

KATHERINE ERNST

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Education

North Carolina State University

2023-Present

Ph.D. in Chemical & Biomolecular Engineering

University of Michigan, Ann Arbor

2016-2020

B.S. in Chemical Engineering, magna cum laude

Work Experience

Particulate Solid Research Inc.

January 2021 - July 2023

Research Development Engineer II

Chicago, IL

- Completed a variety of industrial-scale research projects on the hydrodynamics of granular-fluid flows for industrial-scale fluidized beds and bulk solids transport systems for international research consortium
- Wrote and submitted proposals to clients outlining proposed research costs, experimental design, and project timeline
- Led project teams by designing test equipment, creating technical drawings in CAD software, coordinating with technicians during fabrication, and executing experiments, ensuring that projects were completed on time and under budget
- Analysed data from testing and compiled findings in project reports, research briefs, and update presentations
- Stayed informed on state-of-the-art research trends by conducting thorough literature reviews and actively participating in conferences
- Taught particle technology course at PSRI fluidization seminars and created instructional videos for online webinars

Particulate Solid Research Inc.

May 2022 - July 2023

Safety Coordinator

Chicago, IL

- Coordinated with safety consultants to schedule safety trainings and site inspections to better and uphold company safety standards
- Performed pre-startup inspections and issued permits for newly installed equipment and testing apparatuses
- Led near-miss incident investigations, issued reports and gave presentations to communicate safety procedures
- Ensured that safety program was up to date with city, state and federal regulations
- Organized annual Safety Advisory Committee meetings with membership company representatives to report safety updates and gather feedback to improve safety program

Academic Research Experience

Fundamentals of Hollow Fiber Formation

August 2023 - Present

Advisor: Dr. Saad Khan

North Carolina State University

- Lead a research project on the formation of hollow fibers to correlate rheological and viscoelastic properties of polymer melts to the final fiber properties for nonwoven applications
- Utilize DHR-3 rheometer to determine the zero shear viscosity and relaxation time of polypropylene melts at different temperatures for polymer property characterization
- Conduct melt spinning trials to form hollow fibers, analysing cross-sectional geometry through calculations of circularity and hollowness

M3 Monarch Migration Study

July 2018 - December 2019

Advisor: Dr. David Blaauw

University of Michigan

- Collaborated with a multidisciplinary group of researchers to track monarch butterfly migration using mm-scale computing hardware
- Designed and conducted experiments to verify the robustness of the butterfly localization algorithm
- Wrote technical documents to instruct over 100 volunteers across North America to operate environmental data loggers and upload data files weekly

Technical Skills

Computer-aided Design: AutoCAD, TurboCAD, Fusion360

Programming and Computation: C++, MATLAB, Mathematica, Barracuda Virtual Reactor

Honors and Awards

James B Angell Scholar, University of Michigan award for distinguished academic achievement

Best Paper Award, MobiCom Annual International Conference 2021