

Professor David Erickson

Assistant Professor
240 Upson Hall
Sibley School of Mechanical and Aerospace Engineering, Cornell University
Ithaca, New York, 14853
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RESEARCH AND WORK EXPERIENCE:

Assistant Professor Sept. 2005 – Present
Sibley School of Mechanical and Aerospace Engineering
Field Memberships: Mechanical, Aerospace and Biomedical Engineering, Applied Physics.
Center Memberships: Cornell Nanobiotechnology Center
Cornell University, Ithaca, New York

Post-Doctoral Scholar Aug. 2004 – Aug. 2005
Department of Electrical Engineering
California Institute of Technology, Pasadena, California
Supervisor: Prof. Demetri Psaltis

Doctoral Researcher Sept. 2001 – Aug. 2004
Department of Mechanical and Industrial Engineering
University of Toronto, Toronto, Ontario
Supervisor: Prof. Dongqing Li

Visiting Scientist July 2002 – Aug. 2002
Institute for Polymer Research, Dresden, Germany
Supervisor: Dr. Carsten Werner

Masters Researcher Sept. 1999 – Aug. 2001
University of Toronto, Toronto, Ontario and
University of Alberta, Edmonton, Alberta
Supervisor: Prof. Dongqing Li

Research Assistant May 1999 – Aug. 1999
Defense Research Establishment Valcartier (DREV), Quebec City, Quebec
Supervisor: Dr. Franklin Wong

EDUCATION:

Ph.D. – University of Toronto Nov. 2004
Department of Mechanical & Industrial Engineering
Advisor: Prof. Dongqing Li
Dissertation: Numerical Simulation for Microfluidic Devices and the Development of an Electrokinetically Controlled DNA Hybridization Chip.

M.A.Sc. – University of Toronto

Nov. 2001

Department of Mechanical & Industrial Engineering

Advisor: Prof. Dongqing Li

Dissertation: Viscosity of Radial Hydrogenated Styrene-Isoprene and Block Ethylene-Propylene Copolymer Solutions Under Conditions of High Shear Rate and Small Channel Size.

B.Sc. – University of Alberta

June 1999

Department of Mechanical Engineering

RECENT AWARDS:

For research group awards, students and post-docs are listed and underlined.

NSF CAREER

2009

The National Science Foundation's most prestigious award for junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research.

ASME Nanotechnology Forum Grand Prize & First Prize

2009

Kalontarov, M., Krishnan, M., Grand Prize awarded for best poster presentation (1st out of 144) at the 2009 IMECE Micro-Nanotechnology Forum. Cordovez, B., Chung A., First prize awarded for poster presentation (2nd out of 144) at the 2009 IMECE Micro-Nanotechnology Forum.

NAE Frontiers in Engineering

2009

Selected participant in National Academy of Engineering Frontiers in Engineering Symposium.

ASME Nanotechnology Forum Grand Prize

2008

Huh, Y.S., Chung, A.J., Cordovez, B. Prize awarded for best poster presentation (first out of 160) at the 2008 IMECE Micro-Nanotechnology Forum.

DARPA-MTO Young Faculty Award

2007

The MTO Young Faculty Award rewards research ideas that are critical to future technology developments leading to revolutionary advances of the state-of-the-art.

Robert '55 and Vanne '57 Cowie Excellence in Teaching Award

2007

“The highest award for teaching in the college [of Engineering at Cornell University].”

Best Paper/Presentation Award

2007

Krishnan, M., Tolley, M., Best paper award at the 2007 microfluidics symposium, International Mechanical Engineering Congress and Exposition, Seattle, WA.

Selected Representative 4th U.S. – Japan Young Researchers Exchange Program. 2007

Represented US-NSF in multinational exchange program.

Best Poster Award (1 of 3)

2007

Yang, A.H.J., Cornell Nanoscale Science and Technology Facilities, 30th Anniversary Symposium, Ithaca, NY.

Best Poster Award (2 of 3)

2007

Chung, A.J., Cornell Nanoscale Science and Technology Facilities, 30th Anniversary Symposium, Ithaca, NY.

Glynn Williams Scholarship

2003-2004

Awarded to “the most promising Ph.D. candidate” in the Department of Mechanical & Industrial Engineering, University of Toronto.

NSERC PGS B Scholarship

2001-2003

Federal Ph.D. award based on academic merit

NSERC PGS A Scholarship

1999-2001

Federal M.A.Sc. award based on academic merit

CURRENT MAJOR RESEARCH FUNDING (>\$100k):

NIH-NCI: PHYSICAL SCIENCES ONCOLOGY CENTERS

Title: Cornell Center on the Microenvironment and Metastasis
PI: Harold Craighead (Co-PI **Erickson** and others)
Award Amount: ~70% of a student + Supplies (my share)
Funding Period: June 1, 2009 - ongoing.

NSF-CAREER: FLUID DYNAMICS AND HYDRAULICS

Title: CAREER: Optofluidics – Fusing fluidics and photonics
PI: **David Erickson**
Award Amount: \$400,000
Funding Period: May 15, 2009 – ongoing.

NANOBIOTECHNOLOGY CENTER: NANOSCALE CELL MECHANICS

Title: Nanoscale Optofluidic Probing of Cell Migration Mechanics
PI: Cynthia Reinhart-King (Co-PI **David Erickson**)
Award Amount: 0.5 Graduate Students + \$7.5k / Year (My amount)
Funding Period: January 1, 2009 – ongoing

AIR FORCE OFFICE OF SCIENTIFIC RESEARCH

Title: Optofluidic Waveguides for Reconfigurable Photonic Systems
PI: **David Erickson** (Subcontract from Illuminaria LLC)
Award Amount: Phase 1 - \$100,000 (\$60,000 Erickson Lab)
Funding Period: October 15, 2008 - ongoing

DARPA-DSO: PROGRAMMABLE MATTER

Title: ENZYME: Dynamically Programmable Fluidic Self-Assembly of Arbitrary Functional Objects.
PI: Hod Lipson (Co-PI, **David Erickson**, Heinrich Jaeger)
Award Amount: \$2.5M (~\$1.0M Erickson Lab Phase 1 and 2)
Funding Period: May 1, 2008 - ongoing

NSF-CBET: ACTIVE NANOSTRUCTURES AND NANOSYSTEMS (NANOSCALE INTERDISCIPLINARY RESEARCH TEAM)

Title: NIRT: Active Nanophotofluidic Systems for Single Molecule/Particle Analysis.
PI: **David Erickson** (Co-PIs Michal Lipson, Todd Krauss, Kara Bren)
Award Amount: \$1,012,000 (Total)
Funding Period: September 1, 2007 – ongoing.

NIH-NIBIB: NANOSCIENCE AND NANOTECHNOLOGY IN BIOLOGY AND MEDICINE (R21)

Title: Nanoscale Optofluidic Pathogen Detection
PI: **David Erickson** (Co-PI Antje Baeumner).
Award Amount: \$553,661 (Total)
Funding Period: August 1, 2007 - ongoing

NANOBIOTECHNOLOGY CENTER: BIOMOLECULAR DEVICES AND ANALYSIS

Title: Nanoscale Optofluidic Devices for Biomolecular Analysis
PI: **David Erickson** (Co-PI Antje Baeumner)
Award Amount: 2 Graduate Students + \$30k / Year (Total)
Funding Period: January 1, 2007 – Continuing

DARPA-MTO: HYBRID INSECT MEMS PROGRAM

Title: Insect Cyborg Sentinels
PI: David Stern (Co-PI, David Erickson and Others)
Award Amount: ~\$700,000 (my share, for 3 year program)
Funding Period: January 1, 2007 - ongoing

CURRENT OTHER RESEARCH FUNDING (<\$100k):

- “SERS Enhanced Ligase Detection Reaction Chip for the Molecular Diagnosis of Cancer”
Cornell NanoBioTechnology Center. July 1, 2009 to July 1, 2010.

PAST MAJOR RESEARCH FUNDING:

DARPA-MTO: YOUNG INVESTIGATOR PROGRAM

Title: Integrated Nanosystems for Autonomous Health Monitoring
PI: **David Erickson**
Award Amount: \$150,000.
Funding Period: July 1, 2007 to June 30, 2008.

NSF-CBET: SENSORS AND SENSOR NETWORKS

Title: Collaborative Research SST: Integration of Spectroscopic Sensors and Electroactive Nanowell Arrays with Microfluidic Chips Based on Thermocapillary Actuation.
PIs: Sandra Troian (Caltech) and David Erickson (Cornell).
Award Amount: \$287,919 (Erickson lab portion), \$750,000 Total Award.
Funding Period: September 1, 2005 to August 31, 2008.

NSF- CMMI: MATERIALS PROCESSING AND MANUFACTURING

Title: Hierarchical Nanomanufacturing: Actively Programmable Multi-level Fluidic Self-Assembly.
PI: Hod Lipson (PI), **David Erickson** (Co-PI)
Award Amount: \$130,000 (Total award budget).
Funding Period: August 1, 2006 to July 31, 2008.

PAST OTHER RESEARCH FUNDING (<\$100k):

- “Nanofabricated Devices for Probing Cell Metastasis” Cornell Center for Life Science Technologies (Co-PI with Cynthia Reinhart-King). ~\$30k (Total project amount, ~\$9k Erickson Lab). July 1, 2008 to July 1, 2009.

PUBLICATIONS (* INDICATES CORNELL BASED PAPERS):

Articles published or accepted to refereed journals

1. *Mandal, S., Serey, X., **Erickson, D.**, “Nanomanipulation using Silicon Photonic Crystal Resonators” *Nano Letters*, Accepted (2009).
2. *Cordovez, B., Psaltis, D., **Erickson, D.**, “Electroactive Micro and Nanowells for Optofluidic Storage.” *Optics Express*, 17(23), 21134-21148 (2009).
3. *Goddard, J., Mandal, S., Nugen, S., Baeumner, A., **Erickson, D.**, “Patterning of Nucleic Acid Probes in Optical Nanocavities” *Colloids and Surfaces B*, Accepted (2009).
4. *Huh, Y.S., **Erickson, D.**, “Aptamer based surface enhanced Raman scattering detection of vasopressin using multilayer nanotube arrays” *Biosensors and Bioelectronics*, Accepted (2009).
5. *Park, S.-M., Huh, Y.S., Craighead, H.G., **Erickson, D.**, “A simple technique for nanofluidic device prototyping in PDMS using microchannel collapse” *Proceedings of the National Academy of Sciences - USA* **106**, 15549-15554 (2009)
6. *Mandal, S., Goddard, J., **Erickson, D.**, “A Multiplexed Optofluidic Biomolecular Sensor for Low Mass Detection” *Lab-on-a-Chip* **9**, 2924-2932 (2009).
7. *Krishnan, M., Park J., **Erickson, D.** “Opto-thermorheological flow control” *Optics Letters* **34**, 1976-1978 (2009).
8. *Chung, A.J., Huh, Y.S., **Erickson, D.**, “A robust, electrochemically driven microwell drug delivery system for controlled vasopressin release” *Biomedical Microdevices* **11**, 861-867 (2009).
9. *Goddard, J., **Erickson, D.**, “Bioconjugation Techniques for Microfluidic Biosensors” *Analytical and Bioanalytical Chemistry* **394**, 469-479 (2009).

10. *Krishnan, M., Tolley, M., Lipson, H., **Erickson, D.**, “Hydrodynamically Tunable Affinities for Fluidic Assembly” *Langmuir* 25, 3769-3744 (2009).
11. *Yang, A.H.J., Lerdsuchatawanich, T., **Erickson, D.**, “Forces and Transport Velocities for a Particle in a Slotted Waveguide” *Nano Letters* 9, 1182-1188 (2009).
12. *Huh, Y.S., Lowe, A., Strickland, S., Batt, C.A., **Erickson, D.**, “A Surface Enhanced Raman Scattering based Ligase Detection Reaction” *Journal of the American Chemical Society* 131, 2208-2213 (2009).
13. *Chung, A.J., **Erickson, D.**, “Engineering insect flight metabolics using pupa stage implanted microfluidics.” *Lab-on-a-Chip* 9, 669-676 (2009).
14. *Yang, A.H.J., Moore, S.D., Schmidt, B.S, Lipson, M., **Erickson, D.**, “Optical Manipulation of Nanoparticles and Biomolecules in Sub-Wavelength Slot Waveguides” *Nature*, 457, 71-75 (2009).
15. *Huh, Y.S., Chung, A.J., Cordovez, B., **Erickson, D.**, “Enhanced on-chip SERS based biomolecular detection using electrokinetically active microwells.” *Lab-on-a-Chip* 9, 433-439 (2009).
16. *Huh, Y.S., Chung, A.J., **Erickson, D.**, “Surface Enhanced Raman Spectroscopy for Molecular and Cancer Diagnostics” *Journal of Microfluidics and Nanofluidics* 6 285-297 (2009)
17. *Tolley, M., Krishnan, M., **Erickson, D.**, Lipson, H., “Dynamically programmable fluidic assembly” *Applied Physics Letters* 93, 254105 (2008).
18. *Krishnan, M., Tolley, M., Lipson, H., **Erickson, D.**, “Increased Robustness for Fluidic Self Assembly” *Physics of Fluids*, 20, 073304, (2008).
19. *Mandal, S., **Erickson, D.**, “Nanoscale Optofluidic Sensor Arrays” *Optics Express*, 16, 1623-1631 (2008).
20. *Chung, A.J., Kim, D., **Erickson, D.**, “Electroactive microfluidic devices for rapid, low power drug delivery in autonomous microsystems” *Lab-on-a-Chip*, 8, 330-338 (2008).
21. *Yang, A., **Erickson, D.**, “Stability analysis of optofluidic transport on solid-core waveguiding structures” *Nanotechnology*, 19, 045704 (2008).
22. ***Erickson, D.**, Mandal, S., Cordovez, B., Yang, A., “Nanobiosensors: Optofluidic, electrical and mechanical approaches to biomolecular detection at the nanoscale.” *Journal of Microfluidics and Nanofluidics*, 4, 33-52 (2008).
23. *Schmidt, B. S., Yang, A., **Erickson, D.**, Lipson, M., “Optofluidic trapping and transport on solid core waveguides within a microfluidic device” *Optics Express*, 15 (22) 14322-14334 (2007).

24. *Mandal, S., **Erickson D.**, “Optofluidic Transport in Liquid Core Waveguiding Structures” *Applied Physics Letters*, 90, 184103 (2007).
25. *Cordovez, B., Psaltis, D., **Erickson D.**, “Trapping and Storage of Particles in Electroactive Microwells.” *Applied Physics Letters*, 90, 024102 (2007).
26. ***Erickson, D.**, “Towards Numerical Prototyping of Labs-on-Chip, Modeling for Integrated Microfluidic Devices” *Journal of Microfluidics and Nanofluidics* 1, 301–318 (2005).
27. Heng, X., **Erickson, D.**, Baugh, L., Yaqoob, Z., Sternberg, P., Psaltis, D., Yang C., “Optofluidic microscopy - a method for implementing a high resolution optical microscope on a chip” *Lab-on-a-Chip*, 6, 1274-1276 (2006).
28. **Erickson, D.**, Rockwood, T., Emery, T., Scherer, A., Psaltis, D., “Nanofluidic Tuning of Photonic Crystal Circuits” *Optics Letters*, 31, 59-61 (2006)
29. **Erickson, D.**, Liu, X., Venditti, R., Li, D., Krull, D., “Electrokinetically-based approach for single nucleotide polymorphism discrimination using a microfluidic device.” *Analytical Chemistry*, 77, 4000-4007 (2005)
30. **Erickson, D.**, Li, D. “Integrated Microfluidic Devices” *Analytica Chimica Acta* 507, 11-26 (2004).
31. **Erickson, D.**, Liu, X., Krull, D., Li, D. “An electrokinetically controlled DNA hybridization microfluidic chip enabling rapid target analysis.” *Analytical Chemistry*, 76, 7269-7277 (2004).
32. Lin, F.Y.H., Sabri, M., **Erickson, D.**, Alirezaie, J., Li, D., Sherman, P.M. “Development of a novel microfluidic immunoassay for the detection of Helicobacter pylori infection” *Analyst* 129, 823-828 (2004).
33. Biddiss, E., **Erickson, D.**, Li, D. “Surface charge enhanced micro-mixing for electrokinetic flows.” *Analytical Chemistry* 76, 3208-3213 (2004).
34. **Erickson, D.**, Sinton, D., Li, D. “A miniaturized high-voltage integrated power supply for portable microfluidic applications” *Lab on a Chip* 4, 87-90 (2004).
35. Zimmermann, R., Kratzmüller, T., **Erickson, D.**, Braun, H.-G., Werner, C. “Ionic Strength-Dependent pK-Shift in the Helix-Coil-Transition of Grafted Poly(L-glutamic acid) Layers Analysed by Electrokinetic and Ellipsometric Measurements” *Langmuir* 20, 2369-2374 (2004).
36. Liu, X., **Erickson, D.**, Li, D., Krull, U.J. “Cationic Polymer Coatings for Design of Electro-osmotic Flow and Control of DNA Adsorption.” *Analytica Chimica Acta* 507, 55-62 (2004).

37. **Erickson, D.**, Li, D. “Three-Dimensional Structure of Electroosmotic Flows over Heterogeneous Surfaces” *Journal of Physical Chemistry B* 107, 12212-12220 (2003).
38. **Erickson, D.**, Sinton, D., Li, D. “Joule Heating and Heat Transfer in Poly(dimethylsiloxane) Microfluidic Systems” *Lab on a Chip* 3 141-149 (2003).
39. **Erickson, D.**, Li, D. “Analysis of AC Electroosmotic Flows in a Rectangular Microchannel” *Langmuir* 19 5421-5430 (2003).
40. Sinton, D., **Erickson, D.**, Li, D. “Micro-Bubble Lensing Induced Photobleaching (μ -BLIP) with Application to Microflow Visualization.” *Experiments in Fluids* 35 178-187 (2003).
41. **Erickson, D.**, Li, D., Krull, U.J. “Dynamic Modeling of DNA Hybridization Kinetics for Biochip Applications” *Analytical Biochemistry* 301 186-200 (2003).
42. Sze, A., **Erickson, D.**, Li, D. “Zeta-Potential Measurement of Flat Solid Surfaces Using Electroosmotic Flow and the Slope of Current-Time Method” *Journal of Colloid and Interface Science* 261 402-410 (2003).
43. **Erickson, D.**, Li, D. “Microchannel Flow with Patch-Wise and Periodic Surface Heterogeneity.” *Langmuir* 18 8949-8959 (2002).
44. Sinton, D., **Erickson, D.**, Li, D. “Photo-Injection Based Sample Design and Electroosmotic Transport in Microchannels.” *Journal of Micromechanics & Microengineering* 12 898-904, (2002).
45. Ye, C., Sinton, D., **Erickson, D.**, Li, D. “Electrophoretic motion of a cylindrical particle in a cylindrical microchannel.” *Langmuir* 18 9095-9101 (2002).
46. **Erickson, D.**, Li, D. “Numerical Simulations of Capillary Driven Flows in Non-Uniform Cross Sectional Capillaries.” *Journal of Colloid and Interface Science* 250 422-430 (2002).
47. **Erickson, D.**, Li, D. “3D Numerical Simulations of a Microchannel Thermal Cycling Reactor.” *International Journal of Heat and Mass Transfer* 45 3759-3770 (2002).
48. **Erickson, D.**, Li, D. “Influence of Surface Heterogeneity on Electrokinetically Driven Microfluidic Mixing.” *Langmuir* 18 1883-1892 (2002).
49. **Erickson, D.**, Lu, F., Li, D., White, T. Gau, J. “An experimental investigation into the dimension sensitive viscosity of polymer containing lubricant oils in microchannels” *International Journal of Experimental Heat Transfer, Thermodynamics, and Fluid Mechanics* 25, 623-630 (2002).
50. **Erickson, D.**, Li, D., White, T. Gao, J. “High shear-rate behavior of radial hydrogenated styrene-isoprene and block ethylene-propylene copolymer solutions.” *Industrial & Engineering Chemistry Research* 40, 3523-3529 (2001).

51. **Erickson, D.**, Li, D., “Streaming Potential and Streaming Current Methods for Characterizing Heterogeneous Solid Surfaces.” *Journal of Colloid and Interfacial Science* 237(2), 283-289 (2001).
52. **Erickson, D.**, Blackmore, B., Li, D. “An Energy Balance Approach to Modeling the Hydrodynamically Driven Spreading of a Liquid Drop.” *Colloids and Surfaces A*. 182, 109-122 (2001).
53. **Erickson, D.**, Li, D., Werner, C. “An Improved Method for determining the Zeta-Potential and Surface Conductance.” *Journal of Colloid and Interface Science* 232, 186-197 (2000).

Articles currently under review by refereed journals

54. *Tolley, M., Kalontarov, M., Neubert, J., **Erickson, D.**, Lipson, H., "Stochastic Modular Robotic Systems: A Study of Fluidic Assembly Strategies" Submitted (2009)
55. *Lowe, A., Huh, Y.S., Strickland, A., **Erickson, D.**, Batt, C.A. “Multiplex SNP Detection Utilizing Ligase Detection Reaction Coupled SERS” Submitted (2009)
56. *Yang, A., **Erickson, D.**, “Optofluidic ring resonator switch for optical particle transport” Submitted (2009).
57. *Serey, X., Mandal, S., **Erickson, D.**, “Analytical Comparison of Silicon Photonic Crystal Resonator Nanotweezers” Submitted (2009).

Book Chapters and Magazine Articles

* Indicates Cornell based papers

1. *Krishnan, M., **Erickson, D.**, “Introduction to Microfluidic and Optofluidic Transport” in *Handbook of Optofluidics* (H. Schmidt, A. Hawkins Eds.) Taylor and Francis (2009)
2. ***Erickson, D.**, Yang, A.H.J. “Optofluidic Trapping and Transport Using Photonic Devices” in *Optofluidics* (S. Fainman, L. Lee, D. Psaltis, C. Yang Eds.) McGraw Hill (2008)
3. ***Erickson, D.**, Krishnan, M. “Introduction to Electrokinetic Transport in Microfluidic Systems” in *Lab-on-Chip Technologies and Applications* (A. Rasooly, K. Herold Eds.) Horizon (2008)
4. *Goddard, J., Mandal, S., ***Erickson, D.** “Optically Resonant Nanophotonic Devices for Label-Free Biomolecular Detection” in *Innovative Photonic Structures for Bio/Chemical Detection* (X. Fan Ed.) Springer (2008)
5. ***Erickson, D.**, Yang, C., Psaltis, D., “Optofluidics Emerges from the Laboratory” *Photonics Spectra* 42, 74-78 (2008)

6. ***Erickson, D.**, “Autonomous Microsystems” in 2008 Yearbook of Science and Technology, McGraw-Hill (2007).
7. **Erickson, D.**, Li, D., “Microscale Flow and Transport Simulation for Electrokinetic and Lab-on-Chip Applications” in *Biomems and Biomedical Nanotechnology, Volume IV: Biomolecular Sensing, Processing and Analysis* (R. Bashir and S. Werely Eds.), Kluwer Academic Publishing (2007).

Contributed Conference Publications/Presentations (Invited Talks Listed Separately)

* Indicates Cornell based papers

1. *Kalontarov, M., Krishnan, M., **Erickson, D.**, “Fluid Dynamically Driven Assembly in 3D for Programmable Matter” *ASME International Mechanical Engineering Congress and Exposition*, Orlando, FL, Nov. 2009.
2. *Cordovez, B., **Erickson, D.**, “Optofluidic Data Storage” *ASME International Mechanical Engineering Congress and Exposition*, Orlando, FL, Nov. 2009.
3. *Yang, A.H.J, Moore, S., Schmidt, B., Klug, M., Lipson, M., **Erickson, D.**, “Biomolecular Optical Transport in Nanoscale Slot Waveguides” *American Institute of Chemical Engineers (AIChE) Annual Meeting*, Nashville, TN, Nov. 2009.
4. *Huh, Y., Lowe, A., Chung, A., Cordovez, B., Strickland, A., Batt, C.A., **Erickson, D.**, “Surface Enhanced Raman Scattering Based Biomolecular Sensing Techniques in Optofluidic Device” *American Institute of Chemical Engineers (AIChE) Annual Meeting*, Nashville, TN, Nov. 2009.
5. *Mandal, S., Goddard, J., Serey, X., **Erickson, D.**, “Nanoscale Optofluidic Sensor Arrays for Multiplexed Label Free Biosensing and Biomolecular Trapping.” *Micro-Total Analysis Systems (μ TAS)*, Korea, Nov. 2009
6. *Chung, A.J., Cordovez, B., Reissman, T., MacCurdy, R.B. Garcia, E., **Erickson, D.**, “Chemically Controlled Insect Cyborgs Using Implantable Microfluidic Devices.” *Micro-Total Analysis Systems (μ TAS)*, Korea, Nov. 2009.
7. *Huh, Y., Lowe, A., Chung, A., Cordovez, B., Strickland, A., Batt, C.A., **Erickson, D.**, “Optofluidic Surface Enhanced Raman Scattering Based Detection of a Single Nucleotide Polymorphism.” *Micro-Total Analysis Systems (μ TAS)*, Korea, Nov. 2009
8. *Chung, A.J., Jung, E., **Erickson, D.**, “A new form of reconfigurable photonic material using optofluidic waveguides.” *Micro-Total Analysis Systems (μ TAS)*, Korea, Nov. 2009.
9. *Mandal, S., Goddard, J., **Erickson, D.**, “Optofluidic Sensor Arrays for Biomolecular Detections” *Conference on Lasers and Electrooptics (CLEO) – Symposium on Optofluidics*, Baltimore, May 2009.

10. *Park, J., Krishnan, M., **Erickson, D.**, “Opto-thermorheologically reconfigurable microfluidics” *Conference on Lasers and Electrooptics (CLEO) – Symposium on Optofluidics*, Baltimore, May 2009.
11. *Yang, A.H.J, Moore, S., Schmidt, B., Klug, M., Lipson, M., **Erickson, D.**, “Direct Manipulation of Nanoparticles and DNA in Sub-Wavelength Optical Nanochannels” *Conference on Lasers and Electrooptics (CLEO) – Symposium on Optofluidics*, Baltimore, May 2009.
12. *Krishnan, M., Tolley, M., Lipson, H., **Erickson, D.** “Dynamically Tunable Affinities for Fluidic Self Assembly” *American Institute of Chemical Engineers (AIChE) Annual Meeting*, Philadelphia, Pennsylvania, Nov. 2008.
13. *Chung, A.J., **Erickson, D.** “Microfluidic Neuromuscular Control of Insect Micro-Air-Vehicles” *American Institute of Chemical Engineers (AIChE) Annual Meeting*, Philadelphia, Pennsylvania, Nov. 2008.
14. *Chung, A.J., **Erickson, D.** “Microfluidic Control of Insect Locomotor Activity” *ASME International Mechanical Engineering Congress and Exposition*, Boston, Massachusetts, Nov. 2008.
15. *Huh, Y.S., Chung, A.J., Cordovez, B., **Erickson, D.** “Optofluidic Surface Enhanced Raman Spectroscopy Chip for Detection of Dengue Virus” *ASME International Mechanical Engineering Congress and Exposition*, Boston, Massachusetts, Nov. 2008.
16. *Yang, A.H.J, Moore, S.D., Schmidt, B.S., Lipson, M., **Erickson, D.**, “Optofluidic Manipulation with sub-wavelength scale photonics” *Micro-Total Analysis Systems (μ TAS)*, San Diego, CA, Oct. 2008.
17. *Tolley, M.T., Krishnan, M., Lipson, H., **Erickson, D.**, "Advances Towards Programmable Matter" *Micro-Total Analysis Systems (μ TAS)*, San Diego, CA, Oct. 2008.
18. *Goddard, J.M., Mandal, S., **Erickson, D.**, "Targeted Patterning of Nucleic Acid Probes on Optical Nanostructures" *Micro-Total Analysis Systems (μ TAS)*, San Diego, CA, Oct. 2008.
19. ***Erickson, D.** “Nanoscale Optofluidic Transport” *SPIE Optics and Photonics*, San Diego, CA, August 2008.
20. *Cordovez, B., Psaltis, D., **Erickson, D.**, “Optofluidic Data Storage.” *IEEE/LEOS Summer Topical on Optofluidics*, Acapulco, Mexico, July 2008.
21. *Mandal, S., Goddard, J., **Erickson, D.**, “Nanoscale Optofluidic Sensor Arrays for Dengue Virus Detection.” *IEEE/LEOS Summer Topical on Optofluidics*, Acapulco, Mexico, July 2008.

22. *Moore, S., Yang, A., Schmidt, B., Lipson, M., **Erickson, D.**, “Optofluidic Trapping in Exposed Mode Slot Waveguides” Conference on Lasers and Electrooptics (CLEO), San Jose, May 2008.
23. *Mandal, S., Goddard, J., **Erickson, D.**, “Nanoscale Optofluidic Sensor Arrays for Dengue Virus Detection.” Conference on Lasers and Electrooptics (CLEO), San Jose, May 2008.
24. *Schmidt, B., Manipatruni, S., Yang, A., **Erickson, D.**, Lipson, M. “Optical Trapping Platform Based on Highly Confining Silicon Waveguiding Structures with Microfluidics.” Conference on Lasers and Electrooptics (CLEO), San Jose, May 2008.
25. *Mandal, S., Goddard, J., **Erickson, D.**, “Biomolecular Detection using Nanoscale Optofluidic Sensor Arrays” IEEE MEMS, Tucson, AZ, Jan 2008.
26. *Tolley, M., Baisch, A., **Erickson, D.**, Lipson, H., “Latching Mechanisms for Self-Assembled Planar Microcomponents” *IEEE MEMS*, Tucson, AZ, Jan 2008.
27. *Yang, A., **Erickson, D.**, “Waveguide Based Particle Trapping in Integrated Microfluidic Devices” *AICHE Annual Meeting*, Salt Lake City, Utah, Nov. 2007.
28. *Yang, A., Mandal, S., **Erickson, D.**, “Optofluidic Transport – Optical Waveguides as Microfluidic “Train Tracks” *ASME International Mechanical Engineering Congress and Exposition*, Seattle, Washington, Nov. 2007.
29. *Krishnan, M., Tolley, M., Lipson, H., **Erickson, D.**, “Directed Hierarchical Self Assembly - Active fluid mechanics at the micro and nanoscales.” *ASME International Mechanical Engineering Congress and Exposition*, Seattle, Washington, Nov. 2007.
30. *Chung, A., Kim, D., Chen, L., Akhmechet, R., Cordovez, B., **Erickson, D.**, “Electroactive Microfluidic Devices for Control of Insect Cyborg Neuromuscular Systems.” *Micro-Total Analysis Systems (μ TAS)*, Paris, France, Oct. 2007.
31. *Mandal, S., Akhmechet, R., Chen, L., Nugen, S., Baeumner, A., **Erickson, D.** “Nanoscale optofluidic sensor arrays for Dengue virus detection” *SPIE Optics and Photonics, Section on Optofluidics*, San Diego, California, August 2007.
32. *Cordovez, B., Psaltis, D., **Erickson, D.** “Electroactive Nanowells for Spectrographic Fluidic Memory” *SPIE Optics and Photonics, Section on Optofluidics*, San Diego, California, August 2007.
33. *Mandal, S., **Erickson, D.**, “Optofluidic Transport in Liquid Core Photonic Crystal Fibers” *Conference on Lasers and Electro-Optics (CLEO)*, Baltimore, Maryland, May 2007.
34. *Yang, A., Mandal, S., **Erickson, D.**, “Micro and Nanofluidic Transport Using Advanced Photonic Devices.” *ASME International Mechanical Engineering Congress and Exposition*, Chicago, Ill., Nov. 2006.

35. *Tolley, M., Zykov, V., Lipson, H., **Erickson, D.**, "Directed Fluidic Self-Assembly of Microscale Tiles" *Micro-Total Analysis Systems (μ TAS)*, Tokyo, Japan, Oct. 2006.
36. *Mandal, S., **Erickson, D.**, "Optical Chromatography in Hollow Core Photonic Crystal Fibers" *Micro-Total Analysis Systems (μ TAS)* Tokyo, Japan, Oct. 2006.
37. *Cordovez, B., **Erickson, D.**, "Electroactive Nanowell Sensors for Parallel Particle Trapping and Detection" *Micro-Total Analysis Systems (μ TAS)*, Tokyo, Japan, Oct. 2006.
38. *Mandal, S., **Erickson, D.**, "Particle Transport in Liquid Core Photonic Crystal Fibers" *IEEE/LEOS Summer Topical on Optofluidics, Quebec City, July 2006*.
39. *Yang, A.H.J., **Erickson, D.**, "Finite Element Analysis of Coupled Nanofluidic Dynamics and Silicon-on-Insulator Particle Trapping" *IEEE/LEOS Summer Topical on Optofluidics, Quebec City, July 2006*.
40. *Cordovez, B., Tung, S., **Erickson, D.**, "Optofluidic Particle Manipulation and Characterization in Individually Addressed Nanowell Sensors" *IEEE/LEOS Summer Topical on Optofluidics, Quebec City, July 2006*.
41. *Cordovez, B., **Erickson, D.**, "Electro-active Nanowell Structures for Sensing and Optofluidic Applications" *CLEO, Conference on Lasers and Electro-Optics, Long Beach, CA, May 2006*.
42. **Erickson, D.**, Rockwood, T., Emery, T., Scherer, A., Psaltis, D., "Nanofluidic Tuning of Photonic Crystal Circuitry" *CLEO, Conference on Lasers and Electro-Optics, Long Beach, CA, May 2006*.
43. Heng, X., Cui, X., **Erickson, D.**, Psaltis, D., Yang, C. "Portable optical microscope-on-a-chip" *Photonics West*, San Jose, CA, Jan 2006.
44. Heng, X., **Erickson, D.**, Psaltis, D., Yang, C. "Optofluidic microscope and its applications in developmental biology" *Photonics West*, San Jose, CA, Jan 2006.
45. Heng, X., **Erickson, D.**, Psaltis, D., Yang, C., "Opto-fluidic microscope: a novel imaging device on a biochip." *2005 SPIE Optics East*. Boston, MA, October 2005.
46. **Erickson, D.**, Rockwood, T., Emery, T., Scherer, A., Psaltis, D., "Integration of Sub-Wavelength Nanofluidics with Photonic Crystals" *2005 ASME International Mechanical Engineering Congress and Exposition*, Orlando, FL., Nov. 2005.
47. **Erickson, D.**, Emery, T., Rockwood, T., Scherer, A., Psaltis, D., "Nanofluidically Tunable Photonic Crystal Devices" *Micro-Total Analysis Systems (μ TAS) 2005*, Boston, MA, Oct. 2005.
48. Heng, X., **Erickson, D.**, Psaltis, D., Yang, C "Optofluidic Microscope – A miniaturized microscope on a chip." *Micro-Total Analysis Systems (μ TAS) 2005*, Boston, MA, Oct. 2005.
49. **Erickson, D.**, Heng, X., Li, Z., Rockwood, T., Emery, T., Zhang, Z., Scherer, A., Yang, C., Psaltis, D. "Optofluidics" *SPIE Optics and Photonics*. San Diego, CA, August 2005.

50. **Erickson, D.**, Li, B., Adleman, J., Vyawahare, S., Quake, S., Psaltis, D., "Spectrographic Microfluidic Memory" *3rd International Conference on Microchannels and Minichannels*, Toronto, ON, June 2005
51. Heng, X., **Erickson, D.**, Psaltis, D., Yang, C., "Optofluidic Microscopy" *3rd International Conference on Microchannels and Minichannels*, Toronto, ON, June 2005
52. **Erickson, D.**, Adleman, J., Li, B., Pu, Y., Rockwood, T., Psaltis, D., "Optofluidics" *Optical Society of America Topical Meeting on Information Photonics*, June 2005.
53. **Erickson, D.**, Liu, X., Venditti, R. Krull, U., Li, D "Electrokinetics for control of on-chip chemical reactions" *American Physical Society March Meeting*, Los Angeles, CA, March 2005.
54. Heng, X., **Erickson, D.**, Psaltis, D., Yang C. "Optofluidic microscopy" *Conference on Lasers and Electro-Optics (CLEO)*, Baltimore, MD, May 2005.
55. **Erickson, D.**, Liu, X., Venditti, R. Krull, U., Li, D "A DNA hybridization chip with Electrokinetically-Based Single Nucleotide Polymorphism (SNP) Discrimination." *2004 ASME International Mechanical Engineering Congress and Exposition*, Anaheim, CA, Nov 2004.
56. **Erickson, D.**, Liu, X., Krull, U., Li, D. "An Electrokinetically Controlled DNA Hybridization Chip" *2nd International Conference on Microchannels and Minichannels*, Rochester, NY, June 2004.
57. Biddiss, E., **Erickson, D.**, Li, D. "Heterogeneous surface charge enhanced micro-mixer for electrokinetic flows" *2nd International Conference on Microchannels and Minichannels*, Rochester, NY, June 2004.
58. **Erickson, D.**, Sinton, D., Nikolic, V., Li, D. "Heat Transfer and Electrokinetic Flow Analysis in Poly(dimethylsiloxane) Microfluidic Systems" *2003 ASME International Mechanical Engineering Congress and Exposition*, Washington D.C., Nov 2003.
59. Sinton, D., **Erickson, D.**, Li, D. "Molecular Tagging in Microchannels with Micro-Bubble Lensing Induced Photobleaching (micro-BLIP)" *2003 ASME International Mechanical Engineering Congress and Exposition*, Washington D.C., Nov 2003.
60. Krull, U.J., Park, S.H., Liu, X., Zeng, J., Li, D., **Erickson, D.** "Genomic target identification using distributed gradients of selective single-stranded oligonucleotide probes in conjunction with microfluidics" *39th International Union of Pure and Applied Chemists (IUPAC) Congress*, Ottawa, Ontario, August 2003.
61. Lin, F.Y.H., **Erickson, D.** Li, D., Sherman, P.M. "Development of a Novel Microfluidics-based Biochip System for the Detection of *Helicobacter pylori*" *103rd General Meeting of the American Society for Microbiology*, Washington D.C., May 2003.
62. Lin, F.Y.H., **Erickson, D.** Li, D., Sherman, P.M. "Development of a novel microfluidics based biochip system for the detection of microbial pathogens" *Annual*

Meeting of the Canadian Association of Gastroenterology (CAG), Banff, February 2003.

63. **Erickson, D.**, Li, D. "3D Numerical Simulations of Pressure Driven Flow over Electrokinetically Heterogeneous Surfaces." *ELKIN 2002* Krakow, Poland, June 2002.
64. Sinton, D., **Erickson, D.**, Li, D. "Photo-Injection and Sample Transport in Microfluidic-Chip Applications." *CSME Forum 2002* Kingston, Ontario, June 2002.
65. **Erickson, D.**, Li, D., and Werner, C. "Simultaneous Determination of the Zeta (ζ)-Potential and Surface Conductance using the Improved Slope Intercept Technique." *75th ACS Colloid and Surface Sciences Symposium*, Pittsburgh, Pennsylvania, June 2001.
66. **Erickson, D.**, and Li, D., "Modeling Electrokinetic Flow through Microchannels with Heterogeneous Surface Properties." *75th ACS Colloid and Surface Sciences Symposium*, Pittsburgh, Pennsylvania, June 2001.
67. Wong, F.C. and **Erickson, D.**, "Time-Temperature Independent Fracture Analysis of an Instrumented Solid Rocket Motor" *36th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit*, AIAA Paper 2000-3324, 2000.

Other Refereed Technical Publications

68. *Akhmechet, R., **Erickson, D.**, "Optofluidics: Techniques for Fabrication and Integration" *Encyclopedia of Microfluidics and Nanofluidics*. Springer (2006).
69. *Yang, A., **Erickson, D.**, "Optofluidics: Optics enabling Fluidics" *Encyclopedia of Microfluidics and Nanofluidics*. Springer (2006).
70. *Mandal, S., **Erickson, D.**, "Optofluidics: Applications" *Encyclopedia of Microfluidics and Nanofluidics*. Springer (2006).
71. ***Erickson, D.**, "Electroosmotic Flow" *Encyclopedia of Microfluidics and Nanofluidics*. Springer (2006).
72. ***Erickson, D.**, "Electroosmotic Flow over Heterogeneous Surfaces" *Encyclopedia of Microfluidics and Nanofluidics*. Springer (2006).
73. ***Erickson, D.**, "SNP on Chip: Microfluidic Technologies for Single Nucleotide Polymorphism Analysis" *Encyclopedia of Microfluidics and Nanofluidics*. Springer (2006).
74. ***Erickson, D.**, "Optofluidics: Fluidics enabling Optics" *Encyclopedia of Microfluidics and Nanofluidics*. Springer (2006).
75. **Erickson, D.**, and Wong, F.C., "Failure Prediction of Solid Rocket Motors on Thermal Cool-Down." DREV-TR-2000 025. 150 Pages, 2000.
76. **Erickson, D.**, et. al., "Development of the U of A Entry in the 1997 Propane Vehicle Challenge." 1997 Propane Vehicle Challenge, SAE SP-1360, 1998.

INVITED/KEYNOTE TALKS

1. ***Erickson, D.**, “Microfluidically reconfigurable photonics and matter” 8th International Conference on Nanochannels, Microchannels and Minichannels, *Montreal, Quebec*, August, 2010.
2. ***Erickson, D.**, “Microfluidically reconfigurable for reconfigurable photonics and matter” Danish Technical University, *Copenhagen, Denmark*, March, 2010.
3. ***Erickson, D.**, “Nanomaterial Applications of Optofluidics” ASME 2010 First Global Congress on Nanoengineering for Biology and Medicine, *Houston, Texas*, February, 2010.
4. ***Erickson, D.**, “Silicon Photonics for Biomolecular Analysis” Photonics West, San Francisco, CA, *January 2010*.
5. ***Erickson, D.**, “Microfluidics of Programmable Matter” American Vacuum Society annual meeting, San Diego, California, *November 2009*.
6. ***Erickson, D.**, “Optofluidics for Biomolecular Analysis” *University of California, Los Angeles*, *October 2009*.
7. ***Erickson, D.**, “Optofluidics” Frontiers in Optics (OSA Annual Meeting), San Jose, California, *October 2009*.
8. ***Erickson, D.**, “Optofluidics” and “Programmable Matter” NATO Advanced Study Institute on Microfluidics Based Microsystems. *Izmir, Turkey*, *August 2009*.
9. ***Erickson, D.**, “Optical Manipulation of Nanoparticles and Nucleic Acids using Silicon Photonics”, SPIE Optics and Photonics, San Diego, *August 2009*.
10. ***Erickson, D.**, “Optically Resonant Molecular Sensors”, SPIE Optics and Photonics, San Diego, *August 2009*.
11. ***Erickson, D.**, “Optofluidics – Fusing Nanofluidics and Nanophotonics” State Key Laboratory of Non-Linear Mechanics, Institute of Mechanics, Chinese Academy of Sciences, Beijing, *April 2009*.
12. ***Erickson, D.**, “Biomolecular Detection with Optofluidics” SPIE Defense, Security and Sensing, *Orlando, Florida*, *April 2009*.
13. ***Erickson, D.**, “Optofluidics” *University of Maryland, Baltimore County* March 2009.
14. ***Erickson, D.**, “Optofluidics” *California Institute of Technology, Pasadena, California* February 2009.
15. ***Erickson, D.**, “Optofluidics for Biomolecular Analysis” *University of California, Santa Cruz*, January 2009.
16. ***Erickson, D.**, “Silicon Optofluidic Devices for Biomolecular Analysis” Photonics West, *San Jose*, January 2009.

17. ***Erickson, D.**, “Nanofluidically Active Photonic Crystals” SPIE Optics and Photonics, *San Diego, August 2008.*
18. ***Erickson, D.**, “Optofluidics” *Brown University, Providence, Rhode Island, August 2008.*
19. ***Erickson, D.**, “Optically Resonant Biosensors” Gordon Research Conference on Bioanalytical Sensors, *Rhode Island, July 2008.*
20. ***Erickson, D.**, “Optofluidics” 6th International Conference on Nanochannels, Microchannels, and Minichannels, *Technische Universitaet of Darmstadt, Darmstadt, Germany, June 2008.*
21. ***Erickson, D.**, “Microfluidically enabled optical, living and manufacturing systems” *Yale University, New Haven, Connecticut April 2008.*
22. ***Erickson, D.**, “Microfluidically enabled optical, living and manufacturing systems” *Tufts University, Medford, Massachusetts, April 2008.*
23. ***Erickson, D.** Mandal S, Yang, A., Goddard, J., Cordovez, B., “Optofluidics: Fluidics Enabling Optics and Optics Enabling Fluidics” ASME Micro/Nanoscale Heat Transfer International Conference, *Tainan, Taiwan, January 2008.*
24. ***Erickson, D.**, “Optofluidics” Department of Mechanical Engineering, *University of Victoria, November 2007.*
25. ***Erickson, D.**, “Optofluidic Transport and Sensing” *École Polytechnique Fédéral de Lausanne (EPFL), October 2007.*
26. ***Erickson, D.**, “Integrated Micro-, Nano- and Optofluidic Systems” Department of Mechanical Engineering, *Vanderbilt University, September 2007.*
27. ***Erickson, D.**, “Whole Chip Numerical Simulation of Integrated Biomolecular Microfluidic Devices” *9th US National Congress on Computational Mechanics (USNCCM9) Symposium on Modeling and computation of active small (nano) systems.* Berkeley, California, July 2007.
28. ***Erickson, D.**, “Integrated Micro-, Nano- and Optofluidics Devices”. *US-Japan Young Nanotechnology Researchers Exchange, Osaka University, Osaka, Japan, June 2007.*
29. ***Erickson, D.**, “Optofluidics: Fusing Microfluidics with Microphotonics” Department of Mechanical Engineering, *Clemson University, February 2007.*
30. ***Erickson, D.**, “Optofluidics: Emerging Technologies and Applications” College of Nanoscale Science and Engineering, *SUNY Albany. February 2007.*
31. ***Erickson, D.**, “Optofluidics” 5th International Conference on Optics-photonics Design and Fabrication. *Nara, Japan, December 2006.*
32. ***Erickson, D.**, “Numerical Simulation for Integrated Microfluidic Devices” *Building Nanostructures Bit by Bit Workshop.* Cornell Nanoscience and Technology Center, October 2006.

33. ***Erickson, D.**, “Integrated Optofluidic Devices” *Department of Mechanical Engineering, Carnegie Mellon University, Pittsburg, Pennsylvania, October 2006.*
34. ***Erickson, D.**, Mandal, S., Yang, A., “Micro- and Nanofluid Dynamics in Optofluidic and Nanophotonic Devices” *Optical Society of America, Frontiers in Optics, Rochester, NY, October 2006.*
35. ***Erickson, D.**, “Nanoscale Fluid Dynamics” *Symposium on Nonlinear Dynamics of Nanosystems, Chemnitz, Germany, August 2006.*
36. ***Erickson, D.**, Yang, A., “Photofluidics” *SPIE Optics and Photonics Conference, San Diego, California, August 2006.*
37. ***Erickson, D.**, “Optofluidics” *Department of Biomedical Engineering, University of Rochester, Rochester, NY, November 2005.*
38. ***Erickson, D.**, “Optical Nanofluidics” *MAE Colloquium Series, Sibley School of Mechanical and Aerospace Engineering, Cornell University. Ithaca, NY, September 2005.*
39. **Erickson, D.** “Microscale Transport Analysis and the Development of DNA Hybridization Chips” *Applied Physics and Optics Seminar, California Institute of Technology, Pasadena, California, May 2004.*
40. **Erickson, D.** “Microscale Transport Analysis and the Development of DNA Hybridization Chips” *Department of Mechanical and Aerospace Engineering, Cornell University, Ithaca, NY, May 2004.*
41. **Erickson, D.** “Microscale Transport Analysis and the Development of DNA Hybridization Chips” *Department of Mechanical Engineering, Tufts University, Boston, MA, May 2004.*
42. **Erickson, D.** “Microfluidics Based DNA Sensor Chips” *Department of Mechanical and Environmental Engineering, University of California, Santa Barbara, Santa Barbara, California, April 2004.*
43. **Erickson, D.** “Microscale Simulation For Integrated Microfluidic Devices” *Department of Mechanical Engineering, Rice University, Houston, Texas, February 2004.*
44. **Erickson, D.** “Microfluidics Based DNA Sensor Chips” *Department of Mechanical Engineering, Duke University, Durham, NC, February 2004,*
45. **Erickson, D.** “Microscale Simulation for Integrated Microfluidic Devices” *Department of Mechanical and Aerospace Engineering, University of Florida, Gainesville, Florida, December 2003.*

INDUSTRIAL, WORKSHOP OR EDUCATIONAL TALKS

1. ***Erickson, D.**, “Fluid Dynamically Reconfigurable Photonics and Matter” *AFOSR Workshop on Reconfigurable Systems, Santa Fe, New Mexico, July 2009.*

2. ***Erickson, D.**, “Optofluidics for Biomolecular Analysis” *International Workshop on Nanotechnology-Enabled Sensors and Diagnostics*, Dublin City University, Dublin, Ireland, May 2009.
3. ***Erickson, D.**, “Optofluidics for Biomolecular Detection” *Draper Labs*, Cambridge MA, January 2009.
4. ***Erickson, D.**, “Optofluidics for Biomolecular Analysis and Detection” *Sigma-Aldrich*, St. Louis, MO, *October, 2008*.
5. ***Erickson, D.**, “Optofluidic Transport for Biomolecular Analysis” *Nanobiotechnology, Biomolecular Devices and Analysis Seminar Series*. Ithaca, NY, *December 2007*.
6. ***Erickson, D.**, “Optofluidic Transport” *Cornell Fluid Dynamics Seminar Series*, Ithaca, NY, *November 2007*.
7. ***Erickson, D.**, “Microfluidics” BME667/AEP663/MSE563/BioG663 Nanobiotechnology – 2 lectures, *October 2007*.
8. ***Erickson, D.**, “The US National Nanotechnology Initiative Network” *Third International Nanotechnology Conference on Communications and Cooperation*, Brussels, Belgium, *April 2007*.
9. ***Erickson, D.**, “Nanoscale Optofluidic Sensor Arrays” *Nanobiotechnology, Biomolecular Devices and Analysis Seminar Series*. Ithaca, NY, *January 2007*.
10. ***Erickson, D.**, “Optofluidics for NanoBioTechnology” *Nanobiotechnology Center, Cornell University*, Ithaca, NY, *April 2006*.
11. ***Erickson, D.**, “Electrokinetics for Lab-on-Chip devices” *Department of Chemical Engineering Colloquium Series, Cornell University*, Ithaca, NY, *March 2006*.
12. ***Erickson, D.**, “Optofluidics for Biomedical Engineering” *BME 501 – Biomedical Engineering Seminar (Dr. David Lipson)*. *Oct. 2006*.
13. ***Erickson, D.**, “Lab on Chip Devices” *Nanotechnology Teachers Institute, Cornell University, Ithaca, NY*. *August 2006*.
14. ***Erickson, D.**, “Transport in Microfluidic Devices” BME667/AEP663/MSE563/BioG663 Nanobiotechnology – 1 lecture, *February 2006*.
15. ***Erickson, D.**, “Electrokinetic techniques for single nucleotide polymorphism discrimination and massively parallel biosensing” *Cornell Fluid Dynamics Seminar Series, Ithaca, NY*, *December 2005*.
16. ***Erickson, D.**, “Design of Micro- and Nanofluidic Systems” *MAE 428 – Seminar on Engineering Design (Professor Marjolein Van Der Meulen)*. *Nov. 2005*.
17. ***Erickson, D.**, “Optofluidics” *Seminar Series in Photonics, Department of Electrical and Computer Engineering, Cornell University, Ithaca, NY*, *October 2005*.

POST DOCTORAL STUDENTS - CURRENT

Huh, Yun Suk 2007-Present
Ph.D. KAIST
Project: Programmable Matter and optofluidic surface enhanced raman scattering
Funding: NIH, DARPA

Choi, Inhee
Ph.D. KAIST
Project: Autonomous Microfluidic Systems
Funding: ONR

DOCTORAL STUDENTS - CURRENT

Cordovez, Bernardo 2005-Present
Mechanical Engineering, Cornell University
Ph.D. Project: Electro-optic nanofluidic devices and insect cyborgs
Funding: NSF, DARPA

Yang, Allen 2005-Present
Chemical and Biomolecular Engineering, Cornell University
Ph.D. Project: Optofluidic transport
Funding: NSF

Mandal, Sudeep 2006-Present
Applied and Engineering Physics, Cornell University
Ph.D. Project: Nanoscale Optofluidic Sensor Arrays.
Funding: NBTC, NIH, DARPA

Chung, Aram 2006-Present
Mechanical Engineering, Cornell University
Ph.D. Project: Insect Cyborg Sentinels and Microfluidically Reconfigurable Photonics
Funding: DARPA, AFOSR

Krishnan, Mekala 2006-Present
Mechanical Engineering, Cornell University
Ph.D. Project: Thermorheologically programmable matter.
Funding: NSF, DARPA

Moore, Sean 2007-Present
Mechanical Engineering, Cornell University
Ph.D. Project: Microfluidic Energy Devices.
Funding: NSF

Kalontarnov, Michael 2007-Present
Mechanical Engineering, Cornell University
Ph.D. Project: Assembly processes for Programmable Matter
Funding: DARPA

- Mak, Michael** 2008-Present
Biomedical Engineering, Cornell University
Ph.D. Project: Optical force based cellular characterization and analysis.
Funding: NBTC.
- Jung, Erica** 2008-Present
Mechanical Engineering, Cornell University
Ph.D. Project: Fluidically Adaptive Photonics and Optofluidic SERS
Funding: AFOSR
- Kraning, Casey** 2009-Present
Biomedical Engineering, Cornell University
Ph.D. Project: Cell Metastasis (Co-Supervised with Cynthia Reinhart-King)
Funding: NSF, NBTC
- Gumus, Abdurrahman** 2009-Present
Electrical Engineering, Cornell University
Ph.D. Project: Autonomous Microsystems
Funding: Fellowship
- Serey, Xavier** 2008-Present
Applied and Engineering Physics, Cornell University
Ph.D. Project: Optofluidic trapping using optical resonance.
Funding: NSF
- Mancuso, Matt** 2009-Present
Biomedical Engineering, Cornell University
Ph.D. Project: Optically resonant nanosensor devices.
Funding: NSF Flex-E-Bio IGERT, Knight Fellowship
- Jiang, Li** 2009-Present
Mechanical Engineering, Cornell University
Ph.D. Project: Programmable Matter
Funding: DARPA
- Oncescu, Vlad-Victor** 2009-Present
Mechanical Engineering, Cornell University
Ph.D. Project: Autonomous Microfluidic Systems
Funding: NSERC & ONR
- Kang, Pilgyu** 2009-Present
Mechanical Engineering, Cornell University
Ph.D. Project:
Funding: NIH/AFSOR
- Jain, Aadhar** 2009-Present
Mechanical Engineering, Cornell University
Ph.D. Project:
Funding: NIH/AFSOR

M. ENG STUDENTS - CURRENT

N/A

UNDERGRADUATE STUDENTS - CURRENT

Huang, Toby 2009-Present
Entomology, Cornell University
UG Project: Developing a technique for measuring the metabolic output of *M. Sexta*
Funding: DARPA

Jasuja, Nipun 2009-Present
MAE, Cornell University
UG Project: Autonomous microfluidic control of insect cyborgs
Funding: DARPA

POST-DOC, PH.D. GROUP ALUMNI

Goddard, Julie 2007-2009
Current Position: Assistant Professor
Location: University of Massachusetts, Amherst – Department of Food Science

UG/MENG GROUP ALUMNI (If I missed you please send me an email)

Akhmechet, Roman	M.Eng./Engineer	2006-2007
Story, Devon	M.Eng.	2005-2006
Rubin, Ephram	M.Eng.	2006
Vallejo, Ana	M.Eng.	2006
Borkar, Abhas	M.Eng.	2006
Jayakumar, Harishankar	M.Eng.	2006
Dropkin, Amanda	Undergraduate Researcher	2005-2007
Youn, Paul	Undergraduate Researcher	2005-2006
Ahmad, Sana	Undergraduate Researcher	2005-2006
Tung, Stephen	Undergraduate Researcher	2006
Hoge, Jack	Undergraduate Researcher	2005-2006
Kabadi, Suraj	CNF-REU	2006
Lannon, Herbert	CNF-REU	2006
Kim, Donn	M.Eng	2006-2007
Ng, Adrian	M.Eng	2006-2007
Sheikh, Omer	M.Eng	2006-2007
Nichols, Weston	Undergraduate Researcher	2006-2007
Chen, Likun	REU	2006-2007
Baisch, Andrew	CNF-REU	2007
Klug, Matt	M.Eng.	2007
Chi, Binbin	Undergraduate	2007
Kress, Michael	Undergraduate	2007
Lerdsuchatawanich, Tadsanapan	M.Eng.	2008
Park, Joonsik	UG/M.Eng.	2008

D'Souza, Angela	M.Eng.	2008-2009
DiFelice, Audrey	UG	2009
Klingler, Kristen	UG	2009

PATENTS/INVENTIONS (* INDICATES CORNELL BASED PATENTS):

1. ***Erickson, D.**, Batt, C., Lowe, A., Huh, Y.S. "Enhanced On-Chip SERS Based Biomolecular Detection Using Electrokinetically Active Microwells" Provisional Patent Filed, October 2008.
2. ***Erickson, D.**, Lipson, M., "Optical force based biomolecular analysis in slot waveguides" Provisional Patent Filed, August 2008.
3. ***Erickson, D.**, Mandal, S., "Nanoscale Optofluidic Devices for Biomolecular Detection" Provisional Patent Filed, August 2007.
4. ***Erickson, D.**, Mandal, S., "Optically driven separations in photonic crystal fibers" Patent Pending, November 2006.
5. Wang F., **Erickson, D.**, Yang C., "Combined electrostatic and optical waveguide based microfluidic chip systems for bio-molecule and bio-entity detection and processing." US 7,385,460.
6. **Erickson, D.**, Sinton, D. and Li, D. "A miniature, battery powered, integrated power supply for microfluidic applications with punch-through polymer chip coupling." University of Toronto Confidential Invention Disclosure, July 2003.
7. **Erickson, D.**, and Li, D., "Microchannel Thermal Cycling PCR Reactor Chip." University of Toronto Confidential Invention Disclosure, April 2001.

TEACHING EXPERIENCE:

Instructor – Fundamentals of Fluid Dynamics and Aerodynamics (MAE 601 - Graduate)
Department of Mechanical and Aerospace Engineering, Cornell University
Fall 2008, Fall 2009

Instructor – Nanoscale Energy Transport and Conversion (MAE 656 – Graduate)
Department of Mechanical and Aerospace Engineering, Cornell University
Spring 2006, Spring 2007, Spring 2008, Spring 2010

Instructor – Thermodynamics (MAE/ENGRD 221 – Undergraduate)
Department of Mechanical and Aerospace Engineering, Cornell University
Fall 2005, Fall 2006, Fall 2007, Spring 2009

Instructor – Thermal Energy Conversion (Undergraduate)
Department of Mechanical & Industrial Engineering, University of Toronto
Spring 2004.

EXTERNAL ACADEMIC SERVICE AND PARTICIPATION:

Journal Editorships

- **Associate Editor. Journal of Microfluidics and Nanofluidics.** *January 2008 - continuing.*
- **Associate Editor. Smart Materials and Structures.** *January 2008 – January 2010.*

Multinational Exchange Programs

- **Invitee and Participant. 4th U.S. – Japan NSF Young Researchers Exchange Program.** *2007*

Academic Conferences – Conferences/Major Symposia Organized

- **Conference Chair & Organizer** “Optofluidics: Emerging Technologies and Applications” *IEEE/LEOS Summer Topicals, Acapulco, Mexico, August 2008.*
- **Conference Chair & Organizer** “Optofluidics: Emerging Technologies and Applications” *IEEE/LEOS Summer Topicals, Quebec City, Quebec, August 2006.*
- **Symposium Chair & Organizer** “Optofluidics” *2009 Conference on Lasers and Electro-Optics (CLEO), Baltimore, MA, May 2009*

Academic Conferences – Session Chair or Organizer

- **Technical Committee Member and Symposium Organizer** “Medical and Biological Applications” *2009 Conference on Lasers and Electro-Optics (CLEO), Baltimore, MA, May 2009.*
- **Symposium Co-Chair** “Microfluidics 2008” *2008 International Mechanical Engineering Congress and Exposition (IMECE), Boston, Massachusetts, November 2008.*
- **Session Chair** “Microfluidics” *2007 International Mechanical Engineering Congress and Exposition (IMECE), Seattle, Washington, November 2007.*
- **Session Chair.** “Photonic Crystals” *2007 Conference on Lasers and Electro-optics (CLEO), Baltimore, Maryland, May. 2005.*
- **Session Co-Chair** (with Anna, S.). “FED-13 B Measurement Techniques in Microfluidics” *2005 ASME International Mechanical Engineering Congress and Exposition, Orlando, Fl., Nov. 2005.*
- **Session Co-Organizer and Chair** (with Psaltis, D.) “Optofluidics, OEI312 – Optical Information Systems III” *SPIE Optics and Photonics Conference, August 2005.*

- **Session Co-Chair** (with Sinton, D.) “Microfluidics and Lab-on-a-Chip Devices” *3rd International Conference on Microchannels and Minichannels*, Toronto, ON, June 2005

Reviewer for “Fundamental of Engineering Thermodynamics” by Moran and Shapiro, *May 2006*.

Technical Committee Member, ASME Biomanufacturing Working Group. Since *December 2006*.

Proposal Review Panel Member

- **National Science Foundation;** Civil, Mechanical and Manufacturing Innovation, *December 2008*.
- **National Institutes of Health;** National Institute of Environmental Health Sciences (NIH-NIEHS): Superfund Basic Research Program, *November 2008*.
- **National Science Foundation;** Chemical, Biological and Engineering Transport, *May 2008 (2nd Panel in May 2008)*.
- **National Science Foundation;** Chemical, Biological and Engineering Transport, *May 2008*.
- **National Science Foundation;** Chemical, Biological and Engineering Transport, *January 2008*.
- **National Institutes of Health;** National Institute of Allergy and Infectious Diseases (NIH-NIAID): Cooperative Research Partnerships for Biodefense, *October 2007, October 2008*.
- **National Institutes of Health;** National Institute of Environmental Health Sciences (NIH-NIEHS): Superfund Basic Research Program, *September 2007*
- **National Science Foundation;** Active Nanostructures and Nanosystems Program, *2007*
- **National Science Foundation;** Nanomanufacturing, *December 2006*.
- **National Science Foundation;** Nanomanufacturing, *June 2006*.

Also served as ad-hoc reviewer for: Cornell Nanobiotechnology Center, Keck Foundation, European Union, Alberta Ingenuity Fund.

INTERNAL ACADEMIC SERVICE AND PARTICIPATION:

Chair, Graduate Programs Committee

(2009-Present)

Sibley School of Mechanical and Aerospace Engineering

Colloquium Committee

(2008-2009)

Sibley School of Mechanical and Aerospace Engineering

Faculty Secretary

(2007-2008)

Sibley School of Mechanical and Aerospace Engineering

Dynamics Systems and Controls, Search Committee

(2006-2007, 2007-2008)

Sibley School of Mechanical and Aerospace Engineering

Academic Committee

(2006-2007)

Sibley School of Mechanical and Aerospace Engineering