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Princeton University

Xiaohan (Sally) Li, Ph.D.

PROFESSIONAL EXPERIENCE

- **CIMES Postdoc Fellow, NOAA GFDL/Princeton University** — Princeton, NJ, USA
  Host: Paul Ginoux — 09/2023 - Present
  Research: Bridging Scales in Aerosol Microphysics: From Fundamental Understanding to Aerosol Representation in Atmospheric Climate Models
- **Visiting Scholar in Atmospheric Sciences, Texas A&M University** — College Station, TX, USA
  Host: Yue Zhang — 08/2023
  Research: Aerosol Phase States on Ice Nucleation: Measurements, Modeling, and Impacts

EDUCATION

- **Ph.D. in Civil and Environmental Engineering, Princeton University** — Princeton, NJ, USA
  Advisor: Ian C. Bourg — 08/2018 – 06/2023
  Thesis: Water, Salt, Organics, and Minerals: Improved Understanding of Aerosol Microphysics from a Nanoscale Basis
- **B.S. in Energy and Resources Engineering and Economics, Peking University** — Beijing, China
  Research Advisor: Dongxiao Zhang — 09/2014 – 07/2018

SELECTED HONORS & AWARDS

- **C. Ellen Gonter Environmental Chemistry Award**, American Chemical Society — 2023
  Highest award for graduate research in environmental chemistry.
- **Civil and Environmental Engineering Departmental Travel Award**, Princeton University — 2022
- **School of Engineering and Applied Science Travel Award**, Princeton University — 2022
- **Walbridge Fund Graduate Award for Environmental Research**, Princeton University — 2021
- **Merit Student** (Awarded 4 times), Peking University — 2014 – 2018
- **Cyrus Tang Scholarship** (Awarded 4 times), Cyrus Tang Foundation — 2014 – 2018
- **National Encouragement Scholarship** (Awarded 4 times), Chinese Ministry of Education — 2014 – 2018
- **National Scholarship**, Chinese Ministry of Education — 2017
- **Meritorious Winner**, International Mathematical Contest in Modeling — 2016
- **2nd Prize in National College Students Physics Competition**, Chinese Physics Society — 2015

PROFESSIONAL SERVICES

- **Peer Reviewer.** Journal of the American Chemical Society, ACS Earth and Space Chemistry, ACS Omega
- **Session Leading Convener**. American Geophysical Union (AGU) 2024 Fall Meeting — 2024
  A119: Recent advances in aerosol representation and its impacts on climate, air quality and health
- **Colloquium Organizer**. High Meadow Environmental Institute, Princeton University — 2021– 2022
  Colloquium for Graduate Certificate in Environmental Studies
- **Seminar Organizer**. Civil and Environmental Engineering, Princeton University — 2021– 2022
  Environmental Engineering and Water Resources (EEWR) Brown Bag Seminar
- **Session Co-chair.** American Geophysical Union (AGU) 2021 Fall Meeting — 2021
  A35N: Molecular-Scale Characterization of Atmospheric Aerosol Using Simulations and Experiments
- **Mentor.** High Meadow Environmental Institute, Princeton University — 2021
  Trained 3 undergraduate students in molecular dynamics simulation and data analysis.

PEER-REVIEWED PUBLICATIONS

First-authored papers

In prep/review

1. **Li X.,** Ginoux P. (2024). Angstrom Exponent-Based Parameterization: Separating Coarse and Fine Mode Optical Depth at the Global Scale. *Geophysical Research Letters*, in prep.
2. **Li X.,** Wolf M., Shen X., Steinke I., Lai Z., Niu S., China S., Shrivastava M., Zhang Z., Gold A., Surratt J.D., Bourg I.C., Cziczo D.J., Burrows S., Zhang Y. (2024). Parameterizing the Impact of Phase State on the Ice Nucleation Abilities of Organic Aerosols. *Environmental Science & Technology*, in review.

Published

3. **Li X.,** Bourg I.C. (2024). Hygroscopic growth of adsorbed water films on smectite clay particles. *Environmental Science & Technology*, 58, 2, 1109–1118.
4. **Li X.,** Bourg I.C. (2023). Phase State, surface tension, water activity, and accommodation coefficient of water–organic clusters near the critical size for atmospheric new particle formation. *Environmental Science & Technology*, 57, 13092-13103.
5. **Li X.,** Bourg I.C. (2023). Microphysics of liquid water in sub-10 nm ultrafine aerosol particles. *Atmospheric Chemistry and Physics*, 23, 2525-2556.

Co-authored papers

In prep/review

1. Ginoux P., **Li X.,** Prospero J.M., Gill T.E., Hsu N.C., Zhao M. (2024). Global-scale attribution of anthropogenic and natural dust sources and their emission rates based on MODIS Deep Blue aerosol products. *Reviews of Geophysics*, in prep.

Published

2. Wu Y., Li P., Yan B., **Li X.,** Huang Y., Yuan J., Feng X., Dai C. (2023). A Salt-Induced Tackifying Polymer for Enhancing Oil Recovery in High-Salt Reservoirs: Synthesis, Evaluation, and Mechanism. *Green Energy & Environment*, in press.
3. Zhou S., Zhang D., Wang H., **Li X.** (2019). A modified BET equation to investigate supercritical methane adsorption mechanisms in shale. *Marine and Petroleum Geology*, 105, 284-292.

PRESENTATIONS

- *"Molecular dynamics simulations of adsorbed water films on smectite clay particles"* (Oral, Invited)
  American Chemical Society Fall Meeting 2024 08/2024
- *"Disjoining pressure in adsorbed water films on smectite clay particles"* (Oral)
  61st Annual Meeting of The Clay Minerals Society and 5th Asian Clay Conference 06/2024
- *"Hygroscopic growth of adsorbed water films on smectite clay particles"* (Oral)
  American Chemical Society Spring Meeting 2024 03/2024
- *"Ongoing effort to implement aerosol microphysics in the GFDL atmospheric model"* (Oral, Invited)
  NOAA Geophysical Fluid Dynamics Laboratory Aerosol/Cloud Microphysics Roundtable 03/2024
- *"Water, salt, and organics in nano-aerosol particles: improved understanding of aerosol microphysics from molecular basis"* (Oral, Invited)
  McKelvey School of Engineering, University of Washington in St. Louis 04/2023
- *"How does water contribute to new particle formation?"* (Oral)
  American Chemical Society Spring Meeting 2023 03/2023
- *"Aerosol microphysics from molecular understanding to improved representation in climate models"* (Oral)
  NOAA Geophysical Fluid Dynamics Laboratory 02/2023
- *"Molecular dynamics simulations of the microphysics of liquid water in nano-aerosol droplets."* (Oral)
  The 40th Annual Conference of American Association of Aerosol Research 10/2022

- *"Molecular dynamics simulations of the effect of surface charge density and oxidation degree on the colloidal stability of graphene oxide"* (Oral & Poster)
  Goldschmidt Conference 2022 07/2022
- *"Molecular dynamics simulations of water, salt, and organics in nano-aerosol particles"* (Oral)
  American Chemical Society Spring Meeting 2022 03/2022
- *"Molecular dynamics simulations of liquid water microphysics in nano-aerosol droplets"* (Poster)
  American Geophysical Union 2021 Fall Meeting 12/2021
- *"Molecular dynamics (MD) simulation of the microphysics of liquid water in aerosol particles"* (Oral)
  Soft Materials Coffee Hour Seminar, Princeton University 11/2021
- *"Phase-mixing states of secondary organic aerosol: key to aerosol-cloud interactions"* (Oral)
  Environmental Engineering and Water Research Seminar, Princeton University 10/2020
- *"How secondary organic aerosol affects precipitation and radiative forcing"* (Poster)
  American Geophysical Union 2019 Fall Meeting 12/2019

TEACHING AND MENTORING EXPERIENCE

- **Teaching Assistant**. Princeton University Fall 2020
  CEE207: Introduction to Environmental Engineering Fall 2020
  — I hosted three precepts per week, developed weekly quizzes, held office hours, and graded homework.
- **Undergraduate Research Advising**. HMEI Environmental Internship Program 2020 – 2021
  — I identified research topics, developed research questions, designed experiments, and supervised the following students:
  - Yuno Iwasaki, Physics, Class of 2023, Princeton University
    Topics: Characterizing the microphysics of atmospheric organic aerosols using molecular dynamics simulations
  - George Dickinson, Civil and Environmental Engineering, Class 2023, Princeton University
    Topics: Molecular dynamics simulations of black carbon-water interactions in the atmosphere
  - Benjamin Henry, Civil and Environmental Engineering, Class 2022, Princeton University
    Topics: Molecular dynamics simulations of curvature impact on black carbon wettability

SCIENCE OUTREACH

- **Organizer**. Spring Info Science Event, Science Outreach Program, Princeton University. 04/2024
  Hands-on engaging science event for students in grades 4^{th} through 10^{th} grades to learn and explore science.
- **DEI Committee Member**. Atmospheric and Oceanic Program, Princeton University 2024 – Present
  Promoting more diverse, equitable, and inclusive environment for graduate students and postdocs.