

Dr. Momal Akram

Assistant Professor & Researcher | Academic & Research Coordinator | Environmental & Analytical Chemistry | PhD

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PROFESSIONAL PROFILE

Chemistry academic and researcher with over a decade of progressive experience in higher education, environmental chemistry, and analytical sciences. Recently serving as Assistant Professor and Academic Coordinator at the University of Central Punjab, with a completed PhD focusing on eco-friendly remediation of textile dye wastewater using green adsorbents. Combines deep subject expertise across Organic, Analytical, Physical, and Environmental Chemistry with a strong commitment to student mentoring, research supervision, and academic outreach. Published in internationally indexed journals and active peer reviewer for multiple scientific publications.

RESEARCH INTERESTS

- Green wastewater treatment & environmental remediation
- Biosorption, phytoremediation & nanomaterial-based adsorption
- Heavy metal & dye removal from industrial effluents
- Molecular docking & ADMET analysis
- Cosmetic formulation chemistry & herbal product development
- Adsorption kinetics, thermodynamics & surface chemistry
- Analytical method development & instrumentation

EDUCATION

Doctor of Philosophy (PhD) in Chemistry

School of Chemistry, University of the Punjab · Lahore, Pakistan · Oct 2018 – May 2025 · Result: **A**

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

- Developed eco-friendly remediation techniques: biosorption, phytoremediation, and nanomaterial-based adsorption for textile dye removal
- Operated UV-Vis, FTIR, and AAS instruments for monitoring dye degradation and result validation
- Investigated adsorption kinetics, thermodynamics, and surface chemistry to optimise process conditions
- Assessed economic feasibility and scalability of green wastewater treatment processes

★ **PhD Fellowship Award – University of Glasgow, Scotland, UK · Awarded by HEC Pakistan · March 2022**

MPhil in Chemistry

School of Chemistry, University of the Punjab · Lahore, Pakistan · Feb 2016 – Mar 2018 · Result: **A**

Thesis: Equilibrium, kinetics and thermodynamics in reactive dye removal via biosorption

Master of Science (MSc) in Chemistry

School of Chemistry, University of the Punjab · Lahore, Pakistan · Oct 2013 – Dec 2015 · Result: **A**

Thesis: Biosorptive removal of Brilliant Green dye using Sorghum bicolor L.

Bachelor of Education (B.Ed) in Science

Institute of Education and Research, University of the Punjab · Lahore, Pakistan · Oct 2012 – Sep 2013 · Result: **A** (3rd Position in Batch)

Bachelor of Science (BSc) – Botany, Zoology, Chemistry

Punjab College of Sciences · Lahore, Pakistan · Oct 2010 – Aug 2012 · Result: **1st Division**

WORK EXPERIENCE

Assistant Professor, Chemistry & Academic Coordinator

University of Central Punjab (UCP) · Lahore, Pakistan · Apr 2022 – Jul 2026

- Delivered lectures to undergraduate and postgraduate students in Organic, Physical, Analytical, Environmental Chemistry, Spectroscopy, Instrumental Analysis, and Entrepreneurship

- Supervised laboratory sessions, ensuring adherence to safety protocols and development of students' experimental and analytical skills
- Coordinated faculty examinations: question paper preparation, scheduling, invigilation, and transparent evaluation to uphold academic integrity
- Served as Social Media and Events Coordinator, leading departmental outreach, academic seminars, conferences, and workshops
- Guided and supervised MPhil and BS research students in proposal writing, experimental design, data analysis, and thesis completion; supervised 13+ research projects (2022–2026)
- Conducted independent research on green adsorbent synthesis and characterisation for wastewater remediation, contributing to peer-reviewed publications
- Developed and optimised analytical protocols using UV–Vis, FTIR, and AAS for research validation and student project support
- Served as peer reviewer for multiple indexed journals including Scientific Reports, Microchimica Acta, and Archives of Microbiology
- Participated as **Faculty Partner** in the LIC Student Pedagogy Partnership (SPP) Programme, Spring 2026 (UCP): co-designed an AI-resilient interdisciplinary Environmental Chemistry course, embedded AI-resilience strategies across the curriculum, and collaboratively assessed student performance with a student partner
- Organised and coordinated international academic sessions, seminars, and the Global Scholars Connect Series, fostering interdisciplinary collaboration

Lecturer, Chemistry

Minhaj University Lahore · Lahore, Pakistan · Oct 2018 – Mar 2021

- Delivered lectures in Physical, Organic, Analytical, and Inorganic Chemistry to undergraduate and postgraduate students, integrating theory with applied research
- Supervised laboratory sessions ensuring compliance with safety standards and accurate experimental execution
- Evaluated student performance in lab work, assignments, and research projects with constructive and timely feedback

Research Analyst

School of Chemistry, University of the Punjab · Lahore, Pakistan · Jul 2017 – Jul 2018

- Operated, calibrated, and maintained advanced analytical instruments: ICP-OES, AAS, FTIR, HPLC, and Flame Photometry
- Conducted comprehensive water quality analyses quantifying heavy metals and organic/inorganic contaminants using standardised protocols
- Contributed to environmental monitoring research: data interpretation, report preparation, and publication support

Senior Science Teacher

Ideal College of Science · Lahore, Pakistan · Aug 2016 – Jul 2017

- Taught Chemistry to HSSC students with emphasis on conceptual understanding and exam preparation
- Guided students in science project planning, execution, and presentation, fostering scientific inquiry and hands-on learning

Senior School Teacher

Ideal Grammar School · Lahore, Pakistan · Mar 2014 – May 2016

- Taught Physics, Chemistry, and Biology to SSC students using inquiry-based and demonstration-driven methods aligned with the national curriculum
- Monitored student progress through regular assessments and personalised feedback

PUBLICATIONS

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- [1] Nagra, S. I., **Akram, M.**, Iftikhar, T., & Raja, M. Aloe barbadensis-Mediated Green Synthesis of Zirconium Nanohybrids for Carbon Tetrachloride-Induced Hepatotoxicity in Wistar Rats. *BioNanoScience*. (Accepted, in press). [IF: 3.2]
- [2] Tahir, S., **Akram, M.**, Salman, M., Ahmad, B., Farooq, U., & Ali, F. (2026). Synergistic effect of Zn and Mo co-doping in ZrO₂ for efficient photodegradation of Congo Red and Ciprofloxacin under visible irradiation. *Chemical Papers*,

1–23. <https://doi.org/10.1007/s11696-026-05146-0> [IF: 2.5]

- [3] Tahir, S., Waheed, F., **Akram, M.**, Salman, M., Farooq, U., Saleem, S., & Ehsan, A. (2026). Vanadium-Doped Zirconia as an Efficient Visible-Light Photocatalyst for Advanced Treatment of Dye-Loaded Wastewater. *Iranian Journal of Catalysis*, 16(2), 218–237. <https://doi.org/10.57647/ijc.2026.1602.15> [IF: 2.5]
- [4] Wahab, A., **Akram, M.**, Salman, M., Shakoar, A., Tahir, S., Farooq, U., & Majeed, M. (2023). Sorptive activity of potential native biosorbent for the elimination of lead and cadmium in one and two-component systems: characterization, kinetic activity, and mechanism exploration. *Desalination and Water Treatment*, 290, 82–93. [IF: 1.254]
- [5] Saleem, U., **Akram, M.**, Salman, M., Farooq, U., Dar, A., & Tahir, S. (2022). Biosorption activity of chemically modified *Trifolium alexandrinum* for the detoxification of Cr(III) contaminated water. *Desalination and Water Treatment*, 246, 212–225. [IF: 1.254]
- [6] **Akram, M.**, Salman, M., Rehman, R., Farooq, U., Tahir, S., & Nazir, H. (2021). Kinetic and isothermal investigations of cost-effective sorptive elimination of Gentian Violet dye from water using *Haplophragma adenophyllum* biowaste. *Journal of Chemistry*, 1–12. [IF: 2.08]
- [7] **Akram, M.**, Salman, M., Farooq, U., Saleem, U., Tahir, S., Nazir, H., & Arsalan, H. M. (2020). Phthalate-functionalized *Sorghum bicolor* L.: an effective biosorbent for the removal of Alizarin Red S and Bromophenol Blue dyes from simulated wastewater. *Desalination and Water Treatment*, 190, 383–392. [IF: 1.254]
- [8] Nazir, H., Salman, M., Athar, M., Farooq, U., Wahab, A., & **Akram, M.** (2019). Citric acid functionalized *Bougainvillea spectabilis*: a novel, sustainable, and cost-effective biosorbent for removal of Pb^{2+} from wastewater. *Water, Air, & Soil Pollution*, 230(12), 303. [IF: 3.8]
- [9] Nazir, H., Salman, M., Athar, M., Farooq, U., **Akram, M.**, & Saleem, N. (2019). A novel biosorbent *Bougainvillea spectabilis* stalks leaves for removal of Cd(II) and Cu(II) from wastewater. *Desalination and Water Treatment*, 148, 222–228. [IF: 1.254]

RESEARCH SUPERVISION

2026	BS Chemistry	Maryam Bibi, Sania Latif	Fabrication of Green Nanocellulose-Pectin Composite Beads for Adsorptive Removal of Synthetic Dyes from Aqueous Solution
2026	MPhil Chemistry	Kishwar Aslam	Phytochemical profiling and in silico assessment of herbal therapeutics to enhance insulin sensitivity
2026	BS Chemistry	Muhammad Abubakar Sahaf, Junaid Ashraf, Umar Faisal	Silica nanoparticle–functionalized hydrogel-coated substrates for enhanced oil–water separation
2026	BS Chemistry	Muhammad Hanzla Maqsood, Mahnoor, Amina Bint-e-Zaheer	Formulation of a skin-friendly herbal moisturizing cream using plant extracts
2026	BS Biochemistry	Azka Najeeb, Rimsha Intisar, Areeba Kashif	Phytochemical screening and formulation of a herbal cream for acne treatment
2024	BS Chemistry	Abeeha Mustafa, Samia Shoaib, Hafiz Muhammad Talha	Cymbopogon citratus-derived Cu@Zr bimetallic nanoparticles as advanced photocatalysts for organic pollutant degradation
2024	BS Chemistry	Sehar Shahid, Muhammad Junaid, Muhammad Hamza	Synthesis of trimetallic Ni-Mo@Zr nanoparticles embedded in Aloe vera for antifungal applications
2024	BS Chemistry	Zain Ahmed, Areeba Rashid, Rabia Nadeem	Green synthesis of bimetallic Mg@Zr nanoparticles using Rosmarinus officinalis for antibacterial applications
2023	BS Chemistry	Laiba Noreen, Rimsha Shafiq, Muhammad Arslan	Degradation of organic pollutants using Mo- and Zn-doped zirconia catalyst under LED light
2023	BS Chemistry	Rubi Iqbal, Asad Atique, Sadia Saif	Detection of Cr^{2+} and Sn^{2+} in commercial fruit juices in Lahore

2023	BS Chemistry	Gohar Ali, Amina Siddique, Saba Afzal	Detection of Cu^{2+} and Fe^{2+} in commercial tea brands in Lahore
2022	BS Chemistry	Alisha Manzoor, Muhammad Ali, Mawara Shaukat	Synthesis, characterization, and applications of $\text{Mg}(\text{OH})_2/\text{MnO}_2$ nanocomposite
2022	BS Chemistry	Ali Ur Rehman, Usama Saleem, Alina Ashraf	Analytical quality design of RP-HPLC for simultaneous estimation of Metformin HCl, Empagliflozin, and Linagliptin

PEER REVIEW SERVICE

- Reviewer, Archives of Microbiology
- Reviewer, Scientific Reports
- Reviewer, Nanotechnology for Environmental Engineering
- Reviewer, Microchimica Acta
- Reviewer, Water Conservation Science and Engineering

SKILLS & COMPETENCIES

Instrumentation	ICP-OES · AAS · FTIR · HPLC · UV-Vis Spectrophotometer · Flame Photometry · General Lab Safety
Teaching Areas	Organic Chemistry · Physical Chemistry · Analytical Chemistry · Environmental Chemistry · Spectroscopy · Instrumental Analysis
Research Methods	Experimental design · Kinetic & thermodynamic modelling · Molecular docking & ADMET analysis · Data analysis & interpretation · Scientific writing & publication
Digital & Office	MS Office (Word, Excel, PowerPoint) · Google Workspace · Canva · Turnitin / EndNote · Social Media Management
Languages	Urdu (Native) · Punjabi (Native) · English (C2 – Proficient)

PROFESSIONAL DEVELOPMENT & CERTIFICATIONS

Dec 2025	Quality Control & Regulatory in Cosmetic Science	Olay / Coursera
Dec 2025	Cosmetic Product Development	Olay / Coursera
Sep 2025	Introduction to Cosmetic & Skincare Science	Olay / Coursera
Aug 2025	Cosmetic Formulation Science	Olay / Coursera
Sep 2025	AI in Academic and Research Training	ORIC & LIC, UCP
Jul–Aug 2025	MS/MPhil/PhD Supervision Course (HEC Graduate Education Policy 2023)	HEC / UCP
May 2025	World of Classroom Assessment and Testing	HEC Pakistan / Coursera
Mar 2025	Entrepreneurship Strategy: From Ideation to Exit	HEC Paris / Coursera
Mar 2025	Nanotechnology: A Maker's Course	Duke University / Coursera
Feb 2025	Mentoring and Counselling Skills	FOST, UCP
Jan 2025	Assessment, Grading, Purpose and Technique	FOST, UCP
Jan 2025	Interactive Teaching – BOPPPS Model	FOST, UCP
Sep 2024	EndNote Management & Generative AI in Research	UCP
Aug 2024	Intellectual Property: Patents, Copyrights & Commercialisation (6-session workshop)	UCP

Oct 2022	Teaching Excellence Training Program	Centre of Professional Excellence, UCP
Nov 2022	Turnitin Plagiarism Detection – Pedagogy & Application	Learning Innovation Centre, UCP

SELECTED CONFERENCES & SEMINARS

Apr 2025	CHEMSMART-2025	International Expo Centre, Lahore	Presenter
Nov 2024	2nd ICEHST-2024	University of Central Punjab	Media Coordinator & Presenter
Nov 2024	21st NAPRECA Winter School	University of Central Punjab	Coordinator
Sep 2024	2nd IGSEPS-2024	LCWU / Govt. Islamia Graduate College, Lahore	Participant
Dec 2023	NMR: Fundamentals to Applications Webinar	Dept. of Basic & Applied Chemistry, UCP	Organiser & Participant
Nov 2023	2nd International Conference of Sciences	Rawalpindi Women University	Participant
Nov 2022	International Conference – Chemical & Allied Sciences	The Woman University, Multan	Participant
Nov 2019	Recent Innovations in Molecular Sciences	University of the Punjab	Poster Presenter (2 posters)
Apr 2018	Environmental & Analytical Chemistry Conference	Lahore Garrison University	Poster Presenter