

Curriculum Vitae

ZACHARY FINEWAX

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EDUCATION

University of Colorado at Boulder

2014 – 2020

Ph.D. - Chemistry

- Advisors: Paul Ziemann and Joost de Gouw
- Cumulative GPA of 3.97/4.00
- Graduation: Spring 2020
- Thesis: “Measurements of the emissions and reactions of anthropogenic and biomass burning VOCs”

University of Toronto

2008 – 2012

Hons. B. Sc. – Environmental Chemistry Specialist

- Graduated with High Distinction
- Cumulative GPA of 3.92/4.00
- Thesis: “Volatile carbonyl formation from heterogeneous ozonolysis of a polyunsaturated fatty acid (PUFA) and its primary oxidation products.” Advisor: Jon Abbatt.

RESEARCH EXPERIENCE

National Oceanic and Atmospheric Administration

Chemical Sciences Laboratory

Research Scientist I

2020 – Present

- Measuring chemical kinetics through laboratory experiments of atmospherically relevant VOCs under James Burkholder.

University of Colorado at Boulder

Department of Chemistry, Cooperative Institute for Research in Environmental Sciences (CIRES)

Research Assistant

2015 – 2020

- Measuring VOCs in indoor and outdoor environments under Joost de Gouw.
- Laboratory chamber experiments oxidizing biomass burning relevant VOCs and quantifying reaction products under Paul Ziemann.

University of Toronto

Department of Chemistry

Undergraduate Researcher – Environmental Chemistry

2011 – 2012

- Completed an undergraduate thesis project under Professor Jon Abbatt studying oxidation reactions leading to secondary organic aerosol precursors believed to occur on sea surface microlayer

Undergraduate Researcher – Organic Chemistry

2011

- Completed a summer research project under Professor Mark Taylor synthesizing regioselective functionalized mono and disaccharides. Project was awarded funding provided by NSERC.

PUBLICATIONS AND PRESENTATIONS

Peer-Viewed Publications

- Claflin, M.; Pagonis, D.; **Finewax, Z.**; Handschy, A.; Day, D. A.; Brown, W.; Jayne, J. T.; Worsnop, D. R.; Jimenez, J. L.; Ziemann, P. J.; de Gouw, J.; Lerner, B. (2021) An in situ gas chromatograph with automatic detector switching between PTR- and EI-TOF-MS: isomer-resolved measurements of indoor air. *Atmospheric Measurement Techniques*, 14: 133 – 152.
- **Finewax, Z.**; Pagonis, D.; Claflin, M.; Handschy, A.; Brown, W.; Jenks, O.; Nault, B. A. Day, D. A.; Lerner, B.; Miller, S.; Jimenez, J. L.; Ziemann, P. J.; de Gouw, J. A. (2020) Quantification and source characterization of volatile organic compounds from exercising and application of chlorine-based cleaning products in a university athletic center. *Indoor Air*, In Press.
- **Finewax, Z.**; Jimenez, J. -L.; Ziemann, P. J. (2020) Development and application of a low-cost vaporizer for rapid, quantitative, *in situ* addition of organic gases and particles to an environmental chamber. *Aerosol Science & Technology*. 54: 1567 – 1578.
- **Finewax, Z.**; de Gouw, J. A.; Ziemann, P. J. (2019) Products and secondary organic aerosol yields from the OH and NO₃ radical-initiated oxidation of resorcinol. *Earth and Space Chemistry*, 3: 1248 – 1259.
- **Finewax, Z.**; de Gouw, J. A.; Ziemann, P. J. (2018) Identification, quantification, and volatility of 4-nitrocatechol formed from reactions of catechol with OH and NO₃ radicals. *Environmental Science and Technology*. 52: 1981 - 1989.
- Zhou, S.; Gonzalez, L.; Leithead, A.; **Finewax, Z.**; Thalman, R.; Vlasenko, A.; Vagle, S.; Miller, L. A.; Li, S. -M.; Bureekul, S.; Furutani, H.; Uematsu, M.; Volkamer, R.; Abbatt, J. (2014) Formation of gas-phase carbonyls from heterogeneous oxidation of polyunsaturated fatty acids at the air–water interface and of the sea surface microlayer. *Atmospheric Chemistry and Physics*. 14: 1371 - 1385.

Conference Talks

- **Finewax, Z.**, Ziemann, P. J., de Gouw, J. A. (2016) Composition and volatility of the aerosol products of reactions of catechol, an important biomass burning emission, with hydroxyl and nitrate radicals. *AAAR*, Portland, Oregon.

Seminar Talks

- **Finewax, Z.** (2016) Products and yields from the gas-phase oxidation of benzenediols. *Analytical Chemistry Seminar*, University of Colorado, Boulder, Colorado.

Poster Presentations

- Claflin, M.; Pagonis, D.; **Finewax, Z.**; Sueper, D. T.; de Gouw, J. A.; Jayne, J.; Worsnop, D.; Lerner, B. (2019) An online gas chromatograph with high-resolution mass spectrometric detection for the analysis of volatile organic compounds. *AGU*, San Francisco.
- **Finewax, Z.**; Claflin, M.; Pagonis, D.; Jensen, A.; Jenks, O.; Lerner, B.; Miller, S.; Jimenez, J. -L.; Ziemann, P. J.; de Gouw, J. A. (2019) Identification and quantification of personal care product emissions indoors during exercise by GC-Vocus PTR-ToF. *AAAR*, Portland, Oregon.

- Moravek, A.; VandenBoer, T. C.; Young, C. J.; Nault, B.; Pagonis, D.; **Finewax, Z.**; Day, D. A.; Handschy, A.; Ziemann, P. J.; Jimenez, J. -L.; de Gouw, J. A. (2019) Measurements and reaction pathways of reactive chlorine in a college athletic facility. *SETAC*,
- **Finewax, Z.**; Pagonis, D.; Claflin, M.; Jensen, A.; Jenks, O.; Jimenez, J. -L.; Ziemann, P. J.; Lerner, B.; de Gouw, J. A. (2019) Results from the ATHLETIC study: measurements of indoor volatile organic compounds using a new proton transfer reaction mass spectrometer. *CIRES Rendezvous*, Boulder, Colorado.
- **Finewax, Z.**; Pagonis, D.; Claflin, M.; Jimenez, J. -L.; Ziemann, P. J.; Lerner, B.; de Gouw, J. A. (2019) VOC measurements in the Dal Ward Athletic Center by Vocus PTR-ToF. *CIMS Users Meeting*, Boulder, Colorado.
- **Finewax, Z.**; de Gouw, J. A.; Ziemann, P. J. (2018) Secondary organic aerosol formation of OH and NO₃ initiated reactions of 1,3-benzenediol. *International Aerosol Conference*, St. Louis, Missouri.
- **Finewax, Z.**; Koss, A.; Coggon, M. M.; Gilman, J. B.; Warneke, C.; Ziemann, P. J.; de Gouw, J.A. (2017) Direct roadside measurements of volatile organic compounds from vehicle emissions using NO⁺ time-of-flight chemical ionization mass spectrometry. *American Geophysical Union*, New Orleans, Louisiana.
- **Finewax, Z.**; Ziemann, P. J.; de Gouw, J. A. (2015) Identification and quantification of gas-phase and particle-phase products from reactions of benzenediols with OH and NO₃ radicals in the presence of NO_x. *IAMA*, University of California, Davis, California.
- **Finewax, Z.**; Zhou, S.; Abbatt, J. (2012) Volatile carbonyl formation from heterogeneous ozonolysis of a polyunsaturated fatty acid (PUFA) and its primary oxidation products. *Undergraduate Thesis Presentation*, University of Toronto, Toronto, Ontario.
- **Finewax, Z.**; Gouliaras, C.; Taylor, M. S. (2011) Synthesis of Paramethoxyphenyl-6-O-(β-D-galactopyranosyl)-β-D-galactopyranoside Through Borinic Acid Activation. *NSERC USRA Presentation*, University of Toronto, Toronto, Ontario.

TEACHING EXPERIENCE

University of Colorado

- CHEM4181: Instrumental Analysis Teaching Assistant 2015 – 2020
 - Analytical Chemistry Teaching Assistant Award (2015, 2017)
- CHEM4171: Instrumental Analysis Teaching Assistant 2018
- CHEM1113/1133: General Chemistry I Teaching Assistant 2014
 - General Chemistry Teaching Assistant Award (2014)

EDUCATION OUTREACH

- **Partnerships for Informal Science Education in the Community (PISEC)** 2017
 - Weekly program facilitating science discovery in an informal environment at Longs' Peak Middle School in Longmont, Colorado.
- **CIRES Education Outreach** 2016
 - Provided figures and resources for development of climate science curriculum to be implemented for middle school in the Greater Denver area.

SCHOLARSHIPS AND AWARDS

- CIRES Graduate Fellowship (2015)
- Frances L. Allen Scholarship (2012)
- Sarah Cusick Gollop and William George Gollop Memorial Scholarship in Chemistry – Year I, II, III (2009, 2010, 2011)
- Dr. James A. & Connie P. Dickson Scholarship for Science and Math (2010, 2011)
- Dean's List Scholar in the Faculty of Arts and Science (2009-2011)
- Astra Zeneca Poster Prize (2011)
- NSERC Undergraduate Summer Research Award (USRA) (2011)

OTHER

- Reviewer for Environmental Science & Technology, Atmospheric Environment