

APPOINTMENTS

Associate Professor <i>University of British Columbia, Department of Mechanical Engineering</i>	Vancouver, Canada 2024 – present
Associate Member <i>University of British Columbia, Department of Earth, Ocean, and Atmospheric Sciences</i>	Vancouver, Canada 2022–present
Assistant Professor <i>University of British Columbia, Department of Mechanical Engineering</i>	Vancouver, Canada 2018 – 2024
Postdoctoral Fellow <i>Carnegie Mellon University, Department of Mechanical Engineering</i>	Pittsburgh, PA 2015 – 2017

- **Advisor:** Dr. Allen Robinson

EDUCATION

University of Toronto <i>Ph.D., Chemical Engineering & Applied Chemistry</i>	Toronto, Canada 2011 – 2015
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- **Thesis:** Linking laboratory engine studies to real-world observations: Assessing the air quality impacts of gasoline direct injection engines
- **Advisors:** Dr. Greg J. Evans, Dr. James S. Wallace

University of Waterloo <i>B.A.Sc., Chemical Engineering</i>	Waterloo, Canada 2006 – 2011
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- **Distinctions:** Dean's Honours List, Sanford Fleming Foundation Award for Co-operative Proficiency

LEAVES OF ABSENCE

- Sabbatical: January 2027 – December 2027
- Full-time parental leave: February 2026 – October 2026
- Full-time parental leave: August 2022 – February 2023

SELECTED AWARDS AND HONOURS

Nominee: YWCA Women of Distinction Awards, Category: Research, The Sciences & Technology	2025
Tier 2 Canada Research Chair in Real-World Air Quality Sensing, \$500,000	2024 – 2029
UBC Sustainability Fellow	2019 – 2021
Tier 2 Canada Research Chair in Sustainability, \$500,000	2018 – 2024
NSERC Postdoctoral Fellowship, \$90,000	2015 – 2017
Student Discovery Award, University of Toronto, \$3,000	2015
NSERC Postgraduate Scholarship, \$63,000	2012 – 2015
NSERC Alexander Graham Bell Canada Graduate Scholarship, \$17,500	2011 – 2012
Mary H. Beatty Fellowship, University of Toronto, \$5,000	2011

TEACHING

University of British Columbia	
MECH598/698 004: Research Seminar [enrollment~30]	2023–2025
MECH431: Engineering Economics [enrollment~100]	2018–present
MECH411: Air Pollution, Technology, & Society [enrollment~30]	2019–present
University of Toronto	
CHE230: Environmental Chemistry [enrollment~150]	2015

PUBLICATIONS¹

$n = 41$ [40 published, 1 in review], h -index = 22

41. de Ferreyro Monticelli D, Bhandari S, Brar, J, Giang A, **Zimmerman N***. “The influence of cannabis cultivation on outdoor air quality: Meteorological drivers in urban VOC-limited regimes,” (2026) *ACS ES&T Air*, in review.
40. **Zimmerman N***. “Toward Socially Responsive Ambient Air Quality Monitoring in the Era of Distributed Sensing,” (2026) *Environmental Science & Technology*, in press.
39. Chakraborty M, Jain S, Thornton S, Aklin M, Giang A, **Zimmerman N***. “Impact of Residential Cooking and Heating on Temporal Changes of Black Carbon in Rural India: A Mixed Method Study,” (2025) *Scientific Reports*, 15, 33549.
38. de Ferreyro Monticelli D, Pham C, Bhandari S, Giang A, Borduas-Dedekind N, **Zimmerman N***. “Following the smell: terpene emission profiles through the cannabis life-cycle,” (2025) *Environmental Science: Processes & Impacts*, 27, 1823-1838.
37. Gardner-Frolick R, Jain S, Chambliss S, Jackson D, **Zimmerman N**, Giang A*. “Incorporating Community Knowledge into Analysis of Air Quality Monitoring Network Data,” (2025) *GeoHealth*, 9 (7), e2025GH001378.
36. Barkjohn K*, Clements A, Mocka C, Barrette C, Bittner A, Champion W, Gantt B, Good E, Holder A, Hills B, Landis MS, Kumar M, MacDonald M, Thoma E, Dye T, Archer J-M, Bergin M, Mui W, Feenstra B, Ogletree M, Chester-Schroeder C, **Zimmerman N**. “Air Quality Sensor Experts Convene: Current Quality Assurance Considerations for Credible Data,” *ACS ES&T Air* (2024), 1(10), 1203–1214.
35. **Zimmerman N*** (lead author), with contributions from the World Meteorological Organization, UN Environment Program, and International Global Atmospheric Chemistry project. “Integrating Low-Cost Sensor Systems and Networks to Enhance Air Quality Applications,” *WMO GAW Report No. 293* (2024). <https://library.wmo.int/idurl/4/68924>
34. Bhandari S, de Ferreyro Monticelli D, Xie K, Ramkairsingh A, Maher R, Eykelbosh A, Henderson SB, **Zimmerman N**, Giang A*. “Odor, air quality, and well-being: understanding the urban smellscape using crowd-sourced science,” *Environmental Research: Health* (2024), 2(3), 035012.
33. Jain S, Gardner-Frolick R, Martinussen N, Jackson D, Giang A, **Zimmerman N***. “Identification of Neighbourhood Hotspots via the Cumulative Hazard Index: Results from a Community-Partnered Low-cost Sensor Deployment,” *GeoHealth* (2024), 8(2), e2023GH000935.
32. Jain S, **Zimmerman N***. “Exploration of intra-city and inter-city PM_{2.5} regional models to improve low-cost sensor performance,” *Journal of Aerosol Science* (2024), 177, 106335.
31. Jain S, Presto AA, **Zimmerman N***. “Using Spatio-temporal Prediction Models to Quantify PM_{2.5} Exposure due to Daily Movement,” *Environmental Science: Atmospheres* (2023), 11(3), 1665–1677.
30. Chakraborty M, Giang A, **Zimmerman N***. “Performance evaluation of portable dual-spot micro-aethalometers for source identification of black carbon aerosols: application to wildfire smoke and traffic emissions in the Pacific Northwest,” *Atmospheric Measurement Techniques* (2023), 16(9), 2333–2352.
29. Kelly C, Fawkes J, Habermehl R, de Ferreyro Monticelli D, **Zimmerman N***, “PLUME Dashboard: A free and open-source mobile air quality monitoring dashboard,” (2023). *Environmental Modelling & Software*, 160, 105600.
28. Rogak SN*, Rysanek A, Lee J, Dhulipala SV, **Zimmerman N**, Wright M, Weimer M. “The effect of air purifiers on aerosol dispersion and removal in multi-patient hospital rooms,” (2022) *Indoor Air*. 32(10): e13110.
27. de Ferreyro Monticelli D, Bhandari S, Eykelbosh A, Henderson SB, Giang A, **Zimmerman N***. “Cannabis Cultivation Facilities: A Review of their Air Quality Impacts from the Occupational to Community Scale,” (2022) *Environmental Science & Technology*. 56(5): 2880-2896.
26. **Zimmerman N***. “Tutorial: Guidelines for implementing low-cost sensor networks for aerosol monitoring,” (2022) *Journal of Aerosol Science*. 159: 105872.
25. Song R, Presto AA*, Saha P, **Zimmerman N**, Ellis AA, Subramanian R. “Spatial variations in urban air pollution: Impacts of diesel bus traffic and restaurant cooking at small scales” (2021) *Air Quality, Atmosphere & Health*. 14: 2059-2072.

¹underline denotes member of Zimmerman group, * denotes corresponding author

24. Nguyen PDM, Martinussen N, Mallach G, Ebrahimi G, Jones K, **Zimmerman N**, Henderson SB*. "Using Low-Cost Sensors to Assess Fine Particulate Matter Infiltration (PM2.5) during a Wildfire Smoke Episode at a Large Inpatient Healthcare Facility," (2021) *International Journal of Environmental Research and Public Health*. 18(18): 9811.
23. Eykelbosh A*, Maher R, Monticelli D, Ramkairsingh A, Henderson SB, Giang A, **Zimmerman N**. "Elucidating the community health impacts of odours using citizen science and mobile monitoring," (2021) *Environmental Health Review*. 64(2): 24-27.
22. Jain S, Presto AA, **Zimmerman N***. "Spatial modeling of PM2.5, CO and NO2 concentrations measured by a low-cost sensor network: Comparison of linear and machine learning enabled land use models," (2021) *Environmental Science & Technology*. 55 (13): 8631-8641.
21. Liu B, **Zimmerman N***. "Fleet-based vehicle emission factors using low-cost sensors: Case study in parking garages," (2021) *Transportation Research Part D: Transport and Environment*. 91: 102635.
20. Le Hong Z, **Zimmerman N***. "Air Quality and Greenhouse Gas Implications of Connected and Autonomous Vehicle Diffusion Scenarios." (2021) *Transportation Research Part D: Transport and Environment*. 91: 102676.
19. **Zimmerman N***, Li HZ, Ellis A, Hauryliuk A, Robinson ES, Gu P, Shah RU, Ye Q, Snell L, Subramanian R, Robinson AL, Apte JS, Presto AA. "Improving correlations between land use and air pollutant concentrations using wavelet analysis: Insights from a low-cost sensor network." (2020) *Aerosol and Air Quality Research*. 20(2): 314-328.
18. Li HZ, Gu P, Ye Q, **Zimmerman N**, Robinson ES, Subramanian R, Apte JS, Robinson AL, Presto AA*. "Spatially dense air pollutant sampling: Implications of spatial variability on the representativeness of stationary air pollutant monitors." (2019) *Atmospheric Environment: X*. 2: 100012.
17. Malings C*, Tanzer R, Hauryliuk A, Kumar SPN, **Zimmerman N**, Kara LB, Presto AA, Subramanian R. "Development of a General Calibration Model and Long-Term Performance Evaluation of Low-Cost Sensors for Gas Monitoring with RAMPs." (2019) *Atmospheric Measurement Techniques*. 12(2): 903-920.
16. Saha PK, **Zimmerman N**, Malings C, Hauryliuk A, Li HZ, Snell L, Subramanian R, Lipsky E, Apte JS, Robinson AL, Presto AA*. "Quantifying High-resolution Spatial Variations and Local Source Impacts of Urban Ultrafine Particle Concentration." (2019) *Science of the Total Environment*. 655: 473-481.
15. **Zimmerman N***, Rais K, Jeong CH, Pant P, Delgado-Saborit JM, Wallace JS, Evans GJ, Brook JR, Godri-Pollitt KJ. (2019) "Carbonaceous aerosol sampling of gasoline direct injection engine exhaust with an integrated organic gas and particle sampler." (2019) *Science of the Total Environment*. 652: 1261-1269.
14. Omara M*, **Zimmerman N**, Sullivan MR, Li X, Ellis A, Cesa R, Subramanian R, Presto AA, Robinson AL. "Marginally economic wells dominate methane emissions from U.S. natural gas production." (2018) *Environmental Science & Technology*. 52(21): 12915-12925.
13. Saha PK, Robinson ES, Shah RU, **Zimmerman N**, Apte JS, Robinson AL, Presto AA*. "Reduced Ultrafine Particle Concentration in Urban Air: Changes in Nucleation and Anthropogenic Emissions." (2018) *Environmental Science & Technology*. 52(12): 6798-6806.
12. Wang JM*, Jeong CH, **Zimmerman N**, Healy RM, Evans GJ. "Real World Vehicle Fleet Emission Factors: Seasonal and Diurnal Trends in Traffic Related Air Pollutants." (2018). *Atmospheric Environment*. 184: 77-86.
11. **Zimmerman N**, Presto AA, Kumar SPN, Gu J, Hauryliuk A, Robinson ES, Robinson AL, Subramanian R*. "A machine learning calibration model using random forests to improve sensor performance for lower-cost air quality monitoring." (2018) *Atmospheric Measurement Techniques*. 11(1): 291-313.
10. Maikawa C, **Zimmerman N**, Ramos M, Shah M, Wallace JS, Godri-Pollitt KJ*. "Comparison of airway responses induced in a mouse model by the gas and particulate fractions of gasoline direct injection engine exhaust." (2018) *International Journal of Environmental Research and Public Health*. 15(3): 429-442.
9. Wang JM*, Jeong CH, **Zimmerman N**, Healy RM, Hilker N, Evans GJ. "Real-World Emission of Particles from Vehicles: Volatility and the Effects of Ambient Temperature." (2017) *Environmental Science & Technology*. 51(7): 4081-4090.
8. **Zimmerman N***, Wang JM, Jeong CH, Wallace JS, Evans GJ. "Assessing the climate trade-offs of gasoline direct injection engines." (2016) *Environmental Science & Technology*. 50(15): 8385-8392.
7. Maikawa CL, **Zimmerman N**, Rais K, Shah M, Hawley B, Pant P, Jeong CH, Delgado-Saborit JM, Volkens J, Evans GJ, Wallace JS, Godri-Pollitt KJ*. "Murine precision-cut lung slices exhibit acute responses following exposure to gasoline direct injection engine emissions." (2016) *Science of the Total Environment*. 568: 1102-1109.

6. **Zimmerman N**, Wang JM, Jeong CH, Hilker N, Healy RM, Sabaliauskas K, Wallace JS, Evans GJ*. “Field measurement of gasoline direct injection emission factors: spatial and seasonal variability.” (2016) *Environmental Science & Technology*. 50(4): 2035-2043.
5. Healy RM*, Wang JM, Jeong CH, Lee AKY, Willis MD, Jaroudi E, **Zimmerman N**, Hilker N, Murphy M, Eckhardt S, Stohl A, Abbatt JPD, Wenger JC, Evans GJ. “Light-absorbing properties of ambient black carbon and brown carbon from fossil fuel and biomass burning sources.” (2015) *Journal of Geophysical Research: Atmospheres*. 120(13): 6619-6633.
4. Wang JM*, Jeong CH, **Zimmerman N**, Healy RM, Wang DK, Ku F, Evans GJ. “Plume-based analysis of vehicle fleet air pollutant emissions and the contribution of high emitters.” (2015) *Atmospheric Measurement Techniques*. 8(8): 3263-3275.
3. **Zimmerman N**, Jeong CH, Wang JM, Ramos M, Wallace JS, Evans GJ*. “A source-independent empirical correction procedure for the fast mobility and engine exhaust particle sizers.” (2015) *Atmospheric Environment*. 100: 178-184.
2. **Zimmerman N**, Godri-Pollitt KJ, Jeong CH, Wang JM, Jung T, Cooper JM, Wallace JS, Evans GJ*. “Comparison of three nanoparticle sizing instruments: the influence of particle morphology.” (2014) *Atmospheric Environment*. 86: 140-147.
1. Epling WS*, Yezerets A, Currier N, Hess HS, Chen HY, Russell A, Venkov M, **Zimmerman N**. “Spatially-Resolved Thermal Degradation Induced Temperature Pattern Changes along a Commercial Lean NOx Trap Catalyst.” (2010) *SAE International Journal of Fuels and Lubricants*. 3(1): 723-732

SELECTED RESEARCH FUNDING

Total Funding = ≈\$14.7M (CAD), NZ Portion = ≈\$4.0M (CAD)

- **NSERC Discovery Grant**, 2025–2029. *Real-world air quality assessment: quantification of the spatiotemporal dynamics of emerging air pollution sources*, \$240,000. PI.
- **Tier 2 Canada Research Chair (Renewal)**, 2024–2028. *Canada Research Chair in Real-World Air Quality Sensing*, \$500,000. PI.
- **CFI Infrastructure Operating Fund**, 2024–2030. *Rapid Air Improvement Network*, \$608,424 (NZ portion: \$302,212). Co-PI [w/ S. Rogak (Co-PI) and 8 other Co-Is].
- **NSERC Alliance Grant**, 2023–2026. *Assessing and communicating air quality in community clean air spaces: influence of season and building characteristics*, \$310,000. PI [w/ E. Peterson and M. Schwandt (Co-Is)].
- **ECCC Climate Action and Awareness Fund**, 2023–2027. *Integrated Development of Transport Data, Model & Community Outreach Tool for Urban & Rural Regions*, \$3,027,500 (NZ portion: \$224,000). Co-I [PI: M. Fatmi; w/ 5 other Co-Is].
- **ECCC Climate Action and Awareness Fund**, 2023–2027. *Urban freight system emissions: improved characterization for mitigation planning*, \$2,583,660 (NZ portion: \$189,000). Co-PI [w/ P. Kirchen (Co-PI) and 5 other Co-Is].
- **Microsoft Research Award**, 2021. *Urban Climate Resilience Proposal: using Eclipse data for modeling outcomes*, \$12,500 USD. PI.
- **Rogers-UBC Foundry Model Grant**, 2020–2021. *Advancing an Intelligent Transportation Data Platform*, \$499,000 (NZ portion: \$250,000). PI [w/ M. Kennedy, D. Michelson, C. Woo, M. Fatmi, A. Chaaban].
- **CFI Innovation Fund**, 2020–2024. *Rapid Air Improvement Network*, \$5,071,058 (NZ portion: \$1,385,000). Co-PI [w/ S. Rogak and 8 other Co-Is].
- **NFRF–Exploration**, 2020–2021. *Cannabis cultivation in Canada: Assessing the air, health and equity impacts of a growing and uncharted industry*, \$273,175 (NZ portion: \$80,000). PI [w/ A. Giang and S. Henderson].
- **CFI JELF**, 2018. *High time-resolution mobile laboratory for quantification of emergent air pollutants*, \$308,657. PI.
- **Tier 2 Canada Research Chair**, 2018–2023. *Canada Research Chair in Sustainability*, \$500,000. PI.
- **NSERC Discovery Grant**, 2018–2024. *Quantifying the impact of renewable energy technology and policy interventions on air pollution and climate*, \$243,000. PI.

SELECT CONFERENCE PRESENTATIONS²

11. Subramanian R, Basart S*, Malings C, Amegah K, Diez S, Rosales C, **Zimmerman N**, “Integrating Low-cost Sensor Systems and Networks to Enhance Air Quality Applications” (2025), European Geophysical Union 2025 General Assembly, Vienna, Austria.
10. Chakraborty M, Kandlikar M, **Zimmerman N**, Giang A*, “Modelling residential Black Carbon exposure under household fuel transitions using a Nested Mass Balance Box Model (NMB2)” (2024), American Geophysical Union Fall Meeting, Washington, DC. [*abstract also published as part of conference proceedings*]
9. Bertoldi R*, Sharifi Y, Gardner-Frolick R, Jain S, Martinussen N, **Zimmerman N**, Giang A, “Using dispersion modeling and lower-cost sensor monitoring to estimate neighbourhood-level air pollution in Strathcona, Vancouver” (2024), International Society for Exposure Science (ISES) Annual Meeting, Montreal, QC.
8. Jain S*, Gardner-Frolick R, Martinussen N, Jackson D, Giang A, **Zimmerman N**, “Identification of Neighbourhood Hotspots via the Cumulative Hazard Index: Results from a Community-Partnered Low-cost Sensor Network Deployment” (2023), American Association for Aerosol Research 41st Annual Conference, Portland, OR.
7. Venkatesh Dhulipala S*, Hindson J, **Zimmerman N**, “Community engagement through text-based communication with air quality sensors” (2022), Air Sensors International Conference, Pasadena, CA.
6. Hindson J*, Venkatesh Dhulipala S, **Zimmerman N**, “Integrating multi-modal transportation data with low-cost air quality sensor data to improve understanding of traffic-related air pollution” (2022), Air Sensors International Conference, Pasadena, CA.
5. MacArthur M*, Peterson E, Dix-Cooper L, Schwandt M, **Zimmerman N**, “Quantifying the Impacts of Traffic-Related Air Pollution (TRAP) and Wildfire Smoke on Indoor and Outdoor Air Quality in Daycare Settings: A Pilot Study” (2021), American Association for Aerosol Research 39th Annual Conference, [virtual].
4. Jain S*, Presto AA, **Zimmerman N**, “Impact of Spatiotemporal Factors on Exposure to PM_{2.5} as Residents move between Residential, Commercial and Recreational areas” (2021), International Society for Environmental Epidemiology 33rd Annual Conference, [virtual].
3. Liu B, **Zimmerman N***. “Determining Fleet-based Vehicle Emission Factors Using Low-cost Sensor Packages: A Case Study across Three Parking Garages” (2020). American Association for Aerosol Research 38th Annual Conference, Online.
2. Jain S*, Presto AA, **Zimmerman N**. “Spatiotemporal Modeling of PM_{2.5}, CO and NO₂ Concentrations Measured by a Low-cost Sensor Network: Comparison of Linear and Machine-learning Enabled Land Use Models” (2019). American Association for Aerosol Research 37th Annual Conference, Portland, OR.
1. Jain S, **Zimmerman N**, Presto AA*, “Spatial Modeling of PM_{2.5} Concentrations Measured by a Low-Cost Sensor Network: Comparison of Linear and Machine-Learning Enabled Land Use Models” (2018). 10th International Aerosol Conference, St. Louis, MO.

SELECT CONFERENCE POSTERS³

14. Sharifi, Y*, Bertoldi, R, Gardner-Frolick, R, Jain, S, Martinussen, N, **Zimmerman, N**, Giang, A. “Assessing TRAP Mitigation Policies at The Neighborhood-Level Through Emission Inventory Estimations in Strathcona, Vancouver” (2024), International Society for Exposure Science (ISES) Annual Meeting, Montreal, QC.
13. Chakraborty, M*, Jain, S, Thornton, S, **Zimmerman, N**, Giang, A. “Exploration of temporal dynamics of Black Carbon aerosols from indoor cooking emission in rural Indian households” (2023), American Geophysical Union Fall Meeting, San Francisco, CA.
12. de Ferreyro Monticelli, D*, Pham, C, Bhandari, S, Eykelbosh, A, Henderson, S, Giang, A, **Zimmerman, N**. “Significant Differences in Ultrafine Particle Concentrations and Size Distributions between Cannabis Cultivation and Processing Facilities” (2023). American Association for Aerosol Research 41st Annual Conference, Portland, OR. [received student poster award from AAAR]
11. Pham, C*, Huff, R, de Ferreyro Monticelli, D, Carlsten, C, **Zimmerman, N**. “A Real-World Approach to In-Vitro Lung Epithelial Cell Toxicology of Atmospheric Air Pollutants” (2023). American Association for Aerosol Research 41st Annual Conference, Portland, OR.

²underline denotes member of Zimmerman group, * denotes presenting author

³underline denotes member of Zimmerman group, * denotes presenting author

10. Venkatesh Dhulipala, S*, Hindson, J, **Zimmerman, N**. “Using 5G network to enhance air quality sensing in cities” (2022). Air Sensors International Conference, Pasadena, CA.
9. Jain, S*, MacArthur, M, Chakraborty, M, Venkatesh Dhulipala, S, **Zimmerman, N**. “Developing regional low-cost sensor (LCS) calibration models during wildfire episodes to improve sensor performance over broad concentration ranges” (2022). Air Sensors International Conference, Pasadena, CA.
8. Le Hong, Z, **Zimmerman, N***. “Air Quality and Greenhouse Gas Implications of Connected and Autonomous Vehicle Diffusion Scenarios” (2021). Transportation Review Board 2021 Annual Meeting, virtual. [abstract also published as part of conference proceedings]
7. Jain, S*, Presto, A A, **Zimmerman, N**. “Impact of Spatiotemporal Factors on Exposure to PM_{2.5} as Residents move between Residential, Commercial and Recreational areas” (2020). American Geophysical Union Fall Meeting, virtual. [abstract also published as part of conference proceedings]
6. Chakraborty, M*, Thornton, S, Jain, S, **Zimmerman, N**, Giang, A. “Comparison of Air Exchange Ratio Calculations in Rural Indian Households using Low Cost Sensors” (2020). American Geophysical Union Fall Meeting, virtual. [abstract also published as part of conference proceedings]
5. Liu, B, **Zimmerman, N***. “Determining Fleet-based Vehicle Emission Factors Using Low-cost Sensor Packages: A Case Study across Three Parking Garages” (2020). American Geophysical Union Fall Meeting, virtual. [abstract also published as part of conference proceedings]
4. Liu, B*, Flores KC, Jain S, Chakraborty M, **Zimmerman N**, “Low-cost Sensor Packages in Parking Garages to Determine Emission Factors and Assess the Relative Importance of Cold Start Operation on Air Quality” (2019). American Association for Aerosol Research 37th Annual Conference, Portland, OR.
3. Chakraborty M*, Meiklejohn J, Babae K, Rogak S, Giang A, **Zimmerman N**, “Portable Real-time Black Carbon Monitoring Using the MA300: Performance Characterization in Laboratory and Real-world Environments” (2019). American Association for Aerosol Research 37th Annual Conference, Portland, OR.
2. Jain S*, Presto AA, **Zimmerman N**, “Spatiotemporal modeling of PM_{2.5} using machine-learning enabled land use models” (2019). Machine Learning in Science and Engineering Conference, Atlanta, GA.
1. Chakraborty M*, **Zimmerman N**, Giang A, “Framework for assessing air quality and health impacts of rural emissions in the Indo Gangetic Plain through measurement and modeling” (2019). International GEOS-Chem Meeting, Cambridge, MA.

INVITED TALKS

- **Advancing Globally-Distributed Air Quality Monitoring: A Joint SPARTAN & CAMS-Net Meeting**, “Exploration of intra-city and inter-city PM_{2.5} regional calibration models to improve low-cost sensor performance” (2025).
- **Air Quality Science Unit West Annual Meeting**, “From Concentrations to Context: Approaches for Translating Sensor Network Data into Meaningful Outputs” (2024).
- **University of California Riverside**, “From Concentrations to Context: Approaches for Translating Sensor Network Data into Meaningful Outputs” (2024).
- **26th Conference on Atmospheric Chemistry at the American Meteorological Society (AMS) Annual Meeting**, “Identification of Neighbourhood Hotspots via the Cumulative Hazard Index: Results from a Community-Partnered Low-cost Sensor Network” (2024).
- **Chemical Institute of Canada Environmental Division Seminar Series**, “Air quality, odour, health and equity: Leveraging interdisciplinary approaches to understand the impacts of cannabis cultivation in Metro Vancouver” (2021).
- **Simon Fraser University**, “From Concentrations to Context: Approaches for Translating Sensor Network Data into Meaningful Outputs” (2023).
- **Telluride Science & Innovation Center, Mapping Urban Air: Linking Observations and Processes Workshop**, “From Concentrations to Context: Approaches for Translating Sensor Network Data into Meaningful Outputs” (2023).
- **US EPA Air Sensors Quality Assurance Workshop**, “How to interpret an air sensor calibration model built using machine learning” (2023).

- **AAAR 41st Annual Conference**, “From Concentrations to Context: Approaches for Translating Sensor Network Data into Meaningful Outputs” (2023).
- **Tampere University**, “Integrating multi-modal transportation data with low-cost air quality sensor data to improve understanding of traffic-related air pollution” (2023).
- **University of Arkansas**, “Machine learning for low-cost sensor calibration and deployment” (2023).
- **Microsoft Research Summit**, “Towards Climate-Smart Cities: IoT Networks for Air Pollution Sensing” (2022).
- **UBC IRES and CERC Seminar**, “Understanding Air Quality with Lower-cost Sensors: Technical and Community Considerations for Impactful Research” (2022).
- **University of Toronto**, “Air quality, odour, health and equity: Leveraging interdisciplinary approaches to understand the impacts of cannabis cultivation in Metro Vancouver” (2022).
- **Air Sensors International Conference, Virtual Fall Series Session 2**, “Determining fleet-based vehicle emission factors using low-cost sensors: A case study in three parking garages” [virtual] (2020).
- **American Geophysical Union Fall Meeting**, “Urban air quality and low-cost sensors: From measurement to application” [virtual] (2020).
- **Harvard University**, “Low-cost sensing: Applications in fleet-based vehicle emission factors” (2020).
- **Interagency Meeting, Environment and Climate Change Canada and BC Ministry of the Environment**, “Low-cost sensing: Applications in vehicle emissions and spatial mapping of air pollution” (2020).
- **Air Quality Science Unit - West Mini-Symposium, Environment and Climate Change Canada**, “Using time-resolved data from low-cost PM monitors to improve spatial models of PM2.5” (2019).
- **Strathcona Air Quality Forum, Strathcona Residents Association**, “Perspectives on Low-Cost Sensors and Research in the Region” (2019).
- **Methane Emissions Panel, Canada Gas & LNG Exhibition and Conference**, “Assessing fugitive methane using mobile monitoring techniques” (2019).
- **National Air Pollution Surveillance Program (NAPS) Managers Meeting, Environment and Climate Change Canada**, “iREACH Laboratories at UBC: Quantifying the impact of technology and policy interventions on air pollution and climate” (2019).
- **SensingNetworks.org Global Air Quality Sensing Network Forum, Cypress River Advisors**, “Understanding aerosols: Observations and modelling - Using sensor data to build higher time resolution air quality-land use models” (2019).
- **100th Canadian Chemistry Conference and Exhibition, Canadian Society for Chemistry**, “Regional differences in methane emissions from oil and gas production sites in three US basins” (2017).
- **Diverse Voices in Climate Change Innovation, The Consulate General of Canada & Perkins Coie**, Panelist: “Climate Change at Work: Perspectives from leaders in their field” (2017).
- **University of Toronto SOCAAR Seminar Series**, “In Search of Fresh Air: Characterizing the Sources and Impacts of Air Pollution in Urban Areas” (2017).

MEDIA AND PRESS COVERAGE

- **PLUME Mobile Air Quality Van Launch**: CBC News (Aug 2022); Vancouver Sun (Aug 2022); Glacier Media (Aug 2022); CTV Vancouver (Aug 2022); The Weather Network (May 2023)
- **Emissions from the Cannabis Cultivation Sector**: iNFOnews (Feb 2022); Earth.com (Feb 2022); Environmental Health Perspectives (Jun 2022)
- **Impacts of Wildfires on Air Quality**: CBC News (Jul 2021)
- **Launch of “Smell Vancouver” Mobile Application (www.smellvancouver.ca)**: Vancouver Sun (Dec 2020); CTV Vancouver (Dec 2020); OmniTV (Dec 2020); OMNY.FM Mike Smith Show (Dec 2020); Vancouver is Awesome (Dec 2020); Globe and Mail (Dec 2020); Global TV BC Morning Show (Dec 2020); Chemical Institute of Canada (Jan 2021); Delta Optimist (Feb 2021); The Tyee (Mar 2021); CBC News (Dec 2021); Eos Magazine (Dec 2021)

- **Air Quality in India:** Global News – National (Nov 2019)
- **Cruise Ship Emissions:** CBC News – National (Jan 2019)
- **Low-cost Sensor Networks in Pennsylvania:** *Xploration Awesome Planet* (TV show on Fox, Hulu, Amazon; aired Oct 28, 2017); 90.5 WESA (web and radio story, Feb 2017)
- **Gasoline Direct Injection Emissions:** Scientific American 60-Second Science Podcast (Jul 2016); NPR Science Friday Radio Story (Jul 2016); Chemical & Engineering News Story (Jul 2016); The Daily Mail (Jul 2016)
- **Fugitive Methane:** The Allegheny Front (web and radio story, Jul 2016)

COMMITTEES AND PANELS

- Air Sensors International Conference, Conference Planning Committee (2023–2024)
- Advisory Board, Port of Vancouver and Strathcona Residents' Association Air Quality Study (2020–present)
- Education Committee, American Association for Aerosol Research (2020–2023)
- Expert Panelist, Council of Canadian Academies, Connected and Autonomous Vehicles and Shared Mobility (2019–2020)
- Chair, Combustion Working Group, American Association for Aerosol Research Annual Conference (2018–2019)
- Vice-Chair, Combustion Working Group, American Association for Aerosol Research Annual Conference (2017–2018)
- Session Co-Chair: American Association for Aerosol Research Annual Conference (2016,2017,2018,2019); International Society of Exposure Science (2018)

PEER REVIEW AND EDITORIAL WORK

- **Editorial:** Associate Editor, Air Quality, Atmosphere, & Health (Springer Nature)
- **Academic Journals:** Transportation Research Record, Environmental Science: Processes & Impacts, Journal of Aerosol Science; Sensors; Environment International; Environmental Pollution; Transportation Research Part D: Transport and Environment; Environmental Science & Technology; Environmental Science & Technology Letters; Atmospheric Environment; Atmospheric Measurement Techniques; Aerosol Science & Technology; ACS ES&T Air; Air Quality, Atmosphere, and Health; Science; Proceedings of the National Academy of Sciences
- **Granting Agencies:** European Research Council; National Science Foundation (NSF); Social Sciences and Humanities Research Council (SSHRC); Natural Sciences and Engineering Research Council (NSERC); National Oceanic and Atmospheric Administration (NOAA); Mitacs Canada; US Department of Energy Small Business Innovation Grant; European Research Council
- **Book Publishers:** Cambridge University Press

MEMBERSHIP

- Board Member: Canadian Association for Aerosol Research – Association canadienne pour la recherche sur les aérosols
- American Geophysical Union
- American Chemical Society
- American Association for Aerosol Research

HIGHLY QUALIFIED PERSONNEL TRAINED

n = 31 total

- **Postdoctoral Fellows and Research Associates**
 3. Dr. Laura Salo, 2025 [visiting postdoctoral fellow from Tampere University, Finland]
 2. Dr. Anand Kumar, 2022 – present [Research and Operations Manager for the lab]
 1. Dr. Surya Dhulipala, 2021 – 2022

- **Ph.D. Students**

9. Henna Lintusaari, 2025 – 2026 [visiting PhD student from Tampere University, Finland]
8. Hugo Dignoes Ricart, 2024 – present
7. Caroline Webber, 2023 – present
6. Yuetong Zhang, 2023 – present [w/ C Carlsten]
5. Jasmine Sharifi, 2023 – present [w/ A Giang]
4. Mina Jamshidi, 2023 – present
3. Davi de Ferreyro Monticelli, 2021 – 2025
2. Mrinmoy Chakraborty, 2018 – 2025 [w/ A Giang]
1. Sakshi Jain, 2018 – 2023

- **Masters Students**

4. Cynthia Pham, 2022 – 2025
3. James Hindson, 2021 – 2022
2. Melanie MacArthur, 2019 – 2023⁴
1. Bingqi Liu, 2018 – 2020

- **Undergraduate Researchers**

15. Aditi Gairola, 2026
14. Jasper Markowicz, 2026
13. Krista Traboulay, 2025
12. Elyse Truebridge, 2024 – 2025
11. Alex Ge, 2023 – 2024
10. Jessica Tran, 2022
9. Simon Jang, 2022
8. Rachel Habermehl, 2022
7. Chris Kelly, 2021 – 2024
6. Stefan Colbow, 2021
5. Nika Martinussen, 2021
4. Jacob Rose, 2020 – 2021
3. Julian Fawkes, 2020
2. Zoe Le Hong, 2019 – 2020
1. Katia Cantu Flores, 2019

⁴withdrew from program