

Kyle Bryenton

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CURRENT ROLE: POSTDOCTORAL RESEARCH FELLOW

Dalhousie University, Department of Chemistry & Industrial Partner: Draslovka
PI: Drs. Erin Johnson & Luc LeBlanc

Halifax, NS
2026–present

Project Title: Towards Sustainable Metal Extraction in Mining: Tailoring Glycine Leaching Technologies

My postdoctoral research role is supported by an industrial partnership between Draslovka, Dalhousie University's Department of Chemistry, and collaborators at the University of Cambridge. Building on my PhD work in density-functional theory (DFT) method development and testing, my research focuses on advancing Glycine Leaching Technology (GLT) to make mining more sustainable and economical.

EDUCATION

Dalhousie University, Department of Physics and Atmospheric Science
PhD in Chemical Physics, Advisor: Dr. Erin Johnson

Halifax, NS
2020–2025

AARMS Summer School: Dyn. Sys., DEs, and Special Functions
Graduate Summer School, Instructors: Drs. James Yorke & Mourad Ismail

Charlottetown, PE
2019

University of Guelph, Guelph-Waterloo Physics Institute
MSc in Physics, Advisor: Dr. Elisabeth Nicol

Guelph, ON
2016–2018

University of Prince Edward Island
BSc Hons.+Co-op in Physics & Maths, Advisors: Drs. Nasser Saad & Sheldon Opps

Charlottetown, PE
2011–2016

PAST RESEARCH EXPERIENCE (SELECTED)

- UPEI School of Mathematical and Computational Sciences 2019
PI: Dr. Nasser Saad
- UPEI Departments of Mathematics and Physics 2012–2016
PI: Drs. Nasser Saad, Sheldon Opps, & Gordon MacDonald
- PEI Cancer Treatment Centre 2013
PI: Dr. John Andrew & Grant MacNevin

ACADEMIC PROFESSIONAL & SOCIETAL SERVICES (SELECTED)

Fritz Haber Institute *ab initio* Materials Simulations (FHI-aims) — Developer 2022–present
Dalhousie Graduate Physics Society — Treasurer 2022–2024
UPEI Mathematics Society — President 2013–2016
UPEI Physics Society — Vice President 2014–2015

TEACHING EXPERIENCE (SELECTED)

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|---|---------------------------------|
| Department of Physics | Dalhousie University, NS |
| Lecturer & Teaching Assistant — PHYC 3640 Quantum Mechanics | 2022 |
| Tutorial Instructor — PHYC 2140 Physics Tools: Theory | 2020 |
| Lecturer & Teaching Assistant — First-year Physics | 2020 |
| Department of Physics | University of Guelph, ON |
| Lab Instructor & Teaching Assistant — First-year Physics | 2016–2018 |
| Departments of Physics and Mathematics | UPEI, PE |
| Observatory Technician | 2012–2016 |
| Teaching Assistant — PHYS 251/252 Introductory Astronomy | 2012–2016 |
| Tutorial Instructor — PHYS 312 Electromagnetism I | 2015 |
| Teaching Assistant — First-year Physics | 2013–2014 |
| Math Help Centre Tutor | 2013 |
| UPEI Mathematics Achievement Program | Charlottetown, PE |
| Founder & Director | 2015–2016 |

SCHOLARSHIPS AND AWARDS

| Award Name | Value | Year | Award Name | Value | Year |
|--------------------------------------|----------|------|--------------------------------------|---------|------|
| CSTCC Best Contributed Talk Award | \$556 | 2024 | R. Haines Mem. Sci. Award of Merit | N/A | 2015 |
| Mary M. Werner Grad. Scholarship | \$5,000 | 2024 | Dr. John H. Maloney Scholarship | \$390 | 2015 |
| IBM-Zerner Graduate Student Award | \$674 | 2024 | MacLauchlan Prize for Eff. Writing | \$500 | 2015 |
| CCAM Physics Conf. Feedback Award | \$30 | 2022 | Dr. Terry McCormack Award | \$500 | 2015 |
| Killam Predoctoral Scholarship | \$90,000 | 2020 | UPEI Academic Excellence Award | \$2,000 | 2015 |
| Nova Scotia Graduate Scholarship | \$60,000 | 2020 | NSERC USRA | \$4,500 | 2014 |
| Dalhousie President's Award | \$12,294 | 2020 | UPEI Academic Excellence Award | \$1,000 | 2014 |
| Walter C. Sumner Mem. Fellowship | \$16,400 | 2020 | Island Student Award - Fourth Year | \$600 | 2014 |
| CMS President's Award | \$100 | 2019 | Chin-Hai Lin Memorial Award | \$120 | 2013 |
| NSERC CCGS-M | \$17,500 | 2017 | Physics Co-op Student of the Year | \$500 | 2013 |
| Ontario Graduate Scholarship (Decl.) | \$15,000 | 2017 | Physics Dept Prize in Modern Physics | \$200 | 2013 |
| Ontario Graduate Fellowship | \$9,000 | 2017 | Island Student Award - Third Year | \$600 | 2013 |
| Jeff Praught Grad. Award in Math | \$500 | 2016 | Austin A. Scales Scholarship | \$2,000 | 2012 |
| Physics Department Graduation Prize | \$200 | 2016 | Island Student Award - Second Year | \$400 | 2012 |
| George Coles Graduate Scholarship | \$1,400 | 2016 | Inspiring Excellence Award | \$1,000 | 2011 |
| UPEI Diam. Award in Ed. Leadership | \$500 | 2016 | PEI: Community Service Bursary | \$500 | 2011 |
| UPEI Student/Alumnus of the Month | N/A | 2016 | George Coles Bursary | \$2,000 | 2011 |

PUBLICATIONS (SELECTED)

1. **K. R. Bryenton**, E. R. Johnson, *The exchange-correlation dipole moment dispersion method*. Submitted to: Phys. Chem. Chem. Phys. (2025). doi: 10.48550/arXiv.2506.02352
2. **K. R. Bryenton**, E. R. Johnson, *Many-Body Dispersion in Model Systems and the Sensitivity of Self-Consistent Screening*, J. Chem. Phys. **158**, 204110 (2023). doi: 10.1063/5.0142465
3. **K. R. Bryenton**, A. A. Adeleke, S. G. Dale, E. R. Johnson, *Delocalization Error: The Greatest Outstanding Challenge in Density-functional Theory*, WIREs Comput. Mol. Sci. **13** e1631, (2023). doi: 10.1002/wcms.1631
4. A. J. Price, **K. R. Bryenton**, E. R. Johnson, *Requirements for an Accurate Dispersion-corrected Density Functional*, J. Chem. Phys. **154**, 23, 230902, (2021). doi: 10.1063/5.0050993
5. J. Carbotte, **K. R. Bryenton**, E. J. Nicol, *Optical Properties of a Semi-Dirac Material*, Phys. Rev. B. **99**, 115406, (2019). doi: 10.1103/PhysRevB.99.115406

CONFERENCE CONTRIBUTIONS (SELECTED)

Poster Presentations

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|---|------|
| World Assoc. of Theoretical and Computational Chemists (WATOC) - Oslo, Norway | 2025 |
| Sixty-Third Sanibel Symposium - St. Augustine Beach, FL | 2024 |
| FHI-aims Developers Meeting - Hamburg, Germany | 2023 |
| Canadian Association of Physicists (CAP) Congress - Fredericton, NB | 2023 |
| American Chemical Society Spring Meeting - Indianapolis, IN | 2023 |
| Canadian Mathematical Society Winter Meeting - Toronto, ON | 2019 |

Conference Presentations

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| Canadian Symp. on Theoretical and Computational Chemistry (CSTCC) - Halifax, NS | 2024 |
| Canadian Association of Physicists (CAP) Congress - Fredericton, NB | 2023 |
| American Chemical Society (ACS) Spring Meeting - Indianapolis, IN | 2023 |
| Canadian-Cuban-American-Mexican (CCAM) Graduate Student Physics Conference - Virtual | 2022 |
| Canadian Mathematical Society (CMS) Winter Meeting - Toronto, ON | 2019 |
| Atlantic Universities Physics and Astronomy Conference (AUPAC) - St. John's, NL | 2016 |
| Canadian Mathematical Society (CMS) Summer Meeting - Charlottetown, PE | 2015 |
| Atlantic Universities Physics and Astronomy Conference (AUPAC) - Sackville, NB | 2015 |
| Science Atlantic Math and Computer Science Conference - St. John, NB | 2014 |
| Science Atlantic Math and Computer Science Conference - Sackville, NB | 2012 |

Technical Seminars

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| PEI Cancer Treatment Centre - Charlottetown, PE | 2013 |
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Invited Talks

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| UPEI School of Mathematical and Computational Sciences - Seminar | 2024 |
| UPEI School of Mathematical and Computational Sciences - Seminar | 2016 |