

Elizabeth Spicer

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Education

- Ph.D. Meteorology**, University of Oklahoma – Norman, OK **Expected May 2026**
Advisor: Dr. Petra Klein
- M.S. Meteorology**, University of Oklahoma – Norman, OK **Aug. 2023**
Thesis topic: Carbon-Based Pollutant Analysis and Remote Sensor Validation Using Column-Observing Fourier Transform Infrared (FTIR) Spectrometers During the TRACER Campaign
Advisors: Dr. Sean Crowell and Dr. Feng Xu
- B.S. Chemical Engineering, Minor in Chemistry**, Virginia Tech – Blacksburg, VA **May 2021**
In-Major GPA: 3.63/4.00 | GPA: 3.31/4.00 | Dean's List multiple semesters

Employment History

- Graduate Research Assistant (Ph.D.)** **Aug. 2023 – Present**
The Boundary Layer Integrated Sensing and Simulation (BLISS) group, University of Oklahoma – Norman, OK
- Leading key analysis of the summer Houston, TX urban heat island to supplement understanding of sea/bay breeze development during the 2022 DOE ARM TRACER campaign
 - Promoting data harmonization through analysis- and literature review-based retrieval algorithm comparison with spectrometer community experts in preparation for a future publication
- Graduate Research Assistant (M.S.)** **July 2021 – Aug. 2023**
GeoCarb Mission, University of Oklahoma – Norman, OK
- Started spectrometer-based validation effort, establishing infrastructure for data collection and processing
 - Managed a team of ten, provided troubleshooting for, collected data during, and led analysis of the GeoCarb-TRACER campaign to observe carbon-based emissions in Houston, TX during the summer of 2022
 - Utilized machine learning techniques to analyze influence of urban, industrial pollutants on total column data
- Experimental Safety Lab Intern** **May 2019 – Aug. 2019**
BASF (hired by BCforward) – Wyandotte, MI
- Created Excel analysis tool to effectively communicate experimental hazards based on customer inputs
 - Performed detailed process hazard analysis via modeling with PHAST to improve safety of chemical storage
 - Aided incident investigation process by reporting on safety information in plant presentations
- Process Control/Process Engineering Co-op** **Aug. 2018 – May 2019**
Georgia-Pacific – Big Island, VA
- Consulted on engineering processes to maximize quality, efficiency, & safety of containerboard production
 - Assisted in onboarding new hires in lab and around mill, teaching safety, process, and testing techniques
 - Developed control logic and graphics in mill-wide effort to utilize big data and increase process sustainability
- Undergraduate Research Assistant** **Summers 2017, 2018**
Chemical Hazards Research Center, University of Arkansas – Fayetteville, AR
- Practiced hands-on experimental procedures involving lasers, gases, and fluid flow in wind tunnel
 - Conducted individual project regarding heat transfer, including data collection, analysis, & a technical report

First Author Conference Presentations

- Exploring the influence of local urban and industrial carbon-based pollutant sources on total column concentration enhancements in Houston, Texas during TRACER**
26th Conference on Atmospheric Chemistry, American Meteorological Society 104th Annual Meeting
- Urban and Industrial Carbon-Based Pollutant Monitoring Using EM27/SUNs in Houston, Texas During the Summer 2022 GeoCarb-TRACER Campaign (January 2023)**
25th Conference on Atmospheric Chemistry, American Meteorological Society 103rd Annual Meeting
- GeoCarb-TRACER Campaign: Urban and Industrial Carbon-Based Pollutant Tracking for Meteorological Studies and Remote Sensor Validation (July 2022)**
26th Annual George Mason University Conference on Atmospheric Transport and Dispersion Modeling

Honors and Awards

Outstanding Student Oral Presentation Award Jan. 2023

- Presented by the American Meteorological Society's 25th Conference on Atmospheric Chemistry

Inducted into Omega Chi Epsilon April 2021

- Invited to join the national chemical engineering honor society after demonstrating academic success

Service

Mentor to Undergraduate Research Assistants Aug. 2022 – May 2023, Jan. 2024 – Present

- Mentored undergraduate research students working on data analysis projects resulting in poster presentations
- Taught students Python; Bash; how to give effective science presentations; how to perform literature reviews

Research Instrumentation Tours March 2022

- Taught undergraduate students about atmospheric radiation and remote sensing techniques with live instrument demonstrations during two class sessions of METR 2613

Professional Affiliations

American Meteorological Society Nov. 2022 – Present

American Institute of Chemical Engineers (AIChE) 2017 – Present

Omega Chi Epsilon Honor Society April 2021 – Present

- National chemical engineering honor society. Selected based on academic success

Order of the Engineer April 2021

- Accepted the Obligation of an Engineer, pledging to uphold an ethical code and serve humanity

Virginia Tech College of Engineering Dean's Team Aug. 2019 – May 2022

- Recruited prospective students for the College of Engineering via individual meetings & information sessions
- Represented the College of Engineering at the Admissions and College of Engineering Open House events

Alpha Omega Epsilon Sorority (Historian 2017-2018) 2017 – 2021

- Professional and social sorority focused on promoting women in STEM, community outreach, and sisterhood
- As Historian, managed logistics and personnel, maintained image of the organization by documenting events

Virginia Tech Wind Turbine Team (Aerodynamics Sub-team Lead 2020-2021) 2016 – 2022

- Design, manufacture blades to optimize performance for Collegiate Wind competition & farming application
- Responsible for communicating progress and technical design in meetings, reports, and at competitions

National Speech & Debate Association 2013 – 2016

- Successful at impromptu speeches, diplomatic policy debates, and extensively researched arguments
- Awarded Degree of Excellence by National Speech & Debate Association for performance at competitions

Certifications

AIChE Safety and Chemical Engineering Education (SChE)	Process Safety Lessons Taught from Experience (License: ELA908) Importance of Process Safety (License: ELA950) Hazard Recognition (License: ELA951) Identifying and Minimizing Process Safety Hazards (License: ELA952) An Introduction to Managing Process Safety Hazards (License: ELA953) Inherently Safer Design (License: ELA984)
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Software Experience

CAD (Autodesk Inventor) | \LaTeX (Overleaf) | Linux Command Line + Shell Scripting (Bash) | MATLAB
Process Hazard Analysis (PHAST) | Process Simulation (Aspen Plus)
Python (Jupyter Notebook, Spyder) | R (RStudio)