Chemistry Section, School of Sciences
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Dr. Zeeshan Ahamad

CURRENT DESIGNATION/ INVOLVEMENT:

Currently working as a Guest Faculty (Contractual) in Chemistry Section

AREA OF SPECIALIZATION:

- Inorganic Chemistry,
- Wastewater Treatment,
- Adsorption,
- DFT simulations.

ONGOING ACADEMIC RESEARCH/PROJECTS

- Development of magnetized bio-based adsorbents for the removal of organic dyes and heavy metal ions from aqueous solutions.
- Exploration of green synthesis approaches for advanced nanomaterials and their environmental applications.
- Comprehensive review of low-cost adsorbents derived from waste materials for sustainable water treatment.
- Optimization of adsorption processes through material characterization, kinetic modeling, and performance evaluation.
- Investigation of surfactant-modified lignocellulosic materials for enhanced dye adsorption efficiency.

INNOVATION WITH FIELD OF STUDY AND COLLABORATIVE EFFORTS:

- Specialized in developing novel, low-cost adsorbents for wastewater treatment, incorporating biomass (lignocellulosic material), clay, biopolymer, metal oxides and biological macromolecule-based nanocomposites, as well as superparamagnetic materials, nanomaterials, and hydrogels.
- Conducted comprehensive adsorption studies through a combination of experimental techniques and Density Functional Theory (DFT) simulations to optimize adsorbent performance at the molecular level.
- Proficient in advanced material characterization techniques, including SEM/EDS, TEM/SAED, BET, TGA-DTG/DTA, VSM, FTIR, PXRD, and UV-Vis spectroscopy, for analyzing structural, functional, spectroscopic, magnetic, and morphological properties.

- Executed extensive batch adsorption studies, encompassing kinetic and isotherm modeling, thermodynamic analyses, and desorption/regeneration studies, to evaluate the efficiency, reusability, and scalability of adsorbent materials.
- Multi-institutional research collaborations with Yeungnam University, South Korea, and leading national laboratories for nanomaterial synthesis, characterization, and efficient utilization for wastewater remediation.
- Engaged in high-impact peer review contributions for Chemical Engineering Journal, Separation and Purification Technology, and other Q1 journals, ensuring scientific rigor in adsorption and materials science research.

ACADEMIC AND ADMINISTRATIVE EXPERIENCE:

- Assistant Professor (Contractual), Department of Applied Sciences, MMANTC, Nashik, Maharashtra, From 01, July 2024 to 12 March 2025.
- NAAC Accreditation Work (Criterion 6) in MMANTC, Nashik, Maharashtra, by preparing documentation, compiling data, and coordinating with faculty and administration.
- Anti- Ragging committee incharge in MMANTC, Nashik, Maharashtra.
- Mentor- Mentee Coordinator in MMANTC, Nashik, Maharashtra.

EDUCATIONAL QUALIFICATION:

- Ph.D. in Applied Chemistry, June 2024
  Research Supervisor: Dr. Abu Nasar (Professor and Former Chairperson)
  Department of Applied Chemistry, Aligarh Muslim University, Aligarh, U.P., India
- Masters of Science (M.Sc.) in Chemistry, June 2018
  Specialization: Inorganic Chemistry
  Department of Chemistry, Aligarh Muslim University, Aligarh, U.P., India
- Bachelors of Science (B.Sc.), Honors in Chemistry, June 2016
  Department of Chemistry, Aligarh Muslim University, Aligarh, U.P., India

TEACHING PROFICIENCY

- Urdu, English, and Hindi.

RESEARCH PUBLICATION DETAILS

[1] **Z. Ahamad**, A.S. Bhat, A. Nasar, High-performance magnetic graphene oxide/alginate hydrogel for efficient malachite green removal, J. Water Process Eng. 70 (2025) 107024. https://doi.org/10.1016/j.jwpe.2025.107024.

[2] **Z. Ahamad**, F. Mashkoor, A. Nasar, C. Jeong, Multi-walled carbon nanotubes/TiO_2/Chitosan nanocomposite for efficient removal of malachite green dye from aqueous system: A comprehensive experimental and theoretical investigation, Int. J. Biol. Macromol. (2025) 139461. https://doi.org/10.1016/j.ijbiomac.2025.139461.

[3] **Z. Ahamad**, A. Solanki, V. Gupta, Upcycling waste biomass: Alkali-

modified watermelon rind as a lignocellulosic bioadsorbent for copper ion removal, Ind. Crops Prod. 224 (2025) 120340. https://doi.org/10.1016/j.indcrop.2024.120340.

[4] **Z. Ahamad**, A. Nasar, Conjugated polymers decorated lignocellulosic nanocomposites for malachite green contaminated water remediation, Seperation and Purification Technology. 354 (2025) 128688. https://doi.org/10.1016/j.seppur.2024.128688.

[5] **Z. Ahamad**, A. Nasar, Design and evaluation of a polyaniline-*Azadirachta indica* composite for efficient dye removal: Insights from experimental and theoretical simulations, Materials Today Sustainability. 27 (2024) 100926. https://doi.org/10.1016/j.mtsust.2024.100926.

[6] **Z. Ahamad**, A. Nasar, Synthesis, characterization, and application of magnetized *Azadirachta indica* sawdust as a novel adsorbent: kinetic, and isotherm studies in removing methylene blue as a model dye, Cellulose. 31 (2024) 3763–3782. https://doi.org/10.1007/s10570-024-05813-z.

[7] **Z. Ahamad**, A. Nasar, Polypyrrole-decorated bentonite magnetic nanocomposite: A green approach for adsorption of anionic methyl orange and cationic crystal violet dyes from contaminated water, Environmental Research. 247 (2024) 118193. https://doi.org/10.1016/j.envres.2024.118193

[8] S. Khan, **Z. Ahamad**, A. Nasar, Development and utilization of raw and NaOH-modified peanut hull as potential adsorbents for crystal violet dye removal from wastewater, Biomass Conversion and Biorefinery. (2023). https://doi.org/10.1007/s13399-023-05232-3

[9] **Z. Ahamad**, M. Ahmed, F. Mashkoor, A. Nasar, Chemically modified *Azadirachta indica* sawdust for adsorption of methylene blue from aqueous solutions, Biomass Conversion and Biorefinery. (2023). https://doi.org/10.1007/s13399-023-04161-5

[10] **Z. Ahamad**, A. Nasar, Utilization of Azadirachta indica Sawdust as a Potential Adsorbent for the Removal of Crystal Violet Dye, Sustainable Chemistry. 4 (2023) 110–126. https://doi.org/10.3390/suschem4010009

DETAILS OF CONFERENCE/ SEMINAR /WORKSHOP/FDP (ATTENDED/ PRESENTED)

- Poster presentation titled “Harnessing Advanced Analytical Techniques for Enhanced Wastewater Treatment Applications” at the Workshop on the Application of Advanced Analytical Techniques in Research & Industry, organized by the Sophisticated Analytical Instrument Facility (SAIF) / Centre for Research in Nanotechnology & Science (CRNTS) & Centre for Sophisticated Instruments and Facilities (CSIF), IIT Bombay, Mumbai, India,

in collaboration with the Indian National Academy of Engineering (INAE), held on February 18-19, 2025.

- Attended One Week Online National Level Faculty Development Program on AI Tools organized by Brainovision Solutions India Pvt. Ltd In Association With All India Council For Technical Education (AICTE), held on February 17-21, 2025.
- Oral Presentation On "MWCNT/TiO_2/Chitosan Nanocomposite for Efficient Removal of Malachite Green Dye from Simulated Wastewater: A Comprehensive Experimental and Theoretical Investigations", International Conference In Chemistry -2025 On Recent Advances In Applied Chemical Sciences, Maulana Azad National Urdu University, Hyderabad, 30-31/01/2025.
- Oral Presentation On "Upcycling waste biomass: Alkali-modified watermelon rind as a lignocellulosic bioadsorbent for copper ion removal", International Conference on Importance of Reduce, Reuse and Recycle for Sustainable Environment and Jambhani Philosophy, Guru Jambeshwar Environment Conservation Research Chair, Jai Narayan Vyas University, Jodhpur, Rajasthan, India, 11-12/09/2024.
- Oral Presentation On "Novel MGO/A-DNH Hydrogel For Efficient Malachite Green Removal: Development, Characterization, And Superparamagnetic Separation In Wastewater Treatment", International Conference In Chemistry -2024 On Recent Advances In Applied Chemical Sciences, Maulana Azad National Urdu University, Hyderabad, 23-24/02/2024.
- Oral Presentation on "Facile synthesis of polypyrrole decorated bentonite-based magsorbent: characterizations, performance, and applications in removing cationic and anionic dyes from an aqueous medium", National Conference on Interdisciplinary Approaches in Chemical Sciences (NCIACS-2023), Centre for interdisciplinary research in basic sciences, Jamia Millia Islamia, New Delhi, India, 16/03/2023.
- Oral Presentation on "Magnetized Azadirachta indica sawdust as a novel adsorbent: synthesis, characterization, theoretical investigation using DFT and methylene blue dye adsorption applications from aqueous solution: disposing of waste with waste", International conference on Recent Advancements in Materials, Design and Manufacturing (ICRAMDM-22), Mechanical Engineering Section of the University Polytechnic, Aligarh Muslim University, Aligarh, UP, India, 10/12/2022.
- Oral Presentation on "Synthesis, characterization, and utilization of organic conjugated polymer-based nanocomposite as a novel low-cost adsorbent in wastewater remediation of synthetic wastewater containing crystal violet and methylene blue dyes", International Conference on Green Technology, Issues and challenges (ICGT-2022), Centre for international cooperation,

CCSU, Meerut, UP, India, 22-24/09/2022.

- Participated in One Week Training Program on DST Supported Advanced Research Instruments under STUTI (synergistic training program utilizing the scientific and technological infrastructure) program, 18-24/07/2022.
- Participated in International Conference on Recent Advances in Materials, Design And Manufacturing, mechanical engineering section, University polytechnic, Faculty of Engineering and Technology, Aligarh Muslim University, Aligarh, UP, India, 12/10/22.
- Participated in National Webinar on use of Web of Science in Research and Publications Organized by Maulana Azad Library, Aligarh Muslim University, Aligarh, in collaboration with Clarivate from 12-14/9/2022.
- Oral Presentation on Adsorption of methylene blue dye by chemically modified Azadirachta indica sawdust, International Conference on Advances in Chemical And Petrochemical Engineering (ACAPE 2020), Department of Chemical Engineering And Petroleum Studies, Aligarh Muslim University, Aligarh, UP, India, 22-24/02/2020.
- Oral Presentation on Adsorption of methylene blue dye by Azadirachta indica sawdust, International Conference on Recent Advances in Engineering and Science (ICRAES-2020), University Polytechnic, Aligarh Muslim University, Aligarh, UP, India, 11-12/01/2020.
- Participated in AWSAR (Augmenting Writing Skills for Articulating Research) Workshop on popular science writing, National Botanical Research Institute (NBRI), Lucknow, Uttar Pradesh, India, 30/09/2019.
- Attended an ACS science talk on groundwater pollution, remediation and management, 16/10/2019.
- Presented a Poster on “Design and structural investigation on organotin complexes” during M.Sc. at the National Conference on "Emerging Trends in Chemical Sciences", Department of Chemistry, Aligarh Muslim University, Aligarh, U.P., India, 24-25/02/2018.

DETAILS OF KEYNOTE SPEAKER/RESOURCE PERSON/ SESSION CHAIR ETC.

DETAILS OF SUPERVISION (M.PHIL/M.TECH/P.HD.)

PROFESSIONAL MEMBERSHIPS

PERSONAL DETAILS:

Father's Name:	Mr. Ajaz Ahamad
Date of Birth:	06/06/1992
Gender:	Male
Marital Status:	Single
Nationality:	Indian
Language Known:	Urdu, English, and Hindi.

Date: 22 March 2025
Place: Hyderabad, Telangana

[Last update on: 22 /03/ 2025]