



Matloob Hussain Bhatti

Educational Background

- 2010-2012 **MS Materials Science and Engineering**, *Pakistan Institute of Engineering and Applied Sciences, Islamabad, Pakistan.*
- Learned Courses Structure and Properties of Materials, Thermodynamics of Materials, Vacuum Metallurgy, The Sciences and Engineering of Microfabrication, Characterization of Materials, Nano-Materials Engineering, Kinetics of Phase Transformation, Ferrous Alloy Design, Thin Films and Coatings, Polymeric Matrix Composites, Powder Metallurgy, Corrosion and its Control
- CGPA **3.34/4.00**
- 2006-2010 **B.Sc Metallurgical and Materials Engineering**, *University of Engineering and Technology, Lahore, Pakistan.*
- Learned Courses Mechanics of Materials, Applied Chemistry, Fracture and Failure Analysis, Applied Physics, Advanced Ceramics, Composite Materials, Physical Metallurgy, Polymeric Materials, Inspection and Testing of Materials, Electric and Magnetic Materials, Powder Metallurgy, Heat Treatment of Materials, Welding Engineering, Surface Engineering, Plastic Deformation of Materials, Structural Metallurgy
- CGPA **3.05/4.00**

MS Thesis Research

- Title **Fabrication of Metal Oxide Nanofibers Gas Sensor**
- Description An efficient gas sensor based on nanofibers of undoped silica, Bismuth (Bi) doped silica and bismuth silicate ($\text{Bi}_4(\text{SiO}_4)_3$) were developed. The nanofibers were synthesized via Electrospinning. The electrical measurements were investigated as diagnostic tool for oxygen O_2 gas sensing applications. The gas sensing devices were fabricated via thermally evaporated Ni-Cr metals on Si substrate and then nanofibers were deposited between the contact electrodes for electrical measurements.
- Thesis Grade **Very Good**

Undergraduate Research

- Title **Production of Ultra-fine Grained Aluminum Sheets via Accumulative Roll Bonding**
- Description The mechanical properties of aluminium were improved via cold mechanical working. The grain size of Aluminium sheets was ultrafined using Accumulative Roll bonding. Two thin sheets (<1 mm) were bonded with mechanical rolling. The achieved grain size was ultrafined and hence they show improved mechanical hardness and toughness.
- Thesis Grade **A⁺**

Professional & Academic Experiences

Pakistan Institute of Engineering and Applied Sciences, (PIEAS) Islamabad

- October 2018- to date Working as Lecturer at Department of Physics and Applied Mathematics, PIEAS.
- 2012-October 2018 Worked as a Research Associate at the Department of Metallurgy and Materials Engineering, PIEAS.
- Lab Supervisions Acting as Lab supervisor for the Fundamentals of Mechanics Lab, Condensed Matter Physics Labs, Materials Processing & Deposition Lab, Advanced Materials Characterization and Mechanical Testing Lab.
- Teaching Courses Fundamentals of Mechanics, Characterization of Materials, Ferrous Metallurgy, Microfabrication, Vacuum Science and Technology, Experimental Techniques in Physics.

Management Skills

Pakistan Institute of Engineering and Applied Sciences, (PIEAS) Islamabad

- BS Course Coordination BS Physics Course Coordinator from December 2022 to date.
- Project Coordination BS Physics Project Coordinator from September 2021 to December 2022.
- Secretary Board of Studies Worked as Secretary for the Departmental Board of Studies from December 2019 to September 2021.
- Event Organizer Organizing various International Workshops and Events on Sustainable Metallurgy Processes, 2D Materials and Data Science at PIEAS since 2019.

Academic and Research Interests

- Zero Carbon Emission and Sustainable Materials for Circular Economy
- Semiconducting Nanostructures, 2D Materials for Electronics Applications
- Microfabrication, Nanostructures, Nanodevices & Characterization

Publications

- [1] Raja Yasir Mehmood, M.F. Afsar, A. Jamil, S. Fareed, F. Siddique, **M.H. Bhatti, et al.**, "Study of Electric Conduction Mechanisms, Dielectric Relaxation Behavior and Density of States in Zinc Sulfide Nanoparticles", Journal of Taibah University for Science 2021, VOL. 15, NO. 1, 1144-1155
- [2] Fahad Ahmad, **M.H. Bhatti, et al.** "Thermal Conductivity Enhancement of Ethylene Glycol based Nanofluids", 13th IBCAST Conference, IEEE Proceedings 2016, doi:10.1109/IBCAST.2016.7429848, ISBN 978-1-4673- 9126-9, 21-28
- [3] **Matloob Hussain, et al.** "Oxygen Sensing and Transport properties of Nanofibers of Silica, Bismuth doped Silica and Bismuth Silicate prepared via Electrospinning", Sensors and Actuators B: Chemical, Volume 192, 1 March 2014, Pages 429-438

Experimental Skills

- Materials Characterization Hands on experience of X-ray Diffractometer, Scanning Electron Microscope with EDX, Atomic Force Microscope and FTIR Spectroscoper
- Electrical Characterization Keithley 2400 Source-Meter, Agilent E4980A LCR Meter and Semiconductor Parameter Analyser
- Thermal Characterization Thermogravimetric Analyzer, Differential Thermal Analyzer and Differential Scanning Calorimeter
- NanoPattern Generator SEM based Electron Beam Lithography with Nanomaker Pattern Generator

Deposition Techniques Plasma Ion Sputter Coater, Resist Spin Coater, Thermal Evaporator for Metal Deposition

Vacuum Systems Installaion of Vaccum Systems Rotary and TurboMolecular pumps for Operation of Sophisticated Equipments

Computer Skills

Engineering Softwares Solid Edge 6.0, Origion 8.0, Z-View, X'Pert HighScore Plus, \LaTeX

Languages C++, Fotran and Python Basic Level

Honors and Awards

- July 2022 **Certificate of Appreciation**, *Awarded with Certificate of Appreciation for Organizing 3rd Internatioanl Workshop on 2D Materials and Quantum Effect Devices*, July 19-21, 2022
- January 2022 **Certificate of Appreciation** , *Awarded with Certificate of Appreciation for Organizing 3 Days workshop on Data Science with Python*, January 11-13, 2022
- March 2020 **Certificate of Appreciation** , *Awarded with Certificate of Appreciation for Organizing 2nd Internatioanl Workshop on 2D Materials and Quantum Effect Devices*, March 03-05, 2020
- 2010-2012 **Fellowship**, *PIEAS Fellowship Award*, for Masters Study at PIEAS, Islamabad
- 2006-2010 **Dean's Honors Award**, *UET Lahore*, Awarded with Dean's Honors in Final Academic Year during Undergraduate Studies

Professional Trainings & Academic Activities

- July 2022 Attended *International School on Basics and Applications of the Rietveld Method & Pair Distribution Function Analysis in Material Sciences (ISBARM-22)* from July 27-29, 2022, Speakers from Max Planck Institute for Solid State Reserach Stuttgart Germany at National Centre for Physics Islamabad
- January 2020 Participated in *Professional Competency Enhancement Workshop for Young Faculty Members* from 27 to 31 January, 2020 at PIEAS Islamabad

Languages

The Medium of Instruction Throuhout the Academic Career is English

English Read, Write, Speak and Interpret with Good Competence

IELTS Test Overall Score 6.5 (Test taken on 21st January, 2021)

Memberships

[Pakistan Engineering Council \(PEC\)](#)
Member Since 2010.

References

Dr. Muhammad Asim Rasheed, *PhD in Condensed Matter Physics (Memorial University of Newfoundland, Canada)*, Professor, Department of Physics & Applied Mathematics, PIEAS, Islamabad, Pakistan.
(asim@pieas.edu.pk)

Dr. Fahad Ali, *PhD in Materials Science (Leibniz Institute for Solid State and Materials Research, Dresden, Germany)*, Professor, Department of Metallurgy & Materials Engineering, PIEAS, Islamabad, Pakistan.
(fahad@pieas.edu.pk)