

LYDIA LEE SOHN

ADDRESS: Dept. of Mechanical Engineering
5118 Etcheverry Hall
University of California, Berkeley
Berkeley, CA 94720-1740 USA

TELEPHONE: 1-510-612-2236
FAX: 1-510-643-5599
E-MAIL: sohn@me.berkeley.edu
Lab Website: <http://srl.berkeley.edu>

EDUCATION

1988-1992 Ph.D., Dept. of Physics, Harvard University, Cambridge, MA (M. Tinkham, Ph.D. advisor)
1988-1990 A.M., Dept. of Physics, Harvard University, Cambridge, MA
1984-1988 A.B., Chemistry & Physics (*magna cum laude*), Harvard University, Cambridge, MA

POSITIONS

1992-1993 NSF/NATO Postdoctoral Fellow in the group of Prof. dr. J. E. Mooij, Dept. of Applied Physics, Delft University of Technology, Delft, The Netherlands
1993-1995 AT&T Postdoctoral Research Fellow, Semiconductor Physics Research Dept., AT&T Bell Laboratories, Murray Hill, NJ
1995-2003 Assistant Professor, Dept. of Physics, Princeton University, Princeton, NJ
2003-2005 Assistant Professor, Dept. of Mechanical Engineering, UC Berkeley
2005-2015 Associate Professor, Dept. of Mechanical Engineering, UC Berkeley
2005-present Faculty Scientist, Physical Biosciences Division, Lawrence Berkeley National Laboratories
2011-present Faculty Assistant to the Vice Chancellor for Research, UC Berkeley
2015-present Professor, Dept. of Mechanical Engineering, UC Berkeley

AFFILIATIONS

2003-present Biophysics Graduate Group, UC Berkeley
2003-present Applied Science and Technology, UC Berkeley
2009-present Core Member, UCSF and UC Berkeley Graduate Group in Bioengineering

HONORS AND AWARDS

- Westinghouse Science Talent Search, Honors group (1984)
- Thomas S. Monfried Scholar, New Jersey Harvard Alumni Assoc. (1985)
- Francis Lee Friedman Physics Award, Harvard-Radcliffe Colleges (1987)
- Rowland Foundation Physics Research Award (1986-1988)
- Phi Beta Kappa, Alpha Iota Chapter
- Office of Naval Research Predoctoral Fellowship (1988-1991)
- National Science Foundation-NATO Postdoctoral Fellowship (1992-1993)
- Wu Foundation Award (1996)
- AT&T and Lucent Technologies Foundation Award (1996)
- DuPont Young Professor Award (1996-1999)
- National Science Foundation Faculty Career Early Development Award (1996-2000)
- Army Research Office Young Investigator Award (1997-2000)
- American Physical Society Le Roy Apker Award (2001): awarded to Heather J. Lynch for her Senior Thesis work performed in the Sohn laboratory at Princeton University
- Sigma Pi Sigma, National Physics Honor Society (2004)
- William Pyle Philips Distinguished Visitor, Haverford College (2005)
- Vogel Moral Courage Speaker, Principia College (2006)
- National Academy of Engineering US Frontiers of Engineering Symposium (2007)
- W. M. Keck Foundation Medical Research Program Award (2010-2013)
- Presidential Chair Fellow, UC Berkeley (2012-2013)

- Bakar Fellow, UC Berkeley (2013-2018)
- Identifying Revolutionary Platform Technologies for Advancing Life Sciences Research Competition (sponsored by the W. M. Keck Foundation, Gordon & Betty Moore Foundation, Kavli Foundation, Burroughs-Wellcome Fund, John Templeton Foundation, and Research Corporation)—one of five winners (2014)
- American Association for Clinical Chemistry 2014 Emerging Clinical & Laboratory Diagnostics: The Portable Lab—Outstanding Poster Award (2014)
- American Association for Clinical Chemistry 2014 Personalized Diagnostics Today Conference—Outstanding Poster Award (2014)
- Fellow, American Institute for Medical and Biological Engineering, Class of 2017

PATENTS/TECHNOLOGY DISCLOSURES

- US Patent No. 7,279,883: “Particle Analyzer and Methods for Use Thereof”, issued to O. A. Saleh and **L. L. Sohn**, October 9, 2007.
- US Patent No. 9,201,043: “Devices for Detecting a Particle and Methods for Use Thereof”, issued to K. Balakrishnan, M. Chapman, G. Anwar, and **L. L. Sohn**, December 1, 2015f
- European Patent Application No. 12837906.2: “Devices for Detecting a Particle in a Sample and Methods for Use Thereof”, K. Balakrishnan, M. Chapman, G. Anwar, and **L. L. Sohn**, March 5, 2014.
- PCT/US2014/024574: “Devices for Sorting in a Sample and Methods for Use Thereof”, M. Chambers and **L. L. Sohn**, filed March 15, 2014.
- US Patent Application 62/155,363: “Devices for Separating Analytes in a Sample and Methods for Use Thereof”, D. Yang and **L. L. Sohn**, filed June 26, 2015.
- PCT/US2015/038656: “Devices for Separating Constituents in a Sample and Methods for Use Thereof,” D. Yang and **L. L. Sohn**, filed June 30, 2015.
- US Patent Application 62/346,934: “Metal Node-Pore Assay Devices and Methods for Use Thereof,” J. Hack and **L. L. Sohn**, file June 7, 2016.
- US Patent Application 62/320,339: “Systems and Methods for Cell Detection and Classification Using Coded Node Pore Sensing,” M. Lustig and **L. L. Sohn**, filed April 8, 2016.
- US Patent Application 62/407,425: “Mechano-node pore sensing,” J. Kim, S. Han, and **L. L. Sohn**, filed October 12, 2016.

SERVICE

Department (Princeton University and UC Berkeley)

- Physics Graduate Admissions Committee, Princeton University (2000-2001)
- Chair, Applied Science & Technology Graduate Admissions, UC Berkeley (2005-2006)
- Member, Executive Committee for the Applied Science & Technology Program, UC Berkeley (2004-2006)
- Committee on Seminars, Dept. of Mechanical Engineering, UC Berkeley (2004-2006)
- Committee on Faculty Awards, Dept. of Mechanical Engineering, UC Berkeley (2004-2006)
- Committee on Undergraduate Admissions, ME Dept., UC Berkeley (2004-2008)
- Biophysics Graduate Group Graduate Admissions, UC Berkeley (2004-2007; Chair, 2006-2007)
- Chair, Committee on Faculty and Student Affirmative Action, Dept. of Mechanical Engineering, UC Berkeley (2006-2007)
- Committee on Academic Planning, Dept. of Mechanical Engineering, UC Berkeley (2006-present)
- Committee on Student Prizes, Dept. of Mechanical Engineering, UC Berkeley (2004-2006; 2007-2008)
- Committee on Graduate Study, Dept. of Mechanical Engineering, UC Berkeley (2006-2008; 2013-present)
- Committee on ABET and Undergraduate Study, Dept. of Mechanical Engineering, UC Berkeley (2007-present)
- Committee on Safety, Dept. of Mechanical Engineering, UC Berkeley (2010-present)
- Faculty Search Committee (Biomechanical Engineering), Dept. of Mechanical Engineering, UC Berkeley (2012-2013)

- Faculty Search Committee (Ocean Engineering), Dept. of Mechanical Engineering, UC Berkeley (2014-2015)
- Member, Teaching Points Committee, Dept. of Mechanical Engineering, UC Berkeley (2015-present)
- Chair, Ad-Hoc Committee for Excellence Review for a Continuing Lecturer appointment, Dept. of Mechanical Engineering, UC Berkeley (2015)
- Faculty Search Committee (Assistant Professor in Design, Robotics, Applied Energy Systems, and/or Nanoscale Systems Engineering), Dept. of Mechanical Engineering, UC Berkeley (2016-present)

College of Engineering, UC Berkeley

- SUPERB Committee (2005-2006)
- Faculty Advisory Board, Engineering Research Support Office (2005-2007)
- Commencement Student Relations Committee (2007)
- Faculty Search Committee, Dept. of Civil Engineering (2007-2008)
- Task Force Member, Biology in the College of Engineering (2007-2008)
- Task Force Member, Nanoscience & Nanotechnology in the College of Engineering (2007-2008)
- Founding Faculty Director Search Committee, Fung Institute for Engineering Leadership, (2010-2011)
- Faculty Advisory Committee, Biomolecular Nanotechnology Center (2010-present)
- Reviewer of scholarships for admitted diversity undergraduate students (2013)
- BlackRock Scholars Screening Committee (2016-present)

University, UC Berkeley

- Nanoelectronics Search Committee & Affirmative Action Officer, Berkeley Nanosciences & Nanoengineering Institute (2005-2006)
- Faculty Advisory Board, Nanoscale Science & Engineering Graduate Group (2005-2007)
- Dean Search Committee, College of Natural Resources (2007-2008)
- Member, Research Compliance Advisory Committee (2011-present)
- Chair, Committee on Laboratory and Environmental Biosafety (Institutional Biosafety Committee) (2011-present)
- Search Committee for Assistant Biosafety Office, Environmental, Health, & Safety (2012)
- Reviewer of campus pre-proposals for the NSF: Scalable Nanomanufacturing (SNM) Program (2013)
- Selection Committee for 2014 Summer Undergraduate Research Fellows on campus (2014)
- Selection Committee for EH&S Campus Biosafety Officer (2014)
- Selection Committee for EH&S Campus Assistant Biosafety Officer (2014)
- Member, Committee on Educational Policy, Berkeley Division, Academic Senate (2015-present)
- Member, Campus Ad Hoc Committee for Full Professor consideration of a faculty individual (2016)
- Member, Campus Ad Hoc Committee for Tenure consideration of a faculty individual (2016)

University of California, System-Wide

- Member of Presidential Task Force on Biosafety and Biosecurity (2014-2015)

PROFESSIONAL ACTIVITIES

- Co-Director, *NATO Advanced Study Institute: Mesoscopic Electron Transport*, Curaçao, The Netherlands Antilles, June 24-July 5, 1996
- Member, Advanced Research & Experiments in Sensing II, Office of the Undersecretary of Defense for Acquisition & National Academy of Sciences and Engineering (2000-2001)
- Member, National Research Council committee to review the Federal National Nanotechnology Initiative (2001-2002)
- Public Member, NJ Domestic Security Preparedness Task Force (2001-2003)
- Member, Biophysical Society Minority Affairs Committee (2002-2007)
- Scientific Advisory Board, NSF ScienCentral "Public Understanding of Research" (2003-2006)
- Faculty Advisor: Pi Tau Sigma, Mechanical Engineering Honor Society, UC Berkeley (2004-2006)

- Member, Advisory Board, Boulder School of Condensed Matter Physics and Materials Physics (2004 present)
- Chair in Micro/NanoBiotechnology, IEEE Engineering in Medicine & Biology Society Annual Meeting (2004)
- Editorial Board: *American Journal of Nanomedicine* (2005-2007)
- Interviewer for the Harvard Alumni Association/Harvard Admissions Committee (2005-present)
- Mentor to College Preparatory High School students interested in science and engineering (2006-2014)
- Panelist, Global Technology Leader Conference (2009)
- Editorial Board: *Journal of Physical Chemistry and Biophysics* (2011-present)
- Chair of Advanced Technology for Stem Cell Research Session, 4th Annual Congress of Regenerative Medicine & Stem Cell, Beijing, China (November 2011)—declined due to family reasons
- Consumer Advisory Panel, King Arthur Flour (April, 2012 - present)
- Consultant, Ono Pharmaceutical (June 2012)
- Volunteer Science Teacher, Haste Child Development Center (2012-2013)
- Co-Chair, "Biological Devices/ Biosensors and Molecular Diagnostics" at the 6th International Conference on Bioengineering and Nanotechnology, UC Berkeley (June 2012)
- Mentor, Expanding Your Horizons. Led a workshop, "Go with the Flow," to 6-8th grade girls (March 2013)
- Session Chair, "Microfluidics II", at the 2013 SPIE Micro+Nano Materials, Devices, and Applications in Melbourne, Australia (December, 2013)
- Volunteer Science Teacher, Thornhill Elementary School (2013-present)
- Co-organized and Co-Chair of "Cancer Nanotechnology" session at the IEEE Engineering in Medicine and Biology Society, Chicago, IL (August 26-30, 2014).
- Product Tester and Test Baker, King Arthur Flour Company (2014-present)
- Member of Organizing Committee for the 2015 American Association for Clinical Chemistry Emerging Clinical Laboratory Diagnostics Conference (2014-2015)
- Lead Faculty, Girls in Engineering, University of California, Berkeley, Summer (2016)
- Session Chair, Fall Material Research Society Symposium on Biomaterials for Regenerative Medicine (Nov. 2017)
- Member of the 2017 NIH Director's New Innovator Award Program (DP2) Review Panel (Dec. 2016)
- Member of the 2017 NIH Director's Pioneer Award Competition Review Panel (Dec. 2016-Jan. 2017)
- Panel member for numerous NIH and DoD workshops regarding integrating nanotechnology and physics with molecular biology (2000-present); panel reviewer for numerous NSF evaluation committees in the areas of Physics, Biophysics, Bioinformatics, and Computer Science
- Reviewer for numerous NIH study sections and special emphasis sections focused on medical instrumentation and systems development, training grants, SBIRs, and Innovative Molecular Analysis Technologies (IMAT)
- Referee for Nature, Science, National Research Council, Applied Physics Letters, Langmuir Letters, NanoLetters, Lab Chip, Journal of Optical Society of America, Journal of Physics D: Applied Physics, and Integrative Biology

FUNDING

Awarded

- **NATO Advanced Study Institute 951289:** *Special Program on Nanoscale Science—Mesoscopic Electron Transport*, 1996. Sohn (PI)
- **Office of Naval Research N00014-96-1-0724:** *Mesososcopic Electron Transport: Advanced Study Institute*, 1996. Sohn (PI)
- **NSF DMR-9624536:** *CAREER— Probing Mesoscopic Phenomena in Novel Materials*, 9/15/96 -8/31/00. Sohn (PI)
- **Army Research Office DAAG55-97-1-0401:** *Young Investigator Award—Spin-Polarized Transport in Semiconductor-Based Mesoscopic Devices*, 9/27/97 – 9/21/00. Sohn (PI)
- **DuPont Young Professor Award:** *A Microscale Electronic Sensor for Material Identification*, 1997 - 2000. Sohn (PI)

- **Office of Naval Research (DURIP):** *The Fabrication and Exploration of Quasi-3 Dimensional Mesoscopic Devices*, 3/1/97 – 2/28/98. Sohn (PI)
- **Army Research Office (DURIP):** *Electronic Biosensors*, 2000 – 2001. Sohn (PI)
- **Army Research Office/DARPA DAAD19-00-1-0065:** *Electronic Biosensing for Microfluidic Devices*, 05/1/00 – 04/30/03. Sohn (PI)
- **NSF BES-0074780: POWRE:** *Electronic Biosensors—An Integration of Nanotechnology with Molecular Biology*, 8/1/00 – 7/31/01. Sohn (PI)
- **Fluidigm Corporation:** *Measurement of Nanoscale Particles*, 2001. Sohn (PI)
- **NSF EIA-0103215:** *Nano Initiative: The Single-Molecule DNA Transistor*, 9/15/01 – 8/31/02. Sohn (PI)
- **NSF EIA-0121405:** *Collaborative Proposal-ITR/SY: Molecular Computation with Automated Microfluidic Sensors (MCAMS)*, 9/30/01 – 9/29/06. Sohn (co-PI)
- **DARPA BioComp:** *Molecular Computation with Automated Microfluidic Sensors*, 2001-2004. Sohn (co-PI)
- **Office of Naval Research:** *Measuring the Electron Transport of Single Molecules*, 2001-2004. Sohn (PI)
- **NSF EIA-0205098:** *QuBIC: NSF Information Technology Research/QuBIC Principal Investigators' Meeting Conference*, 1/15/02 – 12/31/02. Sohn (PI)
- **DOE DE-FG02-02ER15355:** *Probing Interactions at the Nanoscale: Sensing Protein Molecules and Protein Networks In Vivo Using On-Chip Electronic Nanosensors*, 10/1/02– 8/24/05. Sohn (PI)
- **Army Research Office:** *A Microfluidics Approach to Investigate Axon Guidance*, 4/1/06 – 12/31/06. Sohn (PI)
- **DARPA NBCH1060008:** *On-Chip NMR*, 5/8/06 – 5/7/07. Sohn (PI)
- **NIH/NIEHS 2 P42 ES004705-19:** *Toxic Substances in the Environment*, 6/19/06-5/30/2009. Sohn (co-PI)
- **NIH/NINDS 5R21NS058600-02:** *A Controllable Microfluidic Gradient Device for Studying Neuronal Polarization*, 3/15/07- 2/28/10. Sohn (PI)
- **NSF CBET-0651799:** *NanoCytometry: A Point-of-Care Technology for Monitoring Chronic Leukemia Patients*, 6/1/07 - 5/31/10. Sohn (PI)
- **CITRIS:** *Improving Point-of-Care Diagnostics for Disease Surveillance in the Developing World*, 6/1/08 – 5/31/09. Sohn (PI)
- **Michael J. Fox Foundation for Parkinson's Research:** *A Pore-Based Method to Sort and Characterize Human Embryonic Stem-Cell Derived Dopaminergic Neurons*, 12/17/08-12/16/09. Sohn (PI)
- **W.M. Keck Foundation Medical Research Program:** *Applying Embryonic Signal Integration for Adult Limb and Organ Regeneration*, 1/15/10-1/14/14. Sohn (PI)
- **Siebel Stem-Cell Institute:** *PALM-Mediated Tracking of Stem-Cell Surface Proteins*, 10/1/09-12/31/11. Sohn (PI)
- **DoD Breast Cancer Research Program:** *Using 3-D Super-Resolution Microscopy to Probe Breast Cancer Stem Cells and Their Microenvironment*, 2/14/11– 2/13/14. Sohn (PI)
- **Siemens Center of Knowledge Interchange (Healthcare Division):** *Direct Detection Diagnostics*, 6/15/11-3/31/11. Sohn (PI)
- **NIH/NCI 1R21CA156139-01:** *Rapid Label-Free Detection of Acute Promyelocytic Leukemia*, 8/31/2011 – 7/30/2014. Sohn (PI)
- **Siemens Center of Knowledge Interchange (Healthcare Division):** *Direct Detection Diagnostics Phase II*, 4/1/2012 – 9/30/2013. Sohn (PI)
- **Bakar Fellows Program:** *Label-Free Isolation and Analysis of Circulating Tumor Cells for Metastatic Breast Cancer Biomarker Discovery*, 7/1/2013 – 6/30/2018, Sohn (PI)
- **Siemens Healthcare:** *Isolation and Screening of Circulating Tumor Cells—Pilot Study*, 10/1/2014 – 12/1/2014, Sohn (PI)
- **NIH/NCI 1R01CA190843-01:** *A Label-Free, Point-of-Care Platform to Diagnose Acute Promyelocytic Leukemia*, 3/1/2015 – 2/28/2020, Sohn (PI)
- **NIH/NIBIB 1R21EB019181-01A1:** *Node-Pore Sensing for Cellular Screening*, 4/1/2015 – 1/31/2017, Sohn (PI)
- **NIH/NCI 1R21CA182375-01A1:** *Isolating Circulating Tumor Cells*, 5/6/2015 – 4/30/2018, Sohn (PI)

- **NSF 1509921:** *A Microfluidic Platform for Detecting Circulating Endothelial Cells at the Point-of-Care*, 7/1/2015 – 6/30/2018, Sohn (PI)

Pending

- **NIH/NIAMS:** *High-throughput screening of cell mechanics to direct 3D tissue culture*, 07/01/17 – 06/30/19
- **NSF 1705959:** *A Light-Activated Dynamic Gel for Stem-Cell Culture*, 06/01/17 – 05/31/20 (PI: Sohn)
- **NIH/NCI 1 R01 EB024989-01:** *Mechanical Phenotyping of Random Periaerolar Fine-Needle Aspiration-Collected Cells for Early Breast Cancer Detection*, 07/01/17 – 06/30/22 (PI: Sohn)

SELECTED TALKS AND PRESENTATIONS

Invited talks (Colloquia, Seminars, Plenary)

1. Condensed Matter Seminar, Physics Dept., Harvard University, "Searching for Cancer Cells One-by-One," Cambridge, MA, October 1999.
2. Dept. of Electrical Engineering and Computer Science, Stanford University, "Capacitance Cytometry: Measuring Single Cells One-by-One," Palo Alto, CA, April 2000.
3. XX Congress for the Int'l. Soc. for Analytical Cytology, "A Micro-Electronic Flow Cytometer," Montpellier, France, May 2000.
4. Defense Science Research Council, "Capacitance Cytometry: Measuring Single Cells One-by-One," San Diego, CA, July 2000.
5. Colloquium, Dept. of Physics, Princeton University, "(Electrically) Shocking Observations about DNA," Princeton, NJ, October 2000.
6. Dept. of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, "(Electrically) Shocking Observations about DNA," Cambridge, MA, February 2001.
7. National Research Council, "(Electrically) Shocking Observations about DNA," Washington, D.C., February 2001.
8. Materials Science and Engineering Dept., Cornell University, "(Electrically) Shocking Observations about DNA," Ithaca, NY, April 2001.
9. Condensed Matter Seminar, Physics Dept., California Institute of Technology, "(Electrically) Shocking Observations about DNA," Pasadena, CA, May 2001.
10. American Chemical Society Prospectives: Biological Applications of Nanotechnology, "Nanoelectronic Sensing: From Single Cells to Single Molecules," Berkeley, CA, June 2001.
11. International Conference on Electronic Interactions in DNA, "(Electrically) Shocking Observations about DNA," University of California, Los Angeles, September 2001.
12. Molecular Biology Department, Princeton University, "Molecular Sensing Using an Artificial Lateral Nanopore," Princeton, NJ, October 2001.
13. National Science Foundation, "Molecular Sensing Using an Artificial Lateral Nanopore," Washington, D.C., December 2001.
14. Stanford Genome Science Technology Center, "Nanoelectronic Sensing: From Single Cells to Single Molecules," Palo Alto, CA, February 2002.
15. Dept. of Hematology and Oncology, Harvard Medical School, "Nanoelectronic Sensing: From Single Cells to Single Molecules," Beth Israel Deaconess Hospital, Boston, MA, March 2002.
16. Physics Dept., Columbia University, "Molecular Sensing Using an Artificial Lateral Nanopore," New York, NY, April 2002.
17. American Vacuum Society, "Molecular Sensing Using an Artificial Lateral Nanopore," Monterey, CA, May 2002.
18. Dept. of Bioengineering, Duke University, "Molecular Sensing Using an On-Chip Artificial Pore," Durham, NC, January 2003.
19. Dept. of Materials Science and Engineering, UC Santa Barbara, "Molecular Sensing Using an On-Chip Artificial Pore," Santa Barbara, February 2003.
20. Dept. of Bioengineering, University of Pennsylvania, "Molecular Sensing Using an On-Chip Artificial Pore," Durham, NC, March 2003.
21. Bauer Center for Genomics, Harvard University, "Peering in the Life of a Cell: Developing Electronic Techniques to Identify Proteins *In Vivo*," Cambridge, MA, April 2003.

22. Dept. of Mechanical Engineering, UC Berkeley, "Molecular Sensing Using an On-Chip Artificial Pore," Berkeley, CA, April 2003.
23. Sandia National Laboratories, "Molecular Sensing Using an On-Chip Artificial Pore," Albuquerque, NM, April 2003.
24. American Chemical Society, Annual Meeting, "Molecular Sensing Using an On-Chip Artificial Pore," New York, NY, September 2003.
25. Plenary Talk, Fundamenteel Onderzoek der Materiel, "Molecular Sensing Using an Artificial Lateral Nanopore," Amsterdam, The Netherlands, September 2003.
26. Dept. of Mechanical Engineering, Northwestern University, Dept. of Materials Science and Engineering, "Molecular Sensing Using an On-Chip Artificial Pore," Evanston, IL, February 2004.
27. NIEHS Nanotechnologies Workshop: Technologies for Improved Risk Stratification and Disease Prevention, "Electronic Sensing: From Single Cells to Single Molecules," Research Triangle Park, NC, March 2004.
28. IBM Almaden, "Molecular Sensing Using an On-Chip Artificial Pore," San Jose, CA, April 2004.
29. Dept. of Materials Science and Engineering, "Molecular Sensing Using an On-Chip Artificial Pore," Palo Alto, CA, September 2004.
30. Plenary Talk, Sigma Pi Sigma National Physics Honor Society Congress Meeting, "Research Ethics in the Physics Community: The Sad Case of Hendrik Schön," Albuquerque, NM, October 2004.
31. ASME Nanotechnology: Miniaturization in Biomedicine, "Molecular Sensing Using an Artificial Nanopore," Irvine, CA, April 2005.
32. Gordon Research Conference on Analytical Chemistry, "Molecular Sensing Using an Artificial Lateral Pore," Roscoff Biological Station, France, June 2005.
33. Prostate Cancer Advocates Group, UC San Francisco, "NanoCytometry: A New Method to Separate Cancer Cells at the Nanoscale," San Francisco, CA, June 2005.
34. William Pyle Philips Distinguished Visitor, Haverford College, "Molecular Sensing Using an On-Chip Artificial Pore," Haverford, PA, September 2005.
35. William Pyle Philips Distinguished Visitor, Haverford College, "The Sad Case of Hendrik Schön," Haverford, PA, September 2005.
36. 9th Annual European Conference on Micro- and Nano-scale Technologies for the Biosciences, "Molecular Sensing Using an On-Chip Artificial Pore," Montreaux, Switzerland, November 2005.
37. Politecnico di Torino, "Introduction to Nanotechnology and Nanoscience" (series of 5, three-hour lectures), Turin, Italy, November 2005.
38. NASA Ames Research Center, "Molecular Sensing Using an On-Chip Artificial Pore," Moffett Field, CA, December 2005.
39. Vogel Moral Courage Award Talk, Principia College, "The Sad Case of Hendrik Schön," St. Louis, MO, April 2006.
40. Colloquium, Dept. of Physics, UC Riverside, "Applications to Artificial Pores—From Immunoassays to Cytometry," Riverside, CA, May 2006.
41. QB3 Biomedical Engineering Symposium, "Applications to Artificial Pores—From Immunoassays to Cytometry," San Francisco, CA, April 2006.
42. Golden Gate Polymer Forum, "Sensing with Artificial Pores," Mountain View, CA, September 2006.
43. Berkeley Sensor & Actuator Center, "Point-of-Care Technology to Diagnose and Monitor Cancer," Berkeley, CA, September 2006.
44. Dept. of Bioengineering, Massachusetts Institute of Technology, "Sensing with Artificial Pores: From Single Molecules to Single Cells," Cambridge, MA, November 2006.
45. 4th USA-Korea Joint Symposium on MEMS and BioSystems Technology, "NanoCytometry: A New Cell Assay for Disease Diagnosis and Monitoring," UC Berkeley, November 2006.
46. Neyman Lecture, Dept. of Statistics, UC Berkeley, "Cell Characterization Using Chemically Functionalized Pores," UC Berkeley, February 2007.
47. Division of Engineering and Applied Sciences, Harvard University, "Characterizing Cells Using a Chemically Functionalized Pore," Cambridge, MA, May 2007.
48. J. William Fulbright Foreign Scholarship Board, "Nanocytometry: Ushering a New Era in Personalized Medicine," UC Berkeley, August 2007.
49. "A Night with Industry," Keynote Speaker, Society of Women Engineers, UC Berkeley, November 2007.

50. Applied Science & Technology Colloquium, "Cell Characterization Using Chemically Functionalized Pores," UC Berkeley, February 2008.
51. 4th Annual Conference for Undergraduate Women in Physics, University of Southern California, Los Angeles, CA, January 2009.
52. UC Berkeley/Nanyang Technological University Workshop, "Microfluidic-Based Methods for Stem-Cell Purification," Singapore, March 2009.
53. Berkeley Stem-Cell Center, "Isolation of Single Organ Stem Cells from their Precise Anatomical Niche," Asilomar, CA, May 2010.
54. Berkeley-Shanghai Biotech Forum, "Label-Free Cell Diagnostics," Shanghai, China, November 2011.
55. 7th Gotham Metro Condensed Matter Meeting, New York Academy Sciences, "The Scientific Fraud of Hendrik Schön," New York, May 2012.
56. Berkeley Breakfast Club, "Label-Free Cell Diagnostics", Berkeley, CA, June 2012.
57. W. M. Keck Foundation Workshop on Imaging Detection of Single Molecules: Challenges and Opportunities, "Label-Free Single-Cell Analysis," National Academies, Beckman Center, Irvine, CA, August 2012.
58. CITRIS Research Exchange Talk, "Label-Free Single-Cell Analysis," UC Berkeley, November 2012.
59. Dept. of Mechanical Engineering, University of California, Davis, "Label-Free Single-Cell Analysis," February 2013.
60. American Physical Society Annual March Meeting, "Uncovering stem-cell heterogeneity in the microniche with label-free microfluidics," in the Micro/Nanofluidics Session sponsored by the Division of Fluid Dynamics and Group on Statistical and Nonlinear Physics, Baltimore, MD, March 2013.
61. 57th International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication, "Label-Free Cell Screening", Nashville, TN, May 2013.
62. SPIE Micro + Nano Materials, Devices, and Applications, "Label-Free Single-Cell Analysis," Melbourne, Australia, December 2013.
63. Point-of-Care Technologies for Cancer, NIH, "Label-Free, Multi-Marker Cell-Surface Screening for Cancer," Bethesda, MD, January 2014.
64. College of Engineering External Advisory Board Meeting, "Creating a Liquid Biopsy for Cancer Diagnosis and Monitoring," Berkeley, CA, March 2014.
65. Pi Tau Sigma (Mechanical Engineering Undergraduate Honor Society), "Being a Scientific Nancy Drew in the 21st Century," Berkeley, CA, March 2014.
66. Physics Dept., Sonoma State University, "Node-Pore Sensing--How a Simple Four-Terminal Measurement Can Screen Cancer Cells, March 2014.
67. American Association for Clinical Chemistry 2014 Oak Ridge Conference: Emerging Clinical & Laboratory Diagnostics: The Portable Lab, "*Node-pore sensing: A label-free platform to screen single cells for their phenotypic profile*," San Jose, CA, April 2014.
68. US-Korea Conference: Biomechanics, Mechanobiology, Disease, "Node-Pore Sensing," San Francisco, CA, August 2014.
69. IEEE Engineering in Medicine and Biology Society 2014, "Node-Pore Sensing for Surface-Marker Profiling of Single Cells," Chicago, IL, August 2014.
70. Micro- Nano-Engineering International Conference, "Node-Pore Sensing," Lausanne, Switzerland, September 2014.
71. American Association for Clinical Chemistry 2014 Personalized Diagnostics Today Conference, "Node-Pore Sensing: A label-free platform to screen single cells for their phenotypic profile," Virtual Conference, October 2014.
72. Keynote speaker, Conference for Undergraduate Women in Physical Sciences (WoPhyS'14), "Node-Pore Sensing: How a Simple Four-Terminal Measurement Can Screen Cancer Cells," University of Nebraska, Lincoln, Nebraska, November 2014.
73. Plenary talk, "Node-Pore Sensing: A Label-Free Platform to Screen Single Cells for Their Phenotypic Profile," Third International Conference on Innovative Biology, Medicine, and Engineering, Nagoya University, Nagoya, Japan, January 2015.
74. Invited talk, "Node-Pore Sensing: A Label-Free Platform to Screen Single Cells for Their Phenotypic Profile", Dept. of Mechanical & Aerospace Engineering, Princeton University, Princeton, NJ, April 2015.

75. Plenary talk, "Node-Pore Sensing: A Label-Free Platform to Screen Single Cells for Their Phenotypic Profile", Korean Life Scientists in the Bay Area Spring 2015 Meeting, UCSF, May 2015.
76. Invited talk, "Node-Pore Sensing: A Label-Free Method for Cell Screening," 2015 Electron, Ion, Photo Beam, and Nanofabrication Conference, San Diego, CA, May 2015.
77. Discussion Leader, "The Future of Precision Diagnostics with UC Berkeley," Annual Meeting of the New Champions, World Economic Forum, Dalian, China, September 2015.
78. Panelist, "Decoding Cancer", Annual Meeting of the New Champions, World Economic Forum, Dalian, China, September 2015.
79. Invited talk, TBD, 2016 Fall Materials Research Society Annual Meeting, Boston, MA, Nov. 29-Dec. 2, 2016.

Plenary or Invited talks declined due to health/family/conflicting schedule reasons

1. PITTCON 2005, "Molecular Sensing Using an Artificial Pore," February 2005.
2. Molecular Medical Diagnostic Technologies, 5th China Medical Biotech Forum, Beijing, China, November 2011.
3. Keynote speaker, Conference for Undergraduate Women in Physical Sciences (WoPhyS'13), University of Nebraska, Lincoln, Nebraska, October 2013.
4. Seventh Microfluidics Consortium, University of California, Berkeley, February 2015.

Invited talks and oral presentations by students and postdocs

1. O. A. Saleh, "A Quantitative Nanoscale Coulter Counter," Oral presentation, 2001 MicroTas Conference, October 2001.
2. A. Thupil, "Axonal Chemotaxis in a Microfluidic Gradient Generator," Oral presentation, 51st Annual Biophysical Society Meeting, March 2007.
3. A. Thupil, "A Controllable Microfluidic Gradient Generator for Studying Neuronal Polarization," Oral presentation, Materials Research Society Spring Meeting, April 2007.
4. A. Carbonaro, "Cell Characterization Using Protein Functionalized Pores," Oral presentation, 11th International Conference on Miniaturized Systems for Chemistry and Life Sciences, Paris, France, October 2007.
5. N. Sanford, "Hydrodynamic Stretching of Molecules of DNA Bound to an Individual Nanowire," Oral presentation, Materials Research Society Fall Meeting, Boston, MA, November 2007.
6. R. Dylla-Spears, "Use of Stagnation Point Flows for DNA Trapping, Manipulation, and Target Sequence Detection," Oral presentation, The XVth International Congress on Rheology, Monterey, CA, November 2007.
7. S. K. Mohanty, "Stem-Cell Surface Marker Interrogation via Resistive-Pulse Sensing," Oral presentation, Biomedical Engineering Society 2009 Annual Meeting, Pittsburgh, PA, October 2009.
8. N. Ho, "Using Microfluidics to Diagnose Leukemia at the Point-of-Care," Oral presentation, Biomedical Engineering Society 2009 Annual Meeting, Pittsburgh, PA, October 2009.
9. R. Dylla-Spears, "Single-Molecule Target Sequence Detection Using Extensional Flow," Oral presentation, AIChE 2009 Annual Meeting, Nashville, TN, November 2009.
10. S. K. Mohanty, "Stem-Cell Surface Marker Interrogation via Resistive-Pulse Sensing: Screening for Sca-1 Expression in Mouse Muscle Stem Cells," Oral presentation, 13th International Conference on Miniaturized Systems for Chemistry and Life Sciences, Korea, November 2009.
11. S. K. Mohanty, "Isolation and Analysis of Satellite Cells from the Muscle Niche Using Microfluidics," Invited talk, The Ottawa Conference on New Directions in Biology and Disease of Skeletal Muscle, Ottawa, Canada, May 2010.
12. M. R. Chapman, "Label-free Screening of Niche-to-Niche Variation in Satellite Stem Cells Using Functionalized Pores," Oral presentation, to be given at the Nanopores Conference, Lanzarote, Spain, January 2012.
13. K. Balakrishnan, "Label-free Screening of Multiple Cell-surface Antigens Using a Single Pore," Oral presentation, Nanopores Conference, Lanzarote, Spain, January 2012.

14. M. R. Chapman, "Label-free screening of niche-to-niche variation in satellite stem cells using functionalized pores," Oral presentation, American Physical Society Annual March Meeting, Boston, MA, February 2012.
15. E. Lyall, "Characterizing Spatial Organization of Cell Surface Receptors in Human Breast Cancer with STORM," Oral presentation, American Physical Society Annual March Meeting, Boston, MA, February 2012.
16. K. Balakrishnan, "Label-free Screening of Multiple Cell-surface Antigens Using a Single Pore," Oral presentation, American Physical Society Annual March Meeting, Boston, MA, February 2012.
17. M. R. Chapman, "Using a light-activated culture matrix to determine the microenvironmental cues that initiate breast-cancer tumor metastasis," Oral presentation, 243rd ACS National Meeting (BIOT Division), San Diego, CA, March 2012.
18. K. Balakrishnan, "Using label-free screening to investigate stem-cells from their microanatomical niche," Oral presentation, 243rd ACS National Meeting (BIOT Division), San Diego, CA, March 2012.
19. K. Balakrishnan, "Toward Multimarker Cellular Screening Using Variable Cross-Section Pores," Oral Presentation, 6th International Conference on Bioengineering and Nanotechnology, Berkeley, CA, June 2012.
20. A. Kesavaraju, "Micropost Microenvironments for Studying Luminal-Basal Lineage Commitment of Breast-Cancer Cells," Oral Presentation, American Physical Society Annual March Meeting, Baltimore, MD, March 2013.
21. K. Balakrishnan, "Node-Pore Sensing", Oral Presentation, 2013 Gordon Research Conference Physics and Chemistry of Microfluidics, Lucca (Barga), Italy, June 2013.
22. M. Mir, "Quantifying Surface-Marker Expression through Imaging of Transient Interactions," Oral Presentation, 2014 Annual Biophysics Society Meeting, San Francisco, CA, February 2014.
23. D. Yang, "High-Throughput Microfluidic Device for Circulating Tumor Cell Isolation from Whole Blood," Oral Presentation, 2015 SPIE Bio-MEMS and Medical Microdevices II Conference, Barcelona, Spain, May 2015.
24. F. Rivest, "Real-Time Cell Detection and Characterization Using Barker-Coded Node-Pore Sensing (NPS)," Oral Presentation, MicroTAS 2015, Gyeongju, Korea, October 2015.

SELECTED PUBLICATIONS

1. M. S. Rzchowski, **L. L. Sohn**, and M. Tinkham, *Frequency Dependence of Shapiro Steps in Josephson-Junction Arrays*, Rapid Communications, Physical Review **B43**, 8682 (1991).
2. **L. L. Sohn**, M. S. Rzchowski, J. U. Free, S. P. Benz, M. Tinkham and C. J. Lobb, *Absence of fractional giant Shapiro steps in diagonal Josephson-junction arrays*, Rapid Communications, Physical Review **B44**, 925 (1991).
3. **L. L. Sohn**, M. S. Rzchowski, J. U. Free, and M. Tinkham, *Phase transitions in Josephson junction arrays with long-range interaction*, Physical Review **B47**, 967 (1993).
4. **L. L. Sohn**, M. T. Tuominen, M. S. Rzchowski, J. U. Free, and M. Tinkham, *AC and DC properties of Josephson junction arrays with long-range interaction*, Physical Review **B47**, 975 (1993).
5. W. J. Elion, J. J. Wachtors, **L. L. Sohn**, and J. E. Mooij, *Observation of the Aharonov-Casher effect of vortices in Josephson-junction arrays*, Phys. Rev. Lett. **71**, 461 (1993).
6. **L. L. Sohn**, J. J. Wachtors, U. Geigenmuller, W. J. Elion, and J. E. Mooij, *Static and Dynamic Properties of Vortices in Small Josephson-Junction Arrays*, Physica **B**, 1059 (1994).
7. W. J. Elion, J. J. Wachtors, **L. L. Sohn**, and J. E. Mooij, *Quantum Interference of Vortices in Josephson-Junction Arrays*, Physica **B**, 1001 (1994).
8. **L. L. Sohn**, J. Romijn, E. v. d. Drift, W. J. Elion, and J. E. Mooij, *Fabrication of a Quasi-3-Dimensional Josephson-Junction Array*, Physica **B**, 125 (1994).
9. W. J. Elion, J. J. Wachtors, **L. L. Sohn**, and J. E. Mooij, *The Aharonov-Casher Effect for Vortices in Josephson-Junction Arrays*, Physica **B**, 497 (1994).
10. **L. L. Sohn** and M. Octavio, *Half-integer steps in single-plaquette Josephson-junction arrays*, Rapid Communications, Physical Review **B49**, 9236 (1994).
11. **L. L. Sohn**, A. Pinczuk, B. S. Dennis, L. N. Pfeiffer, K. W. West, and L. Brey, *Dispersive Collective Excitation Modes in the Quantum Hall Regime*, Solid State Commun. **93**, 897 (1995).

12. T. J. Shaw, M. J. Ferrari, **L. L. Sohn**, D. H. Lee, M. Tinkham, and J. Clarke, *Magnetic Flux Noise Study of the KTB Transition in an Overdamped Josephson-Junction Array*, Phys. Rev. Lett. **76**, 2551 (1996).
13. **L. L. Sohn** and R. L. Willett, *Fabrication of Nanostructures Using Atomic-Force-Microscope Based Lithography*, Appl. Phys. Lett. **67**, 1552 (1995).
14. **L. L. Sohn** and R. L. Willett, *Fabrication of Metallic Nanostructures with an Atomic Force Microscope*, Surf. Sci. **362**, 874 (1996).
15. Y. Xia, J. McClelland, R. Gupta, D. Qin, X. Zhao, **L. L. Sohn**, R. Celotta, and G. M. Whitesides, *Replica Molding Using Polymeric Materials: A Practical Step Toward Nanomanufacturing*, Adv. Mater. **9**, 147 (1997).
16. **L. Sohn**, C. T. Black, M. Eriksson, M. Crommie, and H. Hess, *Scanning Probe Microscopes and Their Applications*, in Mesoscopic Electron Transport, NATO ASI Series, Vol. **E 345**, eds. L. L. Sohn, L. P. Kouwenhoven, and G. Schön (Boston, Kluwer Academic Publishers (1997)).
17. Mesoscopic Electron Transport, NATO ASI Series, Vol. **E 345**, eds. **L. L. Sohn**, L. P. Kouwenhoven, and G. Schön (Boston, Kluwer Academic Publishers 1997).
18. O. B. Bakajin, J. P. Brody, J. Chou, S. S. Chan, T. Duke, J. Knight, **L. Sohn**, A. Vishwanath, R. H. Austin, and E. C. Cox, *Polymer Dynamics and Fluid Flow in Microfabricated Devices*, Proc. SPIE **3258**, 100 (1998).
19. **L. L. Sohn**, *Quantum Leap for Electronics*, Nature **394**, 131 (1998).
20. Mingshaw W. Wu and **Lydia L. Sohn**, *Nanometer-scale Copper Electrodeposition from an On-Chip Source*, IEEE Electron Device Letters **21**, 277 (2000).
21. **L. L. Sohn**, O. A. Saleh, G. R. Facer, A. Beavis, R. S. Allan, and D. A. Notterman, *Capacitance Cytometry: Measuring Biological Cells One-by-One*, Proc. Natl. Acad. Sci. **97**, 10687 (2000).
22. **L. L. Sohn**, O. A. Saleh, G. R. Facer, A. Beavis, R. S. Allan, and D. A. Notterman, *Capacitance Cytometry: Measuring Biological Cells One-by-One*, Biophysical Journal **80** (1): 639, Part 2 Jan 2001.
23. G. R. Facer, D. A. Notterman, and **L. L. Sohn**, *Electronic Characterization of Biological Fluid Samples: 40 Hz to 30 GHz*, Biophysical Journal **80** (1): 652, Part 2 Jan 2001.
24. O. A. Saleh and **L. L. Sohn**, *A Resistive Sensing Device for Biological Solutions*, Biophysical Journal **80** (1): 637, Part 2 Jan 2001.
25. G. R. Facer, D. A. Notterman, and **L. L. Sohn**, *Dielectric Spectroscopy for Bioanalysis: 40 Hz to 26.5 GHz in a Microfabricated Waveguide*, Appl. Phys. Lett. **78**, 996 (2001).
26. D. C. G. Klein, L. Gurevich, J. W. Janssen, L. P. Kouwenhoven, J. D. Carbeck, and **L. L. Sohn**, *Ordered Stretching of Single Molecules of DNA*, Appl. Phys. Lett. **78**, 2396 (2001).
27. O. A. Saleh and **L. L. Sohn**, *A Quantitative Nanoscale Coulter Counter*, in the Fifth International Conference on Miniaturized Chemical and Biochemical Analysis Systems, Kluwer Academic Publishers (2001).
28. O. A. Saleh and **L. L. Sohn**, *Quantitative Sensing of Sub-Micron Colloids Using a Microchip Coulter Counter*, Rev. Sci. Inst. **72**, 4449 (2001).
29. G. R. Facer, D. A. Notterman, and **L. L. Sohn**, *Electronic Biosensing*, appears as an invited chapter in the National Institutes of Environmental Health Sciences, National Institutes of Health, Biomarkers of Environmentally Associated Disease, eds. S. H. Wilson and W. A. Suk, CRC Press, 527-548 (2002).
30. Bockrath, N. Markovic, A. Shepard, M. Tinkham, L. Gurevich, L. P. Kouwenhoven, M. W. Wu, and **L. L. Sohn**, *Scanned Conductance Microscopy of Carbon Nanotubes and λ -DNA*, NanoLetters, **2**, 187-190, 2002.
31. S. Stupp, **L. L. Sohn et al.**, *Small Wonders, Endless Frontiers: A Review of the National Nanotechnology Initiative*, National Research Council & National Academy of Engineering (2002).
32. O. A. Saleh and **L. L. Sohn**, *Correcting Off-Axis Effects in an On-chip Resistive Pulse Analyzer*, Rev. Sci. Inst. **73**, 4396-4398 (2002).
33. O. A. Saleh and **L. L. Sohn**, *An Artificial Nanopore for Molecular Sensing*, NanoLetters **3**, 37-38 (2003).
34. O. A. Saleh and **L. L. Sohn**, *Direct Detection of Antibody-Antigen Binding Using an On-Chip Artificial Pore*, Proc. Natl. Acad. Sci. **100**, 820-824 (2003).
35. T. Messina, L. N. Dunkleberger, G. A. Mensing, A. S. Kalmbach, R. Weiss, D. Beebe, and **L. L. Sohn**, *A Novel High-Frequency Sensor for Biological Discrimination*, in the International Conference on Miniaturized Chemical and Biochemical Analysis Systems 2003, Kluwer Academic Publishers (2003).

36. I. H. Chan, A. Carbonaro, and **L. L. Sohn**, *Artificial Pores for Performing Immunoassays*, International Conference on Miniaturized Chemical and Biochemical Analysis Systems 2004, Kluwer Academic Publishers (2004).
37. O. A. Saleh and **L. L. Sohn**, *Biological Sensing with an On-Chip Resistive Pulse Analyzer*, 26th Annual International Conference, IEEE Engineering in Medicine and Biology Society, Vol. 1, 2568-2570 (September, 2004).
38. S. W. Mohanty, **L. L. Sohn**, and D. J. Beebe, *Hybrid Polymer/Thin-Film Impedance System for Label-Free Monitoring of Cells*, 26th Annual International Conference, IEEE Engineering in Medicine and Biology Society (2004).
39. B. K. Weis, **L. L. Sohn**, et al., *Personalized Exposure Assessment: Enabling Population-Based Environmental Research*, *Environmental Health Perspectives* **113**, 840-848 (2005).
40. A. Carbonaro and **L. L. Sohn**, *A Resistive Pulse Sensor for Multianalyte Detection*, *Lab Chip* **5**, 1155-1160, 2005.
41. O. A. Saleh and **L. L. Sohn**, *An On-Chip Artificial Pore for Molecular Sensing*, in the Handbook of BioMEMS and Biomedical Nanotechnology, eds. R. Bashir and S. Wereley, Kluwer Academic Press (2006).
42. A. Carbonaro, L. Godley, and **L. L. Sohn**, *The NanoCytometer: Screening Cells Based on Cell Size*, International Conference on Microtechnologies in Medicine and Biology, IEEE, p. 206-208, (2006).
43. A. Carbonaro, L. A. Godley, and **L. L. Sohn**, *The NanoCytometer: A New Method of Cell Detection Performed at the Nanoscale*, in the Tenth International Conference on Miniaturized Systems for Chemistry and Life Sciences, Japan Academic Association (2006).
44. **L. L. Sohn**, J. L. Herberg, B. D. Harteneck, D. R. Myers, and J. A. Liddle, *Fabrication of an On-Chip NMR Microfluidics Device*, in the Tenth International Conference on Miniaturized Systems for Chemistry and Life Sciences, Japan Academic Association (2006).
45. S. C. Heilshorn, N. Ma, M.-m. Poo, and **L. L. Sohn**, *A Neuron-Compatible Microfluidic Generator*, American Institute of Chemical Engineers Annual Meeting (November, 2006).
46. A. Thupil, N. Ma, M.-m. Poo, and **L. L. Sohn**, *Axonal Chemotaxis in a Microfluidic Gradient Generator*, *Biophysical Journal*, p. 6A (January, 2007).
47. A. Carbonaro, L. A. Godley, and **L. L. Sohn**, *Kinetics of Antibody-Mediated Interaction of Colloids to Proteins Bound to a Substrate*, *Biophysical Journal*, p. 389A (January, 2007).
48. A. Carbonaro, L. A. Godley, and **L. L. Sohn**, *Functionalized Microfluidic Channels and Resistive-Pulse Sensing for Cell-Surface Antigen Detection*, Materials Research Society Spring Meeting, Session P3: Materials and Strategies for Lab-on-a-Chip—Biological Analysis, Microfactories, and Fluidic Assembly of Nanostructures (April, 2007).
49. A. Thupil, M.-m. Poo, and **L. L. Sohn**, *A Controllable Microfluidic Gradient Generator for Studying Neuronal Polarization*, Materials Research Society Spring Meeting (April, 2007).
50. A. Thupil, M.-m. Poo, and **L. L. Sohn**, *Studying Cell Chemotaxis Using a Microfluidic-Gradient Generator*, The Proceedings of μ TAS 2007 Conference 2007, eds. J. -L. Viovy, P. Tabeling, S. Descroix, and L. Malaquin, The Chemical and Biological Microsystems Society (2007).
51. A. Carbonaro, L. A. Godley, and **L. L. Sohn**, *Cell Characterization Using Protein-Functionalized Pores*, The Proceedings of μ TAS 2007 Conference 2007, eds. J. -L. Viovy, P. Tabeling, S. Descroix, and L. Malaquin, The Chemical and Biological Microsystems Society (2007).
52. A. Carbonaro, N. Sanford, and **L. L. Sohn**, *Hydrodynamic Stretching of Molecules of DNA Bound to an Individual Nanowire*, Materials Research Society Fall Meeting (November, 2007).
53. A. Shamloo, N. Ma, M.-M. Poo, **L. L. Sohn**, S.C. Heilshorn, *Endothelial cell chemotaxis in a shear stress free microfluidic device*, *Lab Chip* **8**, 1292-1299 (2008).
54. A. Carbonaro, H. Huang, L. A. Godley, and **L. L. Sohn**, *Cell Characterization Using a Protein-Functionalized Pore*, *Lab Chip* **9**, 1478-1485 (2008).
55. R. Dylla-Spears, **L. L. Sohn**, and S. Muller, *Use of stagnation point flows for DNA trapping, manipulation, and target sequence detection*, The XVth International Congress on Rheology, Monterey, CA (2008).
56. O. A. Saleh and **L. L. Sohn**, *Resistive-Pulse Sensing and On-Chip Artificial Pores for Biological Sensing*, Invited Chapter in Nano and MicroSensors for Chemical and Biological Surveillance, eds. J. B-H. Tok, (2008), ISBN: 0854041400.
57. Rebecca Dylla-Spears, **Lydia L. Sohn**, and Susan Muller, *Single-Molecule Target Sequence Detection Using Extensional Flow*, in AICHE 2009 Annual Meeting, Nashville, TN, Nov. 2009.

58. R. Dylla-Spears, J. E. Townsend, **L. L. Sohn**, L. Jen-Jacobson, and S. J. Muller, *Fluorescent Marker for Direct Detection of Specific dsDNA Sequences*, *Anal. Chem.* **81**, 10049-10054 (2009).
59. S. K. Mohanty, M. J. Conboy, I. Conboy, and **L. L. Sohn**, *Stem-Cell Surface Marker Interrogation via Resistive-Pulse Sensing*, in the Conference Proceedings for the Biomedical Engineering Society 2009 Annual Meeting, Pittsburgh, PA (Oct. 2009).
60. S. K. Mohanty, M. J. Conboy, I. Conboy, and **L. L. Sohn**, *Stem-Cell Surface Marker Interrogation via Resistive-Pulse Sensing: Screening for Sca-1 Expression in Mouse Muscle Stem Cells*, The Proceedings of μ TAS 2009, Korea, November 2009.
61. E. B. P. Jabart, B. Helms, **L. Sohn**, and I. Conboy, *Site-directed Conjugation of Bioactive Molecules to Poly(lactic-co-glycolic) Acid Nanoparticles*, in the Society for Biomaterials 2010 Annual Meeting & Exposition, April 2010.
62. R. Dylla-Spears, J. E. Townsend, L. Jen-Jacobson, **L. L. Sohn**, and S. J. Muller, *Single-Molecule Sequence Detection via Microfluidic Planar Extensional Flow at a Stagnation Point*, *Lab Chip* **10**, 1543-9 (2010).
63. M. R. Chapman and **L. L. Sohn**, *Label-Free Resistive-Pulse Cytometry*, in *Recent Advances in Cytometry*, Part A, (Methods in Cell Biology), Vol 102. Eds. Zbigniew Darzynkiewicz, E. Holden, A. Orfao, W. G. Telford, and Donald Wlodkowic, Elsevier, (2011) ISBN: 9780123749123.
64. K. Balakrishnan, M. R. Chapman, M. Conboy, S. Mohanty, E. Jabart, H. Huang, J. Hack, I. Conboy, **L. L. Sohn**, *Using Label-Free Screening to Investigate Stem-Cells from Their Microanatomical Niche*, *Biophysical Journal* **102** (3), 726a (2012).
65. M. R. Chapman and **L. L. Sohn**, *Using Light-Activated Culture Matrix to Determine the Microenvironmental Cues that Initiate Breast-Cancer Tumor Metastasis*, *Biophysical Journal* **102** (3), 726a (January, 2012).
66. M. R. Chapman, K. Balakrishnan, M. J. Conboy, S. K. Mohanty, E. Jabart, H. Huang, J. Hack, I. M. Conboy, and **L. L. Sohn**, *Label-free Screening of Niche-to-Niche Variation in Satellite Stem Cells Using Functionalized Pores*, in *Nanopores for Bioanalytical Applications*, Eds. Joshua Edel and Tim Albrecht, Royal Society of Chemistry Publishing, ISBN: 978-1-84973-416-5 (2012).
67. K. Balakrishnan, M. Chapman, A. Kesavaraju, and **L. Sohn**, *A Variable Cross-Section Pore for Screening Cells for Specific Markers*, in *Nanopores for Bioanalytical Applications*, Eds. Joshua Edel and Tim Albrecht, Royal Society of Chemistry of Publishing, ISBN: 978-1-84973-416-5 (2012).
68. M. R. Chapman and **L. L. Sohn**, *Using a light-activated culture matrix to determine the microenvironmental cues that initiate breast-cancer tumor metastasis*, 243rd American Chemical Society National Meeting (BIOT Division), San Diego, CA (March 2012).
69. K. Balakrishnan, M. R. Chapman, M. J. Conboy, S. K. Mohanty, E. Jabart, H. Huang, J. Hack, I. M. Conboy, and **L. L. Sohn**, *Using label-free screening to investigate stem-cells from their microanatomical niche*, 243rd American Chemical Society National Meeting (BIOT Division), San Diego, CA (March 2012).
70. A. Kesavaraju, K. Balakrishnan, M. R. Chapman, and **L. L. Sohn**, *Label-free screening of multiple cell-surface antigens using single micropores*, 243rd American Chemical Society National Meeting (BIOT Division), San Diego, CA (March 2012).
71. **L. L. Sohn**, *Review of Fields, Forces, and Flows in Biological Systems by Alan J. Grodzinsky*, *The Quarterly Review of Biology* **87**, 159 (2012).
72. K. Balakrishnan and **L. L. Sohn**, *Cell Screening Using Resistive-Pulse Sensing*, in *Laboratory Methods in Cell Biology: Biochemistry and Cell Culture*, Vol. 112. Ed. P. Michael Conn, Elsevier, (2012).
73. A. Kesavaraju, B. Qing, E. Jabart, and **L. L. Sohn**, *Tunable Micropost Arrays for Studying Breast Cancer Microenvironments*, in the 7th International Conference on Microtechnologies in Medicine and Biology (April, 2013).
74. K. Balakrishnan and **L. L. Sohn**, *Node-Pore Sensing—A Highly Sensitive Technique for Screening Biological Species*, in the 7th International Conference on Microtechnologies in Medicine and Biology (April, 2013).
75. K. Balakrishnan, G. Anwar, T. Ngyuen, A. Kesavaraju, and **L. L. Sohn**, *Node-Pore Sensing: A Robust, High-Dynamic Range Method for Detecting Biological Species*, *Lab Chip*, 2013, 13, 1302-1307.

Selected by the Editors to be in the themed category, “Lab on a Chip Top 10%,” for being of “exceptional significance for the minituration community” and demonstrating a “breakthrough in device technology [and] methodology”

76. M. R. Chapman, K. Balakrishnan, J. Li, M. J. Conboy, H. Huang, S. K. Mohanty, E. Jabart, J. Hack, I. M. Conboy, and **L. L. Sohn**, *Sorting Single Satellite Cells from Individual Myofibers Reveals Heterogeneity in Cell-Surface Markers and Myogenic Capacity*, *Integrative Biology*, 2013, 5(4) 692-702.
77. K. Balakrishnan and **L. L. Sohn**, *Multi-marker Screening Using Node-Pore Sensing*, in the 17th International Conference on Miniaturized Systems for Chemistry and Life Sciences, Freiburg, Germany (October 2013).
78. M. Mir, O. Scheideler, J. Whang, and **L. L. Sohn**, *Quantifying Surface-Marker Expression through Imaging of Transient Interactions*, *Biophysical Journal* **106** (2), 245a, (2014).
79. E. Jabart, K. Balakrishnan, **L. L. Sohn**, *Microfluidic Techniques to Isolate and Screen Single Stem Cells*, in *Stem Cells and Tissue Engineering*, 2nd Edition, Eds. S. Li, World Scientific Publishing, *In press*.
80. M. Mir, O. Scheideler, J. Whang, and **L. L. Sohn**, *A Simple Optofluidic Platform for Label-Free Cell-Surface Marker Screening*, *Proc. SPIE 9155, Translational Biophotonics 91551C*, DOI: 10.1117/12.2057806 (June, 2014).
81. E. Jabart, S. Rangarajan, C. Lieu, J. Hack, I. Conboy, and **L. L. Sohn**, *A Microfluidic Method for the Selection of Undifferentiated Human Embryonic Stem Cells and In Situ Analysis*, *Microfluid Nanofluid*, DOI: 10.1007/s10404-014-1485-9 (2014).
82. K. Balakrishnan, J. Whang, R. Hwang, J. Hack, L. Godley, and **L. L. Sohn**, *Node-pore sensing enables label-free surface-marker profiling of single cells*, *Analytical Chemistry*, 10.1021/ac504613b (2015).

Selected by the Scientific Editors of the journals belonging to the American Chemical Society to be featured in “ACS Editors’ Choice”, for “research that exemplifies the Society’s commitment to improving people’s lives through the transforming power of chemistry” and for “broad public interest”

84. O. J. Scheideler, L. L. Sohn, and D. V. Schaffer, *Emerging Engineering Strategies for Studying the Stem Cell Niche*, in *Biology in Stem Cell Niche*, K. Turksen (ed), Stem Cells and Regenerative Medicine, Springer International Publishing, Switzerland, pp. 57-106 (2015). doi: 10.1007/978-3-319-21702-4_3.
85. D. Yang, S. Leong, A. Lei, and L. L. Sohn, *High-throughput microfluidic device for rare-cell isolation*, *Proc. SPIE 9518, Bio-MEMS and Medical Microdevices II*, 95180 (1 June 2015); doi: 10.1117/12.2178613.
86. F. R. Rivest, A. P. Pechacek, R. Park, K. Goodman, N. Cho, M. Lustig, and L. L. Sohn, *Toward real-time cell detection and characterization using Barker-coded Node-Pore Sensing*, *μTAS 2015 Conference Proceedings*, 2015.
87. D. Yang, S. Leong, and L. L. Sohn, *High-throughput microfluidic device for circulating tumor cell isolation from whole blood*, *μTAS 2015 Conference Proceedings*, 2015.
88. J. Kim, A. Lei, and L. L. Sohn, *Characterizing mechanical properties of cancer cells by Node-Pore Sensing*, *μTAS 2015 Conference Proceedings*, 2015.

Finalist for the Best Poster Award at μTAS 2015.

89. S. Han, Y. Shin, H. Jeong, J. S. Jeon, R. D. Kamm, D. Huh, **L. L. Sohn**, and S. Cheong, *Constructive remodeling of a synthetic endothelial extracellular matrix*, *Scientific Reports* **5**, Article No. 18290, published online 21 December, 2015. doi: 10.1038/srep18290.
90. R. Falcon-Banchs, F. Rivest, and **L. L. Sohn**, *Single-Cell Label-Free Profiling*, to appear in the *Encyclopedia of Analytical Chemistry*, D. Pappas (ed.), Wiley, United Kingdom (2016).
91. J. Kim, S. Han, A. Lei, M. Miyano, J. Bloom, V. Srivastava, Z. Gartner, M. LaBarge, and **L. L. Sohn**, *Rapid characterization of cellular mechanical phenotypes with mechano-node-pore sensing*, submitted (2016).
92. C. Schiffman, C. Lin, F. Shi, L. Chen, **L. L. Sohn**, and H. Huang, *Clustering analysis for single-cell RNA-sequencing data with SIDEseq: a cell similarity measure defined by shared identified differentially expressed genes*, submitted (2016).

SOHN LAB MEMBERS (PAST & PRESENT)

Postdoctoral Fellows

- Dr. Geoffrey R. Facer (1999-2001)
- Dr. Troy Messina (2003)
- Dr. Stephan Thiberge (2003)

- Dr. Ian Chan (2003-2004)
- Dr. Swomitra Mohanty (2007-2010)
—California Institute for Regenerative Medicine Postdoctoral Fellow (2009-2010)
- Dr. Mustafa Mir (2013-2014)
—California Institute for Regenerative Medicine Postdoctoral Fellow (2014)
- Dr. Eric Jabart (2014)
- Dr. Sewoon Han (2015-present)

Research Scientists

- James Hack (2009-2014)
- Matthew Chambers (2012-2013)
- Anand Kesavaraju (2012-2013)
- Vincent Tuminelli (2011-2012)
- Christina Lin (2015-2016)
- Rui Li (2015-2016)

Primary Ph.D. Students

- Omar A. Saleh, Princeton University PhD in Physics (2003)
A Novel Resistive Pulse Sensor for Biological Measurements
- Andrea Carbonaro, UC Berkeley PhD in Mechanical Engineering (2008)
Cell Characterization Using Protein-Functionalized Pores
- Rebecca Dylla-Spears, UC Berkeley PhD in Chemical Engineering (2009)
Single-Molecule Target Sequence Detection via Microfluidic Planar Extensional Flow at a Stagnation Point
- Eric Jabart, Bioengineering, UC Berkeley (2009-2013)
Embryonic and Adult Stem Cells Explored through Microfluidics and Biological Manipulation
—2011 Siebel Foundation Scholar Award
- Karthik Balakrishnan, Mechanical Engineering, UC Berkeley (2009-2014)
Node-Pore Sensing: A Robust, High-Dynamic Range Method for Multi-Parametric Screening of Biological Samples
—2011-2014 National Defense Science & Engineering Graduate Fellow
- Junghyun Kim, Mechanical Engineering, UC Berkeley (2013-present)
—Jongsong Fellowship (2013-2016)
- Olivia Scheideler, Bioengineering, UC Berkeley (2014-present)
—NSF Graduate Research Fellowship (2014-2017)
- Nahyun Cho, Chemical and Biomolecular Engineering, UC Berkeley (2015-present)
- Roberto Falcon, Bioengineering, UC Berkeley (2015-present)
—Chancellor Fellowship, UC Berkeley (2014-2015)
—NSF Graduate Research Fellowship (2015-2018)
- Francois Rivest, Bioengineering, Ecole Polytechnique Federale de Lausanne (2015-present)
—Co-advised by Prof. Matthias Lutolf, EPFL
- Thomas Carey, Bioengineering (2015-present)
- Alison Su, Bioengineering rotation student (2016)
- Brian Li, Bioengineering rotation student (2017-present)

Co-Advised Ph.D. Students (e.g. Departmental PhD advisor)

- Merwan Benhabib, UC Berkeley PhD in Mechanical Engineering (2009)
Multichannel Mars Organic Analyzer for Planetary Analysis of Organic Molecules and Biomarkers
- Maria Schriver, UC Berkeley (2008-2012)
Amorphous Silicon-Carbon Nanostructure Photovoltaic Devices (2012)

Masters Students

- Dionne C. G. Klein: “Ordered Stretching of Single Molecules of DNA,” March 2000
Co-Advised with Prof. dr. Leo P. Kouwenhoven, Dept. of Applied Physics, Delft University of Technology
- Karthik Balakrishnan: “Microscale Biological Analysis Using Resistive Pulse Sensing,” May 2011
Mechanical Engineering, UC Berkeley
- Daniel Yang: “An Inertial Microfluidic Device for CTC Isolation from Whole Blood,” July 2015
Mechanical Engineering, UC Berkeley
- Francois Rivest: “Barker-Coded Node-Pore Sensing,” August 2015
Bioengineering, Ecole Polytechnique Federale de Lausanne, Switzerland

Senior Theses, University of California, Berkeley

- Christina Lin, “Induction of Epithelial-Mesenchymal Transition in CAOV-3 Cells with Transforming Growth Factor β -1 & Thrombin,” May 2015

Senior Theses, Princeton University

- Amit Shah: “Dielectric Spectroscopy of Cells,” May 2002
- Sunil N. Goda: “Dephasing in One Dimensional Metallic Nanowires,” May 2001
- Heather J. Lynch: “A Kondo Box: Coulomb Blockade and the Kondo Effect in Iron-Doped Copper Nanoparticles,” May 2000
—*American Physical Society LeRoy Apker Award*, 2001
—*Material Research Society Undergraduate Research Initiative Award*, 2000
- Joshua W. Weitz: “Vortex and Charge Dynamics of Superconducting Arrays,” May 1997

Junior Theses, Princeton University

- Ilana Witten: “Conduction through a DNA Molecule,” May 2001
- Heather J. Lynch: “A Kondo Box: Coulomb Blockade and the Kondo Effect in Chromium-doped Aluminum Nanoparticles,” May 1999
- Daniel I. Konieczny: “Magnetization Reversal in Nanosized Ferromagnetic Particles,” May 1997

Undergraduate Research Assistants

- Connie Yang (2016-present): Bioengineering, UC Berkeley, Class of 2019
- Emma Cimenelli (2016-present): Bioengineering, UC Berkeley, Class of 2019
- Vincent Kwan (2016-present): Bioengineering, UC Berkeley, Class of 2018
- Ji Min Li (2015-present): Bioengineering, UC Berkeley, Class of 2018
- K Kevin Luong (2016-present): Bioengineering, UC Berkeley, Class of 2019
- Alice Ma (2016-present): Integrative Biology, UC Berkeley, Class of 2019
- Nathaniel Liu (2016): Mechanical Engineering, UC San Diego, Class of 2017
- Kevin Luong (2016-present): Bioengineering, UC Berkeley, Class of 2019
- Brian Li (2015): Mechanical Engineering, University of Texas-Austin, Class of 2016
—Amgen Scholar
- Shane Pracar (2015): Biology, George Washington University, Class of 2018
- Kathleen Keh (2015): Chemical Biology, UC Berkeley, Class of 2015
- Ilyssa Evans (2015-present): Chemical and Biomolecular Engineering, UC Berkeley, Class of 2016
- Shun Yao (2015): Mechanical Engineering, UC Berkeley, Class of 2016
- Roy Park (2014-2015): Bioengineering, UC Berkeley, Class of 2016
- Serena Leong (2014-present): Bioengineering, UC Berkeley, Class of 2016
- Andrew Sum (2014-2015): Bioengineering, UC Berkeley, Class of 2016
—QUEST scholar (Summer, 2014)
- Andy Lei (2014-2016): Bioengineering, UC Berkeley, Class of 2016

—QUEST scholar (Summer, 2014)

- Rui Li (2013-2015): Bioengineering, UC Berkeley, Class of 2015
- Christopher Divsalar (2014): Bioengineering, UC Berkeley, Class of 2014 (Fall)
- Kelly Goodman (2014): Mechanical Engineering and Electrical Engineering & Computer Science, UC Berkeley, Class of 2014
- Peter Su (2013): Chemical Engineering, UC Berkeley, Class of 2014
- Youny Kuang (2013-2014): Molecular & Cellular Biology, UC Berkeley, Class of 2015
- Christina Lin (2013-2015): Chemical Biology, UC Berkeley, Class of 2015
—Rose Hills Fellow (Summer, 2014)
- Jeremy Whang (2013-2014): Bioengineering, UC Berkeley, Class of 2014
- Justin Inman (2013-2014): Molecular & Cellular Biology, UC Berkeley, Class of 2014
- Cal Dewar (2013): Molecular & Cellular Biology, UC Berkeley, Class of 2015
- Cassidy Werner (2013): Chemical Biology, UC Berkeley, Class of 2015
- Richard Hwang (2012-2013): Bioengineering, UC Berkeley, Class of 2013
- Eugene Chao (2012-2013): Physics, UC Berkeley, Class of 2013
- Trong Ngyuen (2012-2013): Engineering Physics, UC Berkeley, Class of 2013
- Bo Qing (2011-2013): Bioengineering, UC Berkeley, Class of 2013
- Anand Kesavaraju (2011-2012): Bioengineering, UC Berkeley, Class of 2012
- Andrew Yu (2012): Bioengineering, UC Berkeley, Class of 2013
- Evan Lyall (2011-2012): Bioengineering, UC Berkeley, Class of 2012
- Katherine Mellis (2011): Bioengineering, UC Berkeley, Class of 2014
- Farzin Fatollah-Fard (2011): Mechanical Engineering, UC Berkeley, Class of 2012
- Sachin Rangarajan (2010-present): Bioengineering, UC Berkeley, Class of 2013
—Berkeley Stem-Cell Center Summer Apprenticeship (2011)
- Nga Ho (2008-2010): Bioengineering, UC Berkeley, Class of 2010
- James Hack (2008-2010): Engineering Physics, UC Berkeley, Class of 2010
- Jonathan Beard (2007): ME, UC Berkeley, Class of 2009
- Nathan Sanford (2006-2007): ME, UC Berkeley, Class of 2008
- Corinne Lieu (2005; 2009-2010): Engineering, UCSD, Class of 2008
- Jonathan Tesch (2005-2006): ME, UC Berkeley, Class of 2006
- Donald Winston (2004-2006): EECS, UC Berkeley, Class of 2006
- Jason Lee (Spring 2004): Mechanical Engineering, UC Berkeley, Class of 2005
- Alexander McDonald (2001-2002): Biology/Biophysics, Princeton Univ., Class of 2005
- Jonathan Hoffman (2001-2002): Biology, Princeton Univ., Class of 2002
- Richard Allan (1999-2001): Biology/Biophysics, Princeton Univ., Class of 2002
- Craig Nakan (2000): Biology concentrator, Princeton Univ., Class of 2003
- Christopher Roeser (1998): Harvard University Graduate Student

COURSES TAUGHT

PRINCETON UNIVERSITY

Physics 101: Introductory Physics (non-calculus based, Mechanics)
Physics 102: Introductory Physics (non-calculus based, Electromagnetism)
Physics 103: Introductory Physics for Science and Engineering (Mechanics)
Physics 104: Introductory Physics for Science and Engineering (Electromagnetism)
Physics 312: Experimental Physics (Junior Physics Lab)

UNIVERSITY OF CALIFORNIA, BERKELEY

Upper Division Undergraduate Courses

ME102A: Introduction to Measurement Systems for Mechatronics
ME107: Introduction to Experimentation and Measurement

ME118: Introduction to Nanotechnology and Nanoscience
ME119: Introduction to MEMS
ME107: Mechanical Engineering Laboratory

Graduate Course

ME290L: Introduction to Nanobiology