

# Md Masud Mia

East Rajasion, Savar, Dhaka

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## ACADEMIC CREDENTIAL

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**Bangladesh University of Engineering and Technology (BUET)**

Bachelor of Science in Materials and Metallurgical Engineering

CGPA: 3.05/4.0 (30 out of 50)

Feb. 2017 – Nov. 2022

Dhaka, Bangladesh

## RESEARCH INTERESTS

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- Design and fabrication of 2D materials and hetero structures
- Nanolithography and thin-film deposition techniques(CVD, PVD, etc.)
- Nanoscale heterogeneity in advanced materials (nano-FTIR, TERS etc)
- Biosensing and Biomaterials
- Density Functional Theory (DFT)

## RESEARCH EXPERIENCE

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**Assistant Manager, Materials Engineering and Planning Department**

Titas Gas Transmission and Distribution PLC

Jan. 2025 – Present

Dhaka, Bangladesh

- Presided over the selection and evaluation of the right materials for gas transmission and distribution pipelines, and planned the sourcing of these materials. Additionally ensured all choices comply with the recognized standards such as API, ASTM and ASME, which helped with making the system stronger, more resistant to corrosion, and reliable under high pressure.
- Conducted detailed failure analysis and root cause investigations on pipeline materials exposed to harsh and demanding environments, such as hydrogen sulfide and carbon dioxide corrosion, applying cutting-edge approaches namely metallography, hardness testing, and non-destructive testing (NDT) techniques to prevent or mitigate future risks and extend asset life.
- Designed and implemented materials engineering strategies to support pipeline integrity management, incorporating risk assessments, life-cycle cost evaluations, and predictive maintenance models. These efforts optimized resource allocation and minimized downtime in key energy infrastructure.
- Drafted comprehensive technical reports, specifications, and presentations for stakeholders that included regulatory authorities and senior management, highlighting the strong communication skills in translating complex materials science concepts into practical insights for decision-making.

**Undergraduate Thesis**

Dec. 2021 – May 2022

Title: Theoretical Investigation of Structural, Electronic and Optical Properties of Graphene-like ZnO with Mo Doping: A DFT+U Study

- Performed detailed analysis of structural and electronic properties of Mo-doped graphene-like ZnO (g-ZnO) using Density Functional Theory with Hubbard U correction (DFT+U), evaluating lattice stability, bond lengths, and formation energies to assess the impact of doping on material integrity and potential for semiconductor applications.
- Investigated electronic band structures, density of states (DOS), and bandgap modulation induced by Mo doping reveal mechanisms for tuning electrical conductivity and carrier mobility, which are critical for the advancement of optoelectronic devices such as LEDs and solar cells.
- The optical properties explored including UV absorption spectra, dielectric functions, optical conductivity, and refractive index variations demonstrating enhanced photoelectric response and potential applications in photovoltaic and sensor technologies through computational simulations.

- Using advanced software tools such as Quantum ESPRESSO or VASP for ab initio calculations, interpreting results to provide insights into dopant-site preferences and their effects on magnetic and optical behaviors, contributing to the theoretical foundation for novel 2D materials in nanotechnology.

### **Industrial Trainee**

GPH Ispat

Dec. 2021 – Jan. 2022

Chattogram, Bangladesh

- Conducted field surveys across all stages of the steel-making process, with a focus on understanding operational issues.
- Developed skills in communication, presentation, and technical report writing with teams and effectively documenting industrial processes.

## **TECHNICAL SKILLS**

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**Characterization Tools:** UTM, Bending Machine, Hardness Tester, Optical Microscopy

**Analysis & Documentation:** Excel, OriginPro, LaTeX, Microsoft Word

**Design Tools:** AutoCAD, SOLIDWORKS, Adobe Photoshop

## **PUBLICATIONS**

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1. Lead author for five books on Higher Secondary School Certificate(**HSC**)-level admission and academic Chemistry and Physics. Rhombus Publications, 2024 – Present.
2. Author of books on topics related to Bangladesh Civil Service (**BCS**) in mathematics and science. Lekhok Publications, 2023 – Present.
3. Contributor to Chemistry textbooks and resources and Higher Secondary School Certificate(**HSC**)-level curricula. Panjeree Publications, 2025 – Present.

## **EXTRACURRICULAR**

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### **Executive**

Jun. 2019 – May 2022

Alokbortika, Bangladesh University of Engineering and Technology (like an Open Library).

- Organized community events, oversaw book archives and facilitated study circles to promote literacy and collaborative learning among students and local residents.

## **AWARDS & ACHIEVEMENTS**

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- Education Board Scholarship, Higher Secondary School Certificate Examination 2017 – 2022
- Education Board Scholarship, Secondary School Certificate Examination 2014 – 2015
- Mentored more than 300 high school students in Math, Chemistry, and Physics 2017 – 2024

## **REFERENCES**

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### **Dr. Mahbub Hasan (Advisor)**

Professor

Dept. of Materials and Metallurgical Engineering

Bangladesh University of Engineering and Technology

Zahir Raihan Road, Dhaka 1000

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