

Q-CHRONICLES 2022-2024 SUMMARY

Farnaz Heidar-Zadeh, Assistant Professor in theoretical and computational chemistry at Oueen's University, develops machine-learning (ML) algorithms and software to accurately predict molecular properties and interactions, specifically for screening large chemical databases to accelerate chemical discovery. For example, as the Bruce Mitchell Ignite Chair at the Carbon to Metal Coating Institute (C2MCI), Farnaz is developing tiered data-driven approaches for designing gold nanoclusters for cancer therapeutics. Her ML-guided approach leverages experimental and computational data to explore uncharted areas of chemical space and discover novel compounds that might not be intuitive to human chemists.

Farnaz is a co-founder and the lead developer of the QC-Devs International Software Consortium, an inclusive community dedicated to creating sustainable, free, and open-source software for quantum chemistry. Her goal is to make coding accessible and research reproducible. With 15 active repositories, they have been repeatedly selected to mentor interns in the Google Summer of Code program. As Queen's first Cottrell Scholar, Farnaz is developing AI-integrated educational tools for molecular modeling to keep our students competitive in this fast-evolving world.

As Faculty Advisor to the American Chemical Society International Student Chapter at Queen's University (Q-ACS), the second in Canada, Farnaz has the privilege of working alongside our outstanding students and postdocs—trailblazers who are redefining student leadership. They turn vision into action by cultivating an environment where everyone can thrive, exemplified by the student-lead organization of "Celebrating Dr. Alfred R. Bader: Α 100th Birthday Symposium" in 2024 at Queen's University.



Artwork by **Yifan (Eva) Xie,** Undergraduate Student, Queen's Health Sciences depicting **Farnaz Heidar-Zadeh** teaching.



C2MCI Members at the 2023 Annual General Meeting, held in Chernoff Auditorium

Creation of the Carbon to Metal Coating Institute

By Jyoti Kotecha, Managing Director

Dr. Cathleen Crudden's successful \$24M New Frontiers Research Fund-Transformation grant has led to the creation of the Carbon to Metal Coating Institute (C2MCI), which was approved by Queen's Senate and endorsed by Queen's Board of Trustees as a Tier 1 (top tier) Research Institute at Queen's. The C2MCI is currently one of only four Tier 1 institutes at Queen's. The designation as a Tier 1 institute comes with direct funding from Queen's that will be used to support new international research collaborations leading to new funding and additional graduate training and research exchange opportunities. The C2MCI is an international interdisciplinary research institute. The aim of its research



program is to develop coating materials that will enhance the stability of metals used for transportation and energy infrastructure (macro level), improve microelectronics technology (micro level), and improve precision therapeutics for cancer diagnostics and treatment (nano level). C2MCI research outcomes will reduce construction and maintenance costs, open new avenues for microelectronics manufacturing and lead to the production of safer precision therapeutics for cancer treatment. Through C2MCI research, the next generation of Canadian scientists and industry leaders will be trained. Finally, the C2MCI has received \$850K in funding through the Mitacs Umbrella program. This funding represents 114 internship units over the next two years for C2MCI trainees to pursue industry- related research projects. The program will support knowledge translation and the smooth transition of C2MCI trainees into a successful career in a STEM-related industry post-graduation.



CARBON TO METAL COATING INSTITUTE at Queen's University

Dr. Cathleen Crudden

YEAR BY NUMBERS ~\$5 Million National Scholars from becoming a Tier 1 Institute Oncologists/Clinicians 1 4 Secured \$855K to fund HQP industry internships through the Mitacs Umbrella Program **Early Career Researchers** International Teams 5 6 **8** Faculty Members across 3 faculties Patents Internships Arts & Engineering & Health Science Applied Science Sciences 6 7 **10 Research Disciplines Government Partners Research Chairs** Art Conservation 8 Biology 10 Biomedical Chemistry **Industry Partners** Graduates Chemical Engineering **Civil Engineering** 13 15 Mechanical Engineering Molecular Science Seminars/Workshops Publications Oncology Physics 13 32 Highly Qualified 85 Personnel O Awards Presentations 6 20 22 28 48 98 BSc MSc PhD PDRA RA 3

Overview of the C2MCI composition and achievements to July 2024

Message from the Three Heads

Greetings from the Queen's Department of Chemistry!

This is a pivotal time. We are currently writing our 2025-30 strategic plan, which will chart our course as a department for the next 5 years and position us as a leading Department in fields such as green chemistry, materials chemistry for production and storage of energy, bioanalytical chemistry, and chemical biology. We're equally enthusiastic about our plans to prepare our undergraduate and graduate chemistry students for the opportunities and challenges that face us in the 21st century, especially climate change, pandemic preparedness, waste plastic, and the rise of artificial intelligence and machine learning. As part of the renewal of our department, we have recently signed the Green Chemistry Commitment, meaning that we will build green and sustainable chemistry concepts into more of our lecture and lab courses, beyond the existing elective courses on those subjects. We also contribute, with our research, towards 9 of the UN sustainable development goals.

This edition of Q-Chem Chronicles covers the period July 2022-June 2024. Over that time, our department has seen several changes in faculty and staff. Richard Oleschuk completed his term as Head of the Department in the summer of 2023. Our department has undergone dramatic renewal by hiring 9 new faculty members, including 4 women, over the last 6 years. Our newest faculty member, Dr. Lucia Lee, joined our department in 2022 and is keen to recruit students into her research program on main group supramolecular chemistry. The many changes in our staff complement, including the passing away of our much-beloved NMR Facility Manager Dr. François Sauriol, will be described in the message from the Department Manager.

Budgetary headwinds are facing all the universities in Ontario, including Queen's. The Ontario Government decided in 2020 to fund universities at a per-student rate *half* that of the other provinces in Canada, and to freeze funding and tuition. That lead to staff cuts, a hiring freeze, and faculty retirements, including in Chemistry. However, compared to other departments at Queen's or across



L-R: Dr. Richard Oleschuk (Head, 2020-2023), Dr. David Zechel (Interim Head, 2023), and Dr. Philip Jessop (Head, 2024-)

Ontario, we are better prepared to weather these headwinds thanks to our large complement of young faculty. In addition, the hiring freeze doesn't prevent new positions funded by donations. At present, we have an open position for a new faculty member in nanomaterials and surface science, thanks to a very generous donation from Queen's alumnus Bruce Mitchell. The department has also received major gifts from Robert Greenberg, Louise Berlin, Shirley Ann Olley, Dr. Joyce Reddoch, Dr. Barrie & Mrs. Katherine Gilbert, Mark Wiseman, Dr. Thomas Garrett, Beverlly McKerrow, Peter Edward, Dr. William Pearson, and many others. We are grateful for all donations, large or small, in these uncertain times.

In addition to having great students, supporting staff, and faculty, there are several reasons why you should consider joining or engaging with Queen's Chemistry as a student, alumni, prospective faculty member, or industry partner:

 Our Department is located in Chernoff Hall, an award winning building with inspiring architecture and state of the art facilities.

Queen's Chemistry has 25 faculty, including 8 women (32%), one of the highest percentages of female faculty in Canada.
Our research interests are broad and continue to evolve, covering: analytical / environmental, biological, chemical education, inorganic / organometallic, materials / polymer, organic, physical, and theoretical / computational chemistry. Our department hosts the Carbon-to-Metal-Coatings Institute (C2MCI),

an international institute that aims to develop coating materials that will enhance the stability of metals used in transportation, electronics, and precision medicine.

- Our department is a member and co-leader of Open Plastic, a Genome Canada funded

program dedicated to finding a biological solution to reduce waste plastic.

 We host the Contaminants of Emerging Concern – Research Excellence Network that develops new methods of detecting and treating new pollutants such as waste pharmaceuticals.

Our faculty have received more national awards in the past 5 years (per professor) than any other chemistry department in Ontario, and include 5 Canada Research Chairs, a Bader Chair, a Cottrell Scholar, and an Allie Vi Douglas University Professorship. They have also won many international awards and nearly every award from the Canadian Society for Chemistry!

- Our Department offers a number of exciting undergraduate degrees in chemistry, including a joint program with Environmental Studies. We also provide the chemistry expertise required for Engineering Chemistry undergraduate students to graduate with dual accreditation (as both engineers and chemists). Undergrads have many opportunities to work in our research labs during the summer months, or as 4th year students during their capstone research projects. Such students often attend chemistry conferences and become co-authors of articles that are published in top chemistry journals. Many of our undergraduates proceed to graduate studies.

- We also offer an exciting graduate studies program that is currently instructing over 100 graduate students at the MSc and PhD level. Our students receive a competitive minimum stipend (which rapidly increases with awards!), are unionized, and are ably represented by the Queen's Graduate Chemistry Society. They are also highly successful in winning awards (nearly 50% are award holders!), and go on to hold positions in academia, government, and industry following graduation.

 Our Department offers an accelerated MSc program for our ambitious chemistry undergraduates, and a Dual MSc program in partnership with the University of Stuttgart to those students who wish to study abroad.

In addition to studying chemistry in our graduate program, we also offer graduate courses in Scientific Ethics, Business Skills for the Chemical Industry, and Leadership Skills.
 Our Department is closely connected to industry through the Queen's Chemistry Innovation Council (QCIC), a group of business leaders and executives who advise our department and provide career guidance to our graduate students.

In closing we would like to highlight one last distinguishing feature of our Department, and that is our sense of community. Chernoff Hall, with its many common areas, encourages many informal chats between students, faculty, and staff during coffee and lunch breaks. Undergraduates hang out and study outside the offices of faculty in our wonderful 4th floor atrium, and often get to know our faculty personally. With this in mind, if you are interested in joining our chemistry community as an undergraduate or graduate student, please feel free to contact me (Philip) for more information at depthead@chem.gueensu.ca. I look forward to hearing from you!

Message from the Departmental Manager

Lindsay Lee

The Department of Chemistry has had a flurry of activity over the last two years as we have been restructuring to manage the budget crisis while ensuring we meet our



teaching and research mandates. I want to say a huge thank you to our amazing staff who have been the backbone of the department, while continuously pivoting directions and adapting to a changing environment. Our staff have demonstrated the highest resiliency throughout these challenging times, and I want to acknowledge their accomplishments over the past two years. I also want to say thank you to Matthew MacArthur who stepped in as the interim Department Manager from July 2023 to October 2024 during my maternity leave and helped lead the team through some pivotal changes. Over the past two years, we welcomed many new staff, including 11 staffing changes to the Department of Chemistry in a variety of roles. Yvette Liu and Laura Hull were hired in August 2022 as Chemical Technologists

supporting the undergraduate teaching laboratories. Andrew Boddington was hired in July 2023 as the Technical Support Assistant to assist in a variety of technical roles throughout the department. Dr. Alaina Boyd was hired as a Laboratory and Student Training Coordinator in July 2023 to oversee the first-year undergraduate courses and laboratories. Kristen Harrington was hired in July 2023 as a Laboratory and Student Training Coordinator for the second- and third-year undergraduate courses and laboratories. Josh Zacks was hired as an Undergraduate Program Associate in November 2023 and has since accepted a Chemical Technologist role in our department, supporting the undergraduate laboratories. Dr. Muzaddid Sarker was hired in February 2024 as the NMR Facility Instrumentation Manager to oversee the administration and research of the NMR facility. Dr. Mario Khalil was hired in February 2024 as the Mass Spectrometry Facility Manager to oversee the administration and research of the mass spectrometry facility. Bill Free was hired in February 2024 as the Instrumentation Technologist to provide technical assistance to our undergraduate labs, research activities and analytical facilities. Patricia Oprea was hired in July 2024 as the Graduate Assistant to oversee the administration of our graduate programs and provide graduate student support. Sohaib Ghazi was hired in September 2024 as the Finance Assistant for Chemistry Stores to oversee the financial processing and reporting.

Alongside the new additions, we said goodbye to several staff members over the last two years. We said farewell and thank you to Laura Cybulski (Administrative and Advancement Coordinator), Dr. Jiaxi Wang (Mass Spectrometer Facility Manager), Michelle Boutilier (Graduate Assistant), Nancy Wu (Financial Coordinator), Elizabeth Agostino (Financial Assistant and Special Projects), Candace Chabot (Administrative and Advancement Coordinator) and Dr. Kevin McEleney (Microscopy Facility Instrumentation Manager). We wish all our former staff the best of luck on the next chapters of their lives.

We also want to celebrate and remember Dr. Francoise Sauriol who passed away on August 16, 2023. Dr. Sauriol started in our NMR department in 1998 and served as the NMR Facility Instrumentation Manager for 25 years. Please see her tribute section for more information.

The Department of Chemistry has also implemented several facilities updates over the past two years, with undergraduate laboratory equipment purchases, upgrades to our compressed air, and improvements to our ventilation revitalization project. We also received a generous donation from Will Rogers and Helen Ferkul (with contributions from the Chemistry Department) to fund a Makerspace that will provide new innovative technologies to our undergraduate and graduate students (e.g., 3D printers).

Our focus for the upcoming year will be to complete our Queen's University Quality Assurance Processes and Chemical Institute of Canada accreditations. We will also continue to focus on navigating the budget crisis and positioning the department with a new strategic plan. In conclusion, I want to recognize and thank all the incredible chemistry staff members, faculty members and students who pulled together to support the missions and vision of the department over the past two years. It has been an incredible and rewarding experience to work alongside a dedicated and innovative team who ensure that our department continually prospers.

Success Story

by Dr. Diane Beauchemin

Despite COVID-19, Margaret MacConnachie successfully defended her PhD thesis in April 2023, less than 5 years after undertaking graduate studies in September 2018 in the Beauchemin group. She had completed a BScH at Queen's and her undergraduate thesis on forensic analysis of solder in the Beauchemin group. Margaret received an OGS scholarship during her graduate studies. She is an excellent speaker, even in French, as she received the first poster prize at Spectr'Atom 2019, a conference entirely in French that was held in Montreal in June 2019!

Her PhD thesis included 3 published papers and 1 submitted manuscript, which was published in June 2023. She received an <u>RSC</u> <u>Advances Outstanding Student Paper Award</u> <u>2022</u> in the Analytical Chemistry category for her paper in RSC Advances entitled "Sex determination of mummies through multi-elemental analysis of head hair by electrothermal vaporization coupled to inductively coupled plasma optical emission spectrometry", which was



(now **Dr**.) **Margaret MacConnachie** speaking at a Conference in 2023 Photo by **Zichao Zhou**

published in December 2022. This paper involved hair samples collected from 500-year-old Peruvian mummies by Dr. Jocelyn Williams, an anthropologist from Trent University. Two undergraduate students had done their undergraduate theses under Margaret's mentorship without

succeeding in developing a method that could accurately predict the sex of Peruvian mummies using a model made with hair from living humans in Kingston, ON. Margaret went through their data and identified the fingerprint elements that could be successfully used to this end.

Margaret was on track to complete PhD studies in August 2022 (i.e., within 4 years of undertaking graduate studies) until she got a Mitacs Globalink Award to spend 6 months analyzing a collection of European medieval children bones by laser ablation coupled to inductively coupled plasma mass spectrometry under the supervision of Dr. Kaare Lund Rasmussen at the University of Denmark. This work was excluded from her thesis and will be published later, as it is part of a large project.

Although she originally intended to undertake postdoctoral studies, she became an Adjunct and taught CHEM 112 followed by online CHEM 113 and CHEM 114 over the summer in 2024 while awaiting the outcome of applications. She loved the experience so much that she jumped at the opportunity to apply for an Assistant Professor position at Mount Royal University, which she was offered and immediately accepted! She is the second PhD graduate from the Beauchemin group to obtain a position at this institution, the first one being Dr. Nausheen Sadiq (who is now up for tenure). We have a saying in French: "jamais deux sans trois", never two without three. Stay tuned to see who will next join the Department of Chemistry at Mount Royal University!

MakerSpace in the Making

by The MakerSpace Committee

There are some exciting changes coming to Chernoff 100! When Chernoff Hall opened in 2002, before students had high-powered, internet-connected computers in their pockets, this room hosted the Department's computer lab. Over the years, it has evolved into a laboratory and instrumentation space, and now, thanks to a generous donation from our cherished alumni, this room will become a MakerSpace for both the Department and the broader Queen's community. The Department is undertaking the renovation of room 100 to house the new MakerSpace equipment and create an open, inviting communal workspace for project development. This facility will see a gradual opening over the next year as renovations of the space are completed and new equipment is purchased and installed.

This new MakerSpace will be unique at Queen's, being designed specifically with chemical research in mind. Tools will be selected that help researchers build custom labware, fabricate microfluidic devices, and print electronic and photonic materials. Equipped with a fume hood, the facility will allow the handling of materials that typical maker spaces cannot. The MakerSpace aims to be complementary to other facilities on campus; for example, we are planning a collaboration with SparQ Studios Makerspace (located in Mitchell Hall), which hosts its own diverse suite of equipment including woodworking tools and materials.

To realize these goals, a MakerSpace committee with representation from graduate students, the Technical Resources Committee, staff, and faculty has been formed to assist in the design and installation of the new facility. We have already begun investing in 3D printing equipment: a Formlabs resin printer, two Prusa i3 MK3S+ filament printers, a Prusa mini+ printer, and a SnapMaker A250 printer that not only prints using a filament, but also has a laser engraving function and a computer numerical control (CNC) router for both additive and subtractive manufacturing. Among these, the Formlabs resin printer is already operational and is being used to print moulds for lab-on-a-chip devices. The committee is also in the process of surveying the Department for additional equipment to complement our initial suite of tools. If you would like to learn more about the MakerSpace, or have any suggestions for its development, please reach out to us at chemadco@queensu.ca. We look forward to providing our next progress update to unveil the space and identify our donors.

Queen's Chemistry Joins Chemical **Engineering to** Train the Next Generation of Leaders for a Sustainable Plastic **Economy**

by Dr. David Zechel

David L. Zechel is a co-applicant on the recently awarded NSERC CREATE grant entitled Plastic Affordance through Science and Technology Innovation for Circular Solutions (PLASTICS). The PLASTICS



program, led by James McLellan from Queen's Chemical Engineering, will develop research and training programs to train 70 HQP over 6 years with cutting edge technical, translational, Prof. Uwe Bornscheuer business, and leadership skills for the clean

(bio)tech workforce. In addition to the \$1.65 million funding from NSERC, this program will receive over \$2.1 million from the participating institutions and industrial partners as both cash and in-kind. For more

information on this exciting training program, please follow this link:

https://smithengineering.queensu.ca/news/20 24/05/james-mclellan-awarded-nserc-create.

Queen's Chemistry and the Edwards **Better World Fund** Join Forces to **Eliminate Waste** Plastic

by Dr. David Zechel

Professors David Zechel and Graeme Howe of Queen's Chemistry are members of the Genome Canada funded Open Plastic program (www.openplastic.com), which seeks biological methods to degrade and valorize waste plastic. Since launching in 2021, the Open Plastic program has been incredibly effective at bringing together researchers from diverse fields to tackle this problem. With generous funding from the Shirley and Bruce Edwards Better World Fund, the Open Plastic Program along with Queen's Chemistry, Chemical Engineering, and Biology were able to organize the following world class events to share research on creating sustainable solutions for waste plastic:

November 11th, 2022. The inaugural Open Plastic Lecture was delivered by Prof. Uwe Bornscheuer (pictured above) in the Department of Chemistry. Prof. Bornscheuer leads a research group in the Dept. of Biotechnology & Enzyme Catalysis, University of Greifswald, Germany that is at the forefront of enzyme biocatalysis, including enzymatic biodegradation of plastics. A video of Prof. Bornscheuer's outstanding lecture on the challenges of plastic waste, and his search for enzymes that can degrade them, can be found here:

https://www.queensu.ca/alumni/my-services/ media-hub/virtual-events/open-plastics-lecture



Open Plastic Symposium 2023

May 29th-31st, 2023, Open Plastic
 Symposium. The inaugural OP symposium
 was held at the Donald Gordon Conference
 Centre and attended by 60+ investigators,
 students, and invited speakers, including Prof.
 Alain Marty (Chief Scientific Director,
 Carbios) and Rick Eno (Industry Advisor,
 Allonnia LLC).

- April 22nd-24th, 2024, Open Plastic Symposium. The second OP symposium was another hit, with over 60 attendees and outstanding keynote speakers, including Nitin Vaish (Business Development Lead, Ginko Bioworks) and Adam Guss (Genetic and Metabolic Engineer, Oak Ridge National Laboratory).

Graduating the First Cohort

by Dr. Zhe She

Since setting up the laboratory in 2018, working through various projects, and publishing research findings, the happiest moment came in 2023 when I saw the first cohort of five graduate students successfully complete their studies together. Four of them attended the same graduation ceremony in



Celebration after convocation (from left to right: Kailey Browne, MSc; Kristin Partanen, MSc; Dr. Jennifer McLeod; Dr. Yu Pei; Dr. Zhe She)

Fall 2023, while Allison Cole defended her MSc shortly after. Together, they have advanced our understanding of surface chemistry and developed innovative techniques for analyzing pathogens and chemical contaminants in environmental samples. It is wonderful to see them getting ready and moving onto the next stage of their professional careers.

Q-ACS Activities

The mission of Q-ACS is to advance professional and technical development while promoting diversity, equity, inclusion and respect (DEIR) within the Queen's chemical community. Recognized as an Outstanding Student Chapter for two consecutive years (2022-2024), Q-ACS strives for excellence across its activities, events, and initiatives.

As Q-ACS is dedicated to supporting the academic and professional growth of the Queen's chemical community, the Chapter launched a series of enriching workshops, along with the introduction of a Professional Development Travel Award, aimed at providing students and postdoctoral scholars with essential skills and opportunities. Q-ACS is fostering the next generation of leaders in the chemical sciences. Through the Professional-Technical Development Travel Award program and workshops, the Chapter empowers members with essential knowledge, skills, and opportunities. As the Chapter continues to invest in member growth, Q-ACS hopes to serve as a support system in the Queen's chemical community.

As an official ACS International Student Chapter, Q-ACS can implement the Graduate Student and Postdoctoral Scholar Recognition Program (GSPSRP) within the department. In 2022, Q-ACS collected and scored



Members of the Heidar-Zadeh research group (and Q-ACS Faculty Advisor **Dr. Heidar-Zadeh**) having some fun at the event photobooth

nominations from the department in the three GSPSRP categories at both the graduate student and postdoctoral scholar levels. The three categories are: 1) Leadership in Mentoring 2) Leadership in the Promotion of Diversity, Equity, Inclusion, and Respect (DEIR) and 3) Leadership in the Promotion of Research Safety. In addition to the GSPSRP awards, Q-ACS also presented its inaugural Excellence Awards; the Q-ACS Excellence Awards program was modeled on the official ACS Salutes to Excellence Awards program. During the Winter 2023 term, Q-ACS collected nominations for the following three awards: 1) Alumni Excellence 2) EDII Excellence and 3) Initiatives Excellence. The Leadership Awards and the Excellence Awards were remitted at the inaugural spring reception.

On March 30th, 2023, Q-ACS hosted its largest event of 2022-2023: the Chapter's inaugural spring reception Celebrating Equity, Diversity, Inclusion, and Indigeneity (EDII) in Chemical Sciences. This event was open to the entire department, ranging from undergraduate students to faculty and staff. The goal was to organize a barrier-free and safe environment for the Queen's chemistry community to network and discuss EDII. To make this event accessible and free-of-charge, the Chapter secured ~\$10,000 CAD of funding from several sources, including ACS, NanoFabrication Kingston, Public Service Alliance of Canada – 901, Dupont Kingston Technology Centre, and Queen's University.

The event was attended by ~100 people, ranging from undergraduate students through faculty/staff, and included a formal reception and dinner in the Limestone City Ballroom at



Q-ACS Founder/President, **Daniel (Dan) Reddy**, addressing attendees at the Chapter's inaugural spring reception event

the Four Points by Sheraton in Kingston. After the social hour, the attendees heard from Chapter representatives and three keynote speakers: Dr. Racquel Jemison [Program Manager, ACS Office of Diversity (Pre-recorded Video)]; Dr. Nicholas (Nick) Mosey [Associate Dean (Research) and Deputy Provost (Academic Operations and Inclusion), Queen's University – Faculty of Arts and Science]; and Dr. Elliot Chapple [Director (EDII), Queen's University -Faculty of Arts and Science]. The event concluded with an award ceremony honoring nine members of the Queen's chemistry community through the Graduate Student and Postdoctoral Scholar Recognition Program and the Q-ACS Excellence Awards.

In March 2024, Q-ACS hosted the second Celebration Series event, "Celebrating Green Chemistry and Sustainability." This event was open to both the entire Departments of Chemistry and Chemical Engineering, ranging from undergraduate students to faculty/staff. The goal was to organize a barrier-free and safe environment for the Queen's chemical community to network and facilitate discussions around green chemistry and sustainability. To make this event accessible and free-of-charge, the Chapter fundraised from several sources, including ACS, Carbon-to-Metal Coating Institute, Public Service Alliance of Canada - 901, Queen's University, and others. In total, the Chapter fundraised ~\$11,000 CAD to bring this event to fruition. With funding secured, the Chapter was able to book the Limestone City Ballroom at the Kingston Market Square Hotel and provide ~110 attendees with hors d'oeuvres, one drink ticket, and a full meal at no-cost, along with some taxi vouchers to



Members of Q-ACS **Dan Reddy, Rachel Korchinsky,** and **José Giovanni Leite de Brito** (left to right) with **Dr. David Laviska** from the ACS Green Chemistry Institute.

return home after the event, courtesy of the Department of Chemistry. After the networking/social hour, attendees transitioned to the ballroom/dining area to hear from Chapter representatives and the keynote speaker, 2023 ACS Fellow, Tier 1 Canada Research Chair in Green Chemistry, and Head/Full Professor Dr. Philip Jessop. The Chapter also presented three Excellence Awards to graduate students and postdoctoral scholars, in addition to other official ACS and Chapter awards.

ACS Green Chemistry Institute - Summer School 2024

The ACS Green and Sustainable Chemistry Summer School (GSCSS) is a highly selective week-long program for graduate students and postdoctoral chemists and engineers. Each year, approximately 60 exceptional students from North, Central, and South America and the Caribbean are selected from a large pool of applicants and gather for this fully funded once-in-a-lifetime opportunity. Members of Q-ACS Dan Reddy, Rachel Korchinsky, and José Giovanni Leite de Brito as well as fellow Queen's University students Raz Abbasi and Alex Redmond MacDonald participated in this year's ACS Green Chemistry Institute Summer School at the University of Vermont. The Chapter had the opportunity to meet Dr. David A. Laviska, who is an inspiration for the Chapter. The exceptional team of Dr. David A. Laviska, Dr. Sederra Ross, Cecilia Smith, Christiana Briddell, Dr. Edmond Lam, Dr. Isamir Martínez, and Dr. Adelina Voutchkova, organized and hosted this event with skill, kindness, and warmth. Their efforts created memories that will last a lifetime.



Members of Q-ACS (left to right) at the Q-ACS industry roundtable: José Giovanni (Gio) Leite de Brito, Maximilian (Max) van Zyl, Daniel (Dan) Reddy, Rachel Korchinsky, Kennedy Quigg, and Dr. Farnaz Heidar-Zadeh

Industry Roundtable -Summer 2024

The first Q-ACS industry roundtable event was a tremendous success! Thanks to participants for their incredible support, the valuable connections made and opportunities will help Q-ACS flourish.

Q-ACS Booth at RXN HUB Innovation Summit 2024

Reaction (RXN) HUB's Innovation Summit was an inspiration where multiple phenomenal speakers discussed the intricacies of sustainability challenges. Q-ACS had the opportunity to host a booth at the event and was thrilled with the interest from the chemical community.



Q-ACS members Aviva Gerring (left) and Rachel Korchinsky (right) hosted the Q-ACS booth at the RXN HUB Summit

Celebrating the Late Dr. Alfred Bader: A 100th Birthday Symposium

Q-ACS is excited to host the first-ever Bader Symposium on Monday, November 18th, 2024 at The Isabel Bader Centre for the Performing Arts to celebrate this year as the 100th birthday of the late Dr. Alfred R. Bader. In addition to founding the Aldrich Chemical Company, which through a series of mergers became MilliporeSigma, Dr. Bader was a transformative benefactor of Chemistry, The Arts, and philanthropy worldwide. This free-of-charge symposium will feature keynote and plenary speakers from Chemistry and The Arts, the Bader Graduate Student and Postdoctoral Scholar Lectures, a multidisciplinary poster session, and an artistic/musical exhibition. The symposium will conclude with a plenary lecture by Dr. Daniel Bader (CEO/President, Bader Philanthropies, Inc.) through the Brockington Visitorship.

Queen's Chemistry Designates Adjunct Appointment to Dr. Nora Chan

by Dr. Zhe She



Dr. Nora Chan (*left*) is a Principal Defence Scientist at the Defence Research and Development Canada – Suffield Research Centre (DRDC SRC). Her research interests focus on applying multidisciplinary

technologies to develop innovative solutions to biological sensing and medical countermeasures with a view towards international cooperation. Her access to unique defence capabilities such as bioaerosol detection and quantum simulations will provide students with opportunities to apply their research to benefit both Canadian academics and the Canadian Armed Forces.at the event and was thrilled with the interest from the chemical community.

Tribute to Dr. Françoise Sauriol



Dr. Françoise Sauriol passed away in August 2023 after serving as our NMR Facility manager for 25 years. Dr. Sauriol had served as an NMR Facility manager at top Canadian institutions for 40 years. She obtained her PhD in Chemistry and NMR

spectroscopy at l'Université de Montréal. In 1983, Dr. Sauriol was appointed the NMR Facility Manager in the Department of Chemistry at McGill University. She remained in this role until she moved to Queen's Chemistry in 1998, where she served as the NMR Manager for 25 years. The 25-year milestone was celebrated during a dinner given by the Principal and Vice-Chancellor Patrick Deane (June 1, 2023).

At Queen's Dr. Sauriol was an integral member of the Department, and much beloved for her collegiality and kind spirit. She was well known for her brilliance in solving molecular structures by NMR spectroscopy and was actively sought out for her expertise by many research groups in our department and beyond. This led to Dr. Sauriol appearing as a co-author on over 60 publications. Dr. Sauriol was also well known for her dedication to our students. In addition to training hundreds of students on how to use NMR instruments, Dr. Sauriol also spent countless hours assisting students in setting up sophisticated NMR experiments and in helping them interpret their NMR spectra. Dr. Sauriol was also a passionate teacher and served as the designated instructor for our graduate courses in NMR spectroscopy since her appointment in 1998. In 2015, Dr. Sauriol was presented with a Special Recognition for Staff Award by Queen's to formally recognize and celebrate her contributions. Dr. Sauriol was predeceased by her husband Gabriel Lord and is survived by her sister Cecile Sauriol and her brother Gilbert and several nieces and nephews.

Dr. Sauriol will be greatly missed by the Department.

Catalyzing Connections: Aligning Kingston's Next Generation of Professionals with the Chemical Industry

by Rachel Shum and Jennifer McLeod

On November 18th, 2022, the CIC Kingston local section hosted its 2nd annual Chemical Career Fair. Co-organized by PhD students, Rachel Shum and Jennifer McLeod, the career fair drew in 21 companies and 200+ attendees to Kingston's iconic City Hall. With over 60 company representatives present, attendees had ample opportunity to network, apply for open positions, and learn more about the strong chemical industries in their communities. The CIC Kingston Local Section team was delighted to welcome CIC Executive Director Dr. Josephine Tsang, who graciously opened the event and hosted the booth for the Chemical Institute of Canada.

The annual Chemical Career Fair is designed to connect both new and established chemical industries with the next generation of chemical professionals. As investments in Kingston's clean technology and chemical sectors continues to grow, CIC Kingston is thrilled to be the largest local platform connecting members of the chemical community together. We were delighted to host: 3M, Afiya Beauty, Chemical Institute of Canada, Canadian Nuclear Laboratories. CO2L Technologies.

Nuclear Laboratorios, CO2L Technologies, DuPont, Eurofins CDMO Alphora, Goodyear, GreenCentre Canada, INVISTA Canada, Intellectual Property Institute of Canada (IPIC), KEYS Job Centre, Kingston Process Metallurgy (KPM), Mitacs, Novelis, National Research Council Canada (NRC), Open Plastic, PepsiCo, Rillea Technologies, RXN HUB, and Solvay.

The Career Fair would not have been possible without the generous support of dedicated sponsors! Platinum Sponsors: KPM, RXN HUB, Canadian Nuclear Laboratories, Open Plastic, and X-Chem. Gold Sponsor: Eurofins CDMO Alphora. Silver Sponsor: Rillea Technologies. Bronze Sponsor: Afiya Beauty.

We would also like to thank our organizing committee: Dianne Lee, Marketing Director; Parimah Aminfar, Partnerships Coordinator; and Julia McPhail, Social Media Coordinator, and our wonderful volunteer team for all their hard work!

"Traveling from Montreal to Kingston for the CIC Kingston career fair was a pivotal step in my career journey, opening doors I never anticipated. Meeting with Alain, the co-principal of KPM, allowed me to share my CV and ultimately led to a job offer—now I'm thriving as an analytical chemist and building my network in Kingston." – Stella Vu, Concordia U '22

"I think you found a winner - keep the venue and format. The pub mixer afterwards was great. Your event was helpful for recruitment, creating awareness, and building connections. We met a promising new hire!"- Dr. David Zechel, Open Plastic

"The team did a fantastic job managing and making sure everyone was happy. It was a very positive experience. It was great to be able to speak directly to engaging supervisors, technicians, and management about both careers and chemistry." - Dan Barker, Queen's U Ph.D. Candidate



CIC Kingston's Chemical Career Fair team from L to R: Yu Pei, Lizzie Bygott, Julia McPhail, Steacy Coombs, Rachel Shum, Jennifer McLeod, Dianne Lee, Kathleen Ross, Kailey Browne, Parimah Aminfar, Brandon Becher Nienhaus, Raymond Lai, Sho Fujita

2022-2024 Departmental Highlights

June 2022

• Highlighting Women in the Chemical Sciences and the ACS Women Chemists Committee

On June 28th, 2022, Q-ACS celebrated the 95th anniversary of the ACS Women Chemists Committee (WCC); Q-ACS was awarded \$100 USD by the WCC to host the event. The grant stipulated that the event "must follow the WCC mission to 'attract, retain, develop, promote, and advocate for women to positively impact diversity, equity, and inclusion in the [American Chemical] Society and the profession" and that "the event must have at least 10 participants." Q-ACS worked with other groups including the Department of Chemical Engineering, Gender Minorities in Physics (GEMINI-P), and QC-IDEAS to promote the event. The event featured talks by 1) Dr. Amy Balija (ACS National WCC Chair) (Virtual) 2) Dr. Amanda Bongers (Queen's Chemistry Equity, Diversity, and Inclusion Committee Chair) 3) Dr. Shoma Sinha (Queen's Women's Network and Queen's Partnerships and Innovation) 4) Brooke Ring (Women in Science at Queen's) and 5) Rachel Shum (Chemical Institute of Canada - Kingston Section). Q-ACS provided refreshments, and the event was nicely attended.

August 2022 • Mitacs Invention to Innovation (I2I) Skills

Training Program

PhD student Daniel Reddy (Oleschuk group) was accepted into the Mitacs Invention to Innovation (I2I) Skills Training program for the 2022-2023 cohort. Based on Daniel's innovation idea, research



background, accomplishments and motivation, he also received the \$8500 Frank Maine Innovation scholarship.

September 2022

• Royal Society of Canada



Dr. Guojun Liu one of 7 Queen's University faculty members to be appointed to the Royal Society of Canada. As Canada Research Chair in Materials Science at Queen's, Dr. Liu is widely

acknowledged as a world leader in his field. He has led the development of nano- and micro-structured materials. Through this research, he has made critical fundamental and applied scientific contributions, including the development of nanoscale coatings that can be used to improve handheld electronic devices and functional textiles.



In-person invited speakers from left-to-right: Brooke Ring, Dr. Shoma Sinha, Rachel Shum, and Dr. Amanda Bongers

• NSERC's National Research Photo Competition



Microfluidically generated salt crystal

Phillip Hillen (MSc Student, Oleschuk Group) is a finalist for the Natural Sciences and Engineering Research Council of Canada (NSERC) a national research photo competition. Researchers across Canada submit images to share a new perspective of their research. Philip generated magnesium sulfate salt crystals by evaporating a droplet of salt water on a microfluidically modified surface. The image shows a perfectly circular salt crystal, five hundred microns in diameter.

December 2022

• Vanier Canada Graduate Scholarship



Josh Kofsky (Capicciotti Group), PhD candidate, was awarded the Vanier Canada Graduate Scholarship for his work on the synthesis of complex O-glycans for probing glycan-protein binding interactions.

• 2022 Nobel Prize in Chemistry Address

The late Drs. Victor Snieckus and Alfred Bader were mentioned in Barry Sharpless's 2022 Nobel Prize in Chemistry Address.

• Q-ACS Professional-Technical Development Workshop

In December 2022, Q-ACS welcomed Dr. Randy Ellis from Queen's University's School of Computing and Department of Surgery to lead a "Data Analysis Overview" workshop. This session was tailored to the unique needs of chemistry students and professionals, focusing on data analysis techniques directly applicable to their field.

February 2023

• Front Cover of ACS Chemical Biology

The front cover of ACS Chemical Biology features work led by the groups of Graeme Howe and Avena Ross, with the art design by PhD student Neil Grenade. Their research is entitled "Discovery of a Tambjamine Gene Cluster in Streptomyces Suggests Convergent Evolution in Bipyrrole Natural Product Biosynthesis" Article contributors were Neil Grenade, Dragos Chiriac, Ola Pasternak, Jonathan Babulic, Bronwyn Rowland, Graeme Howe and Avena Ross, representing members of four different research groups from the department!

March 2023

• Tribute to Suning Wang in the Canadian Journal of Chemistry



The March 2023, Volume 101, Number 3 of the Canadian Journal of Chemistry is a Special Issue to honour and celebrate the incredible life of Professor Suning Wang. The

introduction of this issue was lovingly crafted by Dr. Zachary Hudson and Dr. Barry Blight, former students and colleagues of Suning. The issue features 13 articles by Suning's students, friends, colleagues and those she inspired throughout her career. It truly is a tribute to her desire to bring people together and share in the joys of new discoveries.

• Two outstanding PhD students receive Inaugural Black Excellence in Mentorship awards from the Faculty of Arts and Science

- Neil Grenade (Howe/Ross groups) obtained his bachelor's degree in chemistry at the University of Ontario Institute of Technology before completing training as a Pharmaceutical Instrumentation Analyst from Seneca College of Applied Arts and Technology. He currently holds a prestigious NSERC Postgraduate Scholarship (PGS D) to support his PhD work interrogating the evolution and enzymes involved in the biosynthesis of alkaloid natural products by bacteria. Neil's supervisors Dr. Howe and Ross commented on how Neil is welcoming and encouraging to all new members of our lab, frequently mentors undergrads and other students, is always willing to help and leads by example. Neil's nominators also spoke of how much they, as his co-advisor's, learned from Neil. His keen insight into the importance of making your work available to the community through knowledge translation was an important learning opportunity for them. - Adekunle Omoboye (She group) obtained his bachelor's degree from the Federal



Neil Grenade (left) and Adekunle Omoboye (right)

University of Technology in Akure, Nigeria, before pursuing a Master's degree in Food Science at the University of British Columbia in Vancouver, Canada. He currently holds a prestigious NSERC Canada Graduate Scholarship (CGS D) to support his PhD work investigating self-assembled monolayers and biological molecules using electrochemistry and scanning probe microscopy towards developing new tools for bioanalytical detection and biomedical applications. Adekunle's Supervisor Dr. She was thrilled to nominate him for the award stating "I have thoroughly enjoyed working with Adekunle over the past three years. He is a talented young scientist who is passionate about learning and developing new analytical methods. Adekunle has been actively involved in mentoring his fellow students in the laboratory, always striving to be flexible and accommodating, especially for those in need. It's wonderful to see his efforts recognized with the Black Excellence in Mentorship award.'

• Q-ACS Professional-Technical Development Travel Award

Q-ACS introduced its inaugural

"Professional-Technical Development Travel Award" in March 2023. This initiative reflects the Chapter's commitment to supporting members' growth and career aspirations. Three chemistry students were granted the opportunity to attend the "Women Creating a More Sustainable World Conference" in Ottawa. This experience not only exposed the attendees to cutting-edge research and networking but also aligned with the Chapter's values of inclusivity and sustainability.



Left-to-right: Yulianna Holowaty, Anastasia Messina, and Morgan Lackey attending the "Women Creating a More Sustainable World" Conference in Ottawa, ON

• Awards: Celebrating EDII in the Chemical Sciences

At the Q-ACS Chapter's "Celebrating EDII in the Chemical Sciences Event," nine total individuals were recognized through two awards programs: 1) the official ACS Graduate Student and Postdoctoral Scholar Recognition Program (GSPSRP) and 2) the Chapter-instituted Excellence Awards program. After scoring the nominations, Q-ACS submitted recommendations to the ACS, who approved the following individuals to receive 2022 GSPSRP awards:

Leadership in Mentoring (Graduate Student): Andre Castillo
Leadership in Mentoring (Postdoctoral Scholar): Dr. Lishen Zhang
Leadership in the Promotion of DEIR (Graduate Student): Jenny McLeod
Leadership in the Promotion of DEIR (Postdoctoral Scholar): Dr. Shideh Ahmadi
Leadership in the Promotion of Research Safety (Graduate Student): Malek Hassan
Leadership in the Promotion of Research Safety (Postdoctoral Scholar): Dr. Roberto Nolla-Saltiel



2022 Graduate Student and Postdoctoral Scholars Recognition Program Award Recipients. Pictured left-to-right: Dr. Lishen Zang (Mentorship), Dr. Roberto Nolla-Saltiel (Research Safety), Andre Castillo (Mentorship), Malek Hassan (Research Safety), Dr. Shideh Ahmadi (DEIR), and Jennifer McLeod (DEIR)

Though the awards were approved in 2022, Q-ACS presented the awards at the reception in March 2023. The ACS provided each recipient with a digital certificate, and through the generosity of our supporters, Q-ACS was able to print and frame the certificates, as well as provide each recipient with a \$50 CAD Visa gift card. Notably, Queen's was the only institution worldwide to have awardees at both the graduate student and postdoctoral scholar levels across all three award categories.

Based on the submitted nominations, the following individuals received the Excellence Awards:

 Alumni Excellence Award: Dr. Alex Veinot
 EDII Excellence Award: Queen's Chemistry – Inclusivity, Diversity, Equity, and Awareness Society (QC-IDEAS)

- Initiatives Excellence Award: Department of Chemistry's Hand Sanitizer Project.



Ayden Harrison (Left) receiving a Q-ACS Excellence Award on behalf of QC-IDEAS, and Dr. Richard Oleschuk (Right) receiving a Q-ACS Excellence Award on behalf of Queen's Chemistry



Joe Wadden (left), Esther Hoffman (right)

April 2023 • Award-Winning 4th Year

Research Projects

Esther Hoffman (Howe Group) won the Walter MacFarlane Smith Prize in Chemistry for their thesis "enzyme that can degrade nylon-based materials quickly and under mild conditions". Joe Wadden (She Group) won the M. Sullivan and Son Limited Scholarship for their thesis "Investigation into Production of Microfluidic Devices and Electrodes using Fused Filament Fabrication (FDM) 3D printing methods".



Crystallization pattern

Art of Research Award

Rachel Korchinsky (Jessop group) won the Art of Research Award in the Innovation for Global Impact category for an electron microscopy image of salts that crystallized after evaporation of a lithium-containing brine.

• Cross of Freedom and Solidarity

On April 30th, Professor Gregory Jerkiewicz was honoured by His Excellency Witold Dzielski, the Polish Ambassador to Canada, with a Cross of Freedom and Solidarity. The Cross honours members of the democratic opposition in Poland who between the years 1956 and 1989 were killed, seriously wounded or injured, arrested, imprisoned or interned for at least 30 days, who lost jobs or were expelled from school or university for at least six months as a result of their activities for the benefit of a free and democratic Poland.



Dr. Gregory Jerkiewicz (left) and the Polish Ambassador to Canada (middle)

May 2023

• Q-ACS Professional-Technical Development Workshop

In May 2023, Dr. Mark Jones, an ACS Fellow and expert in the field, conducted the "Presentation Skills" workshop, teaching the art of delivering compelling presentations and captivating audiences. These skills not only enhance professional growth but also enable members to effectively share their research.

June 2023 • R.U. Lemieux Award



July 2023 • Issue in honour of Cathleen Crudden

The July 2023, Volume 101, Number 7 of the Canadian Journal of Chemistry is a Special Issue to honour Professor Cathy Crudden. The papers and articles for this issue were provided by the incredible network Cathy has built over the course of her career from former students

and postdoctoral fellows to colleagues and friends.

• Bourse Jean d'Alembert

Professor Tucker Carrington received a Bourse Jean D'Alembert from l'Université Paris-Saclay, which consisted of 2800 euros per month while he carried out research at



l'Université Paris-Saclay. Professor Carrington also became a Fellow of the Royal Society of Canada in 2023.

• Q-ACS hosts the ACS Career Kick-Starter Workshop for the first time in Canada!

Beginning in Fall 2022, Q-ACS partnered with the Science-to-Business Network – Kingston Section (S2BN-K) to co-host the official in-person, two-day ACS Career Kick-Starter Workshop (CKSW) for the first time in Canada in June 2023. The CKSW, led by ACS Fellow Dr. Ajay Mallia, addressed the challenges of transitioning from graduate school to a successful career. Attendees gained insights into resume building, job searching strategies, and interview preparation, boosting their confidence to navigate the professional world.

August 2023

• Vanier Canada Graduate Scholarship

PhD student Dan Reddy (Oleschuk group) was awarded the Vanier Canada Graduate Scholarship for his project "Design, Fabrication, and Testing of a Volumetrically-Accurate Nanoliter Metering Device for Liquid Handling and Microfluidic Applications Coupled with Liquid Microjunction Surface Sampling Probe – Mass Spectrometry". Dan came to Queen's after completing a BS in Chemistry and Health Promotion from Liberty University and

Liberty University and then an MS in Organic Chemistry from Purdue University.





Dr. Mallia facilitating the CKSW

2023 American Chemical Society Fellowship



Professor Philip Jessop became a member of this year's 2023 Class of Fellows of the American Chemical Society (ACS). The Queen's ACS Chapter spearheaded Dr. Jessop's nomination beginning in February.

Designation as an ACS Fellow is limited to just 1-2% of the entire ACS membership globally and is intended to recognize and honor ACS members for their outstanding achievements in and contributions to science and the profession and for their equally exemplary service to the ACS.

November 2023 2023 John C. Polanyi Award



Dr. Cathleen Crudden has been awarded the 2023 John C. Polanyi Award in recognition of her breakthrough discovery in organic-on-metal coatings. This award (up to \$250,000) is given to an individual or team

whose research has led to a recent outstanding advance in any NSERC-supported field of the natural sciences or engineering. Dr. Crudden's trailblazing research innovation demonstrated that an extremely thin carbon layer, applied to metal surfaces, can protect them from oxidation and extend their lifespan. The discovery has applications spanning fields from infrastructure, clean energy, electronics manufacturing to cancer diagnostics and treatment.

Canada's Top Most Powerful Women in 2023

Dr. Morgan Lehtinen, a recent graduate of our program (PhD with Guojun Liu, 2022), was recognized as one of Canada's top 100 most powerful women for 2023! Dr. Lehtinen is a serial entrepreneur and co-founder of RxnHub. She is also a member of our Queen's Chemistry Innovation Council.



Dr. Morgan Lehtinen

February 2024 • 2024 Cottrell Scholar Award



Dr. Farnaz Heidar-Zadeh is the first faculty member at Queen's University (chemistry, physics, and astronomy) to receive this recognition. The Research Corporation for Science

Advancement selects 10-20 Cottrell Scholars each year as "outstanding teacher-scholars who are recognized by their scientific communities for the quality and innovation of their research programs and their academic leadership skills." Since the program started 30 years ago (1994), there have been only 14 Cottrell Scholars in Canada (7 in Chemistry; 7 in Physics and/or Astronomy); in the past 5 years, just two Canadians have won the award.

Dr. Heidar-Zadeh has also received:

- the 2023 Prize for Excellence in Research for Outstanding Emerging Researchers, - the Talman Award, Sanibel Young

Investigator Award, i.e., a cash prize given to a junior faculty member to sponsor attendance of the Sanibel Symposium, the leading annual theoretical chemistry meeting in the United States, and

 a Bruce Mitchell Ignite Chair from the Carbon to Metal Coating Institute (C2MCI) of Queen's University.

• IUPAC Global Women's Breakfast at Queen's

In February 2024, Q-ACS collaborated with Queen's Chemistry – Inclusivity, Diversity, Equity, and Awareness Society (QC-IDEAS) to co-host events as part of the International Union of Pure and Applied Chemistry's (IUPAC) Global Women's Breakfast (GWB) initiative. The events included a seminar series

featuring Dr. Cathleen "Cathy" Crudden (Queen's Chemistry), Dr. Rachel Baker (Smith Engineering -Chemical Engineering), and Dr. Diane Beauchemin (Queen's Chemistry), as well as a panel discussion later in the day that featured Dr.



Dr. Baker presenting during the IUPAC GWB event

Meha Panchal (Queen's Physics), Montse Mora Ochomongo (Queen's DBMS), and Shamsa Hassan (Afiya Beauty).

March 2024

• 2023-2024 Michael Condra Outstanding Student Service Award



Megan Bruce, Research & Communications Coordinator of the C2MCI Group received the prestigious 2024 Michael Condra Outstanding Student Service Award from the Office of Student Affairs at Queen's University. This award is presented annually to individuals who demonstrate outstanding commitment to the university community through service, leadership, and advocacy. Megan's receipt of this award places her among a distinguished group of staff members who have left an indelible mark on Queen's University. Her initiatives have had a profound impact on her peers, fostering a supportive and inclusive environment that embodies the spirit of the university.

Honorary Professorship

Dr. Philip Jessop is now an Honorary Professor of the University of Jordan. Philip taught green chemistry and sustainability at the University of Jordan in April and June 2024.

• Q-ACS Awards: Celebrating Green Chemistry and Sustainability

In 2023, Q-ACS collected nominations for the official ACS Undergraduate Award in Chemical Safety and Ethics; this award is supported by the ACS Committee on Ethics (ETHX) and the Division of Chemical Health and Safety (CHAS). Kayla Elliott received the award, which included a digital certificate, a letter of recognition from the Chairs of ETHX and CHAS as well as a certificate, and a one-year membership in the Division of Chemical Health and Safety.

The following individuals received 2023 Graduate Student and Postdoctoral Scholar Recognition Program (GSPSRP) awards:



Awardees with the Head of Chemistry; Left-to-right: Adekunle Omoboye, Kayla Elliott, Emerson MacNeil, Dr. Philip Jessop (Head), Raz Abbasi, Dr. Parimah Aminfar, and Kennedy Quigg

Leadership in Mentoring (Graduate Student): Emerson MacNeil
Leadership in Mentoring (Postdoctoral Scholar): Dr. Goonay Yousefalizadeh
Leadership in the Promotion of DEIR (Graduate Student): Dr. Parimah Aminfar who was a graduate student at the time of the award.
Leadership in the Promotion of Research Safety (Graduate Student): Adekunle Omoboye

Though the awards were approved in 2023, Q-ACS presented the awards at the reception in March 2024. The ACS provided each recipient with a digital certificate, framed certificate, and a \$50 CAD Visa gift card.

In addition to the GSPSRP awards, Q-ACS also presented three Excellence Awards:

 Excellence Award in 4th-Year Project Mentoring: Kennedy Quigg (Chemistry)
 Excellence Award in Green Chemistry and Sustainability (Graduate Student): Raz Abbasi (Chemical Engineering)
 Excellence Award in Green Chemistry and

– Excellence Awara in Green Chemistry and Sustainability (Postdoctoral Scholar): Dr. Anh Tran Ly (Chemical Engineering)

The award included an engraved trophy and a \$50 CAD Visa gift card, thanks to the generosity of supporters.

April 2024 • AMS Award Recognition: Q-ACS



Aviva Gerring (Left) with the AMS Involvement Volunteer of the Year medal and Dan Reddy (Right) with the Jeffrey McCarthy Award trophy

In April 2024, Aviva Gerring and Dan Reddy received awards from the Alma Mater Society of Queen's University (AMS) for their work with Q-ACS! Aviva received the AMS Involvement Volunteer of the Year Award, and Dan received the Jeffrey McCarthy Award for Outstanding Individual Contribution to the Clubs Community. More information

about the Involvement Award can be found at: https://www.myams.org/about/my-ams/awards/, and more information about the Jeffrey McCarthy Award can be found at: https://www.myams.org/clubs/club-awards/.



Zoe Gubinczki (left) and Rachel Wood (right)

• Award-Winning 4th Year Research Projects

Rachel Wood (Oleschuk Group) won the Walter MacFarlane Smith Prize in Chemistry for their thesis "Dual Polarity Mass Spectrometry Imaging for the Differentiation of Tissue Histology". Zoe Gubinczki (Nunzi Group) won the M. Sullivan and Son Limited Scholarship for their thesis "Environmentally Friendly Perovskite Solar Cells".

March 2024

• 3-minute Thesis Competition Champion



PhD student Julia Tropak (Ross group) represented Queen's as the University Champion at the Ontario Provincial 3-Minute Thesis competition. Her 3-minute presentation, entitled

"Bacteria: Friend or Foe", could only be accompanied by a single slide and had to summarize her research and its importance to a general audience. Julia's engaging and inspiring presentation was awarded not only the top prize by the panel of judges but was also selected as the contestants' top pick by her competitors. Julia will be representing Ontario this November at the National competition as part of the Canadian Association of Graduate Studies annual conference.

• Vanier Canada Graduate Scholarship



PhD student Michael Trolio (Beauchemin group) was awarded the prestigious Vanier Canada Graduate Scholarship for his project "The Removal of Interferences Using a Greener

Approach to Sample Introduction

in Inductively Coupled Plasma Mass Spectrometry Analysis". Michael completed his Undergraduate degree in Chemistry at Queen's before undertaking graduate studies in the Beauchemin group. He passed the candidacy exam in September 2023 and switched to PhD studies.



From left to right: Sahar Shokrgozar, Alannah Constable, Aaron Erlich, and Stephan Ducharme blew the crowd away with the "exploding gummy bear"

• Chemistry at Science Rendezvous Kingston 2024

The Department of Chemistry returned to Science Rendezvous Kingston at the Slush Puppie Place on May 11th, 2024. The event was a huge success, with 5201 visitors interacting with 60 booths and 480 volunteers. The event was popular with over 500 people through the doors in the first 11 minutes and the crowds continued to the end. Booth activities included ferrofluids, film canister bottle rockets, miniature elephant toothpaste with household ingredients, and Chemistry personality quiz. The stage show featured Gummy bear rocket fuel, a large-scale bottle rocket, butane bubbles, large-scale elephant toothpaste with lab-grade reagents, as well as hydrogen and hydrogen/oxygen balloons.

• 2023/2024 SGPS International Student Scholarship



Congratulations to Chemistry's own Leila Pujal (Heidar-Zadeh group) who is this year's recipient of the 2023/2024 SGPS International Student Scholarship! The purpose of this award is to

recognize an international graduate or professional student who demonstrates academic excellence. Academic excellence includes achievement in courses and research contributions, as well as instances in which the nominee has, in ethically responsible ways, applied what they have learned through their studies or research to initiatives that have a positive impact within or external to Queen's.



• 2023/2024 SGPS Staff Excellence Award

For the second year in a row, a staff member of the Department of Chemistry has won the 2023/2024 SGPA Staff Excellence Award! The purpose of the SGPS Staff Excellence Award is to recognize a staff member at Queen's University who has made a significant contribution to the SGPS membership outside the classroom.

Jennifer Low is this year's recipient. A well-deserved award for a staff member who goes out of her way to make the lives of those around her better through the many projects and initiatives she runs, the guidance she provides, and her positive attitude.

Visiting Professorships



Professor Tucker Carrington was a Visiting Professor at the Université de Reims Champagne-Ardenne in May 2024 and then at the Universitaet Bielefeld in June-August 2024. He was also

named Honorary Lecturer by the Canadian Association of Theoretical Chemists.

June 2024 • Banting Postdoctoral Fellowship

Dr. Fanwang Meng, Postdoctoral Research Fellow (Heidar-Zadeh group), was awarded the prestigious Banting Postdoctoral Fellowship to support his research into Drug Discovery with Machine Learning: Model Development and Applications. Dr. Meng is the first NSERC/CIHR Banting recipient at Queen's! He completed his Ph.D. at McMaster University in 2019 under the supervision of Paul Ayers followed by postdoctoral research at Massachusetts Institute of Technology (MIT) with Connor Coley. Dr. Meng is the only one at Queen's University who was awarded this fellowship in 2024.

• 25 Years of Service!



Ed Maracle celebrated 25 years of service at Queen's University. The Department of Chemistry is delighted to have Ed as our Network System Administrator, who cares for

all our undergraduate lab computers, office computers, networks in Chernoff Hall, IT administration and more!

• Oral Presentation Award

Angus Sullivan (Crudden group) is the recipient of an Oral Presentation award in the Materials division at the recent CSC conference in Winnipeg.

CIC Fellowship



Dr. Gregory Jerkiewicz has been elected as a 2024 Fellow of the Chemical Institute of Canada (CIC). CIC Fellowship is a senior class of membership that

recognizes the merits of CIC members who have made outstanding contributions across multiple areas:

- Scientific, Engineering and Technical Contributions
- CIC, CSC, CSChE Service

 Management of Science, Engineering or Technology

- Teaching, Mentorship, and Public Awareness

• Gilead Award for Excellence I Equity, Diversity, and Inclusion



Dr. Lucia Lee received the Gilead Award for Excellence in Equity, Diversity, and Inclusion at the CSC Conference in Winnipeg. This award is presented to a chemist as a

mark of distinction and recognition for excellence in their work in equity, diversity and inclusion initiatives.

• 2024 CIC - Environment Division Research and Development Dima Award



Dr. Diane Beauchemin received this year's CIC-Environment Division Research and Development Dima Award. This award is presented for distinguished contributions to research

and/or development in the fields of environmental chemistry or environmental chemical engineering, while working in Canada.

• Q-ACS Awards: Graduate and Postdoctoral Scholars Recognition Program 2024

The following individuals were selected to receive 2024 GPSRP awards: – Leadership in Mentoring (Postdoctoral Scholar): Dr. Maria Cleveland – Leadership in the Promotion of DEIR (Graduate Student): Dana Nanan – Leadership in the Promotion of Research Safety (Graduate Student): Fateme Rezagholizade

Their dedication and leadership in upholding these values set an inspiring example for their peers and the broader scientific community. Congratulations to the 2024 awardees from Queen's University! Please be on the lookout for upcoming posts to highlight each of these awardees!

Congratulations Internal Award Winners

Queen Elizabeth II Graduate Scholarship in

Sciences and Technology (QEII-GSST) Fabiola De Leon Gonzalez (Capicciotti Group), Anastasia Messina (Crudden Group)

R.S. McLaughlin Fellowship

Gaurav Verma (Jerkiewicz Group), Mark Aloisio (Crudden Group), Alannah Constable (Crudden Group), Sara Cheema (Crudden Group), Michael Trolio (Beauchemin Group), Alex Macdonald (Jessop Group), Julia McPhail (Oleschuk Group)

Trevor Holland Award

Liwah Keller (Zechel Group) Grace Boileau Award Stephan Ducharme (Howe Group)

Congratulations NSERC & OGS Recipients

Natural Sciences and Engineering Research Council of Canada (NSERC) - Vanier Canada Graduate Scholarship Program Michael Trolio (Beauchemin Group), Dan Reddy (Oleschuk Group),



From left to right: Fateme Rezagholizade, Neil Grenade, Dana Nanan, and Dr. Maria Cleveland.

Natural Sciences and Engineering Research Council of Canada (NSERC) – Canada Graduate Scholarship - Doctoral Program Adekunle Omoboye (She Group), Sam Hollands (Zechel Group)

Natural Sciences and Engineering Research Council of Canada (NSERC) - Postgraduate Scholarship - Doctoral Program Neil Grenade (Ross-Howe Groups), Viveka Kulkarni (Crudden Group)

Natural Sciences and Engineering Research Council of Canada (NSERC) - Canada Graduate Scholarship - Master's Program Max van Zyl (Heidar-Zadeh Group), Liwah Keller (Zechel Group), Esther Hoffman (Howe Group), Danica Levesque (Zechel Lab)

Ontario Graduate Scholarship Program

Jess Deng (Oleschuk Group), Shauna Schechtel (Bongers Group), Max van Zyl (Heidar-Zadeh Group), Emerson MacNeil (Duchesne Group), Jennifer Kolwich (Ross Group), David Kunar (Wang Group), Alex Macdonald (Jessop Group), Angus Sullivan (Crudden Group), Raymond Lai (Liu Group), Adam Bernicky (Loock Group), Andrew Laluk (Crudden Group), Hailey Tomm (Ross Group), Nick Neokleous (Stamplecoskie Group)

Congratsi

Department of Chemistry Publication Statistics, July 2022-June 2024

9

4

4

4

4

4

3



Atomic Spectroscopy

ACS Omega

Glycobiology

ACS Catalysis

Chemical Engineering Journal Construction & Building Materials

ACS Applied Materials Interfaces

European Physical J: Applied Physics

Journal of Chemical Physics

Chemical Communications

ACS Applied Polymer Materials

Canadian Journal of Chemistry

Journal of Analytical Atomic Spec.

Journal of Chemical Theory & Comp. Journal of Cleaner Production

Physical Chemistry Chemical Physics ACS Applied Energy Materials Advanced Functional Materials

Cold Regions Engineering 2024

Int'l Journal of Environmental Analytical

Journal of Computational Chemistry

Journal of Hazardous Materials

Journal of Physical Chemistry C

Science of the Total Environment

Journal of Photochemistry & Photobiology A

Nature Communications

Journal of the American Society for Mass

Journal of Chemical Education

ACS Chemical Biology

Chemistry of Materials

Journal of the ACS

Analytical Chemistry Angewandte Chemie I.E.

Chemical Science

Spectrometry

Chem Catalysis

Desalination Electrochimica Acta

Chemistry

Nanoscale

RSC Advances

Green Chemistry

Langmuir





 Subject categories are assigned at the journal level. Articles can be assigned to more than one subject category.

Source: Web of Science: Science Citation Index Expanded, Conference Proceedings Citation Index-Science, December 19, 2024 Michael White, MLIS, Chemistry Librarian Librarian for Research Services

UN SDGs



(# of articles)

Top Co-author Affiliations (5+ articles)

| McMaster Univ. | 11 | |
|--|----|--|
| Northeast Petroleum Univ. | 11 | |
| Univ. of Toronto | 11 | |
| Chinese Academy Sciences | 10 | |
| Nagoya Univ. | 10 | |
| Tongji Univ. | 10 | |
| Univ. of Sciences & Technology of China | | |
| Univ. of Victoria | | |
| Centre National de la Recherche Scientifique (CNRS) | | |
| Ghent Univ. | | |
| Mohammed V Univ. Rabat | | |
| National Research Council (NRC) | | |
| Public Health Ontario | | |
| State Univ. System of Florida | | |
| Western Univ. | | |
| Xi An Jiaotong Univ. | | |

Top Publishers (2+ articles)

| Elsevier | 57 |
|-------------------------------------|----|
| American Chemical Society | 56 |
| Royal Society of Chemistry | 24 |
| Wiley | 21 |
| MDPI | |
| Springer Nature | |
| AIP Publishing | |
| EDP Sciences | |
| Oxford Univ. Press | |
| Taylor & Francis | |
| Canadian Science Publishing | |
| Frontiers Media | |
| Nature | |
| American Society of Civil Engineers | |
| IEEE | |



Michael White, Head Engineering and Science Librarian

Congratulations to the Class of 2023



First Column: Yifan Gui, Shannon Woodward, Hannah Zitzerman, Amelia Schmidt; Second Column: Xin Wang, Priyanka Sivaguganantha, Nicholas Lamothe, Yueying Li; Third **Column**; Stephan Ducharme, Darrian Prendergast, Sydney Hood, Megan Millier Stellato; Fourth Column: Catherine Koziarz, Zhecheng Wan, Jennifer Lamarche, Jackson De Verteuil; Fifth Column: Yichun Shi, Michelle Piehler, Sophia Kienast, Kathleen Ross; Sixth Column: Max van Zyl, Kimberly Nguyen, Esther Hoffman, Nicholas Turnbull; Seventh Column: Madison Langley, Daisy Nebel, Shuyi Qiu, Rachel Odell

Congratulations to the Class of 2024



First Column: Emma Ronis, Melody Fang, Rachel Wood, Alisha Amlani; Second Column: Duncan Rowett, Rachel Klotz, Kamiya Sunder, Howard Chan, Kaitlyne Beriault; Third Column; Lainey Ennett, Kai <mark>Ris</mark>eling, Jonah Pagano, Ayden Harrison, Jenelle Hogarth; **Fourth** Column: Devan MacDonald, Michelle <mark>An</mark>derton, Victoria Foss, Alex Hamelinck-Reitsma; Fifth Column: <mark>Jo</mark>hn Dougherty, Madison Campbell, Serena Lunsky, Sarah Meston, Katrina Korotky; Sixth Column: Rosa Perentesis, Jordan Chiabai, Morgan Guyan, Yucong Liu, Dominique Wheatley; Seventh Column: Chloe Earnshaw-Osler, Anna Imeson, Nancy Zhang, Kayla Elliott



2023 Departmental Group Photo







We are pleased to announce the continuation of our speaker series into the 2025-2026 academic year with support from the Friends of Chemistry and GreenCentre Canada. We encourage our community to attend when possible.

Dr. Kendall Houk – University of California in Los Angeles (Stan Brown Lecture, September 19, 2025) Dr. Erin R. Johnson – Dalhousie University (Frost Lecture, November 14, 2025)

Additional speakers to be announced. For more information, please visit our website regularly:

https://www.chem.queensu.ca/about/news-events-seminars

