



# MUHAMMAD HASEEB

## Research Scholar & Physicist

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**Muhammad Haseeb**

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<https://mhaseebbwp.github.io/resume/>

### SKILLS

- Expertise in **Wien2k**, **OLCAO**, **Abinit** for first-principles calculations
- Proficient in **VELAS** and **EIA Tools** for mechanical anisotropy analysis
- Skilled in **Origin**, **Gnuplot**, and **XMGrace** for graph plotting and data analysis
- Experienced with **Crystal Maker**, **Vesta**, **Meshlab**, **View3Dscene** for material visualization
- Strong programming skills in **C**, **C++**, **Python**
- Proficient in **MATLAB** for data processing and simulation
- Advanced use of **MS Office** and related applications

### LANGUAGES

- ENGLISH
- URDU
- PUNJABI

### RESEARCH INTEREST

- Thermomagnetic and thermoelectric material design for energy applications
- First-principles modeling of semiconductors and advanced functional materials
- Spintronic materials and spin-based magnetic phenomena
- Computational study of novel materials for optical and electronic applications
- Anisotropic mechanical and phononic properties of advanced materials

### WORK EXPERIENCE

**Lecturer Physics** May 2024 - Present  
**Moon System of Education I Bahawalpur, Pakistan**

Dedicated to fostering a deep understanding of physics through engaging teaching and innovative methods.

**Visiting Lecturer** Feb 2023 - June 2023  
 Institute of Physics (IUB) I Bahawalpur, Pakistan

**Teaching Asistant** Sep 2022 - Jan 2023  
 Institute of Physics (IUB) I Bahawalpur, Pakistan

**Visiting Lecturer** Mar 2021 - July 2022  
 Institute of Physics (IUB) I Bahawalpur, Pakistan

### EDUCATION

**PhD Physics** 2022 - Present

**Institute of Physics (IUB) I Bahawalpur, Pakistan**

Density Functional Insights of Oxychalcogenide Materials for Energy Harvesting Applications under the supervision of **Dr. Altaf Hussain (Professor)** in Materials Simulation Group (MSG).

**M. Phil. Physics**

**Institute of Physics, The Islamia University of Bahawalpur (IUB) I Bahawalpur, Pakistan**

DFT based simulation is used to study structural, electronic, magnetic and optical properties of carbides under the supervision of **Dr. Altaf Hussain** (Associate Professor) in Institute of Physics (IoP). The topic of my research is “Mechanical, Thermal, Optical and Electronic Properties of Nanolaminated Ternary Carbide  $U_3Al_3C_5$ ” Obtain **3.93 CGPA out of 4.0** in thesis research project. I have also published a research paper during my MPhil research work in the “**Journal of Materials Research and Technology**” entitled “Structural stability, electronic structure, mechanical and optical properties of MAX phase ternary  $Mo_2Ga_2C$ ,  $Mo_2GaC$  and  $Mo_3GaC_2$  carbides”.

2015 - 2019

**BS (Honors) Physics**

**Institute of Physics, The Islamia University of Bahawalpur (IUB) I Bahawalpur, Pakistan**

Solid state physics, laser, nuclear physics, quantum mechanics and electrodynamics as majors, obtained **3.88 CGPA out of 4.0** with **3rd position** in 6th Semester, **B+ grade** in review research project, and report titled “Density Functional Theory based Electronic Structure Studies of Cr-Al-C Max System”.

## RESEARCH PUBLICATIONS

### 2024 | Research Publication in International Journal

- **Journal:** Solid State Communications - Elsevier
- **Impact Factor:** 2.1
- **Journal Rank:** Q2
- **Title of Publication:** Properties of bismuth based  $Bi_2A_3$  ( $A = S, Se, Te$ ) chalcogenides for optoelectronic and thermoelectric applications [🔗](#)
- **Contribution:** 2nd Author
- **Role:** Writing - review & editing, Project administration.

### 2024 | Research Publication in International Journal

- **Journal:** Materials Today Communications - Elsevier
- **Impact Factor:** 3.7
- **Journal Rank:** Q2
- **Title of Publication:** First-principles calculations on electronic, mechanical and optical properties of  $ScMC_2$  ( $M = Ti, V, Cr, \text{ and } Mn$ ) ternary carbides [🔗](#)
- **Contribution:** 4th Author
- **Role:** Writing – review & editing.

### 2024 | Research Publication in International Journal

- **Journal:** Physica B: Condensed Matter - Elsevier
- **Impact Factor:** 2.8
- **Journal Rank:** Q2
- **Title of Publication:** First-principles calculations on electronic, mechanical and optical properties of  $ScMC_2$  ( $M = Ti, V, Cr, \text{ and } Mn$ ) ternary carbides [🔗](#)
- **Contribution:** 3rd Author
- **Role:** Formal analysis, Methodology.

### 2024 | Research Publication in International Journal

- **Journal:** Materials Science in Semiconductor Processing - Elsevier
- **Impact Factor:** 4.2
- **Journal Rank:** Q2
- **Title of Publication:** First-principles study of structural, electronic, mechanical, optical, thermodynamic and thermoelectric properties of ternary  $ZnSnN_2$  and  $ZnMoN_2$  nitrides [🔗](#)
- **Contribution:** Corresponding Author
- **Role:** Writing - review & editing, Project administration.

### 2024 | Research Publication in International Journal

- **Journal:** Journal of Physics and Chemistry of Solids - Elsevier
- **Impact Factor:** 4.3
- **Journal Rank:** Q2
- **Title of Publication:** First-principles investigation of physical properties of transition metal-based ternary  $\text{TM}_5\text{Si}_3\text{C}$  (TM = Nb, Mo, Ta, W) silicides of Nowotny phase [🔗](#)
- **Contribution:** Corresponding Author
- **Role:** Writing - review & editing, Project administration.

### 2023 | Research Publication in International Journal

- **Journal:** Materials Today Communications - Elsevier
- **Impact Factor:** 3.7
- **Journal Rank:** Q2
- **Title of Publication:** Ab initio study of electronic structure, bonding and optical properties of ternary  $\text{A}_2\text{B}_2\text{In}$  (A = Ca, Eu and B = Pd, Pt) indides [🔗](#)
- **Contribution:** 2nd Author
- **Role:** Software, Validation.

### 2023 | Research Publication in International Journal

- **Journal:** Vacuum - Elsevier
- **Impact Factor:** 3.8
- **Journal Rank:** Q2
- **Title of Publication:** First-principles study on physical properties of actinide-based ternary  $(\text{UC})\text{mAl}_3\text{C}_2$  (m = 1, 2, 3) carbides [🔗](#)
- **Contribution:** 2nd Author
- **Role:** Writing - review & editing, Project administration.

### 2022 | Research Publication in International Journal

- **Journal:** Journal of Solid-State Chemistry - Elsevier
- **Impact Factor:** 3.2
- **Journal Rank:** Q2
- **Title of Publication:** DFT based comparative study of physical properties of  $\text{Y}_3\text{AlC}_3$ ,  $\text{YAl}_3\text{C}_3$  and  $\text{Y}_3\text{AlC}$  carbides [🔗](#)
- **Contribution:** 4th Author
- **Role:** Software, Validation.

### 2021 | Research Publication in International Journal

- **Journal:** Journal of Materials Research and Technology - Elsevier
- **Impact Factor:** 6.2
- **Journal Rank:** Q1
- **Title of Publication:** Structural stability, electronic structure, mechanical and optical properties of MAX phase ternary  $\text{Mo}_2\text{Ga}_2\text{C}$ ,  $\text{Mo}_2\text{GaC}$  and  $\text{Mo}_3\text{GaC}_2$  carbides [🔗](#)
- **Contribution:** 2nd Author
- **Role:** Writing - review & editing, Project administration.

## HONOURS AND AWARDS

### 15 November 2018 | PM's Merit Laptop Award by Government of Punjab, Pakistan

#### *Prime Minister's Laptop scheme | Punjab, Pakistan* [↗](#)

Representative student of Department of Physics receives the laptop award in distribution ceremony chaired by Provincial Minister of Punjab.

### 13 December 2014 | CM's Merit Laptop Award by Government of Punjab, Pakistan

#### *Chief Minister's E-Youth Initiative | Punjab, Pakistan* [↗](#)

Receive the laptop award in distribution ceremony chaired by Provincial Minister of Punjab.

### 31 December 2013 | CM's Ujala Program – Solar Home systems for Students

#### *Chief Minister's Ujala Program | Punjab, Pakistan* [↗](#)

Receive solar panels by excellent performance.

## WORKSHOPS, SEMINARS, CONFERENCES AND TRAININGS

### September 2024 | Certification of Reviewing by Vacuum - Elsevier Journal

#### *Vacuum - Elsevier Journal* [↗](#)

Awarded by the Vacuum Journal for reviewing three papers between January and September 2024, in recognition of valuable contributions to the journal.

### September 2023 | Certification of Participation/Oral Presentation

#### *International Conference on Materials Science and Nanotechnology MSNANO-23 Faisalabad | Pakistan* [↗](#)

Talk given at “6th International Conference on Materials Science and Nanotechnology MSNANO-23” scheduled on 25-27 September 2023 at Quaid e Azam Auditorium New Campus Government College University Faisalabad.

### July 2023 | Certification of Participation

#### *Three Days workshop on Quantum Chemistry Thermodynamic approach organized by Zastra Innvations Pvt Ltd* [↗](#)

Participated in the three days' workshop titled “Fast and Robust Quantum Chemistry” and “Solvation Chemistry for modelling and prediction of fluid phase properties” conducted by the Zastra Innvations Pvt Ltd from 25th to 27th July, 2023.

### July 2023 | Certificate of 10 Days Training on Online Teaching Tools

#### *Edexmy LMS Pakistan first public LMS | Pakistan* [↗](#)

Ten Days Training Offered by Edexmy Tuition Hub, Edexmy LMS Pakistan first public LMS | Pakistan

### April 2023 | Certification of Participation

#### *Five Days FDP (Faculty Development Program) at Vellore Institute of Technology, Chennai | India* [↗](#)

Participated in the five days FDP titled “Modelling, Simulation & Fabrication of Advanced Electronic Devices” conducted by the School of Electronics Engineering (SENSE) from 15th to 19th April, 2023 at Vellore Institute of Technology, Chennai, India.

### December 2022 | Certificate of Participation/ Training

#### *Training Offered by Directorate of Teaching Assistants & Research Assistants, IUB | Pakistan* [↗](#)

One Day Training Offered by Directorate of Teaching Assistants & Research Assistants, The Islamia University of Bahawalpur, Pakistan.

### August 2022 | 1 st Pedagogical Training 2022 Certificate

#### *Training Organized by the Department of Education, IUB | Pakistan* [↗](#)

Offered by The Islamia University of Bahawalpur, Pakistan

## February 2022 | Certification of Participation/Oral Presentation

**International Conference on Solid State Physics (ICSSP) Lahore| Pakistan** 

Talk given at “International Conference on Solid State Physics” organized by Center of Excellence Solid State Physics in Punjab University Lahore.

## January 2021 | Python for Everybody Specialization learning program

**Offered by University of Michigan through Coursera Online Learning** 

Completed the Python for Everybody Specialization, offered by the University of Michigan via Coursera, in January 2021.

## March 2019 | Certification of Participation

**International School on Physics & Allied Disciplines” National Centre for Physics (NCP), Islamabad | Pakistan** 

Participate as a volunteer organizer in “International School on Physics & Allied Disciplines” organized by National Centre of Pakistan in Islamabad.

## RECOMMENDATIONS

 **Dr. Saeed Ahmad Buzdar** 

- Professor
- Director Institute of Physics.
- The Islamia University of Bahawalpur (IUB), Bahawalpur, Pakistan

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 **Dr. Altaf Hussain** 

- Professor
- Institute of Physics.
- The Islamia University of Bahawalpur (IUB), Bahawalpur, Pakistan

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 **Dr. Muhammad Amir Rafiq** 

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- Institute of Physics.
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