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DR. MUHAMMAD AASIM

Assistant Professor

Department of Biotechnology, University of Malakand

EXPERIENCE:

- Working as Assistant Professor at Department of Biotechnology, University of Malakand, KP since July, 2012
- Working as Semester Coordinator at Department of Biotechnology, University of Malakand, KP since November, 2012

ACADEMIC PROFILE:

2008-2012

PhD in Biochemical Engineering

School of Engineering and Science
Jacobs University Bremen, Germany

PhD Thesis title:

Surface energetics of Protein adsorption onto chromatographic supports

2001-2006

B.Sc (Hons) Biotechnology

University of Peshawar, Pakistan
Marks Obtained (3019/4225), 71.45%

1st Division (A grade)

1999-2001

F.Sc (Pre-Medical)

Govt. Post Graduate College Mardan

B.I.S.E. Peshawar

Marks Obtained 805/1100, (73.18%)

1st Division (A grade)

1997-1999

S.S.C (Science Group)

Govt. High School Takkar, Mardan

B.I.S.E Peshawar,

Marks obtained 673/850, (79.17%)

1st Division (A grade)

RESEARCH INTERESTS:

- Protein purification
- Adsorption chromatography (Hydrophobic interaction, Ion Exchange and Size exclusion chromatography)
- Characterization of surfaces (surface energy determinations)
- Proteins interaction studies to solid supports (chromatographic supports)
- Expanded Bed Adsorption

EXPERTIES:

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

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.

LANGUAGES:

Pashto

Urdu

English

REFERENCES:

- **Dr. Marcelo Fernández Lahore**
Associate Professor for Biochemical Engineering
JACOBS University Bremen gGmbH
Campus Ring 1
D-28759 / BREMEN / GERMANY
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- **Dr. Syed Muhammad Jamal**
Associate Professor and Chairman
Department of Biotechnology
University of Malakand, Lower Dir, KPK, Pakistan
Cell no. 0092 302 2409599

RESEARCH GRANTS:

1. 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, ONGOING
2. 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. Aasim M, Kakarla PB, D'Souza RN, Bibi, NS, Klein TY, Treccani L, Rezwani 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).
2. 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).
3. 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).
4. 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).
5. 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).
6. 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).

7. 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. Oral presentation in conference on “Trends and Prospects in Molecular Biosciences” at Institute of Biochemistry and Biotechnology, University of the Punjab, October 23 – 24, 2017.
2. Participation in Conference on “Computational Biology and Genomics” at Centre for Human Genetics, Hazara University, Mansehra, September 27 - 29, 2017.
3. Participation in one day International conference on “Biological and Computer Sciences” at Capital University of Science and Technology, Islamabad, 17th December, 2016.
4. 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, 5th – 8th December, 2016
5. 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, 16th – 17th November, 2016.
6. Participation in “One day Biosafety and Biosecurity training workshop for young researchers” at University of Peshawar, Peshawar, Pakistan, 25th October, 2016.
7. Oral Presentation on “Surface energetics of protein adsorption onto chromatographic supports” at **3rd Conference on Sustainability in Process Industry (SPI)**, University of Engineering and Technology, Peshawar, Pakistan, 19th – 20th October, 2016.
8. Participation in “**27th National and 15th International Chemistry Conference**” at Department of Chemistry, University of Malakand, Khyber Pakhtunkhwa, Pakistan, 22 – 25th August, 2016.

9. Oral presentation on “Protein-support interaction behaviour” at **Nano fun retreat. NanoFun Center and Nanomol Graduate Program Retreat**, Flambacher Mühle, Germany, 30th May – 1st June, 2012
10. Oral Presentation on “Surface energetics of protein adsorption onto Ceramic hydroxyapatite and hydrophobic supports” at **Separation of Proteins, Peptides & Polynucleotides (ISPPP)**, in Alexandria, USA, 23rd – 26th October, 2011
11. Poster presentation “Understanding proteins adsorption onto chromatographic supports utilizing surface energetics approach” at **Biochemical Engineering at Interfaces** in Potsdam, Germany, 5th May – 1st June 2011
12. Oral presentation on “Surface energetics of protein adsorption onto chromatographic supports” at **7th HIC/RPC Bioseparation Conference** in Estoril, Portugal, 21st – 24th March, 2011
13. Poster presentation on “The assessment of protein adsorption onto chromatography supports by a surface energetics approach”, at **23rd European Colloid and Interface Science Annual Meeting** in Antalya, Turkey, 6th - 12th September, 2009
14. Summer school “**Quantum and Classical Simulation of Biological Systems and their Interaction with Technical Materials**” at University of Bremen and Jacobs University Bremen, Bremen, Germany, 15th – 26th June, 2009

ORGANIZED EVENTS:

1. Member of the organizer 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, 5th – 6th April, 2017.
2. Member of the organizer committee of the four days international conference “**27th National and 15th International Chemistry Conference**” at Department of Chemistry, University of Malakand, Khyber Pakhtunkhwa, Pakistan, 22 – 25th August, 2016.

COLLABORATIVE PROJECTS:

1. A part of the research project (streaming potential determination) was performed at University of Bremen, 1st November – 22nd December, 2011
2. Partially worked in an industrial project, funded by DSM Biologics (Groningen, Netherlands), September, 2011 - January, 2012
3. Worked with surface analysis instrumentation (Kruss 12, and EKA) at IPFF (Leibniz Institute Dresden, Germany, 1st – 4th March, 2011

DELIVERED LECTURES:

1. A talk delivered to Molife graduate students on “Understanding the protein interaction phenomenon to hydrophobic chromatographic supports” in the Lecture series of “Research in MoLife groups, **Spring semester, 2012** at Jacobs University Bremen, Germany
2. Delivered a practical course on “Bio-Process Engineering II” with Aqueous two phase systems and Proteins adsorptions experiments, **Spring semester, 2011** at DSP laboratory, Jacobs University Bremen, Germany
3. A practical course on “Bio-process thermodynamics” with “To study the interaction of Yeast to Expanded bed adsorption chromatographic supports, **Spring semester, 2009** at DSP laboratory, Jacobs University Bremen, Germany

STUDENTS WORKED UNDER CO-SUPERVISION AT JACOBS UNIVERSITY BREMEN, GERMANY

1. Nadia Naz, **Master’s Thesis**, Surface energetics approach is able to expose the surface properties of Yeast at different phases of the growth, Batch 2010-2012
2. Alaa Al-Hashimi, **MoLife Master student**, Evaluating chromatographic beads-biomass and chromatographic beads-protein interaction, Fall semester, 2012
3. Cephas Muneri, **Undergrade Second year student**, Interaction of intact and disrupted biomass to process supports, Spring semester, 2011
4. Blessing Musunda, **Molife Master student**, Utilization of Surface Thermodynamics Approach for Adsorption Studies in Chromatography, Fall semester, 2009
5. Beti Mintong James Maxime, **Nanomole Master student**, Immobilization of yeast cells fragments(*Saccharomyces cerevisiae*) by adhesion to glass surfaces using poly-L-lysine, Fall semester, 2008

SCIENTIFIC MEMBERSHIP:

1. Member of Editorial board of *International Journal of Advancements in Research & Technology IJOART* (ISSN 2278-7763).
2. Member of Editorial board of *Bioengineering and Bioscience* ISSN: 2332-0028.
3. Reviewer at Biological and