“I (we) wish to acknowledge this land on which the University of Toronto operates. For thousands of years it has been the traditional land of the Huron-Wendat, the Seneca, and most recently, the Mississaugas of the Credit River. Today, this meeting place is still the home to many Indigenous people from across Turtle Island and we are grateful to have the opportunity to work on this land.”

- University of Toronto, Land Acknowledgement
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DPES PROFILES

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Staff: Chai Chen
Alumni: Ashley Aurora
On Wednesday June 10th, 2020, more than 5000 scientists, institutions and publishers participated in the # ShutDownSTEM/# ShutDownAcademia strike to address systemic racism and inequality. Members of the UofT community participated, including UofT Engineering and the Seferos Research Group, Department of Chemistry. Indigenous peoples and minority groups still face barriers in achieving STEM degrees, with roots in high school dropout rates and poverty. In the STEM workforce, race-based discrimination is still prevalent and there is a large gender gap compared to other sectors of the workforce. It is not about filling quotas, but recognizing that these problems exist and that action still needs to be taken.

**COVID-19 and Gender Inequities in Academia**

A pandemic naturally highlights privileges in society while amplifying the impacts of pre-existing inequalities. The current COVID-19 pandemic has highlighted and will exacerbate the gender inequality present in academia. As institutions struggle to cut back costs, economic compensation disparities and faculty position cuts will put a greater financial stress, especially for households headed by women or single women. Women already experience greater teaching loads and student support and mentorship duties, compounding on the struggles of implementing online teaching which is more time consuming, has larger classes, and more student contract hours. The increased time and energy spent on service and teaching will make it more difficult to maintain research funding and other activities as women already have to be “2.5 times as productive to be judged as equally competent in grant applications” (Maisch et al., 2020). The increased household demands, like caring for the now homeschooled children, further adds to the challenge. The situation is worse for those who face intersecting systems of oppression, such as ethnicity, race, sexual orientation, age, economic class etc., as women of colour experience “a double bind of discrimination owing to their gender and race/ethnicity” (Maisch et al., 2020).

**Understanding persistent gender gaps in STEM Majors**

A recently published study (Cimpain, Kim & McDermott., 2020), using data from the U.S. Department of Education’s High School Longitudinal Study of 2009, shows the gender gap in STEM majors has narrowed in disciplines like chemistry, biology, mathematics, but is still a 4-to-1 ratio in the physics, engineering, and computer science (PECS) fields. Persistence rates, from post-high school intention to college major, were
similar overall, but differences arise from low-achieving men who are both attracted to and retained in these fields in college, while only high achieving females are. Whatever women do, they must do twice as well as men to be thought half as good. Low-achieving women either did not want to major in STEM, believed they were incapable, or are dissuaded from pursuing this pathway. Prior research suggests all as possibilities, as women may choose PECS and STEM in general less because of overall lower confidence in math abilities, take different high school STEM courses, or have different career aspirations. The pandemic and shift to online teaching and loss of practical and laboratory teaching may further impact the retention of female students and impact those looking to switch into STEM from other majors.

**The Diversity-Innovation Paradox in Science**

This is the diversity paradox: “diversity breeds innovation, yet underrepresented groups that diversify organizations have less successful careers within them.” It is a common hypothesis that demographic diversity brings about innovation, from having experiences, concerns, and values that differ from groups traditionally represented. Yet in a recent study by Stanford University looking at nearly 1.2 million US doctoral recipients from 1977 to 2015 and following their careers into publishing and faculty positions, finds that despite underrepresented groups producing higher rates of scientific novelty, their contributions are devalued and discounted. Despite producing conceptually novel and impactful and novel PhD theses, women and underrepresented races in STEM disciplines have lower odds of becoming research faculty and continuing research careers. Minorities are 25% less likely to become research faculty and have 10% lower odds of continuing research endeavors. Their novel conceptual linkages are also less likely to be adopted within prevailing fields.

**Read further here:**


A couple of years ago, when I was an undergraduate student at UTSC, I had the opportunity to work with Professor Lana Mikhaylichenko and Professor Kagan Kerman on exciting chemistry projects in the lab, which sparked my interest in research. After motivation and encouragement from these professors and my mentor, Maryam Abdinejad, I decided to pursue my Ph.D. in chemistry. Now, I’m a third-year Ph.D. student in Professor Kagan Kerman’s lab. My research entails synthesizing different nanocomposite gel materials and exploring their potential use in several applications. These applications include the development of novel electrochemical sensors, hybrid solar-cells, and antibacterial wound dressings. One of the most rewarding parts of the Ph.D. journey is having the opportunity to teach and mentor various undergraduate students. During these last 2 years, I had the chance to mentor many bright CHMD90 (directed research course) students, as well as TA various great second- and third-year undergraduate chemistry students. Teaching and connecting with my students is always a rewarding experience for me.

Celia Ferag
Category: Chemistry

A couple of years ago, when I was an undergraduate student at UTSC, I had the opportunity to work with Professor Lana Mikhaylichenko and Professor Kagan Kerman on exciting chemistry projects in the lab, which sparked my interest in research. After motivation and encouragement from these professors and my mentor, Maryam Abdinejad, I decided to pursue my Ph.D. in chemistry. Now, I’m a third-year Ph.D. student in Professor Kagan Kerman’s lab. My research entails synthesizing different nanocomposite gel materials and exploring their potential use in several applications. These applications include the development of novel electrochemical sensors, hybrid solar-cells, and antibacterial wound dressings. One of the most rewarding parts of the Ph.D. journey is having the opportunity to teach and mentor various undergraduate students. During these last 2 years, I had the chance to mentor many bright CHMD90 (directed research course) students, as well as TA various great second- and third-year undergraduate chemistry students. Teaching and connecting with my students is always a rewarding experience for me.

Andrew Zajch
Category: Environmental Sciences/Studies

Andrew is a PhD Candidate in his 4th year at the UTSC climate lab. His research investigates the impact of climate on earth-air heat exchanger systems, a type of shallow geothermal technology which directly provides heated or cooled air to buildings by passing it through subsurface tubing. This follows his completion of a BSc (specialist in environmental physics) and a MSc (Earth Sciences) at UofT. He has also been a teaching assistant in the Department of Physical and Environmental Sciences during his PhD. His teaching experiences include introductory physics and environmental science courses in addition to climatology and geomorphology. A fun fact is that you may recognize him from the UTSC weather station tour video.

Nathan Winsor
Category: Physics & Astrophysics

I’m entering in my fifth year of graduate school, and teaching has always been a constant in my life since high school. I’ve taught a variety of topics in the sciences, including math, physics, chemistry, and now, astrophysics. I have always found teaching to be enjoyable and rewarding, and have continually worked to improve year-by-year. Aside from this, my research interests are the habitability of Solar Systems beyond our own, more specifically, the interplay between a planet’s interior and atmosphere, and its implications for life elsewhere. During my personal time, I enjoy cooking, playing Irish/Newfoundland music, card & board games, and campfires.
This award aims to recognize undergraduate students who demonstrate both academic excellence and leadership within the Department of Physical & Environmental Sciences. The following students have distinguished themselves both academically and for their leadership and contributions to the DPES community through their participation in student organizations (i.e. EPSA, Chemistry Society) or other volunteering work related to DPES. A special thank you to TRACES and Chem Stores for sponsoring these awards.

Maxwell Fine  
Category: Physics & Astrophysics  
Max is currently starting his third year of studies in P&A. Academically, he is an excellent student and shows great promise that has been recently acknowledged by his successful application to the SURP (Summer Undergraduate Research Program at the Dunlap Institute for Astronomy and Astrophysics). He is the P&A representative to EPSA and has been heavily involved in planning and programming events, including the organization of the Physics Study Centre. He has been selected to be the FSG leader for PHYA10. His contagious passion for Physics and Astrophysics will continue to drive peers, attract new students, and remind the rest of us of what a model student should look like.

Karyna Hanif  
Category: Chemistry  
Karyna joined the Chemistry Society in spring of 2016 and has been one of the most hardworking and enthusiastic members of this group. She participated in numerous events of the Society and organized many of those on her own!! She served the Society as an Executive Member, Vice-President and as President for one year. Since the beginning of last summer, Karyna has been working with EPSA as the Chemistry Director, managing the Undergraduate Chemistry Help Center. Karyna has also been the Editor/Designer of the DPES Digest, and we all have had the pleasure of enjoying her impeccable work with our Newsletter! Karyna is also commended by her nominee for being an excellent student and absolutely amazing person, while keeping herself busy with all her work for the department!!

Nicole Anasis  
Category: Environmental Sciences/Studies  
Nicole has shown a sincere interest in helping her peers in Environmental Geosciences as evidenced by her involvement with the Environmental and Physical Sciences Student Association (EPSA). She is the first geoscience student over the past 10-years to follow through with establishing a community for geoscience students. She has made significant strides in building a relationship with her peers at Earth Sciences in order to learn about student opportunities for learning and travel outside UTSC. Nicole has also been involved with a number of initiatives with our Environmental Studies program, including the tri-campus CECCS Sustainability Day Organizing Committee Meeting, where she is helping to plan a Sustainability Day across the three campuses!!
DPES AWARDS

Yuchao Wan
PhD Candidate

Yuchao Wan is the recipient of this year’s DPES Graduate Student Best Paper Award. Yuchao’s paper is the first to document indoor concentrations of a suite of semi-volatile organic compounds of concern (flame retardants, plasticizers and combustion products) in social housing in Canada. People in social housing constitute a vulnerable population in terms of low socio-economic status which is a primary indicator of overall health status. Bio-monitoring studies in the US show that individuals with low socio-economic status are subject to higher chemical exposures of a range of contaminants. Yet, very few studies have documented indoor concentrations of contaminants in low socio-economic status housing. Yuchao’s is the first study to do so for Canada. Yuchao found 3-18 times higher concentrations of a suite of semi-volatile organic compounds in Toronto’s social housing units (n=71) compared with higher socio-economic status homes (n=51).

His nominator, Prof. Miriam Diamond, praised Yuchao for his independent role in conceiving and carrying out the research described in this paper. The paper is published in Environmental Science & Technology Letters with an impact factor of 6.934, which has risen quickly from the start of the journal just 7 years ago.

Yuchao will receive $1,000 that could be used to attend a conference or to support any other activity pertinent to his research. Warmest congratulations for your outstanding work Yuchao!


STAFF AWARD

Tom Meulendyk
Teaching Laboratory Coordinator

Tom has been praised profusely for all his support and creativity with our graduate and undergraduate teaching and research enterprise. He has been directly (or indirectly) involved in nearly half of the teaching grants submitted from our department over the past five years! Tom has received numerous praise within the department for his many talents and the modesty that accompanies his great skill set. He received his Honours BSc from UTSC in 2008, with a Specialist in Environmental Geosciences and a Major in Anthropology. He received a MSc in 2010 from the University of Calgary, Department of Geography, with a specialization in geomorphology/geophysics. He is currently employed as a Lab Coordinator responsible for

Environmental Science graduate and undergraduate teaching labs and field exercises, including their day-to-day operation and compliance with safety regulations. His duties can be anything from the planning of new laboratory and field exercises, research of relevant scientific literature, maintenance of equipment and scientific apparatus to implement new experiments; training and supervision of students during graduate and undergraduate field trips and field camp courses; social media and print, management of the UTSC Weather Station and the web server including the development of applications (using Python and Perl languages). Congratulations Tom! Thank you for your incredible contribution to DPES!
Myrna Simpson has been awarded, through a super competitive process, a Tier 1 Canada Research Chair in Integrative Molecular Biogeochemistry for 7 years. Since 2002, Myrna has established a world class research enterprise that has produced over 200 papers, books, and book chapters. She has trained numerous graduate and undergraduate students, postdoctoral fellows, and visiting scientists. In her highly decorated career, she has received a long list of awards (e.g., PM Huang Award, 2 NSERC Discovery Accelerator Supplements, and Royal Society of Chemistry Environmental Science Award, to name a few). It was only a couple of months ago when she was granted a Discovery Grant from NSERC with an annual instalment that is an all-time record for the Geosciences Evaluation Group.

Myrna’s research program uses an interdisciplinary approach with foundations in environmental/analytical chemistry to study the sources, structure, and environmental reactivity of organic matter found in soils and sediments. Her research group has developed innovative mass spectrometry (MS) and nuclear magnetic resonance (NMR) based methods to obtain molecular-level information which is used to formulate accurate mechanistic information that can then be applied to processes observed on a larger scale.

The three main areas of her research program include: 1) use of organic matter molecular markers (biomarkers) for examining climate change impacts on biogeochemical cycles in terrestrial environments, 2) study of sorption mechanisms of contaminant interactions with soils and sediments, and 3) development of environmental metabolomics to determine the stresses on soil and water dwelling organisms with exposure to contaminants. Myrna has produced very high quality scholarship that is extensively cited in the literature.

Warmest congratulations
Myrna! DPES is incredibly proud for all your success!
Professor Marney Isaac has been promoted to Full Professor effective July 1, 2020. Professor Isaac obtained her Ph.D. from the University of Toronto in 2008, where her research focused on ecological and biophysical dynamics in diversified cocoa systems. After receiving a highly competitive NSERC postdoctoral fellowship, she spent a year (2008-2009) working with the French Agricultural Research Centre for International Development (CIRAD) research unit "Functional Ecology and Biogeochemistry of Soils and Agroecosystems". She then joined the University of Toronto as an Assistant Professor with 51% of her appointment in the Department of Physical and Environmental Sciences and 49% in the Centre for Critical Development Studies, followed by tenure and promotion to Associate Professor in 2015. Professor Isaac holds graduate appointments in the Departments of Geography, School of the Environment, and the Graduate Department of Physical and Environmental Sciences.

She was named the Canada Research Chair (CRC) in Agroecosystems and Development in 2013 and renewed her CRC in 2019. She has over 60 publications in top-tier journals in environmental science and ecology or more specialized journals in agroecology. In addition, she has an impressive funding support from a number of provincial, national, and international funding agencies that has enabled her to establish a prolific research group at UTSC. She has delivered numerous national and international talks and keynote lectures, and was invited to join the editorial boards of three leading applied science and agroecology journals (Journal of Applied Ecology, Agronomy for Sustainable Development, and Biotropica). Congratulations Professor Isaac!

Professor Diana Valencia has been granted tenure and promotion to the rank of Associate Professor. Professor Valencia is a leading scholar in the field of exoplanets. She was one of the first scientists to conduct research in the interior structure and interior dynamics of Super-Earths, which is now an established and flourishing field of study. Professor Valencia’s doctoral thesis (Harvard University) is the first to combine geophysical and astrophysical concepts around these planets. In her postdoctoral years, she held two competitive fellowships: the Henri Poincaré Postdoctoral fellowship, awarded by the French Government and held at the Observatoire de la Cote d’Azur, and the NASA Sagan Postdoctoral fellowship, awarded by NASA and held at the Massachusetts Institute of Technology.

During her tenure at the University of Toronto, she has (co)supervised 11 M.Sc. and Ph.D. students, 13 undergraduate students, and 4 postdoctoral fellows. She was the co-founder of the Centre for Planetary Sciences at the University of Toronto. The impact of her work, research agenda, contributions and initiatives to train Highly Qualified Personnel (HQP) has helped her to secure external funding, including an NSERC Discovery grant, the highly sought-after Early Research Award, the French-Canada Research Fund, as well as competitive internal awards such as the Connaught award. Recent awards include the inaugural Mercator Visiting Fellow awarded by the German Science Foundation and a Visiting Fellow for Planet Science Initiative awarded by the Swiss Science Foundation. Professor Valencia has published over 25 papers in top-tier journals, one book chapter and has been commissioned to write a book. Additionally, she has been invited to give dozens of international academic talks, and reaches out to the public through interviews for the Discovery Channel, CBC Ontario, CNN Espanol among others. Congratulations Diana!
**About Me:**
I completed my undergraduate degree at McMaster University in environmental science and then a M.Sc. and Ph.D. in physical geography from UofT. I like teaching anything to do with things that overlap my research interests, including hydrology and various aspects of biogeochemistry. Between my Ph.D. and starting at UTSC, I was a postdoctoral research fellow for about a year and a half at the Smithsonian Environmental Research Center in Maryland. I grew up in Sarnia, Ontario, which is known on one side of town for its environmental issues and on the other for its natural beauty, especially along the shore of Lake Huron. I don’t think I recognized it much at the time, but this influenced my career path somewhere along the way.

**My Career Journey:**
Early on in university, I had no intention to be on this career path. And not having any access to classes with much environmental content in high school, I more or less serendipitously took a first-year environmental science course as an elective when I started at McMaster, and found the subject fascinating and new. I ended up majoring in environmental science, but it was not until a series of research experiences in 3rd and 4th year that I even thought about graduate school. I asked around with my profs at McMaster about some areas of possible interest and ended up at UofT for my M.Sc. I liked my M.Sc. so much and had so many questions I felt I had to look into further. This is when I started to think about the career I have now.

**Project/Research Highlights:**
There are too many projects going on right now to adequately describe. As one example, I am leading a large, collaborative research project about how forestry practices can be changed to lessen impacts on mercury getting into aquatic food chains. We are working with other universities, four forestry companies, and both the provincial and federal government on this. There are so many exciting things coming out of this right now, even if we are a little slowed down with the pandemic.

Research Profile
I research important chemical reactions in the environment, how living things like plants and microbes affect these reactions, and ultimately whether these reactions lead to toxins and other molecules that impact how animals and humans live. Underlying all this is a lot of research on understanding how different elements and molecules move around the environment, especially with water, and contribute to these reactions. We also work with various types of industry to apply these concepts in helping them to lessen their impact on the environment.

**Recent Accomplishments:**
Last year I was elected President of the Canadian Geophysical Union, a professional society that represents the interests of environmental and Earth scientists through conferences, advocacy, student mentorship and awards. This year has been interesting as we moved our in-person annual conference to weekly online seminars, a change that has actually worked incredibly well.

**Challenges in your role?**
I wear quite a few hats. I teach, I do research and mentor a large number of young researchers, and I contribute with a lot of administrative things, especially with my duties as Associate Graduate Chair. I think I manage my time well, but it gets pretty difficult to focus on any one thing for very long before something more urgent and important comes up. If you don’t get too worked up about it, this challenge is part of the fun in a way.

**Rewarding parts your role?**
Funnily enough, one of the most rewarding parts of my job is that it is challenging. I haven’t been bored since at least 2007. As I’ve progressed in my career, one of the most rewarding things to see is the success of both former students and staff that I’ve had the chance to mentor or work with. Also, working closely with my students keeps me feeling pretty young.

**A fun fact about you?**
I have an identical twin brother who is an elementary school principal.
MEET GRAD STUDENT:
AIMÉ KAYEMBE

Research Summary:
My research is multidisciplinary as it merges at the interface between geospatial analysis, hydrology, stream geomorphology and geochemistry. I am looking at the transport of salt and heavy metal elements, as well as the interaction between these pollutants. My work highlights the important interrelationships between land uses, stream hydrology as well as pollutant behavior in urban aquatic environments.

About Me:
I am originally from the Democratic Republic of the Congo (DRC). I am currently completing a PhD in Physical and Environmental sciences at UTSC, working under the supervision of Dr. Mitchell. I moved to Canada in 2005 to resume with my tertiary education that was interrupted as the result of civil unrest and wars in the DRC. My academic background includes a bachelor’s degree in science, with a joint degree in chemistry and computer science. I subsequently completed a bachelor degree of education as well as a Masters of science in life and environmental sciences, at Trent University. I joined the Mitchell’s research group at Uoft after working as a high school teacher. I am currently in the final stretch of my PhD candidacy and hoping to defend within a few weeks.

What led you to graduate school?
I wanted to fine-tune my understanding of research skills and deepen my knowledge on the impacts of human activity, including urbanization, on water quality in highly developed areas. As I prepare myself for a lifelong career in academia, I recognize that improving both these skills and developing an intellectual self-actualization will equip me with all the effective tools to attain this goal. I was particularly drawn to Dr. Mitchell’s portfolio which involves a multidisciplinary approach to describe underlying processes behind the transport and fate of pollutants in urbanized environments.

Most rewarding parts of your graduate experience?
Even though climate change is an enormous threat, I am lucky that I find atmospheric and climate science fascinating. There are always new things to learn. And it is hugely rewarding to share my enthusiasm with my students.

Advice on work-life balance?
The secret to avoid burning out is to let go of perfectionism. Strive not for perfection, but for excellence. For me, that balance is also sustained through regular exercise, meditation, and unplugging. Make quality time true quality time.

Advice on grad school and if research is for you?
Graduate school is for people who love research and teaching for their own sake and for the difference they can sometimes make in the world. If you are interested in research, I recommend getting advice from everyone you consider either knowledgeable, but particularly from professors. You should understand that a large part of what professors do is to give people advice. Professors know a great deal about graduate school. Another venue for seeking advice would be to speak to graduate students in your department, like the ones who have served as TA’s in your classes.

Where do you hope to be career-wise in 10 years?
A few of my future goals for the next few years include working in academia in some capacity as an educator and a researcher. I’m excited about the prospect of bringing the acquired knowledge and experience over to Africa, where it would definitely be needed the most. I am assisting researchers at a local university in the DR Congo starting a research institute on the environment. Hopefully, 10 years from now the school will expand and have more collaborative works with our DPES; that would be exciting!
About Me:

I grew up in Belleville, Ontario and I became interested in climate change from a pretty young age. I attended Queen’s University for engineering and became active in environmental campaigns on campus and off, particularly those focused on climate change. I started my graduate studies in climate science and went down south to the California Institute of Technology where I received my Master’s degree. I came back to Canada and did my PhD in atmospheric dynamics at U of T St. George. I then moved back to the US – to New York City – to start a post-doc at Columbia University. I ended up spending almost six years at Columbia as a post-doc and then a research scientist before starting my current role in DPES. I love teaching anything to do with the atmosphere or climate and I also love to code. When I’m not thinking about climate change, I love to spend time outdoors or playing music with my husband and 5-year old daughter.

Research Summary:

I am interested in understanding the physical processes that contribute to atmospheric and climate variability, particularly the variability of the polar regions. To do this, I perform experiments using computer models of Earth’s climate system, the same types of models that are used to make projections of future climate change.

What led you on this career path?

When I was in undergrad, I did not really think about graduate school. In my fourth year, I took an advanced fluid dynamics course with a Professor (Dr. Pollard) who would then become my research project supervisor. He encouraged me to apply to graduate school and is the main reason why I applied. This lead me down the path to my post-doc at Columbia University. My full-time job at Columbia was research, but I taught a climate science course part-time at the American Museum of Natural History and discovered that climate science teaching was my passion.

What are the challenges of your current position?

For me, one of the big challenges of my current position is staying optimistic. I have been studying climate change for a long time now and it’s hard to see extremely little action being taken to mitigate it. I always tell my students that I started graduate school when atmospheric carbon dioxide concentrations were 373 ppm and now they are 411 ppm. That’s a huge change! My optimism comes from my students – they are the change-makers.

Most rewarding aspects of current position?

Even though climate change is an enormous threat, I am lucky that I find atmospheric and climate science fascinating. There are always new things to learn. And it is hugely rewarding to share my enthusiasm with my students.

What advice would you give yourself if you could go 10 years in the past?

I would probably tell myself to travel a bit more. I have had some opportunities to travel for fun and for academic conferences, but travel was never something that I made time for and I wish I had. I would especially like to go to Kilimanjaro before the glaciers disappear for good.

Where do you hope your career takes you in 10 years?

I am hoping to continue building climate science literacy through my teaching in DPES and I hope to contribute to the evolution of climate science education in Canada through my involvement in the Canadian Meteorological and Oceanographic Society.
MEET GRAD STUDENT: LUKAS CHEUNG

About Me:
I am a master of environmental science candidate specializing in CCIA in the University of Toronto. I have a bachelor's degree in Physics and a diploma in environment from McGill University. For the past 2 years, I have mainly focused on my work as a research analyst on wind potential, renewable energy and smart micro grid systems in Nergica. After 1 year of internship and remote work for the company, I have noticed that I needed more knowledge and experience in terms of data analysis and statistical methods to perform my work efficiently. Thus, I decided to apply for a master's degree at U of T.

What led you to graduate school?
As I was always interested about the inner workings of climate models and their uncertainties, this field of research is a good fit for me. Furthermore, this experience allows me to polish my data analysis and data visualization skills through processing a huge amount of climate model outputs. At the beginning of the project, there were some programming difficulties and lack of direction. However, after some brainstorming and discussion with my supervisor, these issues quickly resolved. Most of my present challenges reside in how I am processing my data efficiently. I thoroughly enjoyed my graduate school life in U of T. As I have met numerous like-minded colleagues who are also passionate about the environment and want to contribute positively to global climate change. Moreover, the program offers a lot of resources for students to better themselves and to enlarge their social circle.

Research Summary:
My current project aims to determine if the CORDEX RCMs simulates the Great Lakes region more accurately through validations of lake effect temperature and precipitation and overlake and overland points analysis.

A cool fact about yourself?
I have been an avid rock climber for more than 8 years and I am an adventurous traveler. My backpacking journeys include a bike trip from Moncton, NB to St John’s, NF, a month in the UK and Ireland, a month in Japan, a hiking trip in Iceland etc. All these journeys showed me the beauty of the Earth and how it is important to preserve and to protect these important ecosystems for the future.

What advice would you give aspiring graduate students?
UTSC has a lot of resources dedicated to the success of its students and most of the faculty I have met have been very friendly and helpful. Thus, if there are any issues, asking for help or talking about it with your peers can be useful. To know if research is for you, you need to be passionate about your field and to know that at times, your project will advance very slowly. Thus, if you can diligently and patiently work through the challenges, research will be vastly rewarding as you are actively contributing to the knowledge in your chosen field.

What advice would you give yourself if you can go 10 years in the past?
When I was younger, I was always anxious about the future, about what type of career and life I would lead. By being in that stressed emotional state, I would often miss opportunities to appreciate the things that I had. So my advice for my past self would be to concentrate on the present and to enjoy life as it passes by. Not everything I do right now will contribute to my career, but every experience I have can improve myself and promote my wellbeing.
**Staff Profile**

**Chai Chen**

Teaching Laboratory Technician

**Recent accomplishment?**

Just learned how to wheelie!

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**About me and my career journey:**

I did my undergrad at Rensselaer Polytechnic Institute (Started as a Chem major then switch to Biology class of 1990). This is the time when Molecular Biology is the hot area to be in. During this time, I got a summer job working at Cold Spring Harbor Laboratory as a teaching technician in the Vector Program. This is the time when Molecular Biology is mandated in the high school curriculum when most teachers in the state never learned about it during their training. We offered a five-day workshop for the teachers to learn about the theory and techniques. We would pack up our van with equipment and hit the road from state to state for a month at a time. I did this for two summers and got to travel and meet a variety of teachers and see the cultures of different part of the United State. When I graduated, I was offered a full time job at Club Med and I also got into the Master program in UofT. I chose Science over a life time of vacation. After I got my Master, I was offered a job with UTSC in the Life Sciences Department. Later, I switched to DPES.

**You specific job responsibilities:**

Jack of all Trades. Teaching lab is the major responsibilities. With Env. Sci, you need to know a little bit of chemistry, biology, computer science, geology and anything related to sciences.

**Your biggest milestone?**

Getting my Master’s degree in Mircobiology (UofT)

**Challenges in your role?**

Too many interesting projects and too little time.

**Most rewarding aspects of your job?**

Seeing students I helped to move on to a successful career.

**An interesting fact about you:**

While in CSH, I meet three Noble Laureates. One in the photocopy room, I let her (Barbara McClintock) cut in line.

**Favourite hobbies/past times?**

Photography, Cycling, Skiing, Roller Blade, Video gaming.

**What advice would you give yourself if you can go 20 years in the past?**

Have kids earlier.

**Where do you see yourself in 10yrs?**

Cycling world.
ALUMNI HIGHLIGHT
ASHLEY AURORA
HB.Sc in Biochemistry (coop) and Environmental Science, UTSC (2016)
Support Specialist for the IELTS Test Centre at Centennial College, School of Advancement

Tell us about your current role:
Although I work in Centennial college, I specifically work for the IELTS test centre. As a business within the College, my team and I at IELTS provide a service to our clients to help them in their journey to get an education or start a new life in Canada.

I predominately work with our external stakeholders. This entails managing and supporting 600+ people on a quarterly basis, and upto 2000+ people on an annual basis. Good thing I love working with people!)

Never a dull moment. I am either researching new technologies to implement process improvements, to data analysis for making strategic decisions on our business growth, to even supporting my team with the day to day operational work in managing our internal and external stakeholders. Currently, I’m being trained to become the Subject-matter-expert on Computer-Delivered IELTS testing, the more sustainable option to how we conduct our tests globally.

Challenges working in your position?
IELTS is an internationally recognized testing organization, and has been around for quite a number of decades. Therefore, unlike working in a start up company, as I had in my past positions, implementing changes requires a lot of pushing and pulling... and patience. However, the move toward a more sustainable option for the testing is definitely rewarding when we save on using tens of thousands of papers, and plastic, from just one month of testing at our test centre!

Rewarding aspects of your role?
I am not only tackling the environmental aspect of sustainability but also the social pillar. With this role, I interact with people who come from a diverse ethnic backgrounds, where a lot of them are just trying to start a new life in Canada. Everyone has a story and it’s so beautiful to hear about all these different journeys. When the test results are released, I really look forward to seeing that smile on an individual’s face when they get the mark they wanted and can move forward in their immigration application.

Work-life balance?
Gets easier when you start settling in a new role. During my down time, I enjoy working out, Zumba, cooking, watching TedTalks, and trying many, many different restaurants in the city (aspiring to be a BlogTO host someday!)
How has UTSC experiences impacted where you are today?

**Academia** - develop the hard/technical skills (e.g., data analysis).

**Extracurriculars** - developing the soft skills. Being a campus tour guide for 5 years really pushed me out of my shell and helped me develop public speaking + sales skillset. Other opportunities, such as planning and coordinating chemistry experiments for the Toronto Science Fair with the support and supervision of my professors, volunteer mentoring opportunities, and even leading a student association (the Chemistry Society) in my upper years really helped develop a whole bunch of transferable soft skills that are easily applicable to any work environment.

**Coop** – Many eye opening experiences from my workterms. For example, I realized I loved working with people, enjoy being in a corporate environment, didn’t enjoy field work as much as I thought I would, learnt how to write professional emails, how much a company culture matters to be when I come into work every single morning, working toward something that makes an impact, etc. These coop placements made transitioning out of a school system to working in a professional, corporate environment that much easier once I finished my education.

Courses/programs/opportunities you find helpful in getting you to where you are now?

I took many chemistry lab courses (even as electives), which definitely helped with constantly having to follow strict protocols and having a high attention to details. Although not in a lab, this is exactly what I have to work with an environment at IELTS. The high level of security and control established by the IELTS organization at an international level came as a surprise when I first joined. Every tiny action you take in the routine work follows a strict protocol and needs to be done with a high level of accuracy.

Finally, an incredible support system from my department and faculty members. The relationship I built with my professors was not just because I just did well in my courses, but because of the extracurricular opportunities on campus that allowed me to build a more personalized bond with a few of them. Their loving and kind nature definitely made my time at UTSC so much more memorable.

Any advice to current students?

Do not assume you will always have a linear career path, where you are progressively going upwards. Life after school isn’t just about finding a job that pays lot or has a fancy title. Really take the time to reflect what is it that you want to do in this world, what do you stand for, what are your values and what companies out there align with your value system.

Be ok with having a career path that looks like a zig zag line. You might have multiple jobs in your career, and for some, there will be times where you moving laterally, or downgrading/stepping down. But don’t be afraid to take this leap to help you move forward in the vision you have planned for yourself. Everything is a learning opportunity!

A fun fact about you?

Lived in Sweden for a portion of 2017 during grad school, where I travelled to 10.5 countries in Europe (the 0.5 is Vatican city…). During my time in Europe, I was fortunate to be selected as the top 20 people from around the world to attend a 3-day Climate Change conference in Netherlands.

Where do you hope to be career-wise in 10 years?

Living somewhere in Scandinavia, apart of an organization working toward tackling climate change.

What advice would you give yourself if you can go 10 years in the past?

Do not assume you have it all figured out, otherwise you will be set up for disappointment when things don’t go as planned. Have a vision but do not determine the path. Be open to getting your hands dirty with experiences.
ABOUT CSU

The Chemistry Society at The University of Toronto Scarborough (CSU) is an organization that collaborates with students to cultivate innovative and fun academic events focusing on fostering relationships between the faculty and the students. Increasing passion for science and giving tools needed for academic growth while also providing academic support and mentorship. We host events varying from social mixers between students and mixed student-faculty events, workshops for important chemistry techniques, office hours for chemistry lab help, field trips to bring chemistry in context, and more.

STAY CONNECTED

Follow us @CSUFORU on Facebook, Twitter and Instagram for more updates during the year!

Our Email: csu@mail.utoronto.ca  Our Office: Environmental and Physical Sciences Building (EV 264)

MEET THE TEAM!

Name: Natthiya Jachler
Position: Co-President

Name: Shobika Sathiaseelan
Position: Events Director

Name: Pooyan Esmaeili Shayed
Position: Events Director

Name: Samrin Sobahan
Position: Director of Marketing and Webmaster

Name: Anshiba Mumtaz
Position: Director of Marketing (Graphic Design)

Name: Abeer Imam
Position: Director of Marketing (Social Media)

Name: Dr. Lara Mihaylichenco
Position: Faculty Supervisor
## DPES Programs Summary

**Total Programs:** 16  
**Coop Programs:** 9  
**Combined Degree Programs:** 3

### Chemistry
- Chemistry Specialist
- Chemistry Major
- Biochemistry Major
- Biological Chemistry Specialist
- Environmental Chemistry Specialist

### Environmental Science
- Environmental Biology Specialist
- Environmental Geoscience Specialist
- Environmental Physics Specialist
- Environmental Science Major
- Environmental Science Minor
- Natural Sciences and Environmental Management Minor

### Environmental Studies
- Environmental Studies Major

### Physics and Astrophysics
- Physics and Astrophysics Specialist
- Physics and Astrophysics Major
- Physical and Mathematical Sciences Specialist
- Physical Sciences Major

### COOP
- Chemistry Specialist - Coop
- Chemistry Major - Coop
- Biochemistry Major - Coop
- Biological Chemistry Specialist – Coop
- Environmental Chemistry Specialist – Coop
- Environmental Biology Specialist-Coop
- Environmental Geoscience Specialist-Coop
- Environmental Physics Specialist- Coop
- Environmental Science Major-Coop

### Combined Degree Programs
- Honours Bachelor of Science / Master of Engineering
- Honours Bachelor of Science / Master of Environmental Science
- Honours Bachelor of Science or Honours Bachelor of Arts / Master of Teaching
Interested in assisting with the DPES newsletter? Have any great ideas you want to come to light? Send us your resume!

Email: karyna.hanif@mail.utoronto.ca