

CURRICULUM VITAE OF PROFESSOR DAVID SINTON

DEPARTMENT OF MECHANICAL AND INDUSTRIAL ENGINEERING UNIVERSITY OF TORONTO

Date: April 30, 2023

SECTION 1 – PERSONAL INFORMATION

1.1 Name: David Allan Sinton

1.2 Education

Degree	Institution	Department	Thesis Field	Year
Ph.D.	University of Toronto	Mechanical and Industrial Engineering	Microscale Flow Visualization	2000-2003
M.Eng. (thesis)	McGill University	Mechanical Engineering	Computational Modeling Processes with Application to Continuous Casting	1998-2000
B.A.Sc.	University of Toronto	Mechanical and Industrial Engineering		1993-1998

1.3 University Employment and Administrative Functions

Dates	Employer	Position
Jan 2022 - present	Climate Positive Energy	Founding Academic Director University of Toronto, Toronto, ON
Mar 2017 – Feb 2019	University of Toronto	E.W.R. Steacie Memorial Fellow
July 2016 – March 2017	University of Toronto	Interim Vice Dean of Research Faculty of Applied Science and Engineering Toronto, ON
Jan 2016 – present	University of Toronto	Canada Research Chair (Tier I)
July 2015 – Mar 2016	University of Toronto	Associate Chair of Research Mechanical and Industrial Engineering Toronto, ON
July 2013 – present	University of Toronto	Professor with Tenure Mechanical and Industrial Engineering Toronto, ON
July 2012 – June 2015	U of T Institute for Sustainable Energy	Director University of Toronto, Toronto, ON
Sept. 2011 –	University of Toronto	Associate Professor with Tenure

July 2013		Mechanical and Industrial Engineering Toronto, ON
Sept. 2011 – June 2012	U of T Centre for Sustainable Energy	Associate Director University of Toronto, Toronto, ON
2009-2011	University of Victoria	Canada Research Chair (Tier II) Mechanical Engineering, Victoria, BC
2008-2011	University of Victoria	Associate Professor with Tenure Mechanical Engineering, Victoria, BC
2010-2013	Cornell University	Adjunct Associate Professor Sibley School of Mechanical and Aerospace Engineering Ithaca, NY
2009-2010	Cornell University	Visiting Associate Professor Sibley School of Mechanical and Aerospace Engineering Ithaca, NY
2003-2008	University of Victoria	Assistant Professor Mechanical Engineering Victoria, BC
2001-2003	University of Toronto	Research & Teaching Assistant Mechanical and Industrial Engineering Toronto, ON
1998-1999	McGill University	Research & Teaching Assistant Mechanical and Industrial Engineering Montreal, QC

1.4 Lifetime Academic, Research and Professional Honours

Date	Award Title	Awarded By	Terms of Award
2022	Fellow of the Royal Society of Canada (RSC)	RSC	Recognizing international leadership in fluids- and energy-related research.
2019	Fellow of the Canadian Academy of Engineering (FCAE)	CAE	For leadership in the field of microfluidics for energy applications.
2017	Fellow of the American Association for the Advancement of Science	AAAS	For distinguished contributions to the field of mechanical engineering particularly in developing microfluidic methods for applications in energy and the environment.
2016	E.W.R. Steacie Memorial Fellow	NSERC	Recognizing outstanding and highly promising scientists and engineers in Canada. Comes with 250,000 in research

support and two-year buy-out of teaching and service duties.

2016	Canada Research Chair (Tier I)	Canada Research Chairs Program	\$1,400,000 /7 years
2015	Member of the College of New Scholars, Artists and Scientists of the Royal Society of Canada	Royal Society of Canada	Recognizing outstanding intellectual achievement in the emerging generation of scholarly, scientific and artistic leadership in Canada.
2015	Fellow of the Engineering Institute of Canada (FEIC)	Engineering Institute of Canada	Recognizing exceptional contributions to engineering in Canada.
2013	McLean Senior Fellow	University of Toronto	\$100,000 award to an outstanding researcher conducting research in physics, chemistry, computer science, mathematics, the engineering sciences, or statistics.
2013	Fellow of the ASME (FASME)	American Society of Mechanical Engineers	Recognizing outstanding achievements in mechanical and multidisciplinary engineering
2012	Fellow of the CSME (FCSME)	Canadian Society for Mechanical Engineering	Recognizing excellence in mechanical engineering and significant contributions to the profession
2009-2011	Canada Research Chair (Tier II)	Canada Research Chairs Program	\$500,000 / 5 years [Resigned early with move to University of Toronto]
2008	Class of 7T6 Early Career Achievement Alumni Award	University of Toronto	[one Applied Science and Engineering Faculty Alumnus per year, 10 years since graduation]
2007	Faculty of Engineering Award for Excellence in Teaching	University of Victoria	[one Faculty of Engineering instructor per year]
2006	Douglas R. Colton Award	CMC Microsystems	\$3,500 [one national award per year recognizing excellence in research in microsystems]
2006	I.W. Smith Award	Canadian Society for Mechanical Engineering	[one national award per year recognizing achievement in creative mechanical engineering within 10 years of graduation]
2002-2004	Glynn Williams Scholarship	University of Toronto	\$24,000 /2 years
2000-2002	NSERC Postgraduate Scholarship	NSERC	\$40,200 /2 years

1998-2000	NSERC Postgraduate Scholarship	NSERC	\$34,600 /2 years
1998	CSME Gold Medal	University of Toronto	[one award per dept. per year recognizing highest cumulative graduating average]

[& eight additional undergraduate awards]

SECTION 2 – PROFESSIONAL ACTIVITIES

2.1 Consulting, Entrepreneurial, and Advisory Activities (paid and unpaid)

Duration	Client	Activity
2022-present	A3MD Consortium including LG, Microsoft, and TotalEnergies	High-throughput Testing
2021-present	CERT Systems Inc.	Co-Founder and Advisor
2021-present	BP Technology Ventures	Accelerated Discovery
2021-present	Interface Fluidics Ltd.	Co-Founder and Executive Technology Advisor of this startup company*
2019-2023	Eavor Technologies Inc.	Geothermal Fluids
2017	Paliare Roland LLP	Expert witness, Fluids engineering
2015-2021	Interface Fluidics Ltd.	Co-Founder and C.T.O.
2014-2019	Suncor Energy	Solvent-based Oil Recovery
2014-2019	Schlumberger Canada	Hydrocarbon Phase Dynamics
2013-2015	Suncor Energy	Porescale Analysis of Oil Recovery
2012-2013	GE Global Research	Transport Analysis in Nanofluidics
2007-2008	Sensific Technologies Corp.	Microfluidic Bioreactor Chips

2.2 Professional Association Activities and Conference Organization

(e.g., APEO Examinations Board, Chairman Papers Review Committee CANCAM)

Date	Association	Capacity
2022 – 2023	Workshop on Stability in CO ₂ and CO Reduction	Co-organizer, Co-chair
2021 – 2022	Rising Stars in Electrochemical Systems Symposium	Co-chair
2019 – 2021	Microfluidics & Energy Symposium	Co-organizer, Co-chair and lead of the Scientific Committee

2018 – 2019	Microfluidics 2019 Conference: from laboratory tools to process development, Institute de France, Academie de Sciences 2019	Member of the Scientific Committee
2017 – 2018	2 nd International Conference of Microfluidics, Nanofluidics, and Lab-on-a-Chip, 2018	Member of the Advisory Committee
2016 – 2017	Applied Nanotechnology and Nanoscience International Conference, 2017	Member of the Scientific Committee
2016 – 2017	European Optical Society Optofluidics Conference, June 2017	Member of the Program Committee
2016 – 2017	Canadian Society for Chemical Engineering, October 2017	Session Co-Organizer
2014 – 2015	Canadian Society for Mechanical Engineering, Bulletin	Member of the Board and Editor-in-Chief of the CSME Bulletin
2013 – present	Society of Petroleum Engineering, 2014 Heavy Oil Conference	Member, Technical Committee
2013 – 2015	Canadian Society for Mechanical Engineering 2014 Forum, Toronto, Executive Committee	Executive Committee, Marketing
2012 – 2014	Technical Committee for Micro- and Nano- Fluid Dynamics, Fluids Engineering, ASME - all conferences.	Chair
2012 – 2013	2 nd Conf. on Optofluidics, European Optical Society (EOS), Munich, Germany <ul style="list-style-type: none"> - Conference includes a keynote, 12 Invited Speakers and a special invitation-only industry session with four global companies represented. - Co-chairs and Program Committee includes 12 leading researchers from 10 countries. 	General Chair, and lead organizer
2012 – 2013	Canadian Society for Chemistry – Canadian Chemistry Conference and Exhibition, Microfluidics Forum	Forum Co-Chair
2012 – 2013	ASME Society-wide Micro/Nano Technology Forum	Member of Organizing Committee
2011 – 2012	10 th International Conference on Nanochannels, Microchannels and Minichannels	Track Co-Organizer
2010 – 2012	Technical Committee for Micro- and Nano- Fluid Dynamics, Fluids Engineering, ASME - all conferences.	Vice-Chair
2010	1st Conf. on Optofluidics, European Optical Society (EOS), Munich, Germany.	Member of Program Committee

2010	American Society of Mechanical Engineers, International Mechanical Engineering Congress and Exposition (ASME-IMECE).	Co-Organizer Microfluidics Forum for Invited Presentations
2009	International Symposium on Transport Phenomena (ISTP - 20), July 2009.	Member of Organizing Committee & Session Chair
2007 – 2008	Lasers & Electro-Optics Society (LEOS-IEEE) Summer Topical Meeting Series. ‘Optofluidics’ Topical Conference.	Member of Technical Committee & Session Chair
2007	American Physical Society Division of Fluid Dynamics (APS-FD), November 2007.	Session Chair
2007 - present	American Society of Mechanical Engineers, International Mechanical Engineering Congress and Exposition (ASME-IMECE).	Honors Committee Chair & Session Chair
2006	Canadian Society of Mechanical Engineers (CSME) Forum, Calgary, AB, May 2006.	Best Student Paper Committee & Session Chair
2006 - present	American Society of Mechanical Engineers, International Mechanical Engineering Congress and Exposition (ASME-IMECE).	Member of Micro and Nano, Fluid Dynamics Tech. Committee & Session Co-Chair
2005 – 2006	Lasers & Electro-Optics Society (LEOS-IEEE) Summer Topical Meeting Series. ‘Optofluidics: Emerging Technologies and Applications’ Topical Conference.	Member of Technical Committee & Session Chair
2005	American Society of Mechanical Engineers, International Mechanical Engineering Congress and Exposition (ASME-IMECE), November 2005.	Session Co-Chair & Selection Committee for Best Paper
2004 – 2005	3 rd International Conference on Microchannels and Minichannels (ICMM), June 2005.	Session Chair

2.3 Advisory, Journal Editorial and Review Activities

Date	Journal / Issue	Capacity
2023 –	Energy and Environmental Science	Advisory Board Member

2023 –	Nature Reviews Urology	Advisory Board Member
2021 – 2022	Lab-on-a-Chip Journal Commissioning Panel	Member
2017 – 2018	NSERC-CIHR Collaborative Health Research Projects (CHRP) Peer Review Committee	Peer Review Committee Member
2017 –	Waterloo Institute for Nanotechnology (WIN)	Advisory Board Member
2017 –	Lab-on-a-Chip	Advisory Board Member
2014 – 2015	<i>CSME Bulletin</i>	Editor-in-Chief
2012 – 2013	<i>Lab on a Chip</i> , Special Issue on Canadian Researchers	Guest Editor
2012 – 2013	<i>ASME J. Fluids Engineering</i> Special Issue on Microfluidics	Guest Editor

2.4 Professional Interests

Energy; fluid mechanics; microfluidics, nanofluidics, electrocatalysis, carbon management, CO₂ transport, diagnostics.

2.5 Named, Plenary and Keynote Lectures, Invited Scholarly Addresses and Invited Conference Presentations

Title	Venue	Date
Past:		
Conversion of CO ₂ into products via electrochemical systems	Denmark Technical University, DTU, Copenhagen, Demark	Apr 19, 2023
Strategies to avoid salt accumulation in CO ₂ R and COR	Workshop on stability in CO ₂ and CO reduction systems	Mar 10, 2023
Conversion of CO ₂ to products via electrochemical systems	Universite de Montreal, Montreal	Feb 2, 2023
Microfluidic opportunities for an energy industry in transition	Institute of Mechanical Engineers, UK	Jan 10, 2023
What to do with CO ₂ ? Renewably powered CO ₂ capture and conversion	Annual meeting of the Royal Society of Canada, Calgary	Nov 26, 2022
Electrocatalytic conversion of CO ₂ to multicarbon products	Huazhong University of Science and Technology (HUST), China	Nov 21, 2022
Machine learning for sperm selection	Fairtility	June 28, 2022
<i>Named Lecture:</i> Microfluidics for Energy : The world's smallest fluids technologies for the world's largest fluids challenge	Bergveld Lecture at U. Twente, Netherlands	May 20, 2022
Developing electrochemical routes to CO ₂ capture and conversion	Waves, widgets, and socially desirable technologies: challenges of ocean carbon dioxide removal, University of Calgary	April 8, 2022

Microfluidics for energy: The world's smallest fluid tech for the largest fluid challenge	York University, Toronto	March 30, 2022
<u>Keynote</u> – Electrocatalytic conversion of CO ₂ to multicarbon products via engineered interfaces	ACS Spring 2022 – Bonding through chemistry, San Diego, CA	March 23, 2022
Conversion of CO ₂ to products via electrochemical systems	CIRCUIT Webinar, University of Laval	Feb 10, 2022
Electrocatalytic Conversion of CO ₂ to C ₂ Products	240th ECS Meeting	Oct 12, 2021
Increasing the energy efficiency of CO ₂ conversion in membrane electrode assembly electrolyzers	National Research Council - Energy Materials Challenge Workshop	Oct 6, 2021
Micro- and Nanofluidic Approaches to Understanding Phase Behaviour and Fluid Interactions in Energy Operations	IUPAC CCCE Solving Global Challenges in Chemistry	Aug 16, 2021
Electrocatalytic conversion of CO ₂ to ethylene	Power-2-X Tour #2: Opportunities in electrochemical CO ₂ utilization	June 30, 2021
My Microscale Transport Journey from CO ₂ Utilization to CO ₂ Conversion	Microfluidics and Energy Symposium, Toronto	April 30, 2021
Electrocatalytic Conversion of CO ₂ to Renewable Fuels and Chemicals	Simon Fraser University, Chemistry Dept. Seminar	Feb 3, 2021
Electrocatalytic Conversion of CO ₂ to Renewable Fuels and Chemicals	University of Victoria, Chemistry Dept. Seminar	Feb 1, 2021
CO ₂ Utilization and Electrocatalytic Conversion to Products	University of British Columbia, Chemical & Biological Engineering Dept. Seminar	Jan 15, 2021
Microfluidics for Energy Applications	MIT, Applied Microfluidics Seminar	Dec 1, 2020
Electrocatalytic Systems for CO ₂ Conversion to Products	International Conference on Electrocatalysis for Energy Applications and Sustainable Chemicals (EcoCat)	Nov. 23, 2020
Electrocatalysis Systems for CO ₂ Conversion to Products	Waterloo Institute for Nanotechnology, University of Waterloo	Nov 20, 2020
Small Fluids Technologies for the Largest Fluids Challenge: CO ₂ utilization and CO ₂ conversion	University of Houston, Mechanical Engineering Dept. Seminar Series	Oct 15, 2020
Small Fluids Technologies for the Largest Fluids Challenge: CO ₂ utilization and CO ₂ conversion	Stevens Institute of Technology, Mechanical Engineering Dept. Seminar Series	Oct 14, 2020
From Millions to Single Digits	Be Ready for the Future in the Lab – EMD Serono	Oct 13, 2020
Fluidics for Fertility	Monash University, Melbourne Australia	Feb 4, 2020

Small Fluids Technologies for the Largest Fluids Challenge: CO ₂ Utilization and Conversion	Monash University, Melbourne Australia	Feb 3, 2020
What to do with CO ₂ ? From Carbon Utilization to Conversion	Institute for Sustainable Energy, University of Toronto	Jan 28, 2020
Small Fluids Technologies for the Largest Fluids Challenge: CO ₂ Utilization and Conversion	Concordia University, Montreal	Dec. 6, 2019
Small Fluids Technologies for the Largest Fluids Challenges: Microfluidics for Energy and the Environment	Total Research Campus, Pau, France	Nov. 17, 2019
<u>Keynote</u> – Microfluidics for Sustainable Energy and Environmental Applications	Microfluidics 2019 Conference: from laboratory tools to process development, Institute de France, Academie de Sciences, Rueil-Malmaison, France	Nov. 15, 2019
<u>Plenary</u> - The Smallest Fluids Technologies for the Largest Fluids Challenge: Microfluidics for Energy and the Environment	ASME-IMECE International Mechanical Engineering Congress and Exposition, Salt Lake City, UT	Nov. 13, 2019
<u>Keynote</u> – <u>Nanofluidics for Energy and Environmental Applications</u>	<u>µTAS 2019 – 23rd Conf on Miniaturized Systems for Chemistry and Life Sciences</u>	Oct. 29, 2019
CO ₂ Conversion on Campus: U of T Facilities, Researchers & the Carbon XPRIZE	Sustainability: Transdisciplinary Theory, Practice and Action	Oct. 16, 2019
Microfluidic Chemical Effectiveness Testing: From Energy Applications to Broad Chemical Markets	DOW Chemical Ltd., Lake Jackson, TX	April 17, 2019
Microfluidics for Screening Chemical- and Solvent-SAGD Processes	Suncor Energy Ltd., Calgary, AB	Jan. 31, 2018
What to do with CO ₂ ?	Skule Lunch and Learn, Faculty of Applied Science & Engineering, University of Toronto, ON	Dec. 9, 2018
Microfluidics for Fertility	IEEE EMBS Micro and Nanotechnology in Medicine Conference, Kauai, HI	Dec. 10, 2018
Microfluidics and Nanofluidics for Oil, Gas and CO ₂	Claude R. Hocott Lecture in Petroleum Engineering, Hildebrand Department of Petroleum and Geosystems Engineering, UT Austin, Austin, TX.	Nov. 19, 2018
<u>Keynote</u> - Microfluidics for Energy and the Environment	68 th Canadian Chemical Engineering Conference, CSCHE2018, Toronto, ON	Oct. 30, 2018
Microfluidics and Nanofluidics for Energy and the Environment	Brockhouse Institute for Materials Research, McMaster University,	Oct. 15, 2018

	Hamilton, ON	
Selecting Sperm with Microfluidics and AI	Mt. Sinai Urology Rounds presentation, Mt. Sinai Hospital, Toronto, ON	Sept. 26, 2018
Nanofluidics for nanoporous reservoirs: PVT and screening shale EOR processes	Tight Oil Symposium, Tight Oil Consortium, University of Calgary, AB	Sept. 11, 2018
Microfluidics and Nanofluidics for Fluid Property Measurements: Mixture Phase Envelop, Minimum Miscibility Pressure, Diffusivity and Solubility	NIST - 20 th Symposium on Thermophysical Properties, Denver, CO	June 25, 2018
<u>Keynote</u> - Microfluidics and Nanofluidics for Energy and the Environment	International Symposium on Frontiers in Nanoscience and Nanotechnology, Waterloo Institute for Nanotechnology, Waterloo, ON	June 6, 2018
<u>Plenary</u> - The world's smallest fluids technologies for the world's largest fluids challenges	Canadian Society for Mechanical Engineering, CSME-Forum 2018, York University, Toronto	May 29, 2018
Microfluidic and Nanofluidic Phase Behaviour Characterization for CO ₂ , oil and gas	Nanotech 2018 Conference, TechConnect World, Anaheim, CA	May 16, 2018
Catalysis and Flow-based Systems for High Electrical-to-chemical Power Conversion Efficiency Reduction of CO ₂ to CO and Propanol	Nanotech 2018 Conference, TechConnect World, Anaheim, CA	May 15, 2018
Microfluidics for Energy	Rice University, Chemical and Biomolecular Engineering, Houston, TX	Feb. 15, 2018
Microfluidics for Energy and the Environment	Departmental Seminar, Ecology & Evolutionary Biology, University of Toronto	Jan. 29, 2018
Microfluidics for Male Fertility: Diagnostics and Sperm Selection for ICSI	Mt. Sinai Urology Rounds presentation, Mt. Sinai Hospital, Toronto, ON	Dec. 4, 2017
<u>Keynote</u> – Optofluidics for Energy and Environmental Applications	Spectral Shifting Conference – Spectral Shaping for Biomedical and Energy Applications, Tenerife, Canary Islands, Spain.	Nov. 17, 2017
Microfluidics and Nanofluidics for Energy	Flow17 for Micro and Nanofluidics, Fundamentals and Applications, Paris, France.	July 4, 2017
<u>Discussion leader</u> – Field-Structure Interactions	Gordon Research Conference on Microfluidics, Physics & Chemistry, Lucca, Italy	June 6, 2017
Microfluidics for Energy and the Environment	Queen's University, Kingston, ON	April 26, 2017
Microfluidics for Energy and Environmental Applications	Toronto Sustainability Summit, MaRS, Toronto, ON	April 13, 2017

Microreactor Screening for Renewable Energy, Conventional Energy, and Climate Change	BioZone Research Symposium, Toronto, ON	March 31, 2017
<u>Plenary</u> - Microfluidics for Energy	2016 International Conference of Microfluidics, Nanofluidics and Lab-on-a-Chip, Dalian, China	June 12, 2016
Microfluidics and Optofluidics for Energy Applications	Emerging Technologies Communications Microsystems Optoelectronics Sensors 2016, Montreal, QC	May 27, 2016
<u>Keynote</u> - Microfluidics for Energy Applications	Ontario on a chip, Toronto, ON	May 26, 2016
Microfluidics and Nanofluidics as Windows into Pore-scale Processes	8th International Conference on Porous Media & Annual Meeting, Cincinnati, OH, USA	May 9, 2016
<u>Plenary</u> - Microfluidic Analysis for Energy Applications	32nd International Symposium on Microscale Separations and Bioanalysis, Niagara-on-the-Lake, ON	April 7, 2016
Microfluidics for Energy Applications	Queen's University, Kingston, ON	February 25, 2016
<u>Plenary</u> - Microfluidics for Energy Applications	MNHMT Micro/Nanoscale Heat & Mass Transfer International Conference, Singapore, Singapore	January 5, 2016
Optofluidics for Energy Applications	EOSOF-2015 – European Optical Society Optofluidics Conference, Munich, Germany	June 24, 2015
<u>Keynote</u> - Microfluidics for Energy Applications	CSC-2015 – Canadian Society of Chemistry, Ottawa, ON	June 16, 2015
Fluidics for Energy and Carbon Management	Gordon Conference – Microfluidics, Physics & Chemistry, West Dover, Vermont, US	June 2, 2015
Optofluidics for Bioenergy	Eindhoven University of Technology, Eindhoven, The Netherlands	May 20, 2015
Microfluidics for Energy Applications	University of Alberta, Edmonton, AB	April 2, 2015
Microfluidics for Carbon Management and Oil Recovery	Schlumberger Canada DBR Technology Center, Edmonton, AB	Oct 1, 2014
Optofluidic Bioenergy: Cell-scale tools for cultivating and analyzing photosynthetic microorganisms	Bio-inspired Technology for Sustainable Energy - Connaught Global Challenge Symposium, University of Toronto, ON	Oct 9, 2014
Microfluidics for Energy and Fertility	German-Canadian Microfluidic Technology Workshop	Oct 8, 2014
<u>Keynote</u> - Microfluidics for Energy Applications	4th Micro and Nano Flows Conference, MNF2014, University College London, London, UK	Sept 8, 2014

Microfluidics for Carbon Management	Pacific Northwestern National Lab, Richland, WA	Sept 13, 2014
Keynote – Microfluidics for CO ₂ Storage and Enhanced Oil Recovery	Canada-Korea Conference on Science & Technology, Niagara Falls, ON	Aug. 4, 2014
Keynote - Optofluidics for Bioenergy: Cell-scale tools for culturing and analyzing photosynthetic microorganisms	1st international Symposium on Energy Challenges and Mechanics, Aberdeen, Scotland, UK	July 9, 2014
Optofluidic Bioenergy: Photobioreactors for solar energy conversion and to probe photosynthetic function	SPIE Photonics West, San Francisco, CA	Feb. 2, 2014
Small-scale Engineering for Large-scale Energy: Pore-scale Studies of Canadian Energy Operations	Vancouver U of T Alumni Chapter Meeting, Vancouver, BC	June 5, 2013
Small-scale Engineering for Large-scale Energy: Pore-scale Studies of Canadian Energy Operations	Calgary U of T Alumni Chapter Meeting, Calgary, AB	June 4, 2013
Small-scale Fluids for Large-scale Energy	Spring Reunion Lecture, University of Toronto, ON.	June 1, 2013
Developing Blood-based Diagnostics in Vietnam	Engineering Global Health Symposium, University of Toronto, ON.	April 22, 2013
Optofluidics for Energy Applications	Western University, Mechanical and Materials Engineering Department, London, ON.	March 18, 2013
Fluidics and Energy	Wilfred Laurier University, Chemistry Department, Waterloo, ON.	Nov. 30, 2012
Pore-scale Study of Canadian Energy Operations	Petroleum Club, Calgary U of T Skule Alumni Chapter, Calgary, AB.	Nov. 19, 2012
A Pore-scale Micro-lab for the Study of CO ₂ Transport and Reactivity in Reservoirs	Carbon Management Canada Conference, Gatineau, QC.	May 24, 2012
Fluidics and Energy	Ontario-on-a-Chip, Toronto, ON.	May 17, 2012
Nanostructures for simultaneous transport, analyte concentration and sensing	PITTCON, The Pittsburgh Conference, Orlando, FL	March 14, 2012
Fluidics and Energy	Carnegie Mellon University, Department of Mechanical Engineering, Pittsburgh, PA	Nov. 4, 2011
Recent Advances in Microfluidic Fuel Cells	2 nd Workshop on Recent Advances in Fuel Cells, Oshawa, ON	Sept. 26, 2011
Carbon Management: Solar Biofuel Production and CO ₂ Transport at Small Scales	23 rd Canadian Congress of Applied Mechanics, Vancouver, BC	June 6, 2011
Integrated Microfluidics and Nanofluidics for Concentration and Sensing	94 th Canadian Chemistry Conference, Microfluidics Symposium, Montreal, QC	June 7, 2011
Optofluidic Energy: An Evanescent	1st European Optics Society Conference	May 24, 2011

Photobioreactor	on Optofluidics, Munich, Germany	
Fluidics in Energy Applications: Past, Present and Future	CMC Microsystems Workshop on Microfluidics and Nanofluidics: Technologies, Trends and Reducing Barriers to R&D, Edmonton, AB	April 19, 2011
Nanoplasmonics as Nanofluidics: Transport and Sensing in Flow-through Nanohole Arrays	SPIE Photonics West - MOEMS-MEMS Microfluidics, BioMEMS, and Medical Microsystems IX, San Francisco, CA	Jan. 25, 2011
Fluidics in Energy Applications: Past, Present and Future	IEEE Electron Devices Society, Simon Fraser University, Burnaby, BC	Nov. 19, 2010
Nanofluidics meets Plasmonics: Flow-Through Surface-Based Sensing	Int. Conf. on Nanochannels, Microchannels, and Minichannels, Montreal, QC	Aug. 3, 2010
Fluidics in Energy Applications: Past, Present and Future	Waterloo University, Waterloo Institute for Nanotechnology, ON	July 9, 2010
Nanofluidic Structures for Sieving and Sensing	SUNY Binghamton, NY	Mar. 26, 2010
Transport in Plasmonic Nanohole Arrays	GE Global Research, Niskayuna, NY	Nov. 12, 2009
Flow-Through Micro- and Nano-structures for Energy and Biomedical Applications	Arizona State University, Phoenix AZ	Oct. 12, 2009
Flow-Through Microporous Media and Nanohole Arrays: Energy and Biomedical Applications	Cornell University Seminar Series, Ithaca NY	Sept. 4, 2009
Microfluidic and Nanofluidic Integration of Plasmonic Substrates for Biosensing	SPIE Defense, Security and Sensing Conference, Orlando FL	April 14, 2009
Microfluidics and Nanofluidics for Energy and Biomedical Applications	University of Alberta, Seminar Series, Edmonton, AB	Jan. 23, 2009
Small-Time Design: Exploiting Microfluidic and Nanofluidic Phenomena for Energy and Biomedical Applications	University of Toronto, Clarice Chalmers Seminar Series, Toronto ON	Nov. 7, 2008
Flow-Through Microporous and Nano-Structures: Energy Conversion and Biomedical Diagnostics	Nanyang Technological University, Singapore	Oct. 10, 2008
10 Reasons to Love Tiny Pipes: Microfluidics in Energy Applications	First Annual Djilali Lecture, University of Victoria, BC	June 10, 2007
Ionic Dispersion in Nanofluidics and Other Plumbing Adventures On-Chip	Analytical/Environmental Chemistry Seminar Series, University of Washington, WA	March 27, 2006
Microfluidics: Facilitating the Integrated Lab-on-Chip	Biochemistry and Microbiology Department, University of Victoria, BC	January 30, 2004
Computational Fluid Dynamics	Professional Development Seminar Series ASME Southern Ontario Chapter, Toronto, ON	May 11, 2002

2.6 Research Grants/Contracts/and Equipment Grants

Duration	Grantor	Type	Co-grantees	Topic	Amount
2023-2029	New Frontiers in Research Fund - Transformation	Grant	D. Sinton (PI) (w/ 22 others)	CANSTOREnergy: Seasonal storage of renewable energy	\$24,000,000
2023-2027	BP Technology Ventures	Research Contract	D. Sinton (PI)	Accelerated Discovery of Thermal Fluids: High-throughput microfluidic testing and computation	\$1,483,313
2022-2025	Shell Global Solutions	Research Contract	D. Sinton (PI) & E. Sargent	Electrosynthesis of carbon monoxide from capture fluids	\$1,125,000
2023-2024	National Research Council	Grant	D. Sinton (PI)	Promoting CO ₂ -to-ethylene conversion by engineering the interface of bipolar membrane through direct deposition	\$25,000
2023-2024	UofT	Grant	D. Sinton (PI), (w/2 others)	Assessing opportunities in carbon capture and conversion to fuel technologies for empowering Indigenous-led clean energy projects and Northern utilities	\$50,000
2022-2024	CERT Systems	Contract	D. Sinton (PI)	Electrochemical conversion of CO ₂ using low purity feedstocks	\$140,000
2022-2025	NSERC	Alliance Grant	D. Sinton (PI) (w/2 others)	Electrosynthesis of ethylene for the chemical industry	\$2,558,000
2020-2023	TotalEnergies	Contract	D. Sinton (co-PI) & E. Sargent	Electrosynthesis of ethylene for the chemical industry	\$105,000
2022-2024	Eavor Technologies Inc.	Research Contract	D. Sinton (PI)	Thermosyphon-Based Closed-Loop Geothermal Energy	\$150,000
2022-2022	BP Technology Ventures	Research Contract	D. Sinton (co-PI) & E. Sargent	Proof of concept studies in accelerated discovery platforms	\$179,000
2021-2023	TotalEnergies, LG Electronics, and Microsoft	Research Contract	E. Sargent (w/6 others)	A3MD Year 2: Accelerating the discovery of new materials	\$1,011,687
2021-2025	XPRIZE	Award	D. Sinton (PI)	XPRIZE Carbon Removal Student Award	\$322,300
2021-2022	NSERC	Idea-to-Innovation (I2I)	D. Sinton (PI)	NSERC I2I Phase 1: Local regeneration of CO ₂ to achieve scalable electroreduction to multi-carbon products	\$125,000
2021-2021	UofT	Major Research Project Management Fund	D. Sinton	Support for NFRF-T proposal drafting	\$50,000
2020-2025	NSERC	Discovery Grant	D. Sinton (PI)	Fluidics for Energy	\$320,000

2020-2023	NSERC	Alliance Grant	D. Sinton (PI)	Phase Change Material Based Fluid Emulsion for Enhanced Geothermal Recovery	\$700,858
2020-2022	Moore Foundation	Grant	M. Frederickson (PI) (w/2 others)	Symbiosis in Aquatic Systems Initiative	\$667,000
2020-2024	NSERC	Collaborative Research and Development (CRD)	E. Sargent & D. Sinton	Electrosynthesis of Ethanol from CO ₂	\$1,193,000
2019-2022	NRC	Contract	D. Sinton (PI)	Membrane material design for efficient CO ₂ to ethylene conversion	\$87,500
2020-2021	Total American Services and LG Electronics	Research Contract	E. Sargent (w/6 others)	A3MD Year 1: Accelerating the discovery of new materials	\$700,000
2019-2021	Total American Services	Research Contract	D. Sinton (PI)	Total SRA to support UT XPrize Project	\$650,000
2019-2022	Eavor Technologies Inc.	Research Contract	D. Sinton (PI)	High Efficiency Closed-Loop Geothermal Energy	\$550,000
2020-2021	NSERC	Alliance Grant	D. Sinton (PI)	100-Patient Ventilator	\$50,000
2019-2022	NRCan and NGIF	Grant	E. Sargent & D. Sinton	Renewable Natural Gas through Electrocatalytic CO ₂ Conversion	\$1,290,000
2018-2019	NSERC	Research Tools & Instruments (RTI)	D. Sinton (PI)	Next Generation Carbon Dioxide Electrolyzer for Renewable Energy Storage	\$145,000
2017-2020	NSERC	Strategic Partnership Grants for Projects	D. Sinton (PI) (w/1 other)	1000 Individually-controlled Microcosms to assess Ecological Impacts in Canadian Ecosystems, Aquaculture, and Agriculture	\$644,900
2017-2018	NSERC	Idea-to-Innovation (I2I)	D. Sinton (PI)	Mobile Health App Screening for Male Fertility	\$122,372
2017-2020	CIHR - NSERC	Collaborative Health Research Projects	D. Sinton (PI) (w/1 other)	Sperm Olympics: Selecting 1 in 100,000 for Intracytoplasmic Sperm Injection	\$544,780
2017-2019	NSERC	E.W.R. Steacie Memorial Fellowships	D. Sinton (PI)	Supercharging Photosynthesis with 10,000 Optofluidic Bioreactors	\$250,000
2016-2017	NSERC	Research Tools & Instruments (RTI)	D. Sinton (PI)	Supercharging Photosynthesis with 10,000 Optofluidic Bioreactors (Support for E.W.R. Steacie Memorial Fellowship)	\$149,549
2016-2017	OCE - MaRS Innovation	MI MSC POP	D. Sinton (PI) (w/1 other)	Advancing Ontario's Fertility Mandate: Selecting 1 sperm in 100,000,000	\$80,000
2016-2023	Canada Research Chairs Program	Tier I	D. Sinton (PI)	Tier I Canada Research Chair in Microfluidics and Energy	\$1,400,000

2015-2021	NSERC	CREATE Grant	R. Gordon (PI) (w/6 others)	Program in Materials for Enhanced Energy Technologies	\$1,500,000
2015-2020	NSERC	Discovery Grant	D. Sinton (PI)	Nanofluidics for Energy	\$345,000 (69,000/yr)
2015-2020	NSERC	Discovery Accelerator Supplement	D. Sinton (PI)	Nanofluidics for Energy	\$120,000
2015-2019	NSERC	Collaborative Research and Development (CRD)	D. Sinton (PI)	Microfluidics for analysis of solvent-based bitumen recovery methods and rapid measurement of relevant fluid	\$510,975
2015-2019	NSERC	Collaborative Research and Development (CRD)	D. Sinton (PI)	Hydrocarbon Phase Transitions in Nanochannels	\$345,000
2015-2019	Alberta Innovates – Energy & Environment Solutions	Provincial matching (Schlumberger Canada Contract)	D. Sinton (PI)	Hydrocarbon Phase Dynamics in Nanochannels: A Window into Alberta Shale/Tight Oil Production	\$280,000
2015-2017	Suncor Energy Ltd.	Research Contract	D. Sinton (PI)	Microfluidic Analysis of Solvent-based Oil Recovery	\$420,000
2014-2018	Schlumberger Canada Ltd.	Research Contract	D. Sinton (PI)	Hydrocarbon Phase Dynamics	\$280,000
2015-2016	CIHR	Proof-of-Principle	D. Sinton (PI) w/3 others	High Quality Sperm Selection for Assisted Reproductive Technology	\$159,904
2014-2016	Canada Foundation for Innovation and Ontario Research Fund	Leaders Opportunity Fund	D. Sinton (PI) w/2 others	From Fracture to Fluids to Combustion: Infrastructure to Understand the Implications of Hydraulic Fracturing	\$627,270
2014-2015	NSERC	Idea to Innovation	D. Sinton (PI)	High Quality Sperm Selection for Intrauterine Insemination	\$124,774
2014-2015	MaRS Innovation	Medical Sciences Proof-of-Principle Program	D. Sinton (PI)	Microfluidic Device for Improved Sperm Selection for Assisted Reproduction	\$25,000
2013-2016	U of T Faculty of Applied Science & Engineering	Dean's Strategic Fund	D. Sinton (PI)	Institute for Sustainable Energy	\$300,000
2013-2016	NSERC	Strategic Projects	D. Sinton (PI)	Nanoparticle-CO ₂ foams: New Methods for Carbon Storage and Oil Recovery via Pore-scale Microfluidics	\$403,500
2013-2014	Carbon Management Canada		D. Sinton (PI)	Dew Point Measurements of Superficial CO ₂ Mixtures	\$82,822
2013-2017	NSERC	Collaborative Research and	D. Sinton (PI)	Pore-scale Microfluidics for Improved Efficiency in Thermal Oil Recovery with Steam Assisted Gravity Drainage (with Suncor	\$355,058

		Development		Energy)	
2013-2015	Connaught Fund	Global Challenge Fund	E. Sargent (PI) w/ 6 others	Bio-inspired Energy Conversion Technologies	\$1,000,000
2013-2014	Connaught Fund	McLean Award	D. Sinton (PI)	Supercharging Photosynthesis: Concentrating Light into Cells for Solar Fuel Generation	\$100,000
2013-2016	Suncor Energy Inc.	Research Contract	D. Sinton (PI)	Pore-scale Analysis of Steam-Assisted Gravity Drainage	\$298,000†
[†] Value is the all-cash contribution, leveraged by NSERC CRD listed above.					
2013-2014	Canada Foundation for Innovation and Ontario Research Fund		E. Sargent (PI) w/ 10 others	Nanomaterials for Energy	\$3,412,588
2012-2014	Canada Foundation for Innovation and Ontario Research Fund	Leaders Opportunity Fund	D. Sinton (PI)	Laboratory for Fluidics and Energy	\$375,000
2011-2012	Grand Challenges Canada	Rising Stars Competition	D. Sinton (PI)	Water and Power: Energy-Efficient Water Purification Developed for Point-of-care and Scaled for Public Health	\$100,000
2011-2014	NSERC & CIHR	Collaborative Health Research Project	D. Sinton (PI) w/ A. Zini (McGill Medicine)	High-Throughput Sperm Motility Assay and Automated Selection for Clinical In Vitro Fertilization	\$489,000
2011-2012	NSERC	Equipment	D. Steuerman (PI) w/ 5 others	Nanoscale Imaging Facility	\$150,000
2011-2014	Carbon Management Canada	Networked Centres of Excellence	P. Wild (PI) w/ 4 others	Distributed All-optical CO ₂ Sensing for Field-scale Subsurface Carbon Management	\$983,600
2011-2014	Grand Challenges Canada	Point of Care	Nguyen Vu Trung and Nguyen Van Kinh (co-PIs) w/ D. Sinton	Vietnam National Hospital for Tropical Disease: Sample Collection and Processing for Multiplexed Blood-based Point-of-care Analysis	\$969,000
2010-2013	Carbon Management Canada	Networked Centres of Excellence	D. Sinton (PI) w/ 5 others	A Pore Scale Microlab to Perform Fundamental Laboratory-based Studies of CO ₂ Transport and Reactivity in Reservoirs	\$1,050,000
2010-2013	NSERC	Strategic	D. Sinton (PI) w/V. Martin (Concordia)	Evanescent Light Based Photobioreactors for Efficient CO ₂ to Biofuel Conversion in the Canadian Climate	\$454,000

			Canadian Bioenergy Corp. and Waterfall Group.		
2010-2015	NSERC	Discovery	D. Sinton (PI)	Transport in Integrated Microfluidics and Nanofluidics	\$140,000
2010-2011	Cornell University	Centre for a Sustainable Future	D. Erickson w/two others	Thousand Fold Improvement in Solar Photobioreactors using Advanced Photonics	\$100,000
2009-2014	Canada Research Chairs Program – NSERC		D. Sinton (PI)	Canada Research Chair in Integrated Microfluidics and Nanofluidics [†] Terminated due to move to Toronto	\$500,000†
2009	Canada Foundation for Innovation	Leaders Opportunity, and BC Knowledge Development Fund	D. Sinton (PI)	Optofluidic and Biochemical Handling Infrastructure to support Chair (Provincial and Federal portions) [†] Terminated due to move to Toronto	\$150,000†
2009	NSERC	Equipment	A. G. Brolo (PI) w/4 others	Equipment Grant: Materials Deposition System	\$150,000
2009-2014	University of Victoria			Top-up operating funding for Canada Research Chair	\$50,000
2008	NSERC	Equipment	N. Djilali (PI) w/ D. Sinton	Equipment Grant: High Speed Camera for Two-Phase Flow Visualization	\$33,769
2008	NSERC	Equipment	N. Djilali (PI) w/ D. Sinton	Equipment Grant: Characterization of Static and Dynamic Properties of Water Droplets on Fibrous Media	\$62,056
2007-2010	NSERC	Strategic	D. Sinton (PI) w/2 others B.C. Cancer Agency, and Micralyne Inc.	Strategic Projects Grant: Targeting Early Detection of Cancer with Lab-on-Chip Nanohole Sensors.	\$321,000
2006-2008	Toyota Motor Man. Corp.	Contract	N. Djilali (PI) w/ D. Sinton	Development and Validation of a Multi-Phase Capillary Network Model	\$228,000
2005-2006	Canada Foundation for Innovation	New Opportunities and BC Knowledge Development Fund	D. Sinton (PI)	Laboratory for Microfluidic Transport Phenomena	\$325,400

2005-2006	Canada Foundation for Innovation	Operating	D. Sinton (PI)	Infrastructure Operating Funding	\$59,000
2005-2010	NSERC	Discovery	D. Sinton (PI)	Microfluidics: Towards the Biomedical Lab-on-Chip	\$132,000
2005-2007	NSERC	Strategic	D. Harrington (PI) w/4 others	A Microscale Biological Fuel Cell for Micropower Applications.	\$320,000
			Angstrom Power Inc.		
2004-2005	University of Victoria		D. Sinton (PI)	Michael Smith Foundation for Health Research, UVic Health Research Grant Support Program	\$5,000
2004-2005	Western Economic Diversification		N. Djilali (PI) w/4 others	Energy Infrastructure Grant [†] value listed is D. Sinton's portion	\$75,000†
2004-2005	Advanced Systems Institute of BC	Research Award	D. Sinton (PI)	Microfluidic Lab-on-Chip Technologies and British Columbia	\$25,000
2004-2005	NSERC	Equipment Grant	D. Sinton (PI)	Lab-on-Chip Test Bench	\$34,650
2004-2005	NSERC	Discovery	D. Sinton (PI)	Microfluidics: Facilitating the Integrated Biomedical Lab-on-Chip	\$26,370

2.7 Graduate Students

(Completed and current graduate student supervision. For current supervision, indicate starting date in date column with asterisk)

Date	Degree	Candidate	Thesis Title
Current Students			† indicates co-supervised
2023	PhD	David Elder	Electrochemical CO ₂ capture systems
2022	PhD	Chengqian Wu	Electrochemical systems
2022	MASc	Siyu Sun	Reactive capture
2022	MASc	Jinhong Wu	Carbon dioxide reduction through electrocatalysis
2022	PhD	Fatemeh Arabyarmohammadi	Renewable Fuels and CO ₂ Electrocatalysis
2021	PhD	Shijie Liu	Electrochemical Systems for Stable and Efficient CO ₂ Conversion
2021	PhD	Panos Papangelakis	Direct Electrocatalytic Conversion of Flue Gas to Products
2020	PhD	Celine Xiao	Direct Electrocatalytic Conversion of CO ₂ Capture Fluids
2020	PhD	Tartela Alkayyali	CO ₂ Capture and Electrocatalytic Conversion
2019	PhD	Rui Kai (Ray) Miao	Electrocatalytic Conversion of CO ₂

2019 PhD Sepehr Saber Industrial Fluidics for Geothermal Energy

Completed Students

2023 MASc Mohammad Roostaie Phase Change Materials for Geothermal Slurries

2023 PhD Sa Xiao Microfluidics for Sperm Investigation and Selection

2023 PhD Tiago Lins Methodologies for Assessing the Fate of Nanoplastics in the Environment

2023 PhD Mohammad Simchi 3D Microfluidics for Clinical Sperm Selection

2022 PhD Adnan Ozden Electrocatalytic Conversion of CO₂ to Products

2022 PhD Colin O'Brien Engineering Gas Diffusion Electrodes for CO₂ Electrocatalysis

2022 MASc Alireza Darzi Computational Modelling of Geothermal Energy Systems

2022 MASc Vivian Nelson Anodic Upgrading of Carbon-based Products

2021 MASc Hannah McPhee Systems for Industrial Fluid Testing

2021† MASc Fahim Masum (co-supervised with K. Pardee) System for On-demand Cell-free Drug Synthesis

2021 PhD Jonathan Edwards CO₂ Conversion with Electrocatalysis

2021 MASc Anthony Robb CO₂ Conversion to Ethanol

2020 MASc Yawen Guo Microwell studies of Multistressor Toxicity

2020 PhD Yi (Sheldon) Xu Carbon Dioxide Phase Properties and Electrocatalytic Conversion

2019 PhD Zhenbang Qi Pore-scale Microfluidics for Solvent-based Bitumen Recovery

2018 MASc Nash Xu Microfluidics and Nanofluidics for Unconventional Resources in Micropores and Nanopores

2018 MASc Tian Kong Development of Paper-based Male Fertility Diagnostics for Mobile-Health Applications

2018 MASc Farhang Tarlan Method for the Selection of High Quality Sperm via Two-dimensional Slither Swimming

2018 MASc Atena Sharbatian Microfluidics for Measuring Mutual Properties of the CO₂-Crude Oil System

2018 MASc Evan Karakolis Laboratory Methods to Improve Quantification of Microplastic Ingestion by Marine Organisms Under Climate Change Stressors

2018 MASc Arnav Jatukaran Studying the Phase Behaviour of Nanoconfined Fluids using Microfluidic and Nanofluidic Devices

2018 PhD Junjie Zhong Nanoscale Phase Change in Hydrocarbons

2018	PhD	Brian Nguyen	High Throughput Methods for Environmental Screening
2017	MASc	Katarina Neskovic	Device Design for Parallel Testing CO ₂ Electroreduction Catalysts
2017	PhD	Thomas Burdyny	System-based Approaches for the Enhancement of Catalytic CO ₂ Reduction Reactions
2017	PhD	Xiang (Alvin) Cheng	In-situ Observation and Quantification of Microalgae Downstream Processing on a Microfluidic Platform
2017	PhD	Percival Graham	Multiplexed Microfluidics for the Study of Photosynthetic Microorganisms
2017	MASc	Soheil Talebi	Microfluidics for Measuring Solubility and Diffusion Coefficients
2017	MASc	Aleem Hasham	Microfluidics for Fluid Analysis in Oil Sands and Tight Oils
2017	PhD	Scott Pierobon	Material Architectures for Improved Light and Carbon Supply in Microalgal Photobioreactors
2016	PhD	Bo Bao	Fluid Phase Measurement using Optical, Microfluidic and Nanofluidic Methods
2016	MASc	Mira Kim	Microfluidic Analysis of Oil Properties
2016	PhD	Phong Nguyen	Microfluidic and Micro-core Methods for Enhanced Oil Recovery and Carbon Storage Applications
2016	PhD	Matt Ooms	Applied Plasmonics for the Cultivation and Study of Photosynthetic Microorganisms
2016	PhD	Reza Nosrati	Microfluidics for Sperm Selection and Male Infertility Diagnostics
2015	PhD	Max Gong	Microfluidic Point-of-care Diagnostics for Global Health
2015	MASc	Abdul Haseeb Syed	Microfluidic Analysis of Pore-scale Petroleum Recovery in Steam Assisted Gravity Drainage
2015	MASc	Pushan Lele	Droplet Microfluidics for Additive Screening in Enhanced Oil Recovery
2014	MASc	Wen Song	Microfluidic Visualization of Phase and Flow Phenomena related to Carbon Dioxide Transport and Usage
2013	MASc	Nathan Samsonoff	Photosynthetic-Plasmonic-Voltaics: Plasmonically Excited Biofilms for Electricity Production
2013	MASc	Lise Eamer	Microfluidic Selection of Spermatozoa Based on Total Progressive Motility and Wall-Swimming Behaviour
2013	MASc	Pei Zhang	Application of ion concentration polarization to water desalination and active control of analytes in paper
2013	MASc	Thomas de Haas	Microfluidics for Steam Assisted Gravity Drainage and Petroleum Applications
2012	MASc	Matt Ooms	Evanescence Photosynthesis: A New Approach to Sustainable Biofuel Production

2012	MASc	Andrew Sell	Microfluidic Analysis Carbon Management
2012	MASc	Ngoc Minh (Gemma) Pham	Blood Filtration for Multiplexed Point-of-Care Diagnostic Devices
2012†	PhD	Joe Wang (finished at UVic with M. Moffitt)	Flow-Directed Solution Self-Assembly of Block Copolymers in Microfluidic Devices
2011	PhD	Carlos Escobedo	Optofluidic Nanostructures for Transport, Concentration and Sensing
2011†	PhD	Mohsen Akbari (with M. Bahrami)	Flow and Heat Transfer in Microfluidic Devices with Application to Optothermal Analyte Preconcentration and Manipulation
2011†	MASc	Ian Stewart (with N. Djilali)	Microfluidics for Fuel Cell Applications
2010	MASc	Brent Scarff	Radial Analyte Concentration in Microfluidics with an Integrated Planar Nanoporous Film
2009	MASc	Paul Wood	Measurement and Manipulation in Microfluidics with AC Electric Fields
2008†	PhD	Aimy Bazylak (with N. Djilali)	Liquid Water Transport in Fuel Cell Gas Diffusion Layers
2008	MASc	Ali K. Oskooei	Gas-Liquid Segmented Flow Microfluidic Reactors
2008†	MASc	J. Thomas Blakely (with R. Gordon)	Integrated Optofluidic Particle Manipulation
2007†	PhD	Erik Kjeang (with N. Djilali)	Microfluidic Fuel Cells
2007	MASc	Greg Schabas	Microfluidic Self-Assembly of Quantum Dot Compound Micelles
2006	MASc	Jon McKechnie	Fabrication of Microfluidic Devices with Application to Membraneless Fuel Cells
2006	MASc	Angela De Leebeeck	Nanofluidic Species Transport and Nanostructure Based Detection On-Chip
2005†	MASc	Aimy Bazylak (with N. Djilali)	Modelling Microscale Fuel Cells
2005	MASc	Jeff Coleman	Electrokinetic Processes for Microfluidic Devices

2.7.1. Career Totals

Ph.D.	: 33
M.A.Sc.	: 38
M.Eng.	: 0
Postdoc. Supervision and Scholars	: 46

2.7.2. PhD and PDF Alumni with Academic Positions

Prof. Anna O'Brien	PDF 2021	Assistant Professor University of New Hampshire
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Durham, NY, USA

Prof. Jun Li	PDF 2021	Assistant Professor Shanghai Jiao Tong University Shanghai, China
Prof. Jae Bem You	PDF 2019	Assistant Professor Kyungpook National University Daegu, South Korea
Prof. Yamin Yang	PDF 2019	Assistant Professor Department of Biomedical Engineering Nanjing University of Aeronautics and Astronautics Nanjing, China
Prof. Junjie Zhong	PhD 2018	Assistant Professor China University of Petroleum (East China) Shandong, China
Prof. Yuanjie Pang	PDF 2018	Assistant Professor 1000 Talents Program Huazhong University of Science and Technology Huazhong, China
Prof. Tom Burdyny	PhD 2017	Assistant Professor Chemical Engineering TU Delft The Netherlands
Prof. Biao Zhang	PDF 2017	Assistant Professor Chongqing University Chongqing, China
Prof. Reza Nosrati	PhD 2016	Lecturer Mechanical & Aerospace Engineering Monash University Melbourne Australia
Prof. Bo Bao	PhD 2016	Assistant Professor Chemical Engineering East China University of Science and Technology
Prof. Max Gong	PhD 2015	Assistant Professor Biomedical Engineering Trine University Illinois, US
Prof. Brendan MacDonald	PDF 2013	Associate Professor Department of Mechanical and Manufacturing Engineering Ontario Tech University Oshawa, ON, Canada

Prof. Scott Tsai	PDF 2013	Associate Professor Mechanical and Industrial Engineering Ryerson University Toronto, ON, Canada
Prof. Vincent Sieben	PDF 2011	Associate Professor Dalhousie University Halifax, NS, Canada
Prof. Myeongsub Kim	PDF 2011	Associate Professor Department of Ocean & Mechanical Engineering Florida Atlantic University Boca Raton, FL, USA
Prof. Mohsen Akbari	PhD 2011	Associate Professor University of Victoria Victoria, BC, Canada
Prof. Carlos Escobedo	PhD 2011	Associate Professor Chemical Engineering Queens University Kingston, ON, Canada
Prof. Aimy Bazylak	PhD 2008	Professor Canada Research Chair Mechanical and Industrial Engineering University of Toronto, Toronto, ON, Canada
Prof. Erik Kjeang	PhD 2007	Professor Canada Research Chair Mechatronic Systems Engineering School of Engineering Science Simon Fraser University Surrey, BC, Canada

2.8 Post Doctoral Supervisor and Contract Employees Supported by Research Contracts

Duration	Fellow	Financial Sponsor	Topic of Study
2023 – present	Dr. Maryam Ebrahimiazar	Postdoctoral Fellow	Accelerated Discovery of Thermal Fluids
2022 – 2023	Dr. Adnan Ozden	Postdoctoral Fellow	Electrocatalytic Conversion of CO ₂ to Products
2022 – present	Dr. Feng Li	Postdoctoral Fellow	Computational electrochemistry and CO ₂ capture
2022 – present	Dr. Jiheon Kim	Postdoctoral Fellow	AI-accelerated catalytic materials discovery with high-throughput experimentation

2021 – 2023	Dr. Jinqiang Zhang (w/ E. Sargent)	Postdoctoral Fellow	Electrochemical CO ₂ capture and reduction
2022 – present	Dr. Ali Shayesteh	Postdoctoral Fellow	CO ₂ Conversion
2021 – present	Dr. Amin Kazemi	Postdoctoral Fellow	Industrial Fluids for Geothermal Energy
2021 – 2023	Dr. Yong Zhao	Postdoctoral Fellow	System and catalyst design for electrochemical CO ₂ /CO upgrading
2021 – 2023	Dr. Jonathan Edwards	Postdoctoral Fellow	CO ₂ Conversion with Electrocatalysis
2021 – present	Dr. Mengyang Fan	Postdoctoral Fellow	CO ₂ Conversion to Methane
2021 – 2022	Dr. Yi (Sheldon) Xu	Postdoctoral Fellow	CO ₂ Conversion with High Utilization
2020 – present	Dr. Mohammad Zargartalebi	Research Associate	Industrial Fluids Development for Geothermal Energy
2020 – 2022	Dr. Talha Kose	Postdoctoral Fellow	High-throughput Experimentation
2019 – 2022	Dr. Anna O’Brien (w/C. Rochman)	Postdoctoral Fellow	High-throughput Studies of Duckweed Mutualism
2019 – 2021	Dr. Vikram Soni	Postdoctoral Fellow	Industrial Fluids for Geothermal Energy
2019 – 2019	Dr. Yen Hoang (w/E. Sargent)	Postdoctoral Fellow	Scaling CO ₂ Electroreduction to Ethylene
2019 – 2020	Dr. Hossein Yadegari	Postdoctoral Fellow	Hybrid Electrochemical Systems
2019 – 2020	Dr. Junjie Zhong	Postdoctoral Fellow	Industrial Fluidics for the Development of Geothermal Energy Fluids
2018 – 2019	Dr. Yamin Yang	Postdoctoral Fellow	High-throughput Determinations of Multistressor Toxicity
2017 – 2019	Dr. Christopher McCallum	Postdoctoral Fellow	Machine Learning and Microfluidics for Male Fertility
2017 – 2019	Dr. Yihe Wang	Postdoctoral Fellow	Single-cell Sperm DNA Correlation with Sperm Morphology and Viability
2017 - 2019	Dr. Jun Li (w/E. Sargent)	Postdoctoral Fellow	Rapid Transport Through Robust Nanostructures for CO ₂ Electroreduction
2017 - 2019	Dr. Jae Bem You	Postdoctoral Fellow	Developing Novel Paper-based Microfluidic Platforms for Male Fertility
2017 – 2021	Dr. Christine Gabardo	Postdoctoral Fellow	The development of electrodes for renewable energy applications
2017 – 2019	Dr. Anna Kolomijeca	Postdoctoral Fellow	Parallel ecotoxicology testing of elevated CO ₂ and microplastic stressors
2016 – 2017	Dr. Aaron Persad	Postdoctoral Fellow	Efficient, Greener Hydrocarbon Extraction From Shale
2016 – present	Dr. Jason Riordon	Research Associate	Microfluidics for Energy and Health

2015 – 2018	Dr. Ali Abedini	Postdoctoral Fellow	Applications Microfluidics and Nanofluidics of Hydrocarbon Recovery
2015 – 2017	Dr. Biao Zhang	Postdoctoral Fellow	Fertility Microfluidics
2015 – 2016	Dr. Hadi Zandavi	Postdoctoral Fellow	Hydrocarbon Transport
2015 – 2018	Dr. Yuanjie Pang (w/ E.Sargent)	Postdoctoral Fellow	Electrocatalytic conversion of CO to products
2015 – 2017	Dr. Nastaran Kazemi-Zanjani (w/N.Kherani)	Postdoctoral Fellow	Plasmonics for Energy
2015 – 2018	Dr. Pelayo Garcia de Arquer (w/ E.Sargent)	Postdoctoral Fellow	Electrocatalysis
2013 – 2015	Lise Eamer	Research Associate	Fertility Microfluidics
2014 – 2015	Dr. Nader Mosavat	Postdoctoral Fellow	Pore-scale Microfluidics for Bitumen Recovery
2014 – 2017	Dr. Huawei Li	Postdoctoral Fellow	Microfluidics and Nanofluidics of Hydrocarbon Recovery
2014 – 2015	Dr. Jason Riordon	Postdoctoral Fellow	CO ₂ Foam Technology
2014 – 2015	Dr. Yogesh Jeyaram	Postdoctoral Fellow	Plasmonics for Bioenergy
2012 – 2013	Dr. Scott Tsai	Postdoctoral Fellow	Optofluidic Bioenergy
2011 – 2013	Dr. Brendan MacDonald	Postdoctoral Fellow	Energy-Efficient Water Purification and Blood-based Diagnostics for Public Health
2011 – 2014	Dr. Marion Vollmer	Postdoctoral Fellow	Separation of Sperm Based on Wall-Swimming Bias
2010 – 2014	Dr. Hossein Fadaei	Postdoctoral Fellow	Carbon Management Microfluidics
2011 – 2012	Dr. Myeongsub Kim	Postdoctoral Fellow	Optofluidic Analysis of Supercritical CO ₂ Transport in Carbon-intensive Energy Operations
2011	Dr. Vincent Sieben	Postdoctoral Fellow	Optofluidic Bioenergy
2010 – 2011	Brent Scarff	Research Engineer	Carbon Management Microfluidics
2006 – 2009	Dr. Viatcheslav Berejnov	Postdoctoral Fellow	Experimental Microfluidic Pore Networks
2009	Paul Wood	Research Engineer	Nanohole Array Dielectrophoresis
2007	Alex Wlasenko (w/G. Steeves)	Research Engineer	Electrodeposition with Microfluidics
2005	Jeffrey Coleman	Research Engineer	Experimental Microfluidics

SECTION 3 – UNIVERSITY AND DEPARTMENTAL ADMINISTRATIVE COMMITTEES

3.1 University and Faculty Committees

Duration	Position and/or Duties
2021 – present	Institutional Strategic Initiatives Leadership Forum
2020 – 2021	FASE Canada Research Chair Adjudication Committee
2020 – 2021	Member, Steering Committee Materials Acceleration Consortium
2019 – 2021	FASE Disruptors & Dilemmas & Alumni Events Moderator
2018 – 2019	FASE BizSkule Panel Moderator
2017 – 2018	FASE Sustainability Research Strategic Planning Steering Committee
2017 – 2018	FASE Strategic Research Planning Executive Committee
2016 – 2017	Chair, FASE Bibliometrics Working Group
2016 – 2017	Vice President, Research and Innovation Committee
2016 – 2017	Institutional Review
2016 – 2017	BBCIE Management Committee
2016 – 2017	Executive Committee, Faculty of Applied Science & Engineering
2016 – 2017	Chairs and Directors Committee, Faculty of Applied Science & Engineering
2015 – 2018	ISE Steering Committee
2015 – 2017	Faculty Research Committee
2012-2015	Director, Institute for Sustainable Energy, Toronto
2012-2015	Convener, Faculty of Applied Science Working Group for Multidisciplinary Centres and Institutes, Toronto
2011-2012	Associate Director, Centre for Sustainable Energy, Toronto
	At University of Victoria:
2010-2011	Chair Search Committee, UVIC Chemistry Department
2010-2011	Faculty Advisory Committee (Faculty level tenure and promotion review)
2010-2011	Faculty Discovery Grant Review Committee
2007	Faculty of Engineering Speaker: Dec. 4 th Memorial Service
2007-2008	Engineering Student Mentor (6 students)
2007-2009	First Year Teaching Review Task Force
2007-2008	Dean Search Committee, Faculty of Engineering
2007-2011	Senate Committee on Learning and Teaching (Faculty of Engineering Representative)
2006-2007	Design Chair Curriculum Design Committee
2005	Faculty Representative, UVic Career Forum Committee
2003-2011	Faculty Undergraduate Recruitment Committee

3.2 Departmental Committees

Duration	Position and/or Duties
2022-2023	MEng Program Director
2021-2023	Member, MIE Research Committee
2020-2023	Member, MIE PTR Committee
2023-2023	Member, MIE Chair Search Committee
2021-2022	Member, MIE Self-Study Research Committee
2021-2022	Member, MIE Thermofluids Rejuvenation Committee
2020-2021	Member, MIE Lab Restart Committee
2018-2019	Chair, Professional Sports and Entertainment Task Force
2017	Member, Chemical Engineering and Applied Chemistry ACR Advisory Committee
2015 – 2017	Associate Chair of Research
2015 – 2017	Member MIE, Executive Committee
2015 – 2017	Member, Industry Partnership Sub-committee, MIE Advisory Board
2014 – present	Member, Centre for Microfluidic Systems Operations Committee
2013 – present	Chair, Program Committee for the Clean Combustion Engines CREATE Program
2013 – 2019	Faculty Advisor, Society of Petroleum Engineers Student Chapter
2013 – 2014	Member, MIE Chair Advisory Committee
2013 – 2014	Marketing Chair, Executive Committee for MIE-hosted CSME Forum 2014
2012 – 2017	Departmental Mentor, new faculty, Edmond Young
2012 – 2014	Faculty Advisor, Shell Eco-marathon Supermileage Team
2012 – 2013	Member, MIE Energy Lab Banner Committee
2011 – 2013	Member, MIE Seminar Committee
	At University of Victoria:
2008-2011	Chair, Departmental Faculty Awards Committee
2005-2011	Member, Curriculum Committee
2005	Member, Mechanical Engineering Chair Search Committee
2004-2005	Member, Mechatronics Hiring Committee
2003-2011	Departmental Recruitment Coordinator
2003-2011	Member, Appointments, Reappointments, Promotion and Tenure (APRT)

SECTION 4 – TEACHING

4.1 Undergraduate Teaching

Year	Subject No. and Title	No. of Students	Year and Course	Lect./Week	Wt
2022	MIE 312F Fluid Mechanics I (taught second half)	180	III	3	0.5
2021	MIE 312F Fluid Mechanics I (taught second half)	196	III	3	0.5
2020	MIE 312F Fluid Mechanics I (taught second half)	188	III	3	0.5
2014	MIE 312F Fluid Mechanics I (taught second half)	228	III	3	0.5
2013	MIE 312F Fluid Mechanics I (taught both sections)	208	III	3	0.5
2012	MIE 312F Fluid Mechanics I (taught second half)	192	III	3	0.5
2011	MIE 312F Fluid Mechanics I (taught second half)	193	III	3	0.5
At University of Victoria					
2011	MECH 455 Instrumentation	90	IV	3	0.5
2010	MECH 494 Thermofluids and Intro. to Mass Transfer	1	IV	3	0.5
2009	MECH 345 Mechanics of Fluids I	80	III	3	0.5
2009	MECH 455 Instrumentation	97	IV	3	0.5
2008	MECH 345 Mechanics of Fluids I	90	III	3	0.5
2008	MECH 455 Instrumentation	82	IV	3	0.5
2007	MECH 345 Mechanics of Fluids I	91	III	3	0.5
2007	MECH 455 Instrumentation	67	IV	3	0.5
2007	MECH 499 Project – Microfabrication	1	IV	3	0.5
2007	MECH 499 Project – Emulsion Viscosity	1	IV	3	0.5
2006	MECH 345 Mechanics of Fluids I	76	III	3	0.5
2006	MECH 455 Instrumentation	69	IV	3	0.5
2005	MECH 345 Mechanics of Fluids I	75	III	3	0.5
2004	MECH 242 Dynamics (taught second half of course)	51	II	3	0.5
2004	MECH 455 Instrumentation (taught first half of course)	45	IV	3	0.5

4.2 Graduate Teaching

Year	Subject No. and Title	No. of Students
2023	MIE 1120S Current Energy Infrastructure and Resources	71
2022	MIE 1120S Current Energy Infrastructure and Resources	50
2017	MIE 1120S Current Energy Infrastructure and Resources	78
2016	MIE 1120S Current Energy Infrastructure and Resources	69
2015	MIE 1120S Current Energy Infrastructure and Resources	54
2014	MIE 1120S Current Energy Infrastructure and Resources	50
2013	MIE 1120S Current Energy Infrastructure and Resources [new course]	36

At University of Victoria

2009	MECH 580	Microfluidics	4
2008	MECH 580	Microfluidics	9
2007	MECH 580	Microfluidics	4
2007	MECH 590	Directed Studies	3
2006	MECH 580	Microfluidics	4
2005	MECH 580	Microfluidics	6

4.3 Undergraduate Capstone Supervision

Year	Student Name	Capstone Topic
2022-2023	Sarah Chu	Back pressure regulator for Interface Fluidics
2022-2023	Natalie Cichon	Back pressure regulator for Interface Fluidics
2022-2023	Annie Pham	Back pressure regulator for Interface Fluidics
2022-2023	Richard Naso	Back pressure regulator for Interface Fluidics
2021-2022	Alexander Sula	Manifold-Mounted Microfluidic Valve w/Interface Fluidics Ltd.
2021-2022	Awal Yaya Mohammed	Manifold-Mounted Microfluidic Valve w/Interface Fluidics Ltd.
2021-2022	Yicheng Wang	Manifold-Mounted Microfluidic Valve w/Interface Fluidics Ltd.
2021-2022	Patrick Ishimwe	Manifold-Mounted Microfluidic Valve w/Interface Fluidics Ltd.
2020-2021	Alice Ko	100-Patient Ventilator
2020-2021	Yihua Lin	100-Patient Ventilator
2020-2021	Vasant Batta	100-Patient Ventilator
2020-2021	Chris Cardoza	100-Patient Ventilator
2019-2020	Ibttida Khan	High Pressure Manifold w/Interface Fluidics Ltd.
2019-2020	Hassan Asif	High Pressure Manifold w/Interface Fluidics Ltd.
2019-2020	Cameron Whittle	High Pressure Manifold w/Interface Fluidics Ltd.
2019-2020	Stephanie On	High Pressure Manifold w/Interface Fluidics Ltd.
2018-2019	Vincent (Zhanguang) Chang	Microfluidics without Tubes w/Interface Fluidics Ltd.
2018-2019	Richard Salas Chavez	Microfluidics without Tubes w/Interface Fluidics Ltd.
2018-2019	Parham Chinikar	Gull Lake Solar Project w/UofT Facilities and Services
2018-2019	Marawan Abdel Hameed	Gull Lake Solar Project w/UofT Facilities and Services
2018-2019	Liam Keller	Gull Lake Solar Project w/UofT Facilities and Services
2018-2019	Katherine Prysylak	Gull Lake Solar Project w/UofT Facilities and Services
2016-2017	Robert Goldberg	Toronto Blue Jay's Pitching Machine
2016-2017	Karan Shukla	Toronto Blue Jay's Pitching Machine
2016-2017	Aidan Solala	Toronto Blue Jay's Pitching Machine
2016-2017	Adam Thomas	Toronto Blue Jay's Pitching Machine
2015-2016	Balavignesh Krishnamoorthy	Carbon capture with cooling w/Carbon Engineering Ltd.
2015-2016	Daniel Powell	Carbon capture with cooling w/Carbon Engineering Ltd.
2015-2016	Jobin Puthuparampil	Carbon capture with cooling w/Carbon Engineering Ltd.
2015-2016	Prakash Muregesan	Carbon capture with cooling w/Carbon Engineering Ltd.
2015-2016	Alireza Zarghami	Precision High Pressure Syringe Pump w/Schlumberger Ltd.
2015-2016	Amirali Alavi	Precision High Pressure Syringe Pump w/Schlumberger Ltd.

2015-2016	Danyal Mohaddes Khorassani	Precision High Pressure Syringe Pump w/Schlumberger Ltd.
2015-2016	Denys Matvyeyev	Precision High Pressure Syringe Pump w/Schlumberger Ltd.
2013-2014	Jonathan Hamway	Engine and Powertrain Design for Ultra-Low Fuel Consumption Vehicle
2013-2014	Nikita Singarayar	Engine and Powertrain Design for Ultra-Low Fuel Consumption Vehicle
2013-2014	Ryan Billinger	Engine and Powertrain Design for Ultra-Low Fuel Consumption Vehicle
2013-2014	Alex Gordon	Knuckleball Pitching Machine
2013-2014	Jessica Tomasi	Knuckleball Pitching Machine
2013-2014	Martin Cote	Knuckleball Pitching Machine
2013-2014	Queenie Yuan	Knuckleball Pitching Machine
2012-2013	Denis Loboda	Coffee Lid Re-Development
2012-2013	Michael Hughes	Coffee Lid Re-Development
2012-2013	Kenan Alsamman	Coffee Lid Re-Development
2012-2013	Ayan Tugsel	Efficient Cooling of Hot Stamped Automotive Parts
2012-2013	Furqan Javed	Efficient Cooling of Hot Stamped Automotive Parts
2012-2013	Osama Nasir	Efficient Cooling of Hot Stamped Automotive Parts
2011-2012	Yaser Al-Farawi	Hydrogen-CPV Hybrid Power for Remote Locations
2011-2012	Nick Huang	Hydrogen-CPV Hybrid Power for Remote Locations
2011-2012	Rafi Kasmadjian	Hydrogen-CPV Hybrid Power for Remote Locations
2011-2012	Geoffrey Vishloff	Hydrogen-CPV Hybrid Power for Remote Locations
2011-2012	Rohini Patel	Environmentally Sustainable and Energy Efficient Air Humidification
2011-2012	Aditi Joshi	Environmentally Sustainable and Energy Efficient Air Humidification
2011-2012	Kevin Budhoo	Environmentally Sustainable and Energy Efficient Air Humidification
2011-2012	Amol Kane	Environmentally Sustainable and Energy Efficient Air Humidification

4.4 Undergraduate Thesis Supervision

Year	Student Name	Thesis Topic
2021	Siyu Sun	Geothermal closed-loop technology development
2021	Shijie Liu	Electrochemical Systems for Stable and Efficient CO ₂ Conversion
2015	Yi (Sheldon) Xu	Microfluidics Based Phase Behavior Studies of Reservoir Fluids
2015	Naomi Liu	Accumulation of Sperm in Microchannel Corners: The Effects of Geometry and Chemical Environment
2015	Soheil Talebi	Rapid Preparation and Analysis of Oil-Water Samples
2015	Jappinder Nijjer	Fabrication and Verification of Nanochannels
2014	Zhenbang (Seven) Qi	Test Apparatus for CO ₂ Photocatalyst in Solution
2013-2014	Jin Lee	Microfluidic Screening of Additives for SAGD at Reservoir Conditions

4.5 Undergraduate Summer Student Supervision

Year	Student Name	Topic
2023	Andrija Stepanovic	CO ₂ conversion electrodes
2020	Shivani Krishnan	Gas Electrode Development and Fabrication
2020	Alina Alidina	Electrochemical Cell Sealing and Operation
2015	Yi (Sheldon) Xu	Microfluidics Based Phase Behavior Studies of Reservoir Fluids

2015	Naomi Liu	Accumulation of Sperm in Microchannel Corners: The Effects of Geometry and Chemical Environment
2014	Danyal Mohaddes Khorassani	High Pressure Microfluidics for CO ₂ -oil Miscibility
2013-2014	Soheil Talebi	Carbon Management Microfluidics
2013	Bala Krishnamoorthy	Photobioreactor Development
2012	Lauren Bajin	Optofluidic Photobioreactors
2012	Haiyi Wang	Carbon Management
2009	Franco Siletta	Fabrication of Flow-Through Nanohole Arrays
2008	Eric Sefton	Viscosity of Heavy Oil
2008	Michael Fryer	Microfabrication with CO ₂ Laser System
2007	Jason Heinrich	Experimental Microfluidics
2006	Raphaëlle Michel	Microfabrication
2006	Brent Proctor	Microfluidic Fuel Cell Fabrication
2006	Jesse Musial	Microfabrication
2005-2007	Bob Lansdorp	Experimental Microfluidics
2004	Angela De Leebeeck	Nanofluidics

SECTION 5 – PUBLICATIONS

5.1 Refereed Journal Publications

5.1.1 Published/Accepted Articles (bold indicates trainee)

2023 – Published or Accepted

1. Wang, N., Ou, P., **Miao, R. K.**, Chang, Y., Wang, Z., Hung, S.-F., Abed, J., **Ozden, A.**, Chen, H.-Y., Wu, H.-L., Huang, J. E., Zhou, D., Ni, W., Fan, L., Yan, Y., Peng, T., Sinton, D., Liu, Y., Liang, H., Sargent, E. H. “Doping shortens the metal/metal distance and promotes OH coverage in non-noble acidic oxygen evolution reaction catalysts,” *Journal of the American Chemical Society* 145, 14, 7829-7836, 2023.
2. Lee, M. G., Li, X. Y., **Ozden, A.**, Wicks, J., Ou, P., Li, Y., Dorakhan, R., Lee, J., Park, H. K., Yang, J. W., Chen, B., Abed, J., dos Reis, R., Lee, G., Huang, J. E., Peng, T., Chin, Y.-H., Sinton, D., Sargent, E. H., “Selective synthesis of butane from carbon monoxide using cascade electrolysis and thermocatalysis at ambient conditions,” *Nature Catalysis* 1-9, 2023.
3. Dorakhan, R., Grigioni, I., Lee, B. H., Ou, P., Abed, J., **O’Brien, C.**, Rasouli, A. S., Plodinec, M., **Miao, R. K.**, Shirzadi, E., Wicks, J., Park, S., Lee, G., Zhang, J., Sinton, D., Sargent, E. H., “A silver-copper oxide catalyst for acetate electrosynthesis from carbon monoxide,” *Nature Synthesis* 1-10, 2023.
4. Wang, N., Ou, P., Hung, S.-F., Huang, J. E., **Ozden, A.**, Abed, J., Grigioni, I., Chen, C., **Miao, R. K.**, Yan, Y., Zhang, J., Wang, Z., Dorakhan, R., Badreldin, A., Abdel-Wahab A., Sinton, D., Liu, Y., Liang, H., Sargent, E. H., “Strong-proton-adsorption co-based electrocatalysts achieve active and stable neutral seawater splitting,” *Advanced Materials* DOI:10.1002/adma.202210057, 2023.
5. Luo, M., **Ozden, A.**, Wang, Z., Li, F., Huang, J. E., H. S.-F., Wang, Y., Li, J., Nam, D.-H., Li Y. C., Xu, Y., Lu, R., Zhang, S., Lum, Y., Ren, Y., Fan, L. Wang, F., Li, H.-H., Appadoo, D., Dinh, C.-T., Liu, Y., Chen, B., Wicks, J., Chen, H., Sinton, D., Sargent, E. H., “Coordination polymer electrocatalysts enable efficient CO-to-acetate conversion,” *Advanced Materials* 35, 10, 2023.
6. Lee, B.-H., Shin, H., Rasouli, A. S., Choubisa, H., Ou, P., Dorakhan, R., Grigioni, I., Lee, G., Shirzadi, E., **Miao, R. K.**, Wicks, J., Park, S., Lee, H. S., Zhang, J., Chen, Y., Chen, Z., Sinton, D., Hyeon, T., Sung, Y.-E., Sargent, E. H., “Supramolecular tuning of supported metal phthalocyanine catalysis for hydrogen peroxide electrosynthesis,” *Nature Catalysis* 6, 3, 234-243, 2023.

7. **McPhee, H., Soni, V., Saber, S., Zargartalebi, M., Riordon, J.,** Holmes, M., Toews, M., Sinton, D., “Rheological behaviour of phase change slurries for thermal energy applications,” *Langmuir* 39, 1, 129-141, 2023.
 8. Datta, S. S., Battiato, I., Fernø, M. A., Juanes, R., Parsa, S., Prigiobbe, V., Santanach-Carreras, E., Song, W., Biswal, S. L., and Sinton, D., “Lab on a chip for a low-carbon future”, *Lab on a Chip* 23, 5, 1358-1375, 2023.
 9. **Zhao, Y., Hao, L., Ozden, A., Liu, S., Miao, R. K.,** Ou, P., **Alkayyali, T.,** Zhang, S., Ning, J., Liang, Y., **Xu, Y., Fan, M.,** Chen, Y., Huang, J. E., Xie, K., Zhang, J., **O’Brien, C. P.,** Li, F., Sargent, E. H., and Sinton, D., “Conversion of CO₂ to multicarbon products in strong acid by controlling the catalyst microenvironment”, *Nature Synthesis* 1–10, 2023.
 10. **Kazemi, M. A., Zandavi, S. H., Zargartalebi, M.,** Sinton, D., and Elliott, J. A. W., “Analysis of the evaporation coefficients of water, heavy water, and methanol in a high vacuum environment”, *International Journal of Heat and Mass Transfer* 204, 123833, 2023.
 11. **Ozden, A.,** Li, J., Kandambeth, S., Li, X.-Y., **Liu, S.,** Shekhah, O., Ou, P., Zou Finfrock, Y., Wang, Y.-K., **Alkayyali, T.,** Pelayo García de Arquer, F., Kale, V. S., Bhatt, P. M., Ip, A. H., Eddaoudi, M., Sargent, E. H., and Sinton, D., “Energy- and carbon-efficient CO₂/CO electrolysis to multicarbon products via asymmetric ion migration–adsorption”, *Nature Energy* 1–12, 2023.
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12. Xu, A., Hung, S. F., Cao, A., Wang, Z., Kamodak, N., Huang, J. E., Yan, Y., Rasouli, A. S., **Ozdan, A.,** Wu, F.-Y., Lin, Z.-Y., Tsai, H.-J., Lee, T.-J., Li, F., Luo, M., Wang, Y., Wang, X., Abed, J., Wang, Z., Nam, D.-H., Li, Y. C., Ip, A. H., Sinton, D., Dong, C., Sargent, E. H., “Copper/alkaline earth metal oxide interfaces for electrochemical CO₂-to-alcohol conversion by selective hydrogenation,” *Nature Catalysis* 1-8, 2022.
 13. Nam, D.-H., Shekhah, O., **Ozden, A., McCallum, C.,** Li, F., Wang, X., Lum, Y., Lee, T., **Li, J.,** Wicks, J., Johnston, A., Sinton, D., Eddaoudi, M., and Sargent, E. H., “High-Rate and Selective CO₂ Electrolysis to Ethylene via Metal–Organic-Framework-Augmented CO₂ Availability”, *Advanced Materials* 34, 2207088, 2022.
 14. Al-Attas, T., Nabil, S. K., Zeraati, A. S., Shiran, H. S., **Alkayyali, T., Zargartalebi, M.,** Tran, T., Marei, N. N., Al Bari, Md. A., Lin, H., Roy, S., Ajayan, P. M., Sinton, D., Shimizu, G., and Kibria, M. G., “Permselective MOF-Based Gas Diffusion Electrode for Direct Conversion of CO₂ from Quasi Flue Gas”, *ACS Energy Letters* 8, 1, 107–115, 2022.
 15. **Xiao, Y. C., Gabardo, C. M., Liu, S.,** Lee, G., Zhao, Y., **O’Brien, C. P., Miao, R. K., Xu, Y., Edwards, J. P., Fan, M.,** Huang, J. E., **Li, J., Papangelakis, P., Alkayyali, T.,** Rasouli, A. S., Zhang, J., Sargent, E. H., and Sinton, D., “Direct carbonate electrolysis into pure syngas”, *EES Catalysis*, 2022.
 16. **Saber, S., Zargartalebi, M., Soni, V., McPhee, H., Roostaie, M., Darzi, A., Riordon, J.,** Holmes, M., Toews, M., and Sinton, D., “Thermophysical behavior of phase change slurries in the presence of charged particles”, *Colloids and Surfaces A: Physicochemical and Engineering Aspects* 653, 129967, 2022.
 17. Xie, K., **Miao, R. K., Ozden, A., Liu, S.,** Chen, Z., Dinh, C.-T., Huang, J. E., Xu, Q., **Gabardo, C. M.,** Lee, G., **Edwards, J. P., O’Brien, C. P.,** Boettcher, S. W., Sinton, D., and Sargent, E. H., “Bipolar membrane electrolyzers enable high single-pass CO₂ electroreduction to multicarbon products”, *Nature Communications* 13, 3609, 2022.
 18. Xie, Y., Ou, P., Wang, X., Xu, Z., Li, Y. C., Wang, Z., Huang, J. E., Wicks, J., **McCallum, C.,** Wang, N., Wang, Y., Chen, T., Lo, B. T. W., Sinton, D., Yu, J. C., Wang, Y. & Sargent, E. H., “High carbon utilization in CO₂ reduction to multi-carbon products in acidic media”, *Nature Catalysis* 5, 564–570, 2022.
 19. Xie, K., **Ozden, A., Miao, R. K.,** Li, Y., Sinton, D., and Sargent, E. H., “Eliminating the need for anodic gas separation in CO₂ electroreduction systems via liquid-to-liquid anodic upgrading”, *Nature Communications* 13, 3070, 2022.
 20. **Kose, T., O’Brien, C.,** Wicks, J., Abed, J., Xiao, Y. C., Sutherland, B., Sarkar, A., Jaffer, S. A., Sargent, E. H., and Sinton, D., “High-throughput parallelized testing of membrane electrode assemblies for CO₂ reduction”, *Catalysis Science & Technology* 12, 6239-6245, 2022.

21. **Lins, T. F., O'Brien, A. M., Kose, T.,** Rochman, C. M., and Sinton, D., "Toxicity of nanoplastics to zooplankton is influenced by temperature, salinity, and natural particulate matter", *Environmental Science: Nano* 9, 2678–2690, 2022.
22. **Ozden, A.,** García de Arquer, F. P., Huang, J. E., Wicks, J., Sisler, J., **Miao, R. K., O'Brien, C. P.,** Lee, G., Wang, X., Ip, A. H., Sargent, E. H., and Sinton, D., "Carbon-efficient carbon dioxide electrolyzers", *Nature Sustainability* 5, 563–573, 2022.
23. **Xu, Y., Miao, R. K., Edwards, J. P., Liu, S., O'Brien, C. P., Gabardo, C. M., Fan, M.,** Huang, J. E., **Robb, A.,** Sargent, E. H., and Sinton, D., "A microchanneled solid electrolyte for carbon-efficient CO₂ electrolysis", *Joule* 6, 1333–1343, 2022.
24. Li, Y., **Ozden, A.,** Leow, W. R., Ou, P., Huang, J. E., Wang, Y., Bertens, K., **Xu, Y.,** Liu, Y., Roy, C., Jiang, H., Sinton, D., Li, C., and Sargent, E. H., "Redox-mediated electrosynthesis of ethylene oxide from CO₂ and water". *Nature Catalysis* 5, 185–192, 2022.
25. Abedini, A., Ahitan, S., Barikbin, Z., Soni, V., Ratulowski, J., and Sinton, D., "Past, Present, and Future of Microfluidic Fluid Analysis in the Energy Industry", *Energy & Fuels*, 2022.
26. Wang, X., Ou, P., **Ozden, A.,** Hung, S.-F., Tam, J., **Gabardo, C. M.,** Howe, J. Y., Sisler, J., Bertens, K., García de Arquer, F. P., **Miao, R. K., O'Brien, C. P.,** Wang, Z., Abed, J., Rasouli, A. S., Sun, M., Ip, A. H., Sinton, D., and Sargent, E. H., "Efficient electrosynthesis of n-propanol from carbon monoxide using a Ag–Ru–Cu catalyst". *Nature Energy* 1–7, 2022.
27. **Robb, A., Ozden, A., Miao, R. K., O'Brien, C. P., Xu, Y., Gabardo, C. M.,** Wang, X., Zhao, N., García de Arquer, F. P., Sargent, E. H., and Sinton, D., "Concentrated Ethanol Electrosynthesis from CO₂ via a Porous Hydrophobic Adlayer", *ACS Applied Materials & Interfaces* 14, 4155–4162, 2022.
28. **Lins, T. F., O'Brien, A. M., Zargartalebi, M.,** and Sinton, D., "Nanoplastic State and Fate in Aquatic Environments: Multiscale Modeling", *Environmental Science & Technology* 56, 4017–4028, 2022.
29. **O'Brien, A.M., Lins, T.F., Yang, Y.,** Frederickson, M.E., Sinton, D., and Rochman, C.M., "Microplastics shift impacts of climate change on a plant-microbe mutualism: Temperature, CO₂, and tire wear particles", *Environmental Research* 203, 111727, 2022.

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30. **Nosrati, R.** and Sinton, D., "How to select ICSI-viable sperm from the most challenging samples". *Nature Reviews Urology* 1–2, 2021.
31. **Miao, R.K., Xu, Y., Ozden, A., Robb, A., O'Brien, C.P., Gabardo, C.M.,** Lee, G., **Edwards, J.P.,** Huang, J.E., **Fan, M.,** Wang, X., **Liu, S.,** Yan, Y., Sargent, E.H., and Sinton, D., "Electroosmotic flow steers neutral products and enables concentrated ethanol electroproduction from CO₂", *Joule* 5, 2742–2753, 2021.
32. Abed, J., Ahmadi, S., Laverdure, L., Abdellah, A., **O'Brien, C.P.,** Cole, K., Sobrinho, P., Sinton, D., Higgins, D., Mosey, N.J., Thorpe, S.J., and Sargent, E.H., "In Situ Formation of Nano Ni–Co Oxyhydroxide Enables Water Oxidation Electrocatalysts Durable at High Current Densities", *Advanced Materials* 33, 2103812, 2021.
33. **Yadegari, H., Ozden, A., Alkayyali, T., Soni, V.,** Thevenon, A., Rosas-Hernández, A., Agapie, T., Peters, J.C., Sargent, E.H., and Sinton, D., "Glycerol Oxidation Pairs with Carbon Monoxide Reduction for Low-Voltage Generation of C₂ and C₃ Product Streams", *ACS Energy Letters* 6, 3538–3544, 2021.
34. **O'Brien, C.P., Miao, R.K., Liu, S., Xu, Y.,** Lee, G., **Robb, A.,** Huang, J.E., Xie, K., Bertens, K., **Gabardo, C.M., Edwards, J.P.,** Dinh, C.-T., Sargent, E.H., and Sinton, D., "Single Pass CO₂ Conversion Exceeding 85% in the Electrosynthesis of Multicarbon Products via Local CO₂ Regeneration", *ACS Energy Letters* 6, 2952–2959, 2021.
35. Alerte, T., **Edwards, J. P., Gabardo, C. M., O'Brien, C. P.,** Gaona, A., Wicks, J., Obradović, A., Sarkar, A., Jaffer, S. A., MacLean, H. L., Sinton, D., and Sargent, E. H., "Downstream of the CO₂ Electrolyzer: Assessing the Energy Intensity of Product Separation". *ACS Energy Letters* 6, 4405–4412, 2021.
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37. **McCallum, C., Gabardo, C.M., O'Brien, C.P., Edwards, J.P.,** Wicks, J., **Xu, Y.,** Sargent, E.H., and Sinton, D., “Reducing the crossover of carbonate and liquid products during carbon dioxide electroreduction”, *Cell Reports Physical Science* 2, 8, 100522, 2021.
38. **Ozden, A.,** Liu, Y., Dinh, C.-T., **Li, J.,** Ou, P., García de Arquer, F.P., Sargent, E.H., and Sinton, D., “Gold Adparticles on Silver Combine Low Overpotential and High Selectivity in Electrochemical CO₂ Conversion”, *ACS Applied Energy Materials* 4, 7504–7512, 2021.
39. Wang, N., Xu, A., Ou, P., Hung, S.-F., **Ozden, A.,** Lu, Y.-R., Abed, J., Wang, Z., Yan, Y., Sun, M.-J., Xia, Y., Han, M., Han, J., Yao, K., Wu, F.-Y., Chen, P.-H., Vomiero, A., Seifitokaldani, A., Sun, X., Sinton, D., Liu, Y., Sargent, E. H., and Liang, H., “Boride-Derived Oxygen-Evolution Catalysts”, *Nature Communications* 12, 6089, 2021.
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41. **Guo, Y., O'Brien, A.M., Lins, T.F.,** Shahmohamadloo, R.S., Almirall, X.O., Rochman, C.M., and Sinton, D., “Effects of Hydrogen Peroxide on Cyanobacterium *Microcystis aeruginosa* in the Presence of Nanoplastics”, *ACS ES&T Water* 1, 7, 1596–1607, 2021.
42. Sinton, D. and Kelley, S.O., “AbCellera’s success is unprecedented: what have we learned?”, *Lab on a Chip* 21, 2330-2332, 2021.
43. Huang, J.E., Li, F., **Ozden, A.,** Rasouli, A.S., Arquer, F.P.G. de, **Liu, S.,** Zhang, S., Luo, M., Wang, X., Lum, Y., **Xu, Y.,** Bertens, K., **Miao, R.K.,** Dinh, C.-T., Sinton, D., and Sargent, E.H., “CO₂ electrolysis to multicarbon products in strong acid”, *Science* 372, 1074–1078, 2021.
44. **Soni, V., Saber, S., McPhee, H., Riordon, J., Zargartalebi, M.,** Holmes, M., Toews, M., and Sinton, D., “Evaluation of a Microencapsulated Phase Change Slurry for Subsurface Energy Recovery”, *Energy & Fuels* 35, 12, 10293–10302, 2021.
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