

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

CONTACT INFORMATION

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SUMMARY

Analytical Chemist with a passion for problem-solving and a proven ability to leverage computational tools (R, VBA, Python) to develop novel solutions. Thrives in fast-paced environments, excelling at independent learning and driving innovative research efforts.

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 research.
- 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

- Pioneered advanced analytical methods using FTIR, HPLC, GC-MS, and GCxGC to unlock new insights from solid, liquid, and gaseous samples.
- Championed data quality by overseeing all liquid and gaseous sample analysis, personally verifying reported data, and leading ISO17025 internal audits.
- Cultivated strong client relationships by providing expert analysis recommendations and cost-effective experimental design.
- Acted as a scientific liaison at internal, external client, and international and committee meetings, representing the laboratory's, departmental, and Canadian scientific expertise.
- Contributed to research funding proposals, strengthening experimental design and improving project outcomes.

University of Ottawa, University of Waterloo

Laboratory Teaching Assistant

Ontario

September 2011 – May 2014

- Supervised undergraduate labs in General, Organic, Inorganic, Analytical, and Physical Chemistry, demonstrating techniques, explaining theoretical concepts, and ensuring safe and accurate experiment execution.

CanmetENERGY, Natural Resources Canada

Research Assistant - DeNO_x Group

Ottawa

May 2010 – August 2011 (12 months total)

- Investigated novel homogeneous catalysts for the reduction of nitrogen oxides (NO_x) in lean-burn diesel engine exhaust.
- Scaled catalyst synthesis processes by 3 orders of magnitude.
- Custom-built instrumentation and software to support studies.

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 Conference</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 . 10.1021/acs.energyfuels.0c02090	
	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 .10.1039/C6DT00661B	
	Bulsink, P. "Transforming the Chemistry of Rhenium I: Physical and Theoretical Investigations", <i>University of Ottawa Thesis</i> , 2015 . 10.20381/ruor-2762	
	Stanciulescu, M., Bulsink, P., Caravaggio, G., Nossova, 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 . 10.1016/j.apsusc.2014.01.175	
	Richeson, D., Woo, T., Bulsink, P., Joshi, P., Jurca, T., Korobkov, I. "Expanding the coordination geometry and enhancing the photophysical features of Re (I) with redox non-innocent pincer ligands", <i>American Chemical Society Conference</i> , 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 . 10.1016/j.apcatb.2012.04.012	
	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

f1dataR Package

Author & Maintainer

2022 – Present

- Developed and maintain an R package that simplifies accessing Formula 1 data, leveraging a Python library
- Responded to user and custodian feedback by addressing CRAN (Comprehensive R Archive Network) demands and handling issues raised on GitHub.

BulsinkBot

Designer & Programmer

2018 – Present

- Developed and deployed predictive models for NHL hockey game, season, and playoff outcomes, achieving top-5 ranking in accuracy against professional and amateur models (2019-present).
- Leveraged data analysis to generate daily NHL predictions shared via social media platforms (Twitter, Mastodon, and BlueSky).
- Provided expert NHL predictions for dailyfaceoff.com for two seasons (2021–2022 and 2022–2023).

Emergency Response Team - CanmetENERGY, Natural Resources Canada

Team Member & Incident Commander

2015 – Present

- Comprehensively trained in emergency medical and chemical response procedures, including first aid, burn response, trauma/wound care, and HAZMAT operations.
- Acted as backup dispatch, incident commander, and maintained annual SCBA recertification.

AFFILIATIONS

American Chemical Society (ACS), member 2019 – Present

ASTM International, individual member 2024 – Present