

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

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## CONTACT INFORMATION

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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. Exploring data analysis using Python and R.

## EDUCATION

### University of Ottawa

*Master's Degree*

**2015**

- Thesis: "*Rhenium<sup>I</sup> Terdentate Compounds: Theoretical and Experimental Investigations*"
- Seminar: "*Recent Advances in NO<sub>x</sub> 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**

Perform method development and routine analysis, including HPLC, GC-MS, and GCxGC for solid, liquid and gaseous samples. Manage statistical control charts and other documentation for ISO9001 certification. Oversee instrument repair and maintenance. Represent laboratory at internal and external client meetings.

### 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.

### CanmetENERGY, Natural Resources Canada

Ottawa

*Research Assistant - DeNO<sub>x</sub> Group*

**May 2010 – August 2011 (12 months total)**

Research of homogeneous catalysts for removal of NO and NO<sub>2</sub> 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	<b>2023</b>
Positive Workplace Impact - Energy Efficiency & Technology Sector Award, Natural Resources Canada	<b>2022</b>
Innovation & Creativity - CanmetENERGY-Ottawa Award, Natural Resources Canada	<b>2021</b>
Dean's Scholarship, University of Ottawa	<b>2015</b>
Dean's Honour Roll, University of Waterloo, University of Ottawa	<b>2011 – 2014</b>
Graduate Student Poster Award, CSC Inorganic Division Poster Symposium, Quebec City	<b>2013</b>
Recognition of Collaboration - Departmental Achievement Award, Natural Resources Canada	<b>2012</b>
Aileen Proudfoot Award, CanmetENERGY, Natural Resources Canada	<b>2011</b>
Outstanding Co-op ranking, University of Waterloo	<b>2009 – 2012</b>

SELECTED  
PUBLICATIONS &  
PRESENTATIONS

- Bultink, P., Sant-Anna, S., Giddings, T., "Quantification of components without direct calibration by GC-MS/PolyArc<sup>®</sup>/FID" *American Chemical Society*, **2023**
- Bultink, P., "Results of the IEA Bioenergy Round Robin on the Analysis of Heteroatoms in Biomass Liquefaction Oils" *CanmetENERGY-Ottawa Science Seminar*, **2020**
- Bultink, 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", *Energy & Fuels*, 34, 9, pp. 11123-11133, **2020**
- Bultink, 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", *Dalton Trans.*, 45, pp. 8885-8896, **2016**
- Bultink, P. "Transforming the Chemistry of Rhenium I: Physical and Theoretical Investigations", *University of Ottawa Thesis*, **2015**.
- Stanciulescu, M., Bultink, P., Caravaggio, G., Nossova, L., Burich, R. "NH<sub>3</sub>-TPD-MS study of Ce effect on the surface of Mn- or Fe-exchanged zeolites for selective catalytic reduction of NO<sub>x</sub> by ammonia", *App. Surface Sci.*, 300, pp. 201-207, **2014**.
- Bultink, P., Korobkov, I., Woo, T., Richeson, D. "Transforming the chemistry of Re<sup>I</sup> to access the Elusive Pincer Geometry", *CSC Inorganic Division Poster Symposium*, **2013**.
- Stanciulescu, M., Caravaggio, G., Dobri, A., Moir, J., Burich, R., Charland, J.-P., Bultink, P. "Low-temperature selective catalytic reduction of NO<sub>x</sub> with NH<sub>3</sub> over Mn-containing catalysts", *App. Catal. B: Env.*, 123-124, pp. 229-240, **2012**.
- Caravaggio, G., Stanciulescu, M., Burich, R., Scheier, B., Bultink, P. "Novel Catalysts for NO<sub>x</sub> Reduction with Reductants Produced In-Situ", *DEER Conference*, **2010**.

## ACTIVITIES

**fldataR Package**

Author &amp; 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 &amp; 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 [dailyf1coff.com](https://dailyf1coff.com) for 3 years (2021, 2022 and 2023-2024).

where 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.

**Continuing Education**

Completed the 'Data Science' specialization on Coursera, offered in partnership with Johns Hopkins University.

AFFILIATIONS

Chemical Institute of Canada (CIC), member 2011 – Present