

Amna Afzal
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EDUCATION

University of Houston, Houston, TX

PhD in Geology

Dec 2027

Research: Organic Geochemistry / Hydrogeochemistry

Relevant Coursework: Organic Geochemistry, Petroleum Geochemistry, Geospatial Data Analytics, Plate Tectonics, Seismic Structure Geology, Satellite Positioning and Geodesy

University of the Punjab, Lahore, Pakistan

M.Phil. Geology

Research: Delineation of fresh and contaminated groundwater layers by using electrical resistivity sounding in Mandi Yazman area, Bahawalpur, Pakistan.

BS Geology

Research: Seismic signatures of gas hydrates bearing sediments in Makran accretionary prism, Baluchistan, Pakistan.

PROFESSIONAL EXPERIENCE

University of Houston, Houston, TX

Teaching Assistant

Jan 2023 - Present

- Assisted 20+ undergraduates in the Physical Geology Lab (GEOL 1103) on data acquisition, processing, and reporting results of fieldwork.
- Assessed assignments and organized field work opportunities for students.
- Assisted students in their lab work, grading and organized field work.

Research Assistant

June 2023 – May 2024

Experimental Organic Geochemistry Lab

Research projects:

- Conducted a comprehensive analysis of PFAS in water reservoirs in south-central and southeast Texas: Edwards aquifer and Neches River.
- Modelled the Atmospheric Transport and Wet Deposition of PFAS Using HYSPLIT: A Focus on Precipitation Pathways in San Antonio.
- Developed a standardized protocol for the detection of microplastics in complex environment matrices (sediments, in particular) through GC-MS techniques.
- Involved in National Science Foundation (NSF) funded project in conducting a qualitative analysis of abiotic formation of organic molecules in seafloor hydrothermal systems through LC-MS/MS. (*NSF Award Number: 1652481*)

Geological Survey of Pakistan, Lahore, Pk.

Geologist (BPS – 17)

October 2018 – January 2023

- Conducted geochemical investigation for base metals concentration in Permian Strata of Pind Dadan Khan Quadrangle.
- Conducted geochemical investigations of Placer deposits along Jhelum River.
- Pioneered the geodatabase of Punjab, development of 70 years of the research work of the Geological Survey of Pakistan, using advanced GIS and Google Earth Pro.

PUBLICATIONS AND POSTERS

- **A. Afzal**, C. Ong, Q. Fu, A. Hussain, Y. Gao, M. Fu. In Preparation. “Spatial and temporal distribution of PFAS in water reservoirs in south-central and southeast Texas: Edwards aquifer and Neches River”.
- C. Ong, **A. Afzal**, Y. Gao, F. Goddard, Q. Fu. In Preparation. “PFAS in the Contributing Zone of the Edwards Aquifer in South Central Texas: Spatial and Temporal Distribution”.
- A. Hussain, **A. Afzal**, and S. Khan, (2024), “Tectonic analysis of the Mula River Basin,

Kirthar fold belt, Pakistan, using hypsometric index,” *Interpretation* 12: SC9-SC16. <https://doi.org/10.1190/INT-2023-0086.1>

- A. Khalid, A. Qayyum, M. Hussain, A. Hussain, **A. Afzal**, M. Yaseen. (2025), “Structural Inheritance and Evolution of the Khuzdar Knot through Transpression and Inversion Tectonics, Kirthar Fold Belt, Pakistan. Under Review. [*Interpretation, Manuscript ID: INT-2025-0017*].
- **Afzal A.** “Seismic signatures of gas hydrates bearing sediments in Makran accretionary prism, Baluchistan, Pakistan”. Presentation. 23rd Annual Technical Conference, 2016, Islamabad, Pakistan, 11-23-2016.
- **Afzal, A.** Ong, C. Gao, Y and Fu, Q. “Quantifying PFAS in the Edwards aquifer in south central Texas”. Poster. GSA Connects 2023 Meeting, Pittsburgh, Pennsylvania, USA, 10-17-2023. [URL](#)
- **Afzal, A.** Ong, C. Gao, Y and Fu, Q. “Quantification and Comparison of Per- and Polyfluoroalkyl Substances PFAS in Edwards Aquifer and Neches River, Texas”. Poster. Robert E. Sheriff Lecture, Houston, Texas, USA, 13-11-2023.
- **Afzal, A.** Radovic, J. Malloy, T. Fu, Q. “Microplastic Detection in Complex Environmental Matrices: Comparative Study of Thermal Degradation Methods”. Poster. Symposium on Microplastics Circulatory, University of Houston, Energy Division, Texas, USA, 26-04-2025.
- Hernandez, S. Ong, C. **Afzal, A.** Weathers, M. Bertetti, Paul. Fu, Q. Gao, Y. “PFAS and Water Quality Indicators of Aquifer Vulnerability in the Edwards–Trinity System”. Submitted. GSA Connects 2025 Meeting, San Antonio, Texas, USA.

GRANTS, AWARDS AND SCHOLARSHIPS

- Awarded 3rd Place Poster award in UH energy Plastics Circulatory Symposium 2025 held at University of Houston on April 26th, 2025.
- Awarded Outstanding Graduate work in Geology Award, 2025, from UH EAS.
- Awarded Outstanding Graduate work in Geology Award, 2024, from UH EAS.
- Travel Grant from U.S Science Support Program to attend “Interstitial Pore Water Workshop” September 3-6, 2024, at Stone Laboratory, Ohio State University, Ohio, USA.
- Earth and Atmospheric Science Research Grant (Spring 2024) on “Quantification and Primary Source Analysis of PFAS in Soil using LC-MS/MS, South Central TX.
- Travel grant from U.S Science Support Program to attend IODP-NASA workshop 2024, “A workshop to explore Missions to Planet Earth” April 2-4, 2024, Washington, D.C.
- Graduate Tuition Fellowship – University of Houston.
- Travel Grant from Geological Survey of Pakistan, (No: GSP/Award-81, 31 Jan 2020) to attend “9th National Training Workshop on optical Microscopy and Advance Geological Techniques” January 27-31, 2020, Geoscience Advance Research Laboratories, Islamabad, Pakistan.
- Travel Grant to attend 10th International Petroleum Technology Conference, November 14-16, 2016, at Bangkok, Thailand.

SKILLS/ADDITIONAL INFORMATION

Software:

- ArcGIS 3.2.8, HYSPLIT Software by NOAA.

Technical Skills:

- LC-MS/MS, GC-MS, Py-GC-MS, Rock Eval, XRD, XRF.

Professional Trainings:

- “9th National Training Workshop on Optical Microscopy and Advance Geological Techniques”, January 27-31, 2020, Geoscience Advance Research Laboratories, Islamabad, Pakistan.
- “Simultaneous Quantification of Ultrashort, Short and Long Chain PFAS in water by LC-MS/MS (North America)”, March 25, 2025, eLearning Phenomenex.

Professional Memberships:

- Geological Society of America (GSA)
- Houston Geological Society (HGS)
- American Institute of Professional Geologists (AIPG)
- American Association of Petroleum Geoscientists (AAPG), Association of Women Geoscientists (AWG).
- American Geophysical Union (AGU).

Outreach Activities:

- Women engagement and Outreach Coordinator in University of Houston Graduate Association of Pakistani Students.

Media Spotlights:

- **UH, EAS, News and Events** *March, 2024*
“Spring Student Research Grants Program Winners Announced” [Link](#)
- **UH, Energy Division and Innovation, News and Events** *April 2025*
“Plastics Circularity Takes Center Stage at 2025 UH Energy Symposium” [Link](#)