



STEVEN T. WERELEY, PH.D.

Professor, Mechanical Engineering
Birck Nanotechnology Center
Purdue University
Phone: (765) 494-5624
wereley@purdue.edu

<https://engineering.purdue.edu/~wereley/>

Mailing/Physical Addresses

Birck Nanotechnology Center, Room 2019 1205 West State Street West Lafayette, IN 47907-1205 Fax: (765) 496-6443	Mechanical Engineering, Room 1077 585 Purdue Mall West Lafayette, IN 47907-2088 Fax: (765) 494-0539
--	--

Research Interests

Micro and Nanoscale fluid mechanics (*microfluidics*), MEMS, bio-MEMS, biological flows at the cellular level, micro-scale laminar mixing, physiological sensors, electrical and optical manipulation of particles and fluids, development of microfluidic diagnostic techniques.

Education

Ph.D. Mechanical Engineering, Northwestern University, Evanston IL, 1997. Dissertation Topic: An investigation of the physics underlying rotating filtration using particle image velocimetry (PIV), computational particle tracking, and analytical methods.

M.S. Mechanical Engineering, Northwestern University, Evanston, IL, 1992. Thesis Topic: A laser Doppler velocimetry (LDV) investigation of the velocity profiles developed in the annulus between differentially rotating cylinders.

B.S. Mechanical Engineering, Washington University, St. Louis, MO, 1990. Concentration in fluid mechanics: incompressible flow, compressible flow, and computational fluid dynamics.

B.A. Physics, Lawrence University, Appleton, WI, 1990. Physics curriculum (mechanics, electricity and magnetism, electronics, optics, quantum mechanics, experimental methods) combined in equal parts with liberal arts courses.

Work Experience

Professor, School of Mechanical Engineering, Purdue University (2010-Present). Taught Mechanical Engineering courses at the graduate and undergraduate levels and instructed graduate students in a lab setting.

Alexander von Humboldt Fellow, Universität der Bundeswehr, Munich, Germany, Sept.-Oct, 2014.

Associate Professor, School of Mechanical Engineering, Purdue University (2005-2010). Taught Mechanical Engineering courses at the graduate and undergraduate levels and instructed graduate students in a laboratory environment.

Alexander von Humboldt Fellow, Universität der Bundeswehr, Munich, Germany, June-July 2009.

Alexander von Humboldt Fellow, Technische Universität Darmstadt, Darmstadt, Germany, Mar.-Aug., 2007.

Assistant Professor, School of Mechanical Engineering, Purdue University (1999-2005). Taught Mechanical Engineering courses at the graduate and undergraduate levels and instructed graduate students in a laboratory environment.

Post Doctoral Research Scientist, Mechanical and Environmental Engineering Dept., University of California Santa Barbara (1997-1999). Designed and constructed microfluidics experiments and developed custom particle image velocimetry algorithms specifically tailored to microfluidics applications.

Currently Active Consulting Areas

Fluid mechanics measurements using particle image velocimetry (PIV) and other techniques

Fluid mechanics measurements in Microelectromechanical Systems (MEMS), bio-MEMS, and microscopic biological systems using micro-particle image velocimetry (μ PIV) and related techniques

Oil spills, oil flows, other fluid spills; Custom-written PIV software and routines

Expert witness services for fluid mechanics, microfluidics, bio fluid mechanics, MEMS, bio-MEMS, and oil spill issues

Books (Monographs)

- M. Raffel, C. Willert, S. Wereley, J. Kompenhans**, Particle Image Velocimetry: A Practical Guide, 3rd ed., Springer, New York (2018). (ISBN 978-3-319-68851-0; <https://doi.org/10.1007/978-3-319-68852-7>)
- N.T. Nguyen and S.T. Wereley**, Fundamentals and Applications of Microfluidics, Artech House, Boston, (1st ed. 2002; 2nd ed. 2006; 3rd ed. 2019). (ISBN 978-1-58053-972-2)

Books (Edited Collections)

- B. Bhusan (Wereley, section editor)**, Encyclopedia of Nanotechnology, Springer, New York, 2012. (ISBN: 978-90-481-9750-7)
- CH Ahn, M Gijs, S Hardt, SG Kandlikar, JP Landers, Y Lin, A De Mello, H Morgan, NF de Rooij, ST Wereley, and RJ Yang** (section eds), Encyclopedia of Microfluidics and Nanofluidics (ed-in-chief Dongqing Li), Springer, New York (2008).
- R. Bashir and S.T. Wereley** (vol. eds), BioMEMS and Biomedical Nanotechnology (series ed M. Ferrari): Vol. 4: Biomolecular Sensing, Processing and Analysis, Kluwer, Boston (2007). (ISBN 978-0387255668)

Book Chapters

14. **C Snoeyink and ST Wereley**, "Micro/nano flow characterization techniques," in Handbook of Nanotechnology (Springer, 2012).
13. **HS Chuang, A Kumar, SJ Williams, ST Wereley**, "Optoelectrically-enabled multiscale manipulation," in Handbook of Nanotechnology (Springer, 2012).
12. **JS Kwon, R Thakur and ST Wereley**, "Rapid electrokinetic patterning," in Handbook of Nanotechnology (Springer, 2012).
11. **CD Meinhart and ST Wereley**, "Micro Particle Velocimetry," Chapt. 7 in Micro/Nano Technology Systems for Bio-medical Applications-Microfluidics, Optics and Surface Chemistry, (ed. Chih-Ming Ho), Oxford University Press, Oxford UK (2010). ISBN13: 978-0-19-921969-8; ISBN10: 0-19-921969-9
10. **HS Chuang, A Kumar, ST Wereley**, "Optical flow characterization- micro particle image velocimetry (μ PIV)," in Methods in Bioengineering: Microfabrication and Microfluidics (eds Lee and Zahn), Artech House, Boston (2009). ISBN 978-1-59693-401-6
9. **A Kumar, AH Ewing, and ST Wereley**, "Optical tweezers for manipulating cells and particles", Encyclopedia of Microfluidics and Nanofluidics (ed. Dongqing Li), Springer, New York (2008).
8. **P Chamrathy, A Kumar, J Cao, and ST Wereley**, "Fundamentals of Diffusion in microfluidic systems", Encyclopedia of Microfluidics and Nanofluidics (ed. Dongqing Li), Springer, New York (2008).
7. **P Chamrathy and ST Wereley**, "Micro-PIV-Based Diffusometry," Encyclopedia of Microfluidics and Nanofluidics (ed. Dongqing Li), Springer, New York (2008).
6. **J. Cao and S.T. Wereley**, "Micro-Particle Image Velocimetry in Biomedical Applications," in Encyclopedia of Biomaterials and Biomedical Engineering, 2nd edition, (eds G.E. Wnek and G.L. Bowlin), Informa Healthcare, New York (2008).
5. **I. Whitacre and S.T. Wereley**, "Particle Dynamics in a Dielectrophoretic Microdevice", in BioMEMS and Biomedical Nanotechnology (series ed M. Ferrari): Vol. 4: Biomolecular Sensing, Processing and Analysis (vol. eds R. Bashir and S.T. Wereley), Kluwer, Boston (2007).
4. **S.T. Wereley and C.D. Meinhart**, "Electrokinetics in Microdevices" in Complex Systems Science in BioMedicine, eds. Deisboeck, Kresh, Kepler, Kluwer, Boston (2006).
3. **S.Y. Lee, J. Jang, and S.T. Wereley**, "Optical Diagnostics to Investigate the Entrance Length in Microchannels," in MEMS Handbook, ed. Mohamed Gad-el-Hak, Springer, New York (2006).
2. **S.T. Wereley and C.D. Meinhart**, "Micron-Resolution Particle Image Velocimetry" in Micro- and Nano-Scale Diagnostic Techniques, ed. Kenny Breuer, Springer-Verlag, New York, (2005).
1. **C.D. Meinhart, S.T. Wereley, and J.G. Santiago**, "Micron-Resolution Velocimetry Techniques," Laser Techniques Applied to Fluid Mechanics, R. J. Adrian et al. (Eds.), Springer-Verlag, Berlin, pp. 57-70, (2000).

Journal Publications

83. X Pan, JS Kwon, JW Khor, SM Mehdi Shamsi, ST Wereley, "Experimental and computational study of optically-driven electrothermal vortex," Prog. Comp. Fluid Dyn., Vol. 19, p. 307-315 (2019).
82. X Kou, PWS Heng, LW Chan, ST Wereley, MT Carvajal, "Effect of Roughness on the Dispersion of Dry Powders for Inhalation: a Dynamic Visualization Perspective," AAPS PharmSciTech, Vol. 20 (7), p. 271 (2019).

81. **W Ren, SI Mohammed, ST Wereley and J Irudayaraj**, "Magnetic Focus Lateral Flow Sensor for Detection of Cervical Cancer Biomarkers," *Anal. Chem.*, Vol. 91, 2876–2884 (2019). <http://dx.doi.org/10.1021/acs.analchem.8b04848>
80. **KN Clayton, TJ Moehling, DH Lee, ST Wereley, JC Linnes, and TL Kinzer-Ursem**, "Particle Diffusometry: An Optical Detection Method for *Vibrio cholerae* Presence in Environmental Water Samples," *Scientific Reports*, Vol. 9, Article number: 1739 (2019). (2019) 9:1739 | <https://doi.org/10.1038/s41598-018-38056-7>
79. **SH Lee, JY Kim, ST Wereley, and JS Kwon**, "Light-actuated electrothermal microfluidic flow for micro-mixing," *Journal of Micromechanics and Microengineering*, Vol. 29, p. 017003. (2018) DOI: [10.1088/1361-6439/aaf0b1](https://doi.org/10.1088/1361-6439/aaf0b1)
78. **JC Ndukaife, Y Xuan, AGA Nnanna, AV Kildishev, VM Shalaev, ST Wereley, A Boltasseva, ACS Nano**, "High-Resolution Large-Ensemble Nanoparticles Trapping with Multifunctional Thermoplasmonic Nanohole Metasurface," Vol. 12, pp. 5376-84, 2018. DOI: [10.1021/acs.nano.8b00318](https://doi.org/10.1021/acs.nano.8b00318)
77. **KN Clayton, GD Berglund, JC Linnes, TL Kinzer-Ursem, and ST Wereley**, "DNA Microviscosity Characterization with Particle Diffusometry for Downstream DNA Detection Applications," *Analytical Chemistry*, Vol. 89, pages 13334-13341, 2017. DOI: [10.1021/acs.analchem.7b03513](https://doi.org/10.1021/acs.analchem.7b03513)
76. **KN Clayton, D Lee, ST Wereley and TL Kinzer-Ursem**, "Measuring biotherapeutic viscosity and degradation on-chip with particle diffusometry," *Lab Chip*, Vol. 17, pages 4148-4159, 2017. DOI: [10.1039/C7LC00507E](https://doi.org/10.1039/C7LC00507E)
75. **X Kou, ST Wereley, PWS Heng, LW Chan, and MT Carvajal**, "Powder dispersion mechanisms within a dry powder inhaler using microscale particle image velocimetry," *International Journal of Pharmaceutics*, Vol. 514, pp. 445-455, 2016. <https://doi.org/10.1016/j.ijpharm.2016.07.040>
74. **A Mishra, TR Maltais, TM Walter, A Wei, SJ Williams and ST Wereley**, "Trapping and viability of swimming bacteria in an optoelectric trap," *Lab Chip*, Vol. 16, pp. 1039-1046, 2016. DOI: [10.1039/c5lc01559f](https://doi.org/10.1039/c5lc01559f)
73. **JC Ndukaife, AV Kildishev, AGA Nnanna, VM Shalaev, ST Wereley, and A Boltasseva**. "Long-range and rapid transport of individual nano-objects by a hybrid electrothermoplasmonic nanotweezer," *Nature Nanotechnology*, Vol. 11, pages 53–59, 2016. doi:10.1038/nnano.2015.248
72. **A Mishra, JW Khor, KN Clayton, SJ Williams, XD Pan, T Kinzer-Ursem, ST Wereley**, "Optoelectric patterning: Effect of electrode material and thickness on laser-induced AC electrothermal flow," *Electrophoresis*, Vol. 37, pp. 658–665, 2016. DOI: [10.1002/elps.201500473](https://doi.org/10.1002/elps.201500473)
71. **JS Kwon and ST Wereley**, "Light-actuated electrothermal microfluidic motion: experimental investigation and physical interpretation," *Microfluidics and Nanofluidics*, Vol 19, pp 609-619, 2015. DOI: [10.1007/s10404-015-1587-z](https://doi.org/10.1007/s10404-015-1587-z)
70. **R Thakur, AM Amin and ST Wereley**, "On-chip dilution in nanoliter droplets," *Analyst* Vol 140, pp 5855-5859, 2015. DOI: [10.1039/C4AN01829J](https://doi.org/10.1039/C4AN01829J)
69. **A Mishra, V Kulkarni, JW Khor and ST Wereley**, "Mapping surface tension induced menisci with application to tensiometry and refractometry," *Soft matter*, Vol 11, pp 5619-5623, 2015. DOI: [10.1039/C5SM00497G](https://doi.org/10.1039/C5SM00497G)
68. **JC Ndukaife, A Mishra, U Guler, AGA Nnanna, ST Wereley, and A Boltasseva**, "Photothermal Heating Enabled by Plasmonic Nanostructures for Electrokinetic Manipulation and Sorting of Particles," *ACS Nano*, Vol. 8, pp 9035–9043, 2014. <http://dx.doi.org/10.1021/nn502294w>
67. **A Mishra, JS Kwon, R Thakur, and ST Wereley**, "Optoelectrical microfluidics as a promising tool in biology," *Trends in Biotechnology*, Vol 32, pp 414–421, 2014. DOI: <http://dx.doi.org/10.1016/j.tibtech.2014.06.002> [selected as cover article]
66. **C Snoeyink, Sourav Barman, Gordon Christopher, ST Wereley**, "Nano-scale 3D-PTV with Bessel Beam Microscopy," *Meas. Sci. Technol.* (2014) *under review*
65. **C Snoeyink, ST Wereley**, "A novel 3D3C particle tracking method suitable for microfluidic flow measurements," *Exp Fluids* Vol. 54, pp. 1453 (2013). DOI: [10.1007/s00348-012-1453-7](https://doi.org/10.1007/s00348-012-1453-7)
64. **JS Kwon, ST Wereley**, "Towards New Methodologies for Manipulation of Colloidal Particles in a Miniaturized Fluidic Device: Optoelectrokinetic Manipulation Technique," *J. Fluids Eng.*, Vol. 135 (2), 2013. doi:10.1115/1.4023451
63. **AM Amin, R Thakur, S Madren, HS Chuang, M Thottethodi, TN Vijaykumar, ST Wereley, and SC Jacobson**, "Software-programmable continuous-flow multi-purpose lab-on-a-chip," *Microfluidics and Nanofluidics*, 2013. DOI [10.1007/s10404-013-1180-2](https://doi.org/10.1007/s10404-013-1180-2)

62. **C Snoeyink and ST Wereley**, "Single Image Far Field Sub-Diffraction Limit Imaging with Axicon," *Optics Letters*, Vol. 38, pp. 625–627, 2013. DOI 10.1364/OL.38.000625
selected for publication in Virtual Journal for Biomedical Optics, Vol. 8, Iss. 4, Page 625.
61. **CB Park and ST Wereley**, "Rapid generation and manipulation of microfluidics vortex flows induced by AC electrokinetics with optical illumination," *Lab on a Chip*, Vol. 13, pp. 1289-1294, 2013. DOI: 10.1039/c3lc41021h [designated *HOT* article by editor]
60. **SH Lee, DJ Lee, CK Lee, YH Lee, ST Wereley, JH Oh**, "Direct fabrication of microelectrodes on a polymer substrate using selective ultrashort pulsed laser ablation of inkjet-printed Ag lines," *Physica Status Solidi*, Vol. 209, 2012. DOI: 10.1002/pssa.201228269
59. **Z Huang, ES McLamore, HS Chuang, W. Zhang, ST Wereley, JLC Leon, and MK Banks**, "Shear-induced detachment of biofilms from hollow fiber silicone membranes," *Biotechnology and Bioengineering*, Vol. 110, 2012. DOI: 10.1002/bit.24631
58. **JS Kwon SP Ravindranath A Kumar J Irudayaraj and ST Wereley**, "Opto-electrokinetic manipulation for high-performance on-chip bioassays," *Lab on a Chip*, Vol. 12, 2012. DOI: 10.1039/c2lc40662d [cover article] [designated Top 10% by journal]
57. **HS Chuang, LC Gui, ST Wereley**, "Nano-resolution flow measurement based on single pixel evaluation PIV," *Microfluidics and Nanofluidics*, Vol. 13, 2012. DOI 10.1007/s10404-012-0939-1
56. **HS Chuang, R Thakur and ST Wereley**, "Characterizations of gas purge valves for liquid alignment and gas removal in a microfluidic chip", *Journal of Micromechanics and Microengineering*, Vol. 22 (2012). doi:10.1088/0960-1317/22/8/085023
55. **C. Snoeyink and S.T. Wereley**, "Three-dimensional locating of paraxial point source with axicon," *Optics Letters*, Vol. 37, 2012. <http://dx.doi.org/10.1364/OL.37.002058>
54. **P Augustsson, R Barnkob, ST Wereley, H Bruus and T Laurell**, "Automated and temperature-controlled micro-PIV measurements enabling long-term-stable microchannel acoustophoresis characterization," *Lab on a Chip* (2011). DOI: [10.1039/C1LC20637K](https://doi.org/10.1039/C1LC20637K) [cover article]
53. **A Kumar, SJ Williams, HS Chuang, NG Green and ST Wereley**, "Hybrid opto-electric manipulation in microfluidics—opportunities and challenges", *Lab on a Chip* (2011). DOI: [10.1039/c1lc20208a](https://doi.org/10.1039/c1lc20208a)
52. **YH Kim, C Cierpka and ST Wereley**, "Flow field around a vibrating cantilever: coherent structure education by continuous wavelet transform and proper orthogonal decomposition," *J. Fluid Mech.*, Vol. 669, pp. 584–606. (2011). doi:10.1017/S0022112010005318
51. **Wang, C., Sadeghi, F., Wereley, S. T., Rateick Jr., R. G., and Scott, R.**, "Experimental Investigation of Lubricant Extraction from a Micro-Pocket Flow," *Tribology Transactions*, Vol. 54, pp. 404-416 (2011).
50. **A Kumar, C Cierpka, SJ Williams, CJ Kähler and ST Wereley**, "3D3C velocimetry measurements of an electrothermal microvortex using wavefront deformation PTV and a single camera," *Microfluidics and Nanofluidics*, Vol. 10, pp 355-365 (2010). DOI 10.1007/s10404-010-0674-4
49. **HS Chuang, SC Jacobson, and ST Wereley**, "A diffusion-based cyclic particle extractor," *Microfluidics and Nanofluidics* (2010). DOI 10.1007/s10404-010-0589-0
48. **P Chamrathy, SV Garimella and ST Wereley**, "Measurement of the temperature non-uniformity in a microchannel heat sink using microscale laser-induced fluorescence," *International J. Heat and Mass Transfer*, Vol. 53, pp. 3275–3283 (2010). doi:10.1016/j.ijheatmasstransfer.2010.02.052
47. **A Kumar, HS Chuang, and ST Wereley**, "Dynamic Manipulation by Light and Electric Fields: Micrometer Particles to Microliter Droplets," *Langmuir*, Vol. 26, pp. 7656-7660 (2010). DOI: 10.1021/la100614h
46. **A Kumar, JS Kwon, SJ Williams, NG Green, NK Yip, and ST Wereley**, "Optically modulated electrokinetic manipulation and concentration of colloidal particles near an electrode surface," *Langmuir*, Vol. 26, pp 5262–5272 (2010). DOI: 10.1021/la904661y
45. **SJ Williams, A Kumar, NG Green and ST Wereley**, "Optically induced electrokinetic concentration and sorting of colloids," *J. Micromech. Microeng.* 20 (2010) 015022 (11pp).
44. **SJ Williams, CB Park, and ST Wereley**, "Advances and applications on microfluidic velocimetry techniques," *Microfluidics and Nanofluidics*, Vol. 8, p. 709-726 (2010). DOI: 10.1007/s10404-010-0588-1
43. **HS Chuang and ST Wereley**, "Rapid patterning of slurry-like elastomer composites using a laser-cut tape," *J. Micromech. Microeng.* 19 097001 (5pp) doi: 10.1088/0960-1317/19/9/097001
42. **SJ Williams, A Kumar, N Green, and ST Wereley**, "A simple, optically induced electrokinetic method to concentrate and pattern nanoparticles," *Nanoscale* (2009). DOI:10.1039/B9NR00033
41. **CP Wang, HS Chuang, F Sadeghi, and ST Wereley**, "Investigation of Fluid Flow out of Microcavities using μ PIV," *Tribology Transactions*, Vol. 52, pp. 817-32 (2009).

40. **ST Wereley and CD Meinhart**, "Recent Advances in Micro Particle Image Velocimetry," Annual Review of Fluid Mechanics, Vol. 42 (2010).
39. **HS Chuang and ST Wereley**, "Design, fabrication and characterization of conducting PDMS for microheaters and temperature sensors," J. Micromechanics and Microengineering, Vol. 19, 045010 (2009) DOI: [10.1088/0960-1317/19/4/045010](https://doi.org/10.1088/0960-1317/19/4/045010).
38. **P Chamrathy, SV Garimella and ST Wereley**, "Non-Intrusive Temperature Measurement Using Microscale Visualization Techniques," Vol. 47, Exp. Fluids (2009). DOI [10.1007/s00348-009-0646-1](https://doi.org/10.1007/s00348-009-0646-1)
37. **HS Chuang, A Kumar, and ST Wereley**, "Open Optoelectrowetting Droplet Actuation," Applied Physics Letters, Vol. 93, 064104 (2008).
36. **SJ Williams, A Kumar and ST Wereley**, "Electrokinetic patterning of colloidal particles with optical landscapes," Lab on a Chip (2008). DOI: [10.1039/b810787d](https://doi.org/10.1039/b810787d)
35. **A Kumar, SJ Williams and ST Wereley**, "Experiments on opto-electrically generated vortices," Microfluidics and Nanofluidics (2008). DOI: [10.1007/s10404-008-0339-8](https://doi.org/10.1007/s10404-008-0339-8)
34. **SD Peterson, HS Chuang and ST Wereley**, "Three-Dimensional Particle Tracking Using Micro-Particle Image Velocimetry Hardware," Meas. Sci. Technol., Vol. 19, 115406 (2008). DOI: [10.1088/0957-0233/19/11/115406](https://doi.org/10.1088/0957-0233/19/11/115406)
33. **A. Kumar, V. Gorti, H. Shang, G.U. Lee, N.K. Yip, and S.T. Wereley**, "Optical Diffusometry Techniques and Applications in Biological Agent Detection," J. Fluids Eng., Vol. 130, 111401 (2008). DOI: [10.1115/1.2969430](https://doi.org/10.1115/1.2969430)
32. **V.M. Gorti, H. Shang, S.T. Wereley and G.U. Lee**, "Immunoassays in Nanolitre Volume Reactors using Fluorescent Particle Diffusometry," Langmuir, Vol. 24, pp. 2947-2952 (2008).
31. **S.Y. Lee and S.T. Wereley**, "A novel pressure sensing mechanism based on the surface tension and thermodynamic p-v-T relation," J. Micromech. Microeng., Vol. 18, 015020 (2008).
30. **P. Chamrathy, H.K. Dhavaleswarapu, S.V. Garimella, J.Y. Murthy and S.T. Wereley**, "Visualization of convection patterns near an evaporating meniscus using μ PIV," Exp. Fluids, Vol. 44, pp. 431-438 (2008).
29. **S.Y. Lee, J. Jang, and S.T. Wereley**, "Effects of Planar Inlet Plenums on the Hydrodynamically Developing Flows in Rectangular Microchannels of Complementary Aspect Ratios," Microfluidics and Nanofluidics (2008). DOI: [10.1007/s10404-007-0179-y](https://doi.org/10.1007/s10404-007-0179-y)
28. **J. Jang and S.T. Wereley**, "Gaseous slip flow analysis of a micromachined flow sensor for ultra small flow applications," J. Micromech. Microeng., Vol. 17, pp. 229-237 (2007).
27. **De Carlo, A.R. Rokkam, M. ul Haque, A. Wereley, S.T. Irazoqui, P.P. Wells, H.W. McLamb, W.T. Roux, S.J. Porterfield, D.M.**, "Development of a Microfluidic Ion Sensor Array (MISA) to Monitor Gravity-Dependent Calcium Fluxes in Ceratopteris Spores," Gravit. and Space Biol. Bull., Vol 19, pp. 123-124 (2006).
26. **A. ul Haque, M. Rokkam, A. R. De Carlo, S.T. Wereley, H.W. Wells, W.T. McLamb, S.J. Roux, P.P Irazoqui, D.M. Porterfield**, "A MEMS fabricated cell electrophysiology biochip for in silico calcium measurements", Sensors and Actuators B, Vol. 123, pp. 391-399 (2007).
25. **W. Qu, I. Mudawar, S.Y. Lee, S.T. Wereley**, "Experimental and Computational Investigation of Flow Development and Pressure Drop in a Rectangular Micro-Channel," ASME J. Electronic Packaging, Vol. 128, pp. 1-9 (2006).
24. **J. Jang and S.T. Wereley**, "Effective heights and Tangential Momentum Accommodation Coefficients of gaseous slip flows in Deep Reactive Ion Etching rectangular microchannels," J. Micromech. Microeng., Vol. 16, pp. 493-504 (2006).
23. **D. Liu, S. Garimella, and S.T. Wereley**, "Infrared Micro-Particle Image Velocimetry in Silicon-Based Microdevices," Exp. Fluids, Vol. 38, pp. 385-392 (2005).
22. **J. Jang and S.T. Wereley**, "Pressure distributions of gaseous slip flow in straight and uniform rectangular microchannels," Microfluidics and Nanofluidics, Vol. 1, pp 41-51 (2004).
21. **H. Sagi, Y. Zhao, and S.T. Wereley**, "Wide Range Flow Sensor—Vacuum through Viscous Flow Conditions," J. Vac. Sci. and Tech. A, Vol. 22, No. 5, pp 1992-1999 (2004).
20. **Y.H. Kim, S.T. Wereley and C.H. Chun**, "Phase-resolved flow field produced by a vibrating cantilever plate between two endplates," Phys. Fluids, Vol. 16, 145-162 (2004).
19. **L. Gui, S.T. Wereley, and Y.H. Kim**, "Advances and applications of the digital mask technique in particle image velocimetry experiments," Meas. Sci. Technol. Technol., Vol. 14, pp 1820–1828 (2003).
18. **C.D. Meinhart and S.T. Wereley**, "Theory of Diffraction-Limited Resolution in Micro Particle Image Velocimetry," Meas. Sci. Technol., Vol. 14, pp 1047-1053, (2003).

17. **S. Devasenathipathy, J.G. Santiago, S.T. Wereley, C.D. Meinhart, and K. Takehara**, “Particle imaging techniques for microfabricated fluidic systems,” *Exp. Fluids*, Vol. 34, pp 504-514 (2003).
16. **S.T. Wereley and L. Gui**, “A correlation-based central difference image correction (CDIC) method and application in a four-roll mill flow PIV measurement,” *Exp. Fluids*, Vol. 34, pp 42-51, (2003).
15. **S.T. Wereley, A. Akonur, and R.L. Lueptow**, “Particle–fluid velocities and fouling in rotating filtration of a suspension,” *J. Membrane Science*, Vol. 209, No. 2, pp 469-484 (2002).
14. **V. Hohreiter, S.T. Wereley, M. Olsen, and J.Chung**, “Cross-correlation analysis for temperature measurement,” *Meas. Sci. Tech.*, Vol. 13, pp. 1072-1078, (2002).
13. **L. Gui and S.T. Wereley**, “A correlation-based continuous window shift technique for reducing the peak locking effect in digital PIV image evaluation,” *Exp. Fluids*, Vol. 32, pp 506-517, (2002).
12. **S.W. Stone, C.D. Meinhart, and S.T. Wereley**, “A Microfluidic-based Nanoscope,” *Exp. Fluids*, Vol. 33, No. 5, pp 613-619 (2002).
11. **S.T. Wereley, L. Gui, and C.D. Meinhart**, “Advanced Algorithms for Microscale Velocimetry,” *AIAA J.*, Vol. 40, No. 6, pp. 1047-1055 (2002).
10. **R. Gomez, R. Bashir, A. Sarakaya, M.R. Ladisch, J. Sturgis, J.P. Robinson, T. Geng, A.K. Bhunia, H.L. Apple, and S.T. Wereley**, “Microfluidic Biochip for Impedance Spectroscopy of Biological Species,” *Biomedical Microdevices*, Vol. 3, No. 3, 201-209 (2001).
9. **S.T. Wereley and C.D. Meinhart**, “Second-Order Accurate Particle Image Velocimetry,” *Exp. Fluids*, Vol. 31, 258-268, (2001).
8. **C.D. Meinhart, S.T. Wereley, and J.G. Santiago**, “A PIV Algorithm for Estimating Time-Averaged Velocity Fields,” *J. Fluids Eng.*, Vol. 122, 285-289, (2000).
7. **C.D. Meinhart, S.T. Wereley, M.H.B. Gray**, “Volume illumination for two-dimensional particle image velocimetry,” *Meas. Sci. Tech.*, Vol. 11, 809-814, (2000).
6. **S.T. Wereley and R.M. Lueptow**, “Velocity field for Taylor-Couette flow with an axial flow,” *Phys. Fluids*, Vol. 11, No. 12, 3637-3649 (1999).
5. **C.D. Meinhart, S.T. Wereley, and J.G. Santiago**, “PIV Measurements of a Microchannel Flow,” *Exp. Fluids*, Vol. 27, No. 5, 414-419, (1999).
4. **S.T. Wereley and R.M. Lueptow**, “Inertial particle motion in a Taylor Couette rotating filter,” *Phys. Fluids*, Vol. 11, No. 2, 325-333, (1999).
3. **J.G. Santiago, S.T. Wereley, C.D. Meinhart, D. Beebee, and R.J. Adrian**, “A particle image velocimetry system for microfluidics,” *Exp. Fluids*, Vol. 25, No. 4, 316-319, (1998).
2. **S.T. Wereley and R.M. Lueptow**, “Spatio-temporal character of nonwavy and wavy Taylor Couette flow,” *J. Fluid Mech.* Vol. 364, 59-80, (1998).
1. **S.T. Wereley and R.M. Lueptow**, “Azimuthal velocity in supercritical circular Couette flow,” *Exp. Fluids*, Vol. 18, pp. 1-9, (1994).

Patents

9. **JC Ndukaife, AV Kildishev, AA Nnanna, A Boltasseva, VM Shalaev, ST Wereley**, “Multi-site particle sensing system,” US Patent 10,436,780, Oct 8, 2019.
8. **JC Ndukaife, A Boltasseva, AA Nnanna, ST Wereley, A Kildishev, VM Shalaev**, “System and method for manipulation of particles,” US Patent 9,778,400, Oct 3, 2017.
7. **S.T. Wereley and C. Snoeyink**, “Single image super-resolution microscopy and telescope systems,” US Patent 9,494,785, Nov 15, 2016.
6. **S.T. Wereley, A.A. Nnanna, A. Boltasseva, J.C. Ndukaife, A. Mishra**, “Hybrid device for on-chip concentration, manipulation, sorting and sensing of particles on a plasmonic substrate,” US Patent 9,443,632, Sep 13, 2016.
5. **A.M.E. Amin, H.S. Chuang, S.T. Wereley, M.S. Thottethodi, T.N. Vijaykumar, S.C. Jacobson**, “Variable volume mixing and automatic fluid management for programmable microfluids,” US Patent 9,211,539, Dec 15, 2015.
4. **H.S. Chuang, A. Kumar, S.T. Wereley**, “Open optoelectrowetting droplet actuation device and method,” US Patent 8,753,498, June 17, 2014.
3. **H.S. Chuang and S.T. Wereley**, “Microfluidic Purge Valve,” US Patent 8,376,317, Feb 19, 2013.
2. **C.D. Meinhart, J.G. Santiago, R.J. Adrian, and S.T. Wereley**, “Depth-of-Field Micron Resolution Velocimetry with Pulsed Images of Injected Solid Particles,” US Patent 7,057,198, June 6, 2006.
1. **C.D. Meinhart, J.G. Santiago, R.J. Adrian, and S.T. Wereley**, “Micron Resolution Particle Image Velocimeter,” US Patent 6,653,651, Nov. 25, 2003.

Articles About Our Microfluidics Work

BE DiGregorio, “Nanoscale Technology Separates Microbes by Size Mainly, Plus Charge,” Vol. 8, No. 4, p. 155, April 2013.

Trade Publication Articles

S. Wereley, E. Robinson, T. Lundy, “Microfluidics—The Birth of an Industry,” R&D Magazine, Vol. 49, No. 2, pp. 44-46 (2006).

A. ul Haque, M. Rokkam, A. R. De Carlo, S. T. Wereley, H.W. Wells, W.T. McLamb, S.J. Roux, D.M. Porterfield, “Development of a MEMs based *in silico* cell physiology system for measuring real-time gravity responses in single cells,” NASA Tech Briefs (2006).

V. Gorti and S.T. Wereley, “Benefits of microscale particle image velocimetry,” Micro/Nano, Vol. 8, No. 9, pp. 18-19, (2003).

Conference Presentations and Papers *26 invited or keynote*

190. **KN Clayton, TJ Moehling, D Lee, K Byers, M Henderson, A Witten, G Berglund, R Preston, ST Wereley, JC Linnes, TL Kinzer-Ursem**, “Development of a New Method and Platform for Point-of-Care Pathogen Detection,” Society for Laboratory Automation and Screening, San Diego, California, February 5, 2018. Poster.

189. **KN Clayton, TJ Moehling, ST Wereley, JC Linnes, TL Kinzer-Ursem**, “Development of a New Method and Platform for Point-of-Care Pathogen Detection,” Society for Laboratory Automation and Screening, San Diego, California, 2018. Poster.

188. **KN Clayton, TJ Moehling, D Lee, GD Berglund, AJ Witten, ST Wereley, JC Linnes, TL Kinzer-Ursem**, “Detecting Pathogens with Viscosity-Based Measurements,” Miniaturized Systems for Chemistry and Life Sciences (μ TAS), Savannah, Georgia, 2017. Oral Presentation.

187. **KN Clayton, TJ Moehling, GD Berglund, AJ Witten, D Lee, ST Wereley, JC Linnes, TL Kinzer-Ursem**, “A Viscosity-Based Measurement System for Pathogen Detection,” American Institute of Chemical Engineers, Minneapolis, MN, 2017. Oral Presentation.

186. **KN Clayton, TJ Moehling, AJ Witten, GD Berglund, D Lee, ST Wereley, JC Linnes, TL Kinzer-Ursem**, “A Viscosity-Based Measurement System for Pathogen Detection,” Biomedical Engineering Society, Phoenix, AZ, 2017. Oral Presentation.

185. **KN Clayton, ST Wereley and TL Kinzer-Ursem**, “Implementation of Particle Diffusometry for Bionanotechnology Measurements and Applications,” International Conference on Bioengineering and Nanotechnology (Chicago, IL) 2017. (*Poster contest winner*)

184. **JC Ndukaife, AG Agwu Nnanna, AV Kildishev, VM Shalaev, ST Wereley (Invited)**, Alexandra Boltasseva, “Shaping the future of plasmon nano-optical tweezing”, (Gordon Research Conference on Plasmonics and Nanophotonics, 2016)

183. **ST Wereley (Plenary Keynote)**, “Opto-electric Droplet and Particle Physics,” Joint Symposium of the 18th Annual Conference of Chinese Society of Micro & Nano Technology and Microsystems & Nanoengineering Summit 2016 (CSMNT2016 & MAN2016), July 28–31, 2016 (Beijing, China).

182. **ST Wereley (Keynote)**, “Visualizing Microscale Electrothermal Vortices,” International Symposium on Flow Visualization, June 19-22, 2016 (Gatlinburg, TN).

181. **ST Wereley**, “Droplet and Particle Technologies: Entrepreneurship Opportunities,” The Second North Latitude 45 ° Innovative Entrepreneurial Forum, June 15-17, 2016 (Harbin, China).

180. **ST Wereley (Keynote)**, “,” International Conference of Microfluidics, Nanofluidics and Lab-on-a-Chip, June 10-12, 2016 (Dalian, China).

179. **ST Wereley (Invited)**, “Non-contact Micro/Nano Object Manipulation,” TechConnect World Innovation Conference and Expo 2016, May 23-25, 2016 (National Harbor, Maryland).

178. **Justus C. Ndukaife, A. G. Agwu Nnanna, Alexander V. Kildishev, Vladimir M. Shalaev, Steven T. Wereley, Alexandra Boltasseva**, “On-demand rapid transport and stable trapping of nanoparticles by a hybrid electrothermoplasmonic nanotweezer”, (presented at SPIE Optics and Photonics 2016)

177. **Justus C. Ndukaife, A. G. Agwu Nnanna, Alexander V. Kildishev, Vladimir M. Shalaev, Steven T. Wereley, Alexandra Boltasseva**, “Controlled Rapid Delivery and On-chip Trapping of Nanoparticles by a Hybrid Electrothermoplasmonic Nanotweezer”, (presented at CLEO 2016)

176. **Justus C. Ndukaife, A. G. Agwu Nnanna, Vladimir M. Shalaev, Steven T. Wereley, Alexandra Boltasseva**, “The hybrid electrothermoplasmonic nanotweezer: A new paradigm in nanomanipulation”, (presented at MRS Spring Meeting, Phoenix, AZ, March 2016)

175. **Justus C. Ndukaife, A. G. Agwu Nnanna, Steven T. Wereley, Vladimir M. Shalaev, Alexandra Boltasseva**, “Plasmofluidic Device for On-chip Concentration, Manipulation and Sensing of Particles using TiN Plasmonic Nanoantenna Array”, (presented at MRS Fall Meeting, Boston, MA, December 2015)
174. **Justus C. Ndukaife, A. G. Agwu Nnanna, Alexander V. Kildishev, Vladimir M. Shalaev, Steven T. Wereley, Alexandra Boltasseva**, “Hybrid Electroplasmonic Nanotweezer (HENT): Shaping the Future of Nanomanipulation”, (poster presented at ASME IMECE Micro/Nano Forum 2015, Houston Texas, USA, November 13-19, 2015). (Best paper award)
173. **Justus C. Ndukaife, A. G. Agwu Nnanna, Alexandra Boltasseva, Steven T. Wereley**, “Versatile Plasmofluidic Device for Long-range Transport and On-chip Capture of Particles”, (oral presentation at 11th International Symposium on PIV, Santa Barbara, CA September 14-16, 2015)
172. **Justus C. Ndukaife, Alexander V. Kildishev, A. G. Agwu Nnanna, Steven T. Wereley, Vladimir M. Shalaev, Alexandra Boltasseva** (*Invited*), “Electrothermoplasmonic Flow for Plasmon-assisted Optical Trapping”, (invited talk for 2015 SPIE Conference on Plasmonics: Metallic Nanostructures and Their Optical Properties XIII, San Diego, California, USA, August 9-13, 2015)
171. **Justus C. Ndukaife, Alexander V. Kildishev, A. G. Agwu Nnanna, Steven T. Wereley, Vladimir M. Shalaev, Alexandra Boltasseva**, “Hybrid Electroplasmonic Nanotweezer (HENT): Versatile Plasmofluidic Device for On-chip Capture, Manipulation and Printing of Particles on Plasmonic Hotspots”, (poster presented at Summer School on Complex Photonics at the International School of Physics, Enrico Fermi, Varenna, Italy, July 13-18, 2015)
170. **Justus C. Ndukaife, Alexander V. Kildishev, A. G. Agwu Nnanna, Steven T. Wereley, Vladimir M. Shalaev, Alexandra Boltasseva**, “Versatile Plasmofluidic Device for On-chip Concentration, Manipulation and Sensing of Particles in Suspensions”, (poster presented at the Gordon Research Conference on Microfluidics, Mount Snow, VT, June 2015)
169. **Justus C. Ndukaife, Alexander V. Kildishev, A. G. Agwu Nnanna, Steven T. Wereley, Vladimir M. Shalaev, Alexandra Boltasseva**, “Plasmon-Assisted Optoelectrofluidics”, (oral presentation AW3K.5, CLEO /A&T Topical Review - Optofluidics Microsystems I, 2015 Conference, San Jose, CA, USA, May 10-15, 2015)
168. **Justus C. Ndukaife, Avnish Mishra, Urcan Guler, A. G. Agwu Nnanna, Steven T. Wereley, Alexandra Boltasseva**, “Photothermal heating enabled by plasmonic nanoantennas for electrokinetic manipulation and sorting of submicron particles”, (oral presentation FTh1K.2, CLEO 2014, San Jose, CA, USA, June 8-13, 2014)
167. **Justus C. Ndukaife, Avnish Mishra, Urcan Guler, A. G. Agwu Nnanna, Steven T. Wereley, Alexandra Boltasseva**, “Thermoplasmonics for Optofluidics”, NSF Center for Photonics and Multiscale Nanomaterials IRG2 Review Meeting, March 28, 2014, Purdue University, W/L, USA
166. **Justus C. Ndukaife, Avnish Mishra, Urcan Guler, A. G. Agwu Nnanna, Steven T. Wereley, Alexandra Boltasseva**, “A new Plasmofluidic Device for On-chip Concentration, Manipulation and Sorting of Particles on a Plasmonic Substrate”, (NSF Center for Photonics and Multiscale Nanomaterials All-Hands Meeting, September 26, 2014, University of Michigan, Ann Arbor, USA)
165. **K Clayton, A Mishra and ST Wereley**, “Rapid Electrokinetic Patterning for Vertical Stacking and Manipulation of Particles,” Pres. #R10.00009, Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting (San Francisco, CA, Nov. 2014).
164. **A Mishra, S Williams and ST Wereley**, “Electrokinetic Patterning of Metal Nanoparticles and Nanowires,” Pres. #R10.00006, Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting (San Francisco, CA, Nov. 2014).
163. **R Thakur, A Amin and ST Wereley**, “Convection-diffusion driven concentration gradients in nanolitre droplets for microfluidic screening applications,” Pres. #D10.00001, Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting (San Francisco, CA, Nov. 2014).
162. **JW Khor, A Mishra, X Pan and ST Wereley**, “Investigation of Material Dependence in Electrothermal Vortex,” Pres. #A10.00004, Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting (San Francisco, CA, Nov. 2014).
161. **SJ Williams, A Mishra, V Velasco and ST Wereley**, “Electrothermal Flow Patterns Generated by Resistive Heaters”, 12th International Conference on Nanochannels, Microchannels, and Minichannels, Chicago, USA, August 3-7, 2014.
160. **JC Ndukaife, A Mishra, U Guler, AA Nnanna, ST Wereley, and A Boltasseva**, “Photothermal heating enabled by plasmonic nanoantennas for electrokinetic manipulation and sorting of submicron particles,” CLEO, San Jose, USA, June 8-13, 2014.

159. **A Mishra, V Kulkarni, JW Khor and ST Wereley**, "Low Interfacial Tension Measurement with Synthetic Schlieren Imaging," Pres. # E32.00001, Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting (Pittsburgh, PA, Nov. 2013).
158. **ST Wereley and A Mishra**, "Hybrid Opto-electric Manipulation of Macromolecules," Pres. # E6.00001, Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting (Pittsburgh, PA, Nov. 2013).
157. **SJ Williams, V Velasco, A Mishra, J-S Kwon, and ST Wereley**, "Rapid electrokinetic patterning (REP): manipulating colloids from nanoparticles to bacteria," 2013 Kentucky Nano Symposium, Louisville, KY, Aug. 16-17, 2013.
156. **C Snoeyink and ST Wereley**, "Bessel Beam Microscopy: Three Dimensional Particle Tracking with Super-Resolution," Particle Image Velocimetry 2013 (Delft, The Netherlands 1-3 July, 2013).
155. **A Mishra, V Kulkarni, JW Khor and ST Wereley**, "Surface Tension Induced Meniscus Measurement using Free Surface Synthetic Schlieren," Particle Image Velocimetry 2013 (Delft, The Netherlands 1-3 July, 2013).
154. **ST Wereley (Invited)**, "Opto-electric Manipulation of Particles and Droplets," 8th World Conference on Experimental Heat Transfer, Fluid Mechanics and Thermodynamics *ExHFT-8* (June 16-20, 2013 Lisbon, Portugal).
153. **JS Kwon, ST Wereley**, "Theoretical and Experimental Characterization of an Electrothermal Microfluidic Flow," Advances in Microfluidics and Nanofluidics (Notre Dame, IN, May 24-26, 2013).
152. **A Mishra, K Clayton, R Thakur, SJ Williams, A Kumar, ST Wereley**, "Rapid Optoelectrokinetic Manipulation of Nanoparticles," Advances in Microfluidics and Nanofluidics (Notre Dame, IN, May 24-26, 2013).
151. **JS Kwon, V Velasco, SJ Williams, ST Wereley**, "Rapid Electrokinetic Patterning Technique for Manipulation of Colloids and Microorganisms and its Technical Advancement," Advances in Microfluidics and Nanofluidics (Notre Dame, IN, May 24-26, 2013).
150. **JS Kwon, V Velasco, SJ Williams, ST Wereley**, "Rapid Electrokinetic Patterning Technique for Manipulation of Colloids and Microorganisms, and its Technical Advancement," 2nd European Optical Society Conference on Optofluidics *EOSOF 2013* (Munich, Germany, May 13-15, 2013).
149. **A Mishra, R Thakur, SJ Williams, A Kumar, ST Wereley**, "Optoelectrokinetic trapping of Gold Nanoparticles," 2nd European Optical Society Conference on Optofluidics *EOSOF 2013* (Munich, Germany, May 13-15, 2013).
148. **ST Wereley (Invited)**, "A Multiscale Suite of Particle and Droplet Manipulation Technologies," ASME/IMECE, IMECE2012-85373, Houston, TX, Nov 2012.
147. **JS Kwon and ST Wereley**, "A new dimensionless variable for electrothermal microfluidic flow," ASME/IMECE, IMECE2012-94082, Houston, TX, Nov 2012.
146. **JP Kim, JS Kwon and ST Wereley**, "Experimental Results of Electrothermal Vortex in Parallel ITO-glass with High Conductivity Medium and AC electric field and Laser," ASME/IMECE, IMECE2012-94075, Houston, TX, Nov 2012.
145. **C Park and ST Wereley**, "Twin Vortex Flow Generation under a Non-Uniform Alternating Electric Field and Optical Illumination," IMECE2012-93989, ASME/IMECE, Houston, TX, Nov 2012. *Best poster, Fluids Engineering Division, Micro Nano Forum.*
144. **C Park and ST Wereley**, "AC electrokinetic flow generation with various types of electrodes," ASME/IMECE, IMECE2012-87858, Houston, TX, Nov 2012.
143. **ST Wereley (Invited)**, "Lab on a Chip Applications of Optoelectric Particle and Droplet Manipulation," ICNMM2012-73268, 10th International Conference on Nanochannels, Microchannels, and Minichannels, July 2012, Puerto Rico.
142. **JS Kwon and ST Wereley**, "μPIV characterization of a toroidal microfluidic vortex driven by opto-electrokinetic methods," Abstract D18.05, Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting (Baltimore, MD, Nov. 2011).
141. **ST Wereley**, "Random uncertainty estimates of PIV measurements using correlation statistics," Abstract H26.02, Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting (Baltimore, MD, Nov. 2011).
140. **JS Kwon and ST Wereley**, "INVESTIGATION FOR TOROIDAL MICROFLUIDIC VORTICES GENERATED BY A LASER ILLUMINATION APPLICATION IN AN UNIFORM ELECTRIC FIELD," IMECE/ASME, IMECE2011-62743, Denver, CO, Nov. 2011.
139. **K Han, ST Wereley, JH Oh, Z Zhang**, "STUDY ON FACTORS IN COFFEE-RING STRUCTURE FORMATION USING PIV METHOD," IMECE/ASME, IMECE2011-63231, Denver, CO, Nov. 2011.
138. **SJ Williams, JS Kwon, SP Ravindranath, J Irudayaraj, and ST Wereley**, "Rapid concentration and manipulation of colloids and microorganisms through double layer polarization electrokinetics," poster

- T32A, 15th International Conference on Miniaturized Systems for Chemistry and Life Sciences (Micro-TAS, Seattle, WA, Oct 2011).
137. **ST Wereley (invited)**, "Software Programmable Lab-on-a-Chip Applications and Optimization," Lab-on-a-Chip World Congress (San Francisco, CA, Sep 2011).
 136. **R Thakur, SJ Williams, R Cohn, J Rathfon, JF Berret, M Yan, ST Wereley**, "Patterning of non-spherical particles onto electrode surface: Study of orientation behavior under viscous fluid and AC electrokinetic forces," Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting (Long Beach, CA, Nov. 2010).
 135. **C Snoeyink and ST Wereley**, "A Novel 3 Dimension 3 Component Micro-PIV System," Pres. # RW.00007, Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting (Long Beach, CA, Nov. 2010).
 134. **C Park and ST Wereley**, "Using TEM For the Nano-scale Particle Image Velocimetry," IMECE/ASME, IMECE2010-38835, Vancouver, CA, Nov. 12-18, 2010.
 133. **JS Kwon, S Ravindranath, A Kumar, J Irudayaraj, and ST Wereley**, Application of an optically induced electrokinetic manipulation technique on live bacteria," IMECE/ASME, IMECE2010-39324, Vancouver, CA, Nov. 12-18, 2010.
 132. **R Thakur and ST Wereley**, "Optically Induced Rapid Electrokinetic patterning of Non-spherical particles- Study of The Colloidal Phase Transition," IMECE/ASME, IMECE2010-39665, Vancouver, CA, Nov. 12-18, 2010.
 131. **SJ Williams and ST Wereley**, "Experiments and simulation of a dielectrophoretically oscillating microparticle," Paper 1598, Proceedings of the 15th International Symposium on the Application of Laser Techniques to Fluid Mechanics, (Lisbon, Portugal), July 5-8, 2010.
 130. **JS Kwon, A Kumar, SJ Williams and ST Wereley**, "A study for opto-electrokinetic forces of colloidal particles on an electrode surface using Voronoi and Delaunay tessellation," Paper 1775, Proceedings of the 15th International Symposium on the Application of Laser Techniques to Fluid Mechanics, (Lisbon, Portugal), July 5-8, 2010.
 129. **A Kumar, C Cierpka, SJ Williams, C J Kahler and ST Wereley**, "3D3C velocimetry measurements of an electrothermal microvortex using wavefront deformation PTV and a single camera," Paper 1594, Proceedings of the 15th International Symposium on the Application of Laser Techniques to Fluid Mechanics, (Lisbon, Portugal), July 5-8, 2010.
 128. **ST Wereley (invited)**, "Microscale Velocity and Temperature Measurement Techniques," American Institute of Aeronautics and Astronautics 40th Fluid Dynamics Conference (June 28-July 1, 2010, Chicago, IL).
 127. **Smith, C.T., Thakur, R., Chuang, H.S., Kumar, A., Wereley, S.T.**, "A hybrid optoelectric device for multi-scale particle and droplet manipulation," Proceedings of SPIE, Vol.7762, pp.68, June, 2010.
 126. **HS Chuang, A Kumar, CT Smith, and ST Wereley**, "Rapid and dynamic multiscale manipulation based on a hybrid optoelectric device," Trends in Optical Micromanipulation II, Innsbruck, Austria, April 11-16, 2010.
 125. **ST Wereley, SJ Williams, A Kumar, CH Chuang, JS Kwon and CT Smith (invited)**, "Opto-electric Manipulation of Droplets and Colloids for Material Assembly," Materials Research Society Spring Meeting (San Francisco, CA April 6-8, 2010).
 124. **HS Chuang and ST Wereley (invited)**, "Microfluidic gas purge valves," MNHMT/ASME, MNHMT2009-18534, Shanghai, China, Dec. 18-21, 2009.
 123. **A Kumar, SJ Williams, and ST Wereley** "Micro and nano particle manipulation using optically modulated electrokinetic flows" ASME 2009 Micro/Nanoscale Heat and Mass Transfer International Conference, MNHMT2009-18493 Shanghai, China, Dec. 18-21, 2009. (*Awarded "Excellent Paper" distinction—3 given among 340 submissions*)
 122. **HS Chuang, A Kumar, and ST Wereley**, "Light-Enabled Droplet Manipulations," Gallery of Fluid Motion, APS/DFD 62nd Annual Meeting, Minneapolis, MN, USA, Nov. 22-24, 2009. (APS highlighted video)
 121. **HS Chuang, ST Wereley, and SC Jacobson**, "An automated cyclic particle extractor," IMECE/ASME, IMECE2009-10422, Lake Buena Vista, FL, USA, Nov. 13-19, 2009.
 120. **A Kumar, SJ Williams, JS Kwon, NG Green, NK Yip, and ST Wereley**, "Optically induced rapid electrokinetic patterning: a study of the operational regimes and dominant forces" *Proc. ASME/IMECE*, Lake Buena Vista, FL, Nov. 13-19, 2009.
 119. **SJ Williams, A Kumar, ST Wereley**, "Continuous colloidal concentration and patterning with optically induced AC electrokinetics" *2009 AICHE Annual Meeting, Annual Meeting of the American Electrophoresis Society*, Nashville, TN, Nov. 8-13, 2009.

118. **ST Wereley**, (*invited*), "Massively parallel opto/electric manipulation of colloidal particles," Laser Science XXV (Oct. 11-15, 2009, San Jose, CA).
117. **ST Wereley** (*invited*), "Micrometer and nanometer spatial resolution with μ PIV," 25 Years of Particle Image Velocimetry in Aerodynamics (Sept. 23-25, 2009, Göttingen, Germany).
116. A Kumar, **SJ Williams**, and ST Wereley, "A novel optically driven electrokinetic technique for manipulating nanoparticles" *SPIE Symposium on SPIE Nanoscience + Engineering*, Vol. *7400*, paper 74000V, (San Diego, CA, Aug. 2-6, 2009).
115. **SJ Williams, A Kumar, and ST Wereley**, "Optically induced electrohydrodynamics and electrokinetic colloidal aggregation" Proc. ASME/FEDSM, Paper#2009-78121 (Vail, CO), Aug. 2-6, 2009.
114. **SJ Williams and ST Wereley**, "Hydrodynamic investigations of a dielectrophoretically trapped and agitated microparticle" Proc. ASME/FEDSM, Paper#2009-78068 (Vail, CO), Aug. 2-6, 2009.
113. **ST Wereley, E Judokusumo, A Kumar, and SJ Williams** (*invited*), "Velocity Fields in Electrooptically-Induced Fluid Flows," Proc. Seventh Int. ASME Conf. on Nanochannels, Microchannels and Minichannels (June 22-24, 2009, Pohang, South Korea).
112. **A Kumar, SJ Williams and ST Wereley**, "Optically Modulated Rapid Electrokinetic Patterning For Micro and Nano Particles," Proc. European Conferences on Biomedical Optics, Vol. *7371*, paper 737110 (14-18 June 2009, Munich, Germany).
111. **ST Wereley, SJ Williams, and A Kumar** (*invited*), "Optoelectric Micro/Nano Particle Manipulation for Biological Applications," presented at the LifeChips 2009 Symposium (UC-Irvine, Jan. 2009).
110. **ST Wereley** (*invited*), "Flow Diagnostics for Micro/Nano Device Characterization," presented at the International Conference on Fascinating Advancement in Mechanical Engineering 2009 (Mepco-Schlenk Engineering College, Sivakasi, TN, India, Dec. 2008).
109. **SJ Williams, SD Peterson, A Kumar, and ST Wereley**, "Three dimensional transport of an optically induced electrothermal microvortex," Pres. # LN.00003, Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting (San Antonio, TX, Nov. 2008).
108. **E Judokusumo, A Kumar, SJ Williams, and ST Wereley**, "Analysis of Optically Induced Fluid Flows in Electric Fields," Proc. ASME/IMECE 2008-66935 (October 31-November 6, 2008 Boston, 2008, Boston).
107. **HS Chuang, A Amin, M Thodentoddi, T Vijaykumar, S Jacobson, and ST Wereley**, "POLYDIMETHYLSILOXANES (PDMS) PERISTALTIC PUMP CHARACTERIZATION FOR PROGRAMMABLE LAB-ON-A-CHIP APPLICATIONS", Proc. 12th International Conference on Miniaturized Systems for Chemistry and Life Sciences (μ TAS2008), San Diego, USA, Oct 12-16, 2008.
106. **A Kumar, SJ Williams, and ST Wereley**, "Rapid electrokinetic patterning of colloids using optical landscapes" Proc. 12th International Conference on Miniaturized Systems for Chemistry and Life Sciences (μ TAS2008), San Diego, USA, Oct 12-16, 2008.
105. **SJ Williams, P Chamarchy and ST Wereley**, "Laser-Induced Fluorescence Thermometry for Joule Heating in AC Electrokinetic Chips," Proc. ASME-FED paper # 55175 (Jacksonville, FL, Aug. 10-14), 2008.
104. **SJ Williams, A Kumar and ST Wereley**, "Rapid colloidal assembly with optically induced electrokinetic forces," presented at University Government Industry Micro/nano Symposium, Louisville, KY, July 13-16, 2008.
103. **R Nasarek, ST Wereley, P Stephan**, "Flow field measurements near a moving meniscus of a capillary flow with micro Particle Image Velocimetry (μ PIV), Proc. of the Sixth International Conference on Nanochannels, Microchannels, and Minichannels, Darmstadt, Germany, June 23-25, 2008.
102. **AM Amin, M Thottethodi, TN Vijaykumar, ST Wereley and SC Jacobson**, "Automatic Volume Management for Programmable Microfluidics," Programming Language Design and Implementation Conference (Tucson, AZ), paper #13, June 7-13, 2008.
101. **Z Huang, HS Chuang, ST Wereley and MK Banks**, "Effect of biofilm surface roughness on thickness of hydrodynamic boundary layer and coefficient of friction," Paper Coll-476, American Chemical Society Spring Meeting (New Orleans, LA), Apr. 6-10, 2008.
100. **A Kumar, NK Yip and ST Wereley**, "Particle transport on periodic potential landscapes," Pres. # EA.00004, Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting (Salt Lake City, UT, Nov. 2007).
99. **P Chamarchy, ST Wereley and SV Garimella**, "Microscale laser-induced fluorescence method for non-intrusive temperature measurement," Proc. ASME/IMECE, Paper #2007-41935 (Seattle, WA), Nov. 11-15, 2007.
98. **H.S. Chuang and S.T. Wereley**, "In-Vitro Wall Shear Stress Measurements for Microfluid Flows by using Second-order SPE micro-PIV," Proc. ASME/IMECE, Paper #2007-41171 (Seattle, WA), Nov. 11-15, 2007.

97. **R. Muddu and S.T. Wereley**, "Numerical Simulation of Optical Trap systems," Proc. ASME/IMECE, Paper #2007-42411 (Seattle, WA), Nov. 11-15, 2007.
96. **S.J. Williams, S.T. Wereley**, "Field Flow Analysis of Dielectrophoretically Suspended Particles," Proc. ASME/IMECE, Paper #2007-41252 (Seattle, WA), Nov. 11-15, 2007.
95. **A.M. Amin, M. Thottethodi, T.N. Vijaykumar, S.T. Wereley and S.C. Jacobson**, "Aquacore: A General-Purpose Architecture for Programmable Microfluidics," paper T33C, μ YAS (Paris, France), Oct. 7-11, 2007.
94. **H.S. Chuang and S.T. Wereley**, "Nanometer-resolution and second-order accurate SPE micro-PIV," 7th International Symposium on Particle Image Velocimetry (Rome, Italy), Sept. 11-14, 2007.
93. **A.M. Amin, M. Thottethodi, T.N. Vijaykumar, S. Wereley and S.C. Jacobson**, "AquaCore: A programmable Architecture for Microfluidics," Proc. 34th Annual International Symposium on Computer Architecture (ISCA) (San Diego, CA), pages 254-265, June 10-13, 2007.
92. **S.T. Wereley (invited)**, "Interesting Problems in Microflows," Schloß Dagstuhl-Seminar 07121: *Experimental Fluid Mechanics, Computer Vision & Pattern Recognition* (International Conference and Research Center for Computer Science, Wadern, Germany), March 18 – 23, 2007.
91. **A.H. Ewing, S. Kim; S.T. Wereley**, "Mediating Fluidic Self- Assembly with optical traps," Proc. AIChE Annual Meeting, paper 35E, (San Francisco, CA) Nov. 12-17, 2006.
90. **S.T. Wereley (keynote)**, "Micro and Nanoscale Flow Measurement," 33rd National and 3rd International Conference on Fluid Mechanics and Fluid Power (Mumbai, India), Dec. 7-9, 2006.
89. **A. Kumar, V. Gorti, S.T. Wereley**, "Biological Agent Detection Using Optical Diffusometry Methods," Proc. ASME/IMECE, Paper #2006-13267 (Chicago, IL), Nov. 5-10, 2006.
88. **H.K. Dhavaleswarapu, P. Chamrathy, S.V. Garimella, J.Y. Murthy, and S.T. Wereley**, "Experimental Investigation of Thermocapillary Convection near an Evaporating Meniscus," Proc. ASME/IMECE, Paper #2006-13901 (Chicago, IL), Nov. 5-10, 2006.
87. **P. Chamrathy, S.T. Wereley and S.V. Garimella**, "Simultaneous Measurement of Temperature and Velocity Using μ PIV," Proc. ASME/IMECE, Paper #2006-14079 (Chicago, IL), Nov. 5-10, 2006.
86. **H.-S. Chuang, S. T. Wereley**, "Study of Single Pixel Evaluation for Experimental Measurements in a Microchannel," Proc. ASME/IMECE, Paper #2006-14517 (Chicago, IL), Nov. 5-10, 2006.
85. **C. Park, S.T. Wereley, O. Campanella, D.E. Nivens, K.M. Little, H. Sumali**, "Measurements of Mechanical Properties of Human Red Blood Cells," Proc. ASME/IMECE, Paper #2006-15175 (Chicago, IL), Nov. 5-10, 2006.
84. **S.T. Wereley (invited)**, "Micro and Nanoscale Flow Measurement and Visualization," Proceedings of the 12th International Symposium on Flow Visualization (Göttingen, Germany), Sept. 10-14, 2006.
83. **P. Chamrathy, H.K. Dhavaleswarapu, S.V. Garimella, J.Y. Murthy and S.T. Wereley**, "Visualization of convection patterns near an evaporating meniscus using μ PIV," Proceedings of the 12th International Symposium on Flow Visualization (Göttingen, Germany), Sept. 10-14, 2006.
82. **H.-S. Chuang, S. T. Wereley, C. D. Meinhart, D. Tretheway**, "Single pixel evaluation PIV for nano-resolution flow measurements," paper number 32.4, Proceedings of the 13th International Symposium on the Application of Laser Techniques to Fluid Mechanics, (Lisbon, Portugal), June 26-29, 2006.
81. **P. Chamrathy, S.T. Wereley and S.V. Garimella**, "Simultaneous Measurement of Temperature and Velocity using Cross-Correlation μ PIV," paper number 12.4, Proceedings of the 13th International Symposium on the Application of Laser Techniques to Fluid Mechanics, (Lisbon, Portugal), June 26-29, 2006.
80. **A.R. De Carlo, M. Rokkam, A. ul Haque, S.T. Wereley, P.P. Irazoqui, H.W. Wells, W.T. McLamb, S.J. Roux, D.M. Porterfield**, "Development of a Microfluidic Ion Sensor Array (MISA) to Monitor Gravity-Dependent Calcium Fluxes in Ceratopteris Spores," Abstract #56, Annual Meeting of the American Society for Gravitational and Space Biology (Reno, NV, November 1-4, 2005).
79. **M. Rokkam, P. P. Irazoqui, A. ul Haque, A. R. De Carlo, S. T. Wereley, H.W. Wells, W.T. McLamb, D.M. Porterfield**, "Development and testing of an amplifier array for interfacing multichannel digital data acquisition and *in silico* cell physiology MEMS sensor devices," Institute of Biological Engineering Annual Meeting (Tucson, AZ, March 8-12, 2006).
78. **A. ul Haque, A. R. De Carlo, M. Rokkam, S.T. Wereley, H.W. Wells, W.T. McLamb, S.J. Roux, D.M. Porterfield**. Design, fabrication and characterization of an *in silico* cell physiology lab for measuring cellular responses to microgravity, Institute of Biological Engineering Annual Meeting. March 8-12, 2006
77. **A. ul Haque, A. R. De Carlo, M. Rokkam, S.T. Wereley, H.W. Wells, W.T. McLamb, S.J. Roux, D.M. Porterfield**. Design, fabrication and characterization of an *in silico* cell physiology lab for measuring cellular responses to microgravity. International MEMS conference. Singapore, May 9-12, 2006

76. **J. Cao and S.T. Wereley**, "Shear-induced migration of dilute Brownian suspensions," Pres. # EC.00007, Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting (Chicago, IL, Nov. 2005).
75. **P. Chamarthy and S.T. Wereley**, "Temperature Measurement using Brownian Motion in the Presence of a Velocity Gradient," Pres. # BB.00008, Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting (Chicago, IL, Nov. 2005).
74. **S.T. Wereley and C.D. Meinhart**, "Spatial Resolution and Errors of Single Pixel Interrogation," Proc. ASME/IMECE, Paper #2005-83065, (Orlando, FL, Nov. 2005).
73. **P. Chamarthy, S. Wereley, S. V. Garimella**, "Assessment of Alternate Approaches for Temperature Measurement using Brownian Motion," 6th International Symposium on Particle Image Velocimetry (Pasadena, CA, Sept. 21-23, 2005).
72. **J. Cao, S. T. Wereley**, "PIV Measurement in Capillary Tube Flow and Measurement Error Due to Multi-pixel Window Correlation," 6th International Symposium on Particle Image Velocimetry (Pasadena, CA, Sept. 21-23, 2005).
71. **S.T. Wereley, C.D. Meinhart, D. Tretheway, L. Gui, A. Sud**, "Bias and Random Errors in Single Pixel Interrogation," 6th International Symposium on Particle Image Velocimetry (Pasadena, CA, Sept. 21-23, 2005).
70. **S.T. Wereley**, "Optical Diagnostics for Nanoscale Flow Problems?" First International Nanofluidics Workshop (Boekelo, The Netherlands, April 18-20 2005).
69. **S.T. Wereley** (*keynote*), "Progress and Current Developments in Micro-PIV," Joint International PIVNET II / ERCOFTAC Workshop on Micro PIV and Applications in Microsystems (Delft, The Netherlands, April 7-8, 2005).
68. **L. Karp-Boss, P.A. Jumars, P. Grant, S.T. Wereley, and E.H. Klingler**, "Motion of diatoms in steady and unsteady shear flows," ASLO 2005 Aquatic Sciences Meeting (Salt Lake City, Utah, February 20-25, 2005).
67. **J. Cao and S.T. Wereley**, "Brownian particle distribution in tube flows," Proc. ASME/IMECE, Paper #2004-61899, (Anaheim, CA, Nov. 2004).
66. **S.Y. Lee, J. Jang, and S.T. Wereley**, "Entrance length of Low Reynolds number flow in microchannel," Proc. ASME/IMECE, Paper #2004-61908, (Anaheim, CA, Nov. 2004).
65. **P. Chamarthy and S.T. Wereley**, "Mixing Characteristics in a 2D Serpentine Micro-Channel," Proc. ASME/IMECE, Paper #2004-61902, (Anaheim, CA, Nov. 2004).
64. **S.T. Wereley and I. Whitacre**, "Particle Dynamics in a Dielectrophoretic Microdevice," paper 3.2, Proceedings of the 12th International Symposium on the Application of Laser Techniques to Fluid Mechanics, (Lisbon, Portugal), July 12-15, 2004.
63. **D. Liu, S.V. Garimella, and S.T. Wereley**, "Infrared Micro-Particle Image Velocimetry of Fluid Flow in Silicon-Based Microdevices," ASME Heat Transfer/Fluids Engineering Summer Conference (Charlotte, NC), paper number: HT-FED2004-56385, July 2004.
62. **H.A. Diefes-Dux, P.K. Imbrie, K. Haghighi, G.U. Lee, S.T. Wereley, and P. Wankat**, "Nanotechnology Exposure in a First-Year Engineering Program," International Conference on Engineering Education and Research (Olomouc and Bouzov Castle, Czech Republic, June 27-30, 2004).
61. **S.T. Wereley**, "Microfluidic Diagnostics applied to Cold Gas Thruster Design and Analysis," ESA 4th International Spacecraft Propulsion Conference (Cagliari, Italy, June 2-4, 2004).
60. **S.T. Wereley, I. Whitacre, R. Bashir and H.B. Li**, "DEP Particle Dynamics and the Steady Drag Assumption," Nanotech 2004 (Boston, March 7-11, 2004).
59. **J. Jang and S. T. Wereley**, "A Capacitive Micro Gas Flow Sensor Based on Slip Flow," IEEE-MEMS 2004 (Maastricht, The Netherlands, January 25-29, 2004).
58. **S.T. Wereley, I. Whitacre, R. Bashir and H.B. Li**, "DEP Particle Dynamics and the Steady Drag Assumption," Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting, (East Rutherford, NJ, Nov. 2003).
57. **J. Cao and S.T. Wereley**, "The role of Brownian motion in fluid/particulate experiments," Proc. ASME/IMECE, Paper #2003-43360, (Washington, DC, Nov. 2003).
56. **S.Y. Lee and S.T. Wereley**, "Pressure Measurement in the Microchannel using Air Compression," Proc. ASME/IMECE, Paper #2003-41163, (Washington, DC, Nov. 2003).
55. **J. Jang and S.T. Wereley**, "Slip Flow Analyses of Capacitive Pressure-Based Micro Flow Sensor," Proc. ASME/IMECE, Paper #2003-41142, (Washington, DC, Nov. 2003).
54. **G.U. Lee and S.T. Wereley**, "Teaching Nanoscience and Engineering at an Intermediate Level," American Institute of Chemical Engineers Annual Meeting (San Francisco, CA), Nov. 16-21, 2003.

53. **S. Stone, C. D. Meinhart and S. T. Wereley**, "Out of plane spatial resolution of volume illumination PIV using a compound lens system," 5th International Symposium on Particle Image Velocimetry, (Pusan, Korea, Sept. 2003).
52. **Y. H. Kim, S. T. Wereley and C. H. Chun**, "Flow field produced by a vibrating cantilever plate in various geometries," 5th International Symposium on Particle Image Velocimetry, (Pusan, Korea, Sept. 2003).
51. **M.W. Eckerle, C.E. Nyquist, R.L. Schlipf, K. Haghghi, S.T. Wereley**, "Finite Element Modeling of a Micro-Scale Resonant Fan for Microfluidic Transport," ASAE Annual International Meeting, Paper 033098 (Las Vegas, NV, July 2003).
50. **J.Jang, Y. Zhao, and S.T. Wereley**, "Pressure Distributions and TMAC Measurements in Near-Unity Aspect Ratio, Anodically Bonded Microchannels," MEMS 2003, (Kyoto, Japan, Jan. 2003).
49. **S.T. Wereley and I. Whitacre (invited)**, "Velocity Averaging from Out of Plane Gradients in micro-PIV," Paper 2003-0782, American Institute of Aeronautics and Astronautics Annual Meeting, Reno, NV, Jan. 2003.
48. **C.H. Chung and S.T. Wereley**, "Numerical Simulation of Low- Speed Gas Flows in Microchannels," Paper 2003-0860, American Institute of Aeronautics and Astronautics Annual Meeting, Reno, NV, Jan. 2003.
47. **C.H. Chung and S.T. Wereley**, "Analysis of Gas Flows in Microchannels with Small Pressure Difference," Paper 2003-0861, American Institute of Aeronautics and Astronautics Annual Meeting, Reno, NV, Jan. 2003.
46. **S.T. Wereley, S.Y. Lee, and L.C. Gui**, "Entrance Length and Turbulence Transition in Microchannels," Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting, Dallas, TX, Nov. 2002.
45. **S. Stone, C.D. Meinhart, and S.T. Wereley**, "Out of plane spatial resolution of volume illumination PIV," Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting, Dallas, TX, Nov. 2002.
44. **C.H. Chung and S.T. Wereley**, "Computation of Rerefied Gas Flows in Microchannels," JSME/KSME Fluids Engineering Conference (Nagoya, Japan, Nov. 2002).
43. **J. Jang, Y. Zhao, S.T. Wereley, and L.C. Gui**, "Mass Flow Measurements of Gases in Deep-RIE Microchannels," Proc. ASME/IMECE, Paper #2002-33779, (New Orleans, LA, Nov. 2002).
42. **S.Y. Lee, S.T. Wereley, L.C. Gui, W.L. Qu, and I. Mudawar**, "Microchannel Flow Measurement using Micro Particle Image Velocimetry," Proc. ASME/IMECE, Paper #2002-33682, (New Orleans, LA, Nov. 2002).
41. **S.T. Wereley and G.U. Lee**, "Teaching Nanotechnology/Nanoscience Across Disciplines," American Institute of Chemical Engineers Annual Meeting (Indianapolis, IN), Nov. 3-8, 2002.
40. **Eric Tkaczyk, Vandna Handa, Sangwoo Lee, Helen McNally, Lichuan Gui, Steve Wereley, Rashid Bashir**, "Determination Of The Charge Attached To Micro-Scale Devices Used In Fluidic Self-Assembly Processes", MRS Fall Meeting (Boston, MA) 2002.
39. **S.T. Wereley (invited)**, "Microfluidic manipulation of particles, cells, viruses, and molecules," BioMEMS and biomedical nanotechnology WORLD 2002, (Columbus, OH), Sept. 6-8, 2002.
38. **C.D. Meinhart, S. Stone, D. Tretheway, S.T. Wereley**, "Spatial Resolution Limits of Micron Resolution Particle Image Velocimetry," Proceeding of the Seiken Symposium on Particle Image Velocimetry (Tokyo, Japan), p. 57-71, August 23, 2002.
37. **S.T. Wereley and V.P. Hohreiter**, "Simultaneous, Spatially-Resolved Temperature and Velocity Measurements Using Cross-Correlation PIV," paper 15.1, Proceedings of the 11th International Symposium on the Application of Laser Techniques to Fluid Mechanics, (Lisbon, Portugal), July 8-11, 2002.
36. **L. Gui, S.T. Wereley and S.Y. Lee**, "Digital Filters for Reducing Background Noise in Micro PIV Measurements," paper 12.4, Proceedings of the 11th International Symposium on the Application of Laser Techniques to Fluid Mechanics, (Lisbon, Portugal), July 8-11, 2002.
35. **S.T. Wereley, V. Hohreiter, J. Chung**, "Simultaneous, spatially-resolved temperature and velocity measurements in microchannel flows," THERMES 2002: Thermal Challenges in Next Generation Electronic Systems, (Santa Fe, NM), January 13-16, 2002.
34. **Y.H. Kim, S.T. Wereley, C.H. Chun**, "Experimental study on the flow field around a vibrating cantilever plate," Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting, San Diego, CA, Nov. 2001.
33. **S.T. Wereley, V. Hohreiter, J.N. Chung**, "Simultaneous Temperature and Velocity Measurement," Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting, San Diego, CA, Nov. 2001.
32. **S. Stone, C.D. Meinhart, S.T. Wereley**, "Using Particle Image Velocimetry to Probe Wall Shapes with Nanoscope Resolution," Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting, San Diego, CA, Nov. 2001.

31. S.T. Wereley, C.D. Meinhart, S. Stone, V. Hohreiter, and J. Chung, Proc. SPIE Int. Soc. Opt. Eng., Vol. 4558, pp. 124-132 (San Francisco, Oct. 2001).
30. **V. Hohreiter, S.T. Wereley, J.N. Chung, M.G. Olsen**, "Cross-correlation analysis for temperature measurement," 4th International Symposium on Particle Image Velocimetry, Paper 1145, Göttingen, Germany, Sept. 2001.
29. **S.T. Wereley and L.C. Gui**, "PIV measurement in a four-roll-mill flow with a central difference image correction (CDIC) method," 4th International Symposium on Particle Image Velocimetry, Paper 1027, Göttingen, Germany, Sept. 2001.
28. **S. Stone, C.D. Meinhart, S.T. Wereley**, "Using μ -PIV to Probe Wall Shapes with Nanoscope Resolution," 4th International Symposium on Particle Image Velocimetry, Paper 1143, Göttingen, Germany, Sept. 2001.
27. **S.T. Wereley, C.D. Meinhart, S. Stone, V. Hohreiter, J. Chung**, "A Microfluidic MEMS Characterization Toolbox," International MEMS Workshop 2001, pp. 244-253, Singapore, July 2001.
26. **S.T. Wereley**, "Experiments and Simulations in Micro/Nano Domains," ASME Information Storage and Processing Systems Conference, Santa Clara, CA, June 2001.
25. **S.T. Wereley, L.C. Gui, and C.D. Meinhart (invited)**, "Flow Measurement Techniques for the Microfrontier," Paper 2001-0243, American Institute of Aeronautics and Astronautics Annual Meeting, Reno, NV, Jan. 2001.
24. **C.D. Meinhart and S.T. Wereley (invited)**, "Fluid Mechanics Issues at the Microscale," Paper 2001-0720, American Institute of Aeronautics and Astronautics Annual Meeting, Reno, NV, Jan. 2001.
23. **S.T. Wereley, H. Apple, R. Gomez, R. Bashir**, "Microfluidic Biomedical Device Characterization," Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting, Washington, DC, Nov. 2000.
22. **C.D. Meinhart, S.W. Stone, and S.T. Wereley**, "A microfluidic-based nanoscope," ICTAM 2000 (Chicago, IL), paper GV-13, Aug. 2000.
21. **S.T. Wereley and C.D. Meinhart**, "Accuracy Improvements in Particle Image Velocimetry Algorithms," paper 13.4, Proceedings of the 10th International Symposium on the Application of Laser Techniques to Fluid Mechanics, (Lisbon, Portugal), July 10-13, 2000.
20. **C.D. Meinhart, S. Stone, and S.T. Wereley**, "A Microfluidic-based Nanoscope," Proc. μ TAS2000, pp. 83-86, Enschede, The Netherlands, May 2000.
19. **S.T. Wereley, C.D. Meinhart, and M.H.B. Gray**, "Depth Effects in Volume Illuminated PIV," Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting, New Orleans, LA, Nov. 1999.
18. **S.T. Wereley, C.D. Meinhart, M.H.B. Gray**, "Depth Effects in Volume Illuminated Particle Image Velocimetry," pp. 545-550, The Third International Workshop on Particle Image Velocimetry, Santa Barbara, CA, Sept. 1999.
17. **C.D. Meinhart, S.T. Wereley, and J.G. Santiago**, "A PIV Algorithm for Estimating Time-Averaged Velocity Fields," presented at the Symposium on Optical Methods and Image Processing in Fluid Flow ASME/JSME Fluids Engineering Conference, San Francisco, CA, July 18-23, 1999.
16. **Meinhart CD, Gray MHB, Wereley ST** "PIV Measurements of High-speed flows in Silicon-micromachined nozzles," (AIAA/ASME/SAE/ASEE 35th Joint Propulsion Conference and Exhibit, Los Angeles, CA, June 20-24, 1999) AIAA 99-3756.
15. **R.M. Lueptow and S.T. Wereley**, "Particle Distribution in Rotating Filtration," Proc. Amer. Filtration Soc., (Advances in Filtration and Separation Technology, Boston), Vol. 13, 252-259, 1999
14. **S.T. Wereley, C.D. Meinhart, J.G. Santiago, and R.J. Adrian**, "Velocimetry for MEMS Applications," Proc. ASME/DSC, Vol. 66, 453-459, (Micro-fluidics Symposium, Anaheim, CA, Nov. 1998).
13. **S.T. Wereley, C.D. Meinhart, and J.G. Santiago**, "Microfluidic PIV: Algorithms and Experiments," Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting, Philadelphia, PA, Nov. 1998.
12. **J.G. Santiago, S.T. Wereley, C.D. Meinhart, D.J. Beebe, and R.J. Adrian**, "A Micron-Resolution Particle Image Velocimetry System for Microfluidics," 8th International Symposium on Flow Visualization (Sorrento, Italy), Aug. 1998.
11. **C.D. Meinhart, J.G. Santiago, S.T. Wereley, and R.J. Adrian**, "Diagnostic techniques for microfluids research," Proceedings of the 9th International Symposium on the Application of Laser Techniques to Fluid Mechanics, (Lisbon, Portugal) paper 6.4 (1998).
10. **J.G. Santiago, C.D. Meinhart, D.J. Beebe, S.T. Wereley, and R.J. Adrian**, "Velocimetry for Microfluidics," Solid State Sensor and Actuator Workshop (Hilton Head, SC), June 1998.
9. **S.T. Wereley, J.G. Santiago, R. Chiu, C.D. Meinhart, and R.J. Adrian**, "Micro-resolution particle image velocimetry," Proc. SPIE, Vol. 3258, pp. 122-133 (Micro- and Nano-Fabricated Structures and Devices for Biomedical Environmental Applications, San Jose, CA, Jan. 1998).

8. **S.T. Wereley and R.M. Lueptow**, "Particle Motion in a Taylor-Couette Filter Device," Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting, San Francisco, CA, Nov. 1997.
7. **S.T. Wereley and R.M. Lueptow**, "Particle motion in Taylor Couette flow," Proc. ASME/OED Intl. Cong. Sym., Vol 1, pp. 73-80, 1997.
6. **S.T. Wereley and R.M. Lueptow**, "Velocity Field in Wavy Circular Couette Flow," Proc. 10th Int. Couette-Taylor Workshop, July 1997.
5. **S.T. Wereley and R.M. Lueptow**, "Mixing in Wavy Taylor Vortex Flow," Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting, Nov. 1996.
4. **S.T. Wereley and R.M. Lueptow**, "Velocity Field in Wavy Vortex Flow," Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting, Nov. 1995.
3. **S.T. Wereley, S.A. Labhsetwar, and R.M. Lueptow**, "Wavy Taylor Vortex Flow: Experimental Velocity Vectors," Gallery of Fluid Motion at the 48th Annual Meeting of the APS/DFD, Nov. 1995.
2. **S.T. Wereley and R.M. Lueptow**, "Measurements of Velocity Fields with Application to Two-Phase Flow in a Taylor-Couette Separator," Proc. 9th Int. Couette-Taylor Workshop, Boulder, CO, Aug. 1995.
1. **S.T. Wereley, R.M. Lueptow, and K. Min**, "An LDV Investigation of the Taylor Vortex Phenomenon," Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting, Tallahassee, FL, Nov. 1992.

University/Corporate Invited Seminars

67. **Optoelectric Micro/Nano Particle and Droplet Manipulation**, presented at Northwestern University, Nov 8, 2012.
66. **PIV Overview**, Graduatekolleg GRK1114 seminar days, Kleinwalsertal, Austria, Jun 18-20, 2012.
65. **Analyzing Disaster: How big was the Deepwater Horizon disaster?**, presented at the Culver Academies, May 24, 2012.
64. **Optoelectric Micro/Nano Particle and Droplet Manipulation**, presented at Purdue Calumet, Water Institute, Sep 20, 2011.
63. **What can we learn about PIV Uncertainty from the correlation shape?**, presented at the PIV Uncertainty Workshop, Las Vegas, NV, May 11-13, 2011.
62. **Optoelectric Micro/Nano Particle and Droplet Manipulation**, presented at Virginia Tech, Apr 27, 2011.
61. **Using HUBzero to Distribute and Enable Analysis of Deepwater Horizon Oil Spill Videos**, Hubzero Workshop, IUPUI, Apr 5 2011.
60. **Optoelectric Micro/Nano Particle and Droplet Manipulation**, presented at Stanford University, Oct 26, 2010.
59. **Assessing Disaster: How much oil flowed from BP's Macondo well?** presented at Stanford University, Oct 27, 2010.
58. **Temperature and Particle Sizing using Brownian Motion**, presented at International Symposium on Micro/Nano Flow Measurement Techniques, Tokyo, Sept 2010.
57. **Optoelectric Micro/Nano Particle and Droplet Manipulation**, presented at The Ohio State University, Feb 26, 2010.
56. **Opto-Electro Particle Manipulation and Diagnostics**, presented at the Danish Technical University, Copenhagen, Denmark, Sept. 22, 2009.
55. **Opto-Electro Particle Manipulation and Diagnostics**, presented at the University of Alberta, Edmonton, Alberta, Canada, Sept. 13, 2009.
54. **Flow Diagnostics and Optoelectric Micro/Nano Particle Manipulation**, presented at the DFG Priority Program SPP 1164 Nano- & Microfluidics, Bad Honnef, Germany, July 30, 2009.
53. **Flow Diagnostics and Optoelectric Micro/Nano Particle Manipulation**, presented at Deutsche Zentrum für Luft- und Raumfahrt (DLR), Cologne, Germany, July 29, 2009.
52. **Flow Diagnostics and Optoelectric Micro/Nano Particle Manipulation**, presented at Technische Universität Braunschweig, Braunschweig, Germany, July 13, 2009.
51. **Flow Diagnostics and Optoelectric Micro/Nano Particle Manipulation**, presented at Universität des Saarlandes, Saarbrücken, Germany, July 7, 2009.
50. **Flow Diagnostics and Optoelectric Micro/Nano Particle Manipulation**, presented at Yonsei University, Seoul, Korea, June 26, 2009.
49. **Flow Diagnostics and Optoelectric Micro/Nano Particle Manipulation**, presented at Korea Institute of Science and Technology (KIST), Seoul, Korea, June 25, 2009.
48. **Flow Diagnostics and Optoelectric Micro/Nano Particle Manipulation**, presented at Chung-Ang University, Seoul, Korea, June 25, 2009.

47. **Flow Diagnostics and Optoelectric Micro/Nano Particle Manipulation**, presented at NYU-Poly, New York, NY, on Feb. 27, 2009.
46. **Flow Diagnostics and Optoelectric Micro/Nano Particle Manipulation**, presented at Columbia University, New York, NY, on Feb. 26, 2009.
45. **Flow Diagnostics and Optoelectric Micro/Nano Particle Manipulation**, presented at Stevens Institute of Technology, Hoboken, NJ, on Feb. 25, 2009.
44. **Optoelectric Micro/Nano Particle Manipulation**, presented at Indian Institute of Technology Madras, India, on Dec. 10, 2008.
43. **Optoelectric Micro/Nano Particle Manipulation**, presented at University of Southampton, Southampton UK, on Oct. 30, 2008.
42. **Optoelectric Micro/Nano Particle Manipulation**, presented at Rutgers University, New Brunswick, NJ, on Oct. 22, 2008.
41. **Flow Diagnostics for Micro/Nano Device Characterization**, presented at Technische Universität Braunschweig, Braunschweig, Germany, on Aug. 14, 2007.
40. **Flow Diagnostics for Micro/Nano Device Characterization**, presented at Universität Heidelberg, Heidelberg, Germany, on July 18, 2007.
39. **Flow Diagnostics for Micro/Nano Device Characterization**, presented at Universität Rostock, Rostock, Germany, on June 29, 2007.
38. **Microfluidics and suitable diagnostic techniques**, presented at Deutsche Zentrum für Luft- und Raumfahrt (DLR), Göttingen, Germany, on June 8, 2007.
37. **What Can We Learn From Diffusion in Microfluidics?**, presented at Johns Hopkins University, Baltimore, MD, Jan. 26, 2007.
36. **Manipulation and detection of nanoparticles using light**, Tools for Nano Engineering (ARO Workshop), Purdue University, Oct. 2-4, 2006.
35. **What is "Nanofluidics" or The Nano-izing of Fluid Mechanics**, NCN nano-tutorial seminar series, Purdue University, Feb. 20, 2006.
34. **Micro/Nano Fluidics: fundamentals and devices**, presented in S.C. Johnson and Sons Science and Engineering Council, Racine, WI, Feb. 15, 2006.
33. **Introduction to Microfluidics**, presented at the CAMD / CBM2 2005 Summer Workshop, Louisiana State University, Baton Rouge, LA, July 25, 2005.
32. **Micro and Nanoscale Flow Diagnostics**, presented at University of Karlsruhe, Karlsruhe, Germany, April 12, 2005.
31. **Micro and Nanoscale Flow Diagnostics**, presented at Alberts-Ludwig University, Freiburg, Germany, April 13, 2005.
30. **Micro and Nanoscale Flow Diagnostics**, presented at Technical University of Darmstadt, Darmstadt, Germany, April 14, 2005.
29. **Experimental Microfluidics**, presented at Samsung Advanced Institute of Technology, Suwon, South Korea, Sept. 17, 2003.
28. **Experimental Microfluidics**, presented at POSTECH University, Pohang, South Korea, Sept. 18, 2003.
27. **Experimental Diagnostics for Microscale Sensor and Actuator Evaluation**, presented at AFRL Microfluidics Workshop, Los Angeles, CA, May 12, 2003.
26. **Microfluidics of Biomedical Microdevices**, presented at Baxter Healthcare, Round Lake, IL, April 25, 2003.
25. **Algorithm Improvements for Micro-PIV**, presented at TSI, Inc., Minneapolis, MN, April 7, 2003.
24. **Fluid Mechanics in Micro and Nano Domains**, presented at ARO Nanotechnology Workshop, Chicago, IL, Nov. 14, 2002.
23. **Fluid Mechanics and Heat Transfer Research at Purdue**, presented at Schlumberger Mechanical Eureka Community: Mechanical Systems, Dynamics & Design Seminar, Paris, Oct. 1-3 2002.
22. **Experimental Microfluidic Diagnostics and Educating Students and Professionals About Microfluidics**, AIAA Microfluidics Panel Discussion, AIAA Conference, St. Louis, MO, June 26, 2002.
21. **Characterization of Thermo-fluid Processes at MEMS level and the potential use of x-rays**, presented at Argonne National Laboratory, Chicago, IL, March 1, 2002.
20. **Physics Choices**, presented in Dept. of Physics Undergrad Lecture Series, Purdue University, Jan. 22, 2002.
19. **Microfluidic Diagnostic Techniques**, presented in the Civil Engineering Dept., Purdue University, October 2001.
18. **Experiments and Simulations in Micro/Nano Domains**, Data Storage Institute, Singapore, July 2001.
17. **Experiments and Simulations in Micro/Nano Domains**, Seagate Corp., Singapore, July 2001.

16. **Microfluidic Diagnostic Techniques**, presented in the Mechanical Engineering Dept., Nanyang Technological University, Singapore, July 2001.
15. **Experiments and Simulations in Micro/Nano Domains**, National Storage Industry Consortium Annual Meeting, Monterrey, CA, June 2001.
14. **Fluid Measurements in Micro/Nano Domains**, presented at The Colorado Center for Information Storage/Denver Section of the IEEE Magnetics Society seminar series, Boulder, CO, Jan. 2001.
13. **Microfluidic Diagnostic Techniques**, presented in the Mechanical Engineering Dept., Indiana University and Purdue University at Indianapolis (IUPUI), Indianapolis, IN, Nov. 2000.
12. **Microfluidic Diagnostic Techniques**, presented in the Materials Engineering Dept., Purdue University, West Lafayette, IN, Sept. 2000.
11. **Microfluidic Diagnostic Techniques**, presented at the Purdue University Nanotechnology Seminar Series, Purdue University, West Lafayette, IN, Sept. 2000.
10. **Microfluidics: Theory and Experiment**, presented in the "All-Day MEMS overview," University of Illinois, Chicago, IL, Aug. 2000.
9. **Microfluidic Diagnostic Techniques**, presented at Daimler-Chrysler, Ulm, Germany, July, 2000.
8. **Microfluidic Diagnostic Techniques**, presented at the Paul-Scherrer Institut Laboratory for Micro- and Nanotechnology, Villigen, Switzerland, July, 2000.
7. **Microfluidic Diagnostic Techniques**, presented at 3M, Minneapolis, MN, June, 2000.
6. **MEMS: A brief introduction**, presented in the Monticello Business Forum seminar titled "Technologies of the 21st Century and How to Incorporate Them," Monticello, IN, May, 2000.
5. **Fluid Flow in Microscale Domains-Experiments and Analysis**, presented in the Applied Math Seminar Series, Math Department, Purdue University, West Lafayette, IN, Apr. 2000.
4. **Enhanced Micro-PIV**, presented in the Turbulence and Complex Flow Seminar Series, Theoretical and Applied Mechanics Department, University of Illinois, Urbana-Champaign, Feb. 2000.
3. **Microfluidic Diagnostic Techniques**, presented in the Mechanical Engineering Department Lecture Series at the University of Florida, Gainesville, FL, Dec. 1999.
2. **Microfluidic Diagnostic Techniques**, presented in the Society for the Advancement of Material and Process Engineering (SAMPE) Micro-Nano Scale Science and Technology Seminar Series, Purdue University, W. Lafayette, IN, Oct. 1999.
1. **Shear Field and Velocity Field in Taylor Vortex Flow**, presented at Baxter HealthCare, Fenwal Division, Round Lake, IL, Oct. 1996.

Funding History

Hummingbird, Inc., Environmental Cells for Transmission Electron Microscopy (TEM), Two years (2010-2011), \$225,000.

NSF:ERC for Compact and Efficient Fluid Power, Two (2) years (2006-2008), \$5,000,000, \$80,076
Cummins, Inc.:Proposal for Characterizing Fuel Contaminant Size and Type Two (2) years (2007-2009)
 \$223,666.

NSF:Experiments and Modeling of Advanced Optical Trap Systems for Manipulating and Sorting Micro and Nano Particles, Three (3) years (2007-2010), \$212,453

NSF:Collaborative Research: Architecture and Prototype for a Programmable Lab-on-a-Chip, Three (3) years (2007-2009), \$315,000, \$142,893

DARPA: Micro/Nano Fluidics Fundamentals Focus Center (UCI/MF3), Three (3) years (2007-2010), \$150,919

AudioPixels, Inc.:Proposal for micro-PIV measurements to Audiopixels, One (1) year (2009-2010), \$34,607
National Aeronautics and Space Administration (Bionetics Corp./NASA), "Microfluidic Ion Sensor Array," 2/7/2005 to 9/30/2006, *Total award: \$140k, my portion: \$70k.*

Air Force Office of Scientific Research, "STTR: High-resolution evanescent PIV for near-wall microfluidics," 9/15/2004 to 6/30/2005, *Total award: \$75k, my portion: \$42k.*

National Science Foundation, "Scaling down mechanically driven fluidic self-assembly," 8/15/2004 to 1/31/2006, *Total award: \$50k.*

Cooling Technologies Research Center (NSF/Industry consortium), "Heat transport in Microchannels," 1/1/2004 to 12/31/2006, *Total award: \$115k, my portion: \$57k.*

Lilly retention initiatives, "Nanofact/Nanofiction honors class," 1/1/2004 to 5/31/2004, *Total award: \$10k, my portion: \$5k.*

21st Century Research and Technology Fund—"Novel MEMS-Based Microscale Cooling System for the Thermal Management of Integrated Microelectronics," 2004 to 2006, *Total award: \$1922k, my portion \$39k.*

National Science Foundation, DMI Materials Processing/Manufacturing, “GOALI: Improvements spray drying manufacturing through control of drop size distributions,” 9/15/2003 to 8/31/2006, *Total award: \$389k, my portion: \$130k.*

TSI, Inc., “PIV algorithm improvements for TSI’s Insight,” 2003 to 2004, *Total award: \$10k.*

National Science Foundation, Nanoscale Undergraduate Education, “NUE: New Learning and Discovery Experiences in Nanoscale Engineering Undergraduate Education,” 2003 to 2004, *Total award: \$100k, my portion: \$19k.*

Purdue Research Foundation—“Interplay of Randomness and Determinism in Micro/Nanoflows,” 2003 to 2005, *Total award: \$13k.*

National Science Foundation, “SGER: Development of a multiscale manufacturing teaching laboratory,” 2003 to 2004, *Total award: \$100k, my portion: \$17k.*

National Science Foundation, Nanoscale Science and Engineering, Nanoscale Exploratory Research—“Explorations in Biomedical Microdevices: Brownian Motion and Education,” 2002 to 2003, *Total award: \$100k, my portion \$89k.*

National Science Foundation, Biological Oceanography—“Form and Function of Phytoplankton in unsteady, low Reynolds-Number Flows,” 9/1/2002 to 8/31/2006, *Total award: \$970k, my portion \$208k.*

Showalter Trust, “Towards the prevention and control of atherosclerosis: endothelial and smooth muscle cell response to pulsatile flow in stenotic blood vessels,” 2001 to 2002, *Total award: \$83k, my portion: \$16.6k.*

Naval Surface Warfare Center Crane Division (Purdue University Center for Sensing Science and Technology)—“Integrated Detection of Hazardous Materials,” 2001 to 2003, *Total award: \$4000k, my portion \$70k.*

21st Century Research and Technology Fund—“Center for Nanoscale Electronics/Biological Devices,” 2000 to 2002, *Total award: \$1480k, my portion \$49k.*

21st Century Research and Technology Fund—“Intelligent MEMS-based Flow Sensors and Controllers,” 2000 to 2002, *Total award: \$816k, my portion \$271k.*

Purdue Research Foundation—“Experimental Investigation of Prototypical MEMS Pumps,” 2000 to 2002, *Total award: \$13k.*

3M Nontenured Faculty Award—support for untenured faculty in the pursuit of basic research in the physical and/or biological sciences, 2/24/2000, *Total award: \$39k.*

ATC, Inc., unrestricted gift funding in support of research on micro-scale mass flow transducers, 12/30/1999, *Total award: \$27K.*

Short Courses

Principles and Applications of Micro and Nanofluidics, Center for Smart Interfaces, Darmstadt, Germany; offered twice—Mar 22-24, 2010 and Dec 14-16, 2011.

Microfluidics, April 26-28, 2004, Los Angeles, CA. ASME sponsored 3 day short course in which I taught one half day on the theory of flows at small length scales.

Fundamentals and Applications of Microfluidics, half day short course offered at ESA’s Space Propulsion 2004, Cagliari, Italy, June 2-9, 2004.

Microfluidics, April 26-28, 2004, Los Angeles, CA. ASME sponsored 3 day short course in which I taught one half day on the theory of flows at small length scales.

Fundamentals and Applications of Micro/Nanofluidics, 3 hour short course offered at *Nanotech 2004*, in Boston, March 7-11, 2004.

Fundamentals and Applications of Micro/Nanofluidics, 3 hour short course presented at the *Nanotech 2003*, in San Francisco, Feb. 23-27, 2003. Topics addressed: theoretical background of micro/nano-scale fluid mechanics, modeling methods, practicalities of small-scale flows, experimental characterization techniques.

Microfluidics, half-day short course presented at the *International MEMS Workshop 2001*, in Singapore, July 4-6, 2001. Co-taught with Dr. Nam-Trung Nguyen, Nanyang Technical University, Singapore. Topics addressed: theoretical background of micro-scale fluid mechanics, experimental characterization techniques for microflows, fabrication technologies of microfluidic devices, and typical microfluidic applications.

Awards and Memberships

2nd Place, Gold Division, Burton D. Morgan Business Plan Competition, company name PathVis, now OmniVis, 2017.

Purdue Innovator Hall of Fame inductee (2016)

United States Geological Survey Director’s Award for meritorious service to the nation during the Deepwater Horizon oil spill (2010).

3rd Prize, ASME-IMECE Society-Wide Micro/Nano Technology Forum Best Poster Competition, HS Chuang, A Kumar, and ST Wereley, "Rapid Electrokinetic Patterning Of Colloidal Particles With Optical Landscapes", Lake Buena Vista, Florida, 2009

Alexander von Humboldt Fellow (3/2007-8/2007; 6/2008-7/2008; 6/2009-7/2009)

1st Place, Gold Division, Burton D. Morgan Business Plan Competition. Ahmed M. Amin, S.C. Jacobson, M. Thottethodi, T.N. Vijaykumar and S.T. Wereley. "Microfluidic Innovations." Purdue University, West Lafayette, IN, February 2009.

2nd Place, Gold Division, Burton D. Morgan Business Plan Competition. SJ Williams, H.-S. Chuang and A Kumar. Liquid Qinetics. Purdue University, West Lafayette, IN, Feb. 24, 2009.

1st Place Poster, Engineering Sciences, SJ Williams, A Kumar, and ST Wereley, "Rapid electrokinetic patterning of colloids using optical landscapes", 2009 Graduate Student Poster Competition sponsored by Sigma Xi, Purdue University, West Lafayette, IN, Feb. 2009.

3rd Place, 2008 Ecological Science and Engineering Poster Competition. H.-S. Chuang and Steven T. Wereley. "Open Optoelectrowetting Droplet Actuation for Lab-on-a-Chip Applications." Dec. 5, 2008.

Outstanding Video, Gallery of Fluid Motion at Amer. Phys. Soc./Div. Fluid Dyn. Annual Meeting, SJ Williams, A Kumar, and ST Wereley, "Optically induced electrokinetic patterning and manipulation of particles," San Antonio, TX, Nov. 2008. *Note*: Most downloaded video from eCommons@Cornell for the month of December, 2008. (<http://hdl.handle.net/1813/11399>)

"2008 Highlight" distinction conferred by the journal Measurement Science and Technology to the article "Three-dimensional particle tracking using micro-particle image velocimetry hardware" by Peterson, Chuang, and Wereley.

Young Researcher Poster Award Winner at Proc. 12th International Conference on Miniaturized Systems for Chemistry and Life Sciences (μ TAS 2008), A Kumar, SJ Williams and ST Wereley, "Rapid electrokinetic patterning of colloids using optical landscapes", San Diego, USA, Oct 12-16, 2008.

Best Poster Award at the 2nd Annual Birck Nanotechnology Research Review, S. Williams, A. Kumar, and S.T. Wereley, "Rapid electrokinetic patterning of colloidal particles with optical landscapes," April 14, 2008.

21st Annual Purdue Burton Morgan Business Plan Competition, 4th place, A. Amin, H.S. Chuang, T.N. Vijaykumar, T. Thodentoddi, S.T. Wereley, and S. Jacobson, developed a business plan for commercializing programmable Lab-on-a-Chip devices.

Seeds for Success Award (1/2007)—awarded for proposals funded in excess of one million dollars

3M Nontenured Faculty Award (3/2000, 3/2001, 3/2002)—support for untenured faculty in the pursuit of basic research in the physical and/or biological sciences.

Walter Murphy Fellowship (9/1990)—support for outstanding graduate students

Pi Tau Sigma Mechanical Engineering Honor Society: student member (4/89); faculty advisor (4/99-present)

American Physical Society (APS)

American Society of Mechanical Engineers (ASME)

American Institute of Aeronautics and Astronautics (AIAA)

Guest Class Lectures

Microscale Heat and Fluid Flow Diagnostics, ME 605, *Convection of Heat and Mass*, Professor Jayathi Murthy, Dec. 2003.

Fundamentals of Microfluidics, EE 595B, *Fundamentals of MEMS and Micro-Integrated Systems*, Professor Rashid Bashir, Oct., 2003.

An Introduction to Nanotechnology, ENGL373, *Science Fiction and Fantasy*, Prof. Kristina Bross, Feb. 2003.

Fundamentals of Microfluidics, EE 595B, *Fundamentals of MEMS and Micro-Integrated Systems*, Professor Rashid Bashir, Oct., 2002.

The Benefits of a Physics Education in Mechanical Engineering, PHYS 290A, *Seminar in Careers in Physics*, Professor Andrew Hirsch, Jan. 2002.

Microscale Heat and Fluid Flow Diagnostics, ME 605, *Convection of Heat and Mass*, Professor Suresh Garimella, Apr. 2001.

Fundamentals of Microfluidics, EE 595B, *Fundamentals of MEMS and Micro-Integrated Systems*, Professor Rashid Bashir, Feb., 2001.

Microscale Fluid Flow Diagnostics, ME 509, *Intermediate Fluid Dynamics*, Professor Steve Frankel, Dec. 2000.

Microscale Fluidic Actuation, ME 610, *Boundary Layer Theory*, Professor Mike Plesniak, Apr., 2000.

Microscale Pumping Schemes, EE 595B, *Fundamentals of MEMS and Micro-Integrated Systems*, Professor Rashid Bashir, Apr., 2000.

Math and Science in Tom Stoppard's Arcadia, ENGL 201, *The Nature of Literary Study*, Professor Kristina Bross, Apr., 2000.

Fundamentals of Microfluidics, EE 595B, *Fundamentals of MEMS and Micro-Integrated Systems*, Professor Rashid Bashir, Feb., 2000.

Some thoughts on the science in Tom Stoppard's Arcadia, THTR 570, *Dramatic Structure and Literature*, Professor Anne Fliotsos, Feb., 2000.

Microscale Fluid Flow Diagnostics, ME 509, *Intermediate Fluid Dynamics*, Professor Carl Wassgren, Dec. 1999.

Conference Sessions Chaired *current through 2002*

Biomedical Flows: 11th International Symposium on the Application of Laser Techniques to Fluid Mechanics, (Lisbon, Portugal), July 8-11, 2002.

Challenges in Micro and Nanoscale Transport: THERMES 2002: Thermal Challenges in Next Generation Electronic Systems, (Santa Fe, NM), January 13-16, 2002.

BioMEMS & Microfluidic & MEMS/MST Sensor Applications: International MEMS Workshop, (Singapore), July 4-6, 2001.

Micro-Fluid Dynamics II: American Physical Society/Division of Fluid Dynamics Annual Meeting, (Washington, D.C.), Nov.19-21, 2000.

Aerodynamic Flows – 2: 10th International Symposium on the Application of Laser Techniques to Fluid Mechanics, (Lisbon, Portugal), July 10-13, 2000.

Interrogation Algorithms, The Third International Workshop on Particle Image Velocimetry (Santa Barbara, CA), Sept. 12-14, 1999.

Journal Reviews

AIAA Journal, AIChE Journal, J. Fluids Engineering, J. Micromechanics and Microengineering, Physics of Fluids, Experiments in Fluids, J. Fluid Mechanics, ...

Courses Taught

ME697W: Micro/Nano Fluid Mechanics: Fa05, Fa08

ENGR195N: Special Topics in Nanotechnology Research Experiences: Sp04 (team taught with Freshman Eng.)

HONR199C: Nanofact/Nanofiction: Sp04 (co-taught with K. Bross, ENGL)

ME263: Introduction to Mechanical Engineering Design: Sp01

ME309: Introduction to Fluid Mechanics: Fa99, Sp00 (Lead), Fa00, Fa04 (2 sections)

ME509: Intermediate Fluid Mechanics: Fa01, Fa02, Fa06

ME595W: Fundamentals of Particle Image Velocimetry: Sp02, Sp05

ME/ChE517: Micro/Nanoscale Physical Processes: Sp01*, Sp02*, Sp03*, Sp04*, Sp06, Sp08*, Sp09

ME610: Theory of Boundary Layer Flows: Fa03

*co-taught with Gil Lee, CHE

School/College/University Service

Fluid Mechanics Area Chair (5/2008-Present)

ME Leadership Team (5/2008-Present)

Fluid Mechanics Seminar Series Organizer (1/2000-5/2006)

Faculty Advisor to Pi Tau Sigma, the Mechanical Engineering Honor Society (4/2000-Present)

College of Engineering Academic Grievance Committee (8/2000-5/2004)

ME Head's Advisory Council (8/2003-5/2006)

ME Research Committee (8/2001-8/2003)

Heat Transfer Faculty Search Committee (8/2001-5/2002)

Computational Thermal Sciences Faculty Search Committee (12/2000-7/2001)

Laboratory Committee (3/2001-8/2001)

Graduate Committee (8/1999-8/2001)