Bi, Chenyang

Senior Scientist
Center for Aerosol and Cloud Chemistry
Aerodyne Research Inc.

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EDUCATION

Ph.D.	**Civil Engineering** The University of Texas at Austin	Aug, 2018
M.S.	**Environmental and Water Resources Engineering** The University of Texas at Austin	June, 2014
B.S.	**Water Supply and Wastewater Engineering** Tongji University	July, 2012

RESEARCH EXPERIENCE

Senior Scientist, Aerodyne Research Inc., MA 2023 - present

Postdoctoral Associate, Virginia Tech, VA 2018 - 2023
Advisors: Dr. Gabriel Isaacman-VanWertz and Dr. John Little

Graduate Research Fellow, The University of Texas at Austin, TX 2012 - 2018
Dissertation: Sorption of semi-volatile organic compounds to dust and other surfaces in indoor environments.
Advisor: Dr. Ying Xu

HONORS AND AWARDS

1. **Kolodzey Travel Grant**. The University of Texas at Austin. 2018.
2. **ASHRAE Grant-In-Aid Scholarship**. ASHRAE. 2014.
3. **The University of Texas at Austin Graduate Research Assistantship**. 2013-2018.
4. **Klaus Toepfer Environmental Scholarship.** IESD-UNEP, Tongji University, 2011.
5. **National Scholarship**. Ministry of Education, China, 2009.

Sponsored Research

As Principal Investigator
Total: $310,000, Bi'share: $70,000

1. Improved Online Quantification of Airborne PFAS in North Carolina by a Field-Deployable GC-CIMS Method. 2024-2026. $300,000. Subaward of $60,000 to Bi.
2. A Novel Botanical Air Filtration System to Reduce Organic Air Pollutants in Indoor Environments. The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). 2014. $10,000. PI: Bi.

As Significant Contributor or Senior Personnel

1. Non-Academic Research Internship for Graduate Students (INTERN). NSF GeoHealth. 2024. Bi served as the graduate student's supervisor for her six-month internship at Aerodyne.
2. Occupational Exposure to SVOCs from Indoor “Green” Paints. National Institute for Occupational Safety and Health (NIOSH)-Education Research Center (ERC). 2017-2018. $20,000. PI: Ying Xu. Bi served as a significant contributor to the proposal.
3. Organophosphates and Phthalates in Sleep Microenvironments: Emission, Transport, and Infants' Exposure. National Science Foundation (NSF-CBET). 2015. $350,834. PI: Ying Xu. Bi served as a significant contributor and a senior personnel to this funded work.

INVITED SEMINAR PRESENTATIONS

1. **Bi., C.** Towards More Holistic Solutions: Studying the Emission and Fate of Airborne Organic Compounds Across Indoor and Outdoor Environments. Invited presentation at the University of Colorado at Boulder. Department of Mechanical Engineering. Apr. 2023.
2. **Bi., C.** Emission and fate of semi-volatile organic compounds across indoor and outdoor environments: a cross-scale, system-of-systems view. Invited presentation at the University of Florida. Engineering School of Sustainable Infrastructure & Environment. Mar. 2023.
3. **Bi., C.** Emission and fate of semi-volatile organic compounds across indoor and outdoor environments: a cross-scale, system-of-systems view. Invited presentation at the University of California at Riverside. Department of Chemical and Environmental Engineering. Feb. 2023.
4. **Bi., C.** Emission and fate of semi-volatile organic compounds across indoor and outdoor environments: a cross-scale, system-of-systems view. Invited presentation at Purdue University. Department of Mechanical Engineering. Feb. 2022.
5. **Bi., C.** Emission and transport of semi-volatile organic compounds in buildings and the consequent exposure: a cross-scale, system-of-systems view. Invited presentation at University of Toronto. Department of Civil and Mineral Engineering. Feb. 2021. (Virtual)
6. **Bi., C.** Isomer-resolved quantification of particle-phase organic compounds using a coupled GC-CIMS/FID. Harvard University. Department of Earth and Planetary Sciences. May. 2020 (Virtual)

TEACHING EXPERIENCE

Teaching Certificate: Graduate Certificate in Engineering Education, awarded on Aug, 2018

1. Completed 16 credits of coursework (five courses) related to engineering education
2. Taught a graduate course under the observation of the certificate supervisor and the course professor.
3. Learned in-depth knowledge of engineering education research and philosophy on teaching.

Teaching Assistant and Instructor: Renewable Energy and Environmental Sustainability, UT Austin, 2016-2018

1. Delivered well-organized and interesting lectures on green buildings and renewable energy.
2. Organized field trips to visit energy-saving buildings.
3. Graded homework and exams.

SERVICE

Session Chair: AAAR 2022, AAAR2023, AAAR2024
Reviewer for Journal Articles: Environmental Science & Technology, Environmental International, Building and Environment, Science of Total Environment, Environmental Science: Progress & Impact, Atmospheric Environment, Indoor Air, Journal of Exposure Science & Environmental Epidemiology.
Reviewer for Proposals: EPA and NSF-MRI (Major Research Instrumentation Program).

IN-PREP MANUSCRIPTS

1. **Bi, C.**, Murphy, B.N., Huang, X., Foroutan, H., Pye, H.O.T., Isaacman-VanWertz, G. Comparison of timescales between wet and dry deposition of organic compounds as a function of Henry's law constants over the continental US.

PUBLICATIONS

A. Journal articles (24 in total, 10 first-author)

1. **Bi, C.**, Isaacman-VanWertz, G. (2024) Rapid Deposition Significantly Reduces the Production of Late-Generation Compounds in Atmospheric Oxidation Reactions. *Nature Geoscience.* Accepted.
2. **Bi, C.**, Eichler, C., Wang., C., Little, C. J. (2024) Association between Emission Parameters and Material-phase Concentrations of Phthalate Plasticizers and their Alternatives. *Aerosol and Air Quality Research.* 24(1). 230163
3. **Bi, C.**, Isaacman-VanWertz, G. (2022). Estimated timescales for wet deposition of organic compounds as a function of Henry's law constants. *Environmental Science: Atmospheres*. 2. 1526-1533.
4. **Bi, C.**, Little, C. J. (2022). Integrated assessment across building and urban scales: a review and proposal for a more holistic, multi-scale, system-of-systems approach. *Sustainable cities and society*. 82, 103915.
5. **Bi, C.**, Krechmer, J. E., Frazier, G. O., Xu, W., Lambe, A. T., Claflin, M. S., Lerner, B. M., Jayne, J. T., Worsnop, D. R., Canagaratna, M. R., and Isaacman-VanWertz, G. (2021). Quantification of isomer-resolved iodide CIMS sensitivity and uncertainty using a voltage scanning approach. *Atmos. Meas. Tech*. 14, 6835-6850.
6. **Bi, C.**, Krechmer, J. E., Canagaratna, M. R., and Isaacman-VanWertz, G. (2021). Correcting bias in log-linear instrument calibrations in the context of chemical ionization mass spectrometry. *Atmos. Meas. Tech*. 14, 6551-6560.
7. **Bi, C.**, Krechmer, J. E., Frazier, G. O., Xu, W., Lambe, A. T., Claflin, M. S., Lerner, B. M., Jayne, J. T., Worsnop, D. R., Canagaratna, M. R., and Isaacman-VanWertz, G. (2021). Coupling a gas chromatograph simultaneously to a flame ionization detector and chemical ionization mass spectrometer for isomer-resolved measurements of particle-phase organic compounds, *Atmos. Meas. Tech*, 14, 3895-3907.
8. **Bi, C.**, Wang, X., Li, H., Li, X., and Xu, Y. (2020). Direct transfer of phthalate and alternative plasticizers from indoor source products to dust: laboratory measurements and predictive modeling. *Environmental Science & Technology*. 55, 341-351.
9. **Bi, C.**, Maestre, J.P., Li, H., Zhang, G., Givehchi, R., Mahdavi, A., Kinney, K., Siegel, J., Horner, S., and Xu, Y. (2018). Phthalates and organophosphates in settled dust and HVAC filter dust of U.S.

low-income homes: association with season, building characteristics, and childhood asthma, *Environmental International*, 121, 916-930.

10. **Bi, C.**, Liang, Y., and Xu, Y. (2015). Fate and transport of phthalates in indoor environments and the influence of temperature: a case study in a test house. *Environmental Science & Technology*, 49(16), 9674-9681.
11. Li, H., **Bi, C.**, Novoselac, A., Kinney, K. A., Corsi, R. L., Wade, M., & Xu, Y. (2024). Semivolatile organic compounds in U.S. high schools: Concentrations and associations with building characteristics and seasonal variations. Building and Environment, 254, 111348.
12. Eichler, C., **Bi, C**., Wang, C., Little, J.C. (2022). A modular mechanistic framework for estimating exposure to SVOCs: Next steps for modeling emission and partitioning of plasticizers and PFAS, *Journal of Exposure Science & Environmental*.
13. Li, H., **Bi, C.**, Li, X., and Xu, Y. (2019). A Needle Trap Device Method for Sampling and Analysis of Semi-volatile Organic Compounds in Air, *Chemosphere,* 250, 126284.
14. Velazquez, S., **Bi, C.**, Kline, J., Nunez, S., Corsi, R., Xu, Y., Ishaq, S.L. (2019). Accumulation of di-2-ethylhexyl phthalate from polyvinyl chloride flooring into settled house dust and the effect on the bacterial community. PeerJ, 7, e8147
15. Liang, Y., **Bi, C.**, Wang, X., and Xu, Y. (2018). A general mechanistic model for predicting the fate and transport of phthalates in indoor environments, *Indoor Air*, 29(1), 55-69.
16. Wang, X., **Bi, C.**, and Xu, Y. (2015). Modeling and analysis of sampling artifacts in measurements of gas-particle partitioning of semivolatile organic contaminants using filter-sorbent samplers. *Atmospheric Environment*, 117, 99-109.
17. Wang, C., Eichler, C., **Bi, C.**, Delmaar, C., Xu, Y., Little, J. (2023) A rapid micro chamber method to measure SVOC emission and transport model parameters. *Environmental Science: Processes & Impacts*. Accepted.
18. Givehchi, R., Maestre, J., **Bi, C.**, Wylie, D., Horner, S., Xu, Ying., Kinney, Kerry., Siegel, J. (2018). Quantitative filter forensics with residential HVAC filters to assess indoor concentrations, *Indoor Air*, 29(3), 390-402.
19. McGlynn, D.F., Panji, N.S., Frazier, G., **Bi, C.**, Isaacman-VanWertz, G. (2023). An autonomous remotely operated gas chromatograph for chemically resolved monitoring of atmospheric volatile organic compounds. *Environmental Science: Atmospheres*, 3, 387-398.
20. Hurley, J. F., Kreisberg, N. M., Stump, B., **Bi, C.**, Kumar, P., Hering, S. V., Keady, P., and Isaacman-VanWertz, G. (2020). A new approach for measuring the carbon and oxygen content of atmospherically relevant compounds and mixtures, *Atmos. Meas. Tech*., 13, 4911–4925
21. Shen, C., Yang, X., Thornton, J., Shilling, J., **Bi, C.**, Isaacman-VanWertz, G., & Zhang, H. (2024). Observation-constrained kinetic modeling of isoprene SOA formation in the atmosphere. Atmospheric Chemistry and Physics, 24(10), 6153–6175.
22. Fan, Y., Song, Z., Wu, Y., Ren, X., **Bi, C.**, Ye, W., Wei, H., & Xu, Y. (2024). Chemicals of Emerging Concern in Water-Based Paint Products. *Environmental Science and Technology Letters*, *11*(5), 445–452.
23. Eichler, C., Cohen Hubal, E., Xu, Y., Cao, J., **Bi, C.**, Weschler, C., Salthammer, T., Morrison, G., Koivisto, A. J., Zhang, Y., Mandin, C., Wei, W., Blondeau, P., Poppendieck, D., Liu, X., Delmaar,

C., Jolliet, O., Shin, H. M., Diamond, M., Shiraiwa, M., Zuend, A., Hopke, P., Fantke, P., von Goetz, N., Kulmala, M., and Little, J. (2020). Assessing human exposure to SVOCs in materials, products and articles: a modular mechanistic framework. *Environmental Science & Technology.* 55, 25-43.

24. Velazquez, S., Griffiths, W., Dietz, L., Horve, P., Nunez, S., Hu, J., Shen, J., Fretz, M., **Bi, C.**, Xu, Y., Van Den Wymelenberg, KG. (2019). From one species to another: A review on the interaction of chemistry and microbiology in relation to cleaning in the built environment. *Indoor air*. 29. 880-894

B. Conference Proceedings

1. **Bi, C.**, Wang, C., Little, C. J. Integrated assessment across building and city scales using a system-of-systems framework. In: Proceedings of Indoor air 2020, Online conference. Nov. 2020.
2. **Bi, C.**, and Xu, Y. Screen-level estimation of crawling-induced exposure to particle-phase phthalates, In: Proceedings of Indoor Air 2018, Philadelphia, USA. Jul. 2018.
3. **Bi, C.**, and Xu, Y. Direct transfer of phthalates from polyvinyl chloride flooring into house dust: a chamber study. In: Proceedings of Indoor Air 2018, Philadelphia, USA. Jul. 2018.
4. **Bi, C.**, Maestre, J.P., Zhang, G., Kinney, K., Novoselac, A., Siegel, J., and Xu, Y. Semi-volatile organic compounds in indoor settled dust and HVAC filter dust: association with seasons, childhood asthma and building characteristics, In: Proceedings of Indoor Air 2018, Philadelphia, USA. Jul. 2018.
5. **Bi, C.**, and Xu, Y. Phthalates uptake by settled dust on polyvinyl chloride flooring and the influence of temperature. In: Proceedings of Indoor Air 2016, Ghent, Belgium. Jul. 2016.
6. **Bi, C.**, Maestre, J., Kinney, K., Siegel, J., Horner, S., and Xu, Y. Semi-volatile organic compounds in indoor settled and HVAC filter dust: association with seasons, childhood asthma and building characteristics. In: Proceedings of Indoor Air 2016, Ghent, Belgium. Jul. 2016.
7. **Bi, C.**, and Xu, Y. The influence of temperature on the fate and transport of indoor phthalates: a case study in a test house. In: Proceedings of Healthy Building 2015 America, Boulder, Colorado, USA. Jul. 2015.
8. **Bi, C.**, and Xu, Y. The influence of temperature, ventilation and humidity on the fate and transport of indoor phthalates. In: Proceedings of Indoor Air 2014, Hong Kong, China. Jul. 2014.
9. Li, H., **Bi, C.**, Crain, N., Novoselac, A., Kinney, K., Corsi, R., and Xu, Y. Phthalate, organophosphates, polybrominated diphenyl ethers, pesticides, and their alternatives in indoor air and dust in U.S. high school, In: Proceedings of Indoor Air 2018, Philadelphia, USA. Jul. 2018.
10. Li, H., **Bi, C.**, and Xu, Y. Novel rapid method for characterizing emissions of semi-volatile organic compounds from building materials and consumer products, In: Proceedings of Indoor Air 2018, Philadelphia, USA. Jul. 2018.
11. Li, H., **Bi, C.**, Xu, Y., Crain, N., Novoselac, A., Kinney, K., Corsi, R. Phthalates, organophosphates, polybrominated diphenyl ethers, pesticides, and their alternatives in indoor air and dust in U.S. schools. In: Indoor Air 2016, Ghent, Belgium. Jul. 2016.

CONFERENCE ORAL PRESENTATIONS

1. **Bi, C.**, Isaacman-VanWertz, G. (2022). Estimated timescales for wet deposition of organic compounds as a function of henry's law constants. AAAR 2022, Raleigh, USA. Oct. 2022.
2. **Bi, C**., Krechmer, J. E., Canagaratna, M. R., and Isaacman-VanWertz, G. Correcting bias in log-linear instrument calibrations in the context of chemical ionization mass spectrometry. AAAR 2021, Online conference. Oct. 2021.
3. **Bi., C**., Wang, C., Little, C. J. Integrated assessment across building and city scales using a system-of-systems framework. In: Proceedings of Indoor air 2020, Online conference. Nov. 2020.
4. **Bi, C.**, Krechmer, J. E., Frazier, G. O., Xu, W., Lambe, A. T., Claflin, M. S., Lerner, B. M., Jayne, J. T., Worsnop, D. R., Canagaratna, M. R., and Isaacman-VanWertz, G. Isomer-resolved quantification of particle-phase organic compounds using a coupled GC-CIMS/FID, AAAR 2020, Online conference. Oct. 2020.
5. **Bi, C**., Frazier, G., Krechmer, J., Xu, W., Lambe, A., Claflin, M., Lerner, B., Canagaratna, M., Jayne, J., Worsnop. D., Isaacman-VanWertz, G. Isomer-resolved Chemical Characterization of the Particle-phase Oxidation Products of Indoor Emissions Using Gas Chromatography-Chemical Ionization Mass Spectrometry, AAAR 2019, Portland, USA. July. 2019.
6. **Bi, C.**, and Xu, Y. Screen-level estimation of crawling-induced exposure to particle-phase phthalates, In: Proceedings of Indoor Air 2018, Philadelphia, USA. Jul. 2018.
7. **Bi, C.**, and Xu, Y. Direct transfer of phthalates from polyvinyl chloride flooring into house dust: a chamber study. In: Proceedings of Indoor Air 2018, Philadelphia, USA. Jul. 2018.
8. **Bi, C.**, and Xu, Y. Phthalates uptake by settled dust on polyvinyl chloride flooring and the influence of temperature. In: Proceedings of Indoor Air 2016, Ghent, Belgium. Jul. 2016.
9. **Bi, C.**, Maestre, J., Kinney, K., Siegel, J., Horner, S., and Xu, Y. Semi-volatile organic compounds in indoor settled and HVAC filter dust: association with seasons, childhood asthma and building characteristics. In: Proceedings of Indoor Air 2016, Ghent, Belgium. Jul. 2016.
10. **Bi, C.**, and Xu, Y. The influence of temperature on the fate and transport of indoor phthalates: a case study in a test house. In: Proceedings of Healthy Building 2015 America, Boulder, Colorado, USA. Jul. 2015.
11. **Bi, C.**, and Xu, Y. Fate and transport of phthalates in indoor environments and the influence of temperature: a case study in a test house. A&WMA's 108th Annual Conference & Exhibition, Raleigh, North Carolina, USA. Jun. 2015.

PROFESSIONAL ACTIVITIES

Membership in Professional Societies:

1. The American Association for Aerosol Research, 2019 – present.
2. International Society of Indoor Air Quality and Climate, 2014 - present.
3. American Society of Heating, Refrigerating, and Air-Conditioning Engineers, 2014 - present.