

MOHAMMAD JAHIRUL ALAM

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EDUCATION

Ph.D. Candidate

Expected Graduation, April 2026

Department of Earth and Atmospheric Sciences

University of Houston, CGPA: 3.763/4.00

Thesis title: Per- and polyfluoroalkyl substances (PFAS) in air, water, and soil and their impact on air quality in the Houston, Texas, Area

Academic Advisor: Dr. Bernhard Rappenglueck

M.S., 2018

Inorganic and Analytical Chemistry, University of Dhaka

Thesis title: Computational investigation of hydrated Nickel ion ligand complexes, (Ligand: H₂O, NH₃, -OH, -Cl-) and potential complex with VOCs.

B.S., 2016

Chemistry, University of Dhaka.

Thesis title: Adsorptive removal of ethyl violet from aqueous solution using banana stem powder.

RESEARCH & WORK EXPERIENCE

Fall 22 – Present

Per- and polyfluoroalkyl substances (PFAS) in air

- Worked on method development of PFAS and monitoring in air, supporting efforts to reduce contamination in the Houston, Texas area.
- Prepared regulatory reports for TCEQ, ensuring compliance with EPA standards to protect air quality and public health.

Fall 21-Present

Research Assistant & Teaching Assistant, University of Houston, Houston TX, USA

- Graduate Lab Manager and graduate student mentor in Meteorology Laboratory, Atmospheric Chemistry Laboratory, and Climate Change Laboratory.
- Taught instrumentation/calibration techniques, managed \$100K+ in inventory in addition to teaching Meteorology, and Geoscience tutoring.
- Trained and monitored three colleague researchers, leading to an increase in the utilization of instruments by 30%

Summer 22 & 23

Process Improvement Assistant (Co-op experience) – The Viswa Group, Houston, Texas, USA

- Improved Testing Efficiency – Reduced testing time by 23%, saving \$5,000 per month while meeting industry standards.
- Cost-Saving Solutions – Developed methods that cut expenses by \$4,000 per month and supported cleaner energy efforts.
- Research and Compliance – Prepared reports for TCEQ, reviewed existing monitoring law, summarized findings, and created databases.

PUBLISHED ARTICLE

1. Alam, M. J., Rappenglueck, B., Retama, A., & Rivera-Hernández, O. (2024). Investigating the Complexities of VOC Sources in Mexico City in the Years 2016– 2022. *Atmosphere*, 15(2), 179. <https://doi.org/10.3390/atmos15020179> (Citation number: 29 citations in google scholar)

2. Sabid, A. M., Alam, M.J., & Kamrul, H. M. (2024). Computational And Theoretical Analysis On The Single Proton Transfer Process In Adenine Base By Using DFT Theory And Thermodynamics. *IOSR Journal of Applied Chemistry*. (Citation number: 6 citations in google scholar)
3. Alam MJ, Ahamed MS, Islam MS, Halim ME, and Uddin KM. (2025). Computational study of nickel complexes: stability and electronic charge insights. *Am. J. Pure Appl. Sci.*, 7(1), 213-220. <https://doi.org/10.34104/ajpab.025.02130220>
4. Alam, M. J., Karim, I., & Zaman, S. U. (2025). Seasonal dynamics and trends in air pollutants: A comprehensive analysis of PM_{2.5}, NO₂, CO, SO₂ and O₃ in Houston, USA. *Air Quality, Atmosphere & Health*, 1-18.

SKILLS & QUALIFICATIONS

Instruments

Mass Spectrometry- EI, ESI, DESI-MS; and Flame ionization detector- FID
Gas Chromatography - GC, GCxGC (multidimensional GC) and Liquid Chromatography LC, HPLC, UPLC
Thermal Analysis- TD-30, DSC
Particulate matter samplers, Aethalometer, AERONET

Software Skills

Google Earth Engine (GEE) – Satellite data analysis and environmental monitoring
ArcGIS/QGIS – Spatial analysis, mapping, and land-use change detection
ENVI – Remote sensing and satellite image processing
EPA AERMOD – Air dispersion modeling
HYSPLIT – Tracking air pollution and emissions
R-Studio and Python (for Air Quality Analysis) – Statistical modeling of pollution trends

KEY WORKSHOPS & PRESENTATIONS

- 2024** AMS Conference – Presentation in Baltimore, Maryland, USA
2023 HYSPLIT Workshop (online), 22-25 June, NOAA Air Resources Laboratory, USA
2019 5th Conference of Bangladesh Crystallographic Association, 25-26 January, Dhaka, Bangladesh.
2018 International Conference of Chemistry and Chemical Engineering, 20-28 October, Khulna, Bangladesh.

HONORS & AWARDS

- 2024** Student Research Grant, University of Houston, TX, USA
2024 Alumni Scholarship award, Natural Science and Mathematics, University of Houston, TX, USA
2024 Outstanding Academic Achievement Award in Atmospheric Science, University of Houston
2021 Outstanding Academic Achievement Award in Atmospheric Science, University of Houston
2021 Graduate Tuition Fellowship (GTF), University of Houston
2024 AMS Conference Travel Funding (2024) – Presentation in Baltimore, Maryland
2022 Travel award for 19th International GCxGC Symposium, Canada

ACTIVITIES

- American Meteorological Society-Member, University of Houston, TX, 2024-2025
 - Student body committee Chair, University of Houston, Houston, Texas Aug 2023 to Present
 - Bangladesh Chemical and Biomedical Association in North America, Organization Secretary, Texas Chapter, Aug 2022 to Present
 - Judge (Senior Division) in Biochemistry, TEXAS Science and Engineering Fair USA, 2022
 - Judge (Senior Division) in Earth and Environmental Science, Science and Engineering Fair of Houston, Tx, USA, 2023
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