RESUME

DR. MUHAMMAD AYAZ
LECTURER (BPS-18)

Department of Environmental and Conservation Sciences,
University of Swat. Charbagh Swat, Khyber Pakhtunkhwa
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ACADEMICS/EDUCATION

PhD Environmental Sciences (2022-2026)
ANSO-CAS-TWAS/UNESCO Fellow
Institute of Hydrobiology, Chinese Academy of Sciences (CAS), Wuhan China

PhD Research Title: Regulatory Mechanisms of Multiple Environmental Factors on Plastisphere Nitrous Oxide Dynamics.

MPhil Environmental Sciences (2014 - 2016) 1st Div.
Department of Environmental Sciences, Faculty of Biological Sciences
Quaid-i-Azam University, Islamabad Pakistan

M.Phil. Research Title: Integration of Biological and Physical Methods for Remediation of Dyes and Toxic metals from Textile Waste Water.

BS Environmental Sciences (2008-2012) 1st Div.
Department of Environmental Sciences, Faculty of Life & Environmental Sciences
University of Peshawar, Peshawar, Khyber Pakhtunkhwa Pakistan

BS Research Topics:
1. Lichen Diversity as Pollution Indicator on Different Substrate in Upper Valley Swat, Pakistan.
2. Effects of Organic Amendments and NPK Mineral Fertilizers on Heavy Metals Content in Soil.
3. Sustainability assessment of biogas plants in district Swat.

Higher Secondary School Certificate (Pre – Medical 2008) 1st Div.
Government Degree College Matta Swat, Khyber Pakhtunkhwa Pakistan.

Secondary School Certificate (Science Group 2005) 1st Div.
Government High School Qandil Swat, Khyber Pakhtunkhwa Pakistan.

RESEARCH INTERESTS

Climate Change, Nitrous Oxide, Greenhouse gases emissions, Nitrogen Cycling, Potassium, Water Treatment, Microplastics, Plastisphere, Environmental Remediation, Biodegradation, Environmental Microbiology and Environmental Biotechnology.

Publications

S.#	Details
Published (2026)	
14	**Ayaz M,** Liu W, Deng M, Li L, Song K. (2026). Warming-acidification synergy amplifies plastisphere-mediated nitrous oxide emissions. Journal of Environmental Management. 410:130079.
13	**Ayaz M,** Minahil B, Deng M, Li L, Song K. (2026). Plastisphere-mediated nitrogen cycling and N_2O emissions in inland waters: A systematic review. Water Biology and Security. 100633
12	**Ayaz M,** Oon YS, Oon YL, Deng M, Li L, Song K. (2026). Acidification reshapes plastisphere communities to sustain potassium-stimulated N_2O emissions under warming. Journal of Hazardous Materials. 7:142266.
11	Khan G, Nawab J, Abbas H, **Ayaz M**, Rahman A, Ullah H, Ahmad S, Ali A. (2026). Hydrochemical source apportionment and health risk assessment of potentially toxic elements in groundwater across four urban centers of Pakistan. *DYSONA-Applied Science*, 7(2), 269-289.
Published (2025)	
10	Oon YS, Oon YL, **Ayaz M**, Wang Y, Deng M, Li L, Song K, Wu F. (2025). Microalgae-bacteria synergy in photosynthetic bio-electrochemical systems supports nitrogen transformation, microbial dynamics and greenhouse gas mitigation. *Communications Earth & Environment*, 6(1), 884.
9	**Ayaz M,** Oon YL, Oon YS, Deng M, Li L, Song K. (2025). Potassium modulating aquatic microbial processes: Dynamics of nitrogen cycling and nitrous oxide. *Environmental Reviews*. 33:1-15
8	**Ayaz M**, Ali A, Rahman A, Kazmi A, Farooqi S, Song K, & Yousaf S. (2025). Physio-Biological Integration for Removal and Decolorization of Dyes and Extraction of Toxic Metals (Chromium and Cadmium) via Electro-Kinetic Process from Textile Wastewater. *Environmental Quality Management* 35(2): e70208.
7	**Ayaz M,** Oon YS, Oon YL, Khan K, Deng M, Li L, Song K, Jiang X, Xia Z. (2025). Microplastics transport and impact on nitrogen cycling and N2O emissions in estuaries. *Environmental Pollution*, 126869.
6	**Ayaz M,** Khan A H A, Song K, Ali A, Yousaf S, Kazmi A, & Rashid A. (2025). Integration of physio-biological methods for remediation of dyes and toxic metals from textile wastewater. *Bioresource Technology Reports*, 102044.
Published (2023)	
5	Khan K, Younas M, Khan M S, Li X, Fawad M, Shah N S, Ali J, Ullah S, **Ayaz M,** Maryam A, Ali A, Khan A Z, & Ibrahim S M. (2023). Heavy metal occurrence, pathways, and associated socio-ecological risks in riverine water: Application of geographic information system, multivariate statistics, and risk assessment models. *Water, Air, & Soil Pollution*, *234*(7), 449.
4	Oon Y L, Oon Y S, **Ayaz M**, Deng M, Li L, & Song K. (2023). Waterborne pathogens detection technologies: Advances, challenges, and future perspectives. *Frontiers in Microbiology*, *14*, 1286923.
Published (2022)	
3	Khan K, Mohsin A, Sharif A M A, Maryam A, Ali J, Li X, Ibrahim S M, **Ayaz M**, Zhou Y & Younas M (2022). Heavy metal pollution in the soil of a riverine basin:

	distribution, source, and potential hazards, *Environmental Monitoring and Assessment*, volume: 194
Published (2017)	
2	Khan A H I, **Ayaz M**, Arshad M, Yousaf S, Khan M A, Anees M, Sultan A, Nawaz I, Iqbal M (2017). Biogeochemical Cycle, Occurrence and Biological Treatments of Polycyclic Aromatic Hydrocarbons (PAHs). *Iranian Journal of Science and Technology, Transactions A: Science*
Published (2011)	
1	Ahmad N, Fazal H, **Ayaz M**, Mohammad I, Fazal L (2011). Dengue fever treatment with *Carica papaya* leaves extract. *Asian Pacific Journal of Tropical Biomedicine,* 330-333.

Courses Taught During Lecturer-ship

Environmental Biotechnology, Environmental Microbiology, Industrial Microbiology, Bioremediation, Biodegradation and Bioremediation, Climate Change, Soil and Environment, Population and Environment, Earth Sciences, Agro-Ecology, Environmental Toxicology, Environmental Chemistry, Environmental Profile of Pakistan, Current Issues in Environment, Ecosystem, Water Resources Management, Natural Resources Management, Disaster Management, Pollution Control Technologies, Environmental Management Systems, Health and Environment, Research Writing and Planning, Environmental Psychology, Environmental Philosophy, Introduction to Environmental Sciences and Geography of Pakistan.

Work Experience

Lecturer, Department of Environmental and Conservation Sciences, University of Swat. (April, 2021 till date).

Visiting Lecturer, University of Swat (September 2016 to March 2021).

Visiting Lecturer, Department of Environmental Sciences, Abdul Wali Khan University Mardan (September 2015 to August 2016)

Research Internships: 1). Environmental Protection Agency, Swat Region.
2). Nuclear Institute for Food and Agriculture, Pakistan Atomic Energy Commission.

Teaching Experience

1). BS Environmental Sciences
2). MSc. Environmental Sciences
3). MPhil. Environmental Sciences
4). BS Botany
5). BS Microbiology
6). MSc. Microbiology
7). BS Biotechnology

BS Students Supervised (05)

(1) Ijaz Ali and Hassan Ali (2018-2022) Chemical weathering, Paleo-environmental and Paleo-climatological indication in the exposed rocks of Nammal Gorge section, Salt Ranges, Pakistan: Application of XRF Proxies.

(2) Arqam Tariq, Hayat Ali, and Jasim Khan a (2018-2022) Chemical weathering, Paleo-environmental and Paleo-climatological indication in the rocks exposed of Zaluch Nala, Salt Ranges, Pakistan: Application of XRF Proxy approach.

Seminars and Workshops

- 2024 International Workshop on Monitoring and Control of Harmful Algal Blooms, Institute of Hydrobiology, Chinese Academy of Sciences, 24 Oct. — 06 Nov. 2024, Wuhan China
- 19th International Symposium on River and Lake Environment (ISRLE 19), Institute of Hydrobiology, Chinese Academy of Sciences, November 04th - 08th, 2024 Wuhan, China
- SERVIR-Himalaya Youth Forum Using Earth Observation for Climate Change Actions in Pakistan 24th – 27th Nov 2014, Islamabad, Pakistan. Organized by ICIMOD, NASA, USAID and PARC.
- 2010 - 2nd International Disaster Management Conference on *Good Governance in Disaster Risk Reduction and Climate Change Adaptation* (19th -21st October).
- International conference on *Environmental Science – from Pollution To Remediation 2013* (03rd – 05th June)
- Capacity building seminar on *EIA and Khyber Pakhtunkhwa Environmental Protection Act – 2013 (Draft)* on 13th March 2013.
- Training & Survey sessions of South Asian Forum for Education Development *Investigating Dimensions of the Privatization of Public Education in South Asia* (31st March – 4th April 2011).
- World Wide Fund for Nature – Pakistan Eco Internship 2011.
- Earth Day (April 22nd, 2012) and awarded with certificate for holding 1st position in Poster Competition.
- Annual Status of Education Report (ASER) Pakistan 2011 survey: A national initiative for quality education.
- World Environment Day June 5th, 2012.
- Participant in Model Provincial Assembly' 13 as Delegate "Education".
- Biodiversity & 25th International Day for the Preservation of Ozone Layer on September 17th, 2012.
- Rotract District Assembly (Peshawar) 2010 – 11 Rotract District 3272 Pakistan – Afghanistan Hosted by: Rotract Clubs of Peshawar.
- Participation in the Seminar on Human Rights Day organized by the Department of International Relations on December 10th, 2012.
- Earned Certificate on for organizing Exhibition on Recycling on December 19th, 2012.
- Certificate of Excellence for organizing various events (SPACE) for the year 2012.

Paper Presented

Ayaz M, Jan B, Zakir S. N, Ahmad N, Abbasi B. H (2013). Lichen diversity on different substrates in upper valley Swat in conference on Sustainable Utilization of Natural Resources (SUN-R) of the Khyber Pakhtunkhwa & FATA at Pearl Continental Hotel, Peshawar on 11th Feb, 2013.

Ayaz M, Jan, B, Zakir S. N, Ahmad Q (2013). Effect of toxic gases (H_2S & CO) over lichen diversity on different substrates in Swat upper valley in conference on Environmental Science – From Pollution To Remediation 2013 at Baragali Summer Campus University of Peshawar on 3rd -5th Jun 2013.

Awards and Honors

- Awarded by LAPTOP (Naway Sahar Laptop Scheme) from Government of Pakistan by securing more than 75% marks in consecutive BS (4-years) in Environmental Sciences.
- Awarded by Society for Protection, Awareness and Conservation of Environment, Department of Environmental sciences, University of Peshawar (UOP).
- Awarded by Sustainable Utilization of Natural Resources (SUN-R) of the Khyber Pakhtunkhwa & FATA, NCE in Geology, University of Peshawar.
- Finance Sectary of Departmental Society, Society for Protection, Awareness and Conservation of Environment, Faculty of Life and Environmental Sciences, UOP.
- Served as international dealing Director for “Ever Green Rotract Club of Environmental Sciences” UOP chartered with “Rotary International”.