

# Curriculum Vitae

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# 1 Academic History

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## 1.1 University of Victoria

**Master's of Science in Chemistry**      2023 – 2025 (expected graduation: August 2025)

*University of Victoria, Faculty of Science, Victoria, British Columbia, Canada*

Description: A program involving independent research, course work, seminar and teaching.

Website: [Chemistry](#)

## 1.2 Dalhousie University

**BSc Honours in Chemistry, Minor in Neuroscience**      2018 – 2023

*Dalhousie University, Faculty of Science, Halifax, Nova Scotia, Canada*

Description: A degree requiring challenging courses and a thesis based research project. The minor in neuroscience was course based.

Websites: [Degree Programs – Department of Chemistry](#),  
[Programs – Department of Psychology and Neuroscience](#)

**Certificate in University Teaching and Learning**      2021 – 2023

*Dalhousie University, Centre for Learning and Teaching, Halifax, Nova Scotia, Canada*

Description: A graduate level certificate program in higher education that I pursued as an undergraduate.

Website: [Certificate in University Teaching and Learning](#)

**Certificate in Medicinal Chemistry**      2018 – 2023

*Dalhousie University, Faculty of Science, Halifax, Nova Scotia, Canada*

Description: A certificate earned by taking courses primarily in the field of organic chemistry. Website: [Certificate in Medicinal Chemistry](#)

## 2 Honours and Awards

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**Mitacs Globalink Research Award Abroad** Jan – April 2025

Description: The Mitacs Globalink Research Award (GRA) supports research collaborations between Canada and select partner organizations and eligible countries and regions. This award funded a research exchange to the UK for 3 months.

Website: [MITACS GRA](#)

**University of Victoria Fellowship - Doctoral** December 2024

Description: A generic fellowship that I was recommended for from my department.

**Charles S. Humphrey Graduate Student Award** December 2024

Description: An awards granted to highly qualified candidate in the faculties of Science and Engineering.

Website: [The Charles S. Humphrey Graduate Student Award](#)

**Rob and Tammy Lipson Research Scholarship** December 2024

Description: An award given to an outstanding graduate student for an international research opportunity.

Website: [Rob and Tammy Lipson Research Scholarship](#)

**Science Emerging Researcher Award (SERA)** Fall 2024

Description: An award meant to help fund students who come from backgrounds that are historically marginalized to get training that otherwise would not be possible. This award helped fund my research in the UK.

Website: [Awards - University of Victoria](#)

**University of Victoria Fellowship - Master's** July 2024

Description: A generic fellowship that I was recommended for from my department.

**University of Victoria Graduate Awards** June/July 2024

Description: A set of generic graduate award that I was recommended for from my department.

**Faculty of Graduate Studies (FGS) Travel Award, University of Victoria** 2024

Description: The objective of the Graduate Student Travel Award Program

is to support student travel to conferences, workshops, or research activities.

Website: [Travel and Conference Funding - fgs - UVic](#)

**Gilead Early Career Award for Excellence in Equity, Diversity, and Inclusion, National** 2024

Description: “This award is presented to a chemist as a mark of distinction and recognition for excellence in their work in equity, diversity and inclusion initiatives.” I am the third award winner in this award’s history.

Website: [Gilead-Early-Career-Award-for-Excellence-in-EDI](#)

**University of Victoria Graduate Award, University of Victoria** 2024

Description: A general award given based on departmental recommendation.

Website : [Search Graduate Awards and Scholarships - fgs - UVic](#)

**NSERC Alexander Graham Bell Canada Graduate Scholarship-Master’s, National** 2023 – 2024

Description: “The CGS-M program provides financial support to high-calibre scholars who are engaged in an eligible master’s or, in some cases, doctoral program in Canada. This support allows these scholars to fully concentrate on their studies in their chosen fields.” I am currently an award holder for the first year of my upcoming master’s program.

Website: [NSERC – Canada Graduate Scholarships — Master’s program](#)

**President’s Research Scholarship, University of Victoria** 2023

Description: An award given to student’s on the merit of holding Tri-council funding. Website: [Financial Assistance – University of Victoria](#)

**Society of Chemical Industry Merit Award, Dalhousie University** 2023

Description: An award presented annually to “the student with the highest standing in the final year of the chemistry program.” Website: [Scholarships, Awards and Prizes – Department of Chemistry](#)

**Undergraduate Research Prize, Dalhousie University** 2023

Description: A prize given to “students who have made a substantial com-

mitment and contribution to research during their undergraduate programs.” Website: [Undergraduate Research Prize](#)

**Award for Undergraduate Research in Inorganic Chemistry, National** 2023

Description: An award given to: “an undergraduate student registered in an undergraduate program in Canada during the year preceding the nomination deadline, whose ability to perform undergraduate research in the field of Inorganic Chemistry is judged to be of outstanding quality.” Website: [CSC Inorganic Division on Twitter](#)

**Chemistry Achievement Award, Dalhousie University** 2020, 2022

Description: An award given based on: “academic standing, proficiency in chemistry, employment, community service and extracurricular activities.” I won this award twice, once for the 2020 academic year and again for the 2022 academic year. Website: [Scholarships, Awards and Prizes – Department of Chemistry](#)

**STLHE D2L Innovation Award, National** 2022

Description: An award that “celebrates excellence in collaborative teaching and learning in post-secondary education”, given out to a team of educators (A. Crane, J. MacDonald, M. Wall, J. Tassone, A. Allison, R. Karaballi, M. Charlton, I. Curtis, R. Foisy, L. Getz, P. Giesbrecht, K. Jones, E. Lyle, M. Margeson, S. Martell, **N. Roberts**, J. Weatherby). Website: [2022 D2L Innovation Award Recipients – STLHE](#)

**President’s Graduate/Undergraduate Student Teaching Award, Dalhousie University** 2022

Description: An award given once a year to Dalhousie’s top teaching assistants, based on contribution to the field of education as well as the Scholarship of Teaching and Learning (SoTL). I was the first undergraduate student in Dalhousie’s history to have won this award. Website: [President’s Graduate Student Teaching Award Recipients](#)

**Educational Leadership Award for Collaborative Teaching, Dalhousie University** 2021

Description: An award given to a team of educators (A. Crane, J. MacDonald, M. Wall, J. Tassone, A. Allison, R. Karaballi, M. Charlton, I. Curtis, R. Foisy, L. Getz, P. Giesbrecht, K. Jones, E. Lyle, M. Marge-

son, S. Martell, **N. Roberts**, J. Weatherby) on the merit of inclusive and accessible learning opportunities for all students. Website: [Educational Leadership Award for Collaborative Teaching Recipients](#)

**College Chemistry Canada (C3) General Student Scholarship, National** 2021

Description: The C3 general student scholarship is an annual scholarship given to a student pursuing chemistry at a post-secondary institution. Some of the highlights of the award package for this national award include: contributions to chemical education (both in person and online course delivery), community building and outreach, academic research and accessibility. Website: [College Chemistry Canada – Awards](#)

**Undergraduate Student Award for Teaching Excellence in Chemistry, Dalhousie University** 2021

Description: An award meant to: “celebrate the outstanding contributions made to undergraduate education in the Department of Chemistry by a Teaching Assistant through their teaching and/or teaching and learning research.” Website: [Scholarships, Awards and Prizes – Department of Chemistry](#)

**NSERC Undergraduate Student Research Award (USRA), Carleton University** 2020

Description: An award aimed to: “stimulate your interest in research in the natural sciences and engineering and to encourage you to undertake graduate studies and pursue a research career in these fields.” It is given based on academic record and research aptitude. Website: [NSERC – Undergraduate Student Research Awards](#)

**Spirit of Chemistry Award, Dalhousie University** 2020

Description: An award given to: “a student who has demonstrated enthusiasm and dedication in the promotion of Chemistry both socially and academically.” Some noteworthy parts involved in the nomination include: teaching excellence, outreach, volunteering, research, and recruitment/retention initiatives. Website: [Scholarships, Awards and Prizes - Department of Chemistry](#)

### 3 Research Experience/Interests

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**MSc Student for the McIndoe Group, University of Victoria** 2023 – 2025

Description: I am was a graduate researcher for the McIndoe lab at the University of Victoria, designing robotic tools for automating chemistry. My thesis focused on using additive manufacturing and inexpensive electronics to create more accessible automative tools. Website:

[Mechanistic Mass Spectrometry Group Homepage](#)

From January – December 2024, I was solely responsible for the maintenance of the groups Synapt electrospray ionization-mass spectrometer.

**MITACS Exchange Researcher for the Fairlamb Group, University of York (UK)** Jan – April 2025

Description: I undertook a research exchange in the united kingdom working with Prof. Ian Fairlamb to study mechanistic organometallic chemistry. This work was funded by the MITACS GRA program. During my time there, I investigated the mechanism of a novel Pd species using air-sensitive and computational methods.

**Honours Student for the Johnson Group, Dalhousie University** 2022 – 2023

Description: To fulfill my honours degree requirement, I was a researcher for the Johnson group during the 2022/2023 academic year. Research conducted here consisted of modeling Ni C-N/C-O catalytic cycles using density functional theory (DFT). Website: [Group | Johnson Group Webpage](#)

**Experiential Learning Student for the Chitnis Group, Dalhousie University** Winter 2022

Description: I did an experiential learning semester with the Chitnis group during the Winter of 2022. The project here consisted of monitoring (via  $^{31}\text{P}$  NMR) the kinetics of a reaction at different temperatures in a sealed vessel. Rates of the reactions studied were then plotted and compared. I also mentored a younger undergraduate student in the group who was working with me on this project. Website:

[Chitnis Lab at Dalhousie University](#)



**Joint Student Researcher for the Chitnis and Johnson Groups,  
Dalhousie University** Fall 2021 – Summer 2022

Description: I was hired to perform Density Functional Theory (DFT) calculations on a joint project for the Chitnis and Johnson groups. The project here consisted of using the Exchange-hole Dipole Moment (XDM) model of dispersion on small inorganic systems to model dispersive trends on heavy metal elements. This work led to my being first author the published work. I was the only student who worked on this project, i.e. I obtained every result. Publication: <https://doi.org/10.1021/acs.organomet.2c00268>

**Student Researcher for the Chitnis Group,  
Dalhousie University** Fall 2021 – Winter 2022

Description: I volunteered on a project that evaluated the efficacy of Elemental Analysis as an analytical technique. Work here consisted of sample preparation and shipping. Publication: <https://doi.org/10.1021/acscentsci.2c00325>

**Student Researcher for the Chitnis Group, Dalhousie University**  
Summer 2021

Description: I was hired as a summer student researcher for the Chitnis group during the summer of 2021. The project here consisted of main group inorganic synthesis, reaction optimization and computational methods (DFT). Publication: <https://doi.org/10.1002/anie.202204851>

**Inorganic Chemistry Exchange (ICE) Student for the Macdonald Group,  
Carleton University** Summer 2020

Description: The ICE program is designed to pair students who have an interest in inorganic chemistry with summer research supervisors at other institutions across Canada. This involves 16 weeks of academic research, and at the end of the summer research period a formal presentation is given by each student to all other groups to summarize the work we've accomplished. The project here consisted of inorganic main group synthesis and computational methods (DFT).

**Undergraduate Student Volunteer for the Chitnis Group,  
Dalhousie University** 2019 – 2021

Description: I was a student volunteer for the Chitnis group beginning in my first year at Dalhousie and ending my third. Roles and responsibilities of this position include cleaning glassware, organizing gloveboxes, tidying up around the lab, and performing preparatory syntheses for other researchers in the group, either through glovebox or Schlenk line methods.

Publication: <https://doi.org/10.1002/chem.201904361>

## 4 Publications

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1. (**Invited Piece**) “Chromatic inclusivity in chemistry.” **N. J. Roberts**, J. L. MacDonald. (*Nat. Rev. Chem.*, **2024**, 8, 487–488). DOI: <https://www.nature.com/articles/s41570-024-00619-w>
2. “Nickel-Catalyzed O-Arylation of Primary or Secondary Aliphatic Alcohols with (Hetero)aryl Chlorides: A Comparison of Ni(I) and Ni(II) Pre-catalysts.” K. Morrison, **N. J. Roberts**, S. Dudra, J. Tassone, M. Ferguson, E. Johnson, M. Stradiotto. (*J. Org. Chem.*, **2023**). DOI: <https://doi.org/10.1021/acs.joc.3c01584>
3. “An Improved Synthesis of PN-adamantanoid Cages P4(NR)6 and a Mechanistic Study of their Fourfold Oxidation.” M. A. Land, J. Ren, **N. J. Roberts**, K. L. Bamford, M. Shayan, A. Kutulska, T. George, J. D. Masuda, and S. S. Chitnis. (*Chem. Asian J.*, **2023**, 18). DOI: <https://doi.org/10.1002/asia.202300561>
4. “How Effective are Indicators for Individuals with Colour Vision Deficiency?” **N. J. Roberts**, Toren Hynes, Devon Stacey, Jennifer L. MacDonald. (*J. Chem. Ed.*, **2023**, 100, 4168–4173). DOI: <https://doi.org/10.1021/acs.jchemed.3c00413>
5. “Dispersion stabilizes metal-metal bonds in the 1,8-bis(silylamido)naphthalene ligand environment.” **N. J. Roberts**, E. R. Johnson, S. S. Chitnis. (*Organometallics*, **2022**, 41, 2180–2187). DOI: <https://doi.org/10.1021/acs.organomet.2c00268>
6. “An International Study Evaluating Elemental Analysis.” J. Dutton, R. Kuveke, L. Barwise, Y. V. Ingen, **N. Roberts**, K. Vashisth, S. Chitnis, C. Martin, R. Melen (*ACS Cent. Sci.*, **2022**, 8, 855–863).

DOI: <https://doi.org/10.1021/acscentsci.2c00325>

7. “(PNSiMe<sub>3</sub>)<sub>4</sub>(NMe)<sub>6</sub>: A Robust Tetravalent Phosphaza-adamantane Scaffold for Molecular and Macromolecular Construction.” J. Bedard, **N. J. Roberts**, Dr. M. Shayan, Dr. K. L. Bamford, Dr. U. Werner-Zwanziger, Dr. K. M. Marczenko and Prof. S. S. Chitnis (*Angewandte*, **2022**, 61). DOI: <https://doi.org/10.1002/anie.202204851>
8. “Periodicity in Structure, Bonding, and Reactivity for P-Block Complexes of a Geometry Constraining Triamide Ligand” K. M. Marczenko, J. A. Zurakowski, M. B. Kindervater, S. Jee, T. Hynes, **N. Roberts**, S. Park, U. Werner-Zwanziger, M. Lumsden, D. N. Lange-laan, and S. S. Chitnis (*Chem. Eur. J.*, **2019**, 25, 16414-16424). DOI: <https://doi.org/10.1002/chem.201904361>

## 5 Other Relevant Publications/Texts

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1. “Navigating Colour Vision Deficiency in Science Education” J. L. MacDonald, **N. Roberts**, K. Near (Dalhousie University, 2025). Link: [Navigating Colour Vision Deficiency in Science Education](#)
2. “First Year Chemistry 1012/1022 Lab Manual” G. Aleman, S. Barkhouse, J. Bates, V. Berryman, C. Byers, R. Guy, P. Laws, J. MacDonald, A. Pincock, **N. Roberts**, K. Thompson, M. Wall (Department of Chemistry, Dalhousie University, Winter 2022 – Present).
3. “First Year Chemistry 1011/1021 Lab Manual” G. Aleman, S. Barkhouse, J. Bates, V. Berryman, C. Byers, R. Guy, P. Laws, J. MacDonald, A. Pincock, **N. Roberts**, K. Thompson, M. Wall. (Department of Chemistry, Dalhousie University, Fall 2021 – Present).

## 6 Academic Presentations

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1. “The RADBox: Teaching Students about Air Quality in Real Time” J. Scott McIndoe, **N. J. Roberts**, J. Dutnall, Canadian Chemistry Conference and Exhibition (Teaching Analytical Chemistry), June 18th, 2025.

2. *Poster Presentation* “Isolable, Catalytically Relevant Pre-transmetalation Intermediates in  $\text{Csp}^2\text{--Csp}^3$  Suzuki-Miyaura Cross-Couplings” S. C. Smith, **N. J. Roberts**, S. McHale, L. Tomczyk, A. Turner, A. C. Whitwood, R. Gammons, P. O’Brien, I. J. S. Fairlamb, Dalton, April 2nd, 2025. **Note: I presented this work despite not being 1st author.**
3. **(Invited/Award Winning Presentation)** “Supporting Invisible Disabilities in Chemical Education” **N. J. Roberts**, WIDE Virtual Seminar Series, November 27th, 2024. Recording: [Supporting Invisible Disabilities in Chemical Education](#)
4. **(Winner of Best MSc Seminar)** “RADbox: A Dynamic Real-Time Display for Air-Quality Measurements” **Nicholas J. Roberts**, Graduate Student Research Day, November 12th, 2024.
5. **(Award Winning Presentation)** “RADBox: Teaching Students about Air Quality in Real-Time” J. Dutnall, **N. J. Roberts**, J. S. McIndoe, Western Canadian Undergraduate Chemistry Conference (WCUCC), May 8th, 2024.
6. *Poster Presentation* “An inexpensive do-it-yourself auto-sampling device: Lowering the barrier to entry for kinetic studies.” **N. J. Roberts**, J. S. McIndoe, Graduate Student Research Day, February 23rd, 2024.
7. **(Invited/Award Winning Presentation)** “The Importance of Dispersive Stabilization for the Isolation of Intermetallic Bonds,” **N. J. Roberts**, Erin R. Johnson, Saurabh S. Chitnis, Canadian Chemistry Conference and Exhibition, June 6th, 2023.

## 7 Teaching Interests/Experience

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### 7.1 Teaching Appointments

#### 1. The University of Victoria

1.1. **Introductory Organic Chemistry (CHEM 231) Teaching Assistant** Fall 2024

**1.2. Synthetic Chemistry Laboratory (CHEM 260) Teaching Assistant** Fall 2023 – Winter 2024

**2. Dalhousie University**

**2.1. First Year Neuroscience/Psychology Prefect** Fall 2022 – Winter 2023

**2.2. First Year Chemistry Teaching Assistant**  
**Online Training Developer** June 2022 – August 2022

**2.3. Senior Teaching Assistant Chem 1011/1021 and Chem 1012/1022 Laboratory** Fall 2020 – April 2023

- Winter 2023 – Concepts in Chemistry II: Energy and Equilibrium Laboratory (IN-PERSON CLASS – 100 Students)
- Fall 2022 – Concepts in Chemistry I: Structure and Reactivity Laboratory (IN-PERSON CLASS – 100 Students)
- Summer 2022 – Concepts in Chemistry I: Structure and Reactivity Laboratory (IN-PERSON CLASS – 100 Students)
- Winter 2022 – Concepts in Chemistry II: Energy and Equilibrium Laboratory (BLENDED CLASS – 1200 Students)
- Fall 2021 – Concepts in Chemistry I: Structure and Reactivity Laboratory (BLENDED CLASS – 1200 Students)
- Winter 2021 – Concepts in Chemistry II: Energy and Equilibrium Laboratory (ONLINE CLASS – 1200 Students)
- Fall 2020 – Concepts in Chemistry I: Structure and Reactivity Laboratory (ONLINE CLASS – 1200 Students)

**2.4. First Year Chemistry Online/In-Person Course Developer** Summer 2020 – April 2023

**2.5. Teaching Assistant Chem 1011/1021 and Chem 1012/1022 Laboratory**

- Summer 2022 – Concepts in Chemistry II: Energy and Equilibrium Laboratory (IN-PERSON CLASS – 100 Students)
- Winter 2020 – Concepts in Chemistry II: Energy and Equilibrium Laboratory (INPERSON CLASS – 100 students)
- Fall 2019 – Concepts in Chemistry I: Structure and Reactivity Laboratory (IN PERSON CLASS – 100 students)

For a more in-depth assessment of my teaching capabilities, please see my teaching dossier.

## 8 Research Grants Submissions/Approvals

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### **CIC Chemical Education Fund** 2025

Description: “Inexpensive Dye Cast Filers to Help those with Colour Vision Deficiency.” J. L. MacDonald, M. Wall, **N. J. Roberts** (\$1000 Cnd - National: Chemical Institute of Canada)

### **Open Educational Resource (OER) Grant for the Design of colour accessible curricula** 2022

Description: “Navigating Colour Vision Deficiency in Science Education: An Open Educational Resource”. J. L. MacDonald, **N. J. Roberts**, K. Near (\$7000 Cnd - Dalhousie).

### **CLEAR21 Grant** 2021

Description: “Colour Chemistry: Development and implementation of colour filter cards to reduce barriers individuals with colour vision deficiency experience when interpreting colour based experimental results in the undergraduate Chemistry laboratory”. J. L. MacDonald, R. Chisholm, M. Wall, **N. Roberts** (£500 - International Grant: The Learning Science/CLEAR21)

### **Scholarship of Teaching and Learning Grant** 2021

Description: “Investigating the Efficacy of Discussion Boards in Student Engagement in Large Online Gateway Chemistry Classes”. J. L. MacDonald, A. Crane, R. Foisy, **N. Roberts** (\$2,578.42 Cnd - Dalhousie: Centre for Learning and Teaching)

### **Teaching and Learning Enhancement Grant** 2021

Description: “Colour Chemistry: Development and implementation of colour filter cards to reduce barriers individuals with colour vision deficiency experience when interpreting colour based experimental results ”. J. L. MacDonald, R. Chisholm, M. Wall, **N. Roberts** (\$2948 Cnd. - Dalhousie: Centre for Learning and Teaching)

### **Accessibility and Accommodation Fund Grant** 2020

Description: “Colour Chemistry: Development and implementation of colour filter cards to reduce barriers colour blind students and teaching staff experience when interpreting colour based experimental results.”. J. L. MacDonald, R. Chisholm, M. Wall, **N. Roberts** (\$2500 Cnd. - Dalhousie Student Accessibility Centre)

## 9 Research Ethics Submissions/Approvals

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**Dalhousie Research Ethics Board (#REB 2021-5576)** 2021

Description: “Investigating the Efficacy of Discussion Boards in Student Engagement in Large Online Gateway Chemistry Classes”. [J. L. MacDonald, A. Crane, R. Foisy, **N. Roberts**] (REB# 2021-5576)

## 10 Service to the Chemistry Community

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### 10.1 Recruitment, Retention and Outreach

Recruiting more undergraduate students into the chemistry program through not only the classroom but outside of it as well. Some of the events I’ve participated in include:

- **ChemCon Organizer, Dalhousie University** 2022 – 2023  
Description: ChemCon brings together approximately 200 students from Atlantic Provinces annually to share their research, participate in workshops, and attend a career/trade show. As an organizer, my role was to help with the finances of the event, look for businesses/academic institutions to invite, write letters of invitation, help plan events and be present at weekly/bi-weekly meetings throughout the year.
- **Drop-in Student Advisor for the Interdepartmental Advising Drop-In Event, Dalhousie University** March 2023  
Description: I attended the interdepartmental drop-in advising session as a senior student to give advice to younger students on what a degree in chemistry is like and how to succeed in their courses. This event was ca. 2 hours in length and had many students in attendance.

- Invited Student Guest Lecture, Dalhousie University**      March 2023  
Description: I was invited to give a talk to the introductory chemistry 1012 course with regards to student research in the department. The talk consisted of a ca. 15 minute presentation with a brief period for questions.
- Student Research Talk, Dalhousie University**      Winter 2022  
Description: I was invited to speak at the Annual 1st year event hosted by the department of Chemistry. This talk consisted of me discussing what it means to be a student researcher, how to get involved in research in the chemistry department and some of the projects that I've done.
- Dalhousie Virtual Open House**      Fall 2021/Winter 2022  
Description: The virtual open house is an event in which the public (usually prospective students) is open to come and ask questions about the various programs offered. I participated as a student perspective to answer questions from incoming students about the chemistry program/department at Dalhousie.
- Mentoring and Recruitment of an Undergraduate Student, Dalhousie University**      Fall 2021  
Description: An undergraduate student I had taught in the Fall 2021 academic term was interested in research and the chemistry program at Dalhousie. I took it upon myself to show them a research lab, and had a ca. 60 minute conversation about what the chemistry program was like and how to plan courses.
- Campus Tour for Prospective Dalhousie Chemistry Student, Dalhousie Registrar/Recruitment**      Fall 2021  
Description: I was asked by the Chemistry department/Registrar's office to give a high school student who was interested in the chemistry program at Dalhousie a tour of the chemistry building as well as to discuss with them what it was like studying chemistry at Dalhousie. This involved the previously mentioned tour which took ca. 20 minutes, as well as a ca. 60 minute conversation with the student and their guardian about what life was like in Halifax and what the Chemistry program is like at Dalhousie.



- First Year Chemistry Online Course Trailer for Faculty of Science Hub, Dalhousie University** Fall 2020  
Description: The first-year chemistry program recorded a video to welcome incoming first year science students to demonstrate that they were in good hands. I was invited to be a part of it as one of the module developers.
- Recruitment for the Chitnis Lab, Dalhousie University** Winter 2020  
Description: I have been a volunteer for the Chitnis group in the chemistry department since my first year, and have found the experience very rewarding. In an attempt to demonstrate to students how a research lab differs from the first year lab, I offered lab tours of the Chitnis lab for students to get a better idea of what research looks like. One of these students, Nicholas Murphy, became a volunteer member himself after a tour I had offered.
- Dalhousie Academic Fair Program** Winter 2020  
Description: Answered questions and talked with students about careers and involvement in chemistry.
- Kings Advising Luncheon** Winter 2020  
Description: The university of King's College hosts an advising session for first year students during lunch time to sit a table with students/coordinators from a department so that they can discuss the program in a more general one on one way. I acted as a student perspective during this.
- Dalhousie Open House** Fall 2019  
Description: The open house is an event in which the public is open to come and ask questions about the various programs offered. I participated in the capacity of a student perspective, and answered questions that incoming students had about the program/department.
- Faculty of Science Preview Day, Dalhousie University** Winter 2019  
Description: This event was a lab based session in which incoming high school students participated in one of the labs we teach in first year,

that being the copper cycle. I acted as a student TA and led some of these students through the experiment.

## 11 Other Volunteer Experience

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### 11.1 For Inspiration and Recognition of Science and Technology (FIRST)

- **Volunteer judge** November 25th, 2023

Description: I volunteered 5 hours to help setup/teardown and judge a FIRST event in November 2023. Responsibilities included chatting with children from ages 8–12 about their robot ideas, how they were going to achieve their goals and go over what the main principles of FIRST are.

## 12 Committees and Societies

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### 12.1 The University of Victoria Chemistry Equity, Diversity and Inclusion (EDI) Committee

- **LGBTQIA+ Pamphlets** Summer 2024

Description: I was responsible for making pamphlets highlights LGBTQIA+ chemists from various eras for our summer pride event.

- **Graduate Student Representative** 2024 – 2025

Description: The Chemistry Equity, Diversity and Inclusion (Chem EDI) committee is a supportive and educational committee in the Department of Chemistry. As a graduate representative, my responsibilities included designing content to advocate accessibility issues, discuss with the committee about any grievances filed, and act as a general resource to my peers regarding EDI. Website: [Equity and Diversity - University of Victoria](#)

### 12.2 The University of Victoria Graduate Student Society (UVic GSS)

- **Graduate Representative Council (GRC) Member** 2023 – 2024

Description: I served on the GRC (along with one other student) as a representative of the department of chemistry. I was a part of the Bylaw and Policy committee, where responsibilities included reading/writing policy bylaws of the society, and making suggestions regarding the GRC's structure. I have re-written/edited a total of 2 policies and/or bylaws.

### 12.3 The University of Victoria Chemistry Graduate Student Society (UVic CGSS)

- **Graduate Representative Council (GRC) Society Representative** 2023 – 2024

Description: As a member of the GRC, I was automatically made a member of the CGSS' executive committee. Responsibilities included

regular meetings, planning of events, and updating the society about relevant GRC happenings.

## 12.4 Dalhousie University Undergraduate Chemistry Society (DUUCS)

- **President** 2022 – 2023

Description: I was elected president of DUUCS during the 2022/2023 academic year. Responsibilities for this position include organizing meetings, being the main spokesperson for the society, attending university wide society meetings, securing funding, being the main pipeline to the department etc.

- **Anti-Oppression Training** 2022 – 2023

Description: As part of presidential duties, I was required to take anti-oppression training. This training involved learning about how to make spaces more inclusive to those with disabilities, those who are LGBTQIA+, those who are of different ethnic backgrounds etc. It also involved learning about much of the history of oppression within Canada.

- **Undergraduate Student Representative for the new Physical Sciences Building** 2022 – 2023

Description: Dalhousie University was in the process of planning and constructing a new physical sciences building. The organizers wanted student representation such that the building not only benefited researchers and teachers, but also the student body. I sat in on these meetings and offered my voice as undergraduate student representative throughout the 2022/2023 academic year.

- **Career Night Editor/Distributor** Winter 2021/2022

Description: Career night is an event in which DUUCS invites professionals working in industry, academia, or startups, to talk with our peers about how best to succeed with their degree. It was my responsibility to record, edit and distribute the online presentations. This included having to edit out technical difficulties, timestamp the different speaker placements and caption the audio.

- **Organizer/Host of the NSERC USRA Presentations** Winter 2021/2022

Description: Every year DUUCS hosts most if not all of the research professors from the chemistry department to each give a brief presentation on their research, in order to advertise for the summer undergraduate student research awards (USRAs). This event has been a great way for students to get involved in research with professors, whether that be paid or through volunteering. It was my job to organize a team to contact the professors, find someone to host the event, record and distribute the event to other students after the fact.

- **Society Fair** Fall 2019/2021

Description: I have represented the society in the society fair by hosting the booth and talking to students about what society activities we do.

- **Vice-President of Internal Affairs** 2020 – 2022

Description: As the former VP of internal affairs, my job is to ensure that the society is functioning as it should with things like our social/professional events. This also includes fulfilling some of the presidential duties when the president has too much to do, as well as being a leader for the society in general. This year in particular I managed a group of 3 of my peers to organize some of our large events, most notably the NSERC USRA presentations, our Career Night Expo, and our apparel line for 2021/2022.

- **Chembeer Social Events** 2019 – 2023

Description: Chembeer is a social event where every (or every other) Friday the society invites the entire department to get in a room to drink with one another. This event attracts undergraduate and graduate students as well as professors, and is one of the few events where all three of these demographics truly get into a room together and just talk. I have acted as a primary bartender for this event on numerous occasions.

## 13 Science Communication & Outreach

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**Co-peer Reviewer, McIndoe group**

2023 – present

Description: I co-peer reviewed several papers along with my graduate supervisor, J. Scott McIndoe, during my graduate studies at the University of Victoria. This involved my making comments/suggestions on unpublished papers submitted to journals, and discussing the papers with my supervisor. To date, I have co-peer reviewed 4 papers.

**CBC interview discussing colour accessibility**

May

2024 Description: I was invited by CBC to discuss colour accessibility in chemistry. You can find the interview here:

[How do you do colour-based chemistry experiments when you can't see colour?](#).

**Invited piece discussing colour accessibility**

May

2024 Description: I was invited by the faculty of science to discuss colour accessibility in chemistry. You can find the interview here:

[Improving accessibility in chemistry education.](#)

**ACS Reviewer Lab Training, ACS**

Summer 2023

Description: In order to better understand the reviewer process and learn how to more effectively communicate research, I took the American Chemical Society's (ACS's) Reviewer Lab training. This consisted of six modules, which were comprised of topics such as Ethics, Assessment and Hazards. See below for the certificate.



## Social Media Engagement Project, SCIE 3211

Winter 2022

Description: One of the projects of the Communicating Science to Non-Scientists course I had taken involved developing a piece of science to be communicated to a target audience via social media. I used Twitter to share a brief overview/guide of Density Functional Theory (DFT) and how to use it. This went over well with the chemtwitter community.

## 14 Interests and Other Skills

### 14.1 Coding

#### Languages

2020 – Present

Description: Proficient in: Python, Bash, MatLab, Arduino, Lua, Rust, C and LaTeX. Familiar with graphical programming with respect to the python programming language (pysimplegui, flet). Familiar with building CLI applications using rust and C/Lua.

#### Molecular Weight Calculator

Winter 2020

Description: Successfully coded a calculator in python that allows you to input your molecular formula and gives you back its molecular weight.

**nick-deb**

Winter 2023

Description: Coded a bash script to automatically install my preferences for Debian on a virtual machine for swift deployment.

**Xyz to Input**

Winter 2024 – present

Description: I wrote a script in lua to convert xyz files into input files for the ORCA quantum chemistry program. I ended up using this tool so much that I've started developing a command line interface (CLI) tool using rust to improve functionality and share-ability of this tool.

## **14.2 3D Printing**

**Slicing Software**

Description: Proficient in Ultimaker Cura, ORCA Slicer and Chitubox basic.

**3D Printer Knowledge/Maintenance**

Description: Experienced with several FDM printers (Creality ender 3, Creality CR-10, Bambulab X1C), as well as MSLA printers (Elegoo mars 5 ultra). While with the McIndoe lab I was solely responsible for maintaining our group's 3D printers.

**Computer Aided Design (CAD)**

Description: Proficient in FreeCAD.

**E-ink display/enclosure gift**

Description: I designed a 3D printed enclosure for an electronic ink display for my dad.





### 14.3 Mass Spectrometry

#### Mass Spectrometer Maintenance

Description: While with the McIndoe lab, I was responsible for the maintenance of the groups Synapt G2 mass spectrometer. This included weekly ballasting of the pumps, as well as a monthly maintenance of calibration, detector optimization, and verification that the resolution was still in peak condition.

### 14.4 Music

#### Audio Engineering

2020 – Present

Description: I record my own music, whether it be covers or originals. Experienced using Audacity, ProTools and LMMS. Have used several kinds of microphones, including dynamic, condenser and portable (i.e. zoom).

#### Guitar Tech

2025 – Present

Description: I am a capable instrument technician, with knowledge on how to fix hardware and restore instruments. I managed to restore and sell a previously unsellable bass guitar.

## **14.5 Video Editing**

<b>Proficient in DaVinci Resolve</b>	2021 – Present
<b>Proficient in Kdenlive</b>	2023 – Present

## **14.6 Art/Digital Art**

<b>Blender – In Progress of Learning</b>	2021 – Present
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# **15 References**

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Prof. J. Scott McIndoe, University of Victoria (mcindoe@uvic.ca)

Dr. Jennifer L. MacDonald, Dalhousie University (jennifer.l.macdonald@dal.ca)