SCHOOL OF ARTS & SCIENCE

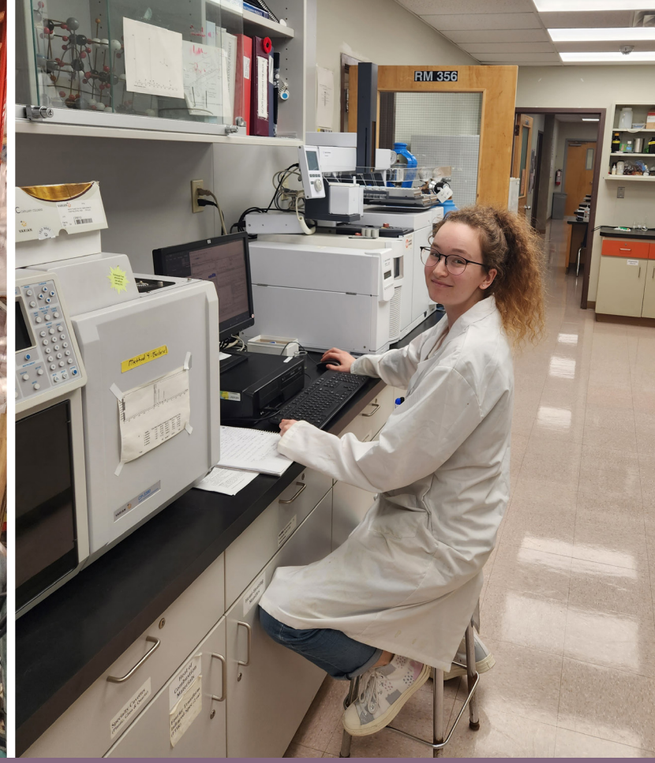
Blair Surridge

Instructor, Chemistry Department

BIOGRAPHY

Blair has been a faculty member in the Camosun Chemistry Department since 2008. He received his BSc from the University of British Columbia and his MSc in Organic Chemistry from the University of Calgary. Prior experience as an analytical chemist includes work on toxic environmental contaminants such as pesticides and plasticizers, as well as nutraceutical health supplements such as St. John's Wort and Ginseng. Since 2010, Blair has been engaged in applied research, giving our Applied Chemistry and Biotechnology (ACBT) students and graduates real and relevant research experience solving problems for local businesses. Blair's work was recognized in 2017 when he received the School of Arts and Science Award for Outstanding Contribution to Applied Research.

Maija Deane working on a project with Driftwood Brewing, in which she analysed samples using the chromatograph/mass spectrometer (GC-MS) instrument in the chemistry department at Camosun.



Maija operates the GC-MS instrument in the Chemistry Department, analyzing flavour and aroma compounds present after fermentation.

Applying their Skills: Chemistry Students Helping Local Businesses Improve their Products

With the assistance of Camosun Innovates, Blair is able to maintain an active area of applied research to give students laboratory opportunities that they may not normally have access to during the course of their undergraduate study. Many chemistry students find learning abstract and complex theories in the classroom environment challenging. However, the practical experience of the chemistry laboratory provides an exciting learning experience. The Camosun Chemistry Department makes every effort to integrate this laboratory experience with the course content to help make the theoretical aspects of the course seem less abstract and more broadly relevant and applicable to the surrounding world.

Federal government funding totalling $150,000, through two National Sciences and Engineering Research Council of Canada (NSERC) grants, was used to purchase analytical instruments and equipment. Since 2010, one to two applied research projects per year, typically four months in length, have allowed over 20 students to participate in research helping local businesses. Each applied research project requires working with scientists and engineers from a local company to solve manufacturing challenges. Funding pays for supplies, faculty teaching release, and student wages. Examples of recent collaborators include companies such as Phillips Brewing and Malting Co., Salon Label Inc,

My time with the Driftwood Brewing project helped me to better understand yeast metabolism and the fermentation and brewing process as a whole. I was able to grow my skills working with HPLC and GC/MS machines, and also the skills of upkeeping data and inventory in a lab; knowing how to communicate results with Driftwood and organize data in a clear way was a bigger learning curve than I expected! One of the biggest takeaways from the project was learning all the nuances in commercial fermentation, as well as learning about maintenance and repairs for analytical machines. Getting to visit the Driftwood brewery and see their fermentation tanks and beer at the different stages was one of the most rewarding things in this project, on top of getting to test different methods on reducing off-flavour production from yeast cells. I would absolutely recommend that any students who have a chance at an experience like this should take it! These projects are an amazing way to get your foot in the door and gain some valuable knowledge and experience working in research.

— Maija Deane, student

Keltsmaht Kelp, StressMarq Biosciences, Driftwood Brewing Company, Origen Air, Seaflora Skincare, Macaloney's Island Distillery, Black Fin Extracts, and MB Laboratories Ltd.

In summary, applied research has been extremely beneficial in enhancing student learning. Students are authors on all reports, and it is not uncommon for them to be hired by the company at the conclusion of the project. Students selected for these projects have typically completed two years of study and are often Applied Chemistry Biotechnology (ACBT) program graduates.

The time commitment for the student is usually between 10 and 15 hours per week, with flexible hours such that students can continue their education. During the course of a project, students receive in-depth training on numerous advanced analytical instruments, which includes operation, maintenance, and calibration. A student's time is spent designing experiments, summarizing and presenting data, meeting with industry collaborators, and problem solving in real-time.

The benefits of this applied research extend to the greater college community in terms of guest lectures, job opportunities, and the access it provides for all chemistry students to modern equipment during their undergraduate laboratory classes.

ACBT student graduate Valentina Beltran Requeneth works on a project with Salon Label Inc. to prepare and test small-scale preparations of a liposome, a type of lipid used to enhance the stability and bioavailability of cosmetic lotions.

Working on a research project helped me put into practice all the knowledge previously learned at college. Being part of the research gave me the opportunity to make decisions about my work, to feel confident about the knowledge learned and gave me the opportunity to demonstrate my skills outside the college laboratory and learn about work in daily life in an industry in Canada.

I developed skills in making decisions about which methods to carry out first, how to carry them out, work organization and time planning, deepening learning using equipment such as HPLC, AA Spectrometer, among others. I put into practice knowledge learned about analytical chemistry, microbiology, mathematics, reading graphs and results.

I was surprised that they give us students the opportunity to intervene in the project with our own ideas and previous experiences from other jobs, they give us the confidence to work autonomously and they give us the opportunity to make mistakes and try again. [The biggest takeaway from this experience was understanding] how and in what way to carry out a project where there is no step by step to follow or elaborate guides, but on the contrary, with my knowledge I must create them and carry them out to achieve the results, that opportunity to start again – [to] start a project and look for references to be able to develop it. As a chemist I always wanted to work in a more scientific than industrial environment and until now research work was that opportunity that helped me focus my knowledge and understand the management of research on a large and small scale.

[The most rewarding aspect of working on the project was the] experience and knowledge that I managed to obtain from my tutor who was always there and helped me resolve doubts and carry out the project.

[I would recommend this experience to other students because] I believe that every science student should have the opportunity to work on research projects that enrich our knowledge and skills in chemistry and in all sciences in general.

— Valentina Beltran Requeneth, student