

Ziyan Wu

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[Google Scholar](#) | [LinkedIn](#)

EDUCATION

2026	Ph.D.	University of Wisconsin - Madison, Madison, WI Environmental Engineering Delta Certificate in Higher Education Teaching and Learning Advisor: Prof. Mohan Qin, Prof. Haoran Wei <u>Expected graduation date: May 2026</u>
2020	M.S.	Stanford University, Stanford, CA Environmental Engineering
2018	B.S.	Northern Arizona University, Flagstaff, AZ Environmental Engineering

HONORS AND AWARDS

2025	UW–Madison Becker Travel Supplement
2024	UW–Madison Student Research Grants Competition
2024	UW–Madison Becker Travel Supplement
2023	UW–Madison Three Minute Thesis (3MT) finalist
2023	UW–Madison Anna Grant Birge Memorial Award
2022	American Chemical Society Fall 2022 Best Student Speaker
2018	NAU Magna Cum Laude for degree honor
2018	NAU Interns-to-Scholars Award
2017	NAU Hooper Undergraduate Research Award
2017	NAU Dean’s List for Exceptional Academic Performance
2015	NAU First-level Scholarship for Undergraduate Student

PUBLICATIONS

Peer-Reviewed Publications

1. **Wu, Z.**, Janssen, S., Tate, M., Qin, M., Wei, H. Regenerable Membrane Sensors for Ultrasensitive Nanoplastic Quantification Enabled by A Data-driven Raman Spectral Processing Algorithm. *Environ. Sci. Technol.* 2025.
2. **Wu, Z.**, Janssen, S., Tate, M., Wei, H., Qin, M. Adaptable Plasmonic Membrane Sensors for Fast and Reliable Detection of Trace Low-Micrometer Microplastics in Lake Water. *Environ. Sci. Technol.* 2024.
3. **Wu, Z.**, Qin, M., Wei, H. Improved Reliability of Raman Spectroscopic Imaging of Low-Micrometer Microplastic Mixtures in Lake Water by Fractionated Membrane Filtration. *ACS EST Water.* 2023.
4. **Wu, Z.**, Cai, S., Cho, S. W., Wei, H., Qin, M. Laboratory Filter Membranes May Release Organic Particles That Affect Water Analysis. *ACS EST Engg.* 2022.
5. Mohebbi, A., Akbariyeh, S., Maruf, M., **Wu, Z.**, Acuna, J., Adams, K. R., Mohebbi, A. Development of Rainfall Intensity-Duration-Frequency (IDF) Curves for the State of Arizona based on Dynamically Downscaled Climate Data. *Journal of Hydrologic Engineering.* 2021.
6. Dong, H., **Wu, Z.**, Liu, M., Tarpeh, W. The role of intraparticle diffusion path length during electro-assisted regeneration of ion exchange resins: implications for selective adsorbent design and reverse osmosis pretreatment. *Chemical Engineering Journal.* 2020.

Publications Under Revision and In Preparation

1. **Wu, Z.**, Chen, L., Peng, P., Qin, M., Wei, H. A Two-Step Artificial Intelligence Framework for Discriminating and Quantifying Mixed Pollutants. *Submitted.*

2. Burns, M., **Wu, Z.**, Mirsha, T., Beaudet, A., Mangus, K., Qin, M. Degradation Kinetics for Organic Nitrogen in Bioelectrochemical Systems towards Ammonia Recovery. *Submitted*.
3. **Wu, Z.**, Wei, H., Qin, M. Quantitatively Imaging and Detecting Microplastics and Nanoplastics Empowered by A Two-Stage, Streamlined Artificial Intelligence Framework. *In preparation*.
4. **Wu, Z.**, Janssen, S., Tate, M., Wei, H., Qin, M. Decoding the Oxidation Digestion Mechanism During Nanoplastic Extraction from the Great Lakes Enabled by a Customizable Detection Framework. *In preparation*.
5. **Wu, Z.**, Janssen, S., Tate, M., Dehnert, G., Wei, H., Qin, M. Advancing Quantification of Low Micrometer Microplastics and Nanoplastics in Freshwater Environments: Research Opportunities and Perspectives. *In preparation*.
6. **Wu, Z.**, Qin, M. Selectively Recovering Ammonia from Nitrate Contaminated Groundwater via a Cyclic Voltammetry Modified Copper Electrode. *In preparation*.

Non Peer-Reviewed Publications

1. **Wu, Z.**, Ho, C., Huang, J. Laboratory Performance Evaluation of Co-Polymer Based Dust Suppressant Mixed with Poorly Sand. *IOP Conf. Ser.: Mater. Sci. Eng.* **603** 052044. 2019.
2. Ho, C., **Wu, Z.**, Zhang, Z., Zhao, P., Huang, J. Using Co-polymers to Improve Soil Strength and Mitigate Fugitive Dust Emissions: Laboratory Evaluation. *E3S Web Conf.*, 92 (2019) 11013. 2019.
3. Huang J., Ho CH., **Wu Z.**, Gao Y., Zhang Y., Zhang Z. Evaluation of Co-Polymer Based Dust Suppressant Mixed with Clayey Soil in Unpaved Road: Lab Experiment. *Transportation and Geotechniques: Materials, Sustainability and Climate, Sustainable Civil Infrastructures*. 2018.
4. Huang J., Ho CH., Gao Y., **Wu Z.**, Zhang Y. Evaluation of Polymer Based Dust Suppressant Mixed with Clayey Soil in Unpaved Road: Lab Experiment. *Transportation and Geotechniques: Materials, Sustainability and Climate, Sustainable Civil Infrastructures*. 2018.

RESEARCH PRESENTATIONS

1. **Wu, Z.**, Janssen, S., Tate, M., Qin, M., Wei, H. *Quantitative Detection of Nanoplastics by Coupling a Novel Raman Spectral Processing Algorithm with Regenerable Membrane Sensors*. AEESP. 2025. Oral presentation.
2. **Wu, Z.**, Janssen, S., Tate, M., Dehnert, G., Wei, H., Qin, M. *Challenges and Opportunities of Detecting Low Micrometer Microplastics and Nanoplastics in the Freshwater Environments*. International Association for Great Lakes Research, Milwaukee. 2025. Oral presentation.
3. Martinez, Y., Ruland, J. **Wu, Z.** *Detecting Micro- and Nano-plastics in the Natural Environment Via an Automatic Approach*. 2025 Undergraduate Symposium. Oral presentation.
4. **Wu, Z.**, Janssen, S., Tate, M., Wei, H., Qin, M. *Single-Particle Detection of Low Micrometer Microplastics in Lake Water Using Plasmonic Membrane Sensors*. ACS. 2024. Oral presentation.
5. **Wu, Z.**, Janssen, S., Tate, M., Wei, H., Qin, M. *Detecting Low Micrometer Microplastics in Lakes Using a Plasmonic Membrane Sensor*. Water@UW-Madison. 2024. Poster presentation.
6. **Wu, Z.**, Qin, M., Wei, H. *Reliable Detection and Characterization of Low Micrometer Microplastics in Lake Water Using Raman Spectroscopy Coupled with Fractionated Membrane Filtration*. Wisconsin Section AWWA. 2023. Oral presentation.
7. **Wu, Z.**, Qin, M., Wei, H. *Reliable Detection and Characterization of Small Microplastics in Lake Water Using Raman Spectroscopy Coupled with Fractionated Membrane Filtration*. UW-Madison Day at the Capitol. 2023. Poster presentation.
8. **Wu, Z.**, Qin, M., Wei, H. *Raman Spectroscopy Coupled with Fractionated Membrane Filtration Improves the Quantification Reliability of Low Micrometer Microplastics*. AEESP. 2023. Oral presentation.
9. Chia, C. S., **Wu, Z.**, Qin, M. *Evaluating the Effects of UV Rays on Microplastic Release by Various Plastic Debris in Different Environmental Conditions*. CBE Undergraduate Research Poster Session. 2023. Poster presentation.
10. Brown, C., **Wu, Z.**, Qin, M. *Evaluating the Release of Microplastics and Dissolved Organic Carbons from HDPE Under UV Exposure*. Water@UW-Madison. 2023. Poster presentation.
11. **Wu, Z.**, Cai, S., Cho, S. W., Wei, H., Qin, M. *Laboratory Filter Membranes May Release Organic Particles that Affect Water Analysis*. ACS. 2022. Oral presentation.

12. Ho, C., **Wu, Z.**, Zhang, Z., Zhao, P., Huang, J. “*Evaluation of Co-Polymer Based Dust Suppressant Mixed with Clayey Soil in Unpaved Road: Lab Experiment*”. GeoChina. 2018. Oral presentation.
13. **Wu, Z.** Mohebbi, A. “*Development and Update of Rainfall and Runoff Intensity-Duration-Frequency Curves for Arizona State Counties in Response to Climate Change*”. Student Water Symposium. 2018. Oral presentation.
14. **Wu, Z.** “*The Engineers Apocalypse: "Natural" Disasters and Design Better World Seminar Series*”. ASCE and Green Jacks. 2018. Oral presentation.
15. **Wu, Z.** Ho, C. “*Evaluation of Co-polymer Based on Dust Suppressant Mixed with Three Types of Soil in Unpaved Roads: Lab Experiment*”. National Conference on Undergraduate. 2018. Poster presentation.
16. **Wu, Z.** Mohebbi, A. “*Development and Update of Rainfall and Runoff Intensity-Duration-Frequency Curves for Arizona State Counties in Response to Climate Change*”. Undergraduate Research Symposium. 2018. Poster presentation.
17. **Wu, Z.** Zhang, Z. H., Ho, C. *Performance Evaluation of Three Dust Suppressants Mixed with Sandy Soil in Unpaved Road: Lab experiment*. 14th Arizona Pavements / Materials Conference. 2018. Poster presentation.

RESEARCH EXPERIENCE

Research Assistant – Qin Group, University of Wisconsin - Madison, WI 2021 – 2026

Co-advised by Prof. Haoran Wei, University of Wisconsin - Madison

“Microplastics (MPs), nanoplastics (NPs), Raman spectroscopy, electrified process for resources recovery”

- Develop a detection framework for MPs and NPs via Raman spectroscopy and membrane filtration
- Recover ammonia from wastewater through an electrocatalytic process

Research Assistant – Kate Maher Group, Stanford University, CA 2019 – 2020

“Examining Alternative Choices to the Tap Drinking Water Using Bottled Water Sales across the US”

- Process and analyze the dataset by Python based on various matrices
- Conduct a literature review of current research concerning water quality and bottled water sales
- Generate plots and maps of bottled water sales relating to different parameters

Graduate Student Researcher – Tarpeh Lab, Stanford University, CA 2019 – 2020

“Nitrogen and phosphate recovery from urine and wastewater using biochar and retreated biochar”

- Evaluate the absorption capacity of feces biochar for ammonia and phosphate in fresh urine
- Determine the recovery efficiency of ammonia and phosphate through ion chromatography (IC)

Operator – The William and Cloy Codiga Resource Recovery Center, CA 2019 – 2020

- Monitor the daily performance of all facility systems and treatment processes
- Process water quality data using Python and program the app to process the daily operational data
- Conduct lab analysis for the water quality of each treatment process

Undergraduate Research Intern – Northern Arizona University, AZ 2017 – 2018

“Development and Update of Rainfall and Runoff Intensity-Duration-Frequency Curves for Arizona State Counties in Response to Climate Change”

- Ran the Weather Research and Forecasting (WRF) model in a Linux System
- Arranged and analyzed a set of 60-year precipitation data with minute-level temporal resolution
- Used MATLAB to analyze data and generate figures
- Cooperated with the research mentor to write a journal paper

Undergraduate Research Assistant – Northern Arizona University, AZ 2017 – 2018

“Evaluation of Dust Suppressant Mixed with different types of Soils in Unpaved Road: Lab experiment”

- Performed a series of lab experiments, including an unconfined shear stress test and a surface strength test
- Attended and presented at several state-wide conferences
- Cooperated with the research mentor and wrote several conference papers

TEACHING AND MENTORING EXPERIENCE

Teaching Experience

Graduate Student Mentor – UW-Madison, WI

2022 – 2026

- Mentor undergraduate students from various departments
- Assisted undergraduate students in the development of a research plan

Graduate Teaching Assistant – UW-Madison, WI 2024

CIVENGR 320: “Environmental Engineering”

- Lead the Discussion Sections
- Held office hours to aid students with their assignments

Graduate Teaching Assistant – UW-Madison, WI 2021

ENV 956: “Advanced Environmental Remote Sensing”

- Assisted with the class and laboratory instruction
- Held office hours to help students with their assignments

Graduate Teaching Assistant – UW-Madison, WI 2020

ENV 556: “Digital Image Processing, Remote Sensed Data”

- Assisted the instructor with class and laboratory instruction
- Helped students with assignments and graded students’ submissions

Graduate Teaching Assistant – Stanford University, CA 2019

CEE 175S/275S: “Environmental Entrepreneurship and Innovation”

CEE 176G/276G: “Sustainability Design Thinking”

- Arranged the course logistics with the instructor
- Led discussion sections and guided students’ thinking from different perspectives

Tutor – Stanford University, CA 2018

- Tutored undergraduate students in math, chemistry, physics, economics, and engineering
- Held appointments each week and supported students with their classwork

Undergraduate Teaching Assistant – Northern Arizona University, AZ 2017

PHI 105: “Ethics of Engineering Design”

- Assisted the instructor in preparing the class and organizing the class
- Graded students’ homework and essays

Mentoring Experience (Mentoring Undergraduate Students)

[#]: Undergraduate Research Scholars (URS) Program

Bennett Kohlhepp	Computer Science	2025 – 2026
Patrick Wang [#]	Computer Science	2025 – 2026
Angela Wang [#]	Computer Science	2025 – 2026
Yousif Zakir [#]	Environmental Engineering	2025 – 2026
Lola Alshihri [#]	Chemical Engineering	2025 – 2026
Keng Chang [#]	Computer Science	2025 – 2026
Sarah Mammen	Environmental Engineering	2025
Maddie Scheer	Environmental Engineering	2025
Tiana Angela Alfsen	Chemistry	2024 – 2025
Jaron Ruland [#]	Electrical Engineering	2024 – 2025
Jake Steger	Environmental Engineering	2024 – 2025
Jessica Becker	Environmental Engineering	2024 – 2025
Yolitz Martinez [#]	Computer Engineering	2024 – 2025
Nicole Vizer	Environmental Engineering	2023 – 2024
Clara Zwolanek	Environmental Engineering	2023
Elizabeth Lettner	Environmental Engineering	2023
Brandon Yang	Chemistry	2023 – 2025
Pai Peng	Data Science	2023 – 2025
Chen Li	Computer Science	2023 – 2025
Chen Shien Chia	Chemical Engineering	2022 – 2024
Esh Kumar [#]	Computer Engineering	2022 – 2023
Lucas Maertz	Environmental Engineering	2021

Chloe Jane Brown

Environmental Engineering

PROFESSIONAL SERVICE

Invited Workshop/Panel Presentations

The Chemistry Undergraduate Research Board panel on “What to Expect in Research”	2023
Stanford Science Circle on “ <i>Environmental engineering: what should we do to save the world</i> ”	2019

Outreach Activities

Wisconsin Science Fest	2025
UW-Madison Science Expeditions	2025
UW-Madison Engineering EXPO	2024
UW-Madison Engineering EXPO	2023

Manuscript Reviewer

ACS Omega
Desalination and Water Treatment

Application Reviewer

Freshwater@UW	2025
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CERTIFICATIONS

Morgridge Entrepreneurial Bootcamp – WI	2024
Professional certification: Fundamental Engineer (FE) – AZ	2017