

THE DPES DIGEST

The official newsletter of the Department of Physical and Environmental Sciences



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Cover photo courtesy of Nick Eyles

Our Acting Chair, Professor Jamie Donaldson

Professor Jamie Donaldson is our Acting Chair of DPES as of July 1, 2018, standing in for Prof. George Arhonditsis while the latter is on research leave until July of 2019. He has served as Associate Chair of DPES from 2003-2005, Associate Chair-Graduate Studies of the tri-campus Chemistry Department from 2008-2013 and Associate Chair-Research in DPES last year.

Jamie grew up “on the hoof” in a Navy family, moving on average every 18 months through the end of high school. He received a BSc in Chemistry from Carleton University in Ottawa, and carried out PhD research there and at labs in the National Research Council. Following postdoctoral work in Boulder, CO, he joined the University of Toronto, and the (then) Division of Physical Sciences in July 1988. Although his appointment was and is at UTSC, space was then at an even greater premium there (in the old S-Wing) than it is today, and he established a research laboratory in the Department of Chemistry labs at the St. George campus, that he maintains to this day.

His early research interests involved studies of chemical reaction kinetics and dynamics, with quantum state-level resolution. These studies used large vacuum chambers (with giant pumps to keep the pressure below 10^{-9} bar!), lasers, spectrometers and computers.

A particular interest was trying to understand and control photochemistry in selected molecules by changing the wavelength of light and the identity of the immediate molecular neighbours.

After about a decade of “hard-core” chemical physics research, his interests evolved to his present more applied studies of atmospheric chemistry happening on surfaces. Some recent highlights are the discovery of a very efficient photochemical release of nitrogen oxides gases from sunlit building surfaces (this generated a fair bit of press interest), the mapping of “chemical morphology” in frozen aqueous solutions and investigations of how seawater chemical processes can be markedly different from those in simple salt solutions.

His research contributions have been recognized by his election as a Fellow of the American Association for the Advancement of Science in 2008, and the Principal’s Research Award in 2017. You can find more information on the Donaldson group’s research work here: <https://sites.chem.utoronto.ca/donaldsonlab/>

Jamie is an ardent supporter of public transit and city cycling, and enjoys sailing, whenever he can get away!





Environmental Science Graduate Orientation Day

Our annual environmental science graduate orientation was held September 6 at Miller Lash House. This year, we welcome approximately 85 new MEnvSc students and 10 new PhD students to our department. The day began with a breakfast and Student Services fair. This was followed by a rotational meet and greet where students moved to different tables to get to know one another and to chat with a faculty member, postdoc or senior graduate student seated at each table. During lunch, we were treated to music from a jazz trio including UTSC's own Gray Graffam and Dave Fenton, accompanied by award-winning saxophonist, May Akanuma. Following lunch, we broke into separate information sessions for

each of the PhD and MEnvSc cohorts. A sincere thank you goes out to all the faculty, postdocs and senior graduate students that participated in the meet and greet, including Nick Eyles, Micah Hewer, Nicole Klenk, Jim MacLellan, Alex Neumann, Yuko Shimoda, Karen Smith, Noelle Stratton, Len Tsuji and Ariola Visha. As always, our staff, including Julie Quenneville, Adam Mohammed, Anisa Diljohn-Maraj, Joanna Ying-Fiss, Shelley Eisner, Janet Blakely, Jennifer Caradonna and Sarah Shujah all contributed their breadth of knowledge to helping our students settle into their time here at UTSC. Finally, a special thanks goes out to Elaine Pick, who led the organization of the event and ensured a hugely successful introduction to our incoming graduate cohort. Welcome to all the incoming students and best wishes for a very successful year!





MEnvSc Internship Poster Day 2018

On September 10th, 2018, DPES hosted 66 outgoing MEnvSc students in the EV Atrium and Catalyst Centre for the first annual Masters of Environmental Science Internship Poster Day. The one-year professional MEnvSc program in DPES includes the option to complete either a summer internship or research project and the internship option is by far the more popular option among students and it is what attracts many students to the MEnvSc program.

This year, instead of having internship students write reports on their work experiences, the MEnvSc faculty and staff organized a poster day. This provided an excellent opportunity for the outgoing MEnvSc students to return to campus and share their experiences in-person with faculty, staff, employers and with each other. In addition, the poster day had the added benefit of introducing the incoming MEnvSc cohort to the internship process and the diversity of potential internships positions available.

Overall, the poster day was a huge success! Special thanks to Stuart Livingstone and the MEnvSc Internship Co-ordinators, Anisa Dilijohn Maraj and Joanna Ying-Fiss for their fantastic organization of this event. Keep an eye out for next year's poster day. All are welcome!

The Chalmers Award for Ontario History

Professor Nick Eyles has won the Chalmers Award for Ontario History for his book *Georgian Bay: Discovering A Unique North American Ecosystem*. The Chalmers award, which is given annually to the best book written on any aspect of Ontario history in the preceding calendar year, was entrusted to the Champlain Society in 1993 with an endowment of \$50,000. Entries are solicited from publishers and individuals. The award is adjudicated by a panel of distinguished Canadian historians

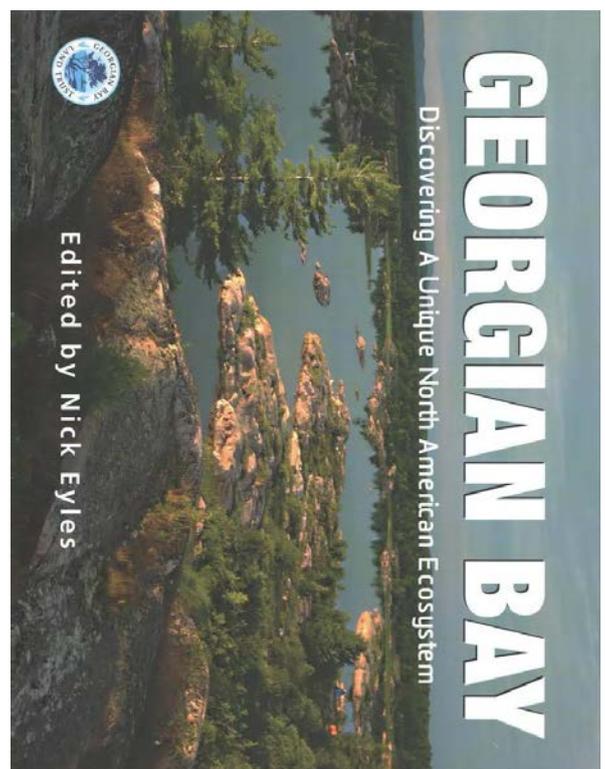
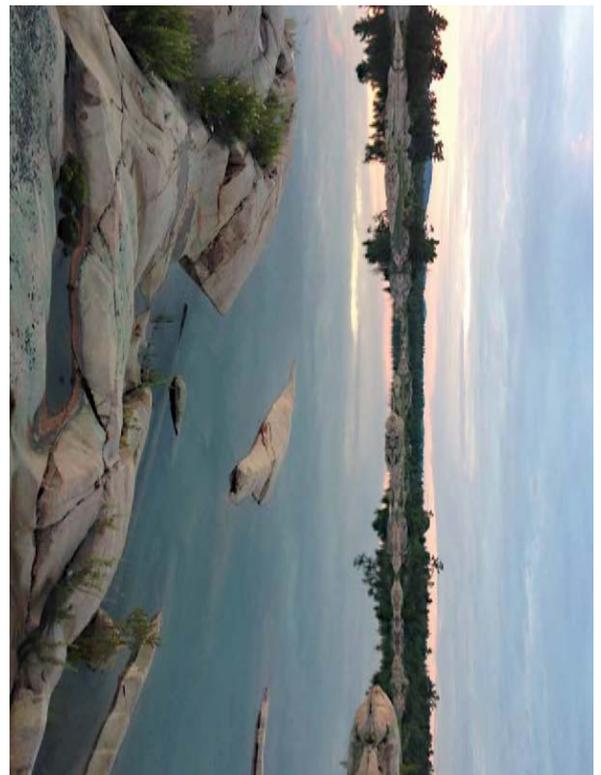
The Chalmers Award committee commented that Professor Eyles' book represented the "best in writing, insight, and presentation". The committee further remarked that, "it is the first time in almost forty years of award-giving that this award goes to an edited collection".

A little bit about the book:

The book tells the story of the clash between water and rocks and the myriad ways that flora and fauna have adapted and flourished along the Bay's windswept shores and its many thousands of offshore islands. Individual chapters focus on life on the land, in the air above, and in the water beneath the wide-mouthed bay. The book enriches our appreciation of the constantly interacting aquatic and terrestrial spaces that characterize this massive and monumental region of Ontario.

Congratulations to the Georgian Bay Land Trust who sponsored it and to the editor, Prof. Nick Eyles and all the contributors for a book which will delight scholars, general readers, and visitors as well as all those fortunate enough to live along the shores of the Bay.

"it is the first time in almost forty years of award-giving that this award goes to an edited collection"



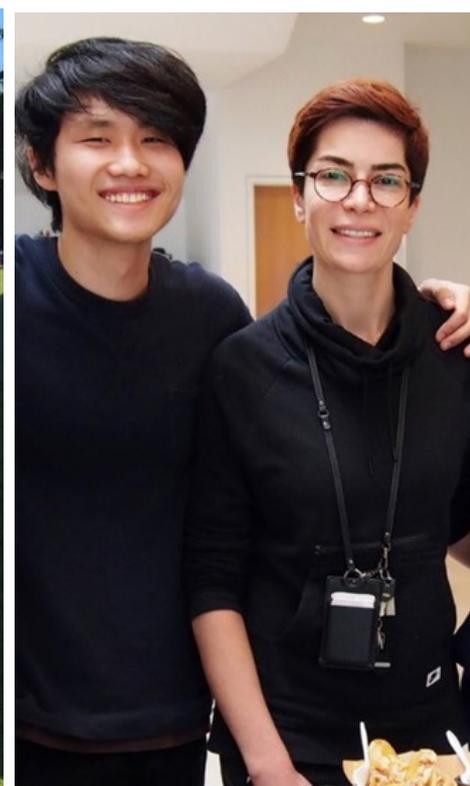
Undergraduate Research Study Project in Clean Energy: Making Dye-Sensitized-Solar Cell (DSSC) Compounds

One of the most popular applications of renewable energy is using solar cells, which represent a green and clean source of energy. We are delighted to announce that our 4th year undergraduate research study (CHMD92H3) students had the opportunity to synthesize dye-sensitized-solar cell (DSSC) compounds for the first time! The project was originally designed by one of our Ph.D. candidates, Maryam Abdinejad under the supervision of Professor Lana Mikhaylichenko in summer 2017 and was implemented in CHMD92H3 in summer 2018 under the supervision of Professor Nirusha Thavarajah (course instructor). Students optimized the method of organic synthesis for the DSSC dyes using bromination, lithiation, and Suzuki coupling reactions, and had the chance to learn a number of advanced analytical techniques. Student comments were highly positive, “D92 has been one amazing course for me, throughout this course I have seen my skills grow as a researcher, as a student, and as a presenter.”



101st Canadian Chemistry Conference Poster Awards

Caitlin Dao and Billy Deng were recipients of the Organic Chemistry Poster Presentation and Environmental Chemistry Poster Presentation awards respectively in the undergraduate division at the 101st Canadian Chemistry Conference and Exhibition which took place in Edmonton in May 2018. Caitlin won this award for her work on the facile synthesis of porphyrin dimers and oligomers in chloroform using carbon dioxide as a C1 building block. Billy won the Environmental division award for his undergraduate work relating to reducing carbon dioxide with porphyrin compounds. Both projects were chiefly designed and spearheaded by their mentor, PhD candidate Maryam Abdinejad. Caitlin would like to express her sincere gratitude to Professors Bernie Kraatz and Xiao-an Zhang for their supervision and support throughout the thesis project and to Maryam for her outstanding tutelage, guidance, and inspiring presence. Caitlin is now a Masters student in the Chemistry department at Queen's University under the supervision of Dr. Suning Wang. As Billy also begins his graduate studies at Queen's, he departs with a few words: "I would like to first express my appreciation for my supervisors, Professors Xiao-an Zhang and Bernie Kraatz. Their dedication to my research fostered an environment of creativity and productivity in the lab. Maryam Abdinejad, my mentor, has also been there for me every step of the way; she brought me to where I am today in my academic career with years of patience and guidance. Without her and my supervisors by my side, none of this could have been possible.



Work Day of a Field Technician at the Adopt-a-Pond Program

By Devanshi Kukadia

I got this amazing opportunity to work as a Wetland Conservation Assistant at the Toronto Zoo's Adopt-A-Pond (AAP) Wetland Conservation Program in the summer of 2018. I am rightly calling it amazing because I got involved with multiple AAP activities such as radio tracking of Blanding's turtles, road surveys, turtle trapping, frog loggers, snake surveys and public outreach all in just a short span of four summer months. Little had I thought that this opportunity was going to turn into the most fun job I have ever had. It was exciting to work with highly dedicated AAP staff who are passionate about wetland conservation.

My typical day at work begins by reporting to the AAP office for a pre-planned field schedule, such as turtle trapping in the morning and road surveys in the afternoon. I go to the lab where all the equipment is stored and get ready. I pick my chest waders, collect data sheets and trap kits and head out to the trap sites. Basking traps and baited hoop traps are laid in the wetlands of the Rouge National Urban Park from May to August to monitor turtle species.

Traps need to be checked daily to minimize the duration of capture for each turtle. My field partner and I reach our first site where, sadly, there are no turtles. We replace the baits in the hoop trap and move to the next site where we find a big Snapping turtle. We quickly move the trap from water to land and release the turtle.



I record measurements such as carapace and plastron lengths and widths, height and weight, while my co-worker is holding its shell tightly on its hind side. This turtle is a massive female and weighs 28 pounds! We calm her down by covering her face with a cloth and quickly insert a PIT tag, which is like a microchip that allows us to track her. We also give her a unique marking called a notch code on the edge of her shell to identify her in future. We double-check all the recorded information and then happily let the turtle swim away to her sweet pond!

I am lucky that my job is not one where I spend all day behind a computer waiting for the day to end and where the outdoors are only reserved for weekends that fly by in the blink of an eye. Each morning, I hop out of my bed just at the very thought of spending a fun-filled day outdoors in the wetlands.

EPSA + CSU UPDATE:

CSU Graduate Student Shadowing Program (Oct 8 - 12):

This program will match one graduate student from chemistry-related programs with two undergraduate students. It will be a wonderful opportunity to link graduate researchers with undergraduates to inspire passion towards research in younger minds as well as a great practice of mentorship for people who are keen for science and research!

Graduates are encouraged to register at:

<https://docs.google.com/forms/d/e/1FAIpQLScUUwx15LYf7YALkIwxkPUOhdCWpATTycXDxX4zqO-6xWEF3g/viewform>

Undergraduates, spots are limited due to the popularity of this program and CSU members will be prioritized. Deadline for registration is Oct 5th, 11:00 A.M. Please register at:

https://docs.google.com/forms/d/e/1FAIpQLScx2fcNG_gUEXlZvMrxC3RqtckpnxGUjq3uAlCv4cvYlZVJA/viewform

DPES SPECTRUM

Many undergraduates are looking for ways to gain volunteer experience related to their degree, but don't know how. The Environmental and Physical sciences' Student Association (EPSA) makes getting involved on campus easy and fun through SPECTRUM, EPSA's online science blog.

Strengthen your writing skills by submitting an article about a scientific event, put your art skills to use by sending in a chemistry comic, or pitch us any idea you're passionate about for content! This volunteer opportunity is CCR recognized, and a great way to get involved and network within the Environmental and Physical Sciences department.

If this sounds like something you'd be interested in, fill out the application on myepsa.ca and e-mail it to spectrum@myepsa.ca

DPES Mix and Mingle!

On Wednesday, October 3rd, EPSA and CSU will be hosting the annual Fall DPES Mix & Mingle event! This will take place in the EV atrium starting at 4pm.

Students will be able to talk to professors and learn about their research. It is also a great opportunity to meet other students from the same program. Be sure to attend! Food will be provided! See you all there! \$2 for non-members to attend.



STUDY SKILLS



DROP-IN & APPOINTMENT INFO

Boost your academic confidence and explore strategies to improve your academic performance.

DROP-INS Tue & Thu | 1-3pm | AC321

1-1 STUDY SKILL PEER COACHING APPOINTMENTS

Log into CLN to book a 1-1 appointment.

Study skills peer coaches provide one on one and group drop-in support to students. The peer coaches help students to assess their study habits and needs, make appropriate referrals to resources, and provide study skills coaching to improve academic confidence and performance. The coaches support students to improve time management, goal setting, motivation, prioritizing, memory, test preparation, reading, and note-taking techniques. Details regarding the program could be found on the following website:

"uoft.me/utscstudyskills<<http://www.utsc.utoronto.ca/aacc/academic-advising-study-skills-appointments#peer-coach>"