

# 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

Professor Santiago's research focuses on the study of microscale transport phenomena including electrokinetic flow, electrohydrodynamic instabilities, and general convective-diffusion-electromigration processes. His research includes the optimization and development of novel micro- and nano-devices for pumping liquids, on-chip electrophoresis, sample preconcentration methods, and miniature fuel cells. The applications of this work include microfabricated bioanalytical systems for genetic analysis, drug discovery, bioweapon detection, drug delivery, and power generation.

#### ACADEMIC APPOINTMENTS

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

#### HONORS AND AWARDS

- 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)

#### 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

#### 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)

#### 2013-14

- Advanced Topics in Electrokinetics: ME 458 (Spr)
- Experimental Methods in Fluid Mechanics: ME 354 (Aut)
- Fluid Flow in Microdevices: ME 457 (Spr)

## Publications

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### PUBLICATIONS

- **Rapid Slow Off-Rate Modified Aptamer (SOMAmer)-Based Detection of C-Reactive Protein Using Isotachophoresis and an Ionic Spacer.** *Analytical chemistry*  
Eid, C., Palko, J. W., Katilius, E., Santiago, J. G.  
2015; 87 (13): 6736-6743
- **Isotachophoresis 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
- **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
- **Increasing Hybridization Rate and Sensitivity of Bead-Based Assays Using Isotachophoresis** *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 isotachophoresis** *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 Isotachopheresis 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 Isotachopheresis 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
- **Purification of nucleic acids using isotachopheresis** *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 isotachopheresis.** *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
- **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
- **Rapid High-Specificity microRNA Detection Using a Two-stage Isotachopheresis 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
- **Isotachopheresis 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
- **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 isotachopheresis 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 isotachopheresis** *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 Isotachopheresis 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 Isotachopheresis** *ANALYTICAL CHEMISTRY*  
Rogacs, A., Qu, Y., Santiago, J. G.  
2012; 84 (14): 5858-5863
- **Rapid hybridization of nucleic acids using isotachopheresis** *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 isotachopheresis** *ELECTROPHORESIS*  
Bahga, S. S., Santiago, J. G.  
2012; 33 (6): 1048-1059
- **On-chip Isotachopheresis 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

- **On-chip isotachopheresis 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 Isotachopheresis** *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 Isotachopheretic Preconcentration and Electrophoretic Separation Using Bidirectional Isotachopheresis** *ANALYTICAL CHEMISTRY*  
Bahga, S. S., Chambers, R. D., Santiago, J. G.  
2011; 83 (16): 6154-6162
- **Sample dispersion in isotachopheresis** *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 Isotachopheresis 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*  
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.  
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.  
2009; 9 (17): 2423-2424
  - **Basic principles of electrolyte chemistry for microfluidic electrokinetics. Part II: Coupling between ion mobility, electrolysis, and acid-base equilibria** *LAB ON A CHIP*  
Persat, A., Suss, M. E., Santiago, J. G.  
2009; 9 (17): 2454-2469
  - **Hydrodynamic interactions in metal rodlike-particle suspensions due to induced charge electroosmosis** *PHYSICAL REVIEW E*  
Rose, K. A., Hoffman, B., Saintillan, D., Shaqfeh, E. S., Santiago, J. G.  
2009; 79 (1)
  - **Rapid and selective extraction, isolation, preconcentration, and quantitation of small RNAs from cell lysate using on-chip isotachopheresis** *LAB ON A CHIP*  
Schoch, R. B., Ronaghi, M., Santiago, J. G.  
2009; 9 (15): 2145-2152
  - **Electrokinetics in nanochannels - Part I. Electric double layer overlap and channel-to-well equilibrium** *JOURNAL OF COLLOID AND INTERFACE SCIENCE*  
Baldessari, F.  
2008; 325 (2): 526-538
  - **Electrokinetics in nanochannels - Part II. Mobility dependence on ion density and ionic current measurements** *JOURNAL OF COLLOID AND INTERFACE SCIENCE*  
Baldessari, F.  
2008; 325 (2): 539-546
  - **Sample zone dynamics in peak mode isotachopheresis** *ANALYTICAL CHEMISTRY*  
Khurana, T. K., Santiago, J. G.  
2008; 80 (16): 6300-6307
  - **Lymphocyte electrotaxis in vitro and in vivo** *JOURNAL OF IMMUNOLOGY*  
Lin, F., Baldessari, F., Gyenge, C. C., Sato, T., Chambers, R. D., Santiago, J. G., Butcher, E. C.  
2008; 181 (4): 2465-2471
  - **A depth-averaged electrokinetic flow model for shallow microchannels** *JOURNAL OF FLUID MECHANICS*  
Lin, H., Storey, B. D., Santiago, J. G.  
2008; 608: 43-70
  - **Ballistic dispersion in temperature gradient focusing** *PROCEEDINGS OF THE ROYAL SOCIETY A-MATHEMATICAL PHYSICAL AND ENGINEERING SCIENCES*  
Huber, D. E., Santiago, J. G.  
2008; 464 (2091): 595-612



- **High flow rate per power electroosmotic pumping using low ion density solvents** *SENSORS AND ACTUATORS A-PHYSICAL*  
Kim, D., Posner, J. D., Santiago, J. G.  
2008; 141 (1): 201-212
- **Preconcentration, separation, and indirect detection of nonfluorescent analytes using fluorescent mobility markers** *ANALYTICAL CHEMISTRY*  
Khurana, T. K., Santiago, J. G.  
2008; 80 (1): 279-286
- **Quick Measurement of Electroosmotic Flow Velocity** *Chips & Tips, Lab on a Chip*  
Nohmi, M., Santiago, J., G.  
2008
- **Physics of pumping methanol/water solutions for fuel cell applications** *ASME International Mechanical Engineering Congress and Exposition*  
Buie, C. R., Litster, S., Santiago, J. G.  
AMER SOC MECHANICAL ENGINEERS.2008: 637-642
- **Taylor Dispersion in Sample Pre-Concentration Methods** *CRC Handbook of Electrophoresis*  
Bharadwaj, R., Huber, D., E., Khurana, T., Santiago, Juan, G.  
edited by Landers, J.  
CRC Press.2008; 3rd: 1085-1120
- **Model and Experimental Study of Hydrodynamic Coupling between a Fuel Pump and a Direct Methanol Fuel Cell** *8th Symposium on Proton Exchange Membrane Fuel Cells*  
Buie, C. R., Santiago, J. G.  
ELECTROCHEMICAL SOCIETY INC.2008: 1525-38
- **On-chip isothermal polymerase chain reaction** *ASME International Mechanical Engineering Congress and Exposition*  
Morita, T., Persat, A., Santiago, J. G.  
AMER SOC MECHANICAL ENGINEERS.2008: 1003-1004
- **INDIRECT FLUORESCENCE DETECTION OF NON FLUORESCENT ANALYTES USING ISOTACHOPHORETIC MOBILITY MARKERS** *6th International Conference on Nanochannels, Microchannels and Minichannels*  
Khurana, T. K., Bercovici, M., Santiago, J. G.  
AMER SOC MECHANICAL ENGINEERS.2008: 1701-1706
- **On-chip indirect detection of non-fluorescent analytes using fluorescent spacers** *ASME International Mechanical Engineering Congress and Exposition*  
Khurana, T. K., Santiago, J. G.  
AMER SOC MECHANICAL ENGINEERS.2008: 901-904
- **Two-liquid electroosmotic pump for portable drug delivery systems** *ASME International Mechanical Engineering Congress and Exposition*  
Litster, S., Ha, B., Kim, D., Santiago, J. A.  
AMER SOC MECHANICAL ENGINEERS.2008: 963-964
- **Experimental study of concentration polarization at a microchannel-nanochannel interface** *ASME International Mechanical Engineering Congress and Exposition*  
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