

CURRICULUM VITAE

Muhammad Irfan, Postdoc, PhD, Engr. (Gold Medalist)

Assistant Professor

Department of Chemical and Energy Engineering

Pak-Austria Fachhochschule: Institute of Applied Sciences and

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Educational Qualification

Doctor of Philosophy (PhD)	September 2015-June 2019 Materials Science and Chemical Engineering, 3.60 CGPA Institute: School of Chemistry and Materials Science, University of Science and Technology of China (World Ranking: 88) Research Interest: Chemical Engineering, Materials Engineering, Membrane Science & Technology, and Materials for Energy Conversion Thesis: Anion Exchange Membranes Structure Control and Performance Evaluation for Diffusion Dialysis, Electrodialysis, and Fuel Cell Applications
Master of Science (MPhil)	February 2011-April 2013 Advanced Chemical Engineering, 3.86 CGPA Institute: Department of Chemical Engineering, University of Engineering and Technology Peshawar, Khyber Pakhtunkhwa, Pakistan Research Interest: Physical and Chemical Extraction Processes Thesis: Extraction of Niobium Pentoxide from ore deposits occurring in Khyber Pakhtunkhwa, Pakistan
Bachelor of Science (BS)	September 2004-August 2008 Chemical Engineering (3.86 CGPA) Institute: Department of Chemical Engineering, University of Engineering and Technology Peshawar, Khyber Pakhtunkhwa, Pakistan Research Interest: Membrane Array Design and Material Balance Thesis: Desalination of Saline Water by Reverse Osmosis Process
Faculty of Science (FSc)	September 2002-July 2004 Pre-Engineering (845/1100) Institute: Govt. College Peshawar, Khyber Pakhtunkhwa, Pakistan Majors: Mathematics, Chemistry, and Physics Board: Board of Intermediate and Secondary Education Peshawar
Matric (SSC)	April 2000-June 2002 Science (661/850) Institute: Govt. High School Taru Jabba, Nowshera, Khyber Pakhtunkhwa, Pakistan Majors: Mathematics, Chemistry, Physics, and Biology Board: Board of Intermediate and Secondary Education Peshawar

Professional Experience

Assistant Professor	<p>May 2022-to date Department of Chemical and Energy Engineering Pak-Austria Fachhochschule: Institute of Applied Sciences and Technology, Mang, Haripur, Pakistan</p>
Postdoctoral Researcher	<p>July 2019-May 2022 Chemical, Energy & Materials Science Engineering Institute: School of Chemistry and Chemical Engineering, Hefei University of Technology China Research Interest: Preparation and Characterization of Lithium-ion Conducting Solid Polymer Electrolytes for Lithium-Ion Batteries Thesis: Conducting Solid Polymer Electrolytes: Emerging Materials and Applications in Lithium-ion Batteries Job Responsibilities: Execution of Research Projects: Executed the awarded scientific projects as principal investigator (PI) for successful completion. Lab Establishment: Developed lab and homemade equipments for the synthesis and characterization of polymer and advanced functional materials. Guided the students on how to use the developed equipment and how to perform their experimental work efficiently. Supervised Master and PhD Students: Worked as a Co-Supervisor of one Master and one PhD student. Conducted weekly meetings with them to examine their research work progress and to solve the related issues for achieving the goals.</p>
Lecturer	<p>January 2011-August 2015 Institute: Department of Chemical Engineering, University of Engineering and Technology of Peshawar, Pakistan Job Responsibilities: Courses Taught: Particle Technology, Statistics and Experimental Design, Mass Transfer, Technical Report Writing & Research Methodology, Instrumentation and Process Control, Thermodynamics-1, and Chemical Process Principle-1 (BS Chemical Engineering). Labs Taught: Particle Technology Lab, Heat Transfer Lab, Industrial Pollution and Control Lab, and Mass Transfer Lab. Lab Incharge: Particle Technology Lab, Industrial Pollution & Control Lab, Heat Transfer Lab, and Mass Transfer Lab for availability and proper maintenance of the equipment. Supervised Bachelor Projects and Theses: Supervised the following undergraduate research projects and theses: <ol style="list-style-type: none"> i. Statistical and experimental study of solar still for seawater purification (2011-2012) ii. Fermentation of sugarcane molasses by <i>saccharomyces cerevesia</i>: Effects of operating parameters on ethanol production (2012-2013) iii. Project design on the production of 700 MTD of single super phosphate (2013-2014) iv. Recovery of sulfur from hydrogen sulfide (2014-2015) </p>

	<p>Member of Departmental PEC: Member of the Departmental Committee for Pakistan Engineering Council (PEC) visits to update the available information for PEC interim visits. Preparation of departmental SAR (Self-assessment report) report as a part of a team for PEC zero and interim visits (Sept 2012-Aug 2015).</p> <p>Member of Scholarship Committee: Member of Departmental Scholarship committee for allocation of scholarships to the deserved students (Feb 2014-Aug 2015).</p> <p>Member of Departmental QEC: Member of Departmental Quality Enhancement Cell Committee (QEC) and preparation of self-assessment report (SAR) for undergraduate and postgraduate studies (Sept 2013-Aug 2015).</p> <p>Member of Convocation Team: Member of the convocation organizing team for seating arrangement (July 2012- July 2014).</p> <p>Member of Project Evaluation Committee: Member of Departmental Project Evaluation Committee for undergraduate projects (Feb 2012-July 2013).</p>
<p>Assistant Production Manager</p>	<p>April 2009-January 2011</p> <p>Industry: Department of Production, Riches Fertilizer Pvt. Ltd, Shekhupura Lahore, Pakistan</p> <p>Plant: Manufacturing of Single Super Phosphate (SSP)</p> <p>Job Responsibilities:</p> <ul style="list-style-type: none"> • Supervision and maintenance of the production process, controlling all the operating parameters and variables within the operating range. • Control and monitoring of operating parameters and operation of the different processes, i.e. Dilution, Mixing (Mixer, Den), Material transportation (Belt Conveyors, Bucket elevators), Crushing, Granulation, Drying (Dryer, Furnace), Screening, and Packing. • Installation and operation of the process equipments (Jaw Crushers, Fine Grinder, Ball Mill (Dry), Cyclones, and Filter Bags) as a team member. • Developing and updating all process reports and maintaining all the raw materials and product stocks for the manufacturing process.
<p>Research and Development Engineer</p>	<p>November 2008-April 2009</p> <p>Industry: Department of Research and Development, Phoenix Chemical Pvt. Ltd, Shekhupura Lahore, Pakistan</p> <p>Plant: Manufacturing of Good-Earth/Fuller Earth</p> <p>Job Responsibilities:</p> <ul style="list-style-type: none"> • Worked as a team member to develop and modify the existing manufacturing processes (i.e. crushing, slurry formation, sand removal, settling/sedimentation, steam formation, reaction, washing (pH adjustment), separation/cake formation (filter presses), drying, crushing, product recovery (filter bags) and packing) for product quality and quantity improvement. • Supervised various process equipments including crusher, ball mill (wet), screw classifier, La mella, fire tube boiler, reactors, hot and cold pressure vessels, washing tanks, filter presses, disintegrator, dryer, filter bags, and packing machine.

Science Teacher	September 2008-November 2008 Institute: Mercy High School Nasir Pur Peshawar, Pakistan Job Responsibilities: Taught the science subjects and performed the experiments in lab.
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Distinctions & Awards

1. Secured Outstanding Research and Best Student Award (30,000 RMB=900,000 PKR) and Certificate of the Academic Year 2018 from the Chinese Scholarship Council (CSC), and the University of Science and Technology of China (USTC) in recognition of excellence in research during PhD study.
2. Best Paper Selection from USTC in the National Forum for International Doctoral Candidates Studying in China to celebrate the 40th anniversary of reform and opening up, Qingdao, Shandong, China, October 19-20, 2018.
3. 2nd Cash Prize and Appreciation Certificate for the Best Oral Presentation at the international 4th Graduate Symposium on Chemistry and Materials Science, University of Science and Technology of China, Anhui, China, November 24-25, 2018.
4. Award of PhD Scholarship by CAS-TWAS Presidential Fellowship in 2015.
5. Secured Gold Medal Certificate for First Position in BS Chemical Engineering from the Department of Chemical Engineering, University of Engineering and Technology Peshawar, Pakistan, July 16, 2008.
6. Secured Maximum CGPA (3.86 CGPA) in the History of Chemical Engineering Department for BS Chemical Engineering at UET Peshawar, July 16, 2008.
7. 1st Cash Prizes and Merit Certificates for the First position in the First, Second, Seventh, and Eighth Semesters of BS Chemical Engineering, UET Peshawar (2004-2008)
8. 2nd Cash Prizes and Merit Certificates for the Second Position in Fourth, Fifth, and Sixth Semesters of BS Chemical Engineering, UET Peshawar (2004-2008)
9. Secured First Position (3.86 CGPA) in M.Sc. Chemical Engineering, UET Peshawar, Pakistan, April 29, 2013.
10. Secured Third Position (845/1100) in the F.Sc. (Pre-Engineering), Government College Peshawar Pakistan, Pakistan, July 31, 2004.
11. Secured First Position (661/850) in the S.S.C annual examination, Government High School Taru Jabba, Nowshera, Pakistan, June 29, 2002.

Research Interest & Core Competence

- Lithium-Ion Batteries Preparation and Characterization
- Synthesis of Polymeric Materials
- Preparation and Characterization of Lithium-ion Conducting Solid Polymer Electrolytes for LIBs.
- Synthesis and Characterization of Advanced Functional Materials
- Ion Exchange Membrane Preparation and Characterization
- Membrane Science and Technology

- Preparation and Characterization of Novel Polymeric Functional Membranes for Diffusion Dialysis, Electrodialysis, and Fuel Cell Technologies
- Sustainability, Wastewater Treatment, and Resources Recovery
- Process Simulation and Optimization
- Mathematical and Statistical Analysis
- Solar Desalination and Reverse Osmosis

Projects and Fundings

- Secured 67th Batch of China Postdoctoral Science Foundation as Principal Investigator (PI) for the experimental and theoretical studies to design and develop the novel single lithium-ion conducting solid polymer electrolytes for the high performance in lithium-ion batteries, 2020, Grant No: 2020M671844 (80,000 RMB=2,400,000 PKR).
- Awarded Fundamental Research Funds for the Central Universities as Principal Investigator (PI) for the development of novel anode and cathode materials for the high performance of lithium-ion batteries, 2020, Grant No: JZ2020HGQB0225, (50,000 RMB=1,500,000 PKR).
- Research project NSFC, China, 2019 and 2021 (Submitted)

Publications & Proceedings

Journal Publications:

First Author Publications:

1. **M. Irfan**, Y. Zhang, Z. Yang, J. Su, W. Zhang, Novel conducting solid polymer electrolytes with zwitterion structure boosting ionic conductivity and retarding lithium dendrite formation, **Journal of Materials Chemistry A** (2021) (IF: 12.732, Q1). <https://pubs.rsc.org/en/content/articlelanding/2021/TA/D1TA05396E>
2. **M. Irfan**, M. Atif, Z. Yang, W. Zhang, Recent advances in high performance conducting solid polymer electrolytes for lithium-ion batteries (Review Article), **Journal of Power Sources**, 486 (2021) 229378 (IF: 9.127, Q1). <https://doi.org/10.1016/j.jpowsour.2020.229378>
3. **M. Irfan**, Y. Wang, T. Xu, Novel electrodialysis membranes with hydrophobic alkyl spacers and zwitterion structure enable monovalent/divalent cation selectivity, **Chemical Engineering Journal**, 383 (2020) 123171 (IF: 13.273, Q1). <https://doi.org/10.1016/j.cej.2019.123171>
4. **M. Irfan**, X. Tingting, G. Liang, Y. Wang, T. Xu, Zwitterionic structure membrane provides high monovalent/divalent cation electrodialysis selectivity: Investigating the effect of functional groups and operating parameters, **Journal of Membrane Science**, 588 (2019) 117211 (IF: 8.742, Q1). <https://doi.org/10.1016/j.memsci.2019.117211>
5. **M. Irfan**, G. Liang, Y. Wang, Z. Yang, T. Xu, Hydrophobic side chains impart anion exchange membranes with high monovalent-divalent anion selectivity in electrodialysis, **ACS Sustainable Chemistry & Engineering**, 7 (2019) 4429–4442 (IF: 8.198, Q1). <https://pubs.acs.org/doi/10.1021/acssuschemeng.8b06426>

6. **M. Irfan**, E. Bakangura, N.U. Afsar, M.M. Hossain, J. Ran, T. Xu, Preparation and performance evaluation of novel alkaline stable anion exchange membrane, **Journal of Power Sources**, 355 (2017) 171-180 (IF: 9.127, Q1). <http://dx.doi.org/10.1016/j.jpowsour.2017.03.146>
7. **M. Irfan**, E. Bakangura, N.U. Afsar, J. Tan, T. Xu, Augmenting acid recovery from different systems by novel Q-DAN anion exchange membranes via diffusion dialysis, **Separation and Purification Technology**, 201 (2018) 336–345 (IF: 7.312, Q1). <https://doi.org/10.1016/j.seppur.2018.02.042>
8. **M. Irfan**, N.U. Afsar, Y. Wang, T. Xu, Investigation of key process parameters in acid recovery for diffusion dialysis using novel (MDMH-QPPO) anion exchange membranes, **Journal of the Taiwan Institute of Chemical Engineers**, 93 (2018) 405-413 (IF: 5.876, Q1). <https://doi.org/10.1016/j.jtice.2018.08.009>
9. **M. Irfan**, N.U. Afsar, E. Bakangura, A.N. Mondal, M.I. Khan, K. Emmanuel, Z. Yang, L. Wu, T. Xu, Development of novel PVA-QUDAP based anion exchange membranes for diffusion dialysis and theoretical analysis therein, **Separation and Purification Technology**, 178 (2017) 269-278 (IF: 7.312, Q1). <http://dx.doi.org/10.1016/j.seppur.2017.01.051>
10. **M. Irfan**, M.I. Ahmad, S. Akhtar, M.A.Z. Khan, M.A.Khan, Experimental and statistical study for leaching of Niobium Pentoxide from Pakistani ore, **Chemical Industry & Chemical Engineering Quarterly**, 24 (2018) 51-58 (IF: 0.638, Q3). <https://doi.org/10.2298/CICEQ160518018I>
11. **M. Irfan**, S. Gul, M. Younas, Solar still performance for seawater purification: A statistical and Experimental study, **Journal of Engineering and Applied Sciences**, 32 (2) (2013) 1-8 (ISSN 1023-862X). <http://researcherslinks.com/current-issues/SOLAR-STILL-PERFORMANCE/31/5/3224>
12. **M. Irfan**, M.I. Ahmad, M.S. Khan, 2013, Extraction of Niobium from ore deposits in KPK, Pakistan, **NUST Journal of Engineering Sciences**, 7 (2015) 1-4 (ISSN 2070-9900). <http://dx.doi.org/10.24949%2Fnjjes.v7i1.40>
13. **M. Irfan**, S. Gul, M. Younas, B. Nawaz, M. Ishfaq, M.A. Durrani, A. Khan, 2013, Fermentation of sugarcane molasses by *Saccharomyces cerevesia*: Effects of operating parameters on ethanol production, **Journal of Engineering and Applied Sciences**, 33(1) (2014) 9-17 (ISSN 1023-862X). <http://researcherslinks.com/current-issues/FERMENTATION-OF-SUGARCANE/31/5/3192>
14. **M. Irfan**, T. Xu, Preparation of novel anion exchange membranes for various applications, **National Forum for International Doctoral Candidates Studying in China**, 2018 268-274.

Corresponding-author Publications:

15. Y. Zhang, **M. Irfan***, Z. Yang, K. Liu, J. Su, W. Zhang*, Lithium hydroxyphenyl propanesulfonate imparts composite solid polymer electrolytes with ultrahigh ionic conductivity for dendrite free lithium batteries, **Chemical Engineering Journal**, (2022) 435 (2022), 134775 (IF: 13.273, Q1). <https://doi.org/10.1016/j.cej.2022.134775>
16. S. Akhtar, K.U. Khan, F. Atlas, **M. Irfan***, Stimulating student's pro-environmental behavior in higher education institutions: an ability–motivation–opportunity perspective,

Environment, Development and Sustainability, (2021) 1-22 (IF: 3.219, Q1).
<https://doi.org/10.2298/CICEQ160613017A>

Co-author Publications:

17. W. Tang, Z. Chen, H. Huang, **M. Irfan**, C. Huang, Z. Yang, W. Zhang, PVP-bridged γ -LiAlO₂ nanolayer on Li_{1.2}Ni_{0.182}Co_{0.08}Mn_{0.538}O₂ cathode materials for improving the rate capability and cycling stability, **Chemical Engineering Science**, 229 (2021) 116126 (IF: 4.311, Q1). <https://doi.org/10.1016/j.ces.2020.116126>
18. W Li, W. Tang, M. Qiu, Q. Zhang, **M. Irfan**, Z. Yang, W. Zhang, Effects of Gradient Concentration on the Microstructure and Electrochemical Performance of LiNi_{0.6}Co_{0.2}Mn_{0.2}O₂ Cathode Materials, **Frontiers of Chemical Science and Engineering**, 14 (2020) 988-996 (IF: 4.204, Q1). <https://doi.org/10.1007/s11705-020-1918-9>
19. W. Ji, B. Wu, Y. Zhu, **M. Irfan**, N. U. Afsar, L. Ge, T. Xu, Self-organized nanostructured anion exchange membranes for acid recovery, **Chemical Engineering Journal**, 382 (2020) 122838 (IF: 13.273, Q1). <https://doi.org/10.1016/j.cej.2019.122838>
20. F. Sheng, L. Hou, X. Wang, **M. Irfan**, M. Shehzad, B. Wu, X. Ren, G. Liang, T. Xu, Electro-nanofiltration membranes with positively charged polyamide layer for cations separation, **Journal of Membrane Science**, 594 (2020) 117453 (IF: 8.742, Q1). <https://doi.org/10.1016/j.memsci.2019.117453>
21. H. Yan, L. Wu, Y. Wang, **M. Irfan**, C. Jiang, T. Xu, Ammonia capture from wastewater with a high ammonia nitrogen concentration by water splitting and hollow fiber extraction, **Chemical Engineering Sciences**, 227 (2020) 115934 (IF: 4.311, Q1). <https://doi.org/10.1016/j.ces.2020.115934>
22. N.U. Afsar, M.A. Shehzad, **M. Irfan**, K. Emmanuel, F. Sheng, X. Tingting, X Ren, L. Ge, T. Xu, Cation exchange membrane integrated with cationic and anionic layers for selective ion separation via electrodialysis, **Desalination**, 458 (2019) 25-33 (IF: 9.501, Q1). <https://doi.org/10.1016/j.desal.2019.02.004>
23. M. Atif, C. Chen, **M. Irfan**, F. Mumtaz, K. He, M. Zhang, L. Chen, Y. Wang, Poly(2-methyl-2-oxazoline) and poly(4-vinyl pyridine) based mixed brushes with switchable ability toward protein adsorption, **European Polymer Journal**, 120 (2019) 109199 (IF: 4.598, Q1). <https://doi.org/10.1016/j.eurpolymj.2019.08.026>
24. N.U. Afsar, B. Erigena, **M. Irfan**, B. Wu, T. Xu, W. Ji, K. Emmanuel, L. Ge, T. Xu, High performance anion exchange membrane with proton transport pathways for diffusion dialysis, **Separation and Purification Technology**, 193 (2018) 11–20 (IF: 7.312, Q1). <https://doi.org/10.1016/j.seppur.2017.10.062>
25. E. Bakangura, C. Cheng, L. Wu, X. Ge, J. Ran, M. I. Khan, E. Kamana, N.U. Afsar, **M. Irfan**, A. Shehzad, T. Xu, Hierarchically structured porous anion exchange membranes containing zwitterionic pores for ion separation, **Journal of Membrane Science**, 537 (2017) 32–41 (IF: 8.742, Q1). <http://dx.doi.org/10.1016/j.memsci.2017.05.007>
26. S. Ge, Z. Zhang, H. Yan, **M. Irfan**, Y. Xu, W. Lei, H. Wang, Y. Wang, Electrodialytic Desalination of Tobacco Sheet Extract: Membrane Fouling Mechanism and Mitigation Strategies, **Membranes**, 2020, 10(9), 1-14 (IF: 4.106, Q2). <https://doi.org/10.3390/membranes10090245>

27. H. Yan, W. Li, Y. Zhou, **M. Irfan**, Y. Wang, C. Jiang, T. Xu, In-Situ Combination of Bipolar Membrane Electrodialysis with Monovalent Selective Anion-Exchange Membrane for the Valorization of Mixed Salts into Relatively High-Purity Monoprotic and Diprotic Acids, **Membranes**, 2020, 10(6), 1-15 (IF: 4.106, Q2). <https://doi.org/10.3390/membranes10060135>
28. M.I. Ahmad, M.H. Shah, M. A. Zaib, M.A. Kamran, A. Ahmad, **M. Irfan**, Concentration of cane-sugar syrup in a pilot scale climbing film evaporator, **Chemical Industry & Chemical Engineering Quarterly**, 24 (2017) 50-71 (IF: 0.638, Q3). <https://doi.org/10.2298/CICEQ160613017A>
29. S. Gul, **M. Irfan**, H. Bilal, A. Rehman, U. Khan, S.U. Khan S.U, Recycling of used engine oil using solvent extraction and distillation, **Journal of Engineering and Applied Sciences**, 33 (1) (2014) 27-32 (ISSN 1023-862X). <http://researcherslinks.com/current-issues/RECYCLING-OF-USED-ENGINE/31/5/3205>
30. M. Atif, K. He, **M. Irfan**, Y. Wang, F. Hu, L. Chen, Y. Wang, pH responsive switchable protein adsorption properties of poly (2-methyl-2-oxazoline)/poly (4-vinyl pyridine) based coatings: Influence of poly (4-vinyl pyridine) chain length and ionic strength, **Progress in Organic Coating**, 157 (2021) 106307. (IF: 5.161, Q1). <https://doi.org/10.1016/j.porgcoat.2021.106307>

Conference Proceedings:

First Author Proceedings:

31. **M. Irfan**, T. Xu “Preparation of novel anion exchange membranes for various applications” Proceedings of the 3rd **Graduate Symposium on Chemistry and Materials Science** at University of Science & Technology of China, China, 25-26 November 2017.
32. **M. Irfan**, T. Xu “Development of anion exchange membranes for diffusion dialysis and fuel cell applications” **Best paper selection in the Doctoral Forum for studying in China to Celebrate the 40th Anniversary of Reform and Opening-up** from University of Science and Technology of China, Chengdu, China, 1-7, 19-20 October 2018.
33. **M. Irfan**, T. Xu “Development of novel anion exchange membranes for various applications: Experimental and theoretical studies for ions separation” Proceedings of the 4th **Graduate Symposium on Chemistry and Materials Science** at University of Science & Technology of China, Hefei, China, 29, 27-28 November 2018.
34. **M. Irfan**, M. I. Ahmad., M. S. Khan, “Selection of a sustainable and energy-efficient process for selection of Niobium from ore deposits in KPK, Pakistan” **Proceedings of First International Conference on Emerging Materials & Processes**, Islamabad, 71, 22-24 August 2013.
35. **M. Irfan**, M. I. Ahmad., M. S. Khan, “Experimental investigation of extraction of Niobium from ore deposits in KPK, Pakistan by concentrated KOH solution” **Proceedings of International Conference on Physical & Environmental Chemistry**, Nathia Gali, 24, 9th-11th September 2013.

Co-author Proceedings:

36. B. Nawaz, M. Ishfaq, **M. Irfan**, M.A. Durrani, “Study of ethanol production from sugar cane molasses by yeast *saccharomyces cerevesia*” **Proceedings of First International Conference on Emerging Materials & Processes**, 22-24 August 2013, Islamabad, 76.

37. M. S. U. Khan, M. I. Ahmad, **M. Irfan**, S. Ahmad, "Production of blended cement through the addition of rhyolite" **Proceedings of First International Conference on Emerging Materials & Processes**, 22-24 August 2013, Islamabad, 77.

Book Chapter

38. **M. Irfan**, Z.H. Yang, J.H. Su, W.X. Zhang*, Polymer-based solid-state electrolytes, solid state batteries: emerging materials & applications, **American Chemical Society, Pittsburg State University, Pittsburg, KS 66762** (Accepted/under-production) (Chapter of ACS Book).

Professional Training, Workshops & Symposiums

- **Communication Skills and Microteaching:** 7 days' workshop organized by Higher Education Commission, Pakistan, March 14-19, 2011.
- **International Workshop on Surface Science and Catalysis:** Two days workshop organized by the School of Chemistry and Material Science, University of Science and Technology of China, January 22-23, 2018, Hefei, China.
- **University Industry Partnership on Sustainability in Process Industry:** One day workshop organized by PASTIC/PSF and University of Engineering & Technology, Peshawar, Pakistan, March 28, 2012.
- **CPD Framework for Professional Development of Engineers (0.5 CPD Points):** One day workshop organized by Pakistan Engineering Council and University of Engineering & Technology, Peshawar, Pakistan, March 22, 2013.
- **International Symposium on Emerging Material and Processes:** Three days international symposium organized by the School of Chemical and Materials Engineering, National University of Science & Technology, Islamabad, Pakistan, August 22-24, 2013.
- **Internship at Cherat Cement Company Ltd, Nowshera, Pakistan:** Four months of operational training on introduction and standards, quality policy, and work instructions at Cherat Cement Pakistan, May-August, 2006.
- **Training on Micro-teaching:** Three days training workshop organized by the Department of Chemical Engineering, University of Engineering and Technology Peshawar, Pakistan, December 01-03, 2014.
- **Internship at Ashraf Ghee Mill Pvt. Ltd, Peshawar, Pakistan:** Two months of operational training at the introduction of Ghee Plant operations and quality control lab on analyzing the raw material, intermediate and final product quality, July-August, 2005.
- **International Symposium on Sustainability in Process Industry:** One-day National symposium organized by Department of Chemical Engineering, University of Engineering & Technology, Peshawar Pakistan, May 22, 2014.
- **Symposium on Advanced Materials in Process Engineering:** Two days symposium organized by the Department of Chemical Engineering, Pakistan Institute of Engineering and Applied Sciences (PIEAS), Nilore Islamabad, Pakistan, October 1st & 2nd, 2014.
- **Internship at Khazana Sugar Mill Pvt. Ltd, Peshawar, Pakistan:** Two months internship on introduction to sugar plant operations and operational training for different industrial processes, July-August, 2007.

IT Skills

- **Programming Languages:** Visual Basic.
- **Software's:** AutoCAD, MATLAB (Modelling & Simulation), COMSOL Multiphysics (Computational Fluid Dynamic), MS VISIO, ChemSep & COCO simulator (Simulation), Design-Expert, Minitab, IBM SPSS (Statistical Simulation and Optimization).

Languages

- Languages: English (Fluent), Urdu (Native), Pushto (Mother language), Chinese (Basic)

Research Activities and Publications

- **Journal Publications:** Overall Publications: 30, First Author Publications: 14, Corresponding author Publications: 02, Co-author Publications: 14 (Cumulative Impact Factor: 180.15).
- **Conference Publications:** Overall Publications: 07, First Author Publications: 05, Co-author Publications: 02
- **Books Publications:** First Author Chapter Publication: 01
- Citations: 573, h-index: 16, i10-index: 19, RG Score: 26.36 (Accessed 6 June 2022)
- Google Scholar URL:
<https://scholar.google.com.hk/citations?user=8cEDMBQAAAAJ&hl=en&oi=ao>
- ResearchGate URL: <https://www.researchgate.net/profile/Muhammad-Irfan-210>
- ORCID URL: <https://orcid.org/0000-0001-8325-277X>