Mina Hoorfar PhD, PEng, FCSME, FCSSE, FCAE
Dean of Faculty of Engineering and Computer Science, University of Victoria

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HIGHER EDUCATION

Doctorate in Applied Science (Engineering), Mechanical Engineering (2005)
University of Toronto, Ontario, Canada,
Development of a Third Generation of Axisymmetric Drop Shape Analysis (ADSA), Dr. A. W. Neumann

Master of Applied Science (M.A.Sc.) in Mechanical Engineering (2001)
University of Toronto, Ontario, Canada
Development of a PC-version of Axisymmetric Drop Shape Analysis (ADSA), Dr. A. W. Neumann

Bachelor of Applied Science (B.A.Sc.) in Mechanical Engineering (1998)
University of Tehran, Tehran, Iran
Enhancement of the Efficiency of Plate Heat Exchangers, Dr. M. Akhavan

FACULTY APPOINTMENTS

University of Victoria (UVIC), Faculty of Engineering and Computer Science, Victoria, Canada

2021/07 - Present	Dean, Faculty of Engineering and Computer Science
2021/07 - Present	Professor, Mechanical Engineering

University of British Columbia (UBC), School of Engineering, Applied Science, Okanagan, Canada

2015/7-2021/6	Professor, Mechanical Engineering
2016/7-2021/6	Director
2015/9-2016/6	Acting Director
2014/12-2015/8	Associate Director - Research and International Engagement
2011/7-2015/6	Associate Professor
2006/9-2011/6	Assistant Professor

Post-doctorate in Applied Science (Engineering), Fuel Cell
Case Western Reserve University 2005/11 - 2006/9

University of Toronto, School of Engineering, Mechanical and Industrial Engineering, Ontario, Canada

2007 - 2012	Status-Only Assistant Professor
1999 - 2005	Research Assistant
2005/1-2005/4	Sessional Instructor
2001/9 - 2002/4	Teaching Assistant

KEY LEADERSHIP CONTRIBUTIONS AND ACCOMPLISHMENTS

UVIC

- Proposed and secured government funding for 600 new Undergraduate domestic seats in Computer Science and Software Engineering to grow these areas in the next five years (2023-2028)
- Raised $25.2 million in donations and sponsorships—more than double the total from the previous five-year period
- Developed the first Transnational-Education (TNE) program in Canada (Bachelor of Engineering in Biomedical Engineering Technology Management will be offered in Singapore in 2026)
- Developed the first Doctor of Engineering (DEng) program in Canada which will be offered in 2026
- Increased the number of female students in Engineering program from 17% (in 2021) to 26% (in 2025)
- Developed the Computing Gateway Program at a new John Horgan Campus to ensure educational accessibility for underrepresented groups
- Launched two new Professional Masters programs in Aerospace and Building Envelopes and Structures
- Led successfully 2022 accreditation of UVIC Engineering (5 programs)
- Completed 2021/22 hiring as part of Tech Expansion I, and in the process of hiring 20 new tenure track academics as part of Tech Expansion II

UBC

- Established the School of Engineering (SoE) at UBC Okanagan Campus (being part of the first 5 faculty members hired to design the building, develop the 4-year curricula for three engineering programs, recruit domestic and international students, hire faculty members, etc.)
- Hired eight new faculty members every year (40 new in total) during my 5-year directorship appointment
- Increased the number of Undergraduate students by two-fold during my 5-year directorship appointment
- Increased the amount of research funding by two-fold during my 5-year directorship appointment
- Established and built a Hydrogen Research Hub and secured the first $2M fund in collaboration with FortisBC
- Developed a new Manufacturing program in 2018, two interdisciplinary Options (Mechatronics started 2018 and Biomedical starting 2019), and two minors (Computer Science and Management started 2015).
- Led and successfully achieved third round of the accreditation of the School's programs
- Enhanced experiential learning by engaging undergraduate students in research projects (developed and ran Steward in Engineering Education (SEED) program
- Implemented courses to promote the dual-credit program to attract high school students to Engineering
- Streamlined industrial placement by modifying the Co-op model
- Facilitated international exchange through the Coordinated International Exchange (CIE) UBC initiative (with Europe, Asia and Australia)

UNIVERSITY ADMINISTRATIVE / LEADERSHIP EXPERIENCE

UVIC

July 2021-Present	Dean of Faculty of Engineering and Computer Science, University of Victoria
July 2021-Present	Member of Dean's Council
July 2021-Present	Member of Executive Council
July 2021-Present	Member of President Leadership Council
July 2021-Present	Member of Senate
July 2021-Present	Member of Joint Board and Senate Committee
March 2024-Present	Member of CIFAL Board of Trustee
July 2021-Present	Member of Engineering Capital Expansion Committee
July 2023-Present	Member of Global Engagement Advisory Committee
July 2021-Present	Chair of Faculty Executive Committee
July 2021-Present	Chair of Faculty Council Meeting

UBC

2015-2021	Member of Dean Advisory Committee on ARPT
2015-2021	Member of Deans, Heads, and Directors (DHD) Committee
2017	Member of Dean of Applied Science Hiring Committee
2016-2017	Member of Coordinated International Experience (CIE)
2015-2017	Applied Science Strategic Research Plan Committee
2019-2021	ISI Co-Op hiring Committee
2017-2020	Member of UBC Senate for Joint Faculties Representative
2018	UBC Vantage College Review Committee
2018	GCRC Proposal Review Committee
2018	Member of Search Committee for Provost
2017-2021	Member of WorkStudy Advisory Board
2016-2021	Co-chair of Faculty & Staff Appeal Committee
2015-2021	Cross Campus Initiative Program
2015-2021	International Student Initiative Committee
2015	Research Advisory Council
2013-2015	UBC NSERC RTI Selection Committee
2014-2015	Interdisciplinary Graduate Studies (IGS) Review Task Force Committee
2010-2013	Graduate Studies Council Committee, UBC Okanagan
2012	NSERC PGS Review Panel, UBC
2012	Work-study Review Panel, UBC
2011-2012	Host of Research Tea Break Seminars, UBC Okanagan
2010, 2011	CFI-LOF Review Panel, UBC
2007-2008	UBC Okanagan Internal Grant Committee, UBC Okanagan
2007-2008	College of Graduate Studies Review Committee, UBC Okanagan

PROFESSIONAL COMMITTEES AND RESPONSIBILITIES

2021-2022	Chair, President, Executive leader of Canadian Society of Mechanical Engineering (CSME)
2018-2020	Senior Vice President in charge of membership, Executive leader of CSME
2014-2019	Chair of Committee, Best student paper award, CSME
2020-2021	Chair of SOE Online Teaching Taskforce
2020-2021	Member of UBC Online Teaching Taskforce
2015	Invited Speaker: Jump Start
2015	Invited Speaker: GoEngGirl
2015	Invited Speaker: WIE High School Outreach Event
2014	Invited Speaker: Jump Start
2009	Keynote Speaker: Kool Careers Conference
2009	Judge: The Science Fair held at UBC Okanagan, UBC Okanagan
2008	Judge: High School Student Competition, School of Engineering, UBC Okanagan

2007	Judge: Engineering 2 Student Pumpkin Competition, School of Engineering, UBC Okanagan
2007	Facilitator: Engineering 2 Student Design Competition, School of Engineering, UBC Okanagan

MEMBERSHIPS AND OFFICES HELD IN PROFESSIONAL SOCIETIES

2022-present	Associate Member	UBC Centre for Clean Energy (CERC)
2020-2022	President	Canadian Society of Mechanical Engineering (CSME)
2018-2020	Vice President	CSME
2013-present	Member	Biophysical Society
2006-present	Member	CSME
2004-present	Member	Adhesion Society (AS)
1999-present	Member	American Society of Mechanical Engineering (ASME)
1999-2005	Member	Materials and Manufacturing Ontario (MMO)
2014-2021	Member	Warden Iron Ring Camp#26
2014-2016	Grants Review Committee	NSERC Research Tools and Instruments

SPECIAL PROFESSIONAL QUALIFICATIONS

11/2008-present	Licensed Professional Engineer (APEGBC)
07/2013-12/2013	Visiting Associate Professor at Stanford, Stanford Microfluidics Lab
01/2014-07/2014	Visiting Scholar, UC Berkeley, Sohn Lab
03/2015	Center for Teaching and Learning Workshop on “How to Manage Your Voice in Large Classrooms”, UBC
04/2014	COMSOL training for Microfluidics, Stanford
03/2014	3D Printing workshop, Stanford
10/2013	Laser Cutting, UC Berkeley
02/2013	Flexible Learning: What are the possibilities? UBC
03/2012	Micro/nano Fabrication and Clean Room Training, UBC
08/2011	Classroom Audio/video Workshop, UBC

HONOURS AND AWARDS

- King Charles III Coronation Medal
- Chancellery of Honours at Rideau Hall (2025/01)
- Top 25 Canadian Immigrants
  Canadian Immigrant (2023/8)
  Prize / Award: Recognized for outstanding service to Canada.
- Fellow of Canadian Academy of Engineering
  The Canadian Academy of Engineering (2023/6)
  Distinction: Recognized for service and research in engineering.
- Dean's Medal of Distinction
  University of British Columbia (2021/11)
  Distinction: Celebrating achievements of outstanding individuals in UBC Applied Science community.
- Fellow of Canadian Society of Senior Engineers
  The Canadian Society of Senior Engineers (2021/6)
  Distinction: Recognized for service in engineering.

- Fellow of Canadian Society of Mechanical Engineering
  Canadian Society for Mechanical Engineering (2020/6)
  Distinction: Awarded for excellence in mechanical engineering and active contributions to the profession and society.
- I Am Accessible Award
  University of British Columbia (2020/3)
  Prize / Award: Recognizing UBC faculty and staff exemplifying qualities of an inclusive educational institution.
- Golden Apple Awards
  University of British Columbia (2018/4)
  Prize / Award: Acknowledging instructors/mentors supporting wellbeing in the academic environment.
- B.C.'s Most Influential Women
  BC Business (2018/3)
  Honor: Recognized as a female role model in STEM fields.
- APEGBC - President's Teaching Award of Excellence
  Association of Professional Engineers and Geoscientists of British Columbia (2017/10)
  Prize / Award: Excellence in Engineering and Geoscience Education.
- Researcher of the Year - $10,000
  University of British Columbia (2016/3)
  Prize / Award: Awarded for impactful research.
- Outstanding Research Award
  University of British Columbia (2015/5)
  Prize / Award: Awarded for outstanding research at the School of Engineering.
- Provost Award for Teaching Excellence and Innovation - $3,000
  University of British Columbia (2014/5)
  Prize / Award: Acknowledging teaching innovation and excellence at UBC.
- Research Excellence Award
  University of British Columbia (2013/7) Prize / Award: Given annually for outstanding research at the School of Engineering
- Teaching Honor Roll, University of British Columbia (2010-2018)
- Teaching Excellence Award, UBC School of Engineering (2013)
- Outstanding Teaching Award, UBC School of Engineering (2012)
- Faculty of the Year for Co-op Program, UBC School of Engineering (2011)
- Pioneer Award for Excellence in Teaching, UBC Okanagan (2008)
- Postdoctoral Fellowship, NSERC, (2003-2005)
- Ontario Graduate Scholarship (OGS), University of Toronto (2003-2005)
- Postgraduate Scholarship (PGSB), NSERC, (2001-2003)
- Ontario Graduate Scholarships in Science and Technology (OGSST), University of Toronto (2000-2001)
- First Rank B.Sc. Prize – Gold Medal, University of Tehran, 1998.

INDUSTRY EXPERIENCE/QUALIFICATIONS

2018-2022	Registered and Chartered Engineer, Engineers Australia
1993-2018	Registered Professional Engineer in the Province of British Columbia
1988-1990	MacInnis Bigg Associates Ltd., Vancouver, Canada, Junior Engineer

STUDY LEAVES-VISITING LECTURER

2013/07-2014/12	Study Leave	Stanford
2014/01-2014/06	Study Leave	Berkeley
2008/08-2009/01	Maternity Leave	UBC Okanagan
2014/12	Project: Integration of Biosensors into Digital Microfluidics	University of Western Ontario
2013/09	Digital Microfluidics and its principles	University of California Berkeley

2006/04	Determination of Surface Tension of Fluoropolymers from Contact Angles and the Role of Liquid and Polymer Molecular Properties	Ohio, Cleveland
2001/11	Cam and Follower Systems	University of Toronto
1999/11	Multi-degree-of-freedom Mechanical Vibration Systems	University of Toronto

MAJOR FIELD(S) OF SCHOLARLY, PROFESSIONAL AND RESEARCH INTERESTS

Contribution I – Gas Sensing Technology: Rigorous study and extensive industry collaboration has proven my standing as a global leader in the gas sensing field - we've impacted many sectors ranging from oil and gas to healthcare and impairment detection. My group has introduced microfluidic-based olfaction system which is a nonintrusive and selective method for detection of volatile organic compounds (VOCs). This technology operates by analyzing the kinetic response of diffused/permeated gases along a microchannel using a single general-purpose gas sensor. We have applied this technology to different applications, some listed below. These studies have resulted in several partnerships with industry in the areas ranging from oil/gas to health. Through a research contract with Cannabix Technologies Inc. (with exclusive license agreement), we applied this technology to detection of THC in breath. As a result of these efforts, Paknahad, has received the CSME Entrepreneurship award which has been matched by Accelerate Okanagan, connecting him with a group of entrepreneurs to advise him on establishing a startup company.

A. Detection of VOCs from liquid samples for applications ranging from wine tasting to detection of foul gases in wastewater: For this purpose, a digital microfluidic platform has been developed and integrated into the gas diffusion channel. The most challenging part of this project was to minimize fluctuation in the response of the sensor due to humidity (or water cross-contamination). This has been achieved by coating not only the microfluidic platform with parylene but also the diffusion channel.

B. Development of a flow-based gas sensing breath analyzer for impairment and health conditions: For this purpose, a diffusion-based gas sensing mechanism cannot provide a rapid and selective response as the breath is composed of a complex mixture of VOCs with a narrow range of adsorption rates. For this application, an innovative flow-based system has been developed for detection of ketone as a biomarker of diabetes. This project has attracted significant media attention; as a result, we have found an industry collaborator (Breathtec Biomedical) and are currently performing clinical tests.

Contribution II – Digital Microfluidic (DMF) Devices: DMF has recently drawn remarkable attention in chemistry, biology, and medicine mainly due to its re-configurability in manipulating droplets. In the past six years, my group has been involved in design and optimization of DMF devices, resulting in several journals, and conferences and one book chapter. Through a research contract with Bio-Rad Laboratories, we are applying these platforms to detection of biomarkers based on DNA in body fluids. As a result of these efforts, Nejad received Friedman Award for Scholars in Health, funding his study at MIT/Harvard.

A. Development of an in-situ measurement technique for characterization of biological samples: The method relies on the measurement of contact angle and capacitance. This technique has been used to measure the concentration of biomolecules captured on the surface of DMF devices. This innovative technique can be used as a label-free detection method for detecting the presence of any type of molecules, important for applications such as molecular genetics/diagnostics, food safety, and defense and security.

B. Use of dielectrophoresis (DEP) for cell manipulation: Using numerical and experimental methods, we optimized the electrode geometry and electric field frequency for controlled trapping of cells — with an accuracy of one cell on a trap with applications in cell printing and culturing. As a result, a capacitance-based biosensor has been developed and integrated into a DMF chip for measuring the number of Cryptosporidium (waterborne pathogens) in drinking water. The cells are focused on the biosensor using DEP. The surface of the biosensor is immobilized with antibodies specific to the cells.

Contribution III – Sensors and Flow cells for Water Quality Monitoring: This work (conducted by Banna, Islam, Aghaarabi, Aminravan, Bera, Jomeh, Francisque) resulted in the development of microfluidic platforms and fabrication of sensors for detection of pathogens and water quality parameters, respectively. The efforts of HQP resulted in 20 journals, 19 conferences, one patent, and a press release by The Globe and Mail. Currently, we are in the process of partnership with Smart Waters (through a research contract and license agreement) to implement both pathogen detector and water quality monitoring platforms in their portable water purification devices. As a result of these efforts, Banna received NSERC PGS award and Jomeh received NSERC PDF award for a postdoctoral position at Lawrence Berkeley National Laboratory.

A. Development of ultra-sensitive pathogen capture device: This technology was developed for detection of pathogenic microorganisms in drinking water. The device, consisting of a series of slotted electrodes, employs an electric field and capture molecules (e.g., antibodies specific to the target organism) to trap the microorganisms while the water flow removes debris. As a result, this technology can be used for monitoring water quality from sources with high turbidity, i.e. important during floods.

B. Integration of sensors in 3D-printed interface for measurement of water quality parameters: We fabricated 5 miniaturized sensors (pH, conductivity, residual chlorine, turbidity, and temperature) and integrated them into a 3D-printed microchannel. The purpose of the latter is to reduce the pressure and flowrate of water samples taken from water main pipes. Tests conducted regarding accuracy, precision, and longevity have shown that our sensors outperform those available in the market and can easily be integrated into a flow-through device.

Contribution IV – Fluid Transport in Fuel Cells: According to Natural Resources Canada, fuel cells can reduce emission by 71 million tons/year if they power the existing 17 million vehicles. Despite the market potential of the fuel

cell, its performance and cost must yet be improved. Water management has been identified as one of the main problems impeding fuel cell performance. The membrane needs to be well hydrated, but the excess water blocks the pores of the gas diffusion layer (GDL) and forms slugs in the flow field. Our group (Shahraeeni, Niya, Phillips, Friess, Hasanpour, Vikram, Chowdhury, Yew, Richards) have enhanced water management by characterizing GDL properties and designing efficient flow fields. Our efforts resulted in 32 journals and 28 conferences. As a result, Shahraeeni received BCIC Innovation Scholar, and Niya received NSERC PDF award for a postdoctoral position at Stanford.

A. Measurement of flow properties of GDL: In collaboration with Ballard Power Systems (hired several of my HQP), internal wettability was measured along with pore size and permeability for 50 samples. Using multi-criteria decision making, these properties were related to fuel cell performance to identify their importance. With this knowledge, we have developed engineered GDLs enhancing water management and hence performance. The pore-network model was also used to find flow characteristics in the GDL. These efforts have enabled Ballard to optimize the structure of GDLs by quantifying a mass transport efficiency of each sample before running the fuel cell.

B. Radial microstructure flow field: In collaboration with Ballard, we developed an innovative flow field which is constructed of micro-rings providing uniform distribution of reactants and an effective use of the active area while facilitating rapid removal of water. Even if the GDL has effective mass transport properties, water accumulates in the flow field if not removed quickly. We have obtained 49% higher performance compared to industry-standard flow fields. Ballard has implemented this design in their micro-fuel cells for applications requiring a high power to weight ratio.

Contribution V: Bio-polymer fabrication

My lab has done extensive work on the development and research of biopolymers, primarily for use in drug encapsulation and delivery, biosensing, and probiotic protection. One of our major areas of focus is on the development of microfluidic platforms and polymer-blends to encapsulate cargo effectively and efficiently for delivery to the gastrointestinal tract. This work has been included in prestigious journals in the field, such as Food Hydrocolloids and Advances in Colloid and Interface Science. A newer area of study has focused specifically on the formulation of pH-sensitive microcapsules for targeted cargo delivery to the colon. This technology aims to be more effective than standard orally delivered therapies by ensuring that bioactive molecules are only released at the desired absorption site, thereby protecting sensitive cargo during transit through the gastrointestinal tract and potentially reducing cargo waste and side effects due to large drug volumes. This research was led by Madison Miller, a graduated MASc student in my group who was pursuing this research through the Lab2Market program and collaboration with Carolina Tropini at UBC via the Weston Catalyst award. Emily Earl, another previous MASc student from my lab, spent her degree developing hydrogels for the treatment of heartburn. The work was supported by the NSERC Canada Graduate Scholarships – master's program and is now in the process of being patented.

Contribution VI: Microfluidic platform for isolation, separation, and detection

In addition to the use of microfluidic technologies for gas detection and bioparticle encapsulation, my lab also designs new microfluidic platforms for the isolation, separation, and detection of both exosomes and microplastics. Exosomes are nano- sized vesicles secreted by cells - they maintain a huge role in regenerative medicine and targeted drug delivery as they can be adapted to transport various compounds within the body without triggering autoimmune response. In addition, exosomes that are secreted by tumour cells hold abnormal DNA, that if isolated and recognized, may lead to the earlier detection of conditions and disease states such as cancer. My microfluidic platforms have the potential to enable the efficient and cost-effective processing of exosome-containing samples, resulting in enhanced sample purity and exosome yield. The work on exosome isolation led to a major collaboration with UBC resulting in two UBC Eminence Funds, a $2 million CFI JELF award, and a New Frontiers in Research Fund, the results of which so far have been 13 technical papers and two review papers titled "Challenges and opportunities in exosome research—Perspectives from biology, engineering, and cancer therapy, and "A review of sorting, separation and isolation of cells and microbeads for biomedical applications: microfluidic approaches which have been cited 345 times and 219 times, respectively, since 2019 in prestigious journals such as Cell Metabolism (Isaac et al., 2021) and Nature Methods (Chen et al., 2021).

Our other microfluidic isolation area, focused on microplastics, revolves around the in-situ detection of microplastics in liquid samples using simple microfluidic chip-based platforms. As plastic pollution continues to be a growing concern, especially in large bodies of water, this research is expected to have a major environmental impact within Canada by providing a practical and cost-effective tool for detecting microplastic pollution. This research continues to inspire collaborations with many different partners, including manufacturers who use plastic in production of their products, such as Aeropress, which led to a $100,000 proposal, as well as partners who have environmental concerns regarding microplastics in local bodies of water such as Victoria International Marina.

PROFESSIONAL CONTRIBUTIONS AND ACTIVITIES

International Collaboration Activities

2015/9 - 2023/11	Collaborator, United States of America, Collaborating and co-supervising with Dr. Kahdemhosseini at MIT/Harvard on 4D bioprinting for organ printing.
2017/9 - 2019/4	Collaborator, Bangladesh, Collaborating with Dr. Billah's team at Khulna University for water quality monitoring technology.
2017/5 - 2019/4	Collaborator, France, Collaborating with Dr. Gardan's group at EPF Ecole d'ingénieurs on additive manufacturing and heat exchanger characterization.
2014/9 - 2018/5	Collaborator, United Arab Emirates, collaborating with Dr. Hussain Ahmed from American University of Sharjah on solid removal from natural gas using cyclones.

Invited Seminars and Keynote Talks

Title: Scalable Microfluidic Synthesis of PEGylated Liposomes for Drug Delivery and Cosmetic Applications
Event: Nanotech 2025, France
Title: Molecularly Imprinted Polymers in Artificial Olfaction: A Sensory Enhancement Approach
Event: ICONN 2024, Australia
Title: Integrated Sensors for Application in Environmental and Clean Technology
Event: Clean Energy Research Centre (CERC) Seminar, Canada, 2023
Title: Breath Sensing for Personal Health Monitoring
Event: UVic Translational Biomedical Engineering Seminar, Canada, 2022
Title: Smart Sensors for Monitoring Volatile Organic Compounds (VOCs)
Event: EGBC 2021, Canada
Title: Smart Sensors for Health and Safety Monitoring
Event: VI ASHRAE and EGBC, Canada, 2021
Title: Graphene-coated Spandex Sensors for Composites Health Monitoring
Event: IEEE Nano 2020, Austria
Title: Digital Microfluidics: From Sample Preparation to Sensing
Event: 2nd Microfluidics Congress, Philadelphia, United States of America, 2017
Title: Development and Characterization of Sensitive/Selective Sensors on Integrated Lab-on-Chip Applications
Event: University of Toronto, Toronto, Canada, 2016
Title: Development of a Dielectrophoretic-Based Technique for Rapid Droplet Mixing in Digital Microfluidics
Event: Massachusetts Institute of Technology (MIT), Boston, United States of America, 2016
Title: Digital Microfluidics and Its Potentials in Biomedical Applications
Event: Stanford University, Palo Alto, United States of America, 2012
Title: Flow in Microstructures
Event: University of California Berkeley, Berkeley, United States of America, 2011.

Guest Lectures, Invited Talks and Other Presentations

- Clean Energy Research Centre (CERC) Seminar, “Integrated Sensors for Application in Environmental and Clean Technology”, January 2023.
- UVic Translational Biomedical Engineering Seminar, “Breath sensing for personal health monitoring” April 2022.
- UVic BME Day 2021, “Smart Sensors for Monitoring Volatile Organic Compounds (VOCs), November 2021.
- VI ASHRAE and EGBC Technical talk, “Smart Sensors for Health and Safety Monitoring”, November 2021.
- EGBC Keynote, “Smart Sensors for Monitoring Volatile Organic Compounds (VOCs), September 2021.
- IEEE Nano 2020, “Graphene-Coated Spandex Sensors for Composites Health Monitoring”, Vienna, Austria, September 2020.
- IMCS 08: Microfluidic Devices and Sensors, “Microfluidic Sensors based on Molecularly Imprinted Polymers for the Selective Detection of Volatile Organic Compounds”, March 2020, Montreal, Canada.
- IC-IMPACTS 2019, “Water Quality Sensing & Monitoring”, Vancouver, Canada, July 2019.
- ICCE-27, 27th Annual International Conference on Composites/Nano Engineering, “Yarn sensors based on graphene coated spandex protected by silicone sheath for bodily motion and structural health detection”, Granada, Spain, July 2019.

- 4th Int. Congress Biomaterials & Biosensors (BIOMATSEN 2019), “Microfluidics Platforms as Non-invasive Diagnosis Tools”, Mugla, Turkey, May 2019.
- UBC Re-Imagining Aging Network, “Wearable devices for aiding aging”, Kelowna, BC, March 2019.
- Digital Olfaction Society Annual Meeting, “Smelling through microfluidic-based artificial olfaction device”, Tokyo, Japan, December 2018.
- TUDelft, “Future of Digital Microfluidics”, Delft, Netherlands, November 2018.
- 4Bio Summit, " Advanced Biomedical and Environmental Diagnostics through Microfluidic Olfaction Technology", Rotterdam, Netherlands, November 2018.
- Microfluidics 2018, "Smelling Through Microfluidic Olfaction Technology", San Diego, USA, August 2018.
- LifeSciences BC, "Digital microfluidics: from sample preparation to sensing", November, 2017.
- 2nd Microfluidics Congress USA, “Digital microfluidics: from sample preparation to sensing”, July 2017.
- Biophysics2016, “Bioensors for lab-on-chip applications”, UBC Okanagan Campus, April 2017.
- Celebrating UBC Research & Innovation: With UBC President & Vice-Chancellor, “Microfluidic sensors for environmental, health and security applications”, Victoria, Canada, April 2017.
- Celebrating UBC Research & Innovation: With UBC President & Vice-Chancellor, “Microfluidic sensors for environmental, health and security applications”, March, 2017.
- University of Toronto, “Development and characterization of sensitive/selective sensors on integrated lab-on-chip applications”, November 2016.
- Massachusetts Institute of Technology (MIT), “Development of a dielectrophoretic-based technique for rapid droplet mixing in digital microfluidics”, July 2016.
- American University in Dubai (AUD), “Nano-tube Biosensors for Detection of Waterborne Pathogens,” April 2015.
- American University of Sharjah (UAE), “Cancer Detection in Micro-devices”, April 2015.
- University of Qatar, “Label-free Detection of TB”, April 2015.
- QatarGas, “Ehnancement of Gas Separation in Cyclone”, April 2015.
- Greenlight Innovation, “Process Modeling of PEM Fuel Cell: a Diagnostic Tool”, March 2015.
- AerialX, “The Next Generation of UAVs running by Fuel Cells”, January 2015.
- Hetek Solution, “Ethane Detection as a Method for Gas Leakage Detection along Gas Pipeline”, January 2015.
- Tervita, “Barium Detection for Water Recycling in Oil Reservoir”, December 2014.
- Stanford University, “Digital Microfluidics and its Potentials in Biomedical Applications”, February 2014.
- Lawrence Berkeley National Laboratory, “3D Tomography of Fuel Cells”, October 2013.
- University of California Berkeley, “Flow in Microstructures”, July 2013.
- Aurora Biomed Inc., “DNA Purification on DMF Platforms”, April 2013.
- PowerDisc Corp., “Effect of Flow Channel on Water Vapor Diffusion”, May 2013.
- Ballard Power Systems Inc., “Characterization of GDLs”, April 2011.
- Automotive Fuel Cell Cooperation Corp. (AFCC), “Introduction to Advanced Thermo-Fluidic Laboratory (ATFL)”, September 2010.
- University of British Columbia Okanagan, Research Tea Break Seminars, “Interfacial Science and Its Advanced Engineering Applications”, March 2008.
- National Research Council Canada (NRC), Institute for Fuel Cell Innovation (NRC-IFCI), “Surface Properties of Gas Diffusion Layers (GDLs)”, September 2007.
- Petroleum Systems Engineering, University of Regina, Saskatchewan, “Measurement of Interfacial Properties and Applications”, August 2006.
- Case Western Reserve University, Department of Chemical Engineering, Cleveland, Ohio, “Measurement of Surface Properties of Gas Diffusion Layers (GDL)”, April 2006.
- National Research Council Canada (NRC), Institute for Chemical Process and Environmental Technology (ICPET), “Accurate Measurement of Interfacial Tension Using Drop Shape Techniques”, January 2006.
- Fuel Cell Research Centre, Kingston, Ontario, “Drop Shape Techniques for the Measurement of Interfacial Properties of Micro Droplets”, December 2005.
- Case Western Reserve University, Department of Chemical Engineering, Ohio, Cleveland, “Reliable Measurement of Interfacial Properties”, November 2005.
- University of Waterloo, Department of Mechanical Engineering, “Measurement of Interfacial Tension Using Drop Shape Techniques”, January 2005.
- Institute of Polymer Research, Dresden, Germany, “Contact Angle and Surface Tension Measurement using Axisymmetric Drop Shape Analysis (ADSA)”, September 2004.

Community Engagement

- Presented at 3 High schools in Singapore, 4 in Thailand, and 3 in Hongkong, “A Journey into the Future of Precision Engineering”, November 2024.
- Presented at 11 High schools in India, “Helping Hand Activity”, November 2016.
- Presented at Qatar Science Leading Program (QSLP) regarding “Active Learning in Classrooms”, April 2015.
- Presented at the Nano Technology workshop at Berkeley, the workshop was intended for community and high school students to become familiar with current advances in micro/nano technology and its applications. The titles of my talks given to a group of 50 undergraduate students were: "From Macro to Nano", "Mechanical Engineering in Micro/Nano Technology", "Microfluidic Technology in Biomedical Applications", November 2013.
- Presented 3-hour lecture on “The Future of Fuel Cell” to Shad Valley students visiting UBC Okanagan, July 2011
- Presented 2-hour lecture on “Polymer Electrolyte Membrane Fuel Cell (PEMFC)” at APSC 175- Matter and Energy, November 2007.
- Prepared experimental setups and corresponding laboratory instructions for APSC254 Instrumentation and Data Analysis Lab., UBC Okanagan, 2006
- Developed an educational software tool to describe and prevent undercutting and high-pressure angle of various disc cam mechanisms (2005)
- Developed an educational software tool for the design and simulation of cam mechanisms included in the syllabus of the undergraduate Kinematics and Dynamics course MIE301F (2001). The results of this work are reflected in Chapter 7 of the textbook entitled “Mechanics of Machines” by W.L. Cleghorn, Oxford University Press, 2005. The software is distributed with the book.
- Developed an educational software tool for the simulation and animation of multi-degree-of-freedom mechanical vibration systems included in the syllabus of the graduate vibration course MIE1005 (1999).

RESEARCH ACTIVITIES

POSTDOCTORAL FELLOWS

Name	Position	Year		Principal Supervisor
		Start	Finish	
Sajjad Janfaza	University of Victoria	2022/9	2023/3	Mina Hoorfar
Somayeh Fardindoost	University of Victoria	2022/01	Present	Mina Hoorfar
Kaveh Moulaee	Universita degli Studi di Messina	2020/09	2021/08	Mina Hoorfar
Amir Mohammad Sattari	University of British Columbia	2019/04	2021/04	Mina Hoorfar
Seyed M. R. Niya		2015/05	2015/10	Mina Hoorfar

RESEARCH ASSOCIATES

Name	Position	Year		Principal Supervisor
		Start	Finish	
Adriaan Frencken	Lab Partnership Manager	2023	2023	Mina Hoorfar
Ashtyn Gibbs	Lab Resource Manager	2023	Present	Mina Hoorfar
Jacob Stachowski	Lab Technical Manager	2023	Present	Mina Hoorfar
Nishat Tasnim	Lab Manager	2021	2026	Mina Hoorfar
Allen O'Brien	Lab Manager	2018	2023	Mina Hoorfar
Emily Earl	Lab Operation Manager	2016	Present	Mina Hoorfar
Ali Ahmadi	Researcher	2014	2016	Mina Hoorfar
Sina Jomeh	Researcher	2013	2014	Mina Hoorfar
Adithya Ravishankara	Lab Technician	2019	2021	Mina Hoorfar

PHD STUDENTS

Student Name	Program Type	Year		Principal Supervisor	Co-Supervisor(s)
		Start	Finish		
Ph.D.					
Abbas Sabahi	Ph.D.	2023	2027	Mina Hoorfar	
Kaveh Yazdani Motlagh	Ph.D.	2022	2026	Mina Hoorfar	
Abbas Motalebizadeh	Ph.D.	2022	2026	Mina Hoorfar	
Mostafa Azimzadeh	Ph.D.	2022	2026	Mina Hoorfar	Mohsen Akbari
Shima Akar	Ph.D.	2022	2026	Mina Hoorfar	
Farnoosh Kalantarnia	Ph.D.	2022	2026	Stephanie Willerth	Mina Hoorfar
Thomas Full	Ph.D.	2020	2024		Mina Hoorfar
Hamed Hadayeghi	Ph.D.	2019	2024		Mina Hoorfar
Mohammad Ramezannezhad	Ph.D.	2019	2024		Mina Hoorfar
Jahanbakhsh Jahanzamin	Ph.D.	2019	2023	Mina Hoorfar	
Ali Habiboallahzade	Ph.D.	2019	2024		Mina Hoorfar
Bahram Talebjedi	Ph.D.	2019	2023	Isaac Lee	Mina Hoorfar
Samaneh Daviran	Ph.D.	2018	2022		Mina Hoorfar
Soha Mohajeri	Ph.D.	2016	2020		Mina Hoorfar
George S. Luka	Ph.D.	2016	2020		Mina Hoorfar
Yousif Alcheikhhamdon	Ph.D.	2016	2020	Mina Hoorfar	
Arash Dalili	Ph.D.	2016	2019	Mina Hoorfar	
Kabilan Sakthivel	Ph.D.	2014	2017		Mina Hoorfar
Roya Samanipoor	Ph.D.	2013	2017	Mina Hoorfar	
Walid I. Mazyan	Ph.D.	2013	2017	Mina Hoorfar	
Yunxi Li	Ph.D.	2012	2016	Mina Hoorfar	
Mohammad Paknahad	Ph.D.	2012	2016	Mina Hoorfar	
H. R. Nejad	Ph.D.	2011	2015	Mina Hoorfar	
Ehsan Samiei	Ph.D.	2011	2016	Mina Hoorfar	

MASTERS STUDENTS

Student Name	Program Type	Year		Principal Supervisor	Co-Supervisor(s)
		Start	Finish		
M.A.Sc./M.Sc.					
Rolla Mohamed	M.A.Sc.	2025	2027	Mina Hoorfar	
Kiranjot Saini	M.ENG	2025	2025	Mina Hoorfar	
Fatemeh Sahebi	M.ENG	2025	2025	Mina Hoorfar	
Mona Mohammadi	M.ENG	2025	2025	Mina Hoorfar	
Sarah An	M.ENG	2024	2025	Mina Hoorfar	
Amirali Alaiezad	M.ENG	2024	2025	Mina Hoorfar	
Tyler Hardy	M.A.Sc.	2024	2026	Mina Hoorfar	
Koorosh Abbaspour	M.A.Sc.	2023	2025	Mina Hoorfar	
Amirhossein Alaghmandfard	M.A.Sc.	2022	2024	Mina Hoorfar	
Zahra Motamedi	M.A.Sc.	2022	2024	Mina Hoorfar	
Mahsa Madadimasouleh	M.A.Sc.	2022	2024	Mina Hoorfar	
Madison Miller	M.A.Sc.	2022	2024	Mina Hoorfar	
Arian Yeganegi	M.A.Sc.	2021	2023	Mina Hoorfar	
Hirad Mashouf	M.A.Sc.	2020	2022	Mina Hoorfar	
Amin Heydari	M.A.Sc.	2020	2022	Mina Hoorfar	
Mohammadreza Aghel	M.A.Sc.	2020	2022	Mina Hoorfar	
Peyman Azhdari	M.A.Sc.	2020	2022	Mina Hoorfar	
Reza Zarghanishiraz	M.A.Sc.	2021	2023	Mina Hoorfar	
Mohsen Sadeghi	M.A.Sc.	2020	2022	Mina Hoorfar	
Andre Van der Berg	M.A.Sc.	2020	2022	Mina Hoorfar	
Mohammadamir Ghasemian Moghaddam	M.A.Sc.	2019	2021	Mina Hoorfar	
Ali Nobakhti	M.A.Sc.	2019	2021	Mina Hoorfar	
Hamed Shieh	M.A.Sc.	2019	2021	Mina Hoorfar	
Arash K. Jahromi	M.A.Sc.	2019	2021	Mina Hoorfar	
Sara Ghaderahmadi	M.A.Sc.	2019	2021	Mina Hoorfar	Mohammad Arjmand
Mahan Ghazi	M.A.Sc.	2019	2021	Mina Hoorfar	
Emily Earl	M.A.Sc.	2019	2021	Mina Hoorfar	
Ali Davoodabadi	M.A.Sc.	2019	2021	Mina Hoorfar	
Grant Sonnenberg	M.ENG	2018	2020	Mina Hoorfar	
Hamed Tahmooressi	M.A.Sc.	2018	2020	Mina Hoorfar	
Adel Yavarinasab	M.A.Sc.	2018	2020	Mina Hoorfar	
Mohamed Tarek Aly	M.A.Sc.	2018	2020	Mina Hoorfar	
Pranav Ambhorkar	M.A.Sc.	2018	2020	Mina Hoorfar	
Matthew Barriault	M.A.Sc.	2018	2020	Mina Hoorfar	
Pamela Ines R. Sanchez	M.A.Sc.	2017	2020	Mina Hoorfar	
Erfan Taatizadeh	M.A.Sc.	2017	2019	Mina Hoorfar	
Hossein Montazerian	M.A.Sc.	2016	2018	Mina Hoorfar	
Pouria Mehrabi	M.A.Sc.	2016	2018	Mina Hoorfar	
Mahyar Mohaghegh Montazeri	M.A.Sc.	2016	2018	Mina Hoorfar	
Reza Larami	M.A.Sc.	2015	2017	Mina Hoorfar	
Nusrat Urmi	M.A.Sc.	2014	2016	Mina Hoorfar	
Sadegh Hassanpour	M.A.Sc.	2014	2016	Mina Hoorfar	
Ryan Phillips	M.A.Sc.	2013	2015	Mina Hoorfar	
Daniel Yang	M.A.Sc.	2013	2015	Mina Hoorfar	
Elaheh Aghaarabi	M.A.Sc.	2011	2013	Mina Hoorfar	
Ovee Z. Chowdhury	M.A.Sc.	2011	2013	Mina Hoorfar	
Siddiq H. Tahseen	M.A.Sc.	2011	2013	Mina Hoorfar	
Tasrif Rahman	M.A.Sc.	2011	2013	Mina Hoorfar	

BACHELOR STUDENTS

Student Name	Program Type	Year	Principal Supervisor
J. Flores	Intern	05/2025-08/2025	Mina Hoorfar
N. Khiari	Mitacs Globalink	05/2025-07/2025	Mina Hoorfar
A. Theodora	Intern	01/2025-04/2025	Mina Hoorfar
C. Pastula	Intern	01/2024-05/2025	Mina Hoorfar
I. Friesen	Co-op Internship	05/2024-08/2024	Mina Hoorfar
E. Lownsbrough	NSERC USRA/Co-op	09/2023-12/2023	Mina Hoorfar
G. Chen	Mitacs Globalink	05/2023-08/2023	Mina Hoorfar
G. Romero	Mitacs Globalink	06/2023-09/2023	Mina Hoorfar
A. Nayac	Mitacs Globalink	05/2023-08/2023	Mina Hoorfar
E. Wind-Granot	Co-op Internship	05/2023-08/2023	Mina Hoorfar
M. Martindale	NSERC USRA/Co-op	05/ 2022- 08 2022	Mina Hoorfar
J. Jungwirth	NSERC USRA/Co-op	09/ 2022-12/2022	Mina Hoorfar
B. Venkateswaran	Mitacs Globalink	05/ 2022-08/2022	Mina Hoorfar
D. Balasaheb Khot	Mitacs Globalink	06/ 2022- 09/2022	Mina Hoorfar
Z. Miao	Mitacs Globalink	08/ 2022- 10/2022	Mina Hoorfar
E. Earl	NSERC USRA	05/2019-08/2019	Mina Hoorfar
J. Hunter	NSERC USRA/Intern	01/2019-04/2020	Mina Hoorfar
G. McIntosh	NSERC USRA/Intern	01/2019-04/2020	Mina Hoorfar
D. Afantchao	Work Study	04/2017-04/2018	Mina Hoorfar
I. Adams	NSERC USRA	04/2020-08/2020	Mina Hoorfar
G. Ross	NSERC USRA	04/2020-08/2020	Mina Hoorfar
S. Kumar	Intern	04/2020-07/2020	Mina Hoorfar
A. Zoher	Intern	04/2020-07/2020	Mina Hoorfar
R. Kumar	Work Study	09/2019-12/2019	Mina Hoorfar
S. Lam	Work Study	09/2019-12/2019	Mina Hoorfar
V. Ahmadi	Work Study	09/2019-12/2019	Mina Hoorfar
G. Ng	Work Study, URA	01/2019-12/2019	Mina Hoorfar
D. Adegborioye	Work Study	01/2019-08/2019	Mina Hoorfar
S. Islam	Work Study	01/2019-08/2019	Mina Hoorfar
K. Workun	Work Study, URA	01/2019-08/2020	Mina Hoorfar
I. Alexander	USRA, Work Study	04/2018-12/2019	Mina Hoorfar
A. Bagai	Intern	04/2019-08/2019	Mina Hoorfar
A. Logel	Work Study	01/2019-04/2020	Mina Hoorfar
M. Grant	Work Study	04/2018-04/2019	Mina Hoorfar
M. Shaunessy	Work Study	01/2018-04/2019	Mina Hoorfar
E. Kim	Work Study	09/2016-04/2019	Mina Hoorfar
S. Alvarez	Work Study, IURA	01/2018-04/2019	Mina Hoorfar
N. de Vries	URA	09/2017-04/2019	Mina Hoorfar
M. Pearson	Work Study	01/2018-04/2018	Mina Hoorfar
J. Kobelt	Work Study	01/2018-04/2018	Mina Hoorfar
I. Li	Work Study	09/2017-04/2018	Mina Hoorfar
J. Hui	NSERC USRA, Work Study	09/2016-04/2018	Mina Hoorfar
C. Grosse	Intern	04/2018-08-2018	Mina Hoorfar
C. McIntosh	USRA	09/2016-04/2018	Mina Hoorfar
K.T. Nguyen	IURA	09/2016-04/2018	Mina Hoorfar
M. Hampel	Work Study	01/2016-04/2017	Mina Hoorfar
Z. Ji	NUS	04/2017-08/2017	Mina Hoorfar

T. Ho	USRA	04/2017-08/2017	Mina Hoorfar
B. Min Jeong Kim	IURA	04/2017-08/2017	Mina Hoorfar
A. Almazbekova	URA	04/2017-08/2017	Mina Hoorfar
G. Mason	Work Study	09/2015-04/2016	Mina Hoorfar
H. Gomes	Work Study	09/2016-04/2017	Mina Hoorfar
A. Steele	Work Study	09/2016-04/2017	Mina Hoorfar
G. Mason	Work Study	09/2016-04/2017	Mina Hoorfar
K. Schlagintweit	Work Study	09/2015-04/2017	Mina Hoorfar
A. Van der Berg	Work Study, USRA	09/2015-04/2017	Mina Hoorfar
J. Rousseau	Work Study	09/2015-12/2016	Mina Hoorfar
M. Elnaggar	Work Study	09/2015-12/2015	Mina Hoorfar
G. Sonnenberg	Work Study	09/2015-08/2015	Mina Hoorfar
J. Singh Bachhal	Work Study	09/2015-08/2015	Mina Hoorfar
A. Vikram	Intern	05/2015-08/2015	Mina Hoorfar
P. Chowdhury	IIT	05/2015-08/2015	Mina Hoorfar
A. Gupta	Intern	05/2015-08/2015	Mina Hoorfar
M. Diaz Debry	IURA, Work Study	05/2015-08/2015	Mina Hoorfar
B. Nestor	NSERC USRA, Work study	10/2013-08/2015	Mina Hoorfar
L. Tamazoli	Work Study	01/2015-04/2015	Mina Hoorfar
C. Furrer	Work Study	01/2015-04/2015	Mina Hoorfar
B. Skow	Work Study	09/2014-04/2015	Mina Hoorfar
M. Williams	Work Study	09/2014-04/2015	Mina Hoorfar
D. Vaile	Work Study	09/2014-04/2015	Mina Hoorfar
Q. Memon	Work Study	01/2014-08/2014	Mina Hoorfar
C. Lee	Work Study, NSERC USRA	01/2014-08/2014	Mina Hoorfar
K. Hill	Work Study, NSERC USRA, URA	01/2014-08/2014	Mina Hoorfar
K. Bera	IIT	05/2014-08/2014	Mina Hoorfar
S. S. Juturu	Intern	05/2014-08/2014	Mina Hoorfar
S. Wu	Intern	05/2014-08/2014	Mina Hoorfar
W. Smyth	Work Study	10/2013-08/2014	Mina Hoorfar
A. Jiang	Work Study	10/2013-03/2014	Mina Hoorfar
Y. Kuang	Work Study	10/2013-12/2013	Mina Hoorfar
A. Yu	Work Study	10/2013-02/2013	Mina Hoorfar
M. Mundra	IIT	05/2013-08/2013	Mina Hoorfar
A. Kannan	Intern	05/2013-08/2013	Mina Hoorfar
R. Phillips	Work Study, NSERC USRA	05/2011-04/2013	Mina Hoorfar
P. D. Barry	Work Study, NSERC USRA	05/2011-04/2013	Mina Hoorfar
M. Buat	Work Study, NSERC USRA	05/2011-04/2013	Mina Hoorfar
S. C. Yew	Work Study, NSERC USRA	05/2010-04/2013	Mina Hoorfar
D. Farina	Work Study	09/2012-12/2012	Mina Hoorfar
L. Dias	Work Study	09/2012-12/2012	Mina Hoorfar
J. Proce	Work Study, NSERC USRA	09/2012-12/2012	Mina Hoorfar
A. Hicks	Work Study, NSERC USRA	05/2012-12/2012	Mina Hoorfar
S. Tedia	Intern	05/2012-09/2012	Mina Hoorfar
D. Lo	Work Study	07/2011-04/2012	Mina Hoorfar
E. Houiellebecq	NSERC USRA	05/2010-12/2010	Mina Hoorfar
J. Pimer	Work Study	05/2010-09/2010	Mina Hoorfar
K. D. Devlin	Work Study, NSERC USRA	05/2009-04/2010	Mina Hoorfar
A. J. Richards	Work Study, NSERC USRA	05/2009-04/2010	Mina Hoorfar

FUNDED RESEARCH PROJECTS

Granting Agency	Subject	Amount ($)	Year	PI	Co-PI
MITACS	Clinical validation of a novel wearable wound infection detector	90,000	2025-2026	Akbari	Hoorfar
MITACS	Design of On-Site SERS-Based Lung Cancer Detection	540,000	2025-2027	Hoorfar	-
MITACS	Hydrogen Detection and Quantification within HENG	150,000	2025-2026	Hoorfar	-
NSERC	L2M - Cosmetics and Beauty Industry: Skin care subsector & Health and Wellness	20,000	2025	Hoorfar	-
NSERC	L2M - A low-cost, easy-to-use microplastic detection kit capable of identifying different types of MPs	20,000	2025	Hoorfar	-
NSERC Discovery	Smart Gas Detection: Integrating Pre-Concentration Techniques and Artificial Intelligence for Multi-Component Gas Sensing for High Sensitivity and Selectivity in Diverse Environmental Conditions	230,000	2024-2029	Hoorfar	-
NSERC CREATE	NSERC CREATE Training Program in 3D Printing Technology and Materials (3DPTM)	1,650,000	2022-2028	Led by UBC	Hoorfar
NSERC CREATE	Microsystems Technologies & Application	1,650,000	2020-2026	Led by York University	Hoorfar
MITACS Accelerate	Microfluidic-assisted sensing of blood biomarkers for at home health monitoring	240,000	2022-2025	Hoorfar	-
NSERC RTI	Nanoparticle Tracking Analysis System Urgently Required for Research in Targeted Drug-Delivery, Exosomes, Nanoplastics, and Artificial Cell Studies	135,513	2024-2025	Hoorfar	-
NSERC	L2M - Powdered Iron Supplement for Redispersion and Quick Consumption	$20,000	2023	Hoorfar	-
NSERC Alliance	H2Lab: A one-of-a-kind laboratory for investigating hydrogen-enriched natural gas from injection to combustion	$1,425,000	2020-2024	Hoorfar	Najjaran Bichler Sediako Brinkerhoff Li Kheirkhak
Weston Family Foundation Weston Catalyst	Engineering gut osmolality biosensors	450,000	2021-2024		Mina Hoorfar
UBC Eminence Fund	Cluster for Translation Extracellular Vesicle Research	$189,000	2020-2022	Hoorfar	Li
IDEaS DND	Development of an Air Surveillance Tool for Population-Wide COVID-19 Detection and Prediction	$200,000	2020	Pakpour	Hoorfar
MITACS	PCR lab-on-chip system for	$120,000	2020	Pakpour	Hoorfar

	rapid and sensitive identification of SARS-CoV-2 infected case				
NSERC Alliance COVID-19 Grant	ELECTRA platform: Electrochemical-based Aptasensor for early detection of COVID-19	$50,000	2020	Hoorfar	Najjaran
NSERC RTI	Environmental Test Chamber Urgently Required to Develop and Calibrate Microfluidic and Thin-film Sensing and Energy Conversion and Storage Technologies	$102,927	2020	Hoorfar	Najjaran Zarifi Uhl Liu
CFI JELF, BCKDF, In-kink	Infrastructure to advance exosome biology & technology	$2,000,000	2020	Hoorfar	Li
NSERC Alliance	Green roll-to-roll Manufacturing of Low-cost High-Performance Large Area Flexible Electronics	$334,000	2020-2023	Servati	Hoorfar
Critical Research Equipment & Tools Program (CRET)	Multi-cell Temperature-controlled UV-Visible spectrophotometer	$45,052	2020	Hoorfar	Pakpour Li
MITACS	Feasibility assessment and development of knowledge, technology, and tools for mercaptan natural gas odorant monitoring	$30,000	2020	Hoorfar	-
VPRI Excellence (Vancouver Office)	Digital Learning Factory (DLF) to Develop a Foundation in Engineering Data Science and AI	$400,000	2019-2020	Najjaran	Hoorfar Poursartip Ng
NSERC CRD	Personal microfluidic device for screening THC	$288,650	2019-2021	Hoorfar	Najjaran
NSERC RTI	Urgent Upgrade of Atomic Layer Deposition with Plasma Capability to Accelerate Energy Storage, Energy Conversion and Gas Sensing Research	$149,480	2019	Liu	Hoorfar Zarifi Uhl Robert
New Frontiers in Research Fund - Exploration	Trojan tag strategy for exosome liquid biopsy	$125,000	2019-2021	Li	Hoorfar Menard
NSERC DG/DND Supplement	Investigation of gas flow in microstructure for highly selective sensing	$40,000	2018-2020	Hoorfar	
MITACS	Feasibility Assessment and Development of Knowledge, Technology, and Tools for Reliable Hydrogen Injection into Natural Gas Delivery Systems	$300,000	2018-2019	Hoorfar	Bichler Sediako Brinkerhoff Li Kheirkhak
NSERC CRD	Development of handheld microfluidic breath-analyzer to detect target volatile organic compounds	$283,333	2018-2021	Hoorfar	Najjaran
NSERC DG	Investigation of gas flow in microstructure for highly selective sensing	$46,000	2018-2023	Hoorfar	
NSERC RTI	Gas Chromatography & Mass Spectrometry (GCMS) System Required for Calibration Reference and Identification of Various Target Molecules for	$149,411	2018	Hoorfar	Murch, Mahmoud, Zandberg, Kheirkhah

	Interdisciplinary Research Areas				
NSERC CRD	Smart Sewers: Development of wireless in-situ sensors for dissolved gases in liquid waste	$240,000	2018-2021	Hoorfar	
School of Engineering Research Tools (SERT) Fund	General Research Fund	$5000	2018	Hoorfar	
NSERC	Staff & Supplies for Support of Life Sciences & Microfabrication Facilities at Advanced Therm-Fluidic Laboratory (ATFL)	$28,600	2018	Hoorfar	
UBC Eminence Fund	Exosome cluster: development of an in-situ exosome isolation platform	$102,000	2017-2019	Hoorfar	Li
NSERC CRD	Development and Field Test of Highly Sensitive and Selective Microfluidic Gas Sensor for Methane Leak Detection	$206,000	2017-2019	Hoorfar	
NSERC RTI	Atomic Force Microscopy System for Biomedical, Materials, and Environmental Research	$149,411	2017	Kim	Hoorfar Bichler Roberts Milani Li Foulds
MITACS Cluster	Developing internal fiber chromatography, a new column designed for liquid, gas and supercritical fluid chromatography	$63,000	2016-2018	Hoorfar	Najjaran
School of Engineering Research Tools (SERT) Fund	General Research Fund	$5000	2017	Hoorfar	
NSERC Engage	Development of Wireless In-Situ Sensors for Dissolved Gases in Liquid Waste	$25,000	2016	Hoorfar	
School of Engineering Graduate Fund	Graduate Travel	$1,900	2016	Hoorfar	
NSERC RTI	Profilometer Urgently Needed to Measure Thickness of Films Made in the Applied Micro and Nanosystems Facility	$41,800	2016	Chau	Hoorfar Holzman Najjaran Kim Fould
NSERC Engage	Development of a gas detector for detection of wine aroma	$25,000	2016	Hoorfar	
India-Canada Innovative Multidisciplinary Partnerships to Accelerate Community Transformation & Sustainability (IC-IMPACTS)	In-field testing of a waterborne pathogen detector	$47,500	2016	Hoorfar	
School of Engineering Research Tools (SERT) Fund	Mass flow controller for fuel cell station	$4,000	2016	Hoorfar	
NSERC Engage	Development of a 3D-printed microfluidic channel to enhance selectivity of methane sensors	$25,000	2015	Hoorfar	

UBC- NSERC Internal Equipment Fund	Addition of a mass flow controller into the plasma machine for etching microfluidic devices	$4,996	2015	Hoorfar	Najjaran
NSERC Pacific Regional Opportunities Fund	School of Engineering Partners with Industry Showcase	$1,950	2015	Hoorfar	
School of Engineering Research Tools (SERT) Fund	Benchtop Plasma Cleaning/Etching System	$15,300	2015	Hoorfar	Najjaran Kim
NSERC Engage	Classification of VOC gases using digital microfluidic	$25,000	2014	Hoorfar	
India-Canada Innovative Multidisciplinary Partnerships to Accelerate Community Transformation & Sustainability (IC-IMPACTS)	Direct Cryptosporidium Detection for Developed and Developing Nations	$74,000	2014-2016	Hoorfar	Roberts
NSERC RTI	Conformal coating machine for micro/nanofabrication processes	$56,545	2014	Hoorfar	Najjaran
NSERC Discovery Grant	Principles and Applications of Fluidics in Microsystems	$32,000	2013-2018	Hoorfar	
International Development Research Centre (IDRC)	Detection of Pathogens in Drinking Water to Prevent Waterborne Disease Transmission in Developing Countries	$30,000	2012-2013	Roberts	Hoorfar
School of Engineering Research Tools (SERT) Fund	Motorized Linear Stage for Microfluidic Setup	$6,000	2013	Hoorfar	
NSERC Engage	Measurement of water vapor transport through gas diffusion layers for various flow field designs	$25,000	2013	Hoorfar	
UBC Okanagan Individual Research Grant	LOC prototype for isolation and measurements of nanoparticles as a surrogate for microvesicles	$5,000	2013	Hoorfar	
School of Engineering Research Tools (SERT) Fund	Power Booster for Impedance Measurement Unit	$15,000	2012	Hoorfar	
NSERC Engage	Development of a magnetic-based Lab-on-chip Device for DNA Purification	$25,000	2012	Hoorfar	
NSERC Engage	Development of a capture device replacing filtration and purification processes used in USEPA 1623 method	$25,000	2012	Hoorfar	
UBC Okanagan Individual Research Grant	Methodology for the Detection of Water Pathogens Using a Reactive Surface Capture Device	$5,000	2012	Hoorfar	
NSERC RTI	A Photolithographic Mask Alignment and Exposure System	$98,130	2011	Holzman	Hoorfar Najjaran Chau
Western Economic Diversification (WED)	Okanagan Microfabrication Facility	$760,000	2011	Holzman	Hoorfar Najjaran Roberts Chau O'Leary

					Johnson
Canada Summer Jobs Grant	Power Generation Systems Development	$7,359	2011	Hoorfar	
NSERC Engage	A BART Methodology for the Detection of Water Pathogens Using MRSCD	$25,000	2011	Hoorfar	
NSERC Engage	Investigation of GDL Wettability	$25,000	2011	Hoorfar	
UBC Okanagan Individual Research Grant	Development of Recyclable Fuel Cells	$5,000	2011	Hoorfar	
Canada Foundation for Innovation (CFI) Infrastructure Operating Fund	Innovative Water Management Strategies to Advance PEM Fuel Cell Technology	$6,500	2011-2016	Hoorfar	
NSERC Regional Opportunities Fund	Engineering Research Showcase	$6,200	2010	Roberts	Hoorfar Alam
NSERC RTI	Toolkit for Evaluation of Microfluidic Fuel Cell Performance	$33,708	2010	Hoorfar	
Canada Summer Jobs Grant	Micro Sensor Development	$6,720	2010	Hoorfar	
UBC Okanagan Collaborative Research Grant	In Vitro Red Wine Characterization through Interfacial Property Measurement	$10,000	2010	Hoorfar	Saucier
NSERC-Strategic Project Grants	Online Monitoring of Distribution Systems - Investigating Water Quality Failure Events	$92,000	2009-2011	Sadiq	Hoorfar Najjaran
Canada Foundation for Innovation (CFI) and BCKDF	Innovative Water Management Strategies to Advance PEM Fuel Cell Technology	$321,372	2010	Hoorfar	
UBC Okanagan Travel Grant	European Fuel Cell Technology and Applications Conference	$2,000	2009	Hoorfar	
UBC Okanagan Individual Research Grant	Modeling of Flow Dynamics in Microfluidic Devices	$5,000	2009	Hoorfar	
NSERC-Strategic Project Grants (Supplemental Competition)	Real-Time Detection of Waterborne Cryptosporidium spp. using Micro-Retroreflectors	$98,500	2009-2010	Roberts	Hoorfar
UBC Okanagan Individual Research Grant	Measurement of Capillary Forces in the Internal Network of Hydrogen Fuel Cells	$5,000	2008	Hoorfar	
NSERC Discovery Grant	Enhancement of Water Management in PEM Fuel	$17,000	2007-2011	Hoorfar	
UBC Okanagan Internal Research Grant	Measurement of Dynamic Interfacial Properties using Drop Shape Techniques	$4,983	2007	Hoorfar	
NSERC RTI	Optical Imaging System for Engineering	$120,298	2007	Holzman	Hoorfar Roberts
UBC Okanagan Faculty Start-up		$23,000	2006	Hoorfar	
Research Contract, Huawei Canada	Comprehensive report on diabetes sensors	$10,000	2022	Hoorfar	
Research Contract, Hetek Technologies Inc.	Ethane Identifier Instrument	$20,000	2020	Hoorfar	

Research Contract, AeroPress	Development of non-scratch coating for household appliances	$195,000	2023-2024	Hoorfar	

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CONFERENCE PROCEEDINGS

1. Field-deployable plasmonic sensing and machine learning classification of microplastics using peptide-AuNP conjugates. IEEE Sensors 2025, Vancouver, BC, Canada.
2. Boronic acid-based impedimetric glucose sensor: A multi-layer molecular imprinting technique. IEEE Sensors 2025, Vancouver, BC, Canada.
3. Extrusion 3D-bioprinting of brain tissue using stem cell-derived neural progenitor cells and fibrin/hyaluronic acid-based hydrogels. Canadian Biomaterials Society (CBS) Conference, Queen's University, Canada.
4. Molecularly imprinted polymers in artificial olfaction: A sensory enhancement approach. ICONN 2024, Australia.
5. Selective On-Site Detection of Polystyrene Microplastics in Water Using Fluorescence-Tagged Peptides, Sensors 2024, Barcelona, Spain.
6. Numerical simulation of a gas-liquid micromixer in a venturi-shaped microchannel. Nanotech 2023, Generic Microfluidics & Nanofluidics.
7. In-situ detection of microplastics based on a portable triboelectric microfluidic sensor. Sensors Technologies International conference - Sensors 2023.
8. Studying the synergistic action of TiO2-SDS nanoparticles using venturi-shaped micromixer. Nanotech 2023, Generic Microfluidics & Nanofluidics,
9. A novel approach for microplastic detection based on the triboelectric method in a microfluidic platform. Nanotech 2023, Generic Microfluidics & Nanofluidics.
10. Selective detection of natural gas odorants using microfluidic gas sensors with embedded micro- and nanofeatures. 7th International Conference on Nanomaterials, Nanodevices, Fabrication and Characterization (INNFC22).
11. Hydrogen extraction from H2-enriched natural gas using membrane technology. 12th International Hydrogen Days 2022 (HYTEP 2022).
12. Development of room-temperature H2S gas sensor using flower-like ZnO nanorods. 7th International Conference on Nanomaterials, Nanodevices, Fabrication and Characterization (INNFC' 22).
13. (2020). A graphene-based chemical sensor for hydrogen sulfide measurement in water. IEEE Sensors, Montreal, Canada, Conference Date: 2019/10 Paper.
14. Developing neural network-like platform on a Chip for drug test. BMES 2019 Annual Meeting, Philadelphia, United States of America, Conference Date: 2019/10 Poster.
15. Polyaniline-based chemiresistive sensor integrated into a microfluidic channel for odor detection. Digital Olfaction Society, Tokyo, Japan, Conference Date: 2018/12.
16. Convolutional neural networks as an end-to-end solution for binary mixture concentration estimation. Digital Olfaction Society, Tokyo, Japan, Conference Date: 2018/12.
17. Review of tetrahydrocannabinol monitoring breath analyzers. Digital Olfaction Society, Tokyo, Japan, Conference Date: 2018/12.
18. A stretchable 3D cellular microarray for mechanobiology study. MicroTAS, Kaohsiung, Taiwan Conference Date: 2018/1.
19. Digital-micromirror-device printed scaffold for vascularized tissue. MicroTAS, Kaohsiung, Taiwan Conference Date: 2018/1.

20. DMD printed scaffold for vascularized tissue. Biomedical Engineering Society (BMES) Annual Meeting, Atlanta, United States of America, Conference Date: 2018/10 Paper.
21. Characterization of the electrodes of DEP-based micro-separator. Canadian Society of Mechanical Engineering (CSME) Congress, Toronto, Canada, Conference Date: 2018/5 Paper.
22. Fabrication of SnO2 composite nanofiber-based gas sensor using electrospinning method. Canadian Society of Mechanical Engineering (CSME) Congress, Toronto, Canada, Conference Date: 2018/5 Paper.
23. Quantitative natural gas discrimination for pipeline leak Detection through time-series analysis of MOS sensor response. Canadian Society of Mechanical Engineering (CSME) Congress, Toronto, Canada Conference Date: 2018/5.
24. Piezoresistive chopped carbon fiber/polydimethylsiloxane composite yarns for deformation sensing in textile fabrics. Canadian Society of Mechanical Engineering (CSME) Congress, Toronto, Canada Conference Date: 2018/5.
25. Biomaterial microarray platform for analyzing the response of cells in three-dimensional matrix to mechanical stimuli. MicroTAS2017, Savannah, United States of America Conference Date: 2017/10 Poster.
26. A method of accelerated regeneration for a microfluidic gas sensor. IEEE Sensors, Glasgow, United Kingdom
27. Conference Date: 2017/10 Poster.
28. A sensor for nuisance sewer gas monitoring. IEEE Sensors, Glasgow, United Kingdom Conference Date: 2017/10.
29. Fabrication of palladium functionalized sol-gel based SnO2 gas sensor for H2 and CO detection. IEEE Sensors, Glasgow, United States of America, Conference Date: 2017/10 Paper.
30. Digital microfluidic-based fluorescent sensor for detection of Cryptosporidium. MicroTAS 2016, Dublin, Ireland (1561-1564), Conference Date: 2016/10 Poster.
31. Diffusion-based microfluidic breath analyzer fordetection of cannabis use. MicroTAS 2016, Dublin, Ireland (905-908), Conference Date: 2016/10 Paper.
32. Digital microfluidic-integrated field-effect-transistor carbon nanotube biosensor. MicroTAS 2016, Dublin, Ireland, Conference Date: 2016/10 Paper.
33. Label free interdigitated capacitive biosensorfor detection of Cryptosporidium. MicroTAS 2016, Dublin, Ireland (1431-1434), Conference Date: 2016/10 Poster.
34. Density-based single particle isolation using micro-wells. MicroTAS 2016, Dublin, Ireland (1130-1133)
35. Conference Date: 2016/10 Poster.
36. Composite Nafion-Functionalized PDMS Electrospun Fibers for Direct Methanol Fuel Cells. Pacific Rim Meeting, Honolulu, United States of America, Conference Date: 2016/10 Abstract.
37. Developing a rapid droplet mixing technique for digital microfluidics. Dielectrophoresis 2016, Boston, United States of America, Conference Date: 2016/7 Paper
38. Highly-selective multi target 3D-printed microfluidic-based breath analyzer. 2016 29th IEEE International Conference on Microelectromechanical Systems (MEMS), ShangHai, China Conference Date: 2016/1.
39. Determination of Permeability of the Gas Diffusion Layer of Proton Exchange Membrane Fuel Cells (PEMFCs). 3rd Zing Hydrogen & Fuel Cells Conference, Cancun, Mexico (1555--1555)
40. Conference Date: 2015/11 Paper.
41. Electrical/Thermal Bulk resistance of non-uniformly compressed GDL. 3rd Zing Hydrogen & Fuel Cells Conference, Cancun, Mexico, Conference Date: 2015/11 Paper.
42. Enhancing the Solid-Gas Separation Efficiency in Natural Gas Cyclones Using Electro-Magneto- Hydrodynamic Forces. ASME 2015 International Mechanical Engineering Congress and Exposition, Houston, United States of America Conference Date: 2015/11 Paper.
43. Detection of low concentrations of DNA in a microliter sample droplet on digital microfluidics using gravity-driven hydrodynamic particle focusing technique. MicroTAS 2015, Seoul, Korea, South Conference Date: 2015/10.
44. Cell-Patterning and Culturing on Digital Microfluidics. MicroTAS 2015, Seoul, Korea, South Conference Date: 2015/10.
45. Label-free gold nanoparticle-based colorimetric assay for direct detection of Cryptosporidium. 37th Annual Inter. Conf. IEEE Engineering in Medicine and Biology Society, Rome, Italy, Conference Date: 2015/8 Paper.
46. 3D cell patterning using dielectrophporesis on digital microfluidics. 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Rome, Italy, Conference Date: 2015/8 Paper.
47. Investigation of Methods of Enhancing the Performance of Propane Pre-Cooling Refrigeration Cycles in Natural Gas Liquefaction Processes. ADIPEC, Abu Dhabi, United Arab Emirates Conference Date: 2015/7
48. Investigation of Gas Diffusion Layer Properties Using X-Ray Microtomography. ASME 2015 13th International Conference on Fuel Cell Science, Engineering and Technology, San Diego, United States of America (V001T04A001--V001T04) Conference Date: 2015/6 Paper.
49. Development of an electronic tongue for detection of different wines. 2015 28th IEEE International Conference on Micro Electro Mechanical Systems (MEMS), Estoril, Portugal, Conference Date: 2015/6 Paper.
50. Dependency of the Power of the Constant Phase Element to Operating Conditions in Proton Exchange Membrane Fuel Cells. ASME 2015 13th International Conference on Fuel Cell Science, Engineering and Technology collocated

with the ASME 2015 Power Conference, San Diego, United States of America (126-130), Conference Date: 2015/6 Paper.

51. A novel density-based dielectrophoretic particle focusing technique for digital microfluidics. 2015 28th IEEE International Conference on Micro Electro Mechanical Systems (MEMS), Estoril, Portugal (492-495), Conference Date: 2015/6 Paper.
52. Improvement of the Process Model for the Ohmic Loss of the Proton Exchange Membrane Fuel Cell. 227th ECS meeting, Chicago, United States of America (1662-1662), Conference Date: 2015/5 Paper.
53. Particle separation using sweeping method in DMF platforms. MicroTAS 2014, San Antonio, United States of America, Conference Date: 2014/10 Paper.
54. Development of a micro proton exchange membrane fuel cell. ASME 2014 12th International Conference on Nanochannels, Microchannels, and Minichannels, Chicago, United States of America Conference Date: 2014/8
55. Introducing a Digital Micropump for Driving a Droplet in a Microfluidic Channel. Microtech 2014, Boston, United States of America, Conference Date: 2014/6 Paper.
56. Droplet actuation on a digital microfluidics byportable DC voltage source. Microtech 2014, Washington DC, United States of America, Conference Date: 2014/6 Paper.
57. Design of experiment for testing the effect of temperature and humidity on fuel cell performance. ASME 2014 12th International Conference on Fuel Cell Science, Engineering and Technology, Boston, United States of America, Conference Date: 2014/6 Paper.
58. Determination of Activation Losses in Proton Exchange Membrane Fuel Cells. ASME 2014 12th International Conference on Fuel Cell Science, Engineering and Technology, Boston, United States of America (79-83), Conference Date: 2014/6 Paper.
59. Sensitivity Analysis of the Response of a Gas Sensor in a Microfluidic-Based Gas Analyzer. ASME 2014 12th International Conference on Nanochannels, Microchannels, and Minichannels, Chicago, United States of America (145-148), Conference Date: 2014/6 Paper.
60. Droplet Dispensing From Open to Close Digital Microfluidics. Microtech 2014, Washington DC, United States of America Conference Date: 2014/6 Paper.
61. Effect of Electrode Geometry on Droplet Splitting in Digital Microfluidic Platforms. ASME 2014 12th International Conference on Nanochannels, Microchannels, and Minichannels, Chicago, United States of America (332-335), Conference Date: 2014/6 Paper.
62. Characterization of Micro-Porous Layer of Gas Diffusion Layer of a PEM Fuel Cell Via X-Ray Tomographic Microscopy. 225th ECS Meeting, Orlando, United States of America (566--566) Conference Date: 2014/5
63. Characterization of the Porous Transport Layer (PTL). 225th ECS Meeting, Orlando, United States of America (565--565) Conference Date: 2014/5 Paper.
64. Estimation of leakage current in proton exchangemembrane fuel cells. 225th ECS Meeting, Orlando, United States of America, Conference Date: 2014/5 Paper.
65. A fuzzy rule-based approach for water quality assessment in the distribution network. IFSA World Congress and NAFIPS Annual Meeting (IFSA/NAFIPS), 2013 Joint, Edmonton, Canada (1149-1154) Conference Date: 2013/6
66. Fabrication and Testing of a Miniaturised Water Quality Monitoring pH and Conductivity Sensors. ASME 2013 International Mechanical Engineering Congress and Exposition, Incline Village, United States of America, Conference Date: 2013/6 Paper.
67. Enhanced fuzzy evidential reasoning using an optimization approach for water quality monitoring. IFSA World Congress and NAFIPS Annual Meeting (IFSA/NAFIPS), 2013 Joint, Edmonton, Canada (1143-1148), Conference Date: 2013/6.
68. Modifying Electrode Geometry for Unequal Droplet Splitting in Digital Microfluidics. ASME 2013 International Mechanical Engineering Congress and Exposition, San Diego, United States of America (253-256), Conference Date: 2013/6 Paper.
69. Networked fuzzy belief rule-based system for spatio-temporal monitoring. IFSA World Congress and NAFIPS Annual Meeting (IFSA/NAFIPS), 2013 Joint, Edmonton, Canada (896-901), Conference Date: 2013/6 Paper.
70. A Pore-Network Model for Capillary-Driven Flows Inside Porous Media. ASME 2012 10th International Conference on Nanochannels, Microchannels, and Minichannels, Puerto Rico, United States of America (597-602), Conference Date: 2012/6 Paper.
71. Temperature Sensitivity Analysis of Electrochemical Impedance Spectroscopy Results in PEM Fuel Cells. ASME 2012 10th International Conference on Fuel Cell Science, Engineering and Technology collocated with the ASME 2012 6th International Conference on Energy Sustainability, San Diego, United States of America (345-349), Conference Date: 2012/6 Paper.
72. Measurement of liquid water content inside the gas diffusion layer. ASME 2012 10th International Conference on Fuel Cell Science, Engineering and Technology collocated with the ASME 2012 6th International Conference on Energy Sustainability, San Diego, United States of America (105-111) Conference Date: 2012/6.
73. Simulation of Constant Pressure and Flow Rate Through Mini-Channels Inserted Into Distribution Systems (WDS). ASME 2012 10th International Conference on Nanochannels, Microchannels, and Minichannels, Puerto Rico, United States of America (469-473), Conference Date: 2012/6 Paper.

74. Development of Radial Flow Field for Improved Water and Gas Management in PEMFC. ASME 2012 10th International Conference on Fuel Cell Science, Engineering and Technology, San Diego, United States of America (169-177), Conference Date: 2012/6 Paper.
75. Multicriteria information fusion using a fuzzy evidential rule-based framework. Systems, Man, and Cybernetics (SMC), 2012 IEEE International Conference on, Seoul, Korea, South (1890-1895) Conference Date: 2012/6
76. Sensitivity Analysis of Mass Transport Properties of Gas Diffusion Layers of Polymer Electrolyte Membrane Fuel Cells. ASME 2012 10th International Conference on Nanochannels, Microchannels, and Minichannels, Puerto Rico, United States of America (149-155), Conference Date: 2012/6
77. Online monitoring of drinking water quality in a distribution network: a selection procedure for suitable water quality parameters and sensor devices", 15th Canadian National Drinking Water Conference, Canadian Water and Wastewater Association, Kelowna BC, October 2012.
78. A fuzzy evidential belief-rule-based framework for multicriteria information fusion," IEEE Int. Conf. on Systems Man and Cybernetics (SMC) October, Seoul, 2012.
79. Control and optimization of biomolecular adsorption in Digital Microfluidic devices", International Conference on Nanochannels, Microchannels and Minichannels, Puerto Rico USA, June 2012.
80. Accurate measurement of capillary pressure-saturation correlation for gas diffusion layers", International Conference on Nanochannels, Microchannels and Minichannels, Puerto Rico USA, June 2012.
81. A pore-network model for capillary-driven flows inside porous media", International Conference on Nanochannels, Microchannels and Minichannels, Puerto Rico USA, June 2012.
82. Numerical simulation of the adhesion of a moving biological cell on a reactive substrate in a rectangular microchannel", International Conference on Nanochannels, Microchannels and Minichannels, Puerto Rico USA, June 2012.
83. Sensitivity analysis of mass transport properties of gas diffusion layers of polymer electrolyte membrane fuel cells, International Conference on Nanochannels, Microchannels and Minichannels, Puerto Rico USA, June 2012.
84. Active water/gas management in a parallel architecture PEM fuel cell stack, International Conference on Nanochannels, Microchannels and Minichannels, Puerto Rico USA, June 2012.
85. In-situ sample preparation for digital microfluidic-based proteomics analyses", International Conference on Nanochannels, Microchannels and Minichannels, Puerto Rico USA, June 2012.
86. Design and fabrication of a constant pressure and constant flow system for miniaturised water quality monitoring sensors", International Conference on Nanochannels, Microchannels and Minichannels, Puerto Rico USA, June 2012.
87. Development of an engineered gas diffusion layer for the enhancement of Enhancement of water management in PEM fuel cells", 10th Fuel Cell Science, Engineering and Technology Conference, San Diego, USA, July 2012.
88. Temperature sensitivity analysis of electrochemical impedance spectroscopy results in high temperature PEM fuel cells", 10th Fuel Cell Science, Engineering and Technology Conference, San Diego, USA, July 2012.
89. Measurement of liquid water content inside the gas diffusion layer after the time of breakthrough", 10th Fuel Cell Science, Engineering and Technology Conference, San Diego, USA, July 2012.
90. Effect of upstream cell performance on downstream cell performance in a laminar flow fuel cell stack", 10th Fuel Cell Science, Engineering and Technology Conference, San Diego, USA, July 2012.
91. Development of radial flow field for improved water and gas management in PEMFC", 10th Fuel Cell Science, Engineering and Technology Conference, San Diego, USA, July 2012.
92. The effect of flow field geometry on the PEM fuel cell performance", 10th Fuel Cell Science, Engineering and Technology Conference, San Diego, USA, July 2012.
93. Simulation of fluid flow in the gas diffusion layer of PEM fuel cell", World Hydrogen Energy Conference (WHEC), Toronto, Ontario, June 2012.
94. Development of hydrophilic metal foams in flow field geometry", World Hydrogen Energy Conference (WHEC), Toronto, Ontario, June 2012.
95. Experimental study of the effect of wettability of gas diffusion layers on proton exchange membrane fuel cell performance", World Hydrogen Energy Conference (WHEC), Toronto, Ontario, June 2012.
96. Dynamics of evaporating microdroplets in digital microfluidic biochips", 23rd Canadian Congress of Applied Mechanics, 2011, Vancouver, BC, June 2011. (Invited Speaker).
97. Leakage forensic analysis for water distribution systems: a fuzzy-based methodology", 20th Canadian Hydrotechnical Conference, Ottawa, Canada, June 2011.
98. Evidential reasoning using the fuzzy extension of Dempster-Shafer theory: application to the quality assessment of drinking water", General CSCE Conference, Ottawa, Canada, June 2011.
99. Effect of the hydrophilic compact-aluminum-foam-filled flow channel on water removal from the cathode catalyst layer", International Conference on Nanochannels, Microchannels and Minichannels, Edmonton, Alberta, June 2011.
100. Analysis of energy and exergy for mixed convection flow in microstructure filled vented enclosures", International Conference on Nanochannels, Microchannels and Minichannels, Edmonton, Alberta, 2011.

101. Study of the effect of electrophoresis on transport of biomolecules in microreactors", International Conference on Nanochannels, Microchannels and Minichannels, Edmonton, Alberta, June 2011.
102. Investigation of the effects of microdroplet evaporation on the performance of the digital microfluidic systems", International Conference on Nanochannels, Microchannels and Minichannels, Edmonton, Alberta, June 2011.
103. Effect of hydrophilic non-woven wicking polymer on water removal from flow channel", 9th Fuel Cell Science, Engineering and Technology Conference, Washington, August 2011.
104. Interval belief structure rule-based system using extended fuzzy Dempster-Shafer inference", IEEE SMC 2011, Alaska, USA, October 2011.
105. Fluorescence microscopy for the measurement of the surface properties of the gas diffusion layers of fuel cells", ASME International Mechanical Engineering Congress and Exposition, Vancouver, Canada, November 2010.
106. Numerical investigation of fluid flow inside the porous medium of GDL," International Conference on Nanochannels, Microchannels and Minichannels, Montreal, Canada, August 2010.
107. Numerical analysis of the effect of different channel geometries and electrode materials on the performance of microfluidic fuel cells," International Conference on Nanochannels, Microchannels and Minichannels, Montreal, Canada, August 2010.
108. Comparison of microorganism capture efficiency of different flow cells designed for water quality monitoring," International Conference on Nanochannels, Microchannels and Minichannels, Montreal, Canada, August 2010.
109. Numerical multiphysics modeling of microdroplet motion dynamics in digital microfluidic systems," International Conference on Nanochannels, Microchannels and Minichannels, Montreal, Canada, August 2010.
110. Nonlinear localization for electrowetting-based digital microfluidic actuation," 8th International Conference on Nanochannels, Microchannels and Minichannels, Montreal, Canada, August 2010.
111. Analysis of water agglomeration inside the GDL using a pore-network model", the ASME 2010 8th International Fuel Cell Science, Engineering and Technology Conference, Brooklyn, New York, June 2010.
112. Modeling of microfluidic fuel cells with flow-through porous electrodes", the ASME 2010 8th International Fuel Cell Science, Engineering and Technology Conference, Brooklyn, New York, June 2010.
113. Effect of PTFE loafing on the performance of the GDL in water removal", the ASME 2010 8th International Fuel Cell Science, Engineering and Technology Conference, Brooklyn, New York, June 2010.
114. Biomolecular adsorption phenomena in electrowetting-based digital microfluidic devices," Annual NSTI Nanotech 2010, Anaheim, USA, June 2010.
115. Multiplexed localization in bilayer digital microfluidic systems," Microtech Conference and Exposition, Anaheim, USA, June 2010.
116. Enhanced addressability in digital microfluidic multiplexer systems by threshold-based voltage actuation and bi-polar voltage activation," CSME Conference, Victoria, Canada, June 2010.
117. Smoothed Particle Hydrodynamics simulation of cell adhesion on a reactive substrate in a rectangular microchannel," CFD Society of Canada 18th annual Conference, London, Canada, May 2010.
118. Dynamic sampling in digital microfluidic devices," Proceedings of the 2010 SPIE Defense, Security and Sensing Conference, Orlando, USA, April 2010.
119. A pore network model for gas diffusion layers of PEM fuel cell", 3nd European Fuel Cell Technology and Applications, Rome, Italy, 2009.
120. Numerical analysis of microfluidic fuel cell", 3nd European Fuel Cell Technology and Applications, Rome, Italy, 2009.
121. Characterization of internal properties of gas diffusion layers (GDLs)", 3nd European Fuel Cell Technology and Applications, Rome, Italy, 2009.
122. Improvement of water management in PEM fuel cells", 2009 NHA Hydrogen Conference and Expo, South Carolina, USA, 2009.
123. Study of the effect of electrode geometries on microfluidic fuel cell performance", COMSOL Conference 2009, Boston, USA.
124. Determination of droplet shape in digital microfluidic systems using two-dimensional flow analysis," Proceedings 12th Annual NSTI Nanotech 2009 Conference, Houston, USA, 2009.
125. Digital implementations for integrated microfluidic sensing," Proceedings of the 2009 SPIE Defense, Security and Sensing Conference, Orlando, USA, 2009.
126. Detailed droplet routing and complexity characterization on a microfluidic biochip," Proceedings of the 2009 SPIE Defense, Security and Sensing Conference, Orlando, USA, 2009.
127. Water management in PEM fuel cells", 2008 AIChE Conference, Philadelphia, US, November 2008.
128. Numerical modeling of microdrop motion in a digital microfluidic multiplexer," Proceedings of the 11th Annual NSTI Nanotech, Boston, USA, 2008.
129. Micro-drop actuation using multiplexer structures," Proceedings of the 6th International Conference on Nanochannels, Microchannels and Minichannels, Darmstadt, Germany, 2008.
130. Numerical modeling of microdrop motion in a digital microfluidic multiplexer," Proc. of the Nano Science & Technology Institute (NSTI) Nanotech 2008, Boston, USA, 2008.

131. Preventing undercutting in design of disc cam and follower mechanisms," Proceedings of 115th ASEE Annual Conf. & Expo., Pittsburg, USA, 2008.
132. A Neurofuzzy based expert system for disease diagnosis", IEEE International Conference on Systems, Man, and Cybernetics. Hawaii, USA 2005.
133. Online Map Building for Terrain Scanning Robots", IEEE Annual Meeting of the North American Fuzzy Information Systems (NAFIPS04), Banff, Canada, 2004.
134. Contact angle and surface tension measurement using Axisymmetric Drop Shape Analysis (ADSA)", Proceedings of the 27th Annual Meeting of The Adhesion Society, Wilmington, North Carolina, USA, 2004 (invited).
135. Simulation and animation of mechanical systems", Proceedings of the 2002 American Society for Engineering Education, Montreal, Canada, 2002.

CONFERENCE PROCEEDINGS (INVITED)

1. Scalable microfluidic synthesis of PEGylated liposomes for drug delivery and cosmetic applications. Nanotech 2025, Paris, France, Conference Date: 2025/5.
2. On-chip characterization of microcapsules using a capacitive sensor for microencapsulation and single-cell analysis applications. ECS. 239th ECS Meeting with the 18th International Meeting on Chemical Sensors (IMCS), Digital Meeting, Conference Date: 2021/5.
3. Microfluidic sensors based on molecularly imprinted polymers for the selective detection of volatile organic compounds. 18th International Meeting on Chemical Sensors, Montreal, Canada, Conference Date: 2020/5.
4. Microfluidic sensors based on molecularly imprinted polymers for the selective detection of volatile organic compounds. 237th ECS Meeting. 18th International Meeting on Chemical Sensors (IMCS 2020), Montreal, Canada, Conference Date: 2020/5.
5. Yarn sensors based on graphene coated spandex protected by silicone sheath for bodily motion detection. ICCE, Granada, Spain, Conference Date: 2019/7 Paper.
6. Modelling and sensitivity analysis of viscosity and complex modulus in the poly (lactic acid)/poly (ethylene oxide)/ carbon nanotubes nanocomposites using artificial neural networks. Nano Today, Lisbon, Portugal, Conference Date: 2019/6 Paper.
7. Effect of channel coating hydrophobicity and analyte polarity on the gas detection capability of a microfluidic-based gas detector. Digital Olfaction Society, Tokyo, Japan, Conference Date: 2018/12.
8. Advanced biomedical and environmental diagnostics through microfluidic olfaction technology. 4Bio Summit: Europe, Rotterdam, Netherlands, Conference Date: 2018/11.
9. Smelling through microfluidic olfaction technology. World Lab-on-a-Chip and Microfluidics Congress 2018, San Diego, United States of America, Conference Date: 2018/10 23.

CONFERENCE ORGANIZER, KEYNOTE SPEAKER

1. Session Chair of IMCS 08 - Microfluidic Devices and Sensors, Montreal, March 2020.
2. Co-organizer and Session Chair of ICCE-27, 27th Annual International Conference on Composites/Nano Engineering, Granada, Spain, July 2019.
3. Session Chair of 4th Int. Congress Biomaterials & Biosensors, Mugla, Turkey, May 2019.
4. Chair of the committee selecting the best student paper award in CSME International Congress, London, Ontario, May 2019.
5. Session Chair of Microfluidic Congress, San Diego, July 2018.
6. Session Chair of BMES Conference, Atlanta, October 2018.
7. Session Chair of 4Bio Summit, Rotterdam, November 2018.
8. Session Chair of Digital Olfaction Society, Tokyo, November 2018.
9. Chair of the committee selecting the best student paper award in CSME International Congress, Toronto, May 2018.
10. Session Chair of Microfluidics Congress USA, Philadelphia, July 2017.
11. Technical Chair of CSME International Congress, Kelowna, June 2016.
12. Chair of Low Temperature Fuel Cell Track, 2015 Fuel Cell Science, Engineering and Technology Conference, San Diego, August 2015.
13. Chair of the committee selecting the best student paper award in CSME International Congress, Toronto, June 2014.
14. Organizer of Microfluidics Track in ASME 12th International Conference on Nanochannel Microchannel Minichannel, Chicago, August 2014.
15. Chair of Low Temperature Fuel Cell Track, Fuel Cell Science, Engineering and Technology Conference, Boston, July 2014.
16. Chair of Fuel Cell Modeling Track, 2013 Fuel Cell Science, Engineering and Technology Conference, Boston, July 2014.
17. Organizer of Digital Microfluidics Track, 2012 International Conference on Nanochannels, Microchannels and Minichannels, Puerto Rico
18. Chair of Low Temperature Fuel Cell Track, 2011 Fuel Cell Science, Engineering and Technology Conference,

Washington, August 2011

19. Invited Speaker at Rotary Club, Kelowna, BC, "Water Quality Monitoring Sensors", May 2011.
20. Featured Speaker in BC Science Teacher's Association, Catalyst 2008, Kelowna, BC, "Advanced Engineering Applications of Interfacial Science", April 2008.
21. Keynote Speaker in Adhesion Society, 27th Annual Meeting, Wilmington, NC, USA, "Contact Angle and Surface Tension Measurement using Axisymmetric Drop Shape Analysis (ADSA)", February 2004.

BOOKS

- H. Montezerian, M. Hoorfar and A. Milani, "Structural Health Monitoring in Sensor-Integrated Smart Composites, from Characterization to Application", DEStech Publications Inc, 978-1-60595-597-1, 2023.
- E. Samiei, M. Hoorfar, "Bioscience on Digital Microfluidics: From Sample Preparation to Detection", Book chapter in: A. Brolo, S. H. Oh and C. Escobedo, "Miniature Fluidic Devices for Rapid Biological Detection", Springer. In press, 2018.
- M. Hoorfar and A. W Neumann "Applied Surface Thermodynamics". A.W. Neumann and R. David, Y.Zuo (Eds.), 2nd Edition, pp. 108-174, 2011.

INTELLECTUAL PROPERTY

Patents

- Hydrogel composites and methods of making same. United States of America. US 2025/0195724 A1. Patent Status: Granted/Issued
- Apparatus, Systems, and Methods for Hydrocarbon Gas Detection and Differentiation. United States of America. US20230228644. 2021/08/13. Patent Status: Granted/Issued
- Apparatus for volatile organic compound (VOC) detection. United States of America. 15/800,679. 2017/11/01. Patent Status: Pending, my contribution is 45% which is the majority among the inventors.
- Apparatuses for determining whether a substance is carried in a fluid. United States of America. 9,470,681. 2016/10/18. Patent Status: Granted/Issued Year Issued: 2016 My contribution is 35% which is the majority among the inventors.

Licenses

- Apparatus for Volatile Organic Compound (VOC) Detection Status: Granted Date Issued: September 2019 Filing Date: October 5, 2017 Licensee: Cannabix Technologies Inc. (Application domain: Breath analyzing)
- Apparatuses for Determining Whether a Substance is Carried in a Fluid Status: Granted Date Issued: July 2018 Filing Date: April 12, 2017, Licensee: Smart Waters (Application domain: Waterborne pathogen detection)

Disclosures

- An Integrated Dual-Sided Uniaxial Cell Stretcher and a Stretchable Cell Microarray Platform for Real-Time Microscope Imaging and High-Throughput Screening of 2D/3D Cell Mechano-response Status: Disclosed Filing Date: October 11, 2019
- Development of a Lab-on-a-Chip Device for the Microencapsulation of Probiotics for Biopharmaceutical Applications Status: Disclosed Filing Date: September 7, 2019
- Highly Specific Exosome Isolation and Characterization Platform Status: Disclosed Filing Date: July 17, 2019
- 3D-Printing Based Fabrication Method to Develop Multifunctional Porous Scaffolds Status: Protected Filing Date: May 17, 2019
- Real-Time Benchtop, Handheld, and Continuous Flow Natural Gas Detectors for Field Applications Status: Disclosed Date Issued: October 2021.