P. Ravi Selvaganapathy

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EDUCATION

B.Tech: Chemical and Electrochemical Engineering
Central Electrochemical Research Institute, Karaikudi, India (1998)

M.S: Electrical Engineering
University of Michigan, Ann Arbor, U.S.A. (2001)

PhD: Electrical Engineering
University of Michigan, Ann Arbor, U.S.A. (2002)
Advisor: Dr. Carlos Mastrangelo

ACADEMIC EXPERIENCE

Professor	Mechanical Engineering	**McMaster University**	2016 onwards
Canada Research Chair	Biomicrofluidics	**McMaster University**	2011 onwards
Visiting Professor	Physics	**Indian Inst. of Science**	2012
Associate Professor	Mechanical Engineering	**McMaster University**	2010-2016
Assistant Professor	Mechanical Engineering	**McMaster University**	2005-2010
Post Doctoral Researcher	Advanced Materials	**Sandia National Laboratory**	2003-2004

HONOURS & AWARDS

- Editor's Pick Award, Biomicrofluidics, (2018)
- Dean's Honor Roll for Graduate Supervision (2018)
- Canada Research Chair Award (Tier II), Canada Research Chairs Program, (2016)
- Best Paper Award - Basic Science and Technology- Journal of Endodontics (2016)
- NSERC Discovery Accelerator Supplement Award (2015)
- Best Paper Award - Chemical Sensors - IEEE Sensors Conference (2014)
- McMaster Synergy Award for Interdisciplinary Collaboration (2014)
- Dean's Honor Roll for Teaching (2014)
- Rising Star in Global Health Award, Grand Challenges Canada, (2012)
- Canada Research Chair Award (Tier II), Canada Research Chairs Program, (2011)
- Early Researchers Award, Ontario Ministry of Research and Innovation, (2010)

RESEARCH AREAS OF INTEREST

- Micro/ Nano fluidics
- Micro/ Nano fabrication and additive manufacturing
- Micro electro mechanical systems (MEMS)

- Microdevices for drug delivery, drug discovery, diagnostics and artificial organs

SCHOLARLY AND PROFESSIONAL ACTIVITIES

Editorships

- **Associate Editor** – Micromachines (2019-)
- **Associate Editor** – Frontiers in Nanotechnology (2019-)
- **Guest Editor** – Sensors – Special Issue on Microfluidic Platforms for Environmental Monitoring and Medical Diagnostics (2019)
- **Guest Editor** – Micromachines – Special Issue on Microfluidics: Tissue Chips and Microphysiological Systems (2019)
- **Guest Editor** - Micromachines - Special Issue on Biomedical microdevices (2017)

Grant Committees

- Section Chair - Electrical Engineering Discovery Grant Evaluation Group - **NSERC** (2017-19)
- Panel Member - Scalable Nanomanufacturing for Integrated Systems- **NSF**, USA (2017)
- Panel Member - Electrical Engineering Discovery Grant Evaluation Group - **NSERC** (2016-19)
- Panel Member - Emerging Frontiers in Research and Innovation - **NSF**, USA (2009)

Executive Positions

- Program Organizing Committee &Track Chair – Packaging – ***IEEE Sensors Conference*** (2019)
- Track Chair (Biomicrofluidics) and Organizing Committee Member - 5th ***European Conference on Microfluidics***, Strasbourg, France (2018);
- Session Chair and Organizer – Microfluidics, 32nd ***International Symposium on Microscale Separations and Bioanalysis***, Niagara on the lake (2016)
- Program Organizing Committee &Track Chair – Chemical Sensors – ***IEEE Sensors Conference*** (2013)
- Session Chair – ***International Smart Structures and Systems Conference*** (2012)
- Session Organizer – Sensors and Actuators – ***CANCAM*** 2011,
- Session Chair and Organizer – Microfluidics - 92nd ***Canadian Chemistry Conference***, Hamilton (2009).

Journal Referee (~20 papers/year)

- Journal of Microelectromechanical Systems (IEEE/ASME) (**recognized for quality of my review**)
- Journal of Micromechanics and Microengineering (IOP)
- Biomedical Microdevices (Springer)
- Transactions on Electron Devices (IEEE)
- Transactions of Biomedical Engineering (IEEE)
- Sensors and Actuators A&B (Elsevier)
- Lab on a Chip (Royal Society of Chemistry)
- Langmuir (American Chemical Society)
- Microsystem Technologies (Springer)
- Microfluidics and Nanofluidics (Springer)

- Energy and Environmental Sciences (Royal Society of Chemistry)
- Analyst (Royal Society of Chemistry)
- Analytical Chemistry (American Chemical Society)
- Microelectronics Engineering (Elsevier)
- Sensors Journal (IEEE)
- Electrophoresis (Wiley)
- ACS Applied Surfaces and Interfaces
- ACS Biomaterials Science and Engineering
- Biomaterials (Elsevier)
- Integrative Biology
- Biofabrication
- Acta Biomateraila
- Water Research
- Advanced Functional Materials (Wiley)

External Grant Reviewer

- Institut national de la santé et de la recherche médicale (INSERM) – France (2019)
- French National Research Agency- ANR (2017)
- Al-Jalila Foundation - United Arab Emirates (2016, 2017, 2018)
- New Zealand Ministry of Business Innovation and Employment (2012, 2013)
- Swiss National Science Foundation (2012)
- Hong Kong Innovation and Technology Commission (2012, 2013)
- NSERC Strategic Grant (2007, 2008, 2009, 2010, 2012, 2018)
- NSERC Discovery Grant (2008, 2012,2013,2014, 2016, 2017)
- Canada Foundation for Innovation (CFI) (2009,2012,2013,2014)
- British Columbia Innovation Council (2010)
- NSERC/CIHR - CHRP Program (2011,2012,2014)
- University of Western Ontario (2006)

External Referee for Tenure and Promotion

- University of British Columbia (6)
- University of Louisville (2)
- Georgetown University (1)
- University of Ontario Institute of Technology (1)

Reviewer for Prestigious Awards

- Presidential Early Career Award for Scientists and Engineers -USA (PECASE) (2010)
- Canada Research Chair Award (2011,2013)
- NSERC Steacie Award (2012,2015, 2017, 2018)
- NSERC Herzberg Medal (2013)

PUBLICATIONS

Contributions to Books

1. A. Shahid, S. Liaghat, P. Ravi Selvaganapathy, Microfluidic devices for DNA amplification, Bioelectronics and Medical Devices, (Eds. K. Pal, H.B. Kraatz) Elsevier, Chapter 35, 721-755, (2019)
2. A. Aryasomayajula, P. Bayat, P. Rezai, P.R. Selvaganapathy, Microfluidic devices and their applications, in *Handbook of Nanotechnology* (Ed. B. Bhushan), Springer, (4^{th} Edition) Chapter 16, 487-522, (2017)
3. W.I. Wu, P. Rezai, H.H. Hsu, P. Selvaganapathy, Materials and methods for the microfabrication of microfluidic biomedical devices, in *Microfluidic devices for biomedical applications* (Eds. X.J. Li, Y. Zhou), Woodhead Publishing, Chapter 1, 3-62, (2013)
4. P. Rezai, W. Wu, P. Selvaganapathy, Polymer Microfabrication, in *MEMS for biomedical applications*, (Ed: S. Bhansali), Woodhead Publishing, Chapter 1, 3-46, (2012).
5. P. Rezai, S. Salam, P. Selvaganapathy, B.P. Gupta, Microfluidic systems to study the biology of human diseases and identify potential therapeutic targets in C. elegans, in *Integrated Microsystems* (Ed: Kris Iniewski), CRC Press, Chapter. 27, 581-608 (2011).
6. A. Noori, S.K. Upadhyaya, P. Selvaganapathy, Materials and microfabrication processes for microfluidic devices, in *Microfluidics for Biological Applications*, E. Finehout, W.C. Tian (Eds.) Springer, Chapter 2, 35-92, (2009).
7. P. Selvaganapathy, Polymers in MEMS and microfluidics, in *Comprehensive Microsystems*, Y. Gianchandani, O. Tabata, H. Zappe (eds.) Elsevier, vol. 1, Chapter 8.05, 1-30, (2007).
8. P. Selvaganapathy, E.T. Carlen, C.H. Mastrangelo, Integrated microfabricated systems for genetic and protein analysis, in *Encyclopedia of Sensors*, C.A. Grimes, E.C. Dickey, M.V. Pishko (eds.), American Scientific Publishers, vol. X, 1-26, (2006).

Journal Publications

1. B. Lee, A. Shamsabadi, P.R. Selvaganapathy, K. Grandfield, A bioprinted in vitro model for osteoblast to osteocyte transformation by changing mechanical properties of the ECM, Advanced Biosystems, (2019) (accepted) (**featured on the cover**)
2. E. Mahoney, H.H. Hsu, F. Du, B. Xiong, P.R. Selvaganapathy, Q. Fang, Optofluidic dissolved Oxygen sensing with sensitivity enhancement through multiple reflections, IEEE Sensors, (2019) (accepted)
3. M. Dabaghi, N. Saraei, G. Fusch, N. Rochow, J. Brash, C. Fusch, P. R. Selvaganapathy, An ultra-thin, all PDMS-based microfluidic lung assist device with high oxygenation capacity, Biomicrofluidics, 13, 034116 (2019)
4. A. Shahin-Shamsabadi, P. Ravi Selvaganapathy, A rapid fabrication technique for self-assembled collagen-based multicellular heterogeneous 3D tissue constructs, Acta Biomaterialia, 92, 172-183, (2019)
5. D. Cevik, M. Acker, R. Ghaemi, P. Arefi, J. Zhang, P.R. Selvaganapathy, I. Dworkin, R. Jacobs, Chloroform and Desflurane immobilization with recovery of viable Drosophila larvae for confocal imaging, J. Insect Physiology, 117, 103900, (2019)
6. D. Firouzi, C.Y. Ching, P.R. Selvaganapathy, Development of oxygen-plasma-surface-treated UHMWPE fabric coated with a mixture of SiC/polyurethane for protection against puncture and needle threats, Fibers, 7, 46, (2019) (**invited**)

7. A. Mohammadzadeh, A. Fox-Robichaud, P.R. Selvaganapathy, Rapid and inexpensive method for fabrication and integration of electrodes in microfluidic devices, J. MEMS, 28, 597-605, (2019)
8. A. Ahmed, I. Hassan, M. El-Kady, A. Radhi, C.K. Jeong, P.R. Selvaganapathy , S. Ren, Q. Wang, R.B. Kaner, Integrated Triboelectric Nanogenerators in the Era of Internet of Things: A review, Advanced Science, (2019) (accepted)
9. C. Guo, P. Koshy, F. Coelho, P.R. Selvaganapathy, Sink electrical discharge machining of hydrophobic surfaces, CIRP annals – Manufacturing Technology, 68, 185-188, (2019)
10. A. Ahmed, I. Hassan, I.M. Mosa, E. Elsanadidy, G.S. Phadke, M.F. El-Kady, J.F. Rusling, P.R. Selvaganapathy, R.B. Kaner, All printable snow-based triboelectric nanogenerator, Nano Energy, 60, 17-25, (2019)
11. A. Ahmed, M.F. El-Kady, I. Hassan, A. Negm, A.M. Pourrahimi, M. Muni, P.R. Selvaganapathy, R.B. Kaner, Fire-Retardant, Self-Extinguishing Triboelectric Nanogenerators, Nano Energy, 59, 336-345, (2019)
12. M .Osborne, A. Aryasomayajula, A. Shakeri, P.R. Selvaganapathy, T. Didar, Suppression of Biofouling on a Permeable Membrane for Dissolved Oxygen Sensing using a Lubricant-Infused Coating, ACS Sensors, 4, 687-693, (2019)
13. A. Shahin-Shamsabadi, P. Ravi Selvaganapathy, ExCeL: Combining Extrusion Printing on Cellulose Scaffolds with Lamination to Create In Vitro Biological Models, Biofabrication, 11, 035002, (2019)
14. R. Attalla, E. Puersten, N. Jain, P.R. Selvaganapathy, 3D Bioprinting of Heterogeneous Bi- and Tri-layered Hollow Channels within Gel Scaffolds using Scalable Multi-Axial Microfluidic Extrusion Nozzle, Biofabrication, 11, 015012, (2019)
15. A. Mohammadzadeh, A. Fox-Robichaud, P.R. Selvaganapathy, Rapid and inexpensive method for fabrication of multi-material multi-layer microfluidic devices, J. Micromech. Microeng., 29, 015013, (2019)
16. M. Dabaghi, N. Saraei, G. Fusch, N. Rochow, J.L. Brash, C. Fusch, P.R. Selvaganapathy, An ultra-thin highly flexible microfluidic device for blood oxygenation, Lab on a Chip, 18, 3780 - 3789 (2018) (featured on the cover)
17. S. Zheng, M. Zlatin, P. Ravi Selvaganapathy, M.A. Brook, Multiple modulus silicone elastomers using 3D extrusion printing of low viscosity inks, Additive Manufacturing, (2018) (accepted)
18. P. Madadkar, P.R. Selvaganapathy, R. Ghosh, Continuous flow microreactor for protein PEGylation, Biomicrofluidics, 12, 044114 (2018)
19. C. Richman, S. Rashid, S. Prashar, R.K. Mishra, P.R. Selvaganapathy, B.P. Gupta, C. elegans MANF homolog is necessary for the protection of dopaminergic neurons and ER Unfolded Protein Response, Frontiers in Neuroscience, 12, 544, (2018)
20. D. Firouzi, M.K. Russel, S.N. Rizvi, C.Y. Ching, P.R. Selvaganapathy, Development of flexible particle-laden elastomeric textiles with improved penetration resistance to hypodermic needles, Materials and Design, 156, 419-428, (2018)
21. M. Wong, M.A. Green, S. Shawky, A. Aryasomyajula, T. Ewart, P. R Selvaganapathy, S. Raha, Extracellular matrix (ECM) surface regulates self-assembly of three-dimensional placental trophoblast spheroids, PLOS ONE, 13, e0199632,(2018)

22. M. Dabaghi, G. Fusch, N. Saraei, N. Rochow, J. Brash, C. Fusch, P. R. Selvaganapathy, An artificial placenta type microfluidic blood oxygenator with double-sided gas transfer microchannels and its integration as a neonatal lung assist device, Biomicrofluidics, 12, 044101,(2018) (**Featured as the Editor's Pick**)
23. U. Umatheva, P. Madadkar, P.R. Selvaganapathy, R. Ghosh, Computational fluid dynamics (CFD) simulation of laterally-fed membrane chromatography, Chemical Engineering Research and Design, 137, 412-420, (2018)
24. R. Ghaemi, M. Dabaghi, R. Attalla, A. Shahid, H.H. Hsu, P. R. Selvaganapathy, Use of flame activation of surfaces to bond PDMS to variety of substrates for fabrication of multimaterial microchannels, J. Micromech. Microeng. 28,087001,(2018)
25. J. Peng, N. Rochow, J. Jansen, D. Predescu, B. DeFrance, S.-Y. Lee, G. Fusch, P. Ravi Selvaganapathy, C. Fusch, Postnatal dilatation of umbilical cord vessels and its impact on wall integrity: Prerequisite for the artificial placenta, Artificial Organs, 41, 393-399, (2018)
26. H. Matharoo, M. Dabaghi, N. Rochow, G. Fusch, N. Saraei, M. Tauhiduzzaman, S. Veldhuis, J. Brash, C. Fusch, and P.R. Selvaganapathy, Steel reinforced composite silicone membranes and its integration to microfluidic oxygenators for high performance gas exchange, Biomicrofluidics, 12, 014107, (2018).
27. X. Deng, R. Attalla, L. Sadowski, M. Chen, M. Majcher, I. Urosev, D-C.Yin, P.R. Selvaganapathy, C. Filipe, T. Hoare, Autonomously self-adhesive hydrogels as building blocks for additive manufacturing, Biomacromolecules, 19, 62-70, (2018) (**featured on the cover**) (**Top 5 most downloaded research article, December 2017**)
28. R. Attalla, C.S. Ling, P.R. Selvaganapathy, Silicon carbide nanoparticles as an effective bioadhesive to bond collagen containing composite gel layers for tissue engineering applications, Advanced Healthcare Materials, 7, 1701385 (2018) (**featured on the cover**)
29. H.H. Hsu, M.J. Deen, P.R. Selvaganapathy, Complete solid state dissolved oxygen sensor using hemin electrocatalyst and palladium-reusable reference electrode, IEEE Sensors, 18, 941-947, (2018).
30. N. Kazemi-Zanjani,, M. Shayegannia, R. Prinja, A.O. Montazeri, A. Mohammadzadeh, K. Dixon, J. Zhu, P.R. Selvaganapathy, A. Zavodni, N. Matsuura, N.P. Kherani, Multiwavelengthsurface-enhanced ramanspectroscopy using rainbow trapping in width-graded plasmonicgratings, Advanced Optical Materials, 6, 1701136,(2018)
31. S. Banik, J. Mahony, P.R. Selvaganapathy, Elution of Artificial Sputum from Swab by Rotating Magnetic Field-Induced Mechanical Impingement, Applied Sciences, 7, 1255, (2017) (invited)
32. A. Shahid, S. Chong, J. Mahony, M.J. Deen, P.R. Selvaganapathy, Electrical tweezer for droplet transportation, extraction, merging and DNA analysis, Micromachines, 8, 353, (2017) (**invited**)
33. R. Ghaemi, P. Arefi, A. Stosic, M. Acker, Q. Raza, J.R. Jacobs, P.R. Selvaganapathy, A microfluidic microinjector for toxicological and developmental studies in Drosophila embryos, Lab on a Chip, 17, 3898-3908, (2017)
34. E. Hoque, H.H. Hsu, A. Aryasomayajula, P.R. Selvaganapathy, P. Kruse, Pencil-drawn chemiresistive sensor for free chlorine in water, IEEE Sensor Lett., 1, 4500504, (2017)
35. A. Mohtasebi, A. Broomfield, T. Chowdhury, P.R. Selvaganapathy, P. Kruse, Reagent-free quantification of aqueous free chlorine via electrical read-out of colorimetrically functionalized pencil lines, ACS Appl. Mat. Int.,9, 20748-20761, (2017)

36. J. Liu, J. Mahony, P. Ravi Selvaganapathy, Low-cost and versatile integration of microwire electrodes and optical waveguides into silicone elastomeric devices using modified xurographic methods, npj-Microsystems and Nanoengineering, 3, 17040, (2017)
37. R. Ghaemi, P. Rezai, F.R. Nejad, P.R. Selvaganapathy, Characterization of microfluidic clamps for immobilizing and imaging of Drosophila Melanogaster larva's central nervous system, Biomicrofluidics, 11, 034113, (2017)
38. M.K. Russel, P.R. Selvaganapathy, C.Y. Ching, Electrical discharge characteristics of a dielectric liquid under external flow in a microchannel with planar electrode configuration, J. Electrostatics, 87, 212-216, (2017)
39. M. S. Islam, A. Aryasomayajula, P. Ravi Selvaganapathy, A review on macroscale and microscale cell lysis methods, Micromachines, 8, 83, (2017) (**invited**)
40. M.S. Islam, K. Kuryllo, A. Shahid, Y. Li, M.J. Deen, Ravi Selvaganapathy, Electrophoretic concentration and electrical lysis of bacteria in a microfluidic device using a nanoporous membrane, Micromachines, 8,45, (2017) (**invited**)
41. H.H. Hsu, A. Aryasomayajula, P.R. Selvaganapathy, A review of sensing systems and their need for environmental water monitoring, Critical Reviews in Biomedical Engineering, 44, 357-382, (2016).
42. S. Ayyash, W.I. Wu, P. R. Selvaganapathy, Fast and inexpensive detection of bacterial viability and drug effectiveness through metabolic monitoring, Sensors,16, 1879, (2016) (**invited - special issue on Biomicrofluidics**)
43. M. K. Russel, S.M. Hasnain, P. R. Selvaganapathy, C. Y. Ching, Effect of doping Ferrocene in the working fluid of electrohydrodynamic (EHD) micropumps, Microfluidics and Nanofluidics, 20, 112 (2016)
44. R. Ghaemi, P.R. Selvaganapathy, Microfluidic Devices for Automation of Assays on Drosophila Melanogaster for Applications in Drug Discovery and Biological Studies, Current Pharmaceutical Biotechnology, 17, 822-836, (2016) (**invited**)
45. M. K. Russel, P. R. Selvaganapathy, C. Y. Ching, Ion Drag Electrohydrodynamic (EHD) Micro-Pumps under a Pulsed Voltage, Journal of Electrostatics, 82, 48-54, (2016)
46. Y. Qin, H.-J. Kwon, A. Subrahmanyam, M.M.R. Howlader, P. Ravi Selvaganapathy, A. Adronov, M. Jamal Deen, Inkjet-printed bifunctional carbon nanotubes for pH sensing, Material letters, 176, 68-70, (2016)
47. D. Liu, B.Gupta, P. R. Selvaganapathy, An Automated Microfluidic System for Screening Caenorhabditis elegans Behaviors using Electrotaxis, Biomicrofluidics, 10, 014117 (2016)
48. R. Attala, C. Ling, P.R. Selvaganapathy, Fabrication and characterization of gels with integrated channels using 3D printing with microfluidic nozzle for tissue engineering applications, Biomedical Microdevices, 18, 1-12, (2016).
49. S. M. Doreswamy,C. Fusch,P. R. Selvaganapathy,H. Matharoo, S. Shivananda, A comparison of the prototype neonatal offset-blade laryngoscope (NOBL) versus the Miller laryngoscope in a manikin, Anaesthesia, 71, 320-325, (2015).
50. Y. Qin, A.U. Alam, S. Pan, M.M.R. Howlader, R. Ghosh, P.R. Selvaganapathy, Y. Wu, M.J. Deen, Low-Temperature Solution Processing of Palladium/Palladium Oxide Films and Their pH Sensing Performance, Talanta, 146, 517-524, (2015).

51. J. Yang, P.R. Selvaganapathy, T.J. Gould, D.J. Dwivedi, D. Liu, A.E. Fox-Robichaud, P.C. Liaw, A Microfluidic Device for Rapid Quantification of Cell-free DNA in Patients with Severe Sepsis, Lab on a Chip, 15, 3925 – 33, (2015).
52. C. Feng, O.Marinov, M.J. Deen, P.R. Selvaganapathy, Y. Wu, Sensitivity of the threshold voltage of organic thin-film transistors to light and water, J. Appl. Phys. 117, 185501 (2015)
53. T. Guo, M.J. Deen, C.Q. Xu, Q. Fang, P.R. Selvaganapathy, H. Zhang, Observation of Ultra-slow Stress Release in Silicon Nitride Films on CaF2, Journal of Vacuum science and Technology A, 33, 041515, (2015).
54. J.M. Leung, L.R. Berry, H.M. Atkinson, R.M. Cornelius, D. Sandejas, N. Rochow, P.R. Selvaganapathy, C. Fusch, A.K.Chan, J.L. Brash, Surface modification of poly(dimethylsiloxane) with a covalent antithrombin–heparin complex for the prevention of thrombosis: use of polydopamine as bonding agent, J. Mater. Chem. B, 3, 6032 - 36, (2015)
55. M. K. Russel, P. R. Selvaganapathy, C. Y. Ching, Electrohydrodynamic Injection Micropump with Single Walled Carbon Nanotube Electrodes, Journal of Microelectromechanical Systems, 24, 1557-1564, (2015).
56. J .Piazza, C.Zhu, P.R. Selvaganapathy, T. Hoare, S.B. Jain, F. Hossain, R.K. Mishra, A Novel Intranasal Spray Device for the Administration of Nanoparticles to Rodents, Journal of Medical Devices, 9, 041001, (2015)
57. G. Layton, W. I. Wu, P.R. Selvaganapathy, S. Friedman, A. Kishen. Fluid dynamics and biofilm removal generated by syringe-delivered and two ultrasonic assisted irrigation methods: A novel experimental approach. J. of Endodontics,41, 884-889 (2015) (**Best Paper Award in Basic Science and Technology category**)
58. H.H. Hsu, E. Hoque, P. Kruse, P. R. Selvaganapathy, A Carbon Nanotube Based Resettable Sensor for Measuring Free Chlorine in Drinking Water, Appl. Phy. Lett.,106, 063102 (2015)(Impact Factor: 3.5)
59. R. Ghaemi, P. Rezai, B. Iyengar, P.R. Selvaganapathy, Microfluidic devices for imaging neurological response of Drosophila Melanogaster Larva to Auditory Stimulus, Lab on Chip15, 1116-1122, (2015) (Impact Factor: 5.7) (**in top 30 downloaded papers in Lab on Chip journal in Jan 2015**)
60. T. Guo, Y. Wei, C.Q. Xu, B. R. Watts, Z. Zhang, Q. Fang , H. Zhang, P. R. Selvaganapathy,M. J. Deen, Counting of E. Coli by a Micro-flow Cytometer Based on a Photonic-Microfluidic Integrated Device, Electrophoresis, 36, 298-304, (2015) (Impact Factor: 3.1)
61. Z. Li, M.J. Deen , S. Kumar, P. R. Selvaganapathy, Raman Spectroscopy for In-Line Water Quality Monitoring – Instrumentation and Potential, Sensors, 14, 17275-17303, (2014)(Impact Factor: 2.0)
62. M. K. Russel, P. R. Selvaganapathy, C. Y. Ching, Effect of electrode surface topology on charge injection characteristics in dielectric liquids: An experimental study, Journal of Electrostatics, 72, 487-492, (2014).
63. H.H. Hsu, P.R. Selvaganapathy, J. Brash, Q. Fang, C.Q. Xu, J. Deen, H. Chen, Development of a Low-Cost Hemin-based Dissolved Oxygen Sensor with Anti-Biofouling Coating for Water Monitoring, IEEE Sensors Journal, 14, 3400-3407, (2014) (**invited**)
64. Y. Qin, Matiar M.R. Howlader, M.J. Deen, Y.M. Haddara, P.R. Selvaganapathy, Polymer Integration for Packaging of Implantable Sensors, Sensors and Actuators-B, Chem. 202, 758-778, (2014).

65. H.H. Hsu, P.R. Selvaganapathy, L. Soleymani, Bottom-up top-down fabrication of structurally- and functionally- tunable hierarchical palladium materials, Journal of Electrochemical Society, 161, D3078-3086, (2014)(Impact Factor: 2.8)
66. J. Piazza, T. Hoare, L. Molinaro, K. Terpstra, J. Bhandari, P.R. Selvaganapathy, B. Gupta, R.K. Mishra, Haloperidol-loaded intranasally administered lectin functionalized poly(ethylene glycol)-block-poly(d,l)-lactic-co-glycolic acid (PEG-PLGA) nanoparticles for the treatment of schizophrenia, Eur. J. Pharm. Biopharm., 87, 30-39, (2014)
67. N Rochow, A. Manan, W.-I Wu, G. Fusch, S. Monkman, J.Leung, E. Chan, D. Nagpal, D. Predescu, J. Brash, P. Ravi Selvaganpathy,C. Fusch, An integrated array of microfluidic oxygenators as a neonatal lung assist device: invitro characterization and invivo demonstration, Artificial Organs, 38, 856-866, (2014)
68. S. Safari, P.R. Selvaganapathy, M.J. Deen, Microfluidic Reference Electrode with Free-Diffusion Liquid Junction, J. of Electrochemical Society, 160, B177-B183, (2013). (Impact Factor: 2.8)
69. S. Salam, A. Ansari, S. Amon, P. Rezai, P.R. Selvaganapathy, R.K. Mishra, B.P. Gupta, A microfluidic phenotype analysis system reveals function of sensory and dopaminergic neuron signaling in C. elegans electrotactic swimming behavior, Worm, 2, e24558, (2013).
70. J. Tong, P. Rezai, S. Salam, P.R. Selvaganapathy, B.P. Gupta,Microfluidic-based Electrotaxis for On-demand Quantitative Analysis of Caenorhabditis elegans' Locomotion, J. Vis. Exp., 75, e50226,(2013)
71. W-I. Wu, N. Rochow, E. Chan , G. Fusch, A. Manan, D. Nagpal, P. Ravi. Selvaganapathy, C. Fusch, Lung Assist Device: Development of Microfluidic Oxygenators for Preterm Infants with Respiratory Failure, Lab on Chip,13, 2641-2650, (2013)(Impact Factor: 5.7)
72. W-I. Wu, Daniel Ewing, Chan Y. Ching, and P. Ravi Selvaganapathy, Measurement of Periodic Micro Flow Using Micro Particle Image Velocimetry with Phase Sampling, Microfluidics and Nanofluidics, 15, 127-135, (2013)(Impact Factor: 2.6)
73. N. Rochow, E.C. Chan, W.-I Wu, P.R. Selvaganapathy, G. Fusch, L. Berry, J. Brash, A.K. Chan, C. Fusch, Artificial placenta - Lung assist devices for term and preterm newborns with respiratory failure, Int. J. of Artificial Organs, 36, 377-391, (2013)
74. G. Mahadevan, H. Sheardown, P. Selvaganapathy, PDMS embedded microneedles as a controlled release system for the eye, Journal of Biomaterials Applications, 28, 20-27, (2013), (Impact Factor: 2.2)
75. D. Maznichenko, P. R. Selvaganapathy, K. Venkatakrishnan, B. Tan, TiO2 nanofibrous interface development for Raman detection of environmental pollutants, Appl. Phys. Lett.,101, 231602 (2012)(Impact Factor: 3.5)
76. Z.Y. Li, M.J. Deen, Q.Y. Fang, P.R. Selvaganapathy, Design of a flat field concave-grating-based micro-Raman spectrometer for environmental applications, Applied Optics, 51, 6855-6863, 2012.
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PATENTS

1. **US Patent** 9,841,381: P.R. Selvaganapathy, W.I. Wu, Temperature change indicator and methods of making the same (2017)
2. **Canadian Patent** 2,619,000: M.J. Deen, P.R. Selvaganapathy, M.W. Shinwari, BioFET based microfluidic systems (2017)

3. **US Patent**: 9,492,603: C. Fusch, L. Berry, A. Chan, N. Rochow, P. Selvaganapathy, J. Brash, G. Fusch, Artificial Placenta (2016).
4. **US Patent**: 8,702,939: P. Selvaganapathy, Bhagwati Gupta, Pouya Rezai, Electrotaxis methods and devices (2014).
5. **US patent**: 8,173,415: P. Selvaganapathy, A. Noori, Single cell microinjection using compliant fluidic channels (2012)
6. **US Patent** 7,125,478: P. Selvaganapathy, M.A. Burns, D.T. Burke, C.H. Mastrangelo; Microscale electrophoresis devices for biomolecule separation and detection, (2006).
7. **US Patent** 7,142,303: Y.B. Gianchandani, C.G. Wilson, L. Que, B. Mitra, P. Selvaganapathy; Microdischarge optical source apparatus and method and system for analyzing a sample, (2006).
8. **US Patent** 7,116,115: Y.B. Gianchandani, L.L. Chu, K. Takahata, P. Selvaganapathy, J.L. Shohet; Micromachined probe apparatus and methods for making and using same to characterize liquid in a fluidic channel and map embedded charge in a sample on a substrate, (2006).

PRESENTATIONS AT MEETINGS

Invited

1. P.R. Selvaganapathy, A. Shahid, S. Chong, J. Mahony, M.J. Deen, Electrical Methods for simple sample preparation, Canadian Chemistry Conference, May 2018 (**invited**)
2. P.R. Selvaganapathy, Rana Attalla, Michael Zlatin, Monika Sliwiak, Microfluidic nozzles for additive manufacturing of gels and soft materials, 5th International Conference on Fluid Flow and Heat and Mass Transfer, June 2018 (**keynote**)
3. P.R. Selvaganapathy, Rana Attalla, Erin Puersten, Nidhi Jain, Simple low cost methods to build perfusable 3D structures composed of gels and cells, Ontario on a Chip Conference, May 2018 (**keynote**)
4. P.R. Selvaganapathy, A. Mohammadzadeh, A. Fox-Robichaud, A fast and inexpensive method for fabrication and integration of electrodes in microfluidic devices, 5th European Conference on Microfluidics, Strasbourg, France, March 2018 (**invited**)
5. P. Selvaganapathy, Additive manufacturing methods for integration of electrodes in flexible devices, Canada-China Symposium on flexible electronics, London, Canada, (Sep 2017) (**invited**)
6. P.R. Selvaganapathy, Electrifying Microfluidics, International Symposium on Electrohydrodynamics, Ottawa, Canada (June 2017) (**keynote**)
7. P.R. Selvaganapathy, Biomedical microdevices for diagnostics, drug discovery and artificial organs, Firestone Institute, St. Joseph's Hospital, Hamilton, Canada, (June 2017) (**invited**)
8. P.R. Selvaganapathy, Microfabricated sensors for environmental monitoring, Nankai University, Tianjin, China, (Nov 2016) (**invited**)
9. P.R. Selvaganapathy, Fast bacterial culture using microfluidics, Jiangsu Industrial Technology Research Institute, (Sep 2016) (**invited**)
10. P.R. Selvaganapathy, Printed gel platforms with integrated microfluidic channels for perfusion and cell culture, Canadian Chemistry Conference, Halifax, Canada, (Jun 2016) (**invited**)

11. P.R. Selvaganapathy, Simple sample preparation for bioassays, 229th Electrochemical Society Conference, San Diego, USA, (May 2016) (**invited**)
12. P.R. Selvaganapathy, A frequency domain optofluidics dissolved oxygen sensor with enhanced sensitivity for water monitoring, 229th Electrochemical Society Conference, San Diego, USA, (May 2016) (**invited**)
13. P.R. Selvaganapathy, 3D printing of microfluidic vascular channels in gels using commercial 3D printers, SPIE Photonics West, BIOS, San Francisco, USA, (Feb 2016) (**invited**)
14. P.R. Selvaganapathy, Sensors exploiting the nanoscale phenomena for environmental and medical monitoring, Indo-Canadian Symposium on Nanotechnology, Mysore, India, (Feb 2016) (**invited**)
15. P.R. Selvaganapathy, Microfluidic sample preparation for handling raw biological samples – examples of urine and plasma, Canadian Chemistry Conference, Vancouver, (Jun 2014) (**invited**)
16. P.R. Selvaganapathy, Simple microfluidic sample preparation for point of care diagnostics, Ontario on a Chip Conference, Toronto, (May 2014) (**invited**)
17. P.R. Selvaganapathy, Advanced functional materials for biomicrofluidics, Thermec Conference, Las Vegas, USA, (Dec 2013) (**invited**)
18. C.Fusch, P. R. Selvaganapathy, Development Of Microfluidic Oxygenators As Lung Assisting Devices For Term And Preterm Newborn Infants, 9th Int. Conf. on Pediatric Mechanical Circulatory Support Systems & Pediatric Cardiopulmonary Perfusion, Hershey, PA, USA, (May 2013) (**invited**)
19. P.R. Selvaganapathy, Microfluidics and its application in drug discovery, drug delivery and diagnostics, Department of Chemistry and Chemical Engineering, Soochow University, Suzhou, China, (Nov 2012) (**invited**)
20. P.R. Selvaganapathy, Integration of functional materials into microfluidic devices, Canadian Materials Science Conference, London, Canada, (Jun 2012)
21. P.R. Selvaganapathy, Electrical control of fluid flow and transport at the microscale, Center for Nanoscience and Engineering , Indian Institute of Science, Bangalore, India (Mar 2012) (**invited**)
22. P.R. Selvaganapathy, Microfluidics and how does it relate to wood and its products?, Institute of Wood Science and Technology , Bangalore, India (Feb 2012)
23. P.R. Selvaganapathy, What is MEMS and microfluidics, National Institute of Engineering , Mysore, India (Feb 2012) (**invited**)
24. P.R. Selvaganapathy, Electrifying microfluidics – A few examples of using electric fields and forces to control microfluidic components and a few applications, Materials Research Center , Indian Institute of Science, Bangalore, India (Feb 2012)
25. P.R. Selvaganapathy, Smart materials and surfaces in microfluidics – a few examples, Sixth International Conference , Bangalore, India (Jan 2012) (**invited**)
26. P.R. Selvaganapathy, Electrifying Microfluidics, Brockhouse Institute of Materials Research, McMaster University, (Nov 2011)
27. P.R. Selvaganapathy, Electrical methods for transport of particles, cells, organisms and generation of droplets in microfluidic systems, 2011 CMOS Emerging Technologies Workshop, Whistler, British Columbia, (June 2011)

28. M.J. Deen, M.M.R. Howlader, P.R. Selvaganapathy, T. Suga, Nanobonding technologies for emerging applications, in *Proc. of International Conference on Electronic Packaging*, Kyoto, Japan, (2011) (**invited**)
29. S. Safari, P.R. Selvaganapathy, M.J. Deen, Microfluidic reference electrode and its application in BioFET, Pacifichem 2010, Honolulu, Hawaii, (Dec 2010)
30. B.G. Gupta, P. Rezai, P.R. Selvaganapathy, Microfluidic systems for chemical screening and drug discovery, 2010 CMOS Emerging Technologies Workshop, Whistler, British Columbia, (May 2010)
31. P. Selvaganapathy, Microfluidics for optoelectronic applications, 217th Electrochemical Society Meeting, Vancouver, (April 2010).

Contributed

1. E. Hoque, L. H-H. Hsu, A. Aryasomayajula, P. R. Selvaganapathy, and P. Kruse, Pencil-Drawn Chemiresistive Sensor for Free Chlorine in Water, *IEEE Sensors Conference*, Glasgow UK, (Oct – Nov 2017)
2. R. Attalla, C. Ling, P.R. Selvaganapathy, Lamination-Based Assembly of Hydrogels with Integrated Channels Using Nanoparticle Adhesives, in *39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, (July 2017)
3. H.H. Hsu, P. R. Selvaganapathy, Development of all solid state sensors for environmental water monitoring: dissolved oxygen and free chlorine*, in ECS Conference*, San Diego, USA, (May 2016)
4. H.H. Hsu, E. Hoque, P. R. Selvaganapathy, P. Kruse, A carbon nanotube based resettable sensors for measuring free chlorine in drinking water, *In IEEE Sensors Conference*, Spain, (Nov 2014).
5. H.H. Hsu, P.R. Selvaganapathy, Stable and reusable electrochemical sensor for continuous monitoring of phosphate in water, *In IEEE Sensors Conference*, Spain, (Nov 2014)
6. P. Madadkar, P.R. Selvaganapathy, R. Ghosh, Protein PEGylation using microreactors, *In 2014 AIChE Annual Meeting, , Atlanta, USA, (*Nov. 2014)
7. S.B. Campbell, J. Yang, W.I. Wu, P.R. Selvaganapathy, T.R. Hoare, Design of a Microinjection Device for Injection of in Situ Gelling Hydrogels for Ophthalmic Drug Delivery, *AIChE Annual Meeting, San Francisco, USA*, (Nov 2013)
8. A.S. Jawed, W. Syed, W.I. Wu, S.B. Campbell, T.R. Hoare, P.R. Selvaganapathy, Wirelessly Controlled Microfluidic Actuators Using Radiofrequency Electromagnetic Induction, *AIChE Annual Meeting, San Francisco, USA*, (Nov 2013)
9. H.H. Hsu, P. Selvaganapathy, Development of a low cost haemin based dissolved oxygen sensor with anti-biofouling coating for water monitoring, *In IEEE Sensors conference, Baltimore, USA*, (Oct 2013). (**Best student paper award in chemical sensors**)
10. H-H. Hsu, P.R. Selvaganapathy, Q. Fang, C.Q. Xu, Development of a miniaturized dissolved oxygen sensor for water monitoring, in *221st Electrochemical Society Meeting, Seattle, WA, USA*, (May 2012)
11. P. Rezai, S. Salam, P.R. Selvaganapathy, B. Gupta, Separation of Caenorhabditis elegans by electrotaxis in a microdevice, in *The 16th International Conference on Solid-State Sensors, Actuators and Microsystems (Transducers 2011), Beijing, China*, 2766-2769, (2011).

12. S. Salam, P. Rezai, P.R. Selvaganapathy, R.K. Mishra, B.P. Gupta, Microfluidics approach to study neurodegeneration in a Caenorhabditis elegans Parkinson's disease model, in 18th International C. elegans meeting, Los Angeles, USA. (June 2011)
13. W.I.Wu, D. Ewing, P.R. Selvaganapathy, C.Y. Ching, Periodic flow measurement using micro particle image Velocimetry, in 5th Ontario on a Chip Conference, Toronto, Canada, (May 2010)
14. P. Rezai, B.P. Gupta, P.R. Selvaganapathy, Application of Caenorhabditis elegans' Electrosensory Response in Drug Discovery Assays for Movement Disorder Diseases, in 5th Ontario on a Chip Conference, Toronto, Canada, (May 2010)
15. S. Safari-Mohsenabad, P.R. Selvaganapathy, M.J. Deen, Microfluidic Reference Electrode for Lab-on-Chip Sensing Application, in 5th Ontario on a Chip Conference, Toronto, Canada, (May 2010)
16. S. Safari-Mohsenabad, P.R. Selvaganapathy, A. Derardja, M.J. Deen, Nanosheet formation by electrodeposition and its application to miniaturized reference electrodes, in 217th Electrochemical Society Meeting, Vancouver, BC, Canada, (Apr 2010)
17. W. Shinwari, P.R. Selvaganapathy, M.J. Deen, Geometric and conformational considerations in biotransistors, in 217th Electrochemical Society Meeting, Vancouver, BC, Canada, (Apr 2010)
18. A. Noori, P. Selvaganapathy, Single cell microinjection using compliant fluidic channels, in *Proc. of the 12th International Conference on Miniaturized Systems for Chemistry and Life Sciences (μTAS 2009)*, San Diego, U.S.A, 1971-1973, (2009)