

BIOGRAPHICAL SKETCH

Abraham P. Lee

Department of Biomedical Engineering

716F Engineering Tower
University of California, Irvine
Irvine, CA 92697-2715
email: aplee@uci.edu
<http://biomint.eng.uci.edu/>

Education:

Lawrence Livermore National Laboratory, Postdoc, 1992-95, Center for Microtechnology
University of California at Berkeley, M.S./Ph.D., 1989/92, Mechanical Engineering
National Tsing Hua University, Hsin Chu, Taiwan, B.S., 1986, Power Mechanical Engineering

Professional Experience:

Associate Chair (Graduate Studies) of Biomedical Engineering Department, 7/2005-present.
Professor of Biomedical Engineering, University of California, Irvine, 2002-present.
Professor of Mechanical & Aerospace Engineering, University of California, Irvine, 2002-present.
Senior Technology Advisor, National Cancer Institute, Bethesda, MD, 7/2001-12/2001
Program Manager, Defense Advanced Research Projects Agency (DARPA), 2/1999-7/2001
Group Leader, Lawrence Livermore National Laboratory, Center of Microtechnology, 1997-1999
Principal Research Engineer, Lawrence Livermore National Laboratory, Center of Microtechnology, 1995-1999
Postdoctoral Engineer, Lawrence Livermore National Laboratory, Center of Microtechnology, 1992-1995
Graduate Student Researcher, University of California at Berkeley, 1987-1992

Professional Activities, Fellowships, Honors and Awards:

Elected Fellow, American Institute of Medical and Biological Engineering, American Society of Mechanical Engineering: Founding executive committee member of the MEMS division (1998-2004), elected Chair of the MEMS Symposium Subcommittee (1998-2001), advisory board member for Nanotechnology Institute (2002-present), Institute of Electronic and Electrical Engineers, American Association for the Advancement of Science; Postdoctoral Fellowship, Associated Western Universities for the U.S. Department of Energy (DOE) (11/92 to 6/93), Federal Laboratory Consortium Award for Excellence in Technology Transfer, Optical Transducer for Optical Coherence Tomography (OCT) (1998), Federal Laboratory Consortium Award for Excellence in Technology Transfer, Mechanical Release Mechanism for Aneurysm Treatment (1999), Engineering Directorate Award for Excellence in Publications (LLNL) (2000), International Advisory Editorial Board Member, Lab on a Chip journal, Royal Society of Chemistry (2004-present), Theme Chair for "Micro and Nano Biotechnology", IEEE EMBS Annual Conference, San Francisco (9/2004), Subject Editor, IEEE/ASME Journal of Microelectromechanical Systems (JMEMS) (9/2004-present). Elected attendee of the National Academies Keck Future's Initiative on "Designing Nanostructures at the Interface between Biomedical and Physical Systems", Irvine, CA (12/18-21/2004).

Relevant Publications:

"Alternating droplet generation and controlled dynamic droplet fusion in microfluidic device for CdS nanoparticles synthesis," L.-H. Hung, K.M. Choi, W.-Y. Tseng, Y.-C. Tan, K.J. Shea, and A.P. Lee, *Lab on a Chip*, **2006**, vol.6, 2, 174-178.
"Microfluidic separation of satellite droplets as the basis of a monodispersed micron and submicron emulsification system," Y.-C. Tan and A.P. Lee, *Lab on a Chip*, **2005**, 5, 1178-1183.
"Monodispersed Microfluidic Droplet Generation by Shear Focusing Microfluidic Device," Y.-C. Tan, V. Cristini, and A.P. Lee, *Sensors and Actuators B*, accepted April **2005**.
"Design of Microfluidic Channel Geometries for the Control of Droplet Volume, Chemical Concentration, and Sorting," Y.-C. Tan, J.S. Fisher, A.I. Lee, V. Cristini, and A.P. Lee, *Lab on a Chip*, **2004**, 4 (4), 292 – 298.
"Microfluidic flow transducer based on the measurement of electrical admittance," J. Collins, and A.P. Lee, *Lab on a Chip*, **2004**, 4 (1), 7 – 10, 2004
"An AC Magneto-hydrodynamic Microfluidic Switch for Micro Total Analysis Systems," A.V. Lemoff and A.P. Lee, *Journal of Biomedical Microdevices*, **2003**, 5, no. 1, 2003.

31 Issued US Patents

Other Significant Publications:

“Vertical-Actuated Electrostatic Comb Drive with in situ Capacitive Position Correction for Application in Phase Shifting Diffraction Interferometry,” A.P. Lee, C.F. McConaghy, G.E. Sommargren, E.W. Campbell, and Peter A. Krulevitch, *Journal of Microelectromechanical Systems (JMEMS)*, **2003**, vol.12, no.6.

“Laser Activated Shape Memory Polymer Microactuator for Treating Ischemic Stroke,” D.J. Maitland, M.F. Metzger, D.L. Schumann, A.P. Lee, T.S. Wilson, *Lasers in Surgery and Medicine*, **2002**, 30:1-11.

“An AC Magnetohydrodynamic Micropump”, A.V. Lemoff, A.P. Lee, *Sensors and Actuators*, B, 2000, 63, 178-185.

“Thin Film Shape Memory Alloy Microactuators,” P.A.Krulevitch, A.P.Lee, P.B.Ramsey, J.Trevino, J.Hamilton, M.A.Northrup, *Journal of Microelectromechanical Systems*, **1996**, 5, 4, 1.

“A Practical Microgripper by Fine Alignment, Eutectic Bonding, and SMA Actuation,” A.P. Lee, D.R. Ciarlo, P.A. Krulevitch, S.Lehew, J.Trevino, and M.A.Northrup, *Sensors and Actuators: A. Physical*, **1996**, SNA054/1-3, 755-759.

“Mixed-Sputtered Deposition of Ni-Ti-Cu Shape Memory Alloys,” P.A.Krulevitch, P.B. Ramsey, D.M.Makowiecki, A.P.Lee, M.A.Northrup, G.C.Johnson, *Thin Solid Films*, **1996**, 274, 101-105.

“Repetitive Impact Testing of Micro Mechanical Structures,” A.P. Lee and A.P. Pisano, *Sensors and Actuators*, **1993**, 39,1, 73-82.

“Polysilicon Angular Microvibromotors,” A.P. Lee and A.P. Pisano, *Journal of Microelectromechanical Systems*, **1992**, 1, 2, 70-76.

Synergistic Activities:

IEEE Special Issues, Guest editor for biomedical applications of MEMS and microfluidics, 12/2003

Lab on a Chip, Editor for special issue on “Science and Applications of Droplets in Microfluidic Devices,” 2004.

International Society of BioMEMS and Biomedical Nanotechnology: Scientific Advisory Board member, 2000-2001.

NASA Advanced Environmental Monitoring Systems: Advisory Board member, 1999-2001

International Society of BioMEMS and Biomedical Nanotechnology: Scientific Advisory Board member, 2000-2001

National Health Research Institute, Taiwan, Scientific Advisory Committee Member, 2003-present.

IEEE Advisory Board Member for Microtechnologies for Medical and Biological Applications, 2003-present.

Scientific Advisory Board, Applied Microstructures, SFC Fluidics

Recent collaborators:

Dr. Kenneth Shea, University of California at Irvine; Dr. Ed Monuki, University of California at Irvine

Dr. Lisa Flanagan, University of California at Irvine; Dr. Noo Li Jeon, University of California at Irvine

Dr. G. P. Li, University of California at Irvine, Dr. Mark Bachman, University of California at Irvine

Dr. Phil Felgner, University of California at Irvine, Dr. Ken Longmuir, University of California at Irvine

Dr. Vittorio Cristini, University of California at Irvine, Dr. Peter Lee, Singapore Defence Sciences Office

Dr. Dan Nicolau, Jr., Swinburne University, Australia, Dr. Steve George, University of California at Irvine

Advisees:

A list of current graduate students, recent graduates and postdoctoral students is given below:

Graduate Students (Year of Degree): Y.-C. Tan (2005), Sony V. Lemoff (2001), M. Farrantsos, Lisen Wang, Jeffrey Fisher, W.-Y. Tseng, L.-H. Hung, T.-H. Hsieh, W.C. Chao, Armando Tovar, Kanaka Hettiarachchi, Jonathan Siegrist, Rob Lin, Reza Moghbel, Carol Y.-H. Chao, T. Pham.

Postdoctoral Students: John Collins (Madras University, 2000)

Advisors: Graduate (Ph.D.): Professor A.P. Pisano (University of California, Berkeley).

Postdoctoral: Dr. M. Allen Northrup (Microfluidic Systems Inc.).