Neuroscience*, November 3-7, 2007, San Diego, CA, USA.
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26. Calvin T. Yang, Jaehoon Choe, Franklin Chiang, Carlos Garcia, Janet Cruz, D. Chavez, Linda Wang, Reggie Edgerton, Jack W. Judy, I. Jimenez, Pablo Rudomin, "Implantable polyimide flat arrays for assessment of spinal cord function after spinal cord injury" *37th Annual Meeting of the Society for Neuroscience*, November 3-7, 2007, San Diego, CA, USA.
27. Velez FG, Isobe J, Lee H, Patnode S, Judy JW, Rosenbaum AL., "In-vivo Functional Electrical Stimulation of Feline Lateral Rectus Muscle: Relationship Between Stimulation Parameters and Eye Movement In Normal Muscle", *Association for Research in Vision and Ophthalmology, Meeting Proceedings*, 2007.

Masters Theses:

1. Jack W. Judy, "Magnetic microactuators with polysilicon flexures", M.S. Thesis, EECS Department, University of California, Berkeley, (August 1994).
2. Xianwen Fang, "Design, Fabrication and Modeling of Magnetic Microelectromechanical System (MEMS) Components for Sensor, Actuator Applications", M.S. Thesis, Electrical Engineering Department, University of California, Los Angeles, (2000).
3. Brian Matthews, "Effects of Electrode Configuration on Polymer Carbon Black Composite Chemical Vapor Sensor Performance", M.S. Thesis, Electrical Engineering Department, University of California, Los Angeles, (March 2002).
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8. Jason Clevenger, "Development of a Unique Laboratory and Setup to Study the Recovery of Ocular Motility", M.S. Thesis, Biomedical Engineering Interdepartmental Program, University of California, Los Angeles, (May 2003).
9. Daniel Vasquez, "Zero-Power MEMS Magnetometers", M.S. Thesis, Electrical Engineering Department, University of California, Los Angeles, (July 2004).

10. Shahin Farshchi, "Wireless Neural Recording, Stimulating, and Computing Platform based on TinyOS", M.S. Thesis, Electrical Engineering Department, University of California, Los Angeles, (June 2005).
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12. Selene Lee, "MEMS-Enabled Anti-Obstructing Ventricular Catheters for Hydrocephalus", M.S. Thesis, Biomedical Engineering Interdepartmental Program, University of California, Los Angeles, (January 2005 - expected).
13. Debra Strick, "Design, Fabrication, and Use of Microcoils for High-Resolution MRI Imaging", M.S. Thesis, Biomedical Engineering Interdepartmental Program, University of California, Los Angeles, (2006).
14. Franklin C. Chiang, "Voltage and Electric-Field Probes for Laboratory Plasmas", M.S. Thesis, Electrical Engineering Department, University of California, Los Angeles, (June 2006).
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Ph.D. Dissertations:

1. Jack W. Judy, "Batch-fabricated ferromagnetic microactuators with silicon flexures", Ph.D. Thesis, EECS Department, University of California, Berkeley, (December 1996).
2. Pedro Irazoqui-Pastor, "Transcutaneous inductively powered neural recording system", Ph.D. Thesis, Biomedical Engineering Interdepartmental Program, University of California, Los Angeles, (May 2003).
3. Paulo Motta, "Micromachined deep-brain stimulation probe for Parkinson's disease research", Ph.D. Thesis, Electrical Engineering Department, University of California, Los Angeles, (December 2004).
4. Andy Hung, "Micromachined and Optimized High-Density Electrodes for Retinal Prostheses", Ph.D. Thesis, Biomedical Engineering Interdepartmental Program, University of California, Los Angeles, (June 2006).
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Patents and Disclosures:

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