

Philip D. Bulsink, B.Sc., M.Sc.

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SUMMARY A proven problem solver with expertise in computational, inorganic, and analytical chemistry.
Comfortable with aggressive learning curves and development of novel ideas.
Adept at writing code in R and VBA to further research objectives.

EDUCATION **University of Ottawa**
Master's Degree **2015**

- Thesis: "*Rhenium^I Terdentate Compounds: Theoretical and Experimental Investigations*"
- Seminar: "*Recent Advances in NO_x Abatement from Diesel Engine Emissions*"
- Tasks: Synthesis & characterization of ligands and catalysts with novel photochemical properties. In-depth mechanism studies with various computational packages. Developed software in Python to simplify & accelerate work.
- Supervisors: Dr. Tom Woo and Dr. Darrin Richeson

University of Waterloo
Bachelor of Science, Honour's Chemistry, Co-op, Music Minor **2012**

- Honour's Thesis: "*Solid Sample Analysis by Microplasma Optical Emission Spectroscopy*"

PROFESSIONAL EXPERIENCE **Characterization Laboratory, CanmetENERGY, Natural Resources Canada** Ottawa
Fuels Chemist **2014 – Present**

Develop novel methods and perform routine analysis using FTIR, HPLC, GC-MS, and GCxGC for solid, liquid and gaseous samples. Manage client relations, including recommending analysis and costing projects. Oversee all liquid and gaseous sample analysis, including final verification of reported data. Represent laboratory, department, and Canada at internal and external client meetings. Designed and managed international round-robin studies of Bio-Liquefaction oils. Provide input to research project funding proposals and wrap-ups. Member of Emergency Response and Building Emergency and Evacuation teams.

University of Ottawa, University of Waterloo Ontario
Laboratory Teaching Assistant **September 2011 – May 2014**

Teaching assistant for undergraduate labs in general, organic, inorganic, analytical, and physical chemistry. Demonstrated techniques and explained theoretical basis for experiments. Supervised students performing chemical laboratory exercises.

CanmetENERGY, Natural Resources Canada Ottawa
Research Assistant - DeNO_x Group **May 2010 – August 2011 (12 months total)**

Research of homogeneous catalysts for removal of NO and NO₂ from lean-burn diesel engine exhaust. Improved catalyst testing procedures. Scaled catalyst synthesis by 3 orders of magnitude. Custom-built instrumentation and software for investigations. Prepared manuscripts for publishing.

Analytical Chemist - Characterization Laboratory **January – April 2009**

Performed analysis of solid and liquid fuel samples. Designed and implemented a software based quality control monitoring system to assist ISO 9001:2000 compliance. Repaired analytical instruments.

Kinectrics Inc. Etobicoke
Analytical Chemist **September – December 2009**

Adhered to stringent ISO 17025 and ISO 14000 specifications while performing various chemical analysis. Prepared and tracked round-robin test samples for distribution to other laboratories.

HONOURS AND DISTINCTIONS	Excellence in Science - Departmental Achievement Award, Natural Resources Canada	2023
	Positive Workplace Impact - Energy Efficiency & Technology Sector Award, Natural Resources Canada	2022
	Innovation & Creativity - CanmetENERGY-Ottawa Award, Natural Resources Canada	2021
	Dean's Scholarship, University of Ottawa	2015
	Dean's Honour Roll, University of Waterloo, University of Ottawa	2011 – 2014
	Graduate Student Poster Award, CSC Inorganic Division Poster Symposium, Quebec City	2013
	Recognition of Collaboration - Departmental Achievement Award, Natural Resources Canada	2012
	Aileen Proudfoot Award, CanmetENERGY, Natural Resources Canada	2011
	Outstanding Co-op ranking, University of Waterloo	2009 – 2012
SELECTED PUBLICATIONS & PRESENTATIONS	Bulsink, P., Sant-Anna, S., Giddings, T., "Quantification of components without direct calibration by GC-MS/PolyArc [®] -FID" <i>American Chemical Society</i> , 2023	
	Bulsink, P., "Results of the IEA Bioenergy Round Robin on the Analysis of Heteroatoms in Biomass Liquefaction Oils" <i>CanmetENERGY-Ottawa Science Seminar</i> , 2020	
	Bulsink, P., de Miguel Mercader, F., Sandström, L., Van De Beld, B., Preto, F., Zacher, A., Oasmaa, A., Dahmen, N., Funke, A., Bronson, B. "Results of the International Energy Agency Bioenergy Round Robin on the Analysis of Heteroatoms in Biomass Liquefaction Oils", <i>Energy & Fuels</i> , 34, 9, pp. 11123–11133, 2020	
	Bulsink, P., Al-Ghamdi, A., Joshi, P., Korobkov, I., Woo, T., Richeson, D. "Capturing Re(I) in a neutral N,N,N pincer scaffold and resulting enhanced absorption of visible light", <i>Dalton Trans.</i> , 45, pp. 8885–8896, 2016	
	Bulsink, P. "Transforming the Chemistry of Rhenium I: Physical and Theoretical Investigations", <i>University of Ottawa Thesis</i> , 2015 .	
	Stanciulescu, M., Bulsink, P., Caravaggio, G., Nossiova, L., Burich, R. "NH ₃ -TPD-MS study of Ce effect on the surface of Mn- or Fe-exchanged zeolites for selective catalytic reduction of NO _x by ammonia", <i>App. Surface Sci.</i> , 300, pp. 201–207, 2014 .	
	Bulsink, P., Korobkov, I., Woo, T., Richeson, D. "Transforming the chemistry of Re ^I to access the Elusive Pincer Geometry", <i>CSC Inorganic Division Poster Symposium</i> , 2013 .	
	Stanciulescu, M., Caravaggio, G., Dobri, A., Moir, J., Burich, R., Charland, J.-P., Bulsink, P. "Low-temperature selective catalytic reduction of NO _x with NH ₃ over Mn-containing catalysts", <i>App. Catal. B: Env.</i> , 123–124, pp. 229–240, 2012 .	
	Caravaggio, G., Stanciulescu, M., Burich, R., Scheier, B., Bulsink, P. "Novel Catalysts for NO _x Reduction with Reductants Produced In-Situ", <i>DEER Conference</i> , 2010 .	

ACTIVITIES

fldataR Package*Author & Maintainer***2022 – Present**

Support, maintain, and improve R language package for accessing Formula 1 data via the FastF1 Python package. Includes maintaining R – Python interface via ‘reticulate’ package, responding to CRAN requests for changes, and handling issues as they are raised on GitHub.

BultinkBot*Designer & Programmer***2018 – Present**

Developed predictive models for NHL Hockey game, season, and playoff results. Posted daily predictions on Twitter, Mastodon and BlueSky social networks. Ranked in top 5 predictive performance in annual competitions against other amateur and professional prediction models from 2019 to present. Provided predictions for dailyfaceoff.com for 2 years (2021-2022 and 2022-2023).

Emergency Response Team - CanmetENERGY, Natural Resources Canada*Team Member & Incident Commander***2015 – Present**

Act as a first responder for any on-site medical or chemical emergencies. Served as backup dispatch and incident commander. Received HAZMAT operations from Ottawa Fire Services HAZMAT trainers. Received first responder, burn response, trauma response and other topical training from Ottawa Paramedic trainers. Annually recertified for SCBA operations.

ChemCalculator.com*Designer & Programmer***2013 – 2017**

Developed website containing various chemistry calculations not available or not user-friendly elsewhere online. Direct application of self-taught and online course-based knowledge and principles of programming.

Giving Refugees Hope in Uganda, Ottawa, Ontario, Canada*Co-Founder, Vice Chair***2013 – 2016**

Co-founded charitable organization assisting refugees in Kampala, Uganda. Administer projects, developed website, maintain online & social media presence. Received charitable status from Canadian Revenue Agency in 8 months.

University of Waterloo, Waterloo, Ontario, Canada*Residence Don***May – August 2009**

Responsible for the well-being of 29 first and second year students. Counselling peers through personal and academic concerns. Organized floor and residence outings. Acted as a liaison between students and the Residence Manager.

AFFILIATIONS

American Chemical Society (ACS), member 2019 – Present