

# Q-CH<sub>e</sub>M

## CHRONICLES

ANNUAL NOVEMBER 2021

## Queen's Chemistry Education Research (QCER) Group

By Amanda Bongers (Twitter: @AmandaBongers / Website: [www.amandabongers.com](http://www.amandabongers.com))

Amanda leads the Queen's Chemistry Education Research (QCER) Group since joining the Department in July 2019. Her team studies how people learn chemistry to bring evidence-based practices into university classrooms, where innovations are needed for Canada to remain a world leader in science.

One branch of the QCER program is investigating the underlying mechanisms of learning, using approaches from cognitive science combined with their chemistry expertise. Phung Nguyen joined the group in Fall 2020 to study how different encoding modes (e.g., drawing, writing, viewing) can affect a learner's memory of chemistry models. Other Natural Sciences and Engineering Research Council-funded projects underway include Victoria Yu's (NSERC-USRA) research into how engaging in multiple tasks, like listening while viewing,

created more inclusive and engaging learning environments.

A newer branch of the QCER program studies innovations in organic chemistry curricula, highlighting the interplay of research with development in chemistry education research. Our current project explores educators' opinions and practices for how (and if) sustainability and green chemistry fit into their organic chemistry courses. This analysis is an important first step towards aligning students' education with the United Nations Sustainable Development Goals, part of Queen's new Strategic Framework. Amanda won a prize for her initial work in this area at the inaugural Commonwealth Chemistry Congress. Her group was also awarded a grant from eCampusOntario to develop and evaluate open-access 'green' organic chemistry modules (and FYI, it's not all



Above: The Bongers Team

about solvent)! In May 2021, Dr. Alaina Boyd (green chemistry expert and Queen's Alum) joined the group as a post doctorate fellow to lead this exciting project.

Amanda and her group are also working to bring new events and programs into the Department, including a successful and engaging virtual 4th-year Thesis Poster Day and a new artist-in-residence program to further build on our Department's interdisciplinary strengths. Beyond the goal of attracting more people into the central science, Amanda centers her outreach and research activities on the idea of reforming science and academia to create more inclusive and equitable spaces.

When pandemic restrictions are lifted, please drop by the 5th floor of Chernoff to say hi and visit her newly renovated Chemistry Learning Laboratory!



## Message from the Former Head

by David L. Zechel

It would be an understatement to say that our 2020-21 cycle was a challenging year for our Department. We lost two towering figures in Chemistry this past year with the passing of our Bader Chair Emeritus, Prof. Victor Snieckus (Dec. 18th, 2020) and medicinal chemistry entrepreneur Prof. Walter Szarek (Feb. 6th, 2021). Both will be dearly missed, and we intend to celebrate their contributions and achievements over the upcoming year. COVID-19, of course, has been a constant pressure throughout our academic term. I'm proud to say that due to an alignment of purpose in our Department, and the relentless efforts of our Safety Committee, we successfully managed to adapt our operations, teaching and research to the restrictions imposed by Covid-19. Indeed, our Department has largely been insulated variations in COVID-19 restrictions imposed by the Province as we

have essentially operated at a Code Red level throughout the academic year. Our faculty and students have been at the front line to develop sensors and drugs to defeat COVID-19, with the labs of Zhe She, Richard Oleschuk, Chantelle Capicciotti, and the late Victor Snieckus receiving funding from NSERC and Queen's for their research efforts. Teaching was almost entirely remote, yet under the leadership of Igor Kozin, we were able to switch from remote to in-person 3rd year labs during the Winter Term, confident that our COVID-19 protocols would keep our students and staff safe. Nevertheless, after months of remote learning and physical distancing we are certainly looking forward to being together again in Chernoff Hall without limitations!

Our Faculty and Staff have evolved over the past year as well. After a long and distinguished career, Prof. Donal Macartney retired on January 1st of 2021. Donal was the model of a dedicated teacher and graduate supervisor, as well as someone the Department could rely on again and again for his service. His steady presence and wisdom in the Department will be missed! We also gained some new faces, with Dr. Paul Duchesne starting his appointment as an Assistant Professor in July of 2020. Dr. Paul Duchesne is initiating an exciting new research program on nanomaterials and heterogeneous catalysts derived from low-cost, Earth abundant materials. We also welcomed Laura Cybulski to our Department as the new Administrative Coordinator, who has been ably filling the very large shoes of Barbara Armstrong, who retired after a long and distinguished career in our Department in June 2020. This summer we will hire new Undergraduate Lab Program Assistant to meet the growing demands on our undergraduate program, which has undergone astonishing growth in the last five years.

Despite the many challenges we faced this year, our Graduate students, staff, and Faculty have dug in and continued to excel. There are many highlights to choose from! Morgan Lehtinen, a PhD student in Guojun Liu's lab, was selected as one of 36 students from across Canada for the elite Next Canada's Next36 entrepreneurship program, while Jevon Marsh, an MSc student from Anne Petitjean's lab, won a Rhodes Scholarship to pursue his PhD at Oxford! Our Departmental Manager, Heather

Drouillard, won the 2020 Queen's Special Recognition Staff award for her administrative prowess. Our Faculty also held their own in 2020-21 for teaching and research excellence, including Diane Beuchemin (OUSA Teaching Excellence Award), Anne Petitjean (Queen's Alumni Award for Teaching Excellence), Nick Mosey (CSC Tom Ziegler Award), Graeme Howe (John C. Polanyi Prize, one of 5 Canadians!), Andrew Evans (ACS Mosher Award, 1st researcher from a Canadian university to do so!), and Cathleen Crudden (elected to the Royal Society of Canada and appointed Editor-in-Chief of *ACS Catalysis*).

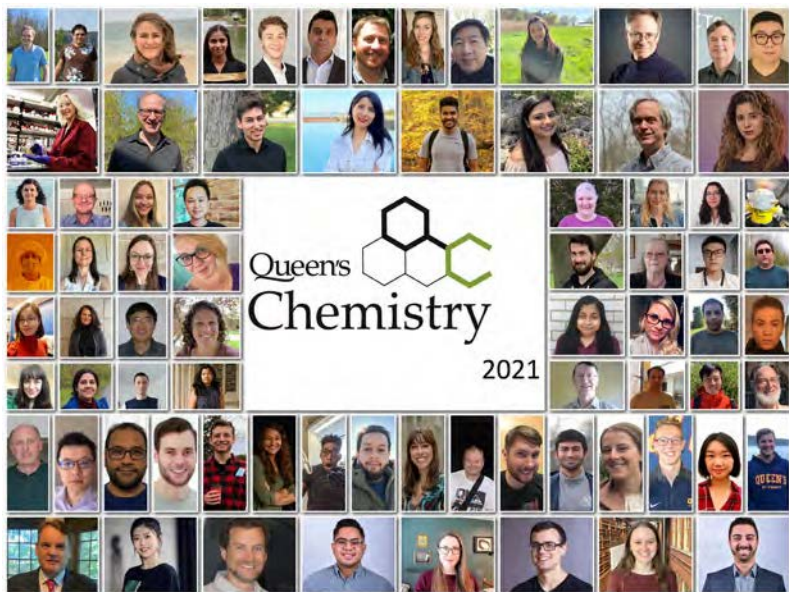
A major contributor to the richness of the academic experience in our Department derives from the generosity of our donors. This has been so important during a pandemic year when everyone needs some good news and brighter things to look forward to. For example, our Department is privileged to have a richly endowed lectureship series that has allowed us to invite top national and international chemists to lecture on cutting edge research. This year our speakers had to lecture via Zoom, but nonetheless we had a brilliant lineup, including Walter Leitner from the Max Planck Institute for Chemical Energy Conversion (Green Chemistry Lecture), Christopher Cummins from MIT (Frost Lecture), Jeremiah Johnson from MIT

(McRae Lecture), Lei Jiang from the Technical Institute of Chemistry, Chinese Academy of Sciences (Russell Lecture), and Vy Dong from UC Irvine (Jones Lecture). We have embarked on a campaign of infrastructure and equipment renewal in our undergraduate labs and analytical facilities, including a new GC-MS and benchtop NMR spectrometer for our undergraduate labs, and a state-of-the-art mass-spectrometer for our MS facility. We are also creating additional scholarships and awards to recognize our high-performing graduate and undergraduate students. Clearly, we are victims of our own success by attracting such great students in large numbers and running out of awards to acknowledge them all!

In closing, I hope that once things return to normal that we can expect a visit from you to our Department. It would be a pleasure to show you how our facility as evolved, recount old memories, and discuss new opportunities for the future. And for the future, stay tuned: if the above is what Queen's Chemistry can do during a pandemic year, I'm personally grabbing the popcorn in anticipation of what is to come when things return to normal!

Best wishes,

David L. Zechel



Above: The Queen's Chemistry Department

# Young Researchers' Successes

by Graeme Howe

Graeme Howe (*pictured below*), assistant professor, has been recognized by the Province of Ontario with a 2020 Polanyi Prize.

Howe is one of five recipients of the annual award that recognizes leading researchers who are in the early stages of their careers and/or pursuing post-doctoral research at an Ontario university in the fields of physics, literature, chemistry, economic science, and medicine/ physiology. The recipients represent the province's next generation of world-class researchers.

The prize, named for 1986 Nobel Laureate in Chemistry John Polanyi, is the province's highest honour for researchers.

The Government of Ontario's announcement describes Dr. Howe's research as follows: "In the Howe Lab at Queen's University, Dr. Graeme W. Howe studies organic chemistry to understand the evolution of enzymes and how they have evolved to accelerate chemical reactions. Chemistry and chemical reactions are foundational to the production of most goods and commodities. Many chemical reactions are energetically demanding or require expensive, environmentally harmful catalysts. By studying enzymes, Howe hopes to design more environmentally-friendly and efficient enzymes to streamline industrial processes."

Recipients are chosen by a selection committee consisting of 10 members, two from each of the five prize categories. Committee members are nominated by the deans of the Graduate Schools in Ontario and selected by the Ontario Council on Graduate Studies.



# A Year in Covid – Up and Running

by Paul Duchesne

Beginning as a new Queen's faculty member in The Year 2020 has been an unusual and often challenging experience, but also a highly rewarding one. Paradoxically, working during this pandemic has felt somehow both busy and slow. With any job, simply learning how to perform your new duties can be a time-consuming process, one that is only further complicated by being removed from your usual work environment. For many instructors, myself included, learning how to teach remotely has increased the amount of time and effort required for preparing lectures and assessing students. However, given the significant difficulties in proctoring examinations remotely, it has also been an opportunity for enterprising instructors to explore alternative means of assessing student learning. With any luck, this will also help us continue in providing a superior education to future students.

Perhaps the greatest challenge in this time has been getting students into the research laboratory. Like many new faculty members, my lab is predominantly populated by undergraduates who require more direct training and supervision. Given that as few as two people can occupy the available space, some creative scheduling has been required to ensure that students get the time they need to complete their research projects and degree requirements. However, with the continued support of the departmental safety committee, it has been possible to ensure that this is done safely and responsibly.

Finally, while teaching and research are perhaps the best-loved components of academic life, they would not be possible without the addition of administrative responsibilities. Though we are more spoiled than ever for instant communication, we are still missing out on the benefits of casual interactions. For a new employee, relatively minor problems can grow troublesome when you can't knock on a neighbour's office door to clarify some fiddly aspect of university bureaucracy or swing by the administrative office for help finding some arcane form. Together, such delays can conspire to slow



the all-important process of getting a laboratory up and running. Fortunately, my colleagues and co-workers have been consistently supportive and helpful in navigating life in the Department of Chemistry.

Despite a seemingly slower start, my laboratory is now well on its way toward full operation, and I am feeling ever more equipped for the challenges of teaching and administration. Overall, I am incredibly grateful for the opportunity to work here at Queen's University and am looking forward to working more closely with my students and colleagues in the coming year.

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## Remembering Victor

by David Zechel

It is with a profound sense of sadness and deep regret that the Chemistry Department and Queen's University in Kingston inform you of the passing of Victor Algirdas Snieckus on December 18,



2020. As one of the most internationally respected synthetic organic chemists in the world, Victor most recently held the position of Emeritus Bader Chair of Chemistry at Queen's University. Victor was born in 1937 in Kaunas, Lithuania, and spent his childhood in

Germany during World War II before immigrating to Alberta Canada with his parents in 1948. He obtained a B.Sc. in chemistry at the University of Alberta in 1959 followed by an M.Sc. from the University of California, Berkeley (1961) and a Ph.D. from the University of Oregon (1965). Following a post-doctoral position at the National Research Council of Canada in Ottawa (1965-1966), Victor joined the University of Waterloo as an assistant professor in 1967, rising through the ranks to become Professor of Chemistry (1979-1992) and then the Monsanto/NRC Industrial, Research Chair (1992-1998). In 1998, Victor joined Queens University as the inaugural holder of the prestigious Bader Chair of Chemistry. Victor Snieckus became a house-hold name among chemists world-wide due to his fundamental

contributions to organo-lithium chemistry and the DOM (directed ortho-metalation) reactions that he and his group pioneered. Research conducted in his laboratories and his consulting with various pharmaceutical industries led to the commercially important anti-inflammatory drug Celebrex™ and to Silthiofam™, a unique fungicide for eradication of the TAKE-ALL fungus which is in use worldwide. That work, and other contributions, led to nearly 300 highly cited publications, 58 international and national fellowships and awards, 249 special and plenary lectureships, and 446 invited presentations around the world. Victor's lasting enthusiasm for discovery and chemistry is best observed in the hundreds of undergraduate, graduate and post-doctoral researchers who have been mentored in his labs, many of whom have gone on to significant careers of their own in academia and industry. Victor was predeceased by his wife, Anne Cecilia, and leaves behind daughter Naomi, son Darius, and two grandchildren. Victor will be missed by family, friends, students and colleagues, but his legacy will live on.

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## Remembering Walter

by David Zechel

The Department of Chemistry at Queen's University is saddened to announce the passing of Professor Emeritus Walter A. Szarek on February 6th, 2021, at the age of 82. Dr. Szarek was one of Canada's leading carbohydrate and medicinal chemists. Despite his fame, Dr. Szarek was a humble, warm, and approachable person. He was also an outstanding colleague, always willing to go the extra mile for his Department, colleagues, and students.



Dr. Walter Szarek received his BSc and MSc degrees from McMaster University (the latter with D.B. MacLean), followed by a PhD from Queen's University in organic and carbohydrate chemistry, with J.K.N. Jones as his supervisor. Following postdoctoral work at Ohio State University with M.L. Wolfrom,

Dr. Walter Szarek began his independent career as an Assistant Professor of Biochemistry at Rutgers University. Dr. Szarek returned to the Department of Chemistry at Queen's University in 1967 and became a Full Professor in 1976. He was appointed Professor Emeritus in 2003 and maintained an active research program until very recently.

Dr. Szarek blazed a path in the fields of carbohydrate and medicinal chemistry. He is the author of over 350 publications and 30 patents, the latter covering drugs to treat Alzheimer's disease, cancer, malaria, bacterial infection, and pain. His innovations led to successful drugs such as Kiacta™, for treatment of renal amyloidosis; Alzhemed™ for treatment of Alzheimer's, and the nutraceutical VIVIMIND™, for alleviating memory decline. His research led to the establishment of Neurochem, which was renamed BELLUS Health Inc. in 2008, and Neuroceptor Inc., which merged with Antalium Inc. to become PainCeptor. Among his research awards are the American Chemical Society's Claude S. Hudson Award in Carbohydrate Chemistry and the Melville L. Wolf from Award of the Division of Carbohydrate Chemistry of the American Chemical Society.

His contributions had a lasting impact on the Canadian carbohydrate chemistry and chemical biology community. Renowned glycobiologist Prof. Stephen Withers, a Canada Research Chair in Chemical Biology at UBC, says of Dr. Szarek, "*Walter Szarek's quiet and kind approach belied his substantial impact on carbohydrate science. In my early career, on several occasions, when I thought I had a great new idea, I would find that Walter had done that very thing a decade before! He will be missed.*"

During his distinguished academic career, Dr. Szarek also served as Director of the Carbohydrate Research Institute at Queen's (1976-1985) and was a member of several scientific advisory and review boards, including PanCeptor Pharma Corporation, Osta Biotechnologies Inc., and the Alzheimer's Drug Discovery Foundation.

Dr. Szarek also led a distinguished teaching career at both the undergraduate and graduate levels, counting the eminent chemical biologist B. Mario Pinto (Deputy Vice Chancellor of the Gold Coast Campus, Griffith University, Australia) as his first graduate student. He has won numerous awards for his teaching, a level of excellence that continued to his last years in front of a

class, when Walter won the graduating class teaching award two years in a row.

The Walter A. Szarek endowed lectureship series was established in 2018 to celebrate his accomplishments, with the inaugural lecture delivered by Walter's life-long friend, and Nobel prize winner, Sir Fraser Stoddart.

Walter will be sorely missed.

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## Undergraduate Life

by Jess Deng and Emerson

MacNeil (DSC Co-Presidents 2020-2021)

As another academic year has come to an end, this year was a bit different than previous years for the undergraduate students in chemistry. The Departmental Student Council (DSC) co-presidents, Jess Deng and Emerson MacNeil are incredibly excited to share the successes and adventures of the DSC during this challenging, and strange academic year. This year, the Chemistry DSC was made up of 25 undergraduate students from each academic year and met monthly throughout the academic school year. Like previous years, the purpose of DSC this year was to promote a comfortable, and enjoyable learning environment for students, as well as creating a sense of community between the undergraduates, graduates, faculty, and staff of the department. Queen's University continues to be a phenomenal place with an incredible learning environment, having placed 1st in Canada, and 5th in the world for the United Nations Sustainable Development Goals across universities in the world, primarily doing well in the categories of "No Poverty" and "Peace, Justice and Strong Institutions", it can remain daunting for some students. The goal of the DSC is to make the four years of their undergraduate career as fulfilling as it may possibly be. In previous years, the DSC hosts educational, social, and informative events for the department to raise funds for an end of the year formal banquet to celebrate with students to relax and socialize.

Though the annual formal was not held this year, many interesting events took its place. Such events included virtual trivia nights

using Kahoot, clothing give-aways, an informational night for the fourth-year thesis, and a joint virtual formal in conjunction with the Life Sciences, Biochemistry, Physics, Mathematics & Statistics, Biology and Geological Science departments. Though the banquet was not held in person, departmental awards were still given out to professors of each respective year that were the “Most Inspiring Professor”, “Best Transition to Online Learning”, and an overall award for “Excellence in Teaching”. The respective awards for each year were as follows: For second year students, Dr. Gang Wu was voted the most inspiring professor, Prof. Zachary Arika was voted to have had the best transition to online learning, and Dr. Avena Ross won the award for teaching excellence as well as that for the third-year students. Dr. Graeme Howe, amongst third year courses was voted to have had the best transition to online learning, and Dr. Kevin Stamplecoskie was voted to have been the most inspirational professor for third year students. Finally, amongst fourth year students Dr. Cathleen Crudden was voted to be the most inspirational professor, and Dr. Chantelle Capicciotti was voted to have the best transition to online learning. The winner of the fourth-year teaching of excellence was Dr. Beauchemin. The DSC would like to (again) congratulate all the professors for their work during this tough year.

Outside of the chemistry department, the DSC also represented chemistry at DSC assemblies which is a meeting of all the undergraduate councils that fall under the Arts & Science Undergraduate Society. Additionally, the DSC attended virtual Open House events for high school students who are interested in pursuing studies at Queen’s, as well as the annual Major’s night for first year students, which showed a remarkable interest in comparison to previous years. This year, the DSC co-presidents were founding members of the Queen’s Chemistry Inclusivity Diversity Equity and Awareness Society (QC-IDEAS), a new society that is dedicated to supporting Women, non-binary folks, BIPOC students and faculty, and minorities within the chemical sciences here at Queen’s.

We are so incredibly thankful for our experience to have been the DSC co-presidents for the year of 2020-2021 and could not have thought of a more fulfilling experience to end our bachelor’s degrees at Queen’s. We want to thank our council members for their hard work during these trying times, without their hard work and dedication this year could not have been as successful as it was. We also want to especially thank the administrative staff of the Queen’s Chemistry department as they were imperative to our success as presidents for their support and guidance. We are so excited to watch what the new DSC



*Image: Chemistry’s Departmental Student Council (DSC) 2020-2021*

presidents, Julia McPhail and Thea Babalis have in store for the department as we continue in our master's degrees at Queen's.

## Graduate Life

by Igor Cunha

Hi there, I hope you are doing well and safe at this time.

The 2020-2021 academic year will definitely remain as one of those times you look back on and don't really know how to feel about it, and that is completely fine. If there is something I learned throughout this year is that being kind to yourself and accepting that you can't control everything is very important. As president of the Queen's Graduate Chemistry Society (QGCS), I was tasked with finding ways to maintain our student community and provide support for our students in a time that everyone's mental health, personal and professional lives were suffering from many uncertainties. This was definitely a challenge, and none of the things I will describe later on would not have been accomplished without the hard work and dedication of the QGCS executive for 2020-2021. I am so grateful to have each one of them beside me during my term as president. You guys are amazing!

So who these great students are, you might ask. Let me introduce you to the 2020-2021 QGCS executive:

**Dianne Lee**, VP Internal Affairs;  
**Polina Novoseltseva**, VP External Affairs;  
**Brandon Becher Nienhaus**, VP Finance;

**Tina Tabrizzadeh**, International Student Representative;  
**Daniel Barker**, Outreach Coordinator;  
**Matthew Sanger**, Union Representative;  
**Margaret MacConnachie**, Third Floor Representative;  
**Joshua Kofsky**, Forth Floor Representative;  
**Nicole Dozois**, Fifth Floor Representative and **Marie Boddington**, Secretary.

We kicked off the year by developing a strategic plan that would guide us throughout the year and allow for events to be planned and organised as efficiently as possible. In the core of the strategic plan, the main goal was to answer a simple question, "what should the QGCS look like for its student?". Among the main themes: moving the QGCS events to the online reality we were living in; the continuity and expansion of our professional development opportunities; organising initiatives focused on the mental health of our students; being a source of reliable information; while still maintaining the social aspect provided by the previous executives were the pillars for our executive. In the centre of these initiatives, fostering connections and providing opportunities for our students to shape the QGCS the way they wanted was very important. For us, the QGCS had to represent the vision of our students, not only the executive vision. To ensure that we were doing that, our students were contacted from the beginning about the events we were planning, and we collected any suggestions they might have. With the strategic plan in hands, it was time to put things into practice.

From the beginning, we noticed that we need a more effective way to provide information to students and connect with them. Our website hasn't been visited in a long time, and our social media accounts were not as





active as they could've been. We decided to rebrand the QGCS by creating a new logo which would be the core for the new website we were making. Once again, our students came to the rescue. We launched a friendly logo competition and received submissions from three very talented students. The graduate students had the opportunity to vote for their favourite one. The submission made by Zack Ariki was selected as the winner. Thank you so much Zack, you made our brand look very cool! Our website became the centre for all events and information regarding graduate life at Queen's Chemistry. We constantly post resources available within the department and the university; we advertise and have the registration for our events on the website; we have a question and suggestion box built-in the website, among many other features. We hope that the website remains as a reliable source of information for our students and evolves with each executive.

Also, at the beginning of our term, we were struck by the tragic death of George Floyd and the events occurring around the globe related to social and racial justice. We recognised the important role we played as representatives of a student community that is so diverse. To provide some sort of support, we made a donation to the Black Lives Matter (BLM) Toronto and with the help of our students, we voted and made a second donation to a Canadian organisation. The students voted for We Matter, an Indigenous youth-led organisation dedicated to Indigenous youth support, hope and life promotion. Creating and fostering an inclusive community within the Chemistry Department was very important for us. As a result, we participated in the creation of the Queen's Chemistry-Inclusivity, Diversity, Equity and Awareness Society (QC-IDEAS). This society dedicated to supporting women, non-binary folks, BIPOC students and faculty, and minorities. The QC-IDEAS is a very important step in the right direction. We are very pleased to collaborate with them, and in the upcoming years, to have their graduate executive also being a liaison in the QGCS executive. The fight for equality, social and racial justice is a long one. We hope that the QGCS can keep contributing to the efforts of so many amazing organisations and groups working tirelessly to create a more just and equitable society.

The event of the year, and a staple for the

QGCS, has always been the Annual Graduate Chemistry Symposium. This year, COVID made us completely reimagine what the Symposium would look like. Despite all the challenges, we couldn't be more proud of what we achieved this year with the Symposium and the opportunities that a virtual world provided us. The 13th Annual Symposium was titled Zoom Into Your Chemistry Career; how fitting?! We maintained the professional development and community integration of the previous year Symposium. But this time, we had the opportunity to have speakers from different countries and from four provinces in Canada. The two-day event had more than 40 participants from all over the world, two key-note speakers, two round-tables, and the traditional student talks. This year didn't divide the talks into themes, which allowed students to get more familiar with the work of some of their peers that they might not have been as close before. One of the round-tables was focused on Equity, Diversity, Inclusivity and Indigeneity (EDII). We had many meaningful discussions about what it meant to be part of an equity-seeking group in Science, Technology, Engineering and Mathematics; the roles we play as allies, and how we can do more to support our peers. The second round table was all about early-career in Chemistry. We got valuable advice from our alumni about the different paths you could take after earning a degree from Queen's. We want to take this opportunity to thank GreenCentre Canada and DuPont Kingston for once again financially supporting this event. Without your support, this event wouldn't be the same. The Symposium had a different feeling this year, but a positive feeling nonetheless; maybe a hybrid version is an excellent way to attract more people, have speakers that in the past could not be here, and just an opportunity to mix things up.

The QGCS is always thrilled to provide its students with professional development opportunities. This year, we once again counted on the support from GreenCentre Canada and DuPont to provide our students with a chance to talk with their professionals and understand what it means to do chemistry outside academia. We organised two virtual tours to the GreenCentre and the DuPont facilities, and I must say, what a blast these tours were. The size of the operations and the organisation of both companies was mind-blowing; goals for 2022, have a cleaner

and more organised bench! We had the opportunity of not only seeing their facilities but also talk with some of their employees. We thank all the people involved in these tours for sparing some of their time in this hectic period we are living in. Your insightful tips and suggestions will positively impact the career of all the students that attend these tours. We hope to maintain this fruitful connection and expand our collaborations. In addition, we were so excited to collaborate with the Chemical Institute of Canada's Kingston Local Section and the Queen's Chemical Engineering Graduate Student Society in the creation of the Bonds for Success (BFS) mentorship program. This was a first of its kind initiative. We are so thrilled to connect our graduate students with so many accomplished mentors ranging from Queen's faculty, local companies employees and entrepreneurs of the Kingston chemical ecosystem and some of the Queen's Chemistry Innovation Council (QCIC) members. This program provides our students with an avenue to make unique connections and explore different careers paths before leaving their graduate studies. We want to thank our mentors for dedicating time, trusting and supporting our initiatives and the students for their active participation. We look forward to creating new connections and a network that just keeps growing stronger.

Finally, I mentioned the importance of supporting the mental health of our students. In addition to all the resources we've made available on our website, we also organised events dedicated to discussing self-care and giving our students an opportunity to take a break from the lab. We had a watercolour painting and drawing afternoon by the lake; a mambo lesson provided by the Mambo at Queen's group (both events) following provincial and university guidelines for social distancing and sanitary measurements; virtual games and trivia nights; a mentorship initiative for the newest members of our department, pairing them with current students, among many other social events. We want to emphasise the importance of a balanced lifestyle in your studies and career. We hope that our students keep taking care of their mental health. The QGCS is here to support you on this journey; being a graduate student is not easy, and you are all doing an amazing job!

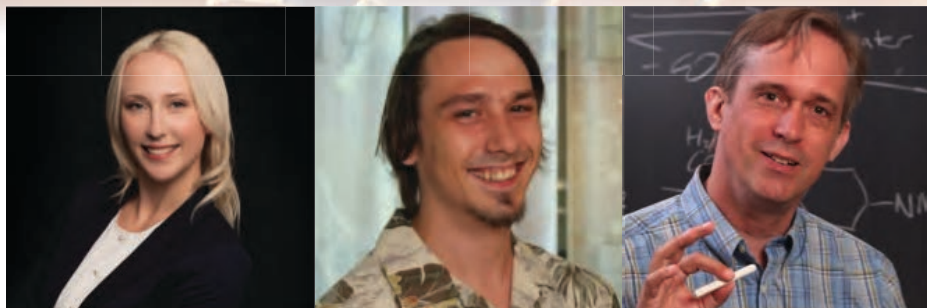
I am so grateful to have had the opportunity

to lead the QGCS this year. I truly enjoyed getting to know each one of you and planning all these events. The QGCS gave me a unique opportunity for professional and personal growth. I've been supported by so many people, and giving back to my community is the minimum I could do to repay all the things I got from this same community. To all the graduate students in our department, thanks for trusting your QGCS executive and participating in our initiatives! To the QGCS executive, thank you again for supporting and trusting me as your president and thank you for all your hard work and passion! As QGCS executive, we are proud of what we've done despite all the challenges brought by COVID-19. Keep being resilient, watch for your mental health and treat yourself with kindness. To the upcoming QGCS executive, the best of luck on your term; I am really excited to see all you guys have planned! ✨



Queen's Graduate  
Chemistry Society

## 2020-21 Departmental Highlights



Congratulations to Morgan Lehtinen on receiving the 2021 SGS Award in Leadership, Innovation, and Community Engagement!

We are pleased to announce that Morgan Lehtinen (*pictured top left*), PhD Student in the Liu Group, is the recipient of 2021 SGS Award in Leadership, Innovation, and Community Engagement! This award recognizes exceptional graduate students who are making a meaningful difference in the world while also demonstrating the highest standards of academic excellence. Congratulations!

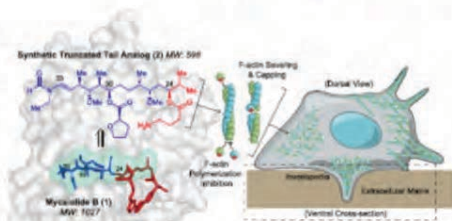
Congratulations to Matt Sanger, PhD student in the Jessop Group & Kyle Boniface, Queen's Alumni, on the recent publication of their work in Nature Chemistry

Graduate student, Matt Sanger (*pictured top middle*) and grad alumnus Kyle Boniface of the Jessop group are celebrating the publication of their work in Nature Chemistry in a joint paper with Walter Leitner and his team at RWTH in Germany. The paper describes a heterogeneous catalyst that switches its selectivity when CO<sub>2</sub> is introduced or removed, even though CO<sub>2</sub> is not involved in the catalyzed reaction.

## CHEMISTRY/DBMS COLLABORATION – A NEW APPROACH TO THE TREATMENT OF CANCER – ALLINGHAM, CRAIG, AND EVANS

**J | A | C | S**  
JOURNAL OF THE AMERICAN CHEMICAL SOCIETY

- A collaborative study by the Allingham, Craig & Evans labs published in *JACS* reports on synthetic analogs of the actin toxin Mycalolide B that disrupt cancer cell invasion.



Dr. Philip Jessop's Canada Research Chair in Green Chemistry has been renewed

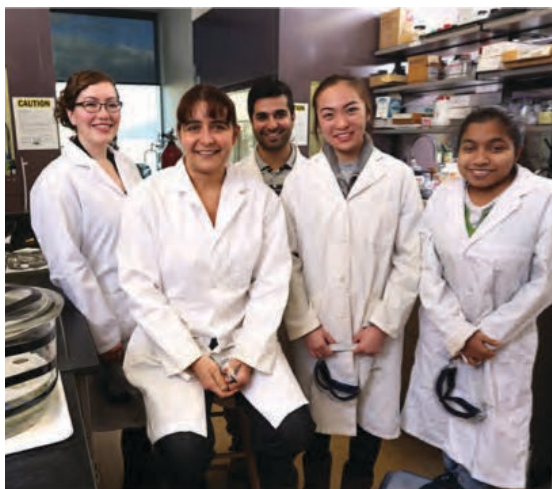
The government has renewed Dr. Philip Jessop's (pictured top right) position as Canada Research Chair in Green Chemistry.

The Department of Chemistry and the Department of Biomedical and Molecular Sciences collaborative study was published in the *Journal of the American Chemical Society*.

The collaborative work of Allingham, Craig & Evans labs (above) was published in the *Journal of the American Chemical Society*. This publication demonstrates the ability to produce a truncated synthetic derivative of the actin-targeting marine toxin mycalolide B impairs ovarian cancer cell motility and invasion of extracellular matrix. This is an important and exciting step toward developing a new class of cancer therapeutics that can inhibit cancer metastasis. Cancer metastasis accounts for approximately 90 percent of the annual deaths, and this approach is an important step in dealing with this dreadful disease.

Congratulations to Anne Petitjean on receiving the Alumni Award for Excellence in Teaching!

Congratulations to Anne Petitjean (pictured second in from left) on receiving the Alumni Award for Excellence in Teaching! The Alumni Award for Excellence in Teaching is awarded to a Queen's teacher who shows outstanding knowledge, teaching ability, and accessibility to students. Inspiring, dedicated, and supportive are words many students use to describe Dr. Petitjean, who is known for





going above and beyond to help her students succeed in the classroom and the lab. Dr. Petitjean's teaching greatness was featured in the Queen's Alumni Article.

Congratulations to our 4th year undergraduate students for completing their thesis projects!

Congratulations to our 4th year undergraduate students for completing their thesis projects! Special congratulations to the recipients of the Walter MacFarlane Smith Prize in Chemistry, Kristen Harrington (*below, right*) and the M. Sullivan and Son Limited Scholarship, Josh Zacks (*below, left*).



Congratulations to Dr. Diane Beauchemin who was awarded the 2021 OUSA Award for Teaching Excellence!



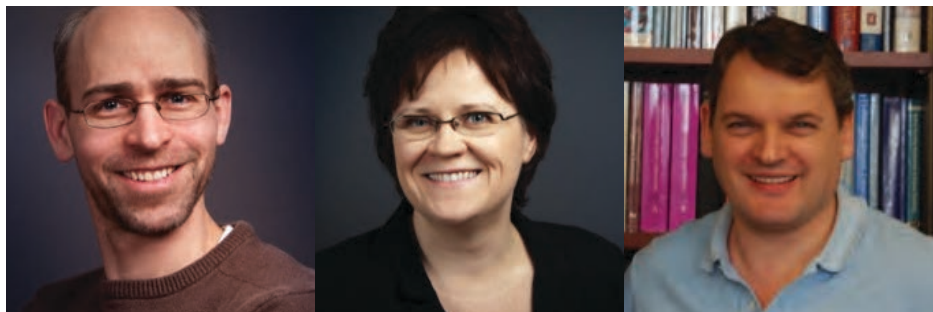
Each year, OUSA (Ontario Undergraduate Student Alliance) nominates a professor who demonstrates outstanding teaching qualities to receive the Award. Through descriptions from Dr. Beauchemin's students, she was able to present difficult course material in an engaging manner while advocating on your students' behalf through remote learning and promoting an interest in research! In addition to this achievement, Dr. Beauchemin (*pictured right*) was also the recipient of the Chemistry DSC's 4th Year Excellence in Teaching award!

A paper published by Dr. Jean-Michel Nunzi and co-workers in nano-Micro Letters was recognized as "paper of the month" by Kanazawa University

A paper published by Dr. Jean-Michel Nunzi and co-workers (*pictured below*) in nano-Micro Letters was recognized as "paper of the month" by Kanazawa University, Japan. The research and paper's topic is about the optimization of the front contact that permits to fabricate efficient and reproducible perovskite solar cells. To view the paper, please visit the Kanazawa website.



*Above (left to right): Professor Tetsuya Taima, Associate Professor Makoto Karakawa, Special Appointed Associate Professor Md. Shahiduzzaman & RP Jean Michel Nunzi*



From left to right: Dr. Nick Mosey, Dr. Cathleen Crudden & Dr. Andrew Evans

Congratulations to Dr. Nick Mosey who is the winner of the 2021 CSC - Tom Ziegler Award!

the first time a researcher from a Canadian university has won this award. Read more about the award and Dr. Evans' research at the Faculty of Arts and Science website.

Professor Nick Mosey is the winner of the 2021 Canadian Society for Chemistry - Tom Ziegler Award. The award will be presented during the Canadian Chemistry Conference (CCCE 2021) and Dr. Mosey will present a lecture at the CCCE 2021. To view the CCCE Award Lectures and biography, please visit the Cheminst website.

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## 2020 —

## NEWS & EVENTS

Dr. Cathleen Crudden appointed as editor-in-chief of ACS Catalysis journal

Congratulations to Dr. Cathleen Crudden who will be the next Editor in Chief at the American Chemical Society (ACS) Catalysis journal. Please visit the ACS website for the official press release.



Congratulations to Morgan Lehtinen who was accepted into the 2021 cohort of Next Canada's Next36 program!

Morgan Lehtinen (left) was accepted into the 2021 cohort of Next Canada's Next36 program. This highly prestigious program

chooses the 36 most promising and high impact entrepreneurial minds across Canada drawing from an applicant pool of 1000+ students and recent graduates from all disciplines of study. The goal of the program is to build a more ambitious and competitive Canada, providing each of the 36 participants with training, mentorship, and access to resources/funding from Canada's top entrepreneurial leaders and investment

Dr. Andrew Evans receives ACS Mosher Award!

Congratulations to Dr. P. Andrew Evans on receiving the Harry and Carol Mosher Award from the American Chemical Society! This is

Congratulations to Heather Drouillard for receiving a 2020 Special Recognition Staff award!

Congratulations to Heather Drouillard (pictured below) for receiving a 2020 Special Recognition Staff award. This award recognizes staff members who consistently provide outstanding contributions during their workday, directly or indirectly, to the learning and working environment at Queen's University at a level significantly beyond what is usually expected (e.g., improving the workplace efficiency, quality of work life, customer service, problem-solving, etc.). On Thursday, Dec. 10, Principal and Vice-Chancellor Patrick Deane recognized a number of staff for their accomplishments in the virtual award ceremony, featured in the Queen's Gazette article. As a



Department Manager, Heather Drouillard is responsible for a multitude of essential services that range from finances to staff to space management in the Department of Chemistry. An impeccable professional and master administrator, Heather is adept at identifying the source of a problem and coming up with a solution. The

lockdown put teaching and research activities at severe risk; not to mention the pandemic's impact on student and staff mental health and livelihoods. Heather's encyclopedic knowledge of departmental space and staff organization was integral in the development of a safety plan that allowed the department to quickly reopen in mid-June with COVID-19 safeguards in place. It was one of the first on campus to do so. The rapid reopening enabled coordinators and grad student teaching assistants to pivot during the summer and develop remote, online labs to instruct undergraduate students in the fall and winter terms. Heather worked with faculty and students to maximize operational space so that more grad students could safely return and complete their studies.



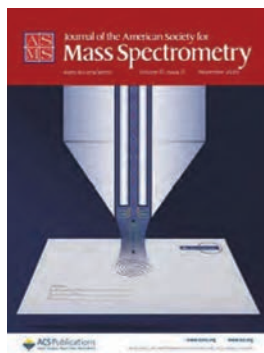
Congratulations to Jevon Marsh, MSc student in the Petitjean Group, who has earned a prestigious Rhodes Scholarship!

Jevon Marsh (pictured above left), MSc student in the Petitjean Group, has earned a prestigious Rhodes Scholarship to pursue a PhD at the University of Oxford. The scholarship was featured in the Queen's Gazette. Jevon speaks about his experiences at Chemistry and Queen's: "I would just like to emphasize that the chemistry community at Queen's is a phenomenal place to grow as a young chemist with a plethora of support and opportunities! I am very proud to have been affiliated with the department and the Queen's community, and the level of mentorship that I have received throughout my studies there will continue to inspire me throughout the rest of my career." Congratulations, Jevon!

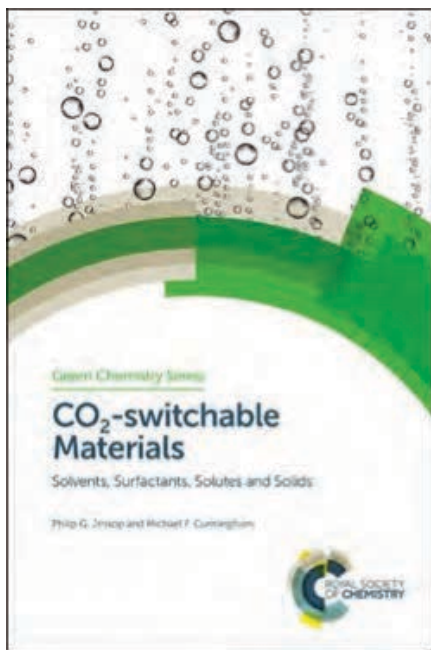
Dr. Richard Oleschuk and group has been featured on the cover for the Journal of the American Society for Mass Spectrometry!

Dr. Richard Oleschuk and group has been featured on the cover for the Journal of the American Society for Mass Spectrometry for their Article: "Detection of Opioids on Mail/Packages using Open Port Interface Mass Spectrometry (OPI-MS)". Article

contributors: Haidy Metwally, Prashant Agrawal, Rachael Smith, Chang Liu, Yves LeBlanc, Thomas R. Covey and Richard Oleschuk. The work stems from a collaboration and NSERC strategic project grant with SCIEX, a



Canadian mass spectrometry equipment manufacturer and was published on November 4, 2020 on the Journal's website.



## CO<sub>2</sub>-Switchable Materials – now published!

A new book, CO<sub>2</sub>-Switchable Materials, written by Philip Jessop and Michael Cunningham, has now been published by the Royal Society of Chemistry.

## Congratulations to the 2019-2020 Chemistry TA Award winners!

Andre Castillo was awarded the William Patrick Doolan Award in Chemistry for 1st Year Chemistry Laboratory. Alastair Kierulf received the Friends of Chemistry Award – For Excellence in Teaching CHEM112 Tutorials. Dianne Lee received the Friends of Chemistry Award – For Excellence in Teaching 2nd Year Synthetic Labs. Andrew Williams received the Friends of Chemistry Award – For Excellence in Teaching 2nd Year Physical and Analytical Labs. Hannah

Ramsay received the Friends of Chemistry Award – For Excellence in Teaching 2nd Year Physical and Analytical Labs. Yizhe (Sherry) received the Fisher Scientific Award for Excellence in Teaching 3rd Year Labs. Congratulations to our TA Award winners!



## Queen's Chemistry is proud to announce that Prof. Cathleen Crudden has been elected to the Royal Society of Canada!

Queen's Chemistry is proud to announce that Prof. Cathleen Crudden (*pictured just above*) has been elected to the Royal Society of Canada (RSC)! Only Canada's top scientists achieve such recognition. The RSC states Prof. Crudden has made "lasting contributions to organic chemistry and materials science. She has employed the principles of organometallic chemistry to develop catalytic transformations of importance to pharmaceutical research and to develop novel techniques for the formation of organic monolayers on metal surfaces. The latter work has resulted in the most robust organic monolayers to date, high stability nanoparticles and novel metal nanoclusters."

Details on the RSC class of 2020 can be found here:

<https://rsc-src.ca/en/news/press-release-rsc-pre-sents-class-2020> Well done Prof. Crudden!



## Congratulations to Drs. Howe and She who are recipients of the Canada Foundation for Innovation's John R. Evans Leaders Fund

Congratulations to Drs. Howe and She who are two of the 18 researchers that are recipients of the Canada Foundation for Innovation's (CFI) John R. Evans Leaders Fund (JELF). The JELF helps exceptional researchers at universities across the country conduct leading-edge research by giving them the tools and equipment they need to become leaders in their fields. Dr. Graeme Howe's project is Elucidating the Evolutionary Enhancement of Enzymatic Efficiency and Dr. Zhe She's project is Visualizing Soft Surfaces using Scanning Probe Microscopy. The story was featured in the Queen's Gazette.

## New Bioanalytical Project Funded by NSERC COVID-19 Alliance Grant

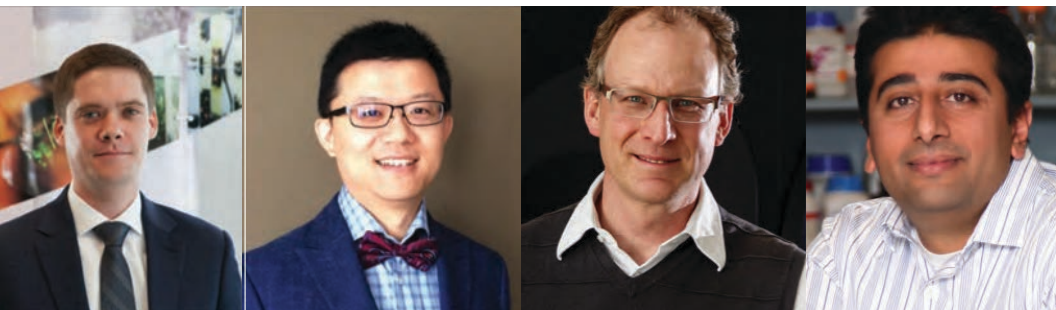
Dr. Zhe She in collaboration with Dr. Richard Oleschuk and Dr. Prameet Sheth (Department of Pathology and Molecular Medicine) will develop an integrated and portable COVID-19 detection system using microfluidic and electrochemical biosensing technologies. The project, which has received support from Department of National Defence Canada, is aiming to enhance the capability of providing medical surveillance on-sites and supporting vulnerable communities. Dr. Sheth's team will assist validating the performance of the system and comparing it with methods currently used at Kingston Health Sciences Centre.

## Nunzi Team Receives France-Canada Research Fund Award

Congratulations to Drs. Howe and She who are two of the 18 researchers that are recipients of the Canada Foundation for Innovation's (CFI) John R. Evans Leaders Fund (JELF). The JELF helps exceptional researchers at universities across the country conduct leading-edge research by giving them the tools and equipment they need to become leaders in their fields. Dr. Graeme Howe's project is Elucidating the Evolutionary Enhancement of Enzymatic Efficiency and Dr. She's project is Visualizing Soft Surfaces using Scanning Probe Microscopy. The story was featured in the Queen's Gazette. \*



*Above: Active Solutions Model*



*From left to right: Dr. Graeme Howe, Dr. Zhe She, Dr. Richard Oleschuk & Dr. Prameet Sheth*



Queens  
Chemistry

The logo for Queens University Chemistry. It features the text "Queens" in a serif font above "Chemistry" in a larger serif font. To the right of the text is a stylized chemical structure consisting of four fused rings: three black and one green.

# TA Teaching Awards

Promoting Excellence in Teaching Assistants in Chemistry.

TA Award recipients (pictured above, left to right):

*William Patrick Doolan Award in Chemistry for 1st-year Chemistry Laboratory*  
– Sophia Botsch

*Friends of Chemistry Award - For Excellence in Teaching 1st-year Tutorials*  
– Monica Ayachit

*Friends of Chemistry Award - For Excellence in Teaching 2nd-year Synthetic Labs*  
– Yu Zhu

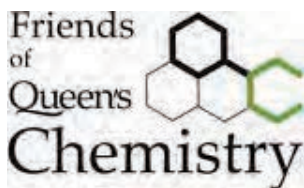
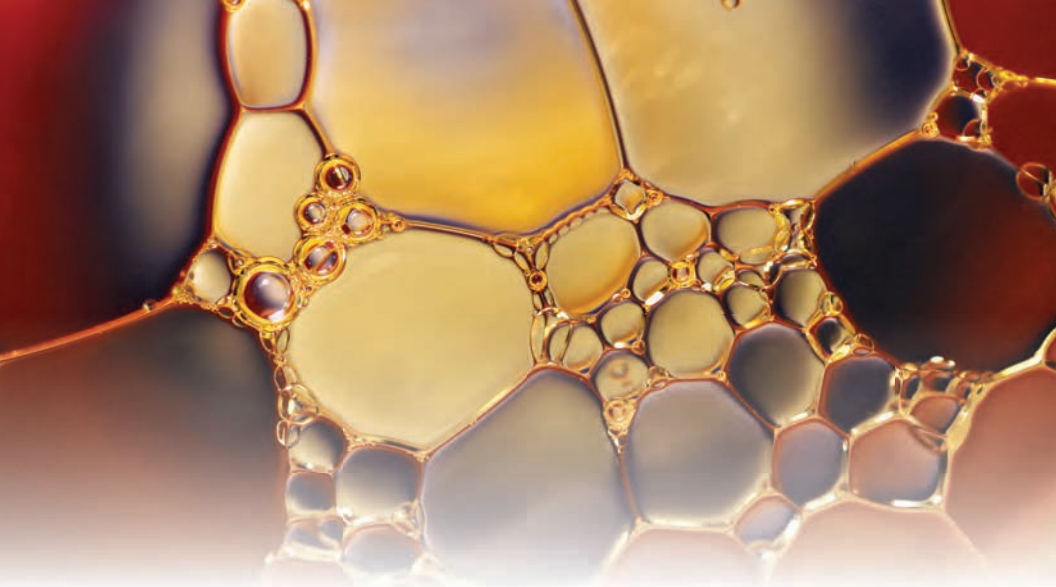
*Friends of Chemistry Award - For Excellence in Teaching 2nd-year Physical & Analytical Labs*  
– Katie Moghadam

*Friends of Chemistry Award - For Excellence in Teaching 3rd-year Tutorials*  
– Carolyn Kimball & Morgan Lehtinen

*Fisher Scientific Award - For Excellence in Teaching 3rd-year Labs*  
– Desiree Bender

## Congratulations to the Class of 2020!





We are pleased to announce that the following speakers have been confirmed for our 2021-2022 Seminar Series. For more information and dates, please visit our website at:

<http://www.chem.queensu.ca/departamental-seminar-series>

Dame Carol Robinson – University of Oxford  
Prof. Claudia Turro – The Ohio State of University  
Prof. Todd Lowary – University of Alberta  
Prof. Karen Wooley – Texas A&M University  
Squire J. Booker – The Pennsylvania State University  
Prof. Vojislac Stamenkovic (UC Irvine)

