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

- **Projects in Postdoc**
  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)
- Mentored two REU students, Washington State University, Summer 2023
- 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 Writing experience

- Submitted a grant proposal to Engineering Research Initiation (ERI), National Science Foundation CBET Environmental Engineering Program, 2024.

Teaching Experience

- 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. Developed content for the course. 50 enrolled. Overall course evaluation (3.9/5.0)
- 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. Made videos of lab experiments along with guiding students in lab
- Lecturer, Sonargaon University, Bangladesh. Fall 2016-Summer 2019

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 (iCSER-2019)*
- Ali, A.B., Rodela, M.H., "Comparative Study of Circular Concrete Column with DifferentTypes of Ferro-cement Confinement" in the proceedings of the *International Conference on Structural Engineering Research (iCSER-2019)*

Publications in Preparation

- Wildfire ash and laboratory produced ash particle characteristics and water quality effects in environmentally relevant water chemistries. Submitted in the journal "Science of The Total Environment".
- Conventional drinking water treatability of wildfire ash. To be submitted in Water Research.
- 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

- 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.

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)

Professional Affiliations

- Association of Environmental Engineering and Science Professors (AEESP)
- American Water Works Association (AWWA)

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

Leadership Skills

- President of Civil and Environmental Engineering Graduate Student Association (CEEGSA) (Fall 2021- Summer 2023)
- General Secretary of Association for Bangladeshi Students and Scholars (ABSS)
- Auditing judge in University of Idaho for a senior design project competed in 31st WERC

Environmental Design Contest, in New Mexico State University.
- Coordinator of English Language and Debate Club, Sonargaon University, Bangladesh
- 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

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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