

# Stanford

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## Juan Santiago

Professor of Mechanical Engineering

### CONTACT INFORMATION

- **Alternate Contact**

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### Bio

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#### BIO

Juan Santiago received his MS and PhD in Mechanical Engineering from the University of Illinois at Urbana-Champaign in 1995. His research includes the development of microsystems for on-chip chemical and biochemical analysis, methods for sample preparation, and electric-field based deionization methods. Applications of this work include molecular diagnostics, drug discovery, and the production of drinking water. He is a Fellow of the American Physical Society, a Fellow of the American Society of Mechanical Engineering, and a Fellow of the American Institute for Medical and Biological Engineering. He is an Editorial Advisory Board of the journal Analytical Chemistry, and an Associate Editor of the journal Microfluidics and Nanofluidics. He is co-founder of several companies in the microfluidics area, co-inventor of micron-resolution particle image velocimetry (Micro-PIV), and director of the Stanford Microfluidics Laboratory. Santiago has given more than 30 keynote and named lectures and more than 150 additional invited lectures. He has graduated 27 PhD students and advised eight postdoctoral researchers. 19 of his former advisees are now professors at major universities. He has authored and co-authored over 170 archival publications and 200 conference papers, and holds 50 patents (24 of which are currently licensed).

#### ACADEMIC APPOINTMENTS

- Professor, Mechanical Engineering
- Member, Bio-X
- Faculty Fellow, Stanford ChEM-H

#### HONORS AND AWARDS

- Fellow, American Institute for Medical and Biological Engineering (AIMBE) (2016)
- Fellow, American Society of Mechanical Engineering (2012)
- Fellow, American Physical Society (2010)
- Outstanding Alumnus Award, Mechanical Engineering Department of the University of Florida (2008)
- Outstanding Achievement in Academia Award, GEM Consortium (2006)
- Presidential Early Career Award for Scientist and Engineers, PECASE (2004)
- National Science Foundation Early Career Development (CAREER) Award, NSF (2003)

- Collegiate Inventors Award, National Inventors Hall of Fame (2001)
- Frederick Emmons Terman Fellow (Faculty) Award, Stanford University (1998)
- Post-Doctoral Fellowship, Ford Foundation (1997)

## **BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS**

- Editorial Advisory Board, Analytical Chemistry, American Chemical Society (2015 - present)
- Editorial Board, Journal of Microfluidics and Nanofluidics, Springer-Verlag (2003 - present)
- Associate Editor, Lab on a Chip, Royal Society of Chemistry (2008 - 2013)

## **PROFESSIONAL EDUCATION**

- PhD, University of Illinois at Urbana-Champaign (1995)
- MS, University of Illinois at Urbana-Champaign (1992)

## **Research & Scholarship**

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### **CURRENT RESEARCH AND SCHOLARLY INTERESTS**

<http://microfluidics.stanford.edu/Projects/Projects.html>

## **Teaching**

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### **COURSES**

#### **2017-18**

- Experimental Methods in Fluid Mechanics: ME 354 (Sum)
- Introductory Fluids Engineering: ME 70 (Aut)
- Physics of Microfluidics: ME 360 (Win)

#### **2016-17**

- Experimental Methods in Fluid Mechanics: ME 354 (Win)
- Introductory Fluids Engineering: ME 70 (Aut)
- The Great Principle of Similitude: ME 13N (Spr)

#### **2015-16**

- Experimental Methods in Fluid Mechanics: ME 354 (Win)
- Fluid Flow in Microdevices: ME 457 (Spr)
- The Great Principle of Similitude: ME 13N (Aut)

#### **2014-15**

- Advanced Topics in Electrokinetics: ME 458 (Spr)
- The Great Principle of Similitude: ME 13N (Aut)

## **STANFORD ADVISEES**

### **Doctoral Dissertation Advisor (AC)**

Ali Hemmatifar

## Publications

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### PUBLICATIONS

- **Nondestructive nanostraw intracellular sampling for longitudinal cell monitoring.** *Proceedings of the National Academy of Sciences of the United States of America*  
Cao, Y., Hjort, M., Chen, H., Birey, F., Leal-Ortiz, S. A., Han, C. M., Santiago, J. G., Pasca, S. P., Wu, J. C., Melosh, N. A.  
2017
- **Assay for *Listeria monocytogenes* cells in whole blood using isotachopheresis and recombinase polymerase amplification** *ANALYST*  
Eid, C., Santiago, J. G.  
2017; 142 (1): 48-54
- **Energy consumption analysis of constant voltage and constant current operations in capacitive deionization** *DESALINATION*  
Qu, Y., Campbell, P. G., Gu, L., Knipe, J. M., Dzenitis, E., Santiago, J. G., Stadermann, M.  
2016; 400: 18-24
- **Influx and Production Rates in Peak-Mode Isotachopheresis** *ANALYTICAL CHEMISTRY*  
Eid, C., Santiago, J. G.  
2016; 88 (23): 11352-11357
- **Energy breakdown in capacitive deionization.** *Water research*  
Hemmatifar, A., Palko, J. W., Stadermann, M., Santiago, J. G.  
2016; 104: 303-311
- **An Ohmic model for electrokinetic flows of binary asymmetric electrolytes** *CURRENT OPINION IN COLLOID & INTERFACE SCIENCE*  
Persat, A., Santiago, J. G.  
2016; 24: 52-63
- **Design sensitivity and mixing uniformity of a micro-fluidic mixer** *PHYSICS OF FLUIDS*  
Ivorra, B., Lopez Redondo, J., Ramos, A. M., Santiago, J. G.  
2016; 28 (1)
- **Approaching the limits of two-phase boiling heat transfer: High heat flux and low superheat** *APPLIED PHYSICS LETTERS*  
Palko, J. W., Zhang, C., Wilbur, J. D., Dusseault, T. J., Asheghi, M., Goodson, K. E., Santiago, J. G.  
2015; 107 (25)
- **Characterization of Resistances of a Capacitive Deionization System.** *Environmental science & technology*  
Qu, Y., Baumann, T. F., Santiago, J. G., Stadermann, M.  
2015; 49 (16): 9699-9706
- **Rapid Slow Off-Rate Modified Aptamer (SOMAmer)-Based Detection of C-Reactive Protein Using Isotachopheresis and an Ionic Spacer.** *Analytical chemistry*  
Eid, C., Palko, J. W., Katilius, E., Santiago, J. G.  
2015; 87 (13): 6736-6743
- **Isotachopheresis for fractionation and recovery of cytoplasmic RNA and nucleus from single cells.** *Electrophoresis*  
Kuriyama, K., Shintaku, H., Santiago, J. G.  
2015; 36 (14): 1658-1662
- **Increasing Hybridization Rate and Sensitivity of Bead-Based Assays Using Isotachopheresis** *ANGEWANDTE CHEMIE-INTERNATIONAL EDITION*  
Shintaku, H., Palko, J. W., Sanders, G. M., Santiago, J. G.  
2014; 53 (50): 13813-13816
- **Increasing hybridization rate and sensitivity of DNA microarrays using isotachopheresis** *LAB ON A CHIP*  
Han, C. M., Katilius, E., Santiago, J. G.  
2014; 14 (16): 2958-2967
- **Simultaneous purification and fractionation of nucleic acids and proteins from complex samples using bidirectional isotachopheresis.** *Analytical chemistry*  
Qu, Y., Marshall, L. A., Santiago, J. G.

2014; 86 (15): 7264-7268

- **Coupling Isotachophoresis with Affinity Chromatography for Rapid and Selective Purification with High Column Utilization, Part 2: Experimental Study** *ANALYTICAL CHEMISTRY*  
Shkolnikov, V., Santiago, J. G.  
2014; 86 (13): 6229-6236
- **Coupling isotachophoresis with affinity chromatography for rapid and selective purification with high column utilization, part 1: theory.** *Analytical chemistry*  
Shkolnikov, V., Santiago, J. G.  
2014; 86 (13): 6220-6228
- **Coupling isotachophoresis with affinity chromatography for rapid and selective purification with high column utilization, part 2: experimental study.** *Analytical chemistry*  
Shkolnikov, V., Santiago, J. G.  
2014; 86 (13): 6229-6236
- **Purification of nucleic acids using isotachophoresis** *JOURNAL OF CHROMATOGRAPHY A*  
Rogacs, A., Marshall, L. A., Santiago, J. G.  
2014; 1335: 105-120
- **An injection molded microchip for nucleic acid purification from 25 microliter samples using isotachophoresis.** *Journal of chromatography. A*  
Marshall, L. A., Rogacs, A., Meinhart, C. D., Santiago, J. G.  
2014; 1331: 139-142
- **On-chip separation and analysis of RNA and DNA from single cells.** *Analytical chemistry*  
Shintaku, H., Nishikii, H., Marshall, L. A., Kotera, H., Santiago, J. G.  
2014; 86 (4): 1953-1957
- **Rapid High-Specificity microRNA Detection Using a Two-stage Isotachophoresis Assay.** *Angewandte Chemie (International ed. in English)*  
Garcia-Schwarz, G., Santiago, J. G.  
2013; 52 (44): 11534-11537
- **Temperature effects on electrophoresis.** *Analytical chemistry*  
Rogacs, A., Santiago, J. G.  
2013; 85 (10): 5103-5113
- **Isotachophoresis with ionic spacer and two-stage separation for high sensitivity DNA hybridization assay.** *Analyst*  
Eid, C., Garcia-Schwarz, G., Santiago, J. G.  
2013; 138 (11): 3117-3120
- **A method for non-invasive full-field imaging and quantification of chemical species.** *Lab on a chip*  
Shkolnikov, V., Santiago, J. G.  
2013; 13 (8): 1632-1643
- **On-chip Isotachophoresis for Separation of Ions and Purification of Nucleic Acids** *JOVE-JOURNAL OF VISUALIZED EXPERIMENTS*  
Garcia-Schwarz, G., Rogacs, A., Bahga, S. S., Santiago, J. G.  
2012
- **Equilibria model for pH variations and ion adsorption in capacitive deionization electrodes** *Water Research*  
Hemmatifar, A., Oyarzun, D. I., Palko, J. W., Hawks, S. A., Stadermann, M., Santiago, J. G.  
2017: 387-397
- **Assay for *Listeria monocytogenes* cells in whole blood using isotachophoresis and recombinase polymerase amplification.** *Analyst*  
Eid, C., Santiago, J. G.  
2016; 142 (1): 48-54
- **Two-Dimensional Porous Electrode Model for Capacitive Deionization** *JOURNAL OF PHYSICAL CHEMISTRY C*  
Hemmatifar, A., Stadermann, M., Santiago, J. G.  
2015; 119 (44): 24681-24694

- **Characterization of Resistances of a Capacitive Deionization System** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*  
Qu, Y., Baumann, T. F., Santiago, J. G., Stadermann, M.  
2015; 49 (16): 9699-9706
- **Transient delivery of modified mRNA encoding TERT rapidly extends telomeres in human cells** *FASEB JOURNAL*  
Ramunas, J., Yakubov, E., Brady, J. J., Corbel, S. Y., Holbrook, C., Brandt, M., Stein, J., Santiago, J. G., Cooke, J. P., Blau, H. M.  
2015; 29 (5): 1930-1939
- **Coupling Isotachophoresis with Affinity Chromatography for Rapid and Selective Purification with High Column Utilization, Part 1: Theory** *ANALYTICAL CHEMISTRY*  
Shkolnikov, V., Santiago, J. G.  
2014; 86 (13): 6220-6228
- **In Situ Spatially and Temporally Resolved Measurements of Salt Concentration between Charging Porous Electrodes for Desalination by Capacitive Deionization** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*  
Suss, M. E., Biesheuvel, P. M., Baumann, T. F., Stadermann, M., Santiago, J. G.  
2014; 48 (3): 2008-2015
- **Particle Tracking and Multispectral Collocation Method for Particle-to-Particle Binding Assays** *ANALYTICAL CHEMISTRY*  
Rogacs, A., Santiago, J. G.  
2014; 86 (1): 608-614
- **Impedance-based study of capacitive porous carbon electrodes with hierarchical and bimodal porosity** *JOURNAL OF POWER SOURCES*  
Suss, M. E., Baumann, T. F., Worsley, M. A., Rose, K. A., Jaramillo, T. F., Stadermann, M., Santiago, J. G.  
2013; 241: 266-273
- **Two- and three-dimensional modeling and optimization applied to the design of a fast hydrodynamic focusing microfluidic mixer for protein folding** *PHYSICS OF FLUIDS*  
Ivorra, B., Redondo, J. L., Santiago, J. G., Ortigosa, P. M., Ramos, A. M.  
2013; 25 (3)
- **Coupling isotachophoresis and capillary electrophoresis: a review and comparison of methods** *ANALYST*  
Bahga, S. S., Santiago, J. G.  
2013; 138 (3): 735-754
- **A method for non-invasive full-field imaging and quantification of chemical species** *LAB ON A CHIP*  
Shkolnikov, V., Santiago, J. G.  
2013; 13 (8): 1632-1643
- **Particle Tracking and Multispectral Collocation Method for Cytometry-Like and Particle-to-Particle Binding Assays** *Particle Tracking and Multispectral Collocation Method for Particle-to-Particle Binding Assays, Analytical Chemistry*  
Rogacs, A., Santiago, J., G.  
2013; 1 (86): 608-614
- **Integration of rapid DNA hybridization and capillary zone electrophoresis using bidirectional isotachophoresis** *ANALYST*  
Bahga, S. S., Han, C. M., Santiago, J. G.  
2013; 138 (1): 87-90
- **Unraveling the potential and pore-size dependent capacitance of slit-shaped graphitic carbon pores in aqueous electrolytes** *PHYSICAL CHEMISTRY CHEMICAL PHYSICS*  
Kalluri, R. K., Biener, M. M., Suss, M. E., Merrill, M. D., Stadermann, M., Santiago, J. G., Baumann, T. F., Biener, J., Striolo, A.  
2013; 15 (7): 2309-2320
- **Integrated Printed Circuit Board Device for Cell Lysis and Nucleic Acid Extraction** *ANALYTICAL CHEMISTRY*  
Marshall, L. A., Wu, L. L., Babikian, S., Bachman, M., Santiago, J. G.  
2012; 84 (21): 9640-9645
- **Effect of PVP on the electroosmotic mobility of wet-etched glass microchannels** *ELECTROPHORESIS*  
Milanova, D., Chambers, R. D., Bahga, S. S., Santiago, J. G.  
2012; 33 (21): 3259-3262

- **Capacitive desalination with flow-through electrodes** *ENERGY & ENVIRONMENTAL SCIENCE*  
Suss, M. E., Baumann, T. F., Bourcier, W. L., Spadaccini, C. M., Rose, K. A., Santiago, J. G., Stadermann, M.  
2012; 5 (11): 9511-9519
- **Robust and high-resolution simulations of nonlinear electrokinetic processes in variable cross-section channels** *ELECTROPHORESIS*  
Bahga, S. S., Bercovici, M., Santiago, J. G.  
2012; 33 (19-20): 3036-3051
- **Electric fields yield chaos in microflows** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Posner, J. D., Perez, C. L., Santiago, J. G.  
2012; 109 (36): 14353-14356
- **Integration of On-Chip Isotachophoresis and Functionalized Hydrogels for Enhanced-Sensitivity Nucleic Acid Detection** *ANALYTICAL CHEMISTRY*  
Garcia-Schwarz, G., Santiago, J. G.  
2012; 84 (15): 6366-6369
- **Bacterial RNA Extraction and Purification from Whole Human Blood Using Isotachophoresis** *ANALYTICAL CHEMISTRY*  
Rogacs, A., Qu, Y., Santiago, J. G.  
2012; 84 (14): 5858-5863
- **Rapid hybridization of nucleic acids using isotachophoresis** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Bercovici, M., Han, C. M., Liao, J. C., Santiago, J. G.  
2012; 109 (28): 11127-11132
- **Concentration cascade of leading electrolyte using bidirectional isotachophoresis** *ELECTROPHORESIS*  
Bahga, S. S., Santiago, J. G.  
2012; 33 (6): 1048-1059
- **On-chip isotachophoresis for separation of ions and purification of nucleic acids.** *Journal of visualized experiments : JoVE*  
Garcia-Schwarz, G., Rogacs, A., Bahga, S. S., Santiago, J. G.  
2012: e3890-?
- **An Integrated Printed Circuit Board Device for Cell Lysis and Nucleic Acid Extraction** *Analytical Chemistry*  
Marshall, L. A., Li, L., Babikain, S., Bachman, M., Santiago, J. G.  
2012; 21 (84): 9640-9645
- **Desalination and hydrogen, chlorine, and sodium hydroxide production via electrophoretic ion exchange and precipitation** *PHYSICAL CHEMISTRY CHEMICAL PHYSICS*  
Shkolnikov, V., Bahga, S. S., Santiago, J. G.  
2012; 14 (32): 11534-11545
- **Extraction of DNA from Malaria-Infected Erythrocytes Using Isotachophoresis** *ANALYTICAL CHEMISTRY*  
Marshall, L. A., Han, C. M., Santiago, J. G.  
2011; 83 (24): 9715-9718
- **Electrophoretic mobility measurements of fluorescent dyes using on-chip capillary electrophoresis** *ELECTROPHORESIS*  
Milanova, D., Chambers, R. D., Bahga, S. S., Santiago, J. G.  
2011; 32 (22): 3286-3294
- **Coupled Isotachophoretic Preconcentration and Electrophoretic Separation Using Bidirectional Isotachophoresis** *ANALYTICAL CHEMISTRY*  
Bahga, S. S., Chambers, R. D., Santiago, J. G.  
2011; 83 (16): 6154-6162
- **Sample dispersion in isotachophoresis** *JOURNAL OF FLUID MECHANICS*  
Garcia-Schwarz, G., Bercovici, M., Marshall, L. A., Santiago, J. G.  
2011; 679: 455-475
- **Rapid Detection of Urinary Tract Infections Using Isotachophoresis and Molecular Beacons** *ANALYTICAL CHEMISTRY*  
Bercovici, M., Kaigala, G. V., Mach, K. E., Han, C. M., Liao, J. C., Santiago, J. G.

2011; 83 (11): 4110-4117

- **MicroRNA Profiling by Simultaneous Selective Isotachopheresis and Hybridization with Molecular Beacons** *ANALYTICAL CHEMISTRY*  
Persat, A., Santiago, J. G.  
2011; 83 (6): 2310-2316
- **High-sensitivity detection using isotachopheresis with variable cross-section geometry** *ELECTROPHORESIS*  
Bahga, S. S., Kaigala, G. V., Bercovici, M., Santiago, J. G.  
2011; 32 (5): 563-572
- **Electroosmotic pump performance is affected by concentration polarizations of both electrodes and pump** *SENSORS AND ACTUATORS A-PHYSICAL*  
Suss, M. E., Mani, A., Zangle, T. A., Santiago, J. G.  
2011; 165 (2): 310-315
- **Toward an Electrolytic Micropump Actuator Design with Controlled Cyclic Bubble Growth and Recombination** *Symposium on Sensors, Actuators, and Microsystems General Session/219th Meeting of the Electrochemical-Society (ECS)*  
Hsu, L., Ramunas, J., Gonzalez, J., Santiago, J. G., STRICKLAND, D. G.  
ELECTROCHEMICAL SOC INC.2011: 3-11
- **High sensitivity detection using isotachopheresis with variable cross-section geometry** *Electrophoresis*  
Bahga, S. S., Kaigala, G. V., Bercovici, M., Santiago, J. G.  
2011; 32: 311-314
- **Quantification of Global MicroRNA Abundance by Selective Isotachopheresis** *ANALYTICAL CHEMISTRY*  
Persat, A., Chivukula, R. R., Mendell, J. T., Santiago, J. G.  
2010; 82 (23): 9631-9635
- **Design and fabrication of porous polymer wick structures** *SENSORS AND ACTUATORS B-CHEMICAL*  
Shkolnikov, V., Strickland, D. G., Fenning, D. P., Santiago, J. G.  
2010; 150 (2): 556-563
- **A two-liquid electroosmotic pump using low applied voltage and power** *SENSORS AND ACTUATORS A-PHYSICAL*  
Litster, S., Suss, M. E., Santiago, J. G.  
2010; 163 (1): 311-314
- **Active water management at the cathode of a planar air-breathing polymer electrolyte membrane fuel cell using an electroosmotic pump** *JOURNAL OF POWER SOURCES*  
Fabian, T., O'Hayre, R., Litster, S., Prinz, F. B., Santiago, J. G.  
2010; 195 (11): 3640-3644
- **Passive water management at the cathode of a planar air-breathing proton exchange membrane fuel cell** *JOURNAL OF POWER SOURCES*  
Fabian, T., O'Hayre, R., Litster, S., Prinz, F. B., Santiago, J. G.  
2010; 195 (10): 3201-3206
- **A self-priming, roller-free, miniature, peristaltic pump operable with a single, reciprocating actuator** *SENSORS AND ACTUATORS A-PHYSICAL*  
Shkolnikov, V., Ramunas, J., Santiago, J. G.  
2010; 160 (1-2): 141-146
- **Effects of Constant Voltage on Time Evolution of Propagating Concentration Polarization** *ANALYTICAL CHEMISTRY*  
Zangle, T. A., Mani, A., Santiago, J. G.  
2010; 82 (8): 3114-3117
- **In situ-polymerized wicks for passive water management in proton exchange membrane fuel cells** *JOURNAL OF POWER SOURCES*  
Strickland, D. G., Santiago, J. G.  
2010; 195 (6): 1667-1675
- **Ionic strength effects on electrophoretic focusing and separations** *ELECTROPHORESIS*  
Bahga, S. S., Bercovici, M., Santiago, J. G.  
2010; 31 (5): 910-919
- **Fluorescent Carrier Ampholytes Assay for Portable, Label-Free Detection of Chemical Toxins in Tap Water** *ANALYTICAL CHEMISTRY*

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- Bercovici, M., Kaigala, G. V., Backhouse, C. J., Santiago, J. G.  
2010; 82 (5): 1858-1866
- **Method for Analyte Identification Using Isotachopheresis and a Fluorescent Carrier Ampholyte Assay** *ANALYTICAL CHEMISTRY*  
Bercovici, M., Kaigala, G. V., Santiago, J. G.  
2010; 82 (5): 2134-2138
  - **Compact adaptive-grid scheme for high numerical resolution simulations of isotachopheresis** *JOURNAL OF CHROMATOGRAPHY A*  
Bercovici, M., Lele, S. K., Santiago, J. G.  
2010; 1217 (4): 588-599
  - **Evidence shows concentration polarization and its propagation can be key factors determining electroosmotic pump performance** *SENSORS AND ACTUATORS B-CHEMICAL*  
Strickland, D. G., Suss, M. E., Zangle, T. A., Santiago, J. G.  
2010; 143 (2): 795-798
  - **Miniaturized system for isotachopheresis assays** *LAB ON A CHIP*  
Kaigala, G. V., Bercovici, M., Behnam, M., Elliott, D., Santiago, J. G., Backhouse, C. J.  
2010; 10 (17): 2242-2250
  - **Theory and experiments of concentration polarization and ion focusing at microchannel and nanochannel interfaces** *CHEMICAL SOCIETY REVIEWS*  
Zangle, T. A., Mani, A., Santiago, J. G.  
2010; 39 (3): 1014-1035
  - **Purification of Nucleic Acids from Whole Blood Using Isotachopheresis** *ANALYTICAL CHEMISTRY*  
Persat, A., Marshall, L. A., Santiago, J. G.  
2009; 81 (22): 9507-9511
  - **Engineering model for coupling wicks and electroosmotic pumps with proton exchange membrane fuel cells for active water management** *ELECTROCHIMICA ACTA*  
Litster, S., Buie, C. R., Santiago, J. G.  
2009; 54 (26): 6223-6233
  - **Two-phase hydrodynamics in a miniature direct methanol fuel cell** *INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER*  
Buie, C. R., Santiago, J. G.  
2009; 52 (21-22): 5158-5166
  - **Electrokinetic control of sample splitting at a channel bifurcation using isotachopheresis** *NEW JOURNAL OF PHYSICS*  
Persat, A., Santiago, J. G.  
2009; 11
  - **Effects of carbon dioxide on peak mode isotachopheresis: Simultaneous preconcentration and separation** *LAB ON A CHIP*  
Khurana, T. K., Santiago, J. G.  
2009; 9 (10): 1377-1384
  - **Imaging and Quantification of Isotachopheresis Zones Using Nonfocusing Fluorescent Tracers** *ANALYTICAL CHEMISTRY*  
Chambers, R. D., Santiago, J. G.  
2009; 81 (8): 3022-3028
  - **On the Propagation of Concentration Polarization from Microchannel-Nanochannel Interfaces Part II: Numerical and Experimental Study** *LANGMUIR*  
Zangle, T. A., Mani, A., Santiago, J. G.  
2009; 25 (6): 3909-3916
  - **On the Propagation of Concentration Polarization from Microchannel-Nanochannel Interfaces Part I: Analytical Model and Characteristic Analysis** *LANGMUIR*  
Mani, A., Zangle, T. A., Santiago, J. G.  
2009; 25 (6): 3898-3908
  - **Electrokinetics in nanochannels. Part II. Mobility dependence on ion density and ionic current measurements (vol 325, pg 539, 2008)** *JOURNAL OF COLLOID AND INTERFACE SCIENCE*  
Baldessari, F., Santiago, J. G.
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2009; 331 (2): 550-550

- **Electrokinetics in nanochannels. Part I. Electric double layer overlap and channel-to-well equilibrium (vol 325, pg 526, 2008)** *JOURNAL OF COLLOID AND INTERFACE SCIENCE*  
Baldessari, F., Santiago, J. G.  
2009; 331 (2): 549-549
- **Dry gas operation of proton exchange membrane fuel cells with parallel channels: Non-porous versus porous plates** *JOURNAL OF POWER SOURCES*  
Litster, S., Santiago, J. G.  
2009; 188 (1): 82-88
- **Open source simulation tool for electrophoretic stacking, focusing, and separation** *JOURNAL OF CHROMATOGRAPHY A*  
Bercovici, M., Lele, S. K., Santiago, J. G.  
2009; 1216 (6): 1008-1018
- **Basic principles of electrolyte chemistry for microfluidic electrokinetics. Part I: Acid-base equilibria and pH buffers** *LAB ON A CHIP*  
Persat, A., Chambers, R. D., Santiago, J. G.  
2009; 9 (17): 2437-2453
- **Corrigendum to 'Electrokinetics in Nanochannels: Part II: Mobility Dependence on Ion Density and Ionic Current Measurements** *Journal of Colloid and Interface Science*  
Baldessari, F., Santiago, J., G.  
2009; 2 (331): 550-550
- **Corrigendum to 'Electrokinetics in Nanochannels. Part I: Electric Double Layer Overlap and Channel-to-Well Equilibrium** *Journal of Colloid and Interface Science*  
Baldessari, F., Santiago, J., G.  
2009; 2 (331): 549-549
- **In-situ Polymerized Wicks for Passive Water Management and Humidification of Dry Gases** *9th Proton Exchange Membrane Fuel Cell Symposium (PEMFC) Conducted Under the Auspices of the 216th Meeting of the Electrochemical-Society-Inc*  
STRICKLAND, D. G., Santiago, J. G.  
ELECTROCHEMICAL SOC INC.2009: 303-9
- **NANOPORE CONCENTRATION POLARIZATION** *ASME International Mechanical Engineering Congress and Exposition*  
Talasaz, A. H., Zangle, T. A., Santiago, J. G.  
AMER SOC MECHANICAL ENGINEERS.2009: 871-872
- **IN-SITU POLYMERIZED WICKS FOR PASSIVE WATER MANAGEMENT IN PEM FUEL CELL SYSTEMS** *3rd International Conference on Energy Sustainability*  
Strickland, D. G., Fenning, D., Litster, S., Santiago, J. G.  
AMER SOC MECHANICAL ENGINEERS.2009: 325-326
- **Special issue on fundamental principles and techniques in microfluidics** *LAB ON A CHIP*  
Santiago, J. G., Chen, C.  
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## PRESENTATIONS

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- Capacitive deionization (CDI) of water: How much energy is dissipated and how much is stored? - 67th Annual Meeting of the International Society of Electrochemistry (8/22/2016)
- Life in the shock wave: Controlling DNA reactions with electric fields - Whiting School of Engineering, Johns Hopkins University (4/14/2016)
- DNA assays leveraging ion concentration shock waves - ASME NanoEngineering for Medicine and Biology Conference (NEMB) (2/23/2016)