



**Department of Biotechnology, University of Malakand, Chakdara,  
Lower Dir, Pakistan**

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## **DR. MUHAMMAD AASIM**

Associate Professor (Tenured)

Department of Biotechnology, University of Malakand

### **EXPERIENCE:**

- Associate Professor, University of Malakand, since May 2019
- Assistant Professor, University of Malakand, since July 2012
- Semester Coordinator at Department of Biotechnology, University of Malakand, since November 2012

### **ACADEMIC PROFILE:**

- **PhD in Biochemical Engineering (2008 - 2012)**  
School of Engineering and Science  
Jacobs University Bremen, Germany  
PhD Thesis title: Surface Energetics of Protein adsorption onto chromatographic supports
- **B.Sc. (Hons) Biotechnology (2001 - 2005)**  
University of Peshawar, Pakistan  
Marks obtained 3019/4425 (71.45%)
- **F.Sc. (Pre-Medical) (1999 – 2001)**  
Govt. Post Graduate College, Mardan  
BISE Peshawar  
Marks Obtained 805/1100 (71.45%)
- **SSC (Science Group) (1997 - 1999)**  
Govt. High School Takkar, Takht Bhai, Mardan  
BISE Peshawar  
Marks Obtained 673/850 (79.17%)

## RESEARCH INTERESTS:

- Protein purification by different types of adsorption chromatography
- Characterization of surfaces (surface energy and zeta potential determinations)
- Protein interaction studies to solid supports (chromatographic supports)
- Expanded Bed Adsorption
- Bioprocess design for the separation/purification of biological molecules

## EXPERTISES:

- Contact angle measurements by Goniometer (OCA 20)
- Zeta potential determination by Malvern Zetasizer
- Streaming potential determination by SurPASS instrument
- FPLC (Fast performance liquid chromatography)

## DISTINCTIONS:

- Awarded with overseas PhD scholarship under Faculty Development Program by the Govt. of Pakistan
- Awarded with Merit Scholarship for 4 years during B.Sc (Hons) Biotechnology.

## GRANTS:

1. “Syntheses of chromatographic material from natural and synthetic polymers for effective downstream processing of commercially important bio molecule” worth of **1.2 million** from HED, KP as CO-PI
2. Travel grant **worth of 0.191 million** for presentation of research paper titled “Comparison of Different Surface Energy Determination Methods to Expose Protein Interaction Behavior onto Chromatographic Supports” in the “2nd World Congress and Expo on Biotechnology and Bioengineering” held from 25<sup>th</sup>-27<sup>th</sup> June 2018 in United Arab Emirates
3. Research grant of “Surface energetics of diverse nature of biomass adsorption onto Expanded Bed chromatographic systems” **worth of 3.35 million** from Higher Education Commission of Pakistan, **Completed 2017**
4. Research grant on “Bioprocess design for extraction of protease from microbial cell by Expanded Bed Chromatography” **worth of 0.4 million** from Directorate of Science and Technology, Khyber Pakhtunkhwa, **Completed 2016**

## RESEARCH PAPERS:

1. Rehman H, Ali W, Ali M, Khan NZ, **Aasim M**, Khan AA, Khan T, Khan AA, Delphinium uncinatum mediated biosynthesis of zinc oxide nanoparticles and in-vitro evaluation of their antioxidant, cytotoxic, antimicrobial, anti-diabetic, anti-inflammatory, and anti-aging activities. *Saudi Journal of Biological Sciences*, 2023 103485.
2. Rehman H, Ali W, Ali M, Khan NZ, **Aasim M**, Khan AA, Khan T, Muhammad Ali, Ashaq Ali, Muhammad Ayaz, Muzamil Shah, Syed Salman Hashmi, Delphinium uncinatum mediated green synthesis of AgNPs and its antioxidant, enzyme inhibitory, cytotoxic and antimicrobial potentials, *PLOS ONE*, 2023 0280553.
3. **Aasim M**, Khan MH, Bibi NS, Lahore MF, Understanding the interaction of proteins to ion exchange chromatographic supports: A surface energetics approach, *Biotechnology Progress*, 2022, 38(2), e3232
4. Khan T, Amin I, Adil M, Alam S, Khan S, Amin U, Ullah I, **Aasim M**, Khan MA, Plant Biotechnology; an important avenue for medicine during pandemics, *Proceedings of Pakistan Academy of Sciences* 2021, 58(S), 19-30.
5. Khan AU, Khan T, Khan MA, Nadhman A, **Aasim M**, Khan NZ, Ali W, Nazir N, Zahoor M, Iron-doped zinc oxide nanoparticles-triggered elicitation of important phenolic compounds in cell cultures of *Fagonia indica*, *Plant Cell, Tissue and Organ Culture (PCTOC)* 2021, 147, 287-296
6. Ahmad B, Yousafzai MA, Zeb A, Ali Waqar, Khan NZ, **Aasim M**, Ahmad S, Ullah S, Khan AA, Naz F, Raziq S, Therapeutic role of *Typha elephantina* leaves aqueous extract in paracetamol intoxicated rabbits, *Pakistan Journal of Pharmaceutical Sciences* 2021, 34(2), 737-745.
7. Khan NZ, Ali W, Lal S, **Aasim M**, Mumtaz S, Kamil A, Bibi NS, Distribution and classification of Dehydrins in selected plant species using bioinformatics approach, Distribution and Classification of Dehydrins in Selected Plant Species Using Bioinformatics Approach, *Iranian Journal of Biotechnology*, 18(4): e2680 (2020)
8. Khan A, Khan S, Aman A, Ali Y, Jamal M, Rahman B, Ahmad M, **Aasim M**, Jalil F, Shah AA, Association of VDR gene variant (rs1544410) with type 2 diabetes in a Pakistani cohort, *Balkan Journal of Medical Genetics*, 22: 59-64 (2019)

9. Adil M, Khan T, **Aasim M**, Khan AA and Ashraf M, Evaluation of the antibacterial potential of silver nanoparticles synthesized through the interaction of antibiotic and aqueous callus extract of *Fagonia indica*, *AMB Express*, 2019, 9(1): 1-12.
10. Saddique H, **Aasim M**, Nawab S, Bibi NS, Muhammad N, Qasim M, Aqueous two Phase Systems for the Isolation and Partial Purification of Lipases from Soil Bacteria, *Iranian Journal of Chemistry and Chemical Engineering*, 2020, 39(6), 281-292.
11. Jan SM, Shahid M, Ahmad S, Hussain F, Ahmad A, Mahmood F, Rashid U, Ullah F, Khan NZ, **Aasim M**, Ayaz M, Khan J, Abdullah, Rahim H, Sadiq A, Synthesis of Pyrrolidine-2,5-dione Based Anti-inflammatory Drug: In Vitro COX-2, 5-LOX Inhibition and In Vivo Anti-inflammatory Studies, *Latin American Journal of Pharmacy*, 38(11), 2287-2294 (2019)
12. Kamil A, Khan MA, **Aasim M**, Khan NZ, Khan RS, Jamal M, Ahmad W, Khan MAK, Jalil F, Detection of ROS and translocation of ERP-57 in apoptotic induced human neuroblastoma (SH-SY5Y) cells, *BIOCELL*, 43(3), 167-174 (2019)
13. **Aasim M**, Khan MH, Rahman IU, Bibi NS, Ali W, Khan NZ, Khan AA, Comparative analysis of the methods used for finding surface energy to investigate protein interaction behavior on chromatographic supports, *Biotechnology Progress*, e2828 (2019)
14. Mahmood F, Ali R, Jan MS, Chishti KA, Ahmad S, Zeb A, Ahmad A, Ayaz M, Ullah F, **Aasim M**, Khan NZ, Rahim H, Jabeen M, Siddique AN, Sadiq A, Chemical Characterization and Analgesic Potential of *Notholirion thomsonianum* Extract, *Latin American Journal of Pharmacy*, 38(4), 807-812 (2019)
15. Nawab S, **Aasim M**, Saddique H, Rabi F, Ali W, Khan NZ, Utilization of Integrative Technique for Partial Recovery of Proteases from Soil Microbes, *Periodica Polytechnica Chemical Engineering*, 63(3), 467-477 (2019)
16. Jehan M, Saeed F, Khan Z, Shah M, Sikandar A, Inayat A, Ali S, Khan AM, Talib A, **Aasim M** and Khan AA, Investigative Evaluation of Cassia absus for Antibacterial Capacity and Biomimetic Synthesis of Silver Nanoparticles, *IET Nanobiotechnology*, 12(8), 1062-1066 (2018).
17. **Aasim M**, Khan MH, Bibi NS, Khan NZ, Protein adsorption onto monoliths: A surface energetics study, *Engineering in Life Sciences*, DOI: 18: 179-186 (2018)
18. Mahmood F, Jan MS, Ahmad S, Rashid U, Ayaz M, Ullah F, Hussain F, Ahmad A, Khan A, **Aasim M**, Sadiq A, Ethyl 3-oxo-2-(2,5-dioxopyrrolidin-3-yl) butanoate Derivatives: Anthelmintic and Cytotoxic Potentials, Antimicrobial, and Docking Studies, *Frontiers in Chemistry: Medicinal and Pharmaceutical Chemistry*, 5: 119 (2017)

19. **Aasim M**, Kakarla PB, D'Souza RN, Bibi, NS, Klein TY, Treccani L, Rezwan K and Fernández-Lahore M, The role of ligands on protein retention in adsorption chromatography: A surface energetics approach, *Journal of Separation Science*, 37: 618-624 (2014).
20. **Aasim M**, Bibi NS, Vennapusa RR and Fernandez-Lahore M, Utilization of surface energetics approach to understanding protein interaction to Ceramic hydroxyapatite, *Journal of Chemical Technology and Biotechnology*, 88: 1421-1428 (2013).
21. Bibi NS, Singh NK, Dsouza RN, **Aasim M** and Fernández-Lahore M, Synthesis and performance of megaporous immobilized metal-ion affinity cryogels for recombinant protein capture and purification. *Journal of Chromatography A*, 1272: 145-149 (2013).
22. **Aasim M**, Bibi NS, Vennapusa RR and Fernandez-Lahore M, Extended DLVO calculations expose the role of the structural nature of the adsorbent beads during chromatography. *Journal of Separation Science*, 35: 1068-1078 (2012).
23. **Aasim M**, Poondi GR, Vennapusa RR and Fernandez-Lahore M, Surface energetics of protein adsorption onto chromatographic supports. *International Review of Chemical Engineering* 2: 263-271 (2010).
24. Fernández Lahore M, Aguilar O, Vennapusa RR and **Aasim M**, Expanded bed chromatography, surface energetics of biomass deposition in Encyclopedia of industrial biotechnology. ed by Michael C. Flickinger, Stephen W. Drew and NJ Summit. John Wiley & Sons, Inc., pp 1-15 (2010).
25. Vennapusa RR, **Aasim M**, Cabrera R and Fernandez-Lahore M, Surface energetics to assess biomass attachment onto immobilized metal-ion chromatography adsorbents in expanded beds. *Biotechnology and Bioprocess Engineering* 14: 419-428 (2009).

#### **CONFERENCES/SEMINARS/WORKSHOPS:**

1. Participation in “Innovative vaccine development against HCV” at Abdul Wali Khan University Mardan, Mardan, December 5, 2019
2. Participation in “1st National workshop on Molecular Biology Tools and Techniques” at University of Malakand, November 12-14, 2018
3. Oral presentation at “1st National Conference on Phytomedicines: Current and Future Perspectives” at Shaheed Benazir Bhutto University Sheringal, October 9 – 11, 2018
4. Participation in “Healthy Food: A Tool for Quality Life” at Shaheed Benazir Bhutto Women University Peshawar, April 18 – 19, 2018

5. Oral presentation at “International workshop on Energy Materials and Nanotechnology” at Department of Chemistry, COMSATS University Islamabad, Abbottabad Campus, August 15 – 16, 2018
6. Oral presentation at “2nd World Congress & Expo on Biotechnology and Bioengineering” organized by Biocore Group at Dubai, June 25 – 27, 2018
7. Oral presentation in “1<sup>st</sup> National Conference on Recent Innovations in Medicinal Chemistry and Biochemistry” at University of Science and Technology, Bannu, February 20-22, 2018.
8. Participation in 1<sup>st</sup> International conference “Advance in Drug Discovery and Development” held at Abdul Wali Khan University Mardan, 3<sup>rd</sup> -5<sup>th</sup> January 2018.
9. Participation in Conference on “Computational Biology and Genomics” at Centre for Human Genetics, Hazara University, Mansehra, September 27 - 29, 2017.
10. Participated “One Day Workshop on Biosafety and Biosecurity for Scientists” at Department of Biotechnology, University of Malakand organized by National Academy of Young Scientists (NAYS), Pakistan, Department of Biotechnology and Health Security Partner, USA, 15<sup>th</sup> November 2017.
11. Participated in “One Day International Seminar on Omics Technologies in Biofuel Production” at Abdul Wali Khan University Mardan, 6<sup>th</sup> October 2017.
12. Oral presentation in international conference on “Trends and Prospects in Molecular Biosciences” at Institute of Biochemistry and Biotechnology, University of the Punjab, October 23 – 24, 2017.
13. Participation in “Two days Training workshop on Quantitative Data Analysis using SPSS, ANOS and EVIEWS” at University of Malakand, 1<sup>st</sup> – 2<sup>nd</sup> November 2017.
14. Participation in one day International conference on “Biological and Computer Sciences” at Capital University of Science and Technology, Islamabad, 17<sup>th</sup> December 2016.
15. Poster presentation on “Comparison of different surface energy determination methods to expose proteins interaction behavior onto chromatographic supports – an In-Silico approach” at the DAAD-HEC International conference” at Comsat institute of Information Technology, Islamabad, Pakistan, 5<sup>th</sup> – 8<sup>th</sup> December 2016
16. Oral Presentation on “Surface Energetics Approach – An Attractive tool to study interaction of biomolecules to chromatographic supports” at Innovation Summit UET, 2016:

- “Biotechnology; Process & Application for Industry”, University of Engineering and Technology, Peshawar, Pakistan, 16<sup>th</sup> – 17<sup>th</sup> November 2016.
17. Participation in “One day Biosafety and Biosecurity training workshop for young researchers” at University of Peshawar, Peshawar, Pakistan, 25<sup>th</sup> October 2016.
  18. Oral Presentation on “Surface energetics of protein adsorption onto chromatographic supports” at 3<sup>rd</sup> Conference on Sustainability in Process Industry (SPI), University of Engineering and Technology, Peshawar, Pakistan, 19<sup>th</sup> – 20<sup>th</sup> October 2016.
  19. Participation in “27<sup>th</sup> National and 15<sup>th</sup> International Chemistry Conference” at Department of Chemistry, University of Malakand, Khyber Pakhtunkhwa, Pakistan, 22 – 25<sup>th</sup> August 2016.
  20. DoST Biotechnology EXPO2015 and presented Research Project (poster) (March 10, 2015) held at Directorate of Archives, Peshawar, Organized by the Directorate of Science and Technology (DoST), Government of Khyber Pakhtunkhwa, Pakistan.
  21. Participated in one day Seminar on ‘Raising Awareness on Zoonotic and Environmentally transmitted diseases’ on 7<sup>th</sup> May 2014, organized by Scientific Society of Biotechnology (SSB), University of Malakand.
  22. Participated in one day seminar on ‘International DNA Day Celebrations’ on 25<sup>th</sup> April 2016, Organized by Scientific Society of Biotechnology (SSB), University of Malakand.

#### **ORGANIZED EVENTS:**

1. Member of the organizing committee “Applied Management Research for Solving indigenous problems ABMR 2019” at University of Malakand, 25<sup>th</sup> – 26<sup>th</sup> April 2019.
2. Member of the organizing committee “On Psychology and Career Development in 21<sup>st</sup> Century” at University of Malakand, 9<sup>th</sup> November 2018
3. Member of the organizing committee of the “National conference on Plants: From Food to Phytomedicine” Jointly organized by University of Malakand & University of Sargodha, 3<sup>rd</sup> – 4<sup>th</sup> May 2018.
4. Principal Organizer at “One Day Workshop on Biosafety and Biosecurity for Scientists” at Department of Biotechnology, University of Malakand organized by National Academy of Young Scientists (NAYS), Pakistan, Department of Biotechnology and Health Security Partner, USA, 15<sup>th</sup> November 2017.

5. Member of the organizing committee of the two days international conference “Causes and Consequences of HIV/AIDS in rural and urban communities of Pakistan” at Department of Sociology, University of Malakand, Khyber Pakhtunkhwa, Pakistan, 5<sup>th</sup> – 6<sup>th</sup> April 2017.
6. Member of the organizer committee of the four days international conference “27<sup>th</sup> National and 15<sup>th</sup> International Chemistry Conference” at Department of Chemistry, University of Malakand, Khyber Pakhtunkhwa, Pakistan, 22 – 25<sup>th</sup> August 2016.