Ahson Jabbar Shaikh, Ph.D. ***Curriculum Vitae***
Tenured Associate Professor of Chemistry
DAAD Fellow, Marie Curie Fellow, Ubbo Emmius Fellow

Male	He/him/his
Date of birth	January 17, 1979
Address	Department of Chemistry, COMSATS University Islamabad - Abbottabad Campus, Abbottabad-22060, KPK, Pakistan.
Contact	92(0)3343770104; 92(0)992387863
e-mail:	ahson@cuiatd.edu.pk, ahsonjabbar@hotmail.com
Web of Science	https://www.webofscience.com/wos/author/record/990258
ORCID	https://orcid.org/0000-0002-8207-6230
Google Scholar	http://scholar.google.com/citations?user=Ms7KitwAAAAJ&hl=en
CUI Profile	https://www.cuiatd.edu.pk/faculty/dr-ahson-jabbar-shaikh/

Keywords: *Perovskite Solar Cells, Nano-composite Hybrid Materials, Metallic & Semiconductor Nanoparticles.*

Work Experience

1) 09/2019 – Till date **Tenured Associate Professor** Department of Chemistry, COMSATS University Islamabad – Abbottabad Campus, Abbottabad-22060, KPK, Pakistan.
   - **Higher Education Commission (HEC) of Pakistan Approved PhD Supervisor**
   - Group Head Materials Chemistry (Oct 2020-March 2023)
   - Member Board of Studies
   - Member Departmental Advisory Committee
   - Member Departmental Academic Review Committee (Oct 2020-March 2023)
   - Member Institutional Biosafety Committee
   - Member Industry-Academia Liaison Committee CUI Abbottabad
   - Member Lab Consumables Management Committee
   - Member Campus Seminar / Conference Management Committee
   - Member Instruments Commercialization Committee
   - Responsibilities: Teaching, Research, Supervision for MS/PhD Students, Graduate Labs In-charge

2) 09/2013 – 09/2019 **Assistant Professor** Department of Chemistry, COMSATS University Islamabad – Abbottabad Campus, Abbottabad-22060, KPK, Pakistan.
   - Member for German Alumni Association of CUI, Abbottabad.

3) 10/2018 – 10/2018 **Motivational Scientist** Directorate of Science and Technology (DOST), Government of KPK for "promotion and support of scientific innovation / product development by youth of schools, colleges and universities" to increase their interest in Science, Technology, Innovation and Discovery.

4) 08/2018 – 10/2018 **DAAD Visiting Researcher** Department of Inorganic & Material Chemistry, University of Cologne, Greinstraße 6, 50939 Köln, Germany.

5) 01/2012 – 09/2013 **Lecturer** Department of Chemistry, COMSATS Institute of Information Technology, Abbottabad-22060, KPK, Pakistan.
   - Focal person and Executive member for German Alumni Association of CIIT, Abbottabad.

6) 09/2010 – 03/2011 **Postdoctoral Research fellow** Stellenbosch University, Department of Chemistry and Polymer Science, Stellenbosch, South Africa.
   - Responsibilities: Research, (Lab) Management, Procurement, Mentor for PhD and Master Students.
   - Research: Densely Grafted Alternating Brush Copolymers (Synthesis and characterization).

7) 01/2003 -01/2004 **Research Assistant** HEJ Research Institute of Chemistry, ICCBS, University of Karachi, Pakistan.

8) 06/2001-07/2001 **Internship Training** Novartis Pharma Ltd, Karachi, Pakistan.

Education

02/2006 – 09/2013 **Ph.D. Chemistry / Nanotechnology** Delft University of Technology, Department of Chemical Engineering (ChemE) and University of Groningen, Stratingh Institute for Chemistry, the Netherlands.

- Awards: University of Groningen, Ubbo Emmius Scholarship Feb 2006 – May 2010.
- Research: Single Molecule Electronics, Nanoscale Hybrid Materials and Synthetic Organic Chemistry.
- Teaching: Mentor for two undergraduate students, 2008.
- Extra-Curricular Activities: Incharge for purchasing, organization and database management of chemicals for the group (2007 - 2008)

02/2004 - 01/2006 **M.Sc. Nanomolecular Sciences** Jacobs University Bremen, Germany, School of Engineering and Science.

- Awards: International University Bremen, GMBH Fellowship Feb 2004 - Jan 2006.
- Research: Synthetic Organic and Organometallic Chemistry, Photolithography.
- Teaching: Undergrad. Lab. teaching for Advanced Organic Chemistry Synthesis, 2004.
- Extra-Curricular Activities: Gas supplies management (2005), University Representative for British American Tobacco visit at IUB.

01/2001 - 12/2002 **M.Sc. Chemistry** (Specialization in Organic Chemistry) University of Karachi, Pakistan, Department of Chemistry and H.E.J. Research Institute of Chemistry.

- Awards: 2nd Prize in M.Sc. Research Student's Poster Session, Uni. of Karachi, February 2003; Need cum merit-based scholarships during years 2001-2002.
- Research: Synthetic Organic Chemistry.
- Extra-Curricular Activities: Finance manager during international conference in Dept. of Chemistry, University of Karachi, Pakistan.

11/1996 - 11/1999 **B.Sc.** Govt. Islamia Science College, University of Karachi, Pakistan.

- Major Subjects: Chemistry, Physics and Mathematics.
- Extra-Curricular Activities: President of Urdu Society of Pakistan, Chief Editor for the Chemistry Society, Member for Physics and Pakistan Studies Society.

General

Prof. Membership:	Royal Dutch Chemical Society (KNCV), European Membrane Society.
Language Skills:	English (Fluent), Dutch & German (Basic), Urdu & Sindhi (Mother tongue), Hindi (spoken fluent), Punjabi (Good working knowledge), Arabic (Reading).
Hobbies:	Travelling, Photography, History, Cinema, News, Electronics.
Additional Awards:	1. 1st Prize in category B (Physical Sciences and Agricultural Sciences), DICE 2016 Mega Innovation & Entrepreneurship Event, NUST, Islamabad, December 21-22, 2016. 2. Marie Curie Actions Fellowship for Nano-structured materials and Membranes in the Food Industry, held at Cetraro and Rende (Institute of Membrane Technology), Italy, 15 – 24 September 2010; Project/Prize winning team member.
GRE Chemistry:	59 percentile, 2003.
English Lang. test:	Common European Framework exam level C1, equiv. IELTS 6.5, 2007.
English Lang. Teaching:	TPK (Test of Professional Knowledge) course and Assessment in the ELTeach professional development program for English language teachers. Score 250/300. Test date 8th December 2014.
Courses:	COMSTECH International Advanced Training Course on “Intellectual Property”, July 27-28, 2022, Islamabad, Pakistan. Conference Presentation Skills, Stellenbosch, South Africa.

Journal publications (<u>As Corresponding Author)</u>

1. Saleem, A., ..., **Shaikh, A.J.***, Lone Pair versus Aromatic Interactions on Metal Oxide Surfaces: A Combined Spectroscopic and Computational Study. Dalton Transactions, 2025.
2. Rehman, H.U., ..., **Shaikh, A.J.***, DLS based Optimization of ZnS-CoS Nanoparticles with Enhanced Energy and Power Density for Supercapacitor Applications and Validation by AI Models. Materials Advances, 2025.
3. Khan, H., ..., **Shaikh, A.J.***, Tailoring hydrodynamic size and stability of TiO_2–SiO_2 nanoparticles for enhanced electrochemical performance of supercapacitors. Materials Chemistry and Physics, 2026. 347: p. 131423.
4. Abdullah, ..., **Shaikh, A.J.***, Optimization of Zn-Cu sulfide nanocomposites: a systematic study for smaller size, enhanced stability, and Reactive Black 5 adsorption efficiency. Colloid and Polymer Science, 2025.
5. Afzal, M.Y., ..., **Shaikh, A.J.***, Understanding Photocatalytic Degradation of RB5 Dye under Salts Using Nickel Sulfide Nanoparticles: Insights from Dynamic Light Scattering and Theoretical Investigations. ACS Omega, 2025. 10(30): p. 32918-32938.
6. Shafaat, S., ..., **Shaikh, A.J.***, Understanding adsorption phenomena through dynamic light scattering and stability measurements. International Journal of Environmental Analytical Chemistry: p. 1-22.
7. Shafaat, S., ..., **Shaikh, A.J.***, Optimized size and stability of composite CuO–ZnO metal oxide nanoparticles for efficient removal of Reactive Black 5 dye. Journal of Chemical Technology & Biotechnology, 2025. 100(6): p. 1346-1365.
8. Hussain, N., Asif, M., Shafaat, S., Khan, M. S., Riaz, N., Iqbal M., Abdullah, Butt, T. A., **Shaikh, A. J.***, Bilal, M.* (2024) Multilayer Adsorption of Reactive Orange 16 Dye onto Fe_2O_3/ZnO Hybrid Nanoadsorbent: Mechanistic Insights from Kinetics, Isotherms and Dynamic Light Scattering Studies. *Journal of Chemical Technology & Biotechnology*, 100, 50-66.
9. Hussain, N., Shafaat, S., Sarfraz, A., Usman, M., Khan, M. S., Khan, A. M., Khan, R. A., Amin, B. A. Z., Bilal, M.*, **Shaikh, A. J.*** (2024) Engineered hybrid iron-cobalt metal oxide nanoparticles for effective adsorption of malachite green dye. *Journal of Chemical Technology & Biotechnology*, 99, 2553-2568.
10. Ibrar, S., Abdullah, Ashfaq, H., khan, A.M., Khan, R.A., Iqbal, M., and **Shaikh, A.J.*** (2024) A step forward towards optimized iron–nickel bimetal oxide core–shell nanoparticles and their magnetic properties. Materialia, 36, 102135.
11. Usman, M., Sarfraz, A., Shafaat, S., Hussain, N., Khan, A. M., Hussain, Z., Amin, B.A.Z., and **Shaikh, A.J.*** (2024) A multiparametric study for size and stability of hybrid Fe_2O_3-NiO nanoparticles and their statistical transformation. Particulate Science and Technology, 1-20.
12. Majid, M., Usman, M., Ibrar, S., Ashfaq, H., Awan, Q. T., Khan, A. M., Younas, F., Rab, A., **Shaikh, A. J.*** (2024). Hybrid Nickel-Copper Oxide Nanoparticles: A Multiparametric Study for the Influence of Synthetic Parameters on the Optical and Physical Properties. ChemistrySelect, 9(15), e202400671.
13. Sarfraz, A., Usman, M., Hussain, N., Shafaat, S., Khan, A. M., Hussain, Z., Amin, B. A. Z., **Shaikh, A. J.*** (2024). A Pathway to Optimal Multivariate Synthesis of Fe2O3-CuO Bimetal Oxide Hybrid Nanoparticles: Transformation Through Mathematical Modelling. JOM, 1-20.
14. Ali, S., Ayoub, M. H., Ahmad, F., Ahmad, S., Hassan, Z. U., Waseem, A., Yasir, M., Farooq, U., **Shaikh, A. J.*** (2024). Relation between Fluorescence Spectroscopy and Dynamic Light Scattering Revealed by Interaction of Transition Metal Sulfide Nanoparticles and Graphene Oxide. Journal of Inorganic and Organometallic Polymers and Materials, 1-15.
15. Bakht, K., Ishaq, A., Khan, A. M., Khan, R. A., Bilal, M., Rabbani, F., and **Shaikh, A. J.*** (2023). Evaluation of binding compatibility among transition metal nanoparticles towards graphene quantum dots and their magnetic properties. Journal of Nanoparticle Research, 25(10), 210.
16. Saleem, A., Agada, F., Ayoub, M. H., Khan, A. M., Sarwar, R., Bukhari, S. M., Zaidi, A., Farooq, U., and **Shaikh, A. J.*** (2023), The synergistic effect of electron lone pairs and aromaticity on the binding affinity towards metal surfaces. Colloids and Surfaces A: Physicochemical and Engineering Aspects, 664, 131127.
17. Ayoub, M. H.; Ahmad, S.; Hassan, Z. U.; Khan, A. M.; Bilal, M.; Waseem, A.; **Shaikh, A. J.*** (2023). Understanding non-covalent interactions of graphene oxide toward transition metal surfaces and relation of binding constants with titration end points from dynamic light scattering studies. J. Appl. Phys., 133, 025303.
18. Saeed, W.; Abbasi, Z.; Bilal, M.; Shah, S. H.; Waseem, A.; **Shaikh, A. J.*** (2023). Interactive behavior of graphene quantum dots towards noble metal surfaces. Physica E: Low-dimensional Systems and Nanostructures, 147, 115596.
19. Hassan, Z. U.; Abbas, Z.; Bakht, K.; Ayoub, M. H.; Ahmad, S.; Khan, A. M.; Farooq, U.; Khan, M. S.; **Shaikh, A. J.*** (2022). Dynamic light scattering and zeta-potential as a tool for understanding the mechanism of pesticides binding toward individual components of transition metal nanoparticles and graphene oxide hybrids. Journal of Environmental Science and Health, Part B, 2022, 1-16.

20. Agada, F., Abbas, Z., Bakht, K., Khan, A. M., Farooq, U., Bilal, M., Arshad, M., Khan, A. F., Kamboh, A. H., and **Shaikh, A. J.*** (2022). A step forward toward quantum dots based perovskite solar cells in an ambient environment. Optical Materials, 129, 112538.

21. Ahmad, S., Ayoub, M. H., Khan, A. M., Waseem, A., Yasir, M., Khan, M. S., Bajwa, T. M., and **Shaikh, A. J.*** (2022). Diverse comparative studies for preferential binding of graphene oxide and transition metal oxide nanoparticles. Colloids and Surfaces A: Physicochemical and Engineering Aspects, 647, 129057.

22. Abbas, Z., Agada, F., Kamboh, A. H., Khan, A. M., Farooq, U., Bilal, M., Arshad, M., and **Shaikh, A. J.*** (2022). A simplistic approach to evaluate the power conversion efficiencies for hybrid charge transport layers in open-air fabricated perovskite solar cells. Journal of Materials Research, 37, 1323.

23. Saeed, W., Abbasi, Z., Majeed, S., Shahzad, S.A., Khan, A.F., and **Shaikh, A.J.***, An insight into the binding behavior of graphene oxide and noble metal nanoparticles. *Journal of Applied Physics* **2021**, 129: 125302.

24. Abbasi, Z., Saeed, W., Shah, S.M., Shahzad, S.A., Bilal, M., Khan, A.F., **Shaikh A.J.***, Binding efficiency of functional groups towards noble metal surfaces using graphene oxide – metal nanoparticle hybrids. *Colloids and Surfaces A: Physicochemical and Engineering Aspects* **2021**, 611: 125858.

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26. **Shaikh, A.J.*;** Aman, N.; and Yameen, M.A.; A new methodology for simultaneous comparison and optimization between nanoparticles and their drug conjugates against various multi drug resistant bacterial strains, *Asian Biomedicine (Res Rev News)* **2019**, *13(4)*,149–162. (Highlighted paper in Editorial in the same issue)

27. Jawad, M.; Khan, A.F.; Waseem, A.; Kamboh A.H.; Mohsin, M.; Shahzad, S.A.; Shah, S.H.; Mathur S.; and **Shaikh, A.J.***; Effect of Gold Nanoparticles on Transmittance and Conductance of Graphene Oxide Thin Films and Efficiency of Perovskite Solar Cells, *Applied Nanoscience* **2020**, *10*, 485–497.

28. Jawad M.; Ali S.; Waseem A.; Rabbani F.; Amin B.A.Z.; Bilal M., and **Shaikh A.J.***; Plasmonic effects and size relation of gold-platinum alloy nanoparticles, *Advances in Nano Research* **2019**, *7(3)*, 169-180.

29. **Shaikh A.J.***; Batool, M.; Yameen, M. A.; Waseem, A., Plasmonic Effects, Size and Biological Activity Relationship of Au-Ag Alloy Nanoparticles, *Journal of Nano Research* **2018**, *54*, 98-111.

30. **Shaikh, A.J.***, *Exploring the Direction of Charge Transfer in Porphyrin – PbSe Quantum Dot Hybrids*, *ChemistrySelect* **2016**, *1(8)*, 1678-1686.

31. Khan, K.; **Shaikh, A. J.***; Siddiq, M.; Sherazi, T. A.; Nawaz, M., *In Situ* formation of Copper Nanoparticles in a P(NIPAM-VAA-AAm) Terpolymer Microgel that retains the swelling behavior of microgels, *Journal of Polymer Engineering* **2016**, *36(3)*, 287–292.

32. **Shaikh, A. J.***; Rabbani, F.; Sherazi, T. A.; Iqbal, Z.; Mir, S.; Shahzad, S. A., Binding Strength of Porphyrin - Au-Nanoparticle Hybrids Based on Number and Type of Linker Moieties and a Simple Method to Calculate Inner Filter Effects of Gold Nanoparticles Using Fluorescence Spectroscopy. *The Journal of Physical Chemistry A* **2015,** *119*, 1108−1116.

As Co-author

33. Gul, R., Bashir, H., Sarfraz, M., **Shaikh, A. J.**, Bin Jardan, Y. A., Hussain, Z., Asad, M.H.H.B., Gulzar, F., Guan, B., Nazir, I., Amirzada, M.I. (2024). Human plasma derived exosomes: Impact of active and passive drug loading approaches on drug delivery. Saudi Pharmaceutical Journal, 32(6), 102096.

34. Shuaibu, A. D., Rubab, R., Ali, S., Umoh, G. V., **Shaikh, A. J.**, Khan, S. A., Khan, A. M. (2024). Synthesis and stabilities of Fe, Ni and Zn oxide incorporated colloidal TiO_2. Colloids and Surfaces A: Physicochemical and Engineering Aspects, 691, 133955.

35. Rahman, M. U., Khan, R. A., Khan, A. M., Sreearunothai, P., Shah, F., Muhammad, H., **Shaikh, A. J.**, Ismail, B., Noor, U. (2024). Utilizing as-synthesized Reduced Graphene Oxide Decorated with $Mn_{1-x}Zn_xFe_{2-y}Cu_yO_4$ Doped Magnetic Nanoparticles for Efficient Electrochemical Sensing of Paracetamol. Journal of The Electrochemical Society, 171(3), 037515.

36. Amir, A., Bibi, F., Zafar, S., Bibi, S., Haq, S., **Shaikh, A. J.**, Waseem, M. (2024). In-Situ Synthesis of Graphene Oxide/Zinc Ferrite Nanocomposites for As(III) Removal from Aqueous Solution. Journal of Inorganic and Organometallic Polymers and Materials.

37. Bibi, F., Hussain, R., **Shaikh, A. J.**, Waseem, M., Iqbal, N., Loomba, S., Haris, M., Mahmood, N. (2024). Efficient sorption of As(III) from water by magnetite decorated porous carbon extracted from a biowaste material. *Environmental Science and Pollution Research*, 1-12.

38. Khan, M. S., Riaz, N., Rehman, S., Chenhui, L., Shaikh, A. J., Arfan, M., Zeb, I., Arshad, M., Hafeez, F., and Bilal, M., (2023). Improved photocatalytic decolorization of reactive black 5 dye through synthesis of graphene quantum dots–nitrogen-doped TiO_2. Environmental Science and Pollution Research.

39. Tariq, A., Gull, M., **Shaikh, A. J.**, Hussain, S., Hussain, R., Haq, S. and Waseem, M., (2023). Grafting the ferrites of cobalt and zinc on MWCNTs for adsorption of crystal violet. International Journal of Environmental Science and Technology, 20, 12465-12480.

40. Rehman, S.; Yousaf, S.; Ye, Q.; Chenhui, L.; Bilal, M.; **Shaikh, A. J.**; Khan, M. S.; Shahzad, S. A.; Wu, P. (2023). Bentonite binding with mercury(II) ion through promotion of reactive oxygen species derived from manure-based dissolved organic matter. Environmental Science and Pollution Research, 30, 26107-26119.

41. Saleem, A., Farooq, U., Bukhari, S. M., Khan, S., Zaidi, A., Wani, T. A., **Shaikh, A. J.**, Sarwar, R., Mahmud, S., Israr, M., Khan, F. A., Shahzad, S. A., (2022). Isoxazole Derivatives against Carbonic Anhydrase: Synthesis, Molecular Docking, MD Simulations, and Free Energy Calculations Coupled with In Vitro Studies, ACS Omega, 7 (34), 30359–30368.

42. Khan, M. T., Zia Uddin, Javed, M. A., Shah, N., Bashir, H., **Shaikh, A. J.**, Rajoka, M. S. R., Amirzada, M. I., and Asad, M. H. H. B., (2022). PEGylated Protamine Letrozole Nanoparticles: A Promising Strategy to Combat Human Breast Cancer via MCF-7 Cell Lines. BioMed Research International, 4438518.

43. Abbasi, M., Sohail, M., Minhas, M. U., Iqbal, J., Mahmood, A., & **Shaikh, A. J.** (2022). Folic acid-functionalized nanoparticles-laden biomaterials for the improved oral delivery of hydrophobic drug in colorectal cancer. Journal of Drug Delivery Science and Technology, 71, 103287.

44. Hussain, S., Muhammad Junaid, H., Tahir Waseem, M., Rauf, W., **Shaikh, A. J.**, & Anjum Shahzad, S. (2022). Aggregation-Induced Emission of Quinoline Based Fluorescent and Colorimetric Sensors for Rapid Detection of Fe3+ and 4-Nitrophenol in Aqueous Medium. Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 272, 121021.

45. Ilyas, Q., Waseem, M. T., Junaid, H. M., Ali Khan, Z., Munir, F., **Shaikh, A. J.**, & Shahzad, S. A. (2022). Fluorescein based fluorescent and colorimetric sensors for sensitive detection of TNP explosive in aqueous medium: Application of logic gate. Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 272, 120994.

46. Junaid, H. M., Waseem, M. T., Khan, Z. A., Gul, H., Yu, C., **Shaikh, A. J.**, & Shahzad, S. A. (2022). Fluorescent and colorimetric sensors for selective detection of TNT and TNP explosives in aqueous medium through fluorescence emission enhancement mechanism. Journal of Photochemistry and Photobiology A: Chemistry, 428, 113865.

47. Shuaibu, A. D., Rubab, R., Khan, S., Ali, S., **Shaikh, A. J.**, Khan, S. A., & Khan, A. M. (2022). Comparative effects of zinc oxide nanoparticles over the interfacial properties of low concentrations of ionic surfactants at interfaces. Colloids and Surfaces A: Physicochemical and Engineering Aspects, 637, 128241.

48. Hussain, A., Shuaibu, A. D., **Shaikh, A. J.**, and Khan, A. M. (2021). Exploring the effects of selected essential amino acids on the self-association of sodium dodecyl sulphate at different temperatures. Journal of Molecular Liquids: 118003.

49. Khan, M. S., Riaz, N., **Shaikh, A. J.**, Shah, J. A., Hussain, J., Irshad, M., Awan, M. S., Syed, A., Kallerhoff, J., Arshad, M., and Bilal, M. (2021). "Graphene quantum dot and iron co-doped TiO2 photocatalysts: Synthesis, performance evaluation and phytotoxicity studies." Ecotoxicology and Environmental Safety 226: 112855.

50. Qayyum, M., Bushra, T., Khan, Z. A., Gul, H., Majeed, S., Yu, C., Farooq, U., **Shaikh, A. J.**, and Shahzad, S. A. (2021). Synthesis and Tetraphenylethylene-Based Aggregation-Induced Emission Probe for Rapid Detection of Nitroaromatic Compounds in Aqueous Media. ACS Omega 6(39): 25447-25460.

51. Hussain, Z., Rehman, A., **Shaikh, A.J.**, Hu, K-X, Ali, M., Sultan, F., Shahzad, M., Altanji, M.; Instability of magneto-hydro-dynamic flow of thermocapillary liquid layers of shear-thinning nanofluids with oxide nanoparticles in water. *Case Studies in Thermal Engineering* **2021**, 26: 100998.

52. Shah, S.H., Mirza, R., Butt, T.A., Bilal, M., Yasser, M.S.A., Ali, A., Ali, M.A., Baig, A., Shah, R.Z., Shah, M.H., Amin, B.A.Z., Asad, M.H.H.B., Saqib, M., **Shaikh, A.J.**; Nano-Porous Zirconia Membranes for Separation of Hydrogen from Carbon Dioxide. *Polish Journal of Environmental Studies* **2021**, 30(3), 2313-2323.

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67. Prins, F.; **Shaikh, A. J.**; van Esch, J. H.; Eelkema, R.; van der Zant, H. S. J., Platinum nanogaps for single-molecule electronics: room-temperature stability. *Physical Chemistry Chemical Physics* **2011**, 14297–14301.

68. Perrin, M. L.; Prins, F.; Martin, C. A.; **Shaikh, A. J.**; Eelkema, R.; van Esch, J. H.; Briza, T.; Kaplanek, R.; Kral, V.; van Ruitenbeek, J. M.; van der Zant, H. S. J.; Dulić, D., Influence of the Chemical Structure on the Stability and Conductance of Porphyrin Single-Molecule Junctions. *Angewandte Chemie International Edition* **2011,** *50* (47), 11223-11226.

69. Perrin, M. L.; Martin, C. A.; Prins, F.; **Shaikh, A. J.**; Eelkema, R.; van Esch, J. H.; van Ruitenbeek, J. M.; van der Zant, H. S. J.; Dulić, D., Charge transport in a zinc–porphyrin singlemolecule junction. *Beilstein Journal of Nanotechnology* **2011,** *2*, 714-719.

70. Wakchaure, V. N.; Mohanty, R. R.; **Shaikh, A. J.**; Nugent, T. C., A One-Pot Asymmetric Sequential Amination-Alkylation of Aldehydes: Expedient Synthesis of Aliphatic Chiral Amines. *European Journal of Organic Chemistry* **2007,** *2007* (6), 959-964.

71. Khan, K. M.; Maharvi, G. M.; Khan, M. T. H.; **Shaikh, A. J.**; Perveen, S.; Begum, S.; Choudhary, M. I., Tetraketones: A new class of tyrosinase inhibitors. *Bioorganic & Medicinal Chemistry* **2006,** *14* (2), 344-351.

Theses

1. Single Molecule Electronics: A systematic approach to study the properties of single porphyrin molecules. Ph.D. Thesis, Self-Assembling Systems (now Advanced Soft Matter), ChemE, Delft University of Technology / Stratingh Institute for Chemistry, University of Groningen, The Netherlands, 2013.
2. One-Pot Asymmetric Sequential Amination-Alkylation Methodology: Synthesis of Chiral Amines
   M.Sc. Thesis, School of Engineering and Science, International University Bremen, Germany, 2006.
3. Synthesis of Some Tetraketones and Their Biological Effects
   M.Sc. Thesis, HEJ Research Institute of Chemistry, and Department of Chemistry, University of Karachi, Pakistan, 2003.

Conferences, Meetings, Symposiums & Workshops participation

1. 5th NUST Flagship International Conference on Water, Energy, and Environment for Sustainability (IC-WEES 2025), Islamabad, September 24-25, 2025.
2. Workshop on Strengthening of Institutional Biosafety committees by training on Responsible Conduct in Research, Know Your Collaborator, and Due Diligence" organized by GC University Faisalabad, and PCSIR Lahore in collaboration with Health Security Partners, USA; Islamabad, November 18-19, 2024.
3. Workshop on Empowering Entrepreneurs "Launching and Nurturing Tech Start-Ups" organized by COMSATS University Islamabad, Abbottabad Campus, February 19-21, 2024.
4. Workshop on Research Methodology in Chemical Sciences RMCS-2020 (Spectroscopy and Structural Analysis), February 24-25, 2020. Organizer and Resource Person.
5. 17th International Conference on Emerging Materials and Nanotechnology, March 07-08, 2019, Berlin, Germany. (Photocatalytic degradation of Azo dyes using N-TiO_2 photocatalyst: Effect of nitrogen loading and calcination temperature), Journal of Material Sciences & Engineering Volume 8, Page 54.
6. 2nd International Rhine Round Table: Emerging Frontiers in Ceramic Materials and Glass Inaugural symposium of the Rhine Chapter Cologne, 24. September 2018, University of Cologne, Cologne, Germany.
7. Professional Development Training for Faculty, Faculty Development Academy (FDA), COMSATS Head Quarters, Islamabad, Pakistan, Feb 27th - March 31st, 2017.
8. DICE 2016 Mega Innovation & Entrepreneurship Event, NUST, Islamabad, Pakistan, December 21-22, 2016. (Poster Presentation titled "Enhancing the efficiency of infrared solar cells using metallic nanorods")
9. International conference on "Research and Enterprise on Food Safety in Developing Countries" COMSATS IIT, Islamabad, Pakistan, December 5-8, 2016. (Oral Presentation titled "The Gold Nanoparticle – Fluoroquinolones Approach to Resistant Bacteria: Can We Trust This Approach?"), page 25 (abstract book).
10. 2nd International Symposium on Applied Materials & Nanodevices" NILOP, Islamabad, Pakistan, November 14-16, 2016. (Poster Presentation by Student titled "Plasmonics of Gold Nanorods for Efficient Infrared Solar Cells").
11. Workshop on Modern Techniques in Structural Chemistry and Structural Biology, COMSATS IIT, Abbottabad, Pakistan, April 17-18, 2014. (Organizer)
12. Workshop on Ethical Fitness, Sustainable Development through Ethics Literacy, COMSATS IIT, Abbottabad, Pakistan, March 30th, 2013.
13. Faculty Development workshop, COMSATS IIT, Abbottabad, Pakistan, Feb 25th - March 1st, 2013
14. International Conference on Advances in Polymer Science and Rubber Technology, IIT, Kharagpur, India, March 3-5, 2011 (Oral Presentation titled "Densely Grafted Alternating Brush Copolymers – Functional Macromolecular Architectures"), page 96 (abstract book).
15. National postdoctoral Research Forum, Somerset, South Africa, December 6-8, 2010 (poster presentation titled "Densely grafted alternating brush copolymers").
16. Conference presentation skills, Stellenbosch, South Africa, November 15, 2010.
17. Scientific Meetings, October 2006-2010 (each year, poster presentation), Lunteren, The Netherlands.
18. 4th International Symposium on Macrocyclic and Supramolecular Chemistry, Maastricht, The Netherlands, June 21-25, 2009 (poster presentation titled "A Step towards highly sensitive sensors"), page 287 (abstract book)
19. Prof. Roeland Nolte Symposium, Nijmegen, The Netherlands, December 11-12, 2008.
20. Nanoned symposium, Wageningen, The Netherlands, November 17, 2008.
21. Ameland Summer School, Ameland, The Netherlands, June 24-29, 2007 (poster presentation).
22. Trends in Nanoscience 2007, February 24-28, 2007, kloster Irsee, Germany.
23. Harz Ski-Hut Seminar, January 29-February 02, 2007, Harz, Germany.
24. KNCV – Section NSA – Nanostructures and Self-Assembly, January 26, 2007, Delft, the Netherlands.
25. Workweek, May 15-19, 2006, Reims, France.
26. 9th International SFB Symposium Asymmetric Synthesis, October 10-11, 2005, Aachen, Germany.
27. CRC International Symposium, "Cross-Coupling and Organometallics", October 12, 2005, Aachen, Germany (poster presentation titled "A One-Pot Asymmetric Simultaneous Amination-Alkylation Reaction: Expedient Synthesis of Aliphatic alpha-Chiral Amines"), page 207 (abstract book)
28. 9th International Symposium on Natural Product Chemistry, January 10-13, 2004, Karachi, Pakistan (poster presentation titled "Computational Studies at the Interface of Organic Chemistry and Ribosomal Function for Protein Engineering"), page 198 (abstract book).
29. H.E.J.-Comstech (CPC)-TWAS International Workshop on the Development of Medicines from Plants, September 8-13, 2003, Karachi, Pakistan (with poster presentation).
30. 7th International Symposium on Protein Structure Function Relationship, January 20-24, 2003 Karachi, Pakistan. (poster presentation titled "Synthesis and Structure Activity Relationship of Tetraketones through Tyrosinase Inhibition"), page 79 (abstract book).

31. 3rd International and 13th National Chemistry Conference, December 28-31, 2002, University of Karachi, Karachi, Pakistan (with poster presentation).
32. 7th Eurasia Conference on Chemical Sciences, March 09-12, 2002, Karachi, Pakistan (with poster presentation).

Projects

Projects as Principal Investigator

1. Porphyrins as Hole Transport Materials and Graphene Quantum Dots as Electron Transport Materials for Efficient Perovskite Solar Cells. (DAAD, Germany 2018) (Completed)
2. Graphene Oxide as Hole Transport Material and Graphene Quantum Dots as Electron Transport Material for Efficient Perovskite Solar Cells. (HEC-NRPU Research Grant, 2019; Accepted by Reviewers)
3. Efficient Quantum Dot Solar Cells by Making Semiconductor Nanoparticle – Metallic Nanoparticle Conjugates. (HEC-NRPU Research Grant 2017; PKR 13.081 million) (Completed)
4. Gold nanoparticles for enhanced anti-cancer activity; in vitro studies. (HEC Start-up Research Grant 2014; PKR 0.36 million) (Completed)
5. Connectivity of Nanoparticles in Linear and Angular Pattern: Model for molecular electronic Studies. (CIIT Internal Grant 2014; PKR 82.5 K) (Completed)

Projects as Co-Principal Investigator

1. Removal of colorants, non-colorants and heavy metals from wastewater using Transition Metal Composites" (HEC-NRPU; Rs. 4147200/-, Awarded March 2022)
2. Bioethanol production from lignocellulosic agricultural waste: biorefinery concept and its industrial implications" (HEC-NRPU; Rs. 3708000/-, Awarded January 2022)
3. Synthesis and characterization of silane crosslinked linear low-density polyethylene / chitosan / closite composite (HEC Start-up Research Grant; PKR 0.5 million) (Completed)
4. Modified activity of commercially available antibiotic drugs by making gold nano-particle conjugates. (CIIT Internal Grant; PKR 175 K) (Completed)
5. Synthesis of biologically active benzofurans and dihydropyrimidines and evaluation of their biological activity. (CIIT Internal Grant; PKR 165 K) (Completed)

Students

Students graduated under my supervision and co-supervision

PhD Students

1. Muhammad Saqib Khan (Ph.D.) Graduated with me, being a supervisory committee member.
2. Afia Saleem (Ph.D. student) worked under my co-supervision.
3. Mubashir Majeed (Ph.D. student) worked under my co-supervision.

MS Students

1. Zertashia Raza (received M.S. Chemistry in September 2014) under my supervision.
2. Attiya Zehra (received M.S. Chemistry in September 2014) under my co-supervision.
3. Sajid Javed (received M.S. Chemistry in September 2015) under my co-supervision.
4. Fizzah Iqbal (received M.S. Chemistry in September 2016) under my supervision.
5. Farkhanda Shaheen (received M.S. Chemistry in September 2016) under my co-supervision.
6. Sabeen Jaffery (received M.S. Chemistry in January 2017) under my co-supervision.
7. Maria Batool (received M.S. Chemistry in September 2017) under my supervision.
8. Sami Ullah (received M.S. Chemistry in January 2018) under my co-supervision.
9. Ghazala Bibi (received M.S. Chemistry in January 2018) under my co-supervision.
10. Shazia Ali (received M.S. Chemistry in September 2018) under my supervision.
11. Bushra Nasim (received M.S. Chemistry in September 2018) under my co-supervision.
12. Takwa Khan (received M.S. Biotech. in September 2018) with myself as supervisory committee member.
13. Muhammad Mohsin (received M.S. Chemistry in January 2019) under my supervision.
14. Muhammad Jawad (received M.S. Chemistry in January 2019) under my supervision.
15. Shabab Hussain (received M.S. Chemistry in January 2019) under my co-supervision.
16. Sheraz Iqbal (received M.S. Chemistry in September 2019) under my co-supervision.
17. Wajeeha Saeed (received M.S. Chemistry in January 2020) under my supervision.
18. Noreen Riaz (received M.S. Chemistry in January 2020) under my co-supervision.

19. Zeeshan Abbasi (received M.S. Chemistry in September 2020) under my supervision.
20. Hafiz Muhammad Junaid (received M.S. Chemistry in December 2020) under my co-supervision.
21. Syed Marifat Shah (received M.S. Chemistry in December 2020) under my supervision.
22. Awais Khan (received M.S. Chemistry in January 2021) under my supervision.
23. Sayyed Tufail Jan (received M.S. Chemistry in January 2021) under my supervision.
24. Razia Batool (received M.S. Chemistry in January 2021) under my co-supervision.
25. Zameer Abbas (received M.S. Chemistry in September 2021) under my supervision.
26. Francis Agada (received M.S. Chemistry in September 2021) under my supervision.
27. Haris Ayoub (received M.S. Chemistry in January 2022) under my supervision.
28. Shehryar Ahmed (received M.S. Chemistry in January 2022) under my supervision.
29. Saman Ali (received M.S. Chemistry in January 2022) under my co-supervision.
30. Khush Bakht (received M.S. Chemistry in July 2022) under my supervision.
31. Aisha Ishaq (received M.S. Chemistry in July 2022) under my co-supervision.
32. Husna Ashfaq (received M.S. Chemistry in January 2023) under my supervision.
33. Sadaf Ibrar (received M.S. Chemistry in January 2023) under my supervision.
34. Sidra Hayat (received M.S. Chemistry in January 2023) under my co-supervision.
35. Muhammad Usman (received M.S. Chemistry in July 2023) under my supervision.
36. Ambreen Sarfraz (received M.S. Chemistry in July 2023) under my supervision.
37. Awais Ahmad (received M.S. Chemistry in July 2023) under my supervision.
38. Abdullah (received M.S. Chemistry in January 2024) under my supervision.
39. Uzair Ahmad Khan (received M.S. Chemistry in January 2024) under my supervision.
40. Hafeez Ur Rehman (received M.S. Chemistry in September 2024) under my supervision.
41. Sehrish Ajaib (received M.S. Chemistry in September 2024) under my supervision.
42. Andleeb Khanum (received M.S. Chemistry in September 2024) under my supervision.
43. Muhammad Younas Afzal (received M.S. Chemistry in January 2025) under my supervision.
44. Hamza Khan (received M.S. Chemistry in September 2025) under my supervision.
45. Saneela (received M.S. Chemistry in September 2025) under my supervision.
46. Raheema Saweer (received M.S. Chemistry in September 2025) under my supervision.

Students currently working under my supervision and co-supervision

1. Nasira Hussain (Ph.D. student), working under my supervision (Thesis Submitted).
2. Shanza Shafaat (Ph. D. student), working under my supervision (Thesis Submitted).
5. 5 MS students are currently working under my supervision.

Editorial activities

1. Pakistan Journal of Scientific and Engineering Research; http://pjser.org/editorial-board
2. Science Publishing Group (Nanoscience and Nanometrology); http://www.sciencepublishinggroup.com/journal/editorialboard?journalid=356
3. International Journal of Science, Engineering and Innovative Research; http://ijseir.org/editorial-board
4. Clausius Scientific Press, Composites and Nano Engineering; https://www.clausiuspress.com/journal/COMPNE/editorialBoard.html
5. Science Research Association, SCIERA Journal of Materials; http://www.scirea.org/journal/EditorialBoard?JournalID=43000
6. ScienceVier, Journal of Innovative Research, http://sciencevier.com/editorial-board-journal-of-innovative-research/

Reviewer activities

1. Various high impact factor journals
2. NSF Reviewer for Scientists of South Africa
3. Reviewer for Intellectual Property Rights Office, International Center for Chemical and Biological Sciences, University of Karachi
4. Reviewer for Pakistan Science Foundation
5. External MS/PhD Examiner, Nelson Mandela Metropolitan University, Port Elizabeth, South Africa.
6. External Examiner, Hazara University, Mansehra; University of Karachi, Karachi; and National University of Sciences and Technology (NUST), Islamabad, Pakistan.

Invited Talks

1. "Four Generations of Solar Cells" at School of Natural Sciences, National University of Sciences and Technology (NUST), Islamabad, April 3rd, 2017.

2. "Scientific Writing" at American Society for Microbiology, Chapter Himalaya, COMSATS University Islamabad, Abbottabad Campus, October 2nd, 2019.
3. "Scientific Writing" at COMSIAN Chemical Society, COMSATS University Islamabad, Abbottabad Campus, December 5th, 2019.
4. "Dynamic Light Scattering and Zeta Potential" at Research Methodology in Chemical Sciences (RMCS-2020, Theme: Spectroscopy and Structural Analysis), COMSATS University Islamabad, Abbottabad Campus, February 25th, 2020.

Courses Taught

As Lecturer (OG-I)

1. SP – 12: BES – II, Environmental Chemistry (Undergraduate Course)
2. FA – 12: BES – II, Environmental Chemistry (Undergraduate Course)
3. SP – 13: ERS – III, Environmental Chemistry (Undergraduate Course)

As Assistant Professor (TTS)

4. SP – 14: MS – II, Chromatographic Techniques (MS Course)
5. FA – 14: PhD – II, Chemistry of Advanced Materials (PhD Course)
6. SP – 15: MS – I, Nanochemistry in Fuel Cells (MS Course)
7. FA – 15: ERS – IV, Environmental Chemistry (Undergraduate Course)
8. SP – 16: MS – II, Chromatographic Techniques (MS Course)
9. FA – 17: BTY – VII, Analytical Techniques (Undergraduate Course)
10. SP – 18: Afghan Classes, Chemistry (Undergraduate Course)
11. SP – 19: PhD – I, Characterization Techniques for Polymers (PhD Course)
12. SP – 19: BTY – VIII, Introduction to Nanobiotechnology (Undergraduate Course)

As (Tenured) Associate Professor

13. FA – 19: BTY – VIII, Introduction to Nanobiotechnology (Undergraduate Course)
14. SP – 20: MS – II, Advanced Material Characterization Techniques (MS/PhD Course)
15. FA – 20: BTY – VIII, Introduction to Nanobiotechnology (Undergraduate Course)
16. SP – 21: GEO-I, Introduction to Chemical Sciences (Undergraduate Course)
17. FA – 21: RCM-2, PCM-1,2, Applied Transition Metal Catalysis (MS/PhD Course)
18. SP – 22: PCM-1,2, Advanced Material Characterization Techniques (PhD Course)
19. FA – 22: RCM, PCM-2, Advanced Material Characterization Techniques (MS/PhD Course) × 2
20. FA – 22: RCM-1, Advanced Analytical Techniques (MS Course)
21. SP – 23: BTY – VIII, Introduction to Nanobiotechnology (Undergraduate Course)
22. SP – 23: RCM-1, Research Methodology and Chemical Data Handling RCM 1I (MS Course)
23. FA – 23: RCM-2, Applied Transition Metal Catalysis (MS Course)
24. FA – 23: PCM-1, Electron Microscopic Techniques (PhD Course)
25. SP – 24: RCM-2, Applied Transition Metal Catalysis (MS Course)
26. SP – 24: RCM-2, Advanced Materials and Nanochemistry (MS Course)
27. FA – 24: HUM100, English Comprehension and Composition (Undergraduate Course)
28. FA – 24: BTY 320, Introduction to Nanobiotechnology (Undergraduate Course)
29. FA – 24: CHM 624, Advanced Renewable Energy Materials (MS Course)
30. SP – 25: CHM 796, Advanced Renewable Energy Materials (MS Course)
31. SP – 25: BTY 320, Introduction to Nanobiotechnology (Undergraduate Course)
32. SP – 25: HUM 102, Report Writing Skills (Undergraduate Course)
33. FA – 25: BTY 320, Introduction to Nanobiotechnology (Undergraduate Course)
34. FA – 25: CHM 796, Advanced Renewable Energy Materials (MS Course)
35. FA – 25: CHM 773, Chemistry of Composite Materials (MS Course)