

Momal Akram, PhD

Analytical Chemist | Water and Wastewater Analysis | Quality Control

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SUMMARY

Analytical and environmental chemist with a PhD in Chemistry and hands-on experience operating, calibrating and maintaining inductively coupled plasma optical emission spectrometry (ICP-OES), atomic absorption spectroscopy (AAS), high-performance liquid chromatography (HPLC), flame photometry, ultraviolet-visible spectroscopy (UV-Vis) and Fourier-transform infrared spectroscopy (FTIR) instruments, with materials characterisation by X-ray diffraction (XRD), scanning electron microscopy (SEM) and transmission electron microscopy (TEM). Background in water-quality testing, heavy-metal and dye analysis, adsorbent and photocatalyst development, and laboratory training. Nine peer-reviewed publications. Formal training in cosmetic formulation and cosmetic quality control.

SKILLS

- Instrumental analysis, calibration and maintenance: ICP-OES, AAS, HPLC, UV-Vis, FTIR, flame photometry
- Materials characterisation: X-ray diffraction (XRD), scanning electron microscopy (SEM), transmission electron microscopy (TEM)
- Water and wastewater quality analysis: heavy metals, trace metals, organic and inorganic contaminants
- Analytical method development; reversed-phase HPLC (RP-HPLC) method design
- Experimental design, data analysis and technical report writing
- Adsorption and photocatalysis testing: kinetics, isotherms, thermodynamics
- Nanomaterial synthesis: sol-gel and plant-mediated green synthesis
- Molecular docking and absorption, distribution, metabolism, excretion and toxicity (ADMET) prediction
- Cosmetic formulation, product development and quality control principles
- Laboratory safety, laboratory training and team supervision
- Microsoft Office, EndNote

PROFESSIONAL EXPERIENCE

Assistant Professor, Chemistry

University of Central Punjab, Lahore, Pakistan | 01/2026 - 07/2026

Lecturer, Chemistry

University of Central Punjab, Lahore, Pakistan | 04/2022 - 12/2025

- Promoted from Lecturer to Assistant Professor in January 2026 in recognition of performance.
- Taught Analytical Chemistry, Instrumental Analysis, Spectroscopy, Environmental, Organic and Physical Chemistry to more than 100 students per semester, and supervised their laboratory sessions with a focus on safety protocols.
- Developed and optimised UV-Vis, FTIR and AAS analytical protocols for research and student projects.
- Supervised 13 student research projects, including RP-HPLC method design for three diabetes drugs, trace-metal testing of commercial tea and fruit juices, and herbal cream formulation.
- Organised LabXpert 2025, a hands-on laboratory instrumentation and safety training programme, and led its UV-Vis spectroscopy session.
- Coordinated faculty examinations as Academic Coordinator: question papers, scheduling, invigilation and evaluation.
- Reviewed six manuscripts for five Springer Nature scientific journals, including Scientific Reports.

Visiting Researcher

University of Glasgow, Scottish Universities Environmental Research Centre, Glasgow, United Kingdom | 03/2023 - 08/2023

- Six-month research placement funded by the Higher Education Commission (HEC) Pakistan.
- Performed experiments, instrumental analysis and material characterisation for doctoral research on textile dye removal from wastewater.

Lecturer, Chemistry

Minhaj University Lahore, Lahore, Pakistan | 10/2018 - 03/2021

- Taught Analytical, Physical, Organic and Inorganic Chemistry to more than 100 students per semester.
- Supervised laboratory sessions for safety compliance and accurate experimental work; assessed laboratory reports and projects.

Research Analyst

School of Chemistry, University of the Punjab, Lahore, Pakistan | 07/2017 - 07/2018

- Operated, calibrated and maintained ICP-OES, AAS, HPLC, FTIR and flame photometry instruments.
- Analysed water samples for heavy metals and organic and inorganic contaminants using standard protocols.
- Interpreted analytical data and prepared reports for environmental monitoring research.

Science Teacher

Ideal College of Science and Ideal Grammar School, Lahore, Pakistan | 03/2014 - 07/2017 | Chemistry, Physics and Biology

EDUCATION

Doctor of Philosophy (PhD), Chemistry

University of the Punjab, Lahore, Pakistan | 10/2018 - 05/2025

Thesis: A green approach for the removal of textile dyes from simulated wastewater

Master of Philosophy (MPhil), Chemistry

University of the Punjab, Lahore, Pakistan | 02/2016 - 03/2018

Master of Science (MSc), Chemistry

University of the Punjab, Lahore, Pakistan | 10/2013 - 12/2015

Bachelor of Education (BEd), Science

University of the Punjab, Lahore, Pakistan | 10/2012 - 09/2013

CERTIFICATIONS

- Mexoxo Take the Lead (leadership), eCornell, Cornell University, 09/2026
- Quality Control and Regulatory in Cosmetic Science, Olay (Coursera), 12/2025
- Cosmetic Product Development, Olay (Coursera), 12/2025
- Introduction to Cosmetic and Skincare Science, Olay (Coursera), 09/2025
- Cosmetic Formulation Science, Olay (Coursera), 08/2025
- Nanotechnology: A Maker's Course, Duke University (Coursera), 03/2025
- Intellectual Property: Patents, Copyrights and Commercialisation, University of Central Punjab, 09/2024
- ASTM COMPASS Standards Database Training, ASTM International, 11/2022

PUBLICATIONS

Nine peer-reviewed journal articles on biosorbents and photocatalysts for dye, heavy-metal and antibiotic removal from water, including Water, Air, and Soil Pollution, BioNanoScience and Chemical Papers. Full list: orcid.org/0000-0003-2795-2338

LANGUAGES

English (fluent), Urdu (native), Punjabi (native), Arabic (basic), Turkish (basic)