Thomas [Tom] Alan Adams II

BUSINESS ADDRESS

Institutt for energi- og prosessteknikk (EPT), Norges teknisk-naturvitenskapelige univ. (NTNU)
Department of Energy & Process Engineering (EPT), Norwegian University of Science & Technol. (NTNU)
Trondheim, Norway, 7030

EDUCATIONAL BACKGROUND

Degrees and Diplomas

2008 **Ph.D. Chemical and Biomolecular Engineering**
University of Pennsylvania
Research Adviser: Prof. Warren D. Seider
Dissertation: “Semicontinuous Processes with Chemical Reaction."
Department of Chemical and Biomolecular Engineering
Philadelphia, PA, USA

2003 **B.Sc. Chemical Engineering**
Michigan State University
Department of Chemical Engineering and Materials Science
East Lansing, MI, USA

2003 **B.Sc. Computer Science**
Michigan State University
Department of Computer Science
East Lansing, MI, USA

Qualifications, Licensures, and Certifications

2016 - Professional Engineer (Ontario) License #100224645

Other Specialized Training

2008-2010 **Postdoctoral Associate** Massachusetts Institute of Technology
Research Adviser: Prof. Paul I. Barton.
Department of Chemical Engineering, MIT, Cambridge, MA, USA

EMPLOYMENT STATUS

Oct 2022 – Norwegian University of Science and Technology (NTNU)
Professor, Tenured, Energy & Process Engineering (EPT)

August 2023 – **Group Leader**, Process & Power Group, EPT Department

July 2023 – McMaster University, **Adjunct Professor**, Chemical Engineering

Leaves of Absence: January to April 2019 (paternity leave)
October 1, 2022 – June 30, 2023 (leave from McMaster while at NTNU).

PROFESSIONAL ORGANIZATIONS

2023 — *Treasurer* since 2024*,* European Committee for the Use of Computers in Chemical Eng. Education

	(EURECHA)
2022 –	*Convenor*, Working Group to develop ISO Technical Specification on eTEAs (ISO/TC 207/SC 5/WG 16) Term ends 2025
2019 —	*Member*, Standards Council of Canada Mirror Committee to International Standards Organization, Technical Committee 207, Subcommittee 5 – Life Cycle Assessment (MC/ISO/TC 207/SC 5)
2012 —	*Member*, Canadian Society of Chemical Engineers (Chemical Institute of Canada)
2000 —	*Member*, American Institute of Chemical Engineers
	Member, Omega Chi Epsilon Chemical Engineering Honors Society
2016 – 2022	Chair, Systems and Control Division, Canadian Society of Chemical Engineers (Elected)
2019 – 2022	Director, Computing and Systems Technology (CAST) Division of American Institute of Chemical Engineers (Elected)

EMPLOYMENT HISTORY

Academic

10/2022 –	**Professor**, Norwegian University of Science & Technology, Tenured, Energy and Process Engineering. Process and Power Group Leader (EPT) since July 2023
07/2023 –	**Adjunct Professor**, McMaster University, Chemical Engineering
07/2022 – 06/2023	**Professor**, McMaster University, Tenured, Chemical Engineering
07/2016 – 06/2022	**Associate Professor**, McMaster University, Tenured, Chemical Engineering
10/2010 –	*Member*: McMaster Advanced Controls Consortium (MACC)
07/2011 – 06/2023	*Member*: McMaster Institute for Energy Studies (MIES)
07/2016 – 09/2021	**Associate Chair**, Graduate, McMaster University, Chemical Engineering
10/2010 – 06/2016	**Assistant Professor**, McMaster University, Tenure-Track, Chemical Engineering
2008 – 2010	**Postdoctoral Associate** Massachusetts Institute of Technology Research Adviser: Prof. Paul I. Barton. Department of Chemical Engineering, MIT, Cambridge, MA, USA

Consultations

2023 – 2024	Declaration Capital Florida, USA
2021	Consultant, Hite Hedge Boston, MA, USA
2017	Research Consultant SINTEF Energy Trondheim, Norway (SINTEF is a non-profit research organization.)
2011 – 2014	**Scientific Advisory Board** HydroConfidence Inc. Johnstown, PA, USA. HydroConfidence was a shale gas services company in western Pennsylvania.

Other

1997 – 2004 **Software Developer**
T-Enterprises, Inc.
DeWitt, MI, USA

Developed commercial software packages to facilitate the design, auditing, and safety analysis of radiofrequency telecommunication systems (industrial position). Position alternated between full time (summers) and part time (school years) as position was held while I was a student (portions of high school, undergraduate years, and graduate school).

SCHOLARLY AND PROFESSIONAL ACTIVITIES

Editorial Boards

2024– Editor, *Perry's Chemical Engineering Handbook 10th Edition*, McGraw-Hill Education
2021– Editor-In-Chief, *Systems and Control Transactions*
2020– Associate Editor, *Canadian J. of Chemical Engineering*
2021– Associate Editor, *Chemical Product and Process Modelling*
2021– Associate Editor, *Frontiers in Energy Research*
2024–2025 Guest Editor, Special Issue, *Computers and Chemical Engineering*
2019–2024 Editor, "Emerging Leaders" Special Series, *Canadian J. of Chemical Engineering*
2018–2020 Section Editor-In-Chief, *Processes*, Computational Methods section
2019–2020 International Advisory Board, *Canadian J. of Chemical Engineering*
2013–2021 Editorial Review Board Member, *Frontiers in Energy Research*
2018 Guest Editor, "Modelling and Simulation of Energy Systems" Special Issue, *Processes*

Grant & Personnel Committees

2020–2021 *Member*, Faculty Search Committee, Department of Mechanical Engineering (for 3 positions)
2013–2015 *Member,* Faculty Search Committee, Department of Chemical Engineering
2014 *Member*, NSERC Research Tools & Instruments Program – Internal Selection Committee
2013 *Member*, Director Search Board Member for McMaster Institute for Energy Studies

Executive Positions

2024– *Treasurer,* European Committee for the Use of Computers in Chemical Engineering Education (EURECHA)
2021– *Trustee*, Computer Aids for Chemical Engineering (CACHE) Foundation (next term ends 2027)
2016–2022 *Chair*, Systems and Control Division, Canadian Society for Chemical Engineering
2019–2022 *Director,* Computing and Systems Technology Division, American Institute of Chem. Engineers
2013–2016 *Vice-Chair*, Systems and Control Division, Canadian Society for Chemical Engineering

Journal Referee

- ACS Sustainable Chemistry & Engineering (1 review)
- ADCHEM Conference (2 reviews)
- American Institute of Chemical Engineers Journal (17 reviews)
- American Society of Mechanical Engineers Turbo Expo (2 reviews)
- Applied Energy (13 reviews)
- BioResources (1 review)
- Brazilian Journal of Chemical Engineering (1 review)
- Canadian Journal of Chemical Engineering (*not including those as editor*) (14 reviews)
- Chemical Engineering & Processing: Process Intensification (7 reviews)
- Chemical Engineering & Technology (1 review)
- Chemical Engineering Education (1 review)
- Chemical Engineering Journal (1 review)
- Chemical Engineering Research & Design (10 reviews)
- Chemical Engineering Science (4 reviews)
- Chemical Product & Process Modelling (*not including those as editor*) (2 reviews)

- Computers & Chemical Engineering (40 reviews)
- Computer Aided Chemical Engineering (34 reviews)
- Education for Chemical Engineers (2 reviews)
- Energy (20 reviews)
- Energy Advances (1 review)
- Energy & Environmental Science (2 reviews)
- Energy & Fuels (6 reviews)
- Energy Conversion & Management (18 reviews)
- Energy Policy (2 reviews)
- Environmental Progress & Sustainable Energy (1 review)
- Frontiers in Energy Research (11 reviews)
- Frontiers in Immunology (1 review)
- Frontiers in Sustainability (1 review)
- Fuel (3 reviews)
- Fuel Processing Technology (2 reviews)
- IEEE Transactions on Control Systems Technology (2 reviews)
- IFAC Conference Papers (1 review)
- Industrial & Engineering Chemistry Research (43 reviews)
- International Journal of Energy Research (2 reviews)
- International Journal of Hydrogen Energy (20 reviews)
- Journal of Advanced Manufacturing and Processing (2 reviews)
- Journal of Cleaner Production (5 reviews)
- Journal of CO_2 Utilization (1 review)
- Journal of Energy Management (1 review)
- Journal of Energy Resources and Technology (1 review)
- Journal of Global Optimization (1 review)
- Journal of Process Control (2 reviews)
- Journal of Natural Gas Science & Engineering (6 reviews)
- Latin America Applied Research (1 review)
- Optimal Control, Application, & Methods (2 reviews)
- Processes (*not including those as editor*) (2 reviews)
- Renewable Energy (1 review)
- Revista Mexicana de Ingenieria Quimica (1 review)
- Systems and Control Transactions (*not including those as editor)* (2 reviews)

External Grant Reviews

- MITACS Accelerate (4 reviews)
- MITACS Elevate (1 review)
- NSERC Canada Research Chair (2 reviews)
- NSERC-Discovery (10 reviews)
- NSERC-CRD (1 review)
- NSERC-Strategic Project Grants (3 reviews)
- NSERC-IRC (1 review)
- NSERC-ARD (1 review)
- Research Council of Norway (2 reviews)

Other Reviews

- Elsevier book proposals (3 reviews)
- McGraw-Hill book proposals (2 reviews)
- Springer book proposals (1 review)
- Wiley book proposals (3 reviews)
- External Tenure, Promotion, or Hiring Cases (5 review)
- External PhD Thesis Reviews (3 reviews)

Total Reviews: 358

AREAS OF INTEREST

Research Interests

Building the Trans-Atlantic Energy Bridge
Recent conflicts in Europe have exposed serious issues in the energy security of the Western world. Our overall goal is to develop a Trans-Atlantic Energy Bridge that will supply Europe with sustainable energy from North America. To do this, we need more sustainable forms of traditional fuels, but we can supplement this with alternative fuels, such as liquid hydrogen, biofuels, and synthetic fuels produced from wastes and nuclear energy. We are developing the future energy conversion and management systems that will be key to transforming our global energy systems for a safer and more secure world, while maintaining carbon dioxide emissions reduction goals. The research includes sustainable design and eco-technoeconomic analysis of the unit operations, systems, and overall supply chain.

Technologies for a Norwegian Hydrogen Economy
One of the hottest topics right now is the coming Hydrogen Economy. However, there are many concerns about the production, storage, and transportation of H2 fuel products. Our research looks at evaluating the most promising technologies from a triple-bottom-line of sustainability approach—what solutions have the best economic, environmental, and socio-political cases for adoption into the hydrogen economy? Which technologies, routes, and supply chains are the most promising? What are the best early-stage technologies to invest in? We answer these questions through bottom-up and top-down eco-technoeconomic analyses (eTEAs), often including the detailed design and simulation of candidate processes throughout the supply chain. Some current technologies of interest include liquid hydrogen storage, formic acid as a hydrogen carrier, and solid oxide electrolysis systems.

Sustainable Power Generation with Solid Oxide Fuel Cells
Solid oxide fuel cells (SOFC) are an amazing power generation device that not only produces electricity at high efficiency but has many unique properties that can be exploited for benefits in the larger system. For almost 15 years, the Adams team has been developing SOFC systems at various scales ranging from building and community scale (~50 kW) to bulk municipal scale (~750 MW). They can be conveniently integrated with energy storage systems, air separation systems, and CO_2 capture systems. They are also fuel flexible, and pair well with many other kinds of technologies. In our work, we focus on SOFC systems for Integrated Community Energy, Hybrid SOFC systems integrated with gas turbines SOFC systems with 100% CO_2 Capture, and Practical operation of SOFC systems and SOFC degradation management through gradual transient strategies.

Steel Refinery Carbon Footprint Reduction
n this collaborative project with ArcelorMittal Dofasco in Hamilton, we are creating processes that reduce the CO2 footprint of steel refining through process retrofits.

Avenue 1: We designed an advanced gas turbine based cycle powered by coke oven gas (COG) that can be retrofitted into place without the need for heat substitution elsewhere in the plant, resulting in the same direct CO_2 emissions but a higher power production, thus reducing net CO_2 emissions from the grid. This process has been constructed and now produces power from waste!

Avenue 2: We designed a process that captures CO_2 from Blast Furnace Gas (BFG) and converts it to methanol, aided by advanced sulfur removal strategies. This both increases the potency of BFG for balance-of-plant uses and reduces direct CO_2 emissions by “storing” carbon in methanol.

Avenue 3: We are designing systems to help displace coal with bio-char. We are focusing on valorizing the complex off-gases produced during bio-char production, noting that the mass of the off-gases is actually greater than the mass of the biochar produced.be effective after five months. In this way, the model can be used for rapid vaccine candidate screening and development.

Integrated Community Energy Systems
The energy systems of the future will be tightly integrated components that dispatch, share, and make energy on demand on increasingly localized networks. Energy harvesting from wind and solar will also play a major role. Significant energy savings and CO_2 reductions can be achieved through integration, but this requires extremely complex dynamic system management, factoring in predictions, optimization, planning, and scheduling.

Eco-technoeconomic Analysis Standards Development
Our most common industrial collaborations are in the area of technology value assessments. We typically use eco-technoeconomic analyses (eTEAs) to evaluate the economic feasibility and environmental impacts of every new systems concept we put forward. We do this in order to understand our innovations in the context of the triple bottom line of sustainability. We also apply this for early technology screening of individual pieces of equipment. For example, our collaborators may have developed a new catalyst, membrane, reactor system, bioprocess, or separation technology. We then take that and try to assess its value by analyzing how the new technology would function in the context of the larger system. Typically, we need to design and simulate a new system that would incorporate the technology, and then use eTEAs to make judgements about the value of that technology compared to other competing strategies (which can result in similar or even very different systems). Some examples are: Solvent screening for biobutanol extraction; Advanced power plants w/ CO_2 capture; Bio-butyl acrylate production; Formic acid production; Liquid H_2 systems; Seaweed as bio-feedstock; Methanol to butanol conversion via acetic acid route; Microwave-enhanced algae-derived lipid production; Waste rubber-to-SNG. As a result of his work, Prof. Adams is now leading the efforts at the International Standards Organization as the Convenor in charge of the development of ISO TS 14076, the new global standard for conducting eTEAs which is based on the research methodologies developed by Prof. Adams.

Carbon Capture, Utilization, or Sequestration (CCUS)
Although CCUS technologies are a part of most systems we study, we also research CCUS systems specifically. For example, we designed a CO2 purification system for oxyfuel combustion which outperforms other strategies, like cryogenic purification. We also develop CO2/water separation systems perfect for CCUS from solid oxide fuel cell, chemical looping, or oxyfuel power plants. We also designed nuclear-heated reactor systems that convert CO2 into syngas through high temperature mixed reforming or dry reforming.

Waste-To-Energy Systems
Waste can sometimes be a high energy resource that can be exploited for significant environmental benefits. Not only is the waste eliminated, but virgin resources (like fossil fuels) are displaced. In our group, we focus on two high-value, underutilized resources: petroleum coke and spent rubber. Through a gasification process at high temperature and pressure, the waste can be broken down into its atomic parts, which quickly recombine to for syngas, a mixture of CO, H_2, and other gases. These can then be used to produce all sorts of products, like hydrogen fuels, synthetic natural gas, dimethyl ether, alcohols, activated carbon, or synthetic diesel/gasoline. Or, it can be combined with CO_2 capture and used for clean power production. Our group uses optimal design under uncertainty approaches to determine the best candidate processes and products under future market scenarios.

Optimal Energy Storage Use: Optimization for Dynamic Operations
Energy storage is a major systems component of any municipal or neighbourhood power system, and will be even more important with the growth of renewable power systems and advanced baseload power systems like SOFCs. The Adams group has been developing models and algorithms that can create optimal system designs that factor in energy storage and market uncertainty. We have developed real time / rolling horizon optimization algorithms that re-run every few minutes that factor in both short and long term demand forecasting in order to make the best decisions on how to use our energy storage systems right now. Our research currently looks at energy storage systems such as compressed air energy storage, thermochemical energy storage (i.e. storage in high-energy chemical bonds), geothermal storage, phase change material storage, and others.

Semicontinuous Distillation Systems
Semicontinuous distillation is an advanced form of distillation that has been developed by the Adams team over the past 17 years. The premise is that a single distillation column can be used to separate chemical mixtures that normally require two or three distillation columns to achieve. This is possible by the use of a complex design coupled with a custom control system that operates the column cyclically. Product is always withdrawn from the column, although in varying degrees throughout the cycle. Unlike batch though, there are no costly startup or shut-down phases in the cycle. The end result is a compact and cost effective system that is typically economically superior to traditional multicolumn designs at intermediate flow rates, especially those typical of biofuels and pharmaceutical manufacturing. The systems can be designed small enough to fit in a shipping container for remote deployment.

Flexible Systems and Agile Chemical Manufacturing
One major research focus in the Adams group is on flexible polygeneration, in which we create chemical plants which can change their product output mix based on market conditions. In this way chemical plants can be designed that are more

robust in the face of market uncertainty and can respond to changing business or political circumstances. Our studies have shown that potentially up to an extra billion dollars in net present value can be earned in some cases by changing products along with prices and playing on the margins. To do this, we combine chemical process synthesis and design expertise, process modeling and simulation, process intensification, techno-economic analyses, and optimization under uncertainty techniques. This produces probability-based economically optimal designs and corresponding strategies for its operation depending on the market conditions of the moment. Business case analyses are used to compute the added-value of the flexibility compared to a single-product baseline. Right now, we are working on flexible systems to produce bio-aviation fuels that can handle seasonal variations in harvested biomass sources.

T-Cell Vaccine Development
Since 2019, we have been teaming up with immunologists, virologists, and pathologists to develop the next generation of vaccines called T-Cell vaccines. These promise to perform better against rapidly-mutating viruses like HIV and coronavirus. On a NIAID funded collaboration, we apply the same process dynamics principles to human and animal immune systems to aid in the development of the vaccines. We are developing a human model of how T-cells divide after a vaccine injection, which when combined with patient blood samples can be used to predict the future protective abilities of the shot.

Teaching Interests

Currently, my teaching focus is on developing the fundamental technical skills required by engineers to solve complex mathematical problems which arise in the simulation of chemical processes. In addition, I am dedicated to helping students develop the critical thinking skills necessary to identify when and how to use complex mathematical modeling to solve real-world chemical engineering problems. At the undergraduate level, my recent efforts have focused on teaching conceptual chemical process design, systems engineering, and chemical process modelling and flowsheeting. I launched a new undergraduate course in Fall 2018 on Energy Systems Engineering which covered a broad-spectrum, big-picture understanding of energy systems at the global scale. At the graduate level, my interests are primarily on advanced computer-based tools and methodologies for solving complex problems within the field of process systems engineering, including chemical process modelling, model reduction and identification, optimization, life cycle analyses, techno-economic analyses, and other techniques. I have also developed extensive course materials for the above that became the basis for my two textbooks Learn Aspen Plus in 24 Hours, published through McGraw Hill Education (the second edition was published in 2022), and Exergy Tables, also through McGraw-Hill Education in 2024.

Consulting

My consulting interests are in applications relating to energy systems, particularly systems aimed at reducing environmental footprint. I have consulted in the past with multiple companies on projects ranging from better shale gas drilling, modular chemical-plant-on-a-truck designs, energy supply chain optimization, and CO_2 capture on offshore oil platforms. Many have led to papers, conference presentations, and funding proposals for future projects. My most recent consultations are in the capital finance industry, providing technical advice on certain green energy technologies.

HONOURS

Professional

2021	David Himmelblau Award for Innovations in Computer-Based Chemical Engineering Education (from AIChE).
2019 – 2024	University Scholar (fellowship awarded to top McMaster researchers under 40)
2016 – 2022	Dean's Doctoral Mentoring Honour Roll (reached "Platinum" level since 2018)
2020	Best Paper Award – *Processes* (review category) for the paper "Modeling and Simulation of Energy Systems: A Review"
2018	Canadian Journal of Chemical Engineering Lectureship Award (the top early career chemical engineering researcher in Canada)
2018	Industrial & Engineering Chemistry Research's 2018 Class of Influential Researchers
2017	CSChE Emerging Leader of Chemical Engineering Award (a top early career researcher and leader in Canada)
2016 – 2017	Dean's Doctoral Mentoring Honour Roll
2014 – 2019	Dean's Teaching Honour Roll
2015	President's Award for Excellence in Graduate Supervision
2015 – 2018	Joseph Ip Distinguished Engineering Fellow

2015	Best Poster Award – 12th Process Systems Engineering and 25th European Symposium on Computer Aided Process Engineering Conference
2015	Outstanding Reviewer – Computers & Chemical Engineering Journal
2014	Ontario Early Researcher Award (Round 9)
2014	Foundations of Computer Aided Process Design Young Researcher Travel Grant (NSF)
2014	Top 25 Cited Paper Award, AIChE Journal
2014	Excellence in Reviewing Award – Journal of Natural Gas Science and Engineering
2013	Excellence in Reviewing Award – Computers & Chemical Engineering Journal
2013	President's Award for Excellence in Graduate Supervision Nominee
2012 – 2013	McMaster Student Union Teaching Award Nominee

Graduate

2004 – 2007	National Science Foundation Graduate Fellow
2003; 2008	Wilson Stearly Yerger Fellow

Undergraduate

1999 – 2003	Dean's Honor List
1999 – 2003	Honors College
2003	AIChE Topp Othmer National Award
2003	College of Engineering Distinguished Academic Achievement
2003	College of Engineering Distinguished Service Award
2003	Chemical Engineering Design Competition Winner
2002 – 2003	Chemical Engineering Scholarship Recipient
2002 – 2003	Computer Science Scholarship Recipient
2002 – 2003	Reflux Club Scholarship Recipient
2002 – 2003	Lifeline Club Scholarship Recipient
2002 – 2003	Health & Food Sciences Scholarship Recipient
2002 – 2003	Richard Reid Scholarship Recipient

COURSES TAUGHT

NTNU

Year	Role/Title	Course Code/Title	Term	% Taught	Enrolment	Additional Comments
2025	Course Lead	TEP 4400 – Nuclear Energy	Fall	TBD	TBD	Lead on this proposed new K-course. To be determined.
2025	Instructor	DIXIL-01 – Mathematical programming and optimization theory	Spring	100	2	Custom PhD Course. Supervising PhD individual study plans.
2025	Instructor	TEP 4215 – Energy Efficiency and Process Integration	Spring	100	50	
2024	Instructor	TEP 4215 – Energy Efficiency and Process Integration	Spring	100	55	
2024	Instructor	TEP 23 – Cryogenic Processes	Fall	5	40	3 Lectures of European Cryogenic Consortium Course
2023	Instructor	TEP 23 – Cryogenic Processes	Fall	5	40	3 Lectures of European Cryogenic Consortium Course

McMaster University

Year	Role/Title	Course Code/Title	Term	Section (C01, L01, T01)	% Taught	Enrolment	Additional Comments
2022	Instructor	ChE 3G04 - Process Model Formulation and Solution	Winter	C01, T01-T03	100	72	
2021	Instructor	ChE 4A03 -Energy Systems Engineering	Fall	C01, T01,T02	100	19	Hybrid mode
2021	Instructor	ChE 3G04 - Process Model Formulation and Solution	Winter	C01, T01-T03	100	88	Held virtually
2020	Instructor	ChE 4A03 -Energy Systems Engineering	Fall	C01, T01,T02	100	49	Held virtually
2020	Instructor	ChE 3G04 - Process Model Formulation and Solution	Winter	C01, T01-T03	100	91	
2019	Instructor	ChE 4A03 -Energy Systems Engineering	Fall	C01 T01 T02	100	55	
2018	Instructor	ChE 4A03 -Energy Systems Engineering	Fall	C01 T01 T02	100	44	
2017	Instructor	ChE 3G04 - Process Model Formulation and Solution	Winter	C01, T01-T03	100	117	
2016	Instructor	ChE 3G04 - Process Model Formulation and Solution	Winter	C01, T01-T03	100	102	
2015	Instructor	ChE 3E04 Simulation, Modeling, and Problem Solving	Fall	C01 T01 T02	100	111	
2015	Instructor	ChE 3G04 - Process Model Formulation and Solution	Winter	C01, T01-T03	100	104	
2014	Instructor	ChE 3E04 Simulation, Modeling, and Problem Solving	Fall	C01 T01 T02	100	122	
2014	Instructor	ChE 3G04 - Process Model Formulation and Solution	Winter	C01, T01-T03	100	~90	
2013	Instructor	ChE 3E04 Simulation, Modeling, and Problem Solving	Fall	C01 T01 T02	100	117	
2013	Instructor	ChE 3G04 - Process Model Formulation and Solution	Winter	C01, T01-T03	100	128	
2012	Instructor	ChE 3E04 Simulation, Modeling, and Problem Solving	Fall	C01 T01 T02	100	97	
2012	Instructor	ChE 3G04 - Process Model Formulation and Solution	Winter	C01, T01-T03	100	87	
2011	Instructor	ChE 3E04 Simulation, Modeling, and Problem Solving	Fall	C01 T01 T02	100	95	
2011	Instructor	ChE 3G04 - Process	Winter	C01, T01-T03	100	110	

		Model Formulation and Solution					
2010	Instructor	ChE 2E04 Problem Solving and Technical Communication	Fall	C01 T01 T02	50	~80	

Graduate

Year	Role/Title	Course Code/Title	Term	Section (C01, L01, T01)	% Taught	Enrolment	Duration	Additional Comments
2021	Instructor	ChE 6A03 - Energy Systems Engineering	Fall	C01 T01 T02	100	1	12 Weeks	Hybrid mode
2020	Instructor	ChE 6A03 - Energy Systems Engineering	Fall	C01 T01 T02	100	4	12 Weeks	Held virtually
2019	Instructor	ChE 6A03 - Energy Systems Engineering	Fall	C01 T01 T02	100	1	12 Weeks	
2019	Instructor	ChE 740 - Advanced PSE Tools and Methods	Fall	C01	100	3	6 Weeks	
2018	Instructor	ChE 6A03 - Energy Systems Engineering	Fall	C01 T01 T02	100	2 (inc. auditors)	12 Weeks	
2016	Instructor	ChE 740 - Advanced PSE Tools and Methods	Fall	C01	100	8	6 Weeks	
2015	Instructor	ChE 741 - Energy Systems Engineering	Fall	C01	100	~8	6 Weeks	
2014	Instructor	ChE 740 - Advanced PSE Tools and Methods	Fall	C01	100	10	6 Weeks	
2013	Instructor	ChE 741 - Energy Systems Engineering	Fall	C01	100	14	6 Weeks	
2012	Instructor	ChE 740 - Advanced PSE Tools and Methods	Fall	C01	100	~8	6 Weeks	
2012	Instructor	ChE 741 - Energy Systems Engineering	Fall	C01	100	~8	6 Weeks	

CONTRIBUTIONS TO TEACHING PRACTICE

In 2021, I received the David Himmelblau Award for Innovations in Computer-Based Chemical Engineering Education, which was in recognition of my efforts in developing educational materials in the form of textbooks, workshops, videogames, open access educational materials, and websites. These are detailed in the rest of the bullet points in rest of this section.

Leadership in Delivery of Educational Programs

- **Development of workshops for Junior Professors teaching process modelling,** American Society of Engineering Education Summer School, July 28-Aug 3, 2017, Raliegh, NC, USA, and again later in July of 2022 in Boulder, Colorado. Created and presented workshops at this long-running summer school on teaching pedagogy and education, in conjunction with Prof. Mario Eden (U Auburn), on how to teach students to use Aspen Plus software at various points throughout the chemical engineering curriculum. Taught special assessment techniques for computer-lab based testing using tiered systems, techniques for training teaching assistants to engage with students for active learning in computer labs, and how to use the undergraduate course content that I created into the course structure. 40-45 attendees each session.
- **Development of Faculty Development Academy Workshops in Graduate Mentorship and Best Practices**. Starting in 2016, I developed and led a 90 minute workshop for new (and newish) professors in the Faculty of Engineering, which I conduct about every other year (most recent 2019). The topic included are Time management, Recruiting tips and goals, Setting expectations, managing the student's first day, Defining written group policies on publications, patents, author ordering, travel, etc., Academic integrity and watching for problems, Tri-council policy on open access

publications, Patents, licenses, and revenue sharing, Group management techniques, Resolving disputes, and Other best practices.

- **Youth Outreach Workshops**, Learning Enrichment Activities Program (LEAP), McMaster University, each summer 2015-2021 (except 2020). I developed a 2 hour workshop (along with my former PhD student, Jake Nease) which teaches youth (middle and high school level) about how the Ontario electricity grid market works using a video game I created (see below). This workshop includes a short presentation of the basics of electricity generation and real-time price bidding, and then students are placed into teams for a hands-on simulation of the market using the video game. Taught yearly at the LEAP program to about 16 students at a time per session, with one to three sessions held per summer. A poster about the workshop was presented Featured at the American Society of Engineering Education Summer School and selected as best poster.

Course/Curriculum Development

- **TEP 4215; Energy Efficiency and Process Integration (NTNU).** I inherited this course in 2024. The previous instructor had taught it for at least 20 years and was in need of significant modernization. I completely revamped the course to update the material to the latest methods in heat exchanger network design, generating at least 500 new slides and 12 new problem sets, filling the course with almost all completely new content. New, modern topics were introduced such as HEN design via superstructure optimization, automated pinch design using decision trees, exergy analyses, and other cutting-edge technologies. One major modernization was to switch from a pencil-and-paper type course to one based on computer-based solution implementations, algorithms, and coding. This allowed us to tackle more concepts, harder problems, and in greater depth, in the same amount of time. The course uses a Mastery Learning approach and a Tiered Exam structure.
- **CHE 740: Advances PSE Tools and Techniques, and CHE 741: Energy Systems Engineering (McMaster)**. I developed two new graduate (quarter) courses, CHE 740 and 741, described above, the special topics delegation for our program. The courses were developed at the request of the then-Chair of Chemical Engineering (Dr. Shiping Zhu) and the then-Dean of Engineering (Dr. David Wilkinson) to create a set of courses which embraces my expertise in Energy and Sustainability. As the courses are new, there is no suitable textbook, and so all course materials and lecture notes were developed over the summer of 2012 and have been updated regularly since then. The lecture notes are rigorous, referenced, and thus serves as suitable reference material. A virtual course pack was developed consisting of textbook sections from five textbooks and approximately 50 journal articles. Due to its popularity, the CHE 741 course was converted to a 4A03 / 6A03 half-course starting Fall 2018 as a part of the Water Energy Technology stream option within chemical engineering (see below).
- **CHE 3G04: Chemical Process Modelling and Simulations. (McMaster)**. In addition, at the request of the Chair and Dean, I revamped my CHE 3G04 course to include a sustainability module of approximately three weeks in which students learn and solve problems concerning the triple-bottom-line approach to sustainability. This material was not included in the course textbook and thus required the development of a course pack of papers, technical documents, and my personal writings. It was also designed to integrate with (but not overlap with) the material contained in the graduate courses 740 and 741.
- **CHE 4A03: Energy Systems Engineering and the Water–Energy–Technology Stream (McMaster)**. I have been instrumental in helping to prepare the new "WET" stream along with former Prof. Kevin Dunn, Prof. Carlos Filipe, and Prof. David Latillupe. This is a new stream which chemical engineering undergrads will be able to take in addition to their regular courses. My primary contribution to this stream is the development of a new course, 4A03/6A03 Energy Systems Engineering. This course takes the core components of my six week graduate course on the same topic (CHE 741) and expands it to a four month course suitable for both undergraduates and graduate students. The expansion consists of lots of hands-on computer simulations of different energy systems, an open ended course project, and regularly updated information about energy systems.

Development/Evaluation of Educational Materials and Programs

- **New Course Pack**: Energy Systems Engineering. Published through the Campus Bookstore, this is a pack containing about 300 pages of carefully prepared tutorials, course project materials, and lecture materials and supplements. It is rich with information and figures, and serves as the course textbook.
- **New Textbook**: Learn Aspen Plus in 24 Hours 2nd Edition. McGraw-Hill Education (Jan 2022). 1st Edition was published Aug 2017. Using material I developed over the past seven years, I created this textbook on how to use Aspen Plus software at the request of the Computer Aids for Chemical Engineering Corporation (CAChE Corp). CAChE is a non-profit group dedicated to computer-based chemical engineering education. They recognized a huge need for a book to help students learn Aspen Plus for their chemical process design or other undergraduate chemical engineering courses, and for a book that can help the professors to understand the software well enough to teach it. They provided

$10,000 in funding to help support the development of the book over both editions. The material was peer-tested at Vanderbilt, North Carolina State, West Virginia University, Northwestern, and Auburn University by students and professors, and the feedback from this was used to modify and improve the book for its final form. The book is used in many other universities across North America, Europe, and Asia. **The 1st edition of book was the #1 New Release on Amazon.com in the chemical engineering, computer science, and petroleum engineering categories.**

- **Textbook Section on CO_2 Capture Systems**. I have written a textbook section for the textbook Sustainable Reactor Engineering (Elsevier, 2015), edited by Fan Shi. The target audience is undergraduate or graduate students in engineering, particularly for students in reactor engineering, design, or simulation courses. My textbook section covers a wide variety of methods for CO_2 capture from various energy conversion processes and how to simulate them using major commercial software packages such as Aspen Plus, Invensys Pro/II, and BRE ProMax. The book section is used as course material in my CHE 740. It is also used in courses at the University of Connecticut and others.
- **Sustainability Video Game**. I have developed a video game to teach the principles of sustainability in the power industry to students between Grade 6 and the undergraduate level. The project is supported by the youth-outreach component of an Ontario Research Fund – Research Excellence grant. I have designed the game and am supervised its development by undergraduate and master's students in software and chemical engineering. The game is played yearly in my Chem Eng 4A03/6A03 course, and the source code has been released to the public (http://psecommunity.org/LAPSE:2018.0136). The game has also been used in workshops of the Faculty of Engineering's Learning Enrichment Activities Program (LEAP) almost every summer since 2014 (even virtually in 2021) where middle and high school youth are the participants.

SUPERVISORSHIPS

Master's Students

Completed

Dates	Student's Name	Project Title	Department/Program	Supervisor	Co-Supervisor
2024—2025	Philipp Schwab	Hydrogen Economy Technologies for Norway-to-Germany Supply Chains	Technical University of Munich (Visiting researcher in my group)	Oliver Wu (TUM)	Tom Adams
2023—2024	Idun Aalstad Dyrland	Thermochemical Energy Storage: Decalin/Napthalene Systems	Energy and Process Engineering (NTNU)	Tom Adams	
2024	Aman Sant Singh Basra	Reduced dynamic models of diffusion through a catalyst particle	Chemical Engineering (NTNU)	Idelfonso Bogueira	Tom Adams
2024	Maiken Ravn Rasmussen	Blue H_2 Production on offshore gas platforms	Chemical Engineering (NTNU)	Johannes Jäschke	Tom Adams, Truls Gundersen
2023—2024	Mira Elise Litleskare	Techno-economic analysis of Green Hydrogen Production from PV plants	Electric Power Engineering (NTNU)	Basanta Raj Pokhrel	Irina Oleinikova, Tom Adams
2023—2024	Ingebjørg Slåtta	Hydrogen as fuel in aviation, concept development for airport refueling	Energy and Process Engineering (NTNU)	Tom Adams	Petter Nekså, Ida Hjorth, and Ingrid Snustad (SINTEF)
2023—2024	Matthias Maier	Dirty-plastic recycling through thermochemical routes.	Montanuniversität Leoben (Austria). Visiting student to NTNU	Tom Adams	
2021—2024	Amir Tabari	Bioformic Acid Production for Green Hydrogen Transport	Chemical Engineering (McMaster)	Tom Adams	

2021—2024	Taran Bhartt	Dynamic models for immune response to T Cell Vaccines	Chemical Engineering (McMaster)	Tom Adams	
2020 – 2023	Sakthi Prasanth Aenugula	Data-driven control of semicontinuous distillation processes	Chemical Engineering (McMaster)	Prashant Mhaskar	Tom Adams
2019 – 2022	Madison Glover	Techno-economic analysis of a biomass-gas-and-nuclear-to-liquids polygeneration plant	Chemical Engineering (McMaster)	Tom Adams	
2019 – 2020	Chenyuan "Oliver" Wu	Postcombustion CO_2 capture systems using membranes	Chemical Engineering (Technical University of Munich)	Tom Adams	
2015 - 2017	Haoxiang Lai	Techno-economic analysis of solid oxide fuel cell / gas turbine plants	Chemical Engineering (McMaster)	Tom Adams	
2015 - 2017	Tokiso Thatho	Flexible distillation systems	Chemical Engineering (McMaster)	Tom Adams	Chris Swartz
2014 – 2016	James Scott	Design, Simulation and Optimization of a Biomass-Natural-gas-and-Nuclear to Liquid Fuels and Power Process	Chemical Engineering(McMaster)	Tom Adams	
2014 – 2016	Sarah Ballinger	Mobile dimethyl-ether production	Chemical Engineering (McMaster)	Tom Adams	
2014 – 2016	Giancarlo Dalle Ave	Biofuel separation systems	Chemical Engineering (McMaster)	Tom Adams	
2013 - 2015	Kyle Lefebvre	Distributed Generation with SOFC & CAES Technologies	Chemical Engineering	Tom Adams	
2013 - 2015	Kushlani Wijesekera	Quaternary and Quintenary Semicontinuous Distillation	Chemical Engineering (McMaster)	Tom Adams	
2012 - 2014	Dominik Seepersad	Dynamic simulation and control of a hybrid gasifier/reformers system	Chemical Engineering (McMaster)	Tom Adams	
2011 -	Alicia Pascall	Semicontinuous	Chemical Engineering	Tom Adams	

2013		separation of dimethyl ether from biomass	(McMaster)		

In progress

Dates	Student's Name	Project Title	Department/Program	Supervisor	Co-Supervisor
2025—2026	Johannes Øverås	Thermochemical heat pumps	NTNU - MIENERG	Tom Adams	
2025—2026	Daniel Marthinussen	Thermochemical heat pumps	NTNU - MIENERG	Tom Adams	
2025—2026	Lisa Marie Njå	Thermochemical heat pumps	NTNU - MTPROD	Tom Adams	
2025—2026	Félix Le Bot	Thermochemical heat pumps	NTNU - EPT	Tom Adams	
2025—2026	Marco Codemo	Thermochemical heat pumps	Erasmus Program - University of Padua (Italy)	Tom Adams	
2024—2025	Wilhelm Kristoffer Løken	New search algorithms for optimal design of heat exchanger networks	Energy and Process Engineering (NTNU)	Tom Adams	
2025—2026	Synne Kjærvik Jøsok	Life cycle assessment of marine heat recovery systems	Chemical Engineering (NTNU)	Kristofer Gunnar Paso	Tom Adams

Doctoral Students

Completed

Dates	Student's Name	Project Title	Department/Program	Supervisor	Co-Supervisor
2024	Eprillia Intan Fitriasari	Power-to-Light Olefins: Production of e-Olefins for Decarbonizing the Petrochemical Industry	Pukyong National University (Korea). Visiting student to my group	J.J. Liu	Tom Adams
2021-2024	Prebantha Moodley	Water Impacts on Green Technology Choices	Chemical Engineering (University of the Witwatersrand)	Kevin Harding	Tom Adams
2017 – 2023	Haoxiang Lai	Solid Oxide Fuel Cell and Gas Turbine Integrated Systems	Chemical Engineering (McMaster)	Tom Adams	
2017 – 2023	Nina Montiero Silva	Integrated community Energy Systems	Chemical Engineering (McMaster)	Tom Adams	Jim Cotton (McMaster)
2018 - 2022	Mina Naeini	Degradation models of solid oxide fuel cells	Chemical Engineering (McMaster)	Tom Adams	Jim Cotton, (McMaster)
2017 - 2021	Avinash Shankar Rammohan Subramanian	Design of polygeneration plants under uncertainty	Energy and Process Engineering (NTNU)	Prof. Truls Gundersen, NTNU, Trondheim, Norway	Tom Adams
2016 - 2020	Ikenna Okeke	Sustainable Petcoke Conversion	Chemical Engineering (McMaster)	Tom Adams	
2016 - 2020	Lingyan Deng	Conversion of steel refinery off gases into energy products	Chemical Engineering (McMaster)	Tom Adams	
2016 - 2020	Pranav Madabhushi	Advanced control of semicontinuous systems	Chemical Engineering (McMaster)	Tom Adams	
2014 - 2018	Leila Hoseinzade	Biomass, nuclear, and gas to liquids systems	Chemical Engineering (McMaster)	Tom Adams	
2011 - 2016	Jaffer Ghouse	Integrated coal gasification and natural gas reforming for energy efficient polygeneration	Chemical Engineering (McMaster)	Tom Adams	
2012 - 2016	Chinedu Okoli	Thermochemical production of biobutanol	Chemical Engineering (McMaster)	Tom Adams	
2012 - 2016	Vida Meidanshahi	Advanced Semicontinuous Systems	Chemical Engineering (McMaster)	Tom Adams	

2011 – 2016	Jake Nease	Integrated solid oxide fuel cell and compressed air energy storage systems	Chemical Engineering (McMaster)	Tom Adams	
2011 - 2015	Nor Farida Harun	Integrated SOFC / Gas Turbine hybrids for flexible polygeneration	Chemical Engineering (McMaster)	Tom Adams	
2011 - 2015	Yaser Khojasteh Salkuyeh	Novel complex polygeneration systems with CO2 capture	Chemical Engineering (McMaster)	Tom Adams	
2008 - 2012	Yang Chen	Global dynamic optimization of static and flexible energy polygeneration systems	Chemical Engineering (MIT)	Tom Adams	Paul Barton (MIT)

In progress

Dates	**Student's Name**	**Project Title**	**Department/Program**	**Supervisor**	**Co-Supervisor**
2024—	Matthias Maier	Green Hydrogen Supply Chains	Energy and Process Engineering (NTNU)	Tom Adams	Sungho Shin (MIT)
2024—	Sudip Sharma	Electrification of chemical processes	Energy and Process Engineering (NTNU)	Tom Adams	Sungho Shin (MIT)
2025— (has not yet arrived)	MohammadSina HajiHashemi	Plastic Recycling through Gasification	Energy and Process Engineering (NTNU)	Tom Adams	
2023—	Rajalakshimi Krishnadoss	Thermochemical Heat Pumps	Energy and Process Engineering (NTNU)	Tom Adams	
2022—	Nagat Mohamed Elrefaei	Systems immunology modelling for human vaccine response	Chemical Engineering (McMaster)	Tom Adams	
2022—	Seyedeh Fatemeh Seyyedizadeh	Systems immunology modelling for human vaccine response	Chemical Engineering (McMaster)	Tom Adams	
2020 –	Jamie Rose	Off-gas valorization from biochar production	Chemical Engineering (McMaster)	Giancarlo Dalle Ave	Tom Adams

Post-Doctoral / Fellowship Students

Completed

Dates	**Student's Name**	**Project Title**	**Department/Program**	**Supervisor**	**Co-Supervisor**
2020	Dr. Lingyan Deng	Thermodynamic exergy	Chemical Engineering	Tom Adams	

		theory development	(McMaster)		

In Progress

Dates	Student's Name	Project Title	Department/Program	Supervisor	Co-Supervisor
Apr 2024 - 2027	Dr. Dmytro Konovalov	Liquid Hydrogen Technologies	EPT (NTNU)	Tom Adams	

Clinical / Professional

Dates	Student's Name	Project Title	Department/Program	Supervisor	Co-Supervisor
2019 - 2020	**Dr. Farhang Jalali Farahani** (Research Associate)	Process systems engineering research. Assistant for student supervision, funding proposals, writing, and general research	Chemical Engineering (McMaster)	Tom Adams	

Supervisory Committees (Not including my own students)

- Moksadur Raman (PhD External Examiner, Mälardalen Uni.) (2022)
- Enrique Velasquez Luna (PhD Supervisory Cmt., Chemical Eng.) (2021—)
- Ahmed Abdellah (PhD Supervisory Cmt., Chemical Eng.) (2019—)
- Brianna Harris (PhD Supervisory Cmt., Mechanical Eng.) (2018—)
- Huiyu Cao (PhD Supervisory Cmt., Chemical Eng.) (2018—2021)
- Sayyed Afzali (PhD Supervisory Cmt., Chemical Eng.) (2017—2020)
- Brendan Sullivan (MaSC Examination, Mechanical Eng.) (2020)
- Rafat Hirmiz (PhD Supervisory Cmt., Mechanical Eng.) (2015—2019)
- Masoud Kheradmandi (PhD Supervisory Cmt., Chemical Eng.) (2014—2018)
- Sarah Nangle-Smith (PhD Supervisory Cmt., Mechanical Eng.) (2013—2018)
- Falah Alhameli (PhD Defence, External, U. Waterloo) (2017)
- Hossein Sahraei (PhD Defence, External, U. Waterloo) (2017)
- Philip Tominac (PhD Supervisory Cmt., Chemical Eng.) (2014—2017)
- Brandon Corbett (PhD Supervisory Cmt., Chemical Eng.) (2013—2016)
- Maaz Mahmood (PhD Supervisory Cmt., Chemical Eng.) (2013—2016)
- Ian Washington (PhD Supervisory Cmt., Chemical Eng.) (2012—2016)
- Yanan Cao (PhD Supervisory Cmt., Chemical Eng.) (2012—2016)
- Buddhadev Das (PhD Supervisory Cmt., Chemical Eng.) (2011—2015)
- Fahad Alujhani (MaSC, Chemical Eng.) (2015)
- Patrick Carter (MaSC, Chemical Eng.) (2015)
- Han Wang (MaSC, Chemical Eng.) (2014)
- Chris Ewashuk (MaSC, Chemical Eng.) (2014)
- Kuilin Chen (MaSC, Chemical Eng.) (2014)
- Jingyan Chen (MaSC, Chemical Eng.) (2014)
- Miao Du (PhD Supervcry Cmt., Chemical Eng.) (2011—2013)
- Yaser Ghobara (MaSC, Chemical Eng.) (2013)
- Richard Mastragostino (MaSC, Chemical Eng.) (2012)
- Matt Wallace (MaSC, Chemical Eng.) (2011)
- Yanan Cao (MaSC, Chemical Eng.) (2011)
- David Gerrardi (MaSC, Chemical Eng.) (2010)
- Elliot Cameron (MaSC, Chemical Eng.) (2010)

Other: Research Assistants, Research Associates, Inquiry Student and other HQP supervised

- **Valeria González – MaSC Exchange Student** (2021)
  Universitdad de La Republica, Uruguay.
- **Kanika Tibriwall** – High School Volunteer Research Assistant (completed) (2021)
  Integrated Community Energy Systems. Literature search and building energy data collection.
- **Alisa Douglas** – Undergraduate Research Assistant and continued as 4Y04 student (2021—2022)
  Immune system response modelling. Engineering youth outreach.
  Funding: MACC
- **Tia Ghantous –** Undergraduate Research Assistant (completed) (2020—2021)
  Purification of captured CO_2 from oxyfuel plants. Learn Aspen Plus in 24 Hours book development.
  Funding: Departmental emergency COVID-19 support. Computer Aides for Chemical Engineering Corporation.
- **Mosana Abraha –** Undergraduate Research Assistant (completed) (2020)
  Immune system response modelling. Engineering youth outreach.
- **Kyle Heyblom, Alexander McKay, Tracey Savery, Erik Fréchette, & Evan Ubene** (complete) (2019—2020)
  Engineering Entrepreneurship Capstone Project Supervisor. Sulfur release detection systems.
- **Connor Marshall, Ahmed Elmoursi, Ali Mahmoud, Dan Khokhlov, & Folarin Ologunagba** (2019—2020)
  (complete)
  Engineering Entrepreneurship Capstone Project Supervisor. Biomass thermal generation systems.
- **Madison Glover** –Co-supervised with Jake Nease (completed) (2018—2019)
  4Y04 student 2018-2019 academic year. Research Associate I Summer 2019.
  Topic: Nuclear and biomass to liquids technologies
- **Leila Hoseinzade** – Research Associate II (completed) (2018)
  Topic: Nuclear and biomass to liquids technologies
  Funding: Ontario Early Researcher Award
- **Edgar Ivan Sanchez** – Summer Undergraduate Research Assistant (completed) (2017)
  Topic: semicontinuous distillation.
  Funding: MITACS
- **Matthew Lefebvre** - 4Y04 independent study (completed) (2016—2017)
  Topic: Flexible distillation systems.
- **Hao Li** –4Y04 Independent Study (completed) (2015—2016)
  Topic: Heat integrated semicontinuous systems
- **Nina Monteiro** – Summer Undergraduate Research Assistant (completed) (2015)
  Topic: Rolling Horizon Optimization for compressed air energy storage systems
  Funding: Science Without Borders (Brazil)
- **Haoxiang Lai** – Summer Undergraduate Research Assist. & 4Y04 (completed) (2014—2015)
  Topic: Water tailing retention pond treatment for the tar sands industry.
  Funding: NSERC USRA, NSERC Discovery.
- **Leila Hosenizade** – Research Associate (completed) (2014)
  Topic: Mobile gas to liquids technology
  Funding: Pioneer Energy.
- **Richard Reiche** – Independent Research Student (Eng. & Society Inquiry) (2014—2015)
  Topic: LCA based comparison on transportation fuel options
- **Syed Nabi** – Summer Undergraduate Research Assistant (completed) (2014)
  Topic: Development of youth-outreach materials concerning sustainable power generation.
  Funding: ORF-RE
- **Kalia Akkad** – Summer Undergraduate Research Assistant (completed) (2014)
  Topic: Chemical energy storage for concentrated solar thermal energy.
  Funding: NSERC USRA, NSERC Discovery.
- **Giancarlo Dalle Ave** – Undergraduate Research Assistant &4Y04 (completed) (2011—2014)
  Topic: Probability-based black-box branch-and-bound particle swarm optimization.
  Funding: MACC, Dean's Scholarship.
- **Sarah Ballinger** – Summer Undergraduate Research Assistant (completed) (2013)
  Topic: Probability-based black-box branch-and-bound particle swarm optimization.
  Funding: NSERC URE.
- **Merissa Weibe** – 4Y04 Independent Research Student (completed) (2013—2014)
  Topic: Butanol vs. E20 Ethanol: Which is more sustainable?

- **Hanna Deathe** – Independent Research (Eng. & Society Inquiry) (completed) (2013—2014)
  Topic: The Societal Challenges of Integrating Wind Energy in Canada
- **Michel Fonseca** – Summer Undergraduate Research Assistant (completed) (2013)
  Topic: Kinetic modeling of bio-butanol synthesis reactors.
  Funding: Scientists without borders (Brazilian scholarship).
- **Timothy Mastalerz** – Summer Undergraduate Research Assistant (completed) (2013)
  Topic: Development of youth-outreach materials concerning sustainable power generation.
  Funding: ORF-RE.
- **Nabihah Samsoodeen** – Summer Undergraduate Research Assistant (completed) (2013)
  Topic: Probability-based black-box branch-and-bound particle swarm optimization.
  Funding: NSERC Discovery.
- **Rafaela de Silva** – Summer Undergraduate Research Assistant (completed) (2013)
  Topic: Advanced modeling and simulation of nickel refinery processes.
  Funding: Scientists without borders (Brazilian scholarship).
- **Filip Jeremic** – Summer Undergraduate Research Assistant (completed) (2012)
  Topic: Development of youth-outreach materials concerning sustainable power generation.
  Funding: ORF-RE.
- **Zain Ajaz** – Assistant Web Developer (completed) (2012)
  Topic: Departmental Admissions Website Development
  Funding: Department of Chemical Engineering, McMaster
- **Usama Hafiz Ali** – Assistant Web Developer (completed) (2011—2012)
  Topic: MACC Website Development
  Funding: McMaster Advanced Control Consortium
- **Philip Tominac** – Summer Undergraduate Research Assistant (completed) (2011)
  Topic: Design of radiant cooler for integrated coal gasifier / natural gas reformer.
  Funding: Imperial Oil grant & MACC. Currently PhD student at McMaster University.
- **Yaser Khojestah Salkuyeh** – Research Associate (completed) (2011)
  Topic: Coal, gas, and nuclear energy to liquids
  Funding: Private donations.

LIFETIME RESEARCH FUNDING (PI UNDERLINED)

Ongoing Funding

Name(s)	Title/Purpose of Research	Years of Funding	Funding Source/Agency	Funding amount
Adams	(1) Green hydrogen economy supply chains (2) Electrification of chemical processing *PhD Salary*	2024-2027	NTNU-MIT Energy Research Programme	~9,6 MNOK
Adams	Dirty Plastic Recycling Processes *PhD Salary*	2025-2027	NTNU SØ	~4,8 MNOK
Adams	Liquid hydrogen supply Chains *Postdoc Salary*	2024-2026	Hydrogeni	~4,8 MNOK
Adams	Chemical heat pumps *PhD Salary*	2024-2026	NTNU Startup Funds	~4,8 MNOK
Ross Kedl (USA), Christopher Hunter (USA), David Christian (USA), Adams	Molecular Mechanisms of Combination Adjuvants HQP Salary	2021-2026	Grant National Institutes of Health RFA-AI-20-004,	~$5,000,000 USD (my share is about $240,000 CAD)
Adams	ISO standard for eco-techno-	2020-2025	Award	$40,000

	economic analyses of energy systems *Travel/hosting costs of participation in ISO meetings*		Standards Council of Canada	
Adams	Advanced Process Systems Engineering Methods and Applications. HQP Salary, equipment, general research funds	2019—2025	Award University Scholar	$60,000
Adams	Combining petcoke gasification and natural gas reforming for oil sands waste-to-energy HQP Salary	2016—2025 (extended	Grant NSERC Discovery	$266,000

Funding Completed

Name(s)	**Title/Purpose of Research**	**Years of Funding**	**Funding Source/Agency**	**Funding amount**
Swartz, Adams, Khan, Malaec, Mhaskar,	Enhancing competitiveness of industrial process operations through responsive, flexible and cleaner production - keeping industry in Ontario HQP Salary	2018-2023	Grant Ontario Research Fund – Research Excellence	$2,727,368
Adams	Miscellaneous funds for undergraduate summer researchers, ongoing HQP Salary	2011—	Grant McMaster Advanced Controls Consortium	About $30,000
Adams	Learn Aspen Plus in 24 Hours 2nd Edition Textbook develop.	2020-2021	Grant CAChE Corporation	$5,000
Adams	Trans-Canada and Trans-Atlantic Distribution of Bio-Hydrogen using Formic Acid as the Carrier. HQP Salary	2021-2022	Alliance Grants - Germany - hydrogen technologies	$50,000
Adams	MDPI Travel Grants Conference Travel	2020	Grant Processes Travel Grants	$1400 (1000 CHF)
Adams	IDAES Workshop Graduate education workshop	2019-2020	Award Fields CQAM	$785
Adams	Dynamic Technoeconomic System Analysis for Hybrids to Evaluate the Value of Hyper Control Strategies	2017—2020	Contract US Department of Energy	$51,568 ($40,000 USD)

	HQP Salary			
Cotton, Adams, Bucking, Emadi, Habibi, Lightstone, Mahalec, McDermid, Narimani, Preston.	Integrated Community Energy Harvesting System (ICE-Harvest) HQP Salary	2017—2020	Grant NSERC-OCE Joint TargetGHG Program plus Industrial Cash	$2,025,000
Adams	Learn Aspen Plus in 24 Hours Textbook develop.	2017	Grant CAChE Corporation	$5,000
Cotton, Adams, Coley, Kleiman, Dunn, McDermid, Zheng, Sirouspour, Hoyt, Habibi, Tullis, Emadi, Lightstone, Schofield, and Preston	Research facility for integrated building energy harvesting system Equipment	2015—2020	Grant Canada Foundation for Innovation / MRI Match	$1,991,740
Adams	Foundations of Computer Aided Process Design Young Researcher Travel Grant Travel	2014	Grant US National Science Foundation	$600
Adams	Optimal flare gas-to-butanol network for Alberta HQP Salary	2014—2015	Grant Pioneer Energy	$20,000
Adams	Sustainable Synthetic Fuels: Combining Biomass, Natural Gas, and Nuclear Energy to Produce Diesel and Gasoline with Reduced CO_2 Emissions HQP Salary	2014—2019	Award Ontario MRI—Early Researcher Award	$150,000
Adams	Combining natural gas reforming with coal/biomass gasification for efficient FT synthesis HQP Salary	2011—2014	Grant Imperial Oil - University Research Award	$75,000
Adams	Combining natural gas reforming with coal/biomass gasification for efficient FT synthesis HQP Salary	2011—2014	Grant NSERC CRD	$66,964
Swartz, Adams, Mahalec, Marlin, Mhaskar	Graduate and undergraduate student salary support HQP Salary	2012—2016	Grant Ontario Research Fund – Research Excellence	$1,015,570
Adams	Distributed biofuels production using semicontinuous chemical processes	2011—2016	Grant NSERC Discovery	$105,000

	HQP Salary			
Adams	Distributed biofuels production using semicontinuous chemical processes HQP Salary	2012—2013	Grant Science and Engineering Review Board (SERB)	$19,000
Adams	Novel processes for sustainable energy conversion and polygeneration HQP Salary	2011	Donation Harold Rosen	$4,850
Adams	N/A Misc.	2010	Startup Faculty of Engineering	$30,000

Canadian Government Merit Scholarship Funding Received by my Graduate Students

Academic Year	Prior to 2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	Total
International OGS	$15k									$15k
Domestic OGS-M	$30k		$60k	$17.5k						$107.5k
Domestic OGS-D	$20k	$10k			$15k	$21k				$66k
Domestic OGF-D									$12k	$12k
NSERC-CGS M	$17.5k	$70k								$87.5k
NSERC-CGS D							$21k	$12k	$35k	$68k
NSERC-Vanier		$45k	$45k							$90k
Ontario Trillium	$60k	$30k	$30k							$120k
Malaysian Scholars	$90k	$30k	$15k							$135k
Shell Canada	$4k		$3k							$7k
Dean's Excellence		$20k	$20k							$40k
Internat'l Excell.		$16k	$10k	$10k	$10k					$46k
					:				TOTAL	**$794,000**

LIFETIME PUBLICATIONS

Roles Explanation: Students/HQP that I supervised at the time of the work are in bold. Collaborators are in italics. Corresponding author is * for multi-author publications. Author order is listed in as in the publication. The usual role is for the Student/HQP to be first author as primary researcher and for me to be second author as the supervisor. In other situations, my role is briefly described.

Open Access Explanation: References to LAPSE are links to open-access submissions in the Living Archive for Process Systems Engineering. Example: the paper with LAPSE ID 2021.0525 can be found at PSEcommunity.org/LAPSE:2021.0525 in satisfaction of Canadian Tri-Council Open Access Requirements.

Books

1. *Deng L*, Adams TA II*, *Gundersen T*. Exergy Tables. McGraw-Hill, 312pp. ISBN 978-1-26471-572-5 (2023).
2. Adams TA II. Learn Aspen Plus in 24 Hours 2nd Edition. McGraw-Hill, 256pp. ISBN 978-1-264-26665-4 (2022) [Now McGraw-Hill Top 50 seller!]
3. Adams TA II (ed). CSChE Systems and Control Transactions Vol 1. PSE Press, 51 pp. ISBN 978-1-7779403-0-0 (2021)
4. Adams TA II (ed). Modeling and Simulation of Energy Systems. MDPI, 496 pp. ISBN 978-3-03921-518-8 (2019)
5. Adams TA II. Learn Aspen Plus in 24 Hours. McGraw-Hill, 208pp. ISBN 978-1-260-11645-8 (2017)

Contributions to Books

1. Adams TA II*, **Salkuyeh Khojestah Y, Nease J**. "Processes and Simulations for Solvent-based CO_2 Capture and Syngas Cleanup", in Reactor and Process Design in Sustainable Energy Technology, Chapter 6 (p163-231), ed: Fan Shi. *Elsevier: Amsterdam*, ISBN 978-0-444-59566-9 (2014). [Role: Primary author (~50%) with contributions from students]
2. *Nathanson RB*, Adams TA II**,** *Seider WD*,* "Aspen Icarus Process Evaluator (IPE): Equipment Sizing and Costing Using Aspen Plus to Initiate Evaluation", May 2008; online textbook section in Product & Process Design Principles, by Seider WD, Seider JD, Lewin DR, and Widago S, 3rd Ed, John Wiley (2008). [Role: was a grad student, wrote about 20% of the text].

Peer Reviewed

Journal Articles

1. **Rose J**, *Dalle Ave G*, Adams TA. Design of biocarbon by-product utilization processes for ironmaking and steel making." *Industrial and Engineering Chemistry Research* 64:15377-15389 (2025). https://doi.org/10.1021/acs.iecr.5c01876
2. **Schwab P**, Adams TA II. Meta-Study and environmental techno-economic assessments (eTEAs) of blue hydrogen processes. *Comput Chem Eng,* 200:109154 (2025). https://doi.org/10.1016/j.compchemeng.2025.109154
3. **Krishnadoss R, Dyrland IA**, Adams TA II. Design and optimization of alcohol-ketone-hydrogen chemical heat pumps. *Comput Chem Eng* 199:109158 (2025). https://doi.org/10.1016/j.compchemeng.2025.109158
4. *Tamburini F**, *Cozzani V*, *Paltrinieri N*, Adams TA II. Weighing risks against GHG reduction benefit in emerging green technologies. *Canadian J Chem Eng* (2025). https://doi.org/10.1002/cjce.25692 [Role: Collaborator].
5. **Meier M**, *Schulze-Netzer C*, Adams TA II*. Chemical recycling of plastic waste via production of ethylene from gasification syngas. *Ind Eng Chem Res* 64:1:575-589 (2025). [Role: Supervisor of Maier]. https://doi.org/10.1021/acs.iecr.4c03441.
6. **Elrhoul D***, Naveiro M, Gómez MR, Adams TA II. Thermo-economic analysis of green hydrogen production onboard LNG carriers through solid oxide electrolysis powered by organic Rankine cycles. *Applied Energy* 380:124996 (2025). [Role: External co-supervisor of Elrhoul, a PhD student at A Coruña University, during her visit to my lab]. https://doi.org/10.1016/j.apenergy.2024.124996
7. **Moodley P**, *Harding K*, Adams TA II*. Assessing the undesired impacts on water sustainability from climate change mitigation technologies in fossil-based power generation. *Environmental Science: Water Research and Technology* 10:2509-2532 (2024). [Role: External co-supervisor of Moodley, PhD student at University of the Witwatersrand] https://doi.org/10.1039/D4EW00122B. Open access post-print will appear after embargo here: LAPSE:2024.1646
8. *Ibrić N**, Adams TA II, *Gundersen T.* Exergo-economic optimization of heat-integrated water networks. *Thermal Sci Eng Prog* 55:102883 (2024) [Role: Collaborator] https://doi.org/10.1016/j.tsep.2024.102883
9. **Monteiro NS**, Adams TA II*, *Cotton JS.* Design and eco-techno-economic analysis of a natural gas cogeneration energy management center (EMC) with short-term thermal storage. *Cleaner Energy Systems* 8:100118 (2024). [Role: Primary supervisor of student who wrote the work, met weekly, and edited text. Cotton was co-supervisor.] 10.1016/j.cles.2024.100118
10. **Fajimi L**, Adams TA II, *Oboirien BO*. Waste Tyre Gasification Processes: A Bibliometric Analysis and Comprehensive Review. *Fuel* 368:131684 (2024) [Role: External co-supervisor of L. Fajimi. Edited manuscript.]
11. Adams TA II*, *Gundersen TS*. Thermo-mechanical exergy of a substance below environmental pressure. *Industrial and Engineering Chemistry Research* 63:14:6286-6296 (2024). https://doi.org/10.1021/acs.iecr.4c00007. [Role: Primary author.]
12. **Aenugula SP**, *Chandrasekar A*, Adams TA II, *Mhaskar P**. Minimizing Total Annualized Cost per tonne of feed processed of a Semicontinuous Distillation Process utilizing Data-driven Model Predictive Control. *Comput Chem Eng,* 186:108711 (2024) DOI: 10.1016/j.compchemeng.2024.108711. [Role: Co-supervisor of Aenugula]
13. **Lai H**, Adams TA II*. Eco-technoeconomic analyses of NG-powered SOFC/GT hybrid plants accounting for long-term degradation effects via pseudo-steady-state model simulations. *J Electrical Energy Conv Store* 21:021004 (2024). doi:10.1115/1.4062711
14. **Subramanian ASR**, *Kannan R, Holtorf F*, Adams TA II, *Gundersen T*, *Barton PI**. Optimization under uncertainty of a hybrid waste tire and natural gas feedstock flexible polygeneration system using a decomposition algorithm. *Energy* 284:129222 (2023). https://doi.org/10.1016/j.energy.2023.129222 [Role: Co-supervisor of student who wrote the work. Met weekly with student throughout project, and edited text. Gundersen and Barton were also co-supervisors on this paper].
15. *Ibrić N**, Adams TA II, *Gundersen T*. Synthesis of Heat-Integrated Water Networks with exergo-economic criteria. *Chem Eng Trans* 103:805-810 (2023). doi:10.3303/CET23103135

16. **Lai H**, Adams TA II*. Life cycle analyses of SOFC/gas turbine hybrid power plants accounting for long-term degradation effects. *J Cleaner Production,* 412:137411 (2023). Open access. doi:10.1016/j.jclepro.2023.137411
17. Adams TA II*. How Canada can supply Europe with critical energy by creating a Trans-Atlantic Energy Bridge. *Canadian J Chem Eng* 101:1729-1742 (2023). **Editor's choice award. Top Downloaded Articles List 2023.** https://doi.org/10.1002/cjce.24787 [open access]
18. *Christian DA*, Adams TA II**,** *Smith TA*, *Shallberg LA*, *Theisen DJ*, *Phan AT*, **Abraha M**, *Perry J*, *Ruthel G*, *Clark JT*, *Murphy KM*, *Kedl, RM*, *Hunter CA*. cDC1 coordinate innate and adaptive responses in the omentum required for T cell priming and memory. *Science Immunology* 7, eabq7432 (2022). Open Access Preprint [bioRxiv]: [Role: I developed the mathematical model which explains the data collected by the other authors. I wrote 25% of the text. I supervised Mosana Abraha who also contributed to the work.]
19. **Naeini M**, *Cotton JS*, Adams TA II*. An Eco-Technoeconomic Analysis of Hydrogen Production Using Solid Oxide Electrolysis Cells that Accounts for Long-Term Degradation. *Frontiers in Energy Research,* 10:1015465 (2022). [Role: Primary supervisor of student who wrote the work, met weekly, and edited text. Cotton was co-supervisor.] https://doi.org/10.3389/fenrg.2022.1015465 [open access]
20. **Glover M, Hoseinzadeh L,** Adams TA II*. Biomass-gas-and-nuclear-to-liquids (BGNTL) Polygeneration Process Part II: Techno-Economic Analysis. *Canadian J Chem Eng,* 100:2546-2556 (2022). https://doi.org/10.1002/cjce.24479
21. **Okeke IJ**, **Ghantous T**, Adams TA II***.** Design Strategies for Oxy-Combustion Power Plant Captured CO_2 Purification. *Chemical Product and Process Modelling* (2022), aop. https://doi.org/10.1515/cppm-2021-0041. LAPSE:2021:0570 [Role: Primary supervisor of Ghantous and Okeke during most of the work. Okeke finished some of the work after graduation.]
22. **Subramanian ASR**, *Gundersen TS, Barton PIB*, Adams TA II*. Global optimization of a hybrid waste tire and natural gas feedstock polygeneration system. *Energy* 250:123722 (2022). [Role: I co-supervised Subramanian with Prof. Gundersen. Prof. Barton provided additional mentorship to Subramanian as part of collaboration.]
23. **Naeini M**, *Cotton JS*, Adams TA II***.** Dynamic Lifecycle Assessment of Solid Oxide Fuel Cell System Considering Long-Term Degradation Effects. *Energy Conversion and Management* 255:115336 (2022). [Role: Primary supervisor of student who wrote the work, met weekly, and edited text. Cotton was co-supervisor.]
24. **Naeini M**, *Cotton JS*, Adams TA II***.** Economically optimal Sizing and Operation Strategy for Solid Oxide Fuel Cells to Effectively Manage Long Term Degradation. *Industrial & Engineering Chemistry Research* 60:47:17128-17142 (2021). [Role: Primary supervisor of student who wrote the work, met weekly, and edited text. Cotton was co-supervisor.]. DOI: 10.1021/acs.iecr.1c03146
25. **Okeke IJ,** Adams TA II***.** Advanced Petroleum Coke Oxy-Combustion Power Generation with Carbon Capture and Sequestration: Part I: Design and Techno-Economic Analysis. *Canadian J Chem Eng* 99:S323-S339 (2021).
26. **Okeke IJ,** Adams TA II***.** Advanced Petroleum Coke Oxy-Combustion Power Generation with Carbon Capture and Sequestration: Part II: Environmental Assessment and Cost of CO_2 Avoided. *Canadian J Chem Eng* 99:S340-S355 (2021).
27. *Fajimi LU*, *Oboirien BO**, Adams TA II**.** Simulation studies on the co-production of syngas and activated carbon from waste tyre gasification process using different reactor configurations. *Energy Convers & Management X* 11:1001005 (2021) [Role: Prof. Oboirien is supervisor of Fajimi who wrote work. I provided advice and made major text edits]. Open Access: https://doi.org/10.1016/j.ecmx.2021.100105
28. **Naeini M, Lai H**, *Cotton JS*, Adams TA II*. A Mathematical Model for Prediction of Long-Term Degradation Effects in Solid Oxide Fuel Cells. *Ind & Eng Chem Res* 60:1326-1340 (2021). [Role: Primary supervisor of student who wrote the work, met weekly, and edited text. Cotton was co-supervisor.] LAPSE:2021.0525
29. **Subramanian A**, *Gundersen T*, Adams TA II*. Optimal design and operation of a waste tire feedstock polygeneration system. *Energy* 223:119990 (2021). [Role: I was co-supervisor of student who wrote the work, met weekly and edited text. Gundersen was primary supervisor.] LAPSE:2020.1034
30. **Lai H**, *Harun NF, Tucker D*, Adams TA II*. Design and Eco-techno-economic Analyses of SOFC/GT Hybrid Systems Accounting for Long-term Degradation Effects. *Int J Hydrogen Energy* 46:5612-5629 (2021). [Role: Primary supervisor of student who wrote work. Harun and Tucker are colleagues at US DOE who assisted with student's experimental work conducted in their facility]. LAPSE:2020.0904
31. **Deng L**, Adams TA II*. Comparison of steel manufacturing off-gas utilization methods via life cycle analysis. *J Cleaner Prod* 277:123568 (2020). LAPSE:2020.0267
32. **Madabhushi PB,** Adams TA II*. On the application of shooting method for determining semicontinuous distillation limit cycles. *Chem Eng Res Des* 160:370-382 (2020). LAPSE:2020.0925
33. **Subramanian ASR,** *Gundersen T,* Adams TA II*. Technoeconomic analysis of a waste tire to liquefied synthetic natural gas (SNG) energy system. *Energy* 205:117830 (2020). [Role: I was co-supervisor of student who wrote the work, meeting weekly and editing text. Gundersen was primary supervisor.] LAPSE:2019.1261

34. **Okeke I**, Adams TA II*. Comprehensive environmental impact assessment of a combined petroleum coke and natural gas to Fischer-Tropsch diesel process. *Int J Greenhouse Gas Control* 96*:*103012 (2020). LAPSE:2020.0305
35. **Deng L**, Adams TA II*. Techno-economic Analysis of Coke Oven Gas and Blast Furnace Gas to Methanol Process with Carbon Dioxide Capture and Utilization. *Energy Conversion and Management* 204:112315 (2020). LAPSE:2020.0072
36. **Madabhushi P**, Adams TA II*. Finding better limit cycles of semicontinuous distillation. Part 1: Back-stepping design methodology. *Ind Eng Chem Res* 58:36:16654-16666 (2019). LAPSE:2019.0423
37. **Madabhushi P**, Adams TA II*. Finding better limit cycles of semicontinuous distillation. Part 2: Extended back-stepping design methodology. *Ind Eng Chem Res* 58:36:16667-16675 (2019). LAPSE:2019.0423
38. *Martín M**, Adams TA II. Challenges and Future directions in process and product synthesis and design. *Comput Chem Eng*, 128:421-436 (2019). [Role: Prof. Martín and I each wrote about half of this perspective paper].
39. **Nease J,** Adams TA II*. BLACKOUT: Teaching Students about the Power Grid through Experiential Workshops and Video Gaming. *Chemical Engineering Education* 53:3:167-177 (2019).
40. **Hoseinzade L**, Adams TA II*. Techno-economic and environmental analyses of a novel, sustainable process for production of liquid fuels using helium heat transfer. *Applied Energy* 236:850-866 (2019). Corrigendum to this article published in *Applied Energy* 260:114165 (2020). LAPSE:2019.0609
41. **Subramanian ASR,** *Truls Gundersen*, Adams TA II*. Modeling and simulation of energy systems: A Review. *Processes* 6:12:238 (2018). **Awarded 2020's Best Review Paper by Journal.** [Role: I was co-supervisor of student who wrote the work, met weekly and edited text. Gundersen was primary supervisor.] Open access on publisher website
42. **Madabhushi P,** Adams TA II*. Side stream control in semicontinuous distillation. *Comput Chem Eng* 119:450-464 (2018). LAPSE:2018.0738
43. **Nezammahalleh H***, Adams TA II**,** *Ghanati F, Nosrati M, Shojaosadati SA*. Techno-economic and environmental assessment of conceptually designed in situ lipid extraction process from microalgae. *Algal Res* 35:547-560 (2018) [Role: I supervised Nezammahalleh weekly who was a visiting PHD student in my lab. Ghanati, Nosrati, and Shoiaosadati were student's home supervisors who played a minor role].
44. **Deng L**, Adams TA II*. Optimization of coke oven gas desulfurization and combined cycle power plant electricity generation. *Ind Eng Chem Res,* 57:38:12816-12828 (2018). LAPSE:2018.0443
45. **Okeke IJ**, Adams TA II*. Combining petroleum coke and natural gas for efficient liquid fuels production. *Energy* 163:426-442 (2018). LAPSE:2018.0439
46. **Scott JA**, Adams TA II***.** Biomass-gas-and-nuclear-to-liquids (BGNTL) processes Part I: Model development and simulation. *Canadian J Chem Eng* 96:1853-1871 (2018). LAPSE:2018.0393. **Canadian J Chem Eng Lectureship Award Publication**
47. **Hoseinzade L**, Adams TA II*. Dynamic modeling of integrated mixed reforming and carbonless heat systems. *Ind Eng Chem Res* 57:17:6013-6023 (2018). LAPSE:2018.0127 **Most Influential Researchers of 2018 Award Publication**
48. Adams TA II*, **Thatho T**, **Le Feuvre MC**, *Swartz CLE*. The optimal design of a distillation system for the flexible polygeneration of dimethyl ether and methanol under uncertainty. *Frontiers Energy Res* 6:41 (2018). [Role: wrote the paper using results of Thatho and Le Feuvre. Supervised Le Feuvre. Co-supervised Thatho with Prof. Swartz.] LAPSE:2018.0128
49. **Lai H,** Adams TA II*. A direct steam generation concentrated solar power plant with decalin/naphthalene thermochemical storage system. *Chem Eng Res Des* 131:584-599 (2018). LAPSE: 2018.0131
50. **Dalle Ave G,** Adams TA II*. Techno-economic comparison of acetone-butanol-ethanol fermentation using various extractants. *Energy Conversion Manage* 156:288-300 (2018). LAPSE:2018.0132
51. **Hoseinzade L**, Adams TA II*. Modeling and simulation of an integrated steam reforming and nuclear heat system. *Int J Hydrogen Energy*, 42:25048-25062 (2017). LAPSE:2018.0133
52. Adams TA II*, **Hoseinzade L, Madabhushi PM, Okeke IJ**. Comparison of CO_2 capture approaches for fossil-based power generation: Review and meta-study. *Processes* 5:44 (2017). [Role: Wrote paper and designed research. Students performed data collection and some analysis]. LAPSE:2018.0134
53. **Ballinger S,** Adams TA II*. Space-constrained purification of dimethyl ether through process intensification using semicontinuous dividing wall columns. *Comput Chem Eng* 105:197-211 (2017). LAPSE:2018.0135
54. **Ghouse J, Seepersad D**, Adams TA II*. Dynamic analysis and open-loop start-up of an integrated radiant syngas cooler and steam methane reformer. *AIChE J 6*3:1602-1619 (2017).
55. *Harun NF**, *Tucker D*, Adams TA II. Open Loop and Closed Loop Performance of Solid Oxide Fuel Cell Turbine Hybrid Systems during Fuel Composition Changes. *J Eng Gas Turbines Power* 139:061702 (2017) [Role: Collaborator, playing advisory role but did not write paper. Harun performed this work independently as US DOE employee under supervision of Tucker.].

56. **Okoli C,** Adams TA II*. Design and assessment of advanced thermochemical plants for second generation biobutanol production considering mixed alcohols synthesis kinetics. *Ind Eng Chem Res* 56:1543-1558 (2017).
57. **Meidanshahi V**, *Corbett B*, Adams TA II*, *Mhaskar P*. Subspace Model Identification and Model Predictive Control Based Cost Analysis of a Semicontinuous Distillation Process. *Comput Chem Eng* 103:39-57 (2017) [*Role*: Was supervisor of Meidanshahi in normal context. Prof. Mhaskar and his student Corbett collaborated and provided valuable ideas and insights.]
58. *Harun NF**, *Tucker D,* Adams TA II. Technical challenges in operating an SOFC in fuel flexible gas turbine hybrid systems: Coupling effects of cathode air mass flow. A*pplied Energy* 190:852-867 (2017). [Role: Collaborator in advisory role. Harun performed this work independently as US DOE employee under supervision of Tucker.]. LAPSE:2018.0140.
59. **Hoseinzade L**, Adams TA II*. Supply chain optimization of flare-gas-to-butanol processes in Alberta. *Canadian J Chem Eng* 94:2336-2354 (2016).
60. **Nease J, Monteiro N**, Adams TA II*. Application of a two-level rolling horizon optimization scheme to a solid-oxide fuel cell and compressed air energy storage plant for the optimal supply of zero-emissions peaking power. *Comp Chem Eng* 94:235-249 (2016).
61. **Nezammahalleh H,** *Ghanati F*, Adams TA II, *Nosrati M, Shojaosadati SA**. Effect of moderate static electric field on the growth and metabolism of Chlorella vulgaris. *Bioresource Technol* 218:700-711 (2016) [Role: I supervised Nezammahalleh weekly who was a visiting PHD student in my lab. Ghanati, Nosrati, and Shoiaosadati were student's home supervisors who contributed about 25% in total].
62. **Okoli C**, Adams TA II*, *Brigljević B***,** *Liu JJ***.** Design and economic analysis of a macroalgae-to-butanol process via a thermochemical route. *Energy Convers Manage* 123:410-422 (2016). [Role: Was supervisor of Okoli in normal context. Prof. Liu and his student Brigljević collaborated and provided valuable ideas and insights.]
63. **Meidanshahi V**, Adams TA II*. Integrated Design and Control of Semicontinuous Distillation Systems Utilizing Mixed Integer Dynamic Optimization. *Comp Chem Eng* 89:172-183 (2016).
64. **Harun NF,** *Tucker D*, Adams TA II*. Impact of Fuel Composition Transients on SOFC Performance in Gas Turbine Hybrid Systems. *Applied Energy* 164:446-461 (2016). [Role: Primary supervisor of Harun and met weekly during research. Tucker is US DOE employee who supervised Harun's experiments she conducted in his lab].
65. **Wijesekera KN,** Adams TA II*. Semicontinuous distillation of quintenary and N-ary mixtures. *Ind Eng Chem Res* 54:12877-12890 (2015)
66. Adams TA II*, **Ghouse JH**. Polygeneration of fuels and chemicals. *Current Opinion in Chemical Engineering,* 10:87-93 (2015). [Role: wrote the paper with data collection and assistance from Ghouse].
67. **Khojestah Salkuyeh Y**, Adams TA II*. Integrated petroleum coke and natural gas polygeneration process with zero carbon emissions. *Energy* 91:479-490 (2015).
68. **Seepersad D, Ghouse JH,** Adams TA II*. Dynamic Simulation and Control of an Integrated Gasifier/Reformer System. Part I: Agile Case Design and Control. *Chem Eng Res Des,* 100:481-496 (2015).
69. **Seepersad D, Ghouse JH,** Adams TA II*. Dynamic Simulation and Control of an Integrated Gasifier/Reformer System. Part II: Discrete and Model Predictive Control. *Chem Eng Res Des,* 100:497-508 (2015).
70. Adams TA, II*. Future opportunities and challenges in the design of new energy conversion systems. *Comp Chem Eng,* 81:94-103 (2015).
71. **Okoli C,** Adams TA II*. Design of Dividing Wall Columns for butanol recovery in a thermochemical biomass to butanol process. *Chem Eng Processing: Process Intensification,* 95:302-316 (2015)
72. **Ghouse JH, Seepersad D,** Adams TA II*. Modelling, simulation, and design of an integrated radiant syngas cooler and steam methane reformer for use with coal gasification. *Fuel Processing Technology,* 138:378-389 (2015)
73. **Nease J,** Adams TA II*. Life Cycle Analyses of Bulk-Scale Solid Oxide Fuel Cell Power Plants and Comparisons to the Natural Gas Combined Cycle. *Canadian J Chem Eng,* 93:1349-1363 (2015).
74. **Wijesekera KN,** Adams TA II*. Semicontinuous distillation of quaternary mixtures using one distillation column and two integrated middle vessels. *Ind Eng Chem Res* 54:5294-5306 (2015).
75. **Khojestah Salkuyeh Y**, Adams TA II*. Co-production of olefins, fuels, and electricity from conventional pipeline gas and shale gas with near-zero CO_2 emissions; Part I: Process development and technical performance. *Energies,* 8*:*3739-3761 (2015)
76. **Khojestah Salkuyeh Y**, Adams TA II*. Co-production of olefins, fuels, and electricity from conventional pipeline gas and shale gas with near-zero CO_2 emissions; Part II: Economic performance. *Energies,* 8*:*3762-3774 (2015)
77. **Nease J**, Adams TA II*. Comparative Life Cycle Analyses of Bulk-Scale Coal-Fueled Solid Oxide Fuel Cell Power Plants. *Applied Energy,* 150:161-175 (2015).
78. **Khojestah Salkuyeh Y**, Adams TA II*. A novel polygeneration process to co-produce ethylene and electricity from shale gas with zero CO_2 emissions via methane oxidative coupling. *Energy Convers Manage* 92:406-420 (2015)

79. **Meidanshahi V**, Adams TA II***.** A new process for ternary separations: Semicontinuous distillation without a middle vessel. *Chem Eng Res Design,* 93:100-112 (2015).
80. **Harun NF**, *Tucker D*, Adams TA II***.** Fuel composition transients in fuel cell turbine hybrid for polygeneration applications. *J Fuel Cell Science Technol, 11:061001* (2014). [Role: Primary supervisor of Harun and met weekly during research. Tucker is US DOE employee who supervised Harun's experiments she conducted in his lab].
81. **Khojestah Salkuyeh Y**, Adams TA II***.** A new power, methanol, and DME polygeneration process using integrated chemical looping systems. *Energy Convers Manage* 88:411-425 (2014).
82. **Okoli C**, Adams TA II*. Design and economic analysis of a thermochemical lignocellulosic biomass to butanol process. *Ind Eng Chem Res,* 53:11427-11441 (2014).
83. **Nease J**, Adams TA II*. Application of rolling-Horizon Optimization to an Integrated Solid-Oxide Fuel Cell and Compressed Air Energy Storage Plant for Zero-Emissions Peaking Power Under Uncertainty. C*omp Chem Eng* 64:203-219 (2014)
84. **Pascall A**, Adams TA II***.** Semicontinuous separation of bio-dimethyl ether from a vapor-liquid mixture. *Ind Eng Chem Res,* 53:5081-5102 (2014).
85. **Nease J**, Adams TA II*. Coal-fuelled systems for peaking power with 100% CO2 capture through integration of solid oxide fuel cells with compressed air energy storage. *J Power Sources*, 251:92-107 (2014).
86. **Niesbach A***, Adams TA II, *Lutze P*. Semicontinuous distillation of impurities for the production of butyl acrylate from bio-butanol and bio-acrylic acid. *Chem Eng Processing: Process Intensification,* 74:165-177 (2013) **[**Role: Supervised Niesbach weekly who was visiting PhD student of Prof. Lutze in my lab. Prof. Lutze's involvement was limited.]
87. **Khojestah Salkuyeh Y**, Adams TA II*. Combining coal gasification, natural gas reforming, and external carbonless heat for efficient production of gasoline and diesel with CO_2 capture and sequestration. *Energy Convers Manage,* 74:492-504 (2013)
88. **Ghouse J**, Adams TA II*. A multi-scale dynamic two-dimensional heterogeneous model for catalytic steam methane reforming reactors. *Int J Hydrogen Energy,* 38:9984-9999 (2013)
89. **Pascall A**, Adams TA II***.** Semicontinuous separation of dimethyl ether (DME) produced from biomass. *Canadian J Chem Eng* 91:6:1001-1021 (2013)
90. **Nease J**, Adams TA II*. Systems for peaking power with 100% CO_2 capture by integration of solid oxide fuel cells with compressed air energy storage. *J Power Sources,* 228:281-293 (2013)
91. Adams TA II*, **Nease J**, *Tucker D*, *Barton PI*. Energy conversion with solid oxide fuel cell systems: a review of concepts and outlooks for the short and long term. *Ind Eng Chem Res,* 52:3089-3111 (2013). [Role: Wrote about 75% of the preview paper with data collection and assistance from my student Nease. Tucker and Barton wrote the remaining 25%].
92. Adams TA II***, Pascall A**. Semicontinuous thermal separation systems. *Chem Eng Techol,* 35:1153-1170 (2012). [Role: wrote the paper with literature review and assistance from student Pascall].
93. **Chen Y**, *Li X*, Adams TA II, *Barton PI**. Decomposition strategy for the global optimization of flexible energy polygeneration systems. *AIChE J,* 58:10:3080-3095 (2012). [Role: Co-supervisory role for Chen who was student of Prof. Barton (I was postdoc). Li provided additional insights.]
94. Adams TA II**,** *Barton PI**. Combining coal gasification, natural gas reforming, and solid oxide fuel cells for efficient polygeneration with CO_2 capture and sequestration. *Fuel Process Technol*, 92:2105-2115 (2011). [Role: Performed research and wrote paper as postdoc].
95. Adams TA II**,** *Barton PI**. Combining coal gasification and natural gas reforming for efficient polygeneration. *Fuel Process Technol*, 92:639-655 (2011) [Role: Performed research and wrote paper as postdoc].
96. **Chen Y**, Adams TA II, *Barton PI**. Optimal design and operation of flexible energy polygeneration systems. *Ind Eng Chem Res*, 50:4553-4566 (2011) [Role: Co-supervisory role for Chen who was student of Prof. Barton (I was postdoc).]
97. **Chen Y**, Adams TA II, *Barton PI**. Optimal design and operation of static energy polygeneration systems. *Ind Eng Chem Res*, 50:5099-5113 (2011) [Role: Co-supervisory role for Chen who was student of Prof. Barton (I was postdoc).]
98. Adams TA II, *Barton PI**. High efficiency power production from coal with carbon capture. *AIChE J,* 56:12:3120-3136 (2010) **TOP 25 CITED PAPER IN 2010 .** [Role: Performed research and wrote paper as postdoc].
99. Adams TA II, *Barton PI**. Re: Support for the high efficiency, carbon separation and internal reforming capabilities of solid oxide fuel cell systems. *J Power Sources,* 195:15:5152-5153 (2010) [Role: Performed research and wrote paper as postdoc].
100. Adams TA II, *Barton PI**. High-efficiency power production from natural gas with carbon capture. *J Power Sources*, 195:7:1971-1983 (2010) [Role: Performed research and wrote paper as postdoc].
101. Adams TA II, *Barton PI**. A dynamic two-dimensional heterogeneous model for water gas shift reactors. *Int J Hydrogen Energy*, 34:21:8877-8891 (2009) [Role: Performed research and wrote paper as postdoc].

102. Adams TA II, *Seider WD**. Design heuristics for semicontinuous chemical processes. *Chem Eng Res Des*, 87:3:263-270 (2009) [Role: Performed research and wrote paper as grad student].
103. Adams TA II, *Seider WD**. Semicontinuous reactive extraction and reactive distillation. *Chem Eng Res Des,* 87:3:245-262 (2009) [Role: Performed research and wrote paper as grad student].
104. Adams TA II, *Seider WD**. Semicontinuous distillation for ethyl lactate production. *AIChE J,* 54:10:2539-2552 (2008) [Role: Performed research and wrote paper as grad student].
105. Adams TA II, *Seider WD**. Practical optimization of complex chemical processes with tight constraints. *Comp Chem Eng*, 32:9:2099-2112 (2008) [Role: Performed research and wrote paper as grad student].
106. Adams TA II, *Seider WD**. Semicontinuous distillation with chemical reaction in a middle vessel. *Ind Eng Chem Res*, 45:5548-5560 (2006) [Role: Performed research and wrote paper as grad student].

Peer Reviewed—Proceedings of Meetings

1. Adams TA II*. Exergy Examples for the Chemical Engineering Classroom. *Systems and Control Transactions* 4:2234-2241 (2025). https://doi.org/10.69997/sct.158988
2. **Krishnadoss R**, Adams TA II*. Integration of a Chemical Heat Pump with a Post-Combustion Carbon Capture Adsorption Unit. *Systems and Control Transactions* 3: 484-489 (2024). https://doi.org/10.69997/sct.128149
3. Adams TA II. Thermo-Mechanical Exergy of a Substance in Cold Applications Approaching Absolute Zero. *Systems and Control Transactions* 3:2-9 (2024). https://doi.org/10.69997/sct.129960
4. *Lewin DR**, Adams TA II, *Bongartz D, Léonard G, Mansouri SS, Martins FG; Mujtaba II, Zondervan E*. Teaching process design – Quo Vaid? *Computer Aided Chemical Engineering* 53:3505-3510 (2024). [Role: contributor]. https://doi.org/10.1016/B978-0-443-28824-1.50585-8
5. **Naeini M**, *Cotton JS*, Adams TA II***.** Dynamic Modeling of Long-term Performance Degradation in Solid Oxide Electrolyzer Cell System. *Computer Aided Chemical Engineering* 49:847-852 (2022). [Role: Primary supervisor of student who wrote the work, met weekly, and edited text. Cotton was co-supervisor.] https://doi.org/10.1016/B978-0-323-85159-6.50141-X
6. **Rose J**, Adams TA II***.** Process Design and Techno-Economic Analysis of Usage of Biomass Pyrolysis By-Products in the Ontario and Aichi Steel Industries. *Computer Aided Chemical Engineering* 49:115-120 (2022). https://doi.org/10.1016/B978-0-323-85159-6.50019-1
7. **Subramanian ASR**, Adams TA II, *Gundersen T*, *Barton PIB**. Optimal design and operation of flexible polygeneration systems using decomposition algorithms. *Computer Aided Chemical Engineering* 48:919-924 (2020). [Role: I was co-supervisor of student who wrote the work, met weekly and edited text. Gundersen was primary supervisor. Barton 77provide additional supervision while student visited his lab.]
8. **Lai H**, *Harun NF*, *Tucker D*, Adams TA II*. Design and eco-techno-economic analyses of SOFC/gas turbine hybrid systems accounting for long-term degradation. *Computer Aided Chemical Engineering* 48:415-420 (2020). [Role: Primary supervisor of student who wrote work. Harun and Tucker are colleagues at US DOE who assisted with student's experimental work conducted in their facility].
9. **Subramanian ASR**, *Kim D*, Adams TA II, *Gundersen T**. Modeling and simulation of a waste tire to liquefied synthetic natural gas (SNG) plant. *Comput Aided Chem Eng* 47:397-402 (2019). [Role: I was co-supervisor of student who wrote the work, met weekly and edited text. Gundersen was primary supervisor. Kim provided additional support as another student of Gundersen.]
10. Adams TA II*. Maximizing our impact: A call for the standardization of techno-economic analyses for sustainable energy systems design research. *Comput Aided Chem Eng* 47:359-364 (2019)
11. **Okeke IJ**, Adams TA II***.** Systems design of a petroleum coke IGCC power plant: Technical, economic, and life cycle 7perspectives. *Comput Aided Chem Eng* 47:163-168 (2019)
12. **Okeke IJ**, Adams TA II***.** Life cycle assessment of petroleum coke gasification to Fischer-Tropsch diesel. *Comput Aided Chem Eng* 46:1495-1500 (2019)
13. **Deng L**, Adams TA II***.** Methanol production from coke oven gas and blast furnace gas. *Comput Aided Chem Eng* 44:163-168 (2018)
14. *Martín M**, Adams TA II. Future directions in process and product synthesis and design. *Comput Aided Chem Eng* 44:1-10 (2018). [Role: Prof. Martín and I each wrote about half of this perspective conference proceeding]
15. **Hoseinzade L**, Adams TA II*. Combining biomass, natural gas, and carbonless heat to produce liquid fuels and electricity. *Comput Aided Chem Eng* 43:1401-1406 (2018)
16. **Madabhushi PB**, **Sánchez Medina EI**, Adams TA II*. Understanding the dynamic behaviour of semicontinuous distillation. *Comput Aided Chem Eng* 43:845-850 (2018)

17. **Nease J**, **Monteiro N**, Adams TA II*. Application of a multiple time-scale rolling horizon optimization technique for improved load-following of an integrated solid-oxide fuel cell/compressed air energy storage plant with zero emissions. *Comput Aided Chem Eng* 38:1725-1730 (2016).
18. **Ghouse J**, Adams TA II*. Optimal Design of an Integrated Radiant Syngas Cooler and Steam Methane Reformer using NLP and Meta-Heuristic Algorithms. *Comput Aided Chem Eng* 38:1431-1436 (2016).
19. **Harun NF**, *Tucker D*, Adams TA II*. Open loop and closed loop performance of solid oxide fuel cell turbine hybrid systems during fuel composition changes. *Proceedings of ASME Turbo Expo 2015: Turbine Technical Conference and Exposition, June 15 – 19, 2015, Montréal, Canada, ASME Paper No. GT2015-43609.* [Role: Primary supervisor of Harun and met weekly during research. Tucker is US DOE employee who supervised Harun's experiments she conducted in his lab].
20. **Meidanshahi V**, Adams TA II*. Integrated design and control of semicontinuous process using mixed integer nonlinear dynamic optimization. *Comput Aided Chem Eng* 37:1181-1186 (2015).
21. **Harun NF**, *Tucker D*, Adams TA II*. Dynamic response of fuel cell gas turbine hybrid to fuel composition changes using hardware-based simulations. *Comput Aided Chem Eng* 37:2423-2428 (2015). [Role: Primary supervisor of Harun and met weekly during research. Tucker is US DOE employee who supervised Harun's experiments she conducted in his lab].
22. **Silva RVP**, *Pontes KV**, Adams TA II. Technical feasibility of a waste cooking oil feedstock biodiesel plant with co-production of succinic acid. *Proceedings of Encontrol Nacional de Engenharla de Producao (National Meeting of Production Engineering), Curitiba, Brazil,* October 7-10 (2014). [Role: Prof. Pontes is supervisor of Silva. Provided supervision to Silva during her visit to my lab as summer undergraduate. Met weekly to supervise project.]
23. Adams TA II*. Challenges and opportunities in the design of new energy conversion systems. *Comput Aided Chem Eng*. 34:5-14 (2014)
24. **Khojestah Salkuyeh Y**, Adams TA II*. Shale gas for the petrochemical industry: incorporation of novel technologies. *Comput Aided Chem Eng*. 34:603-608 (2014).
25. **Okoli, C**, Adams TA II**.** Techno-economic Analysis of a Thermochemical Lignocellulosic Biomass-to-Butanol Process. *Comput Aided Chem Eng.* 33:1681-1686 (2014).
26. **Khojestah Salkuyeh Y**, Adams TA II*. Combining coal, natural gas, and nuclear heat for liquid fuels production with reduced CO_2 emissions. *Comput Aided Chem Eng*. 30:247-251 (2012).
27. Adams TA II, *Barton PI**. Clean Coal: A new power generation process with high efficiency, carbon capture, and zero emissions. *Comput Aided Chem Eng*. 28:991-996 (2010). [Role: Wrote paper as postdoc.]
28. Adams TA II, *Seider WD**. A synthesis procedure for the design of semicontinuous reactive distillation for specialty chemicals. *Comput Aided Chem Eng*. 24: 949-954 (2006). [Role: Wrote paper as graduate student.]

Non-Peer Reviewed—Journal Articles

1. Adams TA II*. Special Series: Systems and Control Division. *Canadian J Chem Eng* 101:1:7-8 (2023).
2. Adams TA II. Inflation- and Energy-Adjusted Historical Prices Reflect Disruptive Events to Global Energy Systems. *CSChE Systems & Control Transactions* 2:31-34 (2022). LAPSE:2022.0093
3. **Douglas AC**, Adams TA II*, Christian DA. Dynamic modelling of T cell vaccination response. *CSChE Systems & Control Transactions* 1:6-10 (2021). [Role: Supervised the undergraduate (1st author) who performed the work. Dr. Christian at University of Pennsylvania collaborated]. LAPSE:2021.0788
4. **Naeini M**, Adams TA II*, *Cotton JS*. Constant power generation by scheduling installation of SOFC modules operating in varying power mode. *CSChE Systems & Control Transactions* 1:30-33 (2021). [Role: Supervised the graduate student (1st author) who performed the work. Dr. Cotton co-supervised]. LAPSE:2021.0793
5. **Ghantous T**, *Okeke IJ*, Adams TA II*. Purification methods for captured CO_2 from petroleum coke oxy-combustion power plants. *CSChE Systems & Control Transactions* 1:42-46 (2021). [Role: Supervised the undergraduate (1st author) who participated in the work with collaborator Dr. Okeke at U of Toronto]. LAPSE:2021.0795
6. Adams TA II*. Special Issue: Modeling and simulation of energy systems. *Processes* 7:523 (2019). (Editorial) LAPSE:2019.1107
7. *West B*, Adams TA II, *Bowman C*, *McLaughin M*, *Stuart P*. Canada's Chemistry-Based Industries: Evolving with the Times. *Chemical Engineering Progress*, October Issue, 57-63 (2019). (Trade Magazine Article). [Role: Wrote or edited approximately 40% of the work. Remaining authors are colleagues in academia or industry.]

Non-Peer Reviewed—Other – Position Papers

1. Adams TA II, *Nease J*, *Wells M.* Access to Affordable, reliable and Sustainable Energy. Chapter within the position paper of the National Council of Deans of Engineering and Applied Science in: *The Canadian Grand Engineering*

Challenge and the United Nationals Sustainable Development Goals (2019). [Role: Wrote about 50% of this position paper]

Non-Peer Reviewed—Other – Interviews and Media

1. Television interview on Bloomberg TV Bulgaria. Subject: Canadian perspectives of EU green energy initiatives. Aired Oct 28 (2020)
2. Radio broadcast interview on National Public Radio, Boston, MA, USA. Subject: My SOFC Research. Aired Dec (2009)
3. Magazine interview in *Wired,* Subject: My SOFC Research. Published in December Issue (2009)
4. Magazine interview in *Popular Science,* Subject: My SOFC Research. Published in December Issue (2009)
5. McMaster "Big Ideas". Supporting Diversity Through Action. Published May Issue (2018)

Accepted for Publication in Final Form

Submitted for Publication

1. **Konovalov D**, Adams TA II. Hydrogen power development: A comparative review of national strategies and the role of energy in scaling green hydrogen. *Submitted to Renewable and Sustainable Energy Reviews* (2025). RSER-D-25-01375
2. *Christian DA*, **Bhartt TPS**, *Lanzar Z*, **Seyyedizadeh SF**, *Hunter C*, Adams TA II**.** The STORE.2 model of the T cell proliferative phase considering c-Myc. *bioRxiv*. [Preprint: https://doi.org/10.1101/2025.06.05.658086]

PRESENTATIONS AT MEETINGS

Invited

1. Adams TA II. Exergy Examples for the Chemical Engineering Classroom. *35th European Symposium on Computer Aided Chemical Engineering*, Ghent, Belgium, July 6-9 (2025).
2. Adams TA II. Exergy Analysis in Process Design Education. *Foundations of Computer-Aided Process Design.* Colorado, USA, July 14-18 (2024).
3. Adams TA II. How do we spent the next £1 trillion to fight climate change? *Robert Sergent Centre for Process Sysatems Engineering Seminar Series. Imperial College London*. London, UK. May 15 (2024).
4. Adams TA II. Techno-economic analysis and lifecycle assessment of emerging technologies in a circular economy. *CircularChem Webinar Series*. [Watch Recording]
5. Adams TA II. Exergy Analysis in PSE. *CAST Webinar Series*. February 8 (2024). [Watch Recording]
6. Adams TA II, *Eden M*. Learn Aspen Plus in 24 Hours. *American Society for Engineering Education—Chemical Engineering Summer School,* Golden, CO, USA. July 25 (2022)
7. Adams TA II*. The European energy upheaval and Canada's choices in an energy insecure world. *Canadian Chemical Engineering Conference* (2022). October 23-26, Vancouver, BC. Invited plenary speaker.
8. Adams TA II. Finding the Signal in the Noise: Determining our best path forward for sustainable energy. *Mälardalen University Departmental Seminar*. Västerås, Sweden, Jan 20 (2022). LAPSE:2019.0442
9. Naeini M, Adams TA II**.** Modelling the degradation of SOFCs. *US Department of Energy, NETL*, Pittsburgh, PA (Virtual), Dec 2 (2021)
10. Adams TA II**.** Eco-Technoeconomicanalysis Standards Development. *RAPID Manufacturing Showcase, AIChE*, (Virtual), April 26 (2021)
11. Adams TA II. Maximizing Our Impact: A call for the standardization of techno-economic analyses for sustainable energy systems design research. 69th *Canadian Chemical Engineering Conference,* Halifax, October 20 (2019). LAPSE:2019.0620
12. Adams TA II. Finding the Signal in the Noise: Determining North America's best path forward for sustainable energy. *University of British Columbia Seminar Series*. Vancouver, BC. Oct 4 (2019). LAPSE:2019.0442
13. Adams TA II. Finding the Signal in the Noise: Determining North America's best path forward for sustainable energy. *West Virginia University Seminar Series*. Morgantown, WV, USA. Sep 20 (2019). LAPSE:2019.0442
14. Adams TA II. Finding the Signal in the Noise: Determining North America's best path forward for sustainable energy. *Hatch Lunch-and-Learn*. Mississauga, ON. Aug 6 (2019). LAPSE:2019.0442
15. Adams TA II**.** Modernizing the undergraduate process design curriculum. *Computer Aides for Chemical Engineering 50th Anniversary Conference (CAChE-50)*, Brekenridge, Colorado, USA, July 19-20, 2019. LAPSE:2019.0639
16. Adams TA II. Maximizing Our Impact: A call for the standardization of techno-economic analyses for sustainable energy systems design research. *Foundations of Computer Aided Process Design*, Copper Mountain, Colorado, USA. July 14-18 2019. LAPSE:2019.0620

17. Adams TA II. Finding the Signal in the Noise: Determining North America's best path forward for sustainable energy. *University of Connecticut Department of Chemical Engineering Seminar Series*. Storrs, CT. April 25 (2019). LAPSE:2019.0442.
18. Adams TA II. Finding the Signal in the Noise: Determining North America's best path forward for sustainable energy. *University of Calgary Department of Chemical Engineering Seminar Series*. Calgary, AB. April 1 (2019). LAPSE:2019.0442
19. Adams TA II, **Hoseinzade L**, **Madabhushi PM**, **Okeke IJ**. Meta-study of carbon dioxide capture technologies: Finding the signal in the noise. *XXIX Interamerican Congress of Chemical Engineering / 68th Canadian Chemical Engineering Conference*, Toronto, ON, Oct 28-31 (2018). **Canadian Journal of Chemical Engineering Lectureship Award Lecture.** LAPSE:2018.0807 [Role: Gave presentation. Based on full paper noted above.]
20. *Martín M*, Adams TA II. Future directions in process and product synthesis and design. *Process Systems Engineering 2018* (*PSE 2018*), San Diego, CA, USA, July 3 (2018). LAPSE:2018.0143. [Role: Gave 50% of presentation. Based on full paper noted above.]
21. Adams TA II**.** Semicontinuous Distillation Systems. *Technical University of Denmark (DTU), Process and Systems Engineering Center (PROSYS)*, Copenhagen, Denmark, May 24 (2018).
22. Adams TA II. Semicontinuous Distillation Systems. *University of Alberta Department of Chemical and Petroleum Engineering Seminar Series.* Edmonton, AB, October 27 (2017).
23. Adams TA II. What should we do with our energy? How chemical engineers have the tools to help answer our toughest Iproblems. *67th Canadian Chemical Engineering Conference* – Invited Plenary – **CSChE Emerging Leader in Chemical Engineering Award Lecture**, Edmonton, AB, Oct 22-25 (2017).
24. Adams TA II. Semicontinuous Distillation Systems. *Process Systems (PROST) Seminar Series, Norwegian University of Science and Technology*, Trondheim, Norway, October 11 (2017).
25. Adams TA II, *Eden M*. Learn Aspen Plus in 24 Hours. *American Society for Engineering Education Chemical Engineering Summer School*. Raleigh, NC, USA, July 29-August 3 (2017). [Role: Co-led workshop on using my textbook]/
26. Adams TA II. Life Cycle Analyses of Solid Oxide Fuel Cell Systems. *University of Pennsylvania Department of Chemical and Biomolecular Engineering Seminar Series*. Philadelphia, PA, USA, September 21 (2016)
27. Adams TA II. The path to academia. *McMaster Engineering Technology Research & Innovation Conference (METRIC)*. Hamilton, ON, August 19 (2016).
28. **Nease J**, Adams TA II. Life Cycle Analyses of Solid Oxide Fuel Cell Systems. *German Aerospace Research Centre*. Stuttgart, Germany, July 18 (2016) [Role: Gave presentation. Based on full papers by Nease et al. noted above.]
29. Adams TA II. The future of polygeneration: Environmental and economic progress. *Combustion Engines for Polygeneration Workshop*. Limburg, Germany, July 14-15 (2016)
30. Adams TA II. SOFC Research in the Adams Group. *Low Emissions Advanced Power Workshop*. US Department of Energy, National Technology Laboratory, Morgantown, WV, USA. May 3-5 (2016)
31. Adams TA II. Semicontinuous distillation processes. *Carnegie Mellon University Seminar Series*. March 3 (2016).
32. Adams TA II. Thinking about an academic career. *Department of Mechanical Engineering Seminar Series*. Hamilton, ON, February 3 (2016).
33. Adams TA II**.** The future of polygeneration: Environmental and economic progress. *University of Waterloo Seminar Series*, February 19 (2015).
34. Adams TA II**, Nease J**. Green power plants of the future: Using rolling-horizon optimization to achieve load-following grid power with near-zero emissions from next generation power plants. *The Fields Institute for Research in Mathematical Sciences*, University of Toronto. May 20 (2014). [Role: Gave presentation. Based on papers by Nease as noted above.]
35. Adams TA II**.** Future Polygeneration Systems: Economic and Environmental Progress. *Queens University Seminar Series*, December 5 (2013).
36. **Nease J**, Adams TA II. Combining Solid Oxide Fuel Cells and Compressed Air Energy Storage for Load-Following Power Production with Near-Zero CO_2 Emissions. *NSERC SmartGrid Workshop*, University of Waterloo. November 21 (2013). [Role: Gave presentation. Based on papers by Nease as noted above.]
37. Adams TA II**.** Future polygeneration systems: environmental and economic progress. *Symposium on Modeling and Optimization, Brigham Young University*. September 24 (2013).
38. Adams TA II**.** Future polygeneration energy systems: environmental progress with an economic benefit through process intensification. *Energy Systems Initiative Seminar, Carnegie Mellon University*. April 5 (2013).
39. **Nease J**, Adams TA II. Combining Solid Oxide Fuel Cells and Compressed Air Energy Storage for Load-Following Power Production with Near-Zero CO2 Emissions, *12th Emerging Information & Technology Conference*, Toronto, ON, Aug 17 (2012). [Role: Gave presentation. Based on papers by Nease as noted above.]

40. Adams TA II. The next generation of green power. Concurrent Technologies Corporation Shale Gas Workshop, Pittsburgh, PA, Dec 8 (2011).
41. Adams TA II, *Barton PI*. High efficiency power production from fossil fuels with carbon capture. McMaster University, Hamilton, ON, April (2010) [Role: Gave presentation. Based on my postdoc research in this area.]
42. Adams TA II, *Barton PI*. High efficiency power production from fossil fuels with carbon capture. University of Michigan, Anne Arbor, MA, March (2010) [Role: Gave presentation. Based on my postdoc research in this area.]
43. Adams TA II, *Barton PI*. High efficiency power production from fossil fuels with carbon capture. IEEE Society on Social Implications of Technology, Lexington, MA, February 22 (2010) [Role: Gave presentation. Based on my postdoc research in this area.]
44. Adams TA II, *Barton PI*. High efficiency power production from fossil fuels with carbon capture. Carnegie Mellon University, Pittsburgh, PA, January 12 (2010) [Role: Gave presentation. Based on my postdoc research in this area.]
45. *Barton PI*, Adams TA II. High efficiency power generation from fossil fuels with carbon capture. *ICAER* (*International Conferences on Advances in Energy Research*), IIT Bombay, India, December 9-11 (2009). [Role: Assisted with slide development. Barton gave presentation highlighting my postdoc research.]

Contributed

Peer Reviewed

Note: To avoid double-listing, this does not include presentations at meetings which have a corresponding peer-reviewed conference proceeding book published with it (those are listed in "Peer Reviewed—Proceedings of Meetings").

1. **Rose J**, Dalle Ave G, Adams TA II. Design and eco-technoeconomic comparison of biomass pyrolysis byproduct utilization methods in steelmaking. *AIChE Annual Meeting* Oct 27-Nov 1, San Diego, CA, USA (2024).
2. **Elrefaei N**, *Christian D*, Adams TA II. A Mathematical Model for Naïve T cell Migration Kinetics. *Biomedical Engineering Society (BMES) Annual meeting*, Baltimore, MA, USA, October 23rd- 26th (2024).
3. *Christian DA,* **Seyyedizadeh SF**, *Kedl R*, *Hunter C*, Adams TA II. Mathematical Modelling of the T cell response to vaccination. *Biomedical Engineering Society (BMES) Annual Meeting*, Baltimore, USA October 23-26 (2024)
4. **Elrefaei N**, *Christian D*, Adams TA II. A Mathematical Multi-Tissue Model for Naïve T-cell Migration. *Canadian Chemical Engineering Conference (CSChE)*, Toronto, ON, Canada, October 6th – 9th (2024).
5. **Seyyedizadeh SF**, Christian DA, Adams TA II. Mathematical Modelling of Immune Response to T-cell Vaccination. *Canadian Chemical Engineering Conference (CSChE)*, Toronto, Canada, October 6-9 (2024)
6. **Aenugula SP**, *Chandrasekar A, Mhaskar P*, Adams TA II. Minimizing the Cost of Semicontinuous Distillation Process. *American Control Conference*, Toronto, Canada, July 8-12 (2024).
7. *Netzer C*, Adams TA II**.** Assessment of syngas quality from plastic gasification for methanol synthesis. *14th European Conference on Industrial Furnaces and Boilers* Algarve, Portugal. April 2-5 (2024)
8. **Nagat Elrefaei N**, *Christian DA*, Adams TA II. A Mathematical Model for Simulating T-Cell Induced Vaccines. *AIChE National Meeting 2023*, Orlando, FL, USA, Nov 8 (2023).
9. Adams TA II, *Gundersen T*. Thermo-mechanical exergy—new visualizations and useful equations at high and low pressure. *CSChE 2023 – 73rd Canadian Chemical Engineering Conference*. Calgary, AB, Oct 29-Nov 1 (2023).
10. **Tabari A**, Adams TA II. Biogenic formic acid as energy carrier. *72nd Canadian Chemical Engineering Conference,* Vancouver, BC, Oct 23-36 (2022).
11. **Rose J**, Adams TA II. Process design and eTEA of syngas derived from biomass pyrolysis by-products for DRI production. *72nd Canadian Chemical Engineering Conference,* Vancouver, BC, Oct 23-36 (2022).
12. **Monteiro NS**, Adams TA II, *Cotton JS*. Multi-objective Optimization to Design a Cogeneration District Heating using PCM Thermal Storage. *European Symposium for Computer Aided Chemical Engineering (ESCAPE 32)*, Tolouse, France, June 12-15 (2022). [Role: Primary supervisor of student who wrote the work, met weekly, and edited text. Cotton was co-supervisor.]
13. **Monteiro N**, Adams TA II. Mapping Environmental and Economic Analysis of Decentralized Cogeneration Energy Management Centers. *AIChE National Meeting,* Boston, MA, Nov 7-11 (2021). [Role: I supervised Monteiro who gave presentation. Cotton co-supervised]
14. Adams TA II, **Douglas A**, *Christian D*. Dynamic Modelling of T Cell Vaccination Response. *71st Canadian Chemical Engineering Conference,* Montreal, QC (Virtual), Oct 24-37 (2021). [Role: I gave presentation and supervised Douglas. Christian was collaborator]
15. **Naeini M**, *Cotton JS*, Adams TA II. Life Cycle Assessment of 550 MW-Scale Solid Oxide Fuel Cell System Using Natural Gas Considering Long-Term Degradation Effects of Solid Oxide Fuel Cells. *71st Canadian Chemical*

Engineering Conference, Montreal, QC (Virtual), Oct 24-37 (2021). [Role: I supervised Naeini who gave presentation. Cotton co-supervised]

16. **Naeini M**, *Cotton JS*, Adams TA II. SOFC Degradation Mastery: How I learned to stop worrying and love the fuel cell. *71st Canadian Chemical Engineering Conference,* Montreal, QC (Virtual), Oct 24-37 (2021). [Role: I supervised Naeini who gave presentation. Cotton co-supervised]
17. *Okeke IJ*, **Ghantous T**, Adams TA II. Design Strategies for Oxy-Combustion Power Plants with Pipeline-Ready Captured CO_2. *71st Canadian Chemical Engineering Conference,* Montreal, QC (Virtual), Oct 24-37 (2021). [Role: I supervised Ghantous who gave presentation. Okeke collaborated]
18. **Rose J**, Adams TA II. Valorization of Biomass Pyrolysis By-Products for Heat Production in the Ontario Steel Industry: A Techno-Economic Analysis. *71st Canadian Chemical Engineering Conference,* Montreal, QC (Virtual), Oct 24-37 (2021). [Role: I supervised Rose who gave presentation.] LAPSE:2021.0799
19. **Subramanian ASR**, Adams TA II, *Gundersen T*. Optimal design and operation of a waste tire feedstock polygeneration system. *70th Canadian Chemical Engineering Conference,* Ottawa, ON (Virtual), Oct 25-30 (2020). [Role: Gave presentation. Subramanian was co-supervised by Gundersen. Subramanian wrote associated paper.]
20. **Naeini M**, *Cotton JS*, Adams TA II. A Detailed Mathematical Model for Evaluation of Solid Oxide Fuel Cells Performance Degradation. *70th Canadian Chemical Engineering Conference,* Ottawa, ON (Virtual), Oct 25-30 (2020). **Winner of the CCEC 2020 Energy Oral Presentation Excellence Award** [Role: Primary Supervisor of Naeini who gave presentation based on her corresponding paper. Cotton was co-supervisor.]
21. Adams TA II, *Christian DA*, **Abraha M**, *Hunter C*, *Kedl R*. Simulations of COVID-19 and other candidate vaccine injections: a talk for chemical process systems engineers. *70th Canadian Chemical Engineering Conference,* Ottawa, ON (Virtual), Oct 25-30 (2020). [Role: Gave talk and performed research, assisted by close collaborations with Christian and student Abraha. Hunter and Kedl provided advice and data].
22. **Lai H**, *Harun NF*, *Tucker D*, Adams TA II. Design and eco-technoeconomic analyses of SOFC/gas turbine hybrid systems accounting for long-term degradation. *European Symposium for Computer Aided Process Engineering,* Milan, Italy *(*Virtual*)*, Aug 30-Sep 2 (2020). [Role: Supervisor of student who gave talk based on associated full paper.]
23. **Subramanian ASR**, Adams TA II, *Gundersen T*, *Barton PI*. Optimal design and operation of flexible energy polygeneration systems using decomposition algorithms. *European Symposium for Computer Aided Process Engineering,* Milan, Italy *(*Virtual*)*, Aug 30-Sep 2 (2020). [Role: Supervised Subramanian who gave talk and was co-supervised by Gundersen, advised by Barton. Work is based on corresponding paper by Subramanian et al.]
24. **Subramanian ASR**, Adams TA II, *Gundersen T*, *Barton PI*. Optimal design and operation of flexible energy polygeneration systems using decomposition algorithms. *AIChE National Meeting,* Orlando, FL, Nov 10-15 (2019). [Role: Supervised Subramanian who gave talk and was co-supervised by Gundersen, advised by Barton. Work is based on corresponding paper by Subramanian et al.]
25. **Madabhushi PB**, Adams TA II. Single shooting method for semicontinuous distillation design. *AIChE National Meeting, Orlando, FL*, Nov 10-15 (2019). [Role: Gave talk based on student's full paper (student could not get visa to attend)]
    LAPSE:2019.1134.
26. Adams TA, **Thatho T**, **Le Feuvre M**, *Swartz CLS*. *69th* Optimal Design of a Distillation System for the Flexible Polygeneration of Dimethyl Ether and Methanol Under Uncertainty. *69th Canadian Chemical Engineering Conference,* Halifax, NS, Oct 20-23 (2019). [Role: Gave presentation based on published full paper. Supervised Le Feuvre. Co-supervised Thatho with Prof. Swartz.] LAPSE:2019.1078
27. **Madabhushi P**, Adams TA II. Semicontinuous distillation design using the shooting method. *69th Canadian Chemical Engineering Conference,* Halifax, NS, Oct 20-23 (2019). [Role: Supervised student who gave talk.]
28. **Okeke IJ**, Adams TA II**.** Systems design of a petroleum coke IGCC power plant: Technical, economic, and life cycle perspectives. *Foundations of Computer Aided Process Design*, Copper Mountain, Colorado, USA. July 14-18 (2019). [Role: Supervised student who gave talk.] LAPSE:2019.0631
29. **Okeke IJ**, Adams TA II**.** Life cycle assessment of petroleum coke gasification to Fischer-Tropsch diesel. *29th European Symposium on Computer Aided Process Engineering*, Eindhoven, Netherlands, June 16-19 (2019) [Role: Supervised student who gave talk.]
30. **Lai H**, Adams TA II. Techno-economic system analysis for SOFC/GT hybrid system accounting for degradation effects. *AIChE National Meeting, Pittsburgh, PA*, Oct 28-Nov 2 (2018). [Role: Supervised student who gave talk.] LAPSE:2018.0809
31. **Hoseinzade L.** Adams TA II. A novel sustainable design for production of liquid fuels. *XXIX Interamerican Congress of Chemical Engineering / 68th Canadian Chemical Engineering Conference*, Toronto, ON, Oct 28-31 (2018). [Role: Supervised student who gave talk.] LAPSE:2018.0811

32. **Okeke IJ**, Adams TA II**.** Techno-economic analysis of combining petroleum coke and natural gas for efficient liquid fuels production. *XXIX Interamerican Congress of Chemical Engineering / 68th Canadian Chemical Engineering Conference*, Toronto, ON, Oct 28-31 (2018). [Role: Supervised student who gave talk.] LAPSE:2018.0810
33. **Deng L.** Adams TA II. Coke oven gas conversion efficiency improvement by system upgrading to combined cycle power plant. *XXIX Interamerican Congress of Chemical Engineering / 68th Canadian Chemical Engineering Conference*, Toronto, ON, Oct 28-31 (2018). [Role: Supervised student who gave talk.] LAPSE:2018.0806
34. **Madabhushi P**, Adams TA II. Improved controls strategies for semicontinuous distillation. *AIChE National Meeting*, Minneapolis, MN, Oct 29-Nov 3 (2017). [Role: Supervised student who gave talk.]
35. **Hoseinzade L.** Adams TA II. Dynamic Modeling of the Integrated Methane Reforming and Nuclear Heat Systems. *67th Canadian Chemical Engineering Conference,* Edmonton, AB, Oct 22-25 (2017). [Role: Supervised student who gave talk.]
36. *Zaccaria V*, *Harun NF*, *Tucker D*, *Traverso A*, Adams TA II. SOFC degradation analysis for various syngas compositions in IGFC-GT systems. *9th Int Conf on Applied Energy*, Cardiff, United Kingdom, Aug 21-24 (2017). [Role: Provided collaborative insights to Zaccaria and Harun who gave talk]
37. **Okoli C**, Adams TA II, *Liu JJ*, *Brigljevic B*. Design and economic analysis of a macroalgae-to-butanol process via a thermochemical route. *AIChE National Meeting*, San Francisco, CA, Nov 13-18 (2016). [Role: Supervised student who gave talk. *Liu* supervised *Brigljevic* who provided some collaborative help on related full paper.]
38. **Meidanshahi V**, *Corbett V*, *Mhaskar P*, Adams TA II. Model predictive control of semicontinuous distillation processes. *AIChE National Meeting*, San Francisco, CA, Nov 13-18 (2016). [*Role*: Was supervisor of Meidanshahi in normal context. Prof. Mhaskar and his student Corbett collaborated and provided valuable ideas and insights.]
39. **Dalle Ave G**, Adams TA II. Techno-economic comparison of extractants for use in acetone-butanol-ethanol fermentation. *66th Canadian Chemical Engineering Conference,* Quebec City, QC, Oct 16-19 (2016). [Role: Supervised student who presented based on full paper.]
40. **Okoli C**, Adams TA II. Design and assessment of novel second generation biobutanol plants based on a thermochemical route. *66th Canadian Chemical Engineering Conference,* Quebec City, QC, Oct 16-19 (2016). [Role: Supervised student who presented based on full paper.]
41. *Hussain D*, *Dzombak DA*, *Lowry GV*, *Henri J*, *Zubrin RM*, *Salvi S*, *Malliaris S*, Adams TA II**.** Conversion of Captured CO2 to C4+ Synthetic Chemicals and Drop-In Liquid Fuels. *15th Annual Conference on Carbon Capture, Utilization, & Storage*, Tysons, VA, June 14-16 (2016). [Role: Provided collaborative insights. Hussain gave presentation.]
42. **Harun NF**, *Zaccaria V*, *Tucker D*, *Traverso A*, Adams TA II. Degradation analysis for various syngas compositions in IGFC systems. *Int Gas Turbine Congress*, Tokyo, Japan, Nov 15-20 (2015). [Role: Provided collaborative insights to Zaccaria and Harun who gave talk]
43. **Okoli C**, Adams TA II. Design and Assessment of Novel Thermochemical Lignocellulosic Biomass to Butanol Process Configurations. *AIChE National Meeting*, Salt Lake City, UT, USA, Nov 8-13 (2015). [Role: Supervised student who presented based on full paper.]
44. **Ballinger SE**, Adams TA II**.** Semicontinuous purification of liquid fuel in a ready-to-assemble plant. *65th Canadian Chemical Engineering Conference,* Calgary, AB, Oct 4-7 (2015). [Role: Supervised student who presented based on full paper.]
45. **Scott JA,** Adams TA II**.** Design of a synthetic fuel biomass-gas-and-nuclear-to-liquids (BGNTL) process. *65th Canadian Chemical Engineering Conference,* Calgary, AB, Oct 4-7 (2015). [Role: Supervised student who presented based on full paper.]
46. **Lai H**, Adams TA II**.** A direct steam generation solar power plant with an integrated chemical storage system. *65th Canadian Chemical Engineering Conference,* Calgary, AB, Oct 4-7 (2015). [Role: Supervised student who presented based on full paper.]
47. **Dalle Ave G**, Adams TA II**.** Optimal extractant choice and separation train configuration for product recovery from acetone-butanol-ethanol fermentation. *65th Canadian Chemical Engineering Conference,* Calgary, AB, Oct 4-7 (2015). [Role: Supervised student who presented based on full paper.]
48. **Khojestah Salkuyeh Y**, Adams TA II**.** Economical upgrading of petcoke to more valuable products with zero carbon emissions. *65th Canadian Chemical Engineering Conference,* Calgary, AB, Oct 4-7 (2015). [Role: Supervised student who presented based on full paper.]
49. **Nease J,** Adams TA II**.** Comparative life cycle analyses of bulk-scale solid oxide fuel cell power plants. *AIChE National Meeting,* Atlanta, GA, USA, Nov 16-21 (2014). [Role: Supervised student who presented based on full paper.]
50. **Ghouse JH**, Adams TA II**.** Design and operation analysis of integrated gasifier and steam methane reforming. *AIChE National Meeting,* Atlanta, GA, USA, Nov 16-21 (2014). **BEST IN SESSION AWARD.** [Role: Supervised student who presented based on full paper.]

51. **Meidanshahi V**, Adams TA II**.** Mixed integer dynamic optimization of semicontinuous processes. *64th Canadian Chemical Engineering Conference,* Niagara Falls, ON, Canada, Oct 19-22 (2014). [Role: Supervised student who presented based on full paper.]
52. **Okoli CO**, Adams TA II**.** Design and analysis of dividing wall column configurations for the separation of biobutanol from a multicomponent mixture. *64th Canadian Chemical Engineering Conference,* Niagara Falls, ON, Canada, Oct 19-22 (2014). [Role: Supervised student who presented based on full paper.]
53. **Nease J**, Adams TA II**.** Load following distributed power generation using a solid oxide fuel cell and compressed air energy storage hybrid system. *64th Canadian Chemical Engineering Conference,* Niagara Falls, ON, Canada, Oct 19-22 (2014). [Role: Supervised student who presented based on full paper.]
54. **Khojasteh Salkuyeh Y**, Adams TA II**.** Innovative processes in the conversion of shale gas to petrochemical feedstocks. *64th Canadian Chemical Engineering Conference,* Niagara Falls, ON, Canada, Oct 19-22 (2014). [Role: Supervised student who presented based on full paper.]
55. **Ghouse JH**, Adams TA II**.** Development of an integrated gasifier and steam methane reformer. *64th Canadian Chemical Engineering Conference,* Niagara Falls, ON, Canada, Oct 19-22 (2014). [Role: Supervised student who presented based on full paper.]
56. **Wijesekera KN**, Adams TA II**.** Design and control of a quaternary separation using a single semicontinuous distillation column and two middle vessels. *64th Canadian Chemical Engineering Conference,* Niagara Falls, ON, Canada, Oct 19-22 (2014). [Role: Supervised student who presented based on full paper.]
57. **Nease J**, Adams TA II**.** Life cycle analyses of bulk-scale solid oxide fuel cell power plants. *64th Canadian Chemical Engineering Conference,* Niagara Falls, ON, Canada, Oct 19-22 (2014). [Role: Supervised student who presented based on full paper.]
58. **Nease J**, Adams TA II**.** Using games to learn about the forms of electricity. *64th Canadian Chemical Engineering Conference,* Niagara Falls, ON, Canada, Oct 19-22 (2014). [Role: Supervised student who presented based on full paper.]
59. **Harun NF**, *Tucker D*, Adams TA II**.** Fuel composition transients in fuel cell turbine hybrid for polygeneration applications. *ASME Fuel Cell Expo,* Boston, MA, USA, July 1 (2014). [Role: Supervised student who presented based on full paper. Tucker provided collaborative supervision.]
60. *Hussain D, Dzombak DA, Lowry GV, Zubrin RM, Malliaris S*, Adams TA II**.** Reducing greenhouse gas emissions through mobile systems for methanol production, electricity generation, & CO_2-enhanced oil recovery utilizing North America's flare gas resources. *13th Annual Conference on Carbon Capture Utilization & Sequestration*, Pittsburgh, PA, April 28-May 1 (2014)
61. Hussain D, Dzombak DA, Lowry GV, Henri J, Malliaris S, **Adams TA II**. Conversion of CH_4 and CO_2 from flare gas and flue gas to butanol for use as a synthetic chemical and/or liquid fuels. *13th Annual Conference on Carbon Capture Utilization & Sequestration*, Pittsburgh, PA, April 28-May 1 (2014) [Role: Provided collaborative insights. Hussain gave presentation.]
62. **Niesbach A**, Adams TA II, *Lutze P*. Theoretical investigation of a semicontinuous distillation process for the separation of bio-based impurities. *AIChE National Meeting*, San Francisco, CA, USA, Nov 3-8 (2013). **[**Role: Supervised Niesbach weekly who was visiting PhD student of Prof. Lutze in my lab. Prof. Lutze's involvement was limited.]
63. **Nease J**, Adams TA II**.** Peaking power with 100% CO_2 capture through the integration of solid-oxide fuel cells, compressed air energy storage and real time optimization. *AIChE National Meeting*, San Francisco, CA, USA, Nov 3-8 (2013). [Role: Supervised student who presented based on full paper.]
64. **Khojestah Salkuyeh Y,** Adams TA II. Thermo-economic optimization of a novel zero carbon emission polygeneration plant based on methane oxidative coupling of shale gas and nickel-oxide combustion processes. *AIChE National Meeting*, San Francisco, CA, USA, Nov 3-8 (2013). [Role: Gave presentation based on student's full paper (student could not attend due to visa issues)]
65. **Khojestah Salkuyeh Y**, Adams TA II. Development of a new polygeneration plant based on integrated coal gasification, natural gas reforming, and carbonless energy. *AIChE National Meeting*, San Francisco, CA, USA, Nov 3-8 (2013). [Role: Gave presentation based on student's full paper (student could not attend due to visa issues)]
66. **Okoli C,** Adams TA II. Design and analysis of a novel thermochemical biomass to butanol process. *63rd Canadian Chemical Engineering Conference,* Fredericton, NB, Oct 20-24 (2013). [Role: Supervised student who presented based on full paper.]
67. **Ghouse JH**, Adams TA II. The use of a rigorous, first-principles based multi-scale model for the design of next generation hybrid gasifiers. *63rd Canadian Chemical Engineering Conference,* Fredericton, NB, Oct 20-24 (2013). [Role: Supervised student who presented based on full paper.]

68. **Nease J**, Adams TA II**.** Real-time optimization of solid oxide fuel cells and compressed air energy storage for peaking power with zero emissions. *63rd Canadian Chemical Engineering Conference,* Fredericton, NB, Oct 20-24 (2013). [Role: Supervised student who presented based on full paper.]
69. **Meidanshahi V**, Adams TA II. Design of new semicontinuous processes for separation of BTX. *63rd Canadian Chemical Engineering Conference,* Fredericton, NB, Oct 20-24 (2013). [Role: Supervised student who presented based on full paper.]
70. **Seepersad D**, Adams TA II. Dynamic simulation and control of a novel hybrid coal gasifier and steam methane reforming system. *63rd Canadian Chemical Engineering Conference,* Fredericton, NB, Oct 20-24 (2013). [Role: Supervised student who presented based on full paper.]
71. **Nease J**, Adams TA II**.** Integration of solid-oxide fuel cells and compressed air energy storage for peaking power with zero carbon emissions. *AIChE National Meeting*, Pittsburgh, PA, October 30 (2012). [Role: Supervised student who presented based on full paper.]
72. **Ghouse JH**, Adams TA II. Integrated coal gasification and natural gas steam reforming. *CSChE Conference*, Vancouver, BC, October 17 (2012). [Role: Supervised student who presented based on full paper.]
73. **Nease J**, Adams TA II. Solid-oxide fuel cell and compressed air energy storage integration to provide peaking power with zero carbon emissions. *CSChE Conference*, Vancouver, BC, October 16 (2012). [Role: Supervised student who presented based on full paper.]
74. **Pascall A**, Adams TA II. Semicontinuous distillation of DME produced from Biomass. *BIOFOR Conference,* Thunder Bay, ON, May 15 (2012). *Main lead.* [Role: Supervised student who presented based on full paper.]
75. Adams TA II**,** *Barton PI*. New Fischer-Tropsch-ready syngas preparation strategies from coal and natural gas using solid oxide fuel cells. *AIChE National Meeting*, Minneapolis, MN, October 18 (2011) [Role: Gave presentation based on my full paper, as postdoc]
76. **Chen Y**, *Li X*, Adams TA II, *Barton PI***.** Decomposition strategy for the global optimization of energy polygeneration systems. *AIChE National Meeting*, Minneapolis, MN, October 20 (2011) [Role: Co-supervisory role for Chen who was student of Prof. Barton (I was postdoc). Li provided additional insights.]
77. Adams TA II, *Barton PI*, Stephanopoulos G. Nanoscale process systems engineering: Design, fabrication, monitoring, and control. *ESCAPE21 (21st European Symposium on Computer Aided Process Engineering)*, Chalkidiki, Greece, May 30 (2011). *Plenary session.* [Role: Gave presentation based on my full paper, as postdoc]
78. Adams TA II, *Barton PI*. New Fischer-Tropsch-Ready syngas preparation strategies from coal and natural gas. *AIChE National Meeting*, Salt Lake City, UT, Nov 11 (2010) [Role: Gave presentation based on my full paper, as postdoc]
79. **Chen Y,** Adams TA II, *Barton PI*. Optimal design and operation of flexible energy systems. *AIChE National Meeting*, Salt Lake City, UT, Nov 11 (2010). [Role: Co-supervisory role for Chen who was student of Prof. Barton (I was postdoc).]
80. **Chen Y,** Adams TA II, *Barton PI*. Optimal energy polygeneration system design under different economic scenarios. *AIChE National Meeting*, Salt Lake City, UT, Nov 10 (2010) [Role: Co-supervisory role for Chen who was student of Prof. Barton (I was postdoc). Li provided additional insights.]
81. Adams TA II, *Barton PI*. New strategies for Polygeneration: Hybrid natural gas reforming and coal gasification techniques for production of methanol, electricity, and Fischer-Tropsch fuels. *AIChE National Meeting*, Salt Lake City, UT, Nov 9 (2010) [Role: Gave presentation based on my full paper, as postdoc]
82. Adams TA II, *Barton PI*. Coal power generation with high efficiency and near-zero emissions. *AIChE National Meeting*, Nashville, TN, November 9 (2009) [Role: Gave presentation based on my full paper, as postdoc]
83. Adams TA II, *Barton PI*. Natural gas power generation with high efficiency and near-zero emissions. *AIChE National Meeting*, Nashville, TN, November 9 (2009) [Role: Gave presentation based on my full paper, as postdoc]
84. Adams TA II, *Barton PI*. A dynamic, heterogeneous, 2D model for water gas shift reactors. *AIChE National Meeting*, Nashville, TN, November 9 (2009) [Role: Gave presentation based on my full paper, as postdoc]
85. Adams TA II, *Seider WD*. Design heuristics for semicontinuous separations with reaction. *AIChE National Meeting*, Philadelphia, PA, November 18 (2008) [Role: Gave presentation based on my full paper, as grad student]
86. Adams TA II, *Seider WD*. Semicontinuous process intensification: Combining reactive extraction, reactive distillation, and binary distillation for production of 1,3-propanediol *AIChE National Meeting*, Salt Lake City, UT, November 4-7 (2007) [Role: Gave presentation based on my full paper, as grad student]
87. Adams TA II, *Seider WD*. Ethyl lactate production using semicontinuous distillation with reaction in an auxiliary vessel and pervaporation. *AIChE Spring Meeting*, Houston, TX, April 23-27 (2007) [Role: Gave presentation based on my full paper, as grad student]
88. Adams TA II, *Seider WD*. A synthesis procedure for the design of semicontinuous reactive distillation for specialty chemicals, *PSE/ESCAPE 2006*, Garmisch-Partenkirchen, Germany, July 10 (2006) [Role: Gave presentation based on my full paper, as grad student]

89. Adams TA II, *Seider WD*. Semicontinuous reactive distillation for specialty chemical production: Economic comparison with batch and continuous processing. *AIChE National Meeting*, Cincinnati, OH, October 30-November 2 (2005); p6251-6257. [Role: Gave presentation based on my full paper, as grad student]
90. Adams TA II, *Seider WD*. A novel concept: Semicontinuous reactive distillation. *AIChE Spring Meeting*, Atlanta, GA, April 10-14 (2005); p1735. [Role: Gave presentation based on my full paper, as grad student]

Not Peer Reviewed

1. **Seyyedizadeh SF, Nagat Elrefaei,** *Christian DA,* Adams TA II. Stochastic Mathematical Modeling of T-Cell Kinetics. *Pfizer Chemistry Connect*, Virtual, November 12 (2024)
2. **Litleskare ME**, Pokhrel BR, Oleinikova I, Adams TA II. Techno-economic analysis of green hydrogen production from PV plants. *H2 Science*, 18-19 June (2024)
3. **Elrefaei N**, *Christian D*, Adams TA II. Quantification of Naïve T-cell migration parameters in mice using a multi-tissue model. *Ontario-Quebec Statistics & Control Meeting*, Montreal, Quebec, Canada, May 9th – 10th (2024).
4. **Naeini M***,* Adams TA II. SOFC Manufacturers Hate This: One Weird Trick Will Quadruple its Lifetime. *Ontario-Quebec Statistics & Control Meeting,* Kingston, ON [Virtual], May (2021). [Role: Supervised student who presented based on full paper.]
5. *Krug CC*, *Bishop P*, Adams TA II, *Taylor G*. Reinforcement learning for chemical factory control. *US Naval Academy Artificial Intelligence Conference.* Baltimore, MD, USA. October 22 (2019). [Role: created models and generated data. Taylor gave presentation.]
6. *Christian DA*, *Phan AT*, Adams TA II, *Smith TE*, *Theisen DJ*, *Murphy KM*, *Hunter CA*. cDC1 are essential for coordinating innate and adaptive immune responses during microbial vaccination. *Immune Modulation & Engineering Symposium*, Philadelphia, PA, USA, October 16 (2019.) [Role: I developed the mathematical model which explains the data collected by the other authors. Christian gave presentation]
7. **Okeke I**, Adams TA II. Comparative environmental impact assessments of oil sands waste conversion: Fischer-Tropsch diesel or power generation. *Ontario-Quebec Statistics & Control Meeting,* Toronto, ON, May 6-7 (2019). [Role: Supervised student who presented based on full paper.]
8. **Meidanshahi V**, Adams TA II. Design and mixed integer dynamic optimization of semicontinuous processes. *Ontario-Quebec Statistics & Control Meeting,* Toronto, ON, May 21-22 (2015). [Role: Supervised student who presented based on full paper.]
9. **Khojestah Salkuyeh Y**, Adams TA II. Shale gas for the petrochemical industry: incorporation of novel technologies. *Ontario-Quebec Statistics & Control Meeting,* Montreal, QC, May 22-23 (2014). [Role: Supervised student who presented based on full paper.]
10. **Okoli C**, Adams TA II. Design and analysis of a novel thermochemical biomass to butanol process. *Ontario-Quebec Statistics & Control Meeting,* Montreal, QC, May 22-23 (2014). [Role: Supervised student who presented based on full paper.]
11. **Nease J**, Adams TA II. Real-time optimization of solid oxide fuel cells and compressed air energy storage for peaking power with zero emissions. *Ontario-Quebec Statistics & Control Meeting,* Kingston ON, May 27-28 (2013). [Role: Supervised student who presented based on full paper.]
12. **Pascall A**, Adams TA II. Semicontinuous distillation of DME produced from Biomass. *Ontario-Quebec Statistics & Control Meeting,* Hamilton, ON, May 23-24 (2012). [Role: Supervised student who presented based on full paper.]
13. Adams TA II, *Barton PI*. Affordable Green Electricity from Fossil Fuels, *MIT Energy Conference Showcase*, Cambridge MA, March 10 (2010) [Role: Gave presentation based on my full paper, as postdoc]

PATENTS

1. Adams TA II. *Christian DA*. A stochastic T-cell population system and process for immune response in the omentum. Patent Disclosure Filed June 22 (2020).
2. **Ballinger SE**, Adams TA II**.** Semicontinuous Dividing Wall Distillation. US Provisional Patent Application 62/408,369 (2016).
3. **Ghouse J**, Adams TA II. Method and Application for Production Synthesis Gas. US Patent Application 15091773 (2016). Provisional Application and Disclosure 61/944,704 (2014).
4. Adams TA II**,** *Barton PI*. Systems and methods for the separation of carbon dioxide and water. US Patent 8,500,868 (2013). World Patent equivalent also issued 2013.

ADMINISTRATIVE RESPONSIBILITIES

University Service

- *Program Leader*, NTNU-MIT Energy Research Programme (2024—2027)
- *Team Leader*, NTNU Team Nuclear (2025—)
- *Deputy Leader*, NTNU Team Nuclear (2024—2025)

(At McMaster below this point)

- *Advisor*, National Society of Black Engineers, McMaster Student Chapter (2011—2022)
- *Member,* University Faculty Grievance Review Panel (Engineering Representative) (2021—2022)
- *Internal Reviewer,* many Discovery and other grants (provide feedback and advice) (2016—2022)
- *Senator*, University Senate (Elected by Faculty of Engineering) (2018—2020)
- *Member,* Senate Academic Integrity Committee (2019—2020)
- *Member*, University Graduate Council Working Group on Student/Supervisor Relationships (2019—2020)
- *Member*, McMaster Campus Ministry Council (2016—2020)
- *Member,* Senate Executive Committee (2018—2019)
- *Member*, University Graduate Council (Elected by Faculty of Engineering) (2016—2017)
- *Advisor*, McMaster Undergraduate Energy Society (2016—2017)
- *Member*, University Graduate Council (Elected by Faculty of Engineering) (2013—2015)
- *Chair*, University Graduate Council Working Group on Graduate Pay (2014—2015)
- *Member*, Graduate Studies Fair Representative (2012)

Faculty Service (Engineering)

- *Member*, Graduate Curriculum & Policy Committee (2016—2022)
- *Member,* Distinguished Engineering Honorifics Selection Committee (2021)
- *Member*, Faculty Search Committee (Equity, Diversity, & Inclusion Representative). For 3 hires. (2020—2021)
- *Member,* Faculty Search Committee (Dean's representative to Civil Eng.) (2016)
- *Leader,* Faculty Development Academy workshop on Graduate Program Management (2016, 2019)
- *Member,* Computer Labs Task Group (2012—2015)
- *Member,* Student and Professional Engineers Committee (2011—2013)

Departmental Service

- *Group Leader*, Process and Power (NTNU, EPT) (2023—)

(At McMaster below this point)

- *Associate Chair* (Graduate), Chemical Engineering (2015—2021)
- *Member*, Tenure and Promotion Committee (2018—2022)
- Equity, Diversity, and Inclusion Champion for departmental committees (2019—2022)
- *Chair*, PhD Comprehensive Exam Committee for many students (2011—)
- *Member*, Graduate Recruiting (2015—2017)
- *Chair,* Seminar Speaker Committee (2013—2015)
- *Member*, Faculty Search Committee (2014—2015)
- *Member*, Graduate Awards Committee (2013—2014)
- *Member*, Seminar Speaker Committee (2011—2012)
- *Member*, Computing and Software Committee Member (2012—2013)
- *Member*, Graduate Attributes and Sustainability Committee (2011—2013)
- *Judge*, McMaster University Chemical Engineering Conference Oral Presentation (2011—2013)
- *Member*, Undergraduate Recruiting Committee (2010—2012)

OTHER RESPONSIBILITIES

Conference Organization

- *Session Chair,* Societal Challenges; Sustainable Product Development & Design. ESCAPE 35 (2025)
- *Member, 35*th European Symp. on Computer Aided Process Eng (ESCAPE). Scientific Comtee. (2024—2025)
- *Conference Co-Chair*, 2024 Foundations of Computer Aided Process Design (FOCAPD) (2021—2024)
- *Member*, Process Systems Engineering (PSE) 2021 International Programming Committee (2020—2022)
- *Session Chair,* Canadian Chem Eng Conference (CCEC) 2022, PSE For Energy and Environment (2022)
- *Session Chair,* CAST Director's Student Presentation Award Finalists (AIChE Nat'l Meeting) (2022)
- *Division Chair,* managed 7 Systems & Control Division sessions, Canadian Chem Eng Conference (2021)
- *Session Chair*, Process Systems & Control, 69th Canadian Chemical Engineering Conference (2019)

- *Chair*, 2019 Foundations of Computer Aided Process Design (FOCAPD) Internat'l Subcom'tee (2018—2019)
- *Member*, 2019 FOCAPD International Programming Committee (2018—2019)
- *Session Chair,* Design of Sustainable Processes I, Canadian. Chem Eng. Conference (2018)
- *Member,* 28th European Symp. on Computer Aided Process Eng (ESCAPE). Scientific Comtee. (2017—2018)
- *Member,* International Program Committee: Process Systems Engineering 2018, San Diego, CA (2015—2018)
- *Session Chair*, Process Systems Engineering (PSE) 2018. Process & Product Design. San Diego (2018)
- *Session Chair*, Systems and Process Design, AIChE Nat'l Meeting (2017)
- *Session Co-Chair,* Systems and Control, Canadian. Chem Eng. Conference (2017)
- *Coordinator,* 2017 AIChE Meeting Programming Coordinator for Division 10A (Elected) (2014—2017)
- *Member,* International Advisory Committee: 4th International Symposium on Sustainable Chemical Product and Process Engineering (SCPPE). Nanjing, China, 2016 (2015—2016)
- *Member,* 26th European Symp. on Computer Aided Process Eng (ESCAPE). Scientific Committ. (2015—2016)
- *Session Chair*, Process-Product Synthesis, Design & Integration, ESCAPE 26 (2016)
- *Session Chair*, Energy Systems Design and Operations II, AIChE Nat'l Meeting (2016)
- *Session Co-Chair*, Systems and Process Design Poster Session, AIChE Nat'l Meeting (2016)
- *Session Chair*, Systems and Process Design and Simulations, Canadian. Chem Eng. Conference (2016)
- *Session Chair*, Systems and Control, Canadian. Chem Eng. Conference (2015)
- *Session Chair*, Design and Analysis of Power Systems, AIChE Nat'l Meeting (2015)
- *Session Chair*, Systems and Control 5, Canadian. Chem Eng. Conference (2014)
- *Session Chair*, Systems and Control 6, Canadian. Chem Eng. Conference (2014)
- *Session Chair*, Process Design, AIChE Nat'l Meeting (2014)
- *Member,* International Programming Committee Member: 2014 Foundations of Computer-Aided Process Design Conference, Cle Elum, WA, USA (2013—2014)
- *Session Chair*, Fluid Flow, Canadian. Chem Eng. Conference (2013)
- *Session Chair*, Systems & Control, Canadian. Chem Eng. Conference (2013)
- *Session Chair*, Energy Systems Design, AIChE Nat'l Meeting (2013)
- *Session Chair*, Process Design I, AIChE Nat'l Meeting (2012)
- *Session Co-chair*, Energy System Design & Alt. Energy Sources, AIChE Nat'l Meeting (2011)
- *Session Co-chair*, Industrial Innovation in Process Design, AIChE Nat'l Meeting (2010)

International Scholarly and Dissemination Activities

- *Managing Editor*, PSE Press (2019—)
- *Director*, Living Archive for Process Systems Engineering (LAPSE), the pre-print repository for my field. (2018—)
- *Member*, Standards Council of Canada Mirror Committee MC/ISO/TC 207/SC 5 (Life cycle assessment) (2019—)
- *Convenor*, International Standards Organization, ISO/TC 207/SC 5/WG 16 (eco-technoeconomic analysis) (2021—)

Judging Activities and Award Committees

- *Member, Canadian J. Chem. Eng.* Lectureship Award selection committee (2023, 2021)
- *Judge*, Canadian Society for Chemical Engineering Student Poster Competition (2022)
- *Judge*, Best Paper Award, *Canadian J. Chem. Eng.* (2021)
- *Judge*, AIChE Computing & Systems Technology Division Grad Research Competition (2020)
- *Judge*, Canadian Society for Chemical Engineering Student Design Competition (2019)
- *Judge*, Foundations of Computer Aided Process Design conference Poster Sessions (2019)
- *Judge*, AIChE National Meeting Poster Sessions (2016, 2017)
- *Judge*, American Society for Eng. Education Summer School Workshop Poster Session (2017)
- *Judge*, Women in Science and Engineering's Current Research in Engineering, Science, & Technology Meeting (CREST) (2019, 2016, 2014, 2013)
- *Chair*, D.G. Fischer Award Committee (Canadian Society for Chemical Engineering) (2014)
- *Judge*, CSChE SVC-Lavalin Plant Design Competition (Can. Societ. for Chem. Eng.) (2012, 2013)
- *Judge,* Monsaroff Undergraduate Student Paper Competition Judge (2012,2013)

Corporate Invited Lectures

- **Adams TA II**. The next generation of green power. Hatch Corporation, Mississauga, ON, Feb 18 (2011)
- **Adams TA II**, Barton PI. High efficiency power production from fossil fuels with carbon capture. BP Research Division, Naperville, IL, June (2010)

Media Articles / Broadcasts Discussing my Work

Television

- *Colossal Machines* TV series. On-camera energy expert for four episodes. Fuse Network (Canada-English). Illico (Canada-French), SPIEGEL Geschichte, Servus TV (Germany-German), National Geographic (Rest of World). (Series premiers Feb 3, 2022)

Radio

- Ryan Jespersen Show, AM630 Edmonton (Topical show, discussed my work) (Dec 2016)

Print Magazines

- Wired (Interview on my SOFC Research) (Dec 2009)
- Scientific American (Article about my SOFC work) (Feb 2010)
- Power Magazine (Article about my SOFC work) (Mar 2010)
- Green Solutions Magazine (Article about my SOFC work)

Web Magazines

- Discovery News (the Discovery Channel) (Article about my SOFC work) (Dec 2009)
- Daily Kos (Article about my SOFC work) (Dec 2009)
- Science Daily (Article about my SOFC work) (Dec 2009)
- Green Car Congress (Article about my SOFC work) (Dec 2009)
- Idea Connection (Article about my SOFC work) (Dec 2009)
- Ceramics.com (Article about my SOFC work) (Jan 2010)
- Clean Technica (Article about my SOFC work) (Feb 2010)

External Collaborations

- Seoul National University (S. Korea): Maritime CCS value chain technologies. (2025—)
- University of Waterloo (Canada): eTEA of green ammonia synthesis pathways (2024—)
- Pukyong National University (S. Korea) – CCUS for green olefins production (2024—)
- A Corunna University (Spain) – Onboard LH_2 regasification recapture and use technologies (2023—)
- Universität Hamburg (Germany) – Formic acid as an energy carrier for a hydrogen economy (2021—)
- University of the Witwaterstand (South Africa) – Water sustainability metrics (2021—)
- University of Johannesburg (South Africa) – Waste rubber to activated carbon (2020—)
- MIT (USA) –Flexible polygeneration systems. LH_2 supply chains. Electrification of chem. processes. (2020—)
- University of Pennsylvania (USA) – Modelling of immunology and systems biology (2019—)
- University of Colorado (USA) – Modelling of immunology and systems biology (2019—)
- Arcelor Mittal Dofasco (Canada) – CO_2 mitigation from steel manufacturing (2016—)
- Carnegie Mellon University (USA) – Carbon Capture and Utilization (2022—2025)
- Linde (Bulgaria) and Technical University of Munich (Germany) Standardized H_2 technology eTEAs (2024—2025)
- University of Bologna (Italy) – Risk of CO_2 Avoided Metrics (2023—2025)
- Pukyong National University (S. Korea) – Microalgae to butanol conversion; power-to-fuels. (2015—2019)
- ChemBioPower (Canada) – Semicontinuous dimethyl ether production processes (2014—2024)
- Montanuniversität Leoben (Austria) – Dirty plastic recycling through gasification routes (2023—2024)
- Universidade Federal do Rio de Janeiro (Brazil) – TEA of hydrogen production upgrades. (2019—2023)
- Universidad De La República (Uruguay) – Carbon Capture and Utilization (2021—2022)
- Norwegian University of Sci. & Tech (NTNU, Trondheim, Norway) – Design under uncertainty (2017—2022)
- Mälardalen University (Sweden) – Degradation of solid oxide fuel cells (2020—2021)
- US Department of Energy (Morgantown, USA) – Hybrid gas turbine/SOFC power systems (2012—2021)
- Technical University of Munich (Germany) – Biomass, gas, and nuclear to liquids (2019—2021)
- United States Naval Academy (USA) – Artificial intelligence for chemical processes (2018—2019)
- University of Salamanca (Spain) – Future directions of process and product design (2017—2019)

- SINTEF Energy (Norway) – Floating off-shore platform power plants with CO_2 capture (2017)
- Tarbiat Modares Univ. (Iran) – Microalgae extraction w/ electromagnetic field stimulation (2016—2018)
- Pioneer Energy (USA)– Mobile gas to electricity and liquids processes (2014—2016)
- Università degli Studi di Genoa (Italy) – Degradation of solid oxide fuel cells (2014—2015)
- University of São Paulo (Brazil) – Biodiesel production from waste cooking oil (2013—2014)
- Technical University of Dortmond (Germany) – Semicontinuous bio-butylacrylate (2013)
- MIT (USA) – Current state of solid oxide fuel cell research and commercialization (2012—2013)
- Imperial Oil (Canada) – Hybrid coal gasification and natural gas reforming systems (2011—2014)