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WANDA RESTIVO'S RETIREMENT
The Graduate Department had five PhD students Convocate on June 13th! Congratulations to:

Carlos Alberto Arnillas Merino - supervised by Marc Cadotte
Shahrzad Davarpanah Jazi - supervised by Mathew Wells
Thea L Dickinson - supervised by Bill Gough
Andrew Leung - supervised by Bill Gough
Yalda Liaghati Morbarhan - supervised by Andre Simpson

(Left to right) Mathew Wells
Shahrzad
Carlos
Andrew
and Bill Gough

(Left to right) Andrew
Thea
Mathew Wells
and Shahrzad

(Left to right) Mathew Wells
Bill Gough
Bernie Kraatz
and Mary Silcox
The 102nd Canadian Chemistry Conference and Exhibition (CCCE) was held in Quebec City, Quebec from June 3-7, 2019. This annual gathering continues to be Canada’s premier conference for chemistry and the chemical sciences. The contributions by our graduate and undergraduate students are listed here: graduate student Maryam Abdinejad with the Kraatz and Zhang lab had three posters titled: "Designing Two New Experiments Based on Original Research for an Advanced Chemistry Laboratory Course", "Using Porphyrin Complexes for Homogeneous Electrocatalytic Reduction of CO2", and "Enhanced Student Learning using Augmented and Virtual Reality in Chemistry Education". Undergraduate Zainab Mirza also from the Kraatz lab presented her poster titled: "CO2 Capture and Electrochemical Reduction using Amine Compounds" in the Environmental Science category. Natashya Falcone and Syed Ahmed, both from the Kraatz lab presented on "Supramolecular Assembly of Stimuli-responsive Peptide Gelators and their Biomedical Applications" and "Electrochemical Detection of Human nAChR α7 Subunit Phosphorylation", respectively.

Zainab Mirza received first prize for her poster presentation. She competed within the Environmental Chemistry symposium to showcase her imperative research on the capture and electrochemical reduction of CO2 using primary amine compounds. This project was chiefly designed by her mentor and PhD candidate, Maryam Abdinejad. In addition to expressing sincere gratitude to Professor Bernie Kraatz for his constant guidance throughout her thesis project, Zainab is particularly thankful to Maryam for her outstanding mentorship and dedication. She describes her experience as follows, “Maryam has very patiently moulded me into the successful, self-aware and confident individual I am today. She invested her valuable time in my growth and development, which shows her genuine commitment to student success. I am truly grateful for all the opportunities she has provided me with, and none of this would have been possible without her support!”

Zainab is now pursuing a professional master’s degree in Biotechnology at UTM, where she was awarded the Amgen Canada Fellowship in Biotechnology based on her high academic standing.
Natashya Falcone won a poster prize in the Biological Chemistry division of "Advancing Peptide and Protein Science Through Chemistry" at this year's 102nd Canadian Chemistry Conference.

Natashya Falcone is a third year PhD student holding the NSERC CGS-D award in Professor Bernie Kraatz' lab. Her research entails synthesizing novel bio-conjugates, specifically focusing on peptide hydrogel materials. She is exploring numerous applications of these biomaterials including enzyme entrapment for improved biochemical transformations and as extracellular matrix mimics for tissue regeneration.
The 102nd Canadian Chemistry Conference and Exhibition (CCCE) was held in Quebec City, Quebec from June 3-7, 2019. Our own Artur Izmaylov gave the Tom Ziegler award lecture in the Physical, Computational, and Theoretical Chemistry Division titled, "A Role of Topological Phases in Quantum Molecular Dynamics" sponsored by Software for Chemistry and Materials.

A brief abstract for Dr Izmaylov's talk is included here:

Dynamical consideration that goes beyond the common Born–Oppenheimer approximation (BOA) becomes necessary when energy differences between electronic potential energy surfaces become small or vanish. One of the typical scenarios of the BOA breakdown in molecules beyond diatomics is a conical intersection (CI) of electronic potential energy surfaces. CIs provide an efficient mechanism for radiationless electronic transitions: acting as “funnels” for the nuclear wave function, they enable rapid conversion of the excessive electronic energy into the nuclear motion.

Congratulations to Professor Artur Izmaylov for winning the 2019 Journal of Physical Chemistry-PHYS Lectureship Award. The JPC-PHYS lectureship awards honour the contributions of investigators who have made major impacts in their field of physical chemistry. Artur is being recognized for his pioneering work in quantum dynamics, in particular in the development of approaches for studying non-adiabatic processes.

Artur is the first winner of this award from U of T and will present his lecture on August 27 at the 2019 ACS Fall National Meeting in San Diego. Congratulations to Artur for his multiple awards and accomplishments!
The Interdisciplinary Graduate Research and Discovery (IGRAD) Conference was held on April 30th, 2019 at the University of Toronto Scarborough (UTSC). The conference aims to provide an opportunity for graduate students at UTSC to present their research to the broader UTSC community. The conference began with an opening statement from Stephanie Gagliardi (IGRAD Chair) and Qusai Hassan (President of the Graduate Student’s Association at Scarborough), followed by a keynote talk titled “Interdisciplinarity, Actually: The Case of Narrative and Science” by Dr. Daniel Newman from the Faculty of Arts and Science at the University of Toronto.

The keynote talk was followed by the poster session. The topics discussed ranged from mechano-microbiology to behavioural neuroscience. Nicholas Guilbeault from the Thiele lab was the winner of the poster session with his poster titled “An open-source software platform for relating neural activity to behaviour”. Jonathan Burnie from the Guzzo Lab won the short talk session with his talk titled “Visualization and Characterization of Host Proteins within the HIV Envelope”, while Andrew Apostoli from the Gough Lab was awarded the best long talk which was titled “Growing the North: Will changing climatic conditions enhance the suitability of agriculture in the Great Clay Belt in Northeastern Ontario, Canada?”. The conference concluded with a lively social in the IC Atrium. Thank you to all who presented!

The IGRAD conference was hosted by the IGRAD committee: Stephanie Gagliardi (Chair), Qusai Hassan, Natashya Falcone, Aidan Goertzen, Keuna Jeon, Michael Martin, Trisha Mahtani, Rida Ansari and Eliana Vonapartis. The conference organizers would like to thank the faculty judges and sponsors.

Visit our website at: https://www.utsc.utoronto.ca/conferences/grad-conference/ for more details about the talks presented as well as the complete photo gallery. Also make sure to follow @IGRAD_UTSC on Twitter for more details about next year’s conference!
DPES Staff Award

Koneswary (Konnie) Patkunaranjan

The staff award was introduced to recognize dedicated professional staff who, without the need for fanfare, contributes to the daily operations of the department. Konnie truly represents the spirit of this award because of her professionalism, team-first attitude, and outstanding customer service.

While lab technicians play a significant role in shaping the student’s laboratory experience, their professional lives are often thankless. Most of us have no idea the amount of work that goes into preparing for each laboratory session, assuming it all happens by some kind of magic. As result, we generally think of them only when things do not go well – which is a fate none of us would like! Konnie takes great pride ensuring that students always have a positive and successful lab experience. The Department has undergone many changes over the past couple of years, placing great demands on all the support staff. Through it all Konnie has remained the consummate professional treating all staff, students and faculty with kindness and respect all the while quietly going about her tasks. Without any fanfare Konnie has become one of the rocks that our department leans. Congratulations Konnie!

DPES Excellence and Leadership Awards for Undergraduate Students:

Ms. Zainab Mirza
Mr. Andrew Haddad

DPES Graduate Student Best Paper Award:

Ignacio Loaiza

PhD student in Professor Artur Izmaylov’s research group. He wins for the paper “On the breakdown of the Ehrenfest method for molecular dynamics on surfaces”, by Ignacio Loaiza and Artur F. Izmaylov, which was published in Volume 149 of the Journal of Chemical Physics in late 2018. The selection committee was impressed by the originality and potential importance of the work, and by the independent nature of the student’s contribution.

DPES Teaching Assistant Awards:

Mr. Andrew Apostoli
Ms Felicity Ni
Mr. Jacky Li
UTSC Teaching Awards

**Associate/Full Professor Faculty Teaching Award**

**Dr Shadi Dalili**

The 2019 UTSC Associate Professor Faculty Teaching award was presented to Shadi Dalili at the Celebration of Distinguished Services ceremony on June 25, 2019 held at the Miller Lash House.

Dr Dalili is an organic chemist with over 13 years of teaching experience and an exceptionally inspiring and committed instructor who has made an enormous positive impact on her students and the UTSC community. Not only is she an extremely effective teacher, but she also mentors students, organizes and volunteers for numerous outreach events, and involves undergraduate students early in lab and chemical education research.

**Assistant Professor Faculty Teaching Award**

**Dr Adam Martin**

The 2019 UTSC Assistant Professor Faculty Teaching award was presented to Adam Martin at the Celebration of Distinguished Services ceremony on June 25, 2019 held at the Miller Lash House.

Adam Martin is an ecologist in the Centre for Critical Development Studies and the Department of Physical and Environmental Sciences.

With over 10 years of highly-regarded teaching experience, Adam has taught more than 20 courses at UofT. His teaching style and environmental science courses are recognized as being especially effective in blending theory with applications. His talents as an educator and mentor are evidenced by his outstanding evaluations and, critically, really good reviews on Rate My Professor.com. One student writes “Somehow, he was able to make a course about soil science really interesting.”
Maryam Abdinejad, a Ph.D. student at DPES, working in the groups of Professors Bernie Kraatz and Xiao-an Zhang, is the recipient of the Tri-campus 2019 Teaching Assistants’ Training Program (TATP) Teaching Excellence Award, amongst 334 nominees from across all 3 campuses!

Winning this award represents a significant accomplishment as Maryam is the FIRST TA from UTSC to receive this prestigious TA award!!

Maryam has also previously received the UTSC TA teaching award in 2017. This year, by winning this prestigious university-wide award, she has distinguished herself as a teaching assistant who shows evidence of exceptional initiative, commitment, student impact, and leadership. She can be considered as one of the university's top TAs.

Congratulations, Maryam!
João Pedro (JP) Fontenelle is a 5th year PhD candidate at DPES, working at the Lovejoy lab, at the Biological Sciences Dept.

He has been awarded two research awards: the UTSC Graduate Research Award and the Edward C. Raney Award from the American Society of Ichthyology and Herpetology. The UTSC Graduate Research Award is given every year to one PhD student and one Masters student across all departments of UTSC, after a committee evaluates curriculum, transcripts and participation of the student in UTSC teaching and research. The Raney Award is also offered by A.S.I.H. annually, but consists of a curriculum evaluation and a research project proposal.

For his award, he proposed to evaluate differences in feeding behaviour and structures of needlefish groups, in order to try to understand how these adaptations can relate to different ecologies and life habits.

His research focus is based around ecology and evolution of fishes, on how differences in the environment, ranging from geology to physicochemical gradients, affect the diversification of freshwater fishes in the Neotropical region (South America), in different time scales. More specifically he is interested in how ecological differences can act as barriers to fish reproduction/dispersal (short time scale) and how changes in the topology of the rivers have impacted the diversity as we see today (long time scale).

Congratulations to Joao on his success!
The Clean Energy Lab at the University of Toronto is led by Professor Voznyy since 2018. The group works on developing new materials for Li-ion batteries, hydrogen storage, CO2 capture, and photovoltaics. Group members use atomistic simulations, machine learning, automated high-throughput materials synthesis and characterization to demonstrate proof-of-principle devices that will speed up the transition to renewables.

To fight with increasing carbon dioxide (CO2) concentration in the atmosphere, electro-reducing CO2 into valuable products has gained great attention recently. Traditional CO2 electro-reduction requires CO2 gas bubbling into liquid electrolyte where the catalyst reduces CO2 into various products. The supply of CO2 gas is mainly from traditional CO2 capture industrials, which use alkaline solutions to react with CO2 gas, forming carbonate. The CO2 is then collected by high-temperature heating of carbonate salts, which requires extra energy input (fossil fuels) and increases the cost.

In this study, we designed a new system that can electro-reduce carbonate solution directly into syngas, bypassing the energy expensive regeneration step. We used a bipolar membrane which splits water and generates protons. These protons converted carbonate into CO2 gas in situ. Then the silver-based catalyst reduces CO2 to syngas. We showed 100% carbon utilization and generated syngas as a single product without purification. The energy efficiency of 35% is achieved and the electrolyzer is shown to be stable over six weeks. This study is the first study that converts carbonate into syngas via single step and demonstrates the viable combination of direct-air CO2 capture and electro-reduction.

This paper became one of the most downloaded articles for the past month on ACS platform highlighting the interest of the community to this novel approach. Future work will focus on scaling up the system to industrial level.
The DPES End of Year BBQ was held in ESCB on June 21, 2019. It was a great way to end the year and thank you to all the staff who worked so hard to organize and cater the event.

Have a wonderful summer!
Wanda Restivo, Associate Professor, Teaching Stream has retired after a long and illustrious career at DPES. She received her Honours Bachelor of Science from University of Toronto (1982) as a Specialist in Chemistry and Biochemistry.

Since 1982 she has been a member of our chemistry teaching faculty. Originally hired as a full-time sessional demonstrator, the position morphed into various titles: Tutor, Senior Tutor, Senior lecturer and now Associate Professor Teaching Stream. She has been teaching full time since 2005. Her most recent responsibilities were conducting the labs in 2nd year Organic (CHMB42) and the 3rd year inorganic lab, as well as lecturing the second year Organic Course (CHMB42). She loves working with students and provides them with leadership opportunities in the lab and in the classroom. She has worked closely with AACC- Academic Advising and Career Centre, as a faculty adviser and helping at events.

She has been a member of the organizing committee for the International Conference in Chemical Education, ICCE 2014, held in Toronto as social director as well as the SOUSCC, Southern Ontario University Student Chemistry Conference in the late 80’s held at UTSC. She has been a judge at the Toronto Science Fair all her career.

She has been the Chemistry Discipline Representative on the Department of Physical and Environmental Sciences Executive Council. She has been a Dean's Representative on several hires and promotions in departments outside of DPES. She has also most recently been the Dean's Designate on Academic Matters dealing with academic offences on campus.

She has been involved in Athletics on campus, and received the Student Athlete of the Year in 1977-78 as well as the Faculty/Staff Athletic Award later in her career.

In 2015, she received the University of Toronto Scarborough Faculty Teaching Award.

In her personal life she is married to a wonderful man, Gord, and has two children, Kate and Ben. She played in a professional string quartet playing cello at weddings for twelve years and has been a volunteer with Tennis Canada for 44 years working as a co-head for Transportation at the at The Rogers Cup Tennis tournament in Toronto. For this, she won the Volunteer of the Year Award for Festivals and Events Ontario in 2015.

In her retirement, she will continue volunteering for Tennis Canada, travel, read books for pleasure, and hang out with friends.

She wants to thank the department, her colleagues and most of all her students for a wonderful, happy career. I Wanda has been a valuable member of the department and a wonderful colleague to all those who have worked with her and she will be dearly missed.

The department wishes the best for Wanda in her retirement!
HAPPY RETIREMENT WANDA!!