

47th College Chemistry Canada (C3) on Zoom

Abstracts

- Abstracts listed in order of Day and Session.
- Welcome, Thursday Opening, AGM, General Student Scholarship Award Presentation & Friday Closing will be in Main Meeting Zoom Link.
- 'letter'1 corresponds to Group Session (eg Thursday A1-1, A1-2, A1-3 will be presented in Zoom Room 1)
- 'letter'2 corresponds to Group Session (eg Thursday A2-1, A2-2, A2-3 will be presented in Zoom Room 2)

Zoom Links
Speakers Prep Room – 9-11 am PDT. Wed. May 26, 2021 https://bcit.zoom.us/meeting/65931016141
Main Meeting + Zoom Room #1. Thursday-Friday, May 27-28, 2021 https://ca01web.zoom.us/j/64013549052
Zoom Room #2. Thursday-Friday, May 27-28, 2021 https://bcit.zoom.us/meeting/67790362756

Note: Click on a 'Presentation Title' and it will link to the Abstract

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Thursday Opening / A1 Presentations. 9:15-10:20 am (PDT)

Presentation:	Thursday Opening
Name / Affiliation:	Andy Dicks, University of Toronto
Title of Presentation:	Discussion Bored? & Other Musings On Virtual Intro Orgo
Abstract:	This winter I co-taught and coordinated our second-year Intro Orgo II course (450 students) from my bedroom. Never thought I'd write that! I'll briefly discuss what did and didn't pay off from both the student perspective and my own: Zoom polls, quizzes, discussion boards and other fun stuff, and what I'll (surprisingly to me!) be taking forward post-pandemic.

Presentation:	Thursday A1-1
Name / Affiliation:	Owen Scadeng, Concordia University of Edmonton
Title of Presentation:	Google Jamboard for Collaborative Learning in Introductory Organic
Abstract:	The transition to online course delivery immediately made active learning in groups a challenge. This was especially true for introductory organic chemistry that has such a heavy reliance on drawing. Concordia University of Edmonton used Google Suite for online instruction, allowing for Google Jamboards to be used for group problem solving and active learning components. Challenges and successes experienced will be discussed.

Presentation:	Thursday A1-2
Name / Affiliation:	Marco Zimmer-De Iuliis, University of Toronto Scarborough
Title of Presentation:	Bridging the High School Gap: Creating a Preparatory University Chemistry Course (PUCC)
Abstract:	With no admission requirements for first year chemistry at the University of Toronto Scarborough, there is often a disconnect between the expected foundational knowledge and practical lab skills incoming students possess. Since our first-year intake is very large (900-1000 students), reviewing admission requirements requires a great deal of time and resources and many of our students are either out of province or are international, which compounds the challenge of authenticating and cross checking their credentials. At UTSC, we are offering a novel preparatory university

	chemistry course (PUCC) to provide incoming students with an opportunity to review key concepts, practice problem solving skills, and get hands on experience in the lab. This course is offered free of charge and acts as a community-based experience by targeting local high school students admitted to UTSC. In this presentation, I will discuss our first run of the course and some of the successes and challenges that were presented, and how offering this course online due to the COVID crisis has led to new ideas and new collaborations.
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Presentation:	Thursday A1-3
Name / Affiliation:	Violeta Iosub, University of Victoria
Title of Presentation:	Reflections on One Year of Teaching of Organic Chemistry Remotely
Abstract:	This session will present insights into teaching organic chemistry remotely from summer 2020 to summer 2021. How lessons learned in one semester were extended to the following semester and what are some enduring understandings the instructor gained in the process will be emphasized.

Thursday A2 Presentations. 9:30 – 10:20 am

Presentation:	Thursday A2-1
Name / Affiliation:	Sarah Pelletier, University of Alberta
Title of Presentation:	Creating videos of chemistry experiments for online learning using TechSmith Camtasia™ and what to do with them in the future
Abstract:	For the year 2020-2021, all of our chemistry classes and labs were taught online. This presentation will show how the recordings of the general and organic chemistry experiments filmed in our labs were processed to create short high-resolution, narrated videos. Using the software Camtasia™, clips shot in the lab were edited in several ways such as cutting, accelerating, removing unwanted sounds, and adding image transitions. Simple interactive moments were often added in the videos. Finally, we will explore ideas on how to use these videos for future in person and hybrid learning in the labs.

Presentation:	Thursday A2-2
Name / Affiliation:	Gianna Aleman, Joshua Bates, and Lauren Thompson, Dalhousie University
Title of Presentation:	Feedwhat? From Blur Words to Valued Skills
Abstract:	The integration of soft or transferrable skills into our undergraduate laboratory curriculum in recent years has been part of our ongoing effort to help students reach their highest potential. While some of these - motivation, attitude, adaptability, creative thinking, critical thinking, problem-solving, teamwork, communication, time management, conflict resolution, and work ethic - might make sense to some students, they are

	merely blur words to others. In this presentation, we will share the good, the bad, and the surprising of adapting pre-pandemic transferable skills active learning sessions to the online environment; in particular, the pandemic and post-pandemic impact of a peer feedback exercise that started to unblur the meaning of transferable skills for students in the second-year physical chemistry laboratory.
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Presentation:	Thursday A2-3
Name / Affiliation:	Roderick A. Chisholm*, Jessica Nickerson and Alan Doucette, Dalhousie University
Title of Presentation:	At Home/Hands-on Analytical Experiments - Teaching Absorption Spectroscopy and Beer's Law Remotely.
Abstract:	With Covid-19 moving many Chemistry laboratories online, we recognized the loss of hands-on learning and the loss of student motivation gained from these in-person laboratory experiences. As such, we developed and delivered a variety of at-home laboratory experiments students conducted as part of their 2nd year Introductory to Analytical Chemistry Remote Laboratory. One experiment conducted aided in the understanding of absorption measurements (and related this data to Beer's Law) via the use of free cell phone LUX meter apps (no kits required). This talk will briefly discuss the organization of the remote Analytical laboratory, experimental design, challenges (from the student and instructor perspective) and how these activities will be incorporated into future in-person laboratory teaching.

Thursday B1 Presentations. 11:30 am – 12:30 pm

Presentation:	Thursday B1-1
Name / Affiliation:	Travis Fridgen, Memorial University
Title of Presentation:	<i>Uber-Algorithmic</i> Tests and Final – A Tool for COVID and Beyond
Abstract:	In Winter 2019, we were forced to find alternatives to in-person tests and exams. We were able to provide unique evaluations to students using the Mastering Chemistry platform. My philosophy is that any test/assignment questions are chemically realistic and that physical quantities, such as equilibrium and rate constants are not fictitious. Having over a year of remote instruction now, we have used some ingenuity and hard work to create <i>uber-algorithmic</i> testing on the Mastering Chemistry platform in order to provide almost unlimited versions of tests for students.

Presentation:	Thursday B1-2
Name / Affiliation:	Éric Martineau, Collège Jean-de-Brébeuf
Title of Presentation:	Solving Problems as Chemistry Exam Preparation – An Incomplete Strategy if Time Management is Not Involved

<p>Abstract:</p>	<p>The Covid-19 pandemic had an overall negative effect on the social life of our students. Although communications were still possible through a variety of platforms, many students were somehow a bit lost when it came time to plan, organize, and take good working practice examples from peers. Investing on self-management (one of the IB diploma program approaches to learning) can help in this situation. To support students' development of their self-management skills, I proposed to them two quick and easy tasks while they were doing a series of practice chemistry problems at home. First, the student had to attribute himself/herself a grade based on established criteria for the solution they proposed for each problem they worked on (3: all good; 2: minor corrections; 1: major corrections; 0: not understood). Then I asked them to take note of the amount of time required to solve each problem. Therefore, when they were done with a series of problems, they now had two indicators to plan for the next step: where to invest their remaining efforts and how to manage their time. This way, they could be better prepared for the formative assessment coming prior to the summative exam and improve their performance. They could also use these indicators to realize the improvement of their understanding and their problem-solving skills. I plan to keep this idea alive in the future, after giving it some thoughts to improve on it.</p>
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<p>Presentation:</p>	<p>Thursday B1-3</p>
<p>Name / Affiliation:</p>	<p>Devin Latimer, University of Winnipeg</p>
<p>Title of Presentation:</p>	<p>Online Presentations/Discussions as a Tool for Engagement and Assessment</p>
<p>Abstract:</p>	<p>Having been teaching first-year intro chemistry and second-year chemistry of environmental Issues from a distance for over 20 years. I have found online student presentations to be one of the most important remote teaching exercises to increase student success, retention and feedback. Now that the pandemic has forced a conversion to complete online delivery, the student presentation has become an even more important part of my second year class since it adds an individualized connection with, and assessment of, each student.</p> <p>In my Environmental Issues chemistry class, which previously had both classroom and online sections running in tandem, the students have been doing online presentations for the past decade. Sixty students/year research, prepare and deliver a presentation just like they would in any live situation, but they record themselves delivering the presentation on a phone or other video recording device. They then upload it to YouTube or Vimeo and post the link along with their slides, a written summary and bibliography as part of an online discussion forum in Nexus. They watch each other's videos and challenge/debate each other in the discussion forum on the various environmental issues. Since this is quite often the students' first university presentations, they appreciate the chance to</p>

	<p>deliver their presentations by themselves (usually in their basement using their computer plugged into a TV as a presentation tool) and can practice the presentation a number of times before deciding which one to upload. As an instructor, I appreciate and value the opportunity to observe the students' engagement in a sizable and unique portion of material related to the course. Feedback has indicated that, despite initial nervousness about a presentation and debate, this exercise is often the most rewarding in the course. I have a number of useful strategies for this assignment I can share. I now use this format in my third year Advanced Organic Chemistry course as well.</p>
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Presentation:	Thursday B1-4
Name / Affiliation:	Christian Landry, Université de Moncton
Title of Presentation:	La Classe de Chimie Générale Inversée / The Flipped General Chemistry Classroom (English Subtitles)
Abstract:	<p>Cette année j'ai exploré le format de la classe inversée dans mes cours de chimie générale. À l'aide de vidéos préenregistrés, j'ai enseigné le cours, et lors de nos rencontres synchrones, nous avons travaillé des exercices ensemble. Les avantages de cette approche et des témoignages d'étudiants seront discutés.</p> <p>This year I explored the flipped class model in my general chemistry classes. With the help of pre-recorded videos, I taught the class, and during our synchronous meetings, we would work problems together. Advantages of this method and student testimonials will be discussed.</p>

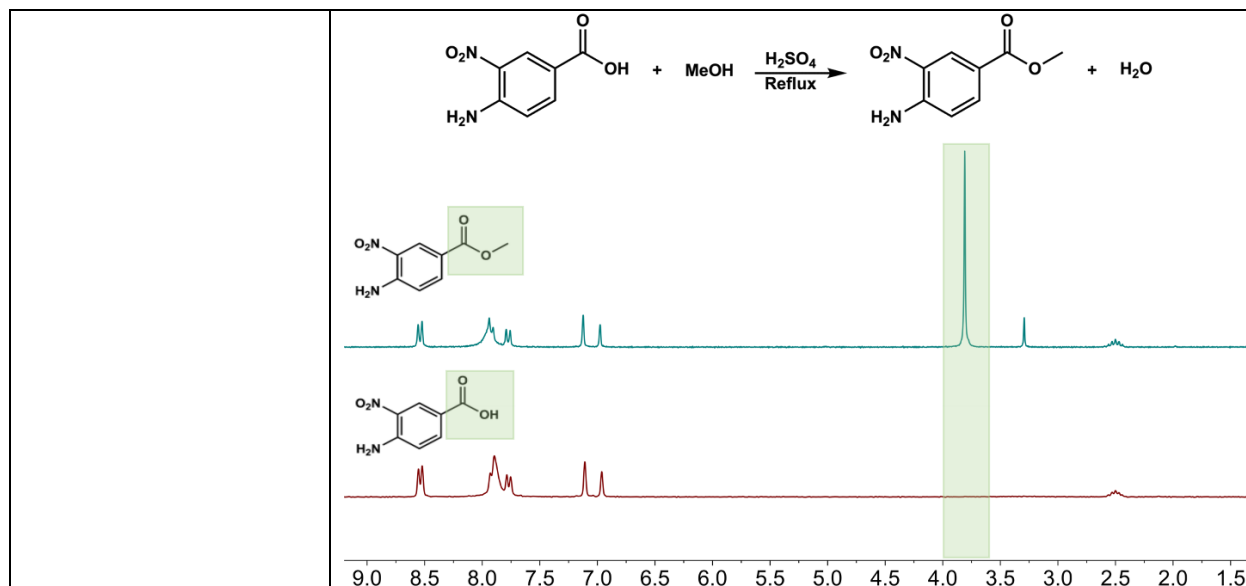
Thursday B2 Presentations. 11:30 am – 12:30 pm (PDT)

Presentation:	Thursday B2-1
Name / Affiliation:	Riley Petillion, Ph.D. student at UBC Okanagan
Title of Presentation:	Student Satisfaction with Synchronous Online Organic Chemistry Labs: Pre-Recorded Video vs. Livestream
Abstract:	<p>The forced transition to online teaching as a result of the global pandemic moved the organic chemistry laboratory experience online to the virtual world. At UBC's Okanagan campus, it was decided that the laboratory should be delivered synchronously to maximize student interactions with their teaching assistants, though the exact online pedagogical approach was not an obvious decision. Two methods were tried: (1) using Zoom video-conferencing software, have the teaching assistant watch a pre-recorded video of the laboratory procedure with the students, and (2) have the teaching assistant perform the experiment live from the laboratory, again streamed using Zoom. One TA teaching two sections implemented one of these methods in each of their sections. The two teaching methods were compared mostly qualitatively using open-ended feedback surveys and additional follow-up semi-structured interviews, and</p>

	quantitatively with a few Likert questions. Overall, the livestream section received significantly more positive feedback in all aspects, including student investment, perceived conceptual gains, understanding of glassware and techniques, ability to make proper experimental observations, engagement in critical thinking and problem-solving, and general satisfaction with their online lab experience.
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Presentation:	Thursday B2-2
Name / Affiliation:	Jennifer Schmeisser, St. Lawrence University
Title of Presentation:	Culinary Reactions
Abstract:	As part of our general education natural science with lab offerings in the chemistry department, we have developed a 100 level non-majors chemistry course which explores the chemical structures of food and the chemistry involved during cooking processes. Usually the labs for this course take place in on-campus cooking facilities. For the summer of 2020, I re-developed the course content to allow students to complete the lab experiments in their own kitchens synchronously with me and their fellow students on Zoom. I will talk about the structure, give a few examples, and outline a few of the challenges that need to be addressed before it can be offered again.

Presentation:	Thursday B2-3
Name / Affiliation:	Jonathan Ma, Nanalysis
Title of Presentation:	Incorporation of Benchtop Spectroscopy into Undergraduate Laboratories
Abstract:	NMR spectroscopy remains one of the most widely used characterization techniques in chemical research. Despite pedagogical shifts towards active-learning and guided-inquiry approaches, incorporation of NMR spectrometers directly into an undergraduate curriculum has remained largely limited due to mitigating factors of size, cost, required maintenance expertise and availability of high-field spectrometers. As a result, students rarely gain direct, hands-on access to this instrumentation. The emergence of a new class of benchtop NMR spectrometers that are affordable, portable and do not require weekly upkeep or maintenance can facilitate the introduction of this technique at all stages of chemical education. Herein, we describe a popular organic reaction taught in undergraduate courses, monitored using a 60 MHz benchtop NMR spectrometer and illustrate how students can learn to effectively use an NMR instrument, prepare samples for analysis, and interpret their own NMR spectra. Furthermore, with the advent of online learning, we will discuss how students and teachers can access their benchtop spectrometer from their home-learning environment. <i>Figure next page.</i>



Presentation:	Thursday B2-4
Name / Affiliation:	Jimmy Lowe, British Columbia Institute for Technology (BCIT)
Title of Presentation:	Continuing Chemistry Collaborations – How avoiding bed bugs has been beneficial!
Abstract:	I had the opportunity for a professional development (PD) opportunity with Terramera (a local Ag-Tech company) from 2019-2020. This PD would provide me with new skills, knowledge, authentic learning experiences and stories for my students. On the flip side, I hoped not to feel too out of place heading back to R&D and avoid the bed bugs. In this Furious Five, I will highlight two areas of continuing chemistry education: a public outreach experiment with Terramera Employees (tied in to the UN Sustainability Goals) and what a polytechnic Chemistry Department can offer to industry.

Friday C1 Presentations. 9:10 – 10:10 am

Presentation:	Friday C1-1
Name / Affiliation:	Amanda Musgrove, Marissa Clapson and Roxane Jackson. University of Calgary
Title of Presentation:	Hands-on to On-line with Materials Chem Tutorials
Abstract:	Our second-year Materials Chem class came from in-person learning with very interactive and hands-on tutorial activities featuring co-operative and competitive games, demonstrations and hands-on activities. We had to get creative to convert these to online learning, using Qualtrics, Flippity, video, and more to stay interactive and fun while learning from home. We'll show you what we did, what worked, and what we'll do differently next time for these adjusted activities.

Presentation:	Friday C1-2
Name / Affiliation:	Erin Dul, Northern Alberta Institute of Technology (NAIT)
Title of Presentation:	The Periodic Table of Hypothetical Elements: An Approach to Assessing Inorganic Nomenclature
Abstract :	One challenging aspect of online learning was assessment, particularly assessments where the answers are searchable online. For example, answers to any inorganic nomenclature problem can instantly be found using google. To ensure that students were developing the skills and understanding how to apply rules of inorganic nomenclature, I used "hypothetical elements" in my assessments, rather than elements and compounds that could be easily looked up online. In this presentation, I will share example problems, describe how I overcame some challenges of this approach, and suggest some extensions for this question format.

Presentation:	Friday C1-3
Name / Affiliation:	Marc Whalen, Dalhousie University
Title of Presentation:	Lessons Learned Delivering 2 nd Year Inorganic Chemistry Lecture and Lab Online
Abstract:	In the Winter term of 2021 I delivered an online version of 2 nd year inorganic chemistry at Dalhousie University. This involved developing pre-recorded online versions of labs and lectures during the Fall 2020 term. During this development period it became apparent that without the psychomotor component, labs could be thought of as active learning exercises supporting the lecture material. With this in mind, pre-existing in-person labs were altered to improve alignment with the lecture component of the course, effectively becoming a subset of assignments covering the lecture component. Course delivery involved releasing an assignment each Monday with an accompanying set of pre-recorded lectures. Lectures and assignments were connected through a detailed statement of learning objectives. Thursday and Friday lab slots were used for small group online tutorials (covering lecture / assignment content) with the assignment due the following Monday. These weekly cycles created an opportunity for ongoing active learning throughout the semester, which enabled the implementation of online assessments based more on understanding than in-person assessments in previous years. In the talk I will discuss which aspects will remain with the course in the future, and which aspects will need to be reworked or discarded.

Presentation:	Friday C1-4
Name / Affiliation:	Yann Brouillette, Dawson College (Montreal, Quebec)
Title of Presentation:	Safe, Convenient and Hands-On At-Home Chemistry Experiments
Abstract:	CLAW (Chemistry Laboratory Alternative Work) At-Home experiments were designed for students to acquire hands-on experience during the

	<p>COVID-19 pandemic by performing multiple experiments using household chemicals and materials. Eight experimental protocols for college level in-person laboratories are freely available to all on the SALTISE website as open education resources. These procedures may still be used post-pandemic as experiments that students can carry out in the lab or for student projects. For a complete list, visit: https://www.saltise.ca/?s=CLAW</p>
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Friday C2 Presentations. 9:10 – 10:10 am

Presentation:	Friday C2-1
Name / Affiliation:	Stephen Cheng, Lynn Mihichuk and Alla Gagarinova, University of Regina
Title of Presentation:	Novel Laboratory Recitation for General Chemistry
Abstract:	<p>In Fall 2019, we created a new mandatory laboratory recitation, offering supplemental instruction type experiences for our first general chemistry course in face-to-face mode. Then the pandemic forced us to teach remotely. Based on what we learned in the face-to-face sessions, we modified and enhanced the laboratory recitation, providing students interactive learning experience in remote learning. Our research has shown that we can deliver effective learning experience in both face-to-face and remote learning modes. In the presentation, we will also share with the audience what we have successfully implemented as well as implications post-pandemic.</p>

Presentation:	Friday C2-2
Name / Affiliation:	Andrew Chan, Erika Smith and Vince Guo, University of Regina
Title of Presentation:	Use of Take-Home Lab Kits for Teaching Online General Chemistry Labs at the University of Regina
Abstract:	<p>To enhance the student learning experience in the General Chemistry labs while classes are delivered online during the COVID-19 pandemic, students were provided with a lab kit for them to perform experiments at home. Materials for each kit cost about \$50, and contains some basic lab equipment including beakers, graduated cylinder, digital balance, and thermometer. Household chemicals were provided to perform experiments in basic measurements, calorimetry, acid-base properties of salt and solubility.</p>

Presentation:	Friday C2-3
Name / Affiliation:	Caroline Cormier, Cégep André-Laurendeau, Montréal (Québec)
Title of Presentation:	Bloc asynchrones avec wooclap : une façon de séparer le groupe en deux
Abstract:	Étant donné que nos laboratoires ne pouvaient accueillir que la moitié d'un groupe-classe, nous avons séparé nos groupes en deux pour les labos, qui étaient faits une semaine sur deux par une moitié des étudiants, puis par l'autre moitié des étudiants la semaine suivante. Pour encadrer l'apprentissage des étudiants qui restaient à la maison pendant que nous étions au labo avec leurs collègues, nous avons conçu des "blocs asynchrones", sortes d'auto-formations, que nous avons hébergés sur la plateforme wooclap. Je présenterai brièvement cette plateforme et nos préoccupations lors de la conception pédagogique de ces blocs asynchrones : alternance vidéos/exercices, gradation des exercices, devoirs liés.

Presentation:	Friday C2-4
Name / Affiliation:	Kathleen Nichol, Brandon University
Title of Presentation:	Taking Intro Chemistry On-line – it worked ... pretty well.
Abstract:	This past year has been an exciting time! The challenges were to learn – quickly – the best practices for teaching on-line and decide how to implement them in my courses; to create labs for on-line delivery; to apply for second term labs in person, and manage all aspects of COVID-safe protocol for them; to create some feeling of community among the students; and to infuse demos into the class.

Friday D1 Presentations. 10:30 – 11:20 am

Presentation:	Friday D1-1
Name / Affiliation:	Jennifer Mills, Macmillan Learning
Title of Presentation:	Increasing Student Engagement with <i>Achieve</i>
Abstract:	Whether you are teaching in-person, online, or hybrid, Achieve was created to reach students on all levels. Our platform has proven student success and uses resources such as interactive eBooks, adaptive quizzing, and in-class activities to create an engaging and interactive experience for your students.

Presentation:	Friday D1-2
Name / Affiliation:	Tina M. Bott, MacEwan University
Title of Presentation:	Information Literacy – Infographics in the Virtual Classroom
Abstract:	<p>Infographics are a way in which complex information can be communicated quickly and effectively to a target audience using compelling graphics and minimal text. The process of designing an infographic requires a student to: 1) read and digest scientific information, 2) sort, analyze and summarize the information, and 3) arrange and present the key messages to the reader using strategic visuals. In Winter 2021, I incorporated an infographic project into a senior-level medicinal chemistry course as a way of maintaining a meaningful presentation component in an online environment. Elements of the project included a virtual workshop on infographics and how to summarize scientific information for visual presentation, a small (virtual) group activity where students summarize an article independently and then in collaboration with their peers, the evaluation of several infographics using a rubric, and the preparation of a full infographic on a drug molecule of their choice. This presentation will highlight the challenges and successes of this project in a virtual environment.</p>

Presentation:	Friday D1-3
Name / Affiliation:	Jerry Godbout, University of New Mexico - Valencia
Title of Presentation:	Process-Oriented Guided-Inquiry Learning (POGIL) by Zoom
Abstract:	<p>Process-Oriented Guided-Inquiry Learning (POGIL) is an active-learning method that relies heavily, if not almost exclusively, on small-group collaboration in the classroom. Adapting this method to an online environment or face-to-face with social distancing has been challenging. Efforts to maintain an active learning environment online using Zoom breakout rooms will be discussed.</p>

Friday D2 Presentations. 10:30 – 11:20 am

Presentation:	Friday D2-1
Name / Affiliation:	Larry Lee, Camosun College
Title of Presentation:	Animating with Adobe CC
Abstract:	<p>One of the biggest challenges for online teaching is presenting content. Most students, including myself, are visual learners and despite the rich number of tutorials and animations that are available on Youtube and Publisher's websites, there are not enough. Using Adobe CC, I created my</p>

	own animations to show concepts such as using curved arrows in organic mechanisms and showing bond cleavage and bond formation.
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Presentation:	Friday D2-2
Name / Affiliation:	Phil Mills, Molly Firolette, Rachel Coffey, John Wiley & Sons, Inc.
Title of Presentation:	Adapting to Today's Students, A Targeted Learning Experience with Wiley
Abstract:	With the challenges of today's students combined with the move to online teaching, providing students with an individualized, scaffolded experience has never been more important. Wiley's adaptive technology is designed to provide students with exactly what they need, when they need it, in order to be successful in their course, whether it be online, face-to-face, or hybrid.

Presentation:	Friday D2-3
Name / Affiliation:	Sherrie Wang, North Island College
Title of Presentation:	Essential Technology for Online Synchronous Lectures
Abstract:	A short video presentation of a quick review on essential technology required for online synchronous lecturing. The presentation will go over various equipment setup for a live lecture given to students. It will also discuss software tools best suited for live teaching. The ultimate goal is to make online lecturing as real as in-person.

Friday E1 Presentations. 11:20 am – 12:15 pm

Presentation:	Friday E1-1
Name / Affiliation:	John P. Canal, Rebecca Goyan and Garry Mund, Simon Fraser University
Title of Presentation:	Online General Chemistry: Lessons Learned
Abstract:	With the start of the COVID-19 pandemic and the transfer to online education, we were able to study how students performed during the online version of our first-year chemistry course compared to our traditional in person model. A grade comparison, student feedback on the online system and insights gained will be discussed.

Presentation:	Friday E1-2
Name / Affiliation:	Jennifer L. MacDonald, Angela K. Crane, and Mark J. Wall, Dalhousie University
Title of Presentation:	Bringing First-Year Chemistry Online with Students as Partners through Universal Design
Abstract:	<p>If you had told us a year ago that we would be rapidly transitioning and offering a 1000-1500 student First-Year Chemistry Program in a fully online format for Fall 2020/Winter 2021, well, we would not have believed you. In March 2020, COVID-19 suspended all in-person classes at Dalhousie University and our class completed the term with a rapid conversion to temporary remote teaching. With the experiences gained from this transition and the knowledge that our team (and our new first-year students!) were facing a fully online academic year, with great intention, Drs. MacDonald, Crane, and Wall assembled a talented team of student educators (2 undergraduate students and 12 graduate students) in Summer 2020 to begin development. This is the largest course development collaboration to come from the Department of Chemistry since the creation of the Concepts in Chemistry Program; though it is unique in its "Students as Partners" approach to course design. This is the story of how the synergy of this team, together with our common goal of creating an accessible, interactive, and universally designed course, has brought to life Dalhousie Chemistry's first fully online version of Chem 1011/1021 and Chem 1012/1022 during the COVID-19 pandemic.</p>

Presentation:	Friday E1-3
Name / Affiliation:	Carl Doige, Kerry Davie, and Scott Richardson, Okanagan College
Title of Presentation:	H5P as the Central Glue for Student Engagement and Online Accountability
Abstract:	<p>This presentation will highlight several examples of how I used H5P (HTML5 Package) to make online videos and tutorials interactive and engaging for students both for the lab and lecture environment. I will reflect on the effectiveness of this tool to hold students accountable and possible applications for non-COVID chemistry teaching.</p>

Presentation:	Friday E1-4
Name / Affiliation:	Vishakha Monga, University of British Columbia
Title of Presentation:	Advantages / Disadvantages of a Zoom Lecture using E-resources
Abstract :	<p>For the academic year 2020_21, I used zoom lectures for a laboratory and lecture course for big classes (150-450 students). I will be discussing the advantages and disadvantages of this experience and will try to summarize some lessons learned.</p>

Friday E2 Presentations. 11:20 am – 12:15 pm

Presentation:	Friday E2-1
Name / Affiliation:	Jason Pearson, Jocelyne Richards, Adam Proud, University of Prince Edward Island, Stemble Learning Inc
Title of Presentation:	Creating a Powerful Digital Learning Experience for Students in Chemistry
Abstract:	<p>In this talk, I'll briefly highlight the breadth of digital tools that we have developed for teaching and learning chemistry in a higher education context. These include web-based technologies for teaching and assessing chemistry-specific skills across the full general chemistry spectrum, as well as a suite of dozens of fully interactive virtual laboratory experiments. These tools have allowed faculty at UPEI and several collaborating institutions to offer lecture content, homework assignments, tests and exams, and laboratory experiments (synchronously or asynchronously) to a global audience of students.</p> <p>In particular, I'll highlight how we can use data from student interactions with our platform to craft reliable measures of learning and student progress that can be used in realtime to improve learning outcomes and increase engagement.</p>

Presentation:	Friday E2-2
Name / Affiliation:	Erika Merschrod, Memorial University of Newfoundland
Title of Presentation:	Balancing Simplicity and Flexibility in Assessments: How I (barely) Survived Teaching Gen Chem Remotely
Abstract:	<p>I found remote teaching really difficult, but some things I tried worked. My main struggle was to balance flexibility and the need to have some structure for students fresh out of a very structured high school experience. I came up with a core set of assignments and a selection of additional "bonus" assignments, and this seemed to prevent the overload of too many assignments while still allowing students to demonstrate their learning in a range of ways. (I used a number of assessment methods that I have learned about at previous C3 conferences!) The flexibility offered to the students was also offered back to me, which was a big relief. My assessment approach also helped me to pivot quickly at the start of the term when I realized that what we had been told that students wanted for remote learning was not actually what they wanted or needed.</p>

Presentation:	Friday E2-3
Name / Affiliation:	Shannon Accettone, Trent University
Title of Presentation:	Rethinking the Role of Traditional Exams after COVID-19
Abstract:	<p>The most common form of summative assessment within undergraduate chemistry courses is the traditional timed exam. However, during the 2020-2021 academic year, the COVID-19 pandemic has forced educators to reassess the ways in which they design their courses, from the perspective of content delivery as well as assessments of student learning.</p> <p>Within four remotely delivered undergraduate chemistry courses at Trent University, assessments were shifted away from traditional timed and closed-book exams focused on assessing knowledge retention to summative take-home assignments which utilized free-response questions to assess student knowledge through application. The goal was that, in removing exams, these major course assignments would become not just assessments <u>for</u> learning, but assessments <u>as</u> learning.</p> <p>To obtain the student perspective, students were asked how they would describe their experience in participating in a course that elected to remove exams as a form of assessment in favour of take-home, application-based, assignments. The students' responses indicated that this design method contributed to a significant reduction in their stress levels, that they found the assignments to be a better method of retaining the course materials, both short and long-term, and that they experienced an increase in their academic confidence and were, therefore, more engaged in the course and with the course materials.</p> <p>Additionally, students were asked about their perceptions of which assessment method (exams, summative assignments, or a combination of both), provide them with the best opportunity for learning and understanding the course material along with which methods allowed them the best opportunity to show their knowledge of the material. Students indicated that assignments (87.8%) offered the best opportunity to learn and understand the course material. Similarly, 70.7% of students indicated they are best able to express their knowledge of the course material via assignments. However, 20.7% of students indicated that the assignments were equal to exams in allowing them to express their knowledge.</p> <p>The goal of this presentation will be to discuss the overall experience of replacing traditional exams with take-home summative assignments from the instructor's standpoint, perspectives from the students who participated in such courses and why this model of assessment might be worth continuing after remote learning ends.</p>

Presentation:	Friday E2-4
Name / Affiliation:	Thilini Rupasinghe, University of Kelaniya, Sri Lanka
Title of Presentation:	Student-produced videos as a formative assessment method in the online environment.
Abstract:	<p>This study, the possibility of utilizing student-led video production as a novel and unique way of assessing students learning in the online, asynchronous environment has been studied. This is of much importance in the current context, where most of the schools and institutions in the world have changed their teaching paradigm from traditional face to face approach to online teaching due to the Covid-19 pandemic. Herein, students were asked to produce 5-10 minutes summary videos on given a topic and asked to share it with their peers. Creating videos by themselves allow students to gain a comprehensive understanding on the content, articulate what they have learnt and present subject matter in a way that is clear and concise to their peers. Further, it was expected that the activity would enhance communication skills, technical skills, motivation, problem solving skills as well. Results indicated that nearly 91 % of students have identified student-led video production as a positive learning experience and according to statistical testing, a weak positive correlation of 0.14 was observed between the summative assessment score (mid-exam) and the performance of the video production activity indicating the possibility of utilizing video production activity as a formative assessment method which can be used to improve learning of students throughout the semester. Overall, student-led video production can be identified as a successful formative assessment method in the online environment which measures student learning and helps to improve students to learn the subject matter better.</p>

Friday Closing Presentation. 12:20 – 12:30 pm

Presentation:	Friday closing
Name / Affiliation:	Yann Brouillette, Dawson College (Montreal)
Title of Presentation:	Comic Book Chemistry Part 9 ½ : Remedy to Covid Dullness
Abstract :	<p>Covid-19 sure has its share of dark sides, but comic book stories can enlighten class atmosphere and stimulate engaging student discussion about the elements and their reactivity. This talk continues previous years' presentations about the "Chemistry in Comics", focusing this time on the <i>depiction of the corona virus and the chemistry of the credible Hulk</i> in mainstream comics. A fun and critical look at rational explanations describing out-of-the-ordinary events impersonated by the Hulk and She-Hulk seen in movies, TV shows and graphic novels will be investigated. In sum, comic books and chemistry can team-up to strengthen pedagogical approaches to learning via STEAM-based lessons. After all, if knowledge is power, teachers can be superheroes. ChemCurious - YouTube</p>