

Mrittika Hasan Rodela
Assistant Professor
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My work characterizes physicochemical properties of wildfire ash, water quality impacts and treatability post wildfires. My aim is to increase climate preparedness for municipal water providers and support water utilities in adhering to regulatory standards following extreme events and climate disturbances, safeguarding the quality of drinking water.

Education

- Ph.D., Civil Engineering (CGPA 3.98), August 2023
Washington State University, Pullman, WA, USA
Dissertation: Physicochemical Characterization and Treatment of Wildfire Ash Particles in Drinking Water
- Bachelor of Science, Civil Engineering (CGPA 3.56), February 2016
Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh

Professional Appointments:

- Assistant Professor, Civil and Construction Engineering and Management, The University of Texas at Tyler, August 2025-present
- Visiting Assistant Professor, Montana Technological University, August 2024-July 2025
- Postdoctoral Researcher, Montana State University, Fall 2023-Summer 2024
- Instructor, Washington State University, Fall 2022
- Graduate Research Assistant, Washington State University, Fall 2019-Spring 2020; Spring 2022
- Graduate Teaching Assistant, Washington State University, Fall 2020, Fall 2021, Spring 2023
- Lecturer, Sonargaon University, Bangladesh, August 2016-July 2019

Research Experience

- **Research Project, Montana Technological University**
 1. Advanced Manufacturing Technology for Water Filtration and Purification
Funding Agency: United States Army Research Laboratory (ARL)
- **Postdoctoral Research Projects**
 1. Water security: Evaluation of drinking water system challenges and cost implications to assess preparedness for wildfire in the Western US
Funding Agency: United States Forest Service (USFS)
 2. Monitoring and managing microbial water quality for food safety: Characterization of wildfire ash runoff contamination potential of agricultural waters
Funding Agency: United State Department of Agriculture (USDA)
 3. Collaborative Research: Evaluating the Unique Composition, Environmental Stability, and Export of Dissolved Pyrogenic Organic Matter in Wildfire-Impacted Watersheds
Funding Agency: National Science Foundation (NSF), Environmental Engineering
 4. Ensuring Water Security with Increasing Wildfire Threats in the Western US: Drinking Water Treatment and Ecosystem Services
Funding Agency: United States Forest Service (USFS)

- **Research Assistant, Washington State University**

- Physicochemical characterization of wildfire and lab simulated ash and implications for particle stability in surface waters. Studied physical and chemical properties of solid wildfire ash particles and linked physicochemical properties of ash particles to possible downstream mobilization and possible source water contamination.
- Wildfire ash and lab ash characteristics and water quality effects in environmentally relevant water chemistries. Studied how physicochemical properties of different color ash particles affect water quality parameters and can potentially impact drinking water treatment processes.
- Conventional drinking water treatability of wildfire and lab produced ash particles. Studied water treatment processes of ash-water mixtures using different coagulants to understand the ash removal mechanism from water.

Grant experience

- UT STARS Research Grant — \$140,000 (Spring 2026)

Publications

- Rodela, M. H., Chowdhury, I., & Hohner, A. K. (2022). Emerging investigator series: physicochemical properties of wildfire ash and implications for particle stability in surface waters. *Environmental Science Processes & Impacts*. <https://doi.org/10.1039/D2EM00216G>
- Rodela, M.H., Ali, A.B., “Comparative Study between Manual Analysis and Computer Software Analysis (ETABS) of a Residential Building in Dhaka City” in the proceedings of the *International Conference on Structural Engineering Research (iCSE-2019)*
- Ali, A.B., Rodela, M.H., “Comparative Study of Circular Concrete Column with Different Types of Ferro-cement Confinement” in the proceedings of the *International Conference on Structural Engineering Research (iCSE-2019)*

Publications in Preparation

- Characterization of wildfire ash water quality effects compared to laboratory produced ash across burn severities. Submitted in the journal “Water Research X”.
- Conventional drinking water treatability of wildfire ash. To be submitted in “Water Research X”.
- Physicochemical characterization and treatability of different temperature lab ash in drinking water. (under internal review) To be submitted in “Environmental Science: Processes & Impacts”.

Presentation and Posters

- Stability and Treatment of Wildfire Ash Particles in Water, Pacific Northwest International Section of the Air & Waste Management Association (A&WMA), (PNWIS), November 2024.
- Wildfire Ash Effects on Source Water Quality and Treatability, WaterSmart Innovations, September 2024.
- Effects of Wildfire Ash and Laboratory Produced Ash Particles on Source Water Quality and Treatability, The Montana Section of the American Water Works Association (MSAWWA), April 2024.
- Wildfire Ash Impacts on Source Water Quality, Particle Stability and Treatability, Water Quality Technology Conference, American Water Works Association (AWWA), November 2023.
- Stability of Wildfire Ash Particles and Effects on Water Quality, Association of Environmental Engineering and Science Professors (AEESP), June 2023.
- Wildfire Ash Characterization and Implications for Post-Fire Water Effects, Post-fire Research and Monitoring Symposium, Oregon State University, Oregon, Spring 2023.

- Treatment of Wildfire Ash Particles in Drinking Water, Summer Poster Symposium for Undergraduate Researchers, Washington State University, Summer 2023.
- Mitigating Wildfire Impacts on Water Resources, Summer Poster Symposium for Undergraduate Researchers, Washington State University, Summer 2023.
- Treatment of Wildfire Ash in Drinking Water, 104th Annual (American Meteorological Society) AMS Meeting 2024

Teaching Experience

- Introduction to Environmental Engineering, CENG 3371, The University of Texas at Tyler, Spring 2026
- Environmental Engineering Design CENG 5391, CENG 4371; Fluid Mechanics and Hydraulics CENG 3310, The University of Texas at Tyler, Fall 2025
- Environmental Sampling II, EENV 242; Pollution Prevention and Sustainability, EENV 250, Montana Tech University, Spring 2025
- Air Diffusion Modelling, EENV 313, Montana Tech University, Fall 2024
- Instructor, Fluid Mechanics, CE 315, Washington State University, Fall 2022
- Teaching Assistant, Theory courses: CE 211: Statics, CE 341: Introduction to Environmental Engineering, CE 418/518: Hazardous Contaminant Pathway Analysis, CE 405: Decision Making for Sustainable and Resilient Infrastructure
- Teaching Assistant, Lab courses: CE 415/515: Environmental Measurements, CE 416: Hydraulic Engineering Laboratory
- Lecturer, Sonargaon University, Bangladesh. Fall 2016-Summer 2019

Mentoring Experience

Graduate Students

- **Kriti Sigdel**, M.S. Thesis Committee Member, 2026.
Thesis: *Mechanical, Mechanistic, and Performance Assessment of Untreated and Chemically Treated Rice Straw Fiber-Modified Asphalt Binder*
- Co-Mentor, Caroline Martin, M.S. Student, Environmental Engineering, Montana State University (Fall 2023 – Summer 2024)
- Co-Mentor, Jack Heneghan, M.S. Student, Environmental Engineering, Montana State University (2023 – Summer 2024)

Undergraduate Students

- Yara Farghali Mohamed, Washington State University, Fall 2022
- Mohammed Abighail, Washington State University, Fall 2022
- Md Anisur Rahman, Sonargaon University, Fall 2017
- Md Mojibur Rahman, Sonargaon University, Fall 2017
- Shakil Ahmed, Sonargaon University, Fall 2018
- Taser Rahman, Sonargaon University, Fall 2018
- Taser Ali, Sonargaon University, Fall 2018
- Asma Khatun, Sonargaon University, Summer 2018
- Md Salim Hossen, Sonargaon University, Summer 2018
- Md Amirul Islam, Sonargaon University, Summer 2018

K-12 Students

- Vikram Hari, K-12 students at Montana Tech University, Summer 202
- Nandhini Mahesh, K-12 students at Montana Tech University, Summer 2025
- Ruby Pascal, NSF REU students, Washington State University, Summer 2023
- Tanner Miller, NSF REU students, Washington State University, Summer 2023

Awards and Fellowship

- Best Dissertation Award, Civil and Environmental Engineering Department, Washington State University, 2023
- Secured 2nd place at research presentation, The Montana Section of the American Water Works Association (MSAWWA) conference, April 2024
- Secured 1st place at 3-Minute Thesis Competition, Civil and Environmental Engineering Department, Washington State University, 2023
- Secured 3rd Place at 3-Minute Thesis Competition, Voiland College of Engineering and Architecture, Washington State University, 2023
- Suksdorf Fellowship at Washington State University (Fall 2019-Spring 2021)
- Best Student Organization Award, 2023 for “Association of Bangladeshi Students and Scholars (ABSS) from Graduate Professional Student Organization (GPSA)
- Government Technical Student Scholarship for 4 years (2011-2015)
- The Daily Star Award Recipient for outstanding A’ level results, 2010
- The Daily Star Award Recipient for outstanding O’ level results, 2008

Peer Review Experience (ad hoc)

- Peer Reviewer, Journal 1 Biomass and Bioenergy
- Peer Reviewer, Journal 2 American Water Works Association (AWWA) Water Science
- Peer Reviewer of AWWA University Student Activities Committee (USAC)

Professional Affiliations

- Association of Environmental Engineering and Science Professors (AEESP)
- American Water Works Association (AWWA)
- Texas American Water Works Association (TAWWA)
- Society of Women Engineers

Conference Work

- Ratliff Relay Poster Competition Judge, The University of Texas at Tyler, November 2025
- Session Chair, Professional Skills Development, Pacific Northwest International Section of the Air & Waste Management Association (A&WMA), (PNWIS), November 2024.
- Auditing judge in the University of Idaho for a senior design project competed in 31st WERC Environmental Design Contest, in New Mexico State University, Spring 2022
- Session Chair, Student Academic Debate Sessions, English Debating Club, Sonargaon University (Summer 2018).

Invited Guest Lectures (Scheduled)

- Invited Guest Lecture, Chemical and Biomolecular Engineering, University of Nebraska–Lincoln (March 2026)
- Invited Guest Lecture, Voiland College of Engineering, Washington State University (April 2026)

News and Events

- Research Feature, *Emerging Investigator Series* -“Physicochemical properties of wildfire ash and implications for particle stability in surface waters,” featured by the **Royal Society of Chemistry** (November 2022) https://blogs.rsc.org/em/2022/10/11/emerging-investigator-series-amanda-hohner/?doing_wp_cron=1757805412.0432898998260498046875
- Dissertation Award Feature-Best Dissertation Award showcased in the Department of Civil & Environmental Engineering Magazine, Washington State University (2023)

- University Social Media Feature-Washington State University (official Instagram), recognition for 3-Minute Thesis Competition award (2023)

Service and Outreach

- Advisor of Chi Epsilon Honors Society (Fall 2025-present)
- Invited Speaker at Society of Women Engineering (Fall 2025)
- Participant, STEM in Action, Spring Tech Day, Montana Technological University (Spring 2025)
- Participant, STEM in Action, Fall Tech Day, Montana Technological University (Fall 2024)
- Selected Departmental Representative (by invitation) — Schweitzer Engineering Hall Groundbreaking Ceremony, Washington State University; sole student representative from the Civil Engineering Department; led tours and hosted university leadership, including President Kirk Schulz
- Participant, Kids' Science and Engineering Day (KSED) Program, Washington State University, contributed to engineering education and student engagement activities (Spring 2022)
- President of Civil and Environmental Engineering Graduate Student Association (CEEGSA) (Fall 2021- Summer 2023)
- General Secretary of Association for Bangladeshi Students and Scholars (ABSS) (Fall 2022-Summer 2023)
- Advisor of English Language and Debate Club, Sonargaon University, Bangladesh (Fall 2017-Summer 2019)
- Active Member, Civil Engineering Student Association, BUET, 2011-2015
- Active Member, Badhon-A Blood Donating Organization, 2012-2015
- Panel Editor, Souvenir Magazine, BUET Civil Festival 2013

Skills Summary

- Instrumental skills: Tescan Scanning Electron Microscope (SEM), Seal Analytical AQ-400, Bench scale jar tester, Malvern Mastersizer 3000, Zetasizer Nano ZS (Malvern Instruments Inc.), Shimadzu TOC- Analyzer with nitrogen module, TruSpec-CHN elemental analyzer (LECO), Quartz Crystal Microbalance with Dissipation Monitoring (QCM-D), HACH Turbidimeter 2100, HACH Spectrophotometer, Agilent Inductively coupled plasma mass spectrometry (ICP-MS), VWR Symphony B10p pH meter, Muffle Furnace
- Programming Software: C++ Programming, MATLAB, R Studio/ R
- Modeling & Other Software: HEC-RAS, QGIS, ArcGIS
- Drawing Software: AutoCAD
- Design Software: ETABS, SAP, STAAD Pro

Grant Experience and Outreach Activities

- Received grants of \$3000 for CEEGSA during the tenure period (Fall 2021- Summer 2023)
- Received grants of \$15000 for ABSS during the tenure period (Fall 2022- Summer 2023)

References

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