

Faisal Ahmed

Ph.D. Student

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ResearchGate ; Google Scholar; LinkedIn

Education

Ph.D. (Running)	Department of Civil Engineering at University of North Dakota (Fall 2023 - Present) Academic program: Environmental Engineering Research focus: Developing advanced adsorption materials from bio-waste, engineer membrane separation systems, and conducting environmental analysis to detect and remove per- and polyfluoroalkyl substances and other emerging contaminants from water systems. Advisor: Mahmut S. Ersan, Ph.D.
M.S.	GIScience and Geo-environment at Western Illinois University (2021- 2023) Thesis title: A Comparative Study of Environmental Education in Conventional versus Alternative Schools in Bangladesh: A Case Study. Advisor: Christopher Sutton, Ph.D.
M.S.	Environmental Sciences, Jahangirnagar University, Bangladesh (2010-2012) Thesis title: Sanitation and environmental status of nearby village around the industrial activities of Dhaka Export Processing Zone (DEPZ), Bangladesh. Advisor: Abdu Kadir Ibne Kamal, Ph.D.
B.S.	Environmental Sciences, Jahangirnagar University, Bangladesh (2005-2010)
Higher Secondary	Adamjee Cantonment College, Dhaka, Bangladesh (2005)

Research Interests

PFAS, Water and Wastewater treatment, Membrane distillation, Nano-material synthesis, Pharmaceutical pollution, Waste valorization, Environmental monitoring with GIS.

Awards and Honors

- Poster Competition, **First Place** in **2026 David Loveday Memorial Scholarship**, Water Quality Association's (WQA) Convention + Expo in Miami, Florida, on April 29 and 30, 2026.
- Poster Competition, **First Place** in **NDSU Soybean Symposium**, March 5th, 2026, North Dakota State University, Fargo, ND, United States.
- Fresh Ideas Poster Competition 2025, **First Place** in **ND Water & Pollution Control Conference** (NDWPCC), October 14-16, 2025, Fargo, ND, United States.
- **Poster Presentation Award, Surface Water Treatment Workshop**, North Dakota Section of the American Water Works Association (AWWA), April 22–24, 2025, West Fargo, ND, United States.
- **Dennis Lubbs Memorial Geography Scholarship**, Department of Earth, Atmospheric, and GIS, Western Illinois University, 2022–2023.
- **President Huang International Scholarship**, Western Illinois University Foundation, 2022–2023.
- **International Commitment Scholarship**, Western Illinois University Foundation, 2021–2022 & 2022–2023.
- **UND Angel Fund Scholarship**, University of North Dakota, Fall 2023.
- **UND Open Door Scholarship**, University of North Dakota, Fall 2023.

Publication

1. **Ahmed, F.**, Perreault, F., Ali, M. E. A., & Ersan, M. S. (2026). Advancing membrane distillation for complex water matrices: Mechanistic insights into organic-inorganic separation, antifouling strategies, and hybrid design. Separation and Purification Technology. <https://doi.org/10.1016/j.seppur.2026.139741>

2. **Ahmed, F.**, Gaber, M. S., Garcia-Segura, S., & Ersan, M. S. (2026). Pharmaceutical adsorption and ex-situ electro-regeneration performance of magnetically modified activated carbon. *Environmental Science and Pollution Research*. <https://doi.org/10.1007/s11356-026-37655-6>
3. Karim, S., **Ahmed, F.**, Mollick, T., et al. (2026). Climate-driven forecasting of agricultural land cover change in North Dakota's Red River Valley using remote sensing and machine learning. *Earth Systems and Environment*. <https://doi.org/10.1007/s41748-026-01205-4>
4. Ali, M. E. A., **Ahmed, F.**, & Ersan, M. S. (2025). The interplay between per- and polyfluoroalkyl substances removal and flux in direct contact membrane distillation. *Desalination*, 119578. <https://doi.org/10.1016/j.desal.2025.119578>
5. **Ahmed, F.**, Sakib, M. N. R., Khan, M., & Karim, S. (2026). Thirty years of air quality change in North Dakota: Seasonal trends and machine-learning forecasts of NO₂ and SO₂. *AIMS Environmental Science*.
6. **Ahmed, F.**, Bayazid, A. Z. M., Islam, M. M., Rahaman, M. Z., & Al Muntasir, M. F. (2024). The terrible air pollution in Dhaka city is getting worse. *GSC Advanced Research and Reviews*, 19, 42–52. <https://doi.org/10.30574/gscarr.2024.19.1.0133>
7. Idrish, M. H. B., & **Ahmed, F.** (2024). Deconstructing the nexus between the influx of Rohingya refugees and the economy (labor) in Cox's Bazar, Bangladesh. *GSC Advanced Research and Reviews*, 18, 290–298. <https://doi.org/10.30574/gscarr.2024.18.1.0016>
8. **Ahmed, F.**, Idrish, M. H. B., & Kamal, A. K. I. (2023). A review of current water governance in Bangladesh: A case study on administrative and performance of water policy. *Scientific Research Journal (SCIRJ)*, XI(12), 1–10. <https://www.scirj.org/dec-2023-paper.php?rp=P1223973>
9. **Ahmed, F.**, Bahaiddin, K. M., & Kamal, A. K. I. (2023). Exploring health problems among lead acid storage battery workers in Dhaka city, Bangladesh. *American Journal of Pure and Applied Sciences*, 5(1), 1–12. <https://doi.org/10.34104/ajpab.023.001012>
10. Hasnat, M. F., & **Ahmed, F.** (2023). The history of the Rohingya crisis: Origin and uprising. *British Journal of Arts and Humanities*, 5(4), 192–208. <https://doi.org/10.34104/bjah.02301920208>
11. Sufian, M. A., Rahaman, M. Z., **Ahmed, F.**, & Dewan, H. A. (2023). Analysis of rejection data in the lasting section of the footwear industry. *Australian Journal of Engineering, Innovation and Technology*, 5(2), 35–57. <https://doi.org/10.34104/ajeit.023.035057>
12. **Ahmed, F.**, Ahmed, F., Alam, M., Islam, M. R., & Kamal, A. K. I. (2015). Sanitation and environmental status of nearby village around the industrial activities of Dhaka Export Processing Zone (DEPZ), Bangladesh. *International Science Community Association Journal of Environmental Sciences*, 4(5). <http://www.isca.in/IJENS/Archive/v4/i5/1.ISCA-IRJEvS-2015-009.pdf>

Research Paper Under Review

1. **Ahmed, F.**, Perreault, F., & Ersan, M. S. (2026). Surface-modified MD membranes with enhanced anti-wetting barriers for robust PFAS separation in direct contact membrane distillation. *Under review*.
2. **Ahmed, F.**, Yakamercan, E., & Ersan, M. S. (2026). Unknown per- and polyfluoroalkyl substances (PFAS) in environmental and engineered systems: Occurrence, analytical characterization and transformation. *Under review*.
3. **Ahmed, F.**, Holle, R., & Ersan, M. S. (2026). Upcycling soybean hulls into activated carbon for effective removal of PFAS in water treatment. *Under review*.

Conference Proceedings and Presentation

Oral Presentation

- **Ahmed, F.**, Holle, R., & Ersan, M.S. (2026). *Valorization of Soybean Hull Waste into Activated Carbon for Efficient PFAS Removal*. ACS Spring 2026. March 22-26, Atlanta, Georgia.
- **Ahmed, F.**, Holle, R., & Ersan, M.S. (2026). *Soybean Hull Derived Activated Carbon for Efficient Removal of PFAS from Water*. 2026 Red River Valley ACS Research Conference. February 14, Moorhead, Minnesota.

- **Ahmed, F.,** Ali, M.E.A., & Ersan, M.S. (2026). *Direct Contact Membrane Distillation for Sustainable Remediation of PFAS-Contaminated Saline Waters*. Membrane Technology Conference and Exposition 2026. February 2-5, Myrtle Beach, South Carolina.
- **Ahmed, F.,** Ali, M.E.A., & Ersan, M.S. (2025). *Salinity-Driven Dynamics of PFAS Separation Using Direct Contact Membrane Distillation*. 2025 North Dakota Water and Pollution Control Conference, October 14, Fargo, ND, United States.
- Tabish, F.N.U., Mamaghani, I.H.P., Khalid, R.A., & **Ahmed, F.** (2025). *Integrating GIS and Machine Learning for Seismic Damage Assessment of Liquid Storage Tanks in California*. Proceedings of the 10th International Conference on Civil Structural and Transportation Engineering (ICCSTE 2025), July, Imperial College London Conference Center, London, United Kingdom. Paper No. 347. https://avestia.com/ICCSTE2025_Proceedings/files/paper/ICCSTE_347.pdf
- **Ahmed, F.,** Ali, M.E.A., & Ersan, M.S. (2025). *Efficient PFAS Removal in Hypo/Hyper Saline Waters via Direct Contact Membrane Distillation*. 2025 Surface Water Treatment Workshop, April 22–24, West Fargo, ND, United States.
- **Ahmed, F.** & Ersan, M.S. (2025). *Can Direct Contact Membrane Distillation Be the Solution to Efficient Per- and Polyfluoroalkyl Substances Removal?* 2025 Red River Valley ACS Research Conference, February 20–21, University of North Dakota, Grand Forks, ND, United States.
- **Ahmed, F.,** Ersan, G., Garcia-Segura, S., & Ersan, M.S. (2024). *Does Magnetization of Carbonaceous Adsorbents Facilitate Pharmaceutical Removal?* ACS Fall 2024 National Meeting & Exposition, August 18–22, Denver, CO, United States.
- **Ahmed, F.** & Ersan, M.S. (2024). *Adsorption of Ciprofloxacin and Ibuprofen on Magnetic Iron-Doped Powdered Activated Carbon (PAC)*. North Dakota Academy of Science Proceedings of the 115th Annual Meeting, March, University of North Dakota, Grand Forks, ND, United States.

Poster

- **Ahmed, F.,** & Ersan, M.S. (2026). *Surface-Modified PTFE Membrane for Robust PFAS Separation in Direct Contact Membrane Distillation*. 2026 AWWA Annual Conference and Exposition (ACE26). June 21–24, 2026. Walter E. Washington Convention Center, Washington, D.C., USA.
- **Ahmed, F.,** & Ersan, M.S. (2026). *Upcycling Soybean Hulls into Activated Carbon for Effective Removal of PFAS in Water Treatment*. 2026 Water Quality Association (WQA) Convention + Expo. April 29–30, 2026. Miami, FL, USA.
- **Ahmed, F.,** Holle, R., & Ersan, M.S. (2026). *Upscaling Soybean Hulls into Activated Carbon for Sustainable Removal of PFAS in Water Treatment*. 2026 NDSU Soybean Symposium. March 5th, 2026. North Dakota State University, Fargo, ND.
- **Ahmed, F.,** Ali, M.E.A., & Ersan, M.S. (2025). *High Efficiency PFAS Removal and Water Recovery Using Direct Contact Membrane Distillation*. 2025 North Dakota Water and Pollution Control Conference, October 14, Fargo, ND, United States.
- **Ahmed, F.** & Ersan, M.S. (2025). *Efficient Removal of Per- and Polyfluoroalkyl Substances Using Direct Contact Membrane Distillation*. Graduate Research Achievement Day, February 26–27, University of North Dakota, Grand Forks, ND, United States.
- **Ahmed, F.,** Ersan, G., & Ersan, M.S. (2024). *Removal of Ibuprofen and Ciprofloxacin Using Magnetized versus Non-Magnetized Powdered Activated Carbon*. South Dakota Student Water Conference, October 14–16, South Dakota State University, Brookings, SD, United States.
- **Ahmed, F.** & Ersan, M.S. (2024). *Adsorption of Ciprofloxacin and Ibuprofen on Magnetic Iron-Doped Powdered Activated Carbon*. Graduate Research Achievement Day, February 28–29, University of North Dakota, Grand Forks, ND, United States.
- **Ahmed, F.,** Ersan, G., & Ersan, M.S. (2024). *Adsorption of Pharmaceutical Contaminants on Magnetic Iron-Doped Powdered Activated Carbon*. 2024 RRV-ACS Research Conference, February, Bemidji State University, Minnesota, United States.

Seminar

- Ciprofloxacin and Ibuprofen Adsorption on Magnetic Iron-doped Powdered Activated Carbon (Spring 2024), Department of Civil Engineering, University of North Dakota.
- Direct Contact Membrane Distillation for Efficient Per- and Polyfluoroalkyl substances (PFAS) Removal and Water Recovery (Fall 2024), Department of Civil Engineering, University of North Dakota.

Internship / Professional Activities

- **Graduate Research at ORNL (GRO)**
Manufacturing Science Division, **Oak Ridge National Laboratory**, TN, United States (May 2026 – August 2026)
Supervisor: Dr. Naushita Sharma

Employment and Professional Activities

- **Graduate Research Assistant**
Department of Civil Engineering, University of North Dakota (August 2023 - Present)
Supervisor: Dr. Mahmut S. Ersan
Develop bio-waste-derived activated carbon and carbon quantum dots for environmental remediation
Conduct membrane distillation experiments (fabrication, modification, performance evaluation)
Operate advanced analytical instruments (HPLC, LC, TOC, IC, BET, SEM, TGA)
Design experiments, analyze data, and prepare publications and technical reports
Collaborate with multidisciplinary teams following laboratory safety best practices
- **Graduate Teaching Assistant** (August 2023 – May 2025)
Department of Civil Engineering, University of North Dakota
Assisted with instruction, grading, and exam proctoring
Held office hours and provided feedback to students
Supported course materials preparation and classroom activities
- **Graduate Student** (Research – GIS Lab) (August 2021 – May 2023)
GIScience and Geo-environment Program, Western Illinois University
Supervisor: Dr. Christopher Sutton
Conducted advanced ArcGIS-based spatial analysis and visualization
Collaborated with Adams County Health Department and Blessing Health System
Developed StoryMap of Quincy, IL (2022) for public health and planning applications
- **Independent Academic Preparation & Research Development** (April 2019 – July 2021)
Prepared for graduate studies (applications, English proficiency, research skills)
Conducted self-directed study in environmental science and GIS
Completed 18 Credits (online) in Environment and Resource Management, Brandenburg University of Technology, Germany
- **Lecturer, Department of Geography and Environment**, Mirpur Girl's Ideal Laboratory Institute, Dhaka, Bangladesh (January 2017 – March 2019)
Taking classes on Geography and Environmental aspects
Maintain students' attendance records, grades, and other required records
Prepare course materials like syllabus, homework assignments, and hand notes
Plan, evaluate, and revise curriculum, content, materials, methods of instruction
Supervise students for fieldwork on different geological and environmental issues
- **Research Assistant**, OHDIR Foundation, Bangladesh (August 2016 – December 2016)
supporting data collection, literature review, and analysis for environmental and social research projects.
- **Cultural Exchange Participant** (Government-Sponsored Program) Sydney, Australia (August 2015 – July 2016)
Selected for a government-sponsored international cultural exchange program
Engaged in cross-cultural academic and professional activities
Developed global perspective and communication skills through international collaboration

- **Vice Chairman (Academic Administration)** Sunmoon International School, Dhaka, Bangladesh (January 2012 – July 2015)
Led academic planning and institutional management
Assisted in budgeting and implementation
Coordinated with parents and community stakeholders

Research Project

- Upcycling Soybean Hulls into Activated Carbon for Effective Removal of PFAS in Water Treatment. ND Soybean Council grant (July 1st, 2025, to June 30, 2026). PI: Dr. Mahmut Selim Ersan.
- Novel, Stable, and Efficient PFAS Removal by Nanostructure and Porous Carbon-Titanium Ceramic Electrodes (Spring 2025). PI: Dr. Mahmut Selim Ersan and Dr. Jiale Xu, Assistant Professor, NDSU.
- Efficient removal of perfluorooctanoic acid (PFOA) using magnetic biomass-derived carbon quantum dots in water treatment. (Fall 2024) (Funded by - Early Career Award Program, UND
PI: Dr. Mahmut Selim Ersan, Co-PI: Dr. Mariia Goriacheva-Morrell, Project Mentor: Dr. Alena Kubatova
- Evaluation of regeneration efficiency of PFAS-laden IX media by brine solutions. Funded by - DeNORA Water Technologies. (Spring 2024) PI: Dr. Mahmut Selim Ersan

Analytical Instruments Skills

- High-Performance Liquid Chromatography (HPLC; Agilent)
- Total Organic Carbon (TOC) analyzers (Shimadzu TOC-VCHS/TOC)
- Ion Chromatography (Thermo Scientific-Dionex)
- BET surface area and porosity analysis (Anton Paar)
- Fourier Transform Infrared (FT-IR) Spectrometer (Thermo Fisher Scientific)
- Scanning Electron Microscope (SEM -Hitachi 4700)
- Thermogravimetric Analysis (TGA 8000 Perkin Elmer)
- UV-VIS spectrophotometry (HACH-DR6000)

Methods and Techniques

- Adsorption kinetics/isotherms
- Membrane distillation
- Water quality analysis
- Waste valorization
- Adsorption Material Synthesis

Software Skills

- MS office, and SPSS.
- ArcGIS Pro
- Adobe Photoshop and Illustrator.
- Minitab
- Origin
- Visual MINTEQ

Special Certification

- Certified Lecturer (Geography & Environmental Science, 2014), Non-Government Teachers' Registration & Certification Authority (NTRCA) Ministry of Education, Bangladesh

Language Skills

- Proficient in Bengali and English and a moderate user of Hindi and German.

Other Working Experiences

Alumni Engagement Associate (March 2023 to May 2023), Western Illinois University

Responsibilities: Promote awareness of the organization's mission and work

- Cultivate a network of dedicated donors
- Spot new fundraising opportunities
- Plan fundraising initiatives to financial goals
- Form strong relationships with internal and external stakeholders

Internship

FCI BD Group and Talisman Group at "DEPZ", Dhaka, Bangladesh (January 2011 to March 2011)

- Support to maintain the Environmental Sustainability Plan
- Assist in maintaining Ethical and Environmental Standards
- Assist in waste audit to identify types and volumes of waste generated and reduction and recycling.

Membership

- American Chemical Society (ACS)
- American Water Works Association (AWWA)
- UND AWWA Student Chapter
- The Illinois Geographical Society
- Bangladesh Student Association UND
- Bangladesh Environmental Scientist Society

Outreach Activities

- Engineering Saturday (Spring), Saturday February 28, 2026. Hosted by College of Engineering & Mines, University of North Dakota.
- T4/ND Energy Education program (NDEE), November 7, 2025. Hosted by Northland Technical College, East Grand Forks, Grand Forks–East Grand Forks school district.
- UND BrainSTEM Event, October 9, 2025, Organized by the joint venture of the University of North Dakota and ASCE North Dakota Section.
- Environment Camp, August 20, 2025. Department of Civil Engineering, University of North Dakota.
- Young Scientists and Engineers Academy (YSEA) Camp. July 29, 2025. Department of Civil Engineering, University of North Dakota.
- 2nd Admit Day for the Spring Semester, April 4, 2025. Hosted by College of Engineering & Mines, University of North Dakota.
- Engineering Saturday (Spring), Saturday March 1, 2025. Hosted by College of Engineering & Mines, University of North Dakota.
- Grand Forks Middle School Career Exploration Fair, April 2024.
- Sustainable Concrete Infrastructure and Environmental Camp, (Summer Camp) August 21-22, 2024, Department of Civil Engineering, University of North Dakota.
- UND BrainSTEM Event, October 10, 2024, Organized by the joint venture of the University of North Dakota and ASCE North Dakota Section.
- Recruitment Week Program for prospective students, October 18, 2023, exhibiting the Environment Engineering program under the Department of Civil Engineering, University of North Dakota.
- Northern Valley Career Expo, October 25, 2023, as an exhibitor from the Department of Civil Engineering, University of North Dakota.

Volunteerism

- Treasure (Current Position), AWWA UND Student Chapter.
- Volunteered with PetroNd (<https://petrond.com/>) in water treatment initiatives, supporting sustainable clean water solutions and community engagement.
- Mentor at Young's Organization for Urban Research (YOUR)
- Organized a free 'blood donation' campaign (March 2014) at Sunmoon International School campus, Mirpur, Dhaka, Bangladesh.
- Organized a day for the 'tree plantation' campaign on June 6, 2011, at Mirpur, Dhaka, Bangladesh.

Invited Reviewer for Journals

- Waste Management
- Nature Conservation
- American Journal of Environmental Science and Engineering