

PROF of the MONTH

Queen's Chemistry Departmental Student Council (DSC)

ISSUE NO 4. | SEPT- 2019



What aspect of teaching at Queen's is your most favourite?

"My favourite aspect of teaching at Queen's is just seeing the students understand and apply the concepts that I've just taught. It's an indescribable feeling to see something that you've taught to students and seeing in their eyes that things have just clicked. I know how satisfying it can be to truly understand a difficult concept, and I love playing a part in the development of that sort of understanding with my students."

What are your current research interests?

"My current research interests involve understanding how enzymes evolve to be efficient catalysts. Basically, I'm interested in the origins of enzymatic catalysis: how do enzymes increase the rates of reactions? As a mechanistic enzymologist, I firmly believe that "what I can't create, I don't understand" and by developing an understanding of how enzymes work, we may be able to create new ones. Specifically, I'm interested in the mechanisms of natural and directed evolution of enzymes. As a physical organic chemist, I am also interested in the interplay of solvent effects and transition state structures."

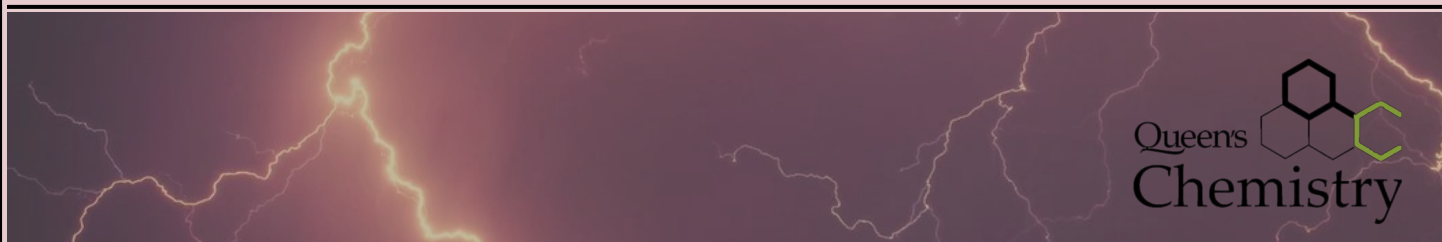
How/why did you decide to study chemistry?

"Actually, after taking the course that I am now teaching (CHEM 311) it changed my view on chemistry. I was on the road to going to medical school, and after taking the physical organic chemistry class at my university, it was the first time that I felt something almost "click". I like this field because it was more about understanding why things work than rote memorization."

DR. GRAEME HOWE



Dr. Graeme Howe is an Assistant Professor at Queen's University, specializing in Biological & Physical Organic chemistry. Dr. Howe group's current research interests include studying the origins of enzymes as modern catalysts, as well as in-depth analyses and modelling of transition states and transition state structures.



Why or how do you think your field is of importance to industry? What is unique about your field of study that has led you to pursue a career in it?

“Without enzymes, we wouldn’t have living systems. Even after hundreds of years, we still don’t have a good understanding of how enzymes work and that just fascinates me. We use these catalysts industrially to carry out useful reactions, but we really don’t know how they function.”

What do you feel is the biggest misconception that people have in regards to what you do? Why do you think is the case?

“A lot of chemists feel that biology is scary and the moment that they hear the word “Enzymes” they just run away. But really, once you begin to understand how these biological systems work, it becomes a lot less daunting. They just have to give biology a chance.”

What advice do you have to offer to students who are considering a career in research?

“Find a problem that you’re very passionate about. If you like what you’re doing, it is easy to work hard.”

Where do you see your field going in the future? What direction is it taking?

“In the long term, we’ll be essentially be able to use computers to design new biocatalysts. We can potentially revitalize industrial chemistry with computationally-designed enzymes that are environmentally friendly and highly efficient.”

The CHEM DSC thanks Dr. Howe for his time in participating in ‘Prof of the Month’.

Useful Student Resources in the Chemistry Department

HELPFUL CONTACTS:

Department Head:

Dr. Richard Oleschuk
richard.oleschuk@chem.queensu.ca

Departmental Assistant:

Barbara Armstrong
barb@chem.queensu.ca

Graduate Chair:

Dr. Richard Oleschuk

Graduate Assistant:

Michelle Boutilier
gradadm@chem.queensu.ca

Undergraduate Chair:

Dr. Donal Macartney
donal.macartney@chem.queensu.ca

Undergraduate Assistant:

Meredith Richards
ugadm@chem.queensu.ca

Operations Assistant:

Kim Mackinder
mackinde@queensu.ca

1st Year Labs:

Dr. Michael Mombourquette
mjm5@queensu.ca

2nd Year Labs:

Dr. Jason Vlahakis
jason.vlahakis@chem.queensu.ca
Dr. Igor Kozin
igor.kozin@chem.queensu.ca

STUDENT REPRESENTATIVES:

FIRST YEAR: Ervis Musa, Rahman Noureldin, Sofia Skebo

SECOND YEAR: Emile Diedericks, Margarita Liubetskaya, Alessia Rizzello

THIRD YEAR: Shanzeh Chaudhry, Jess Deng, Vivien Gandolfi

FOUR YEAR: Bianca Fernandes, Shelly Gelman, Oren Katz