

Md Sojib Hossain

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EXPERTISE IN

Dissimilar Metal Welding & Solidification Cracking Mitigation
Laser Surface Processing for Corrosion Mitigation
Metal Casting & Process Optimization

EXPERIENCE

UNIVERSITY OF VIRGINIA | RESEARCH ASSISTANT
August 2021 - Present | Charlottesville, Virginia

Collaborating with Virginia Transportation Research Council on Dissimilar Metal Joining Standards for Bridge Construction

- Optimized processing parameters to prevent solidification and cold cracking in dissimilar metal joints, improving reliability in bridge infrastructure.
- Revised constitutional diagrams for accurate delta ferrite prediction and refined filler metal selection criteria for robust joints.
- Contributed to standardized procedures for dissimilar metal joining, aiding the Virginia Transportation Research Council in establishing new guidelines.

Advancing Laser Surface Modification Techniques to Mitigate Intergranular Corrosion of AA5XXX Alloys

- Enhanced corrosion resistance of AA5083 alloy through excimer and ADAPT laser surface melting (LSM), reducing susceptibility to intergranular corrosion in marine environments.
- Showed excimer LSM creates a homogenized surface layer with fine sub-grains, interrupting IGC pathways and increasing durability.

TITAS GAS TRANSMISSION & DISTRIBUTION COMPANY LTD. | ASSISTANT ENGINEER
December 2018 – August 2021 | Dhaka, Bangladesh

- Gas pipeline design, welding, NDT, and cathodic protection.

WALTON HI-TECH INDUSTRIES PLC | DEPUTY DIRECTOR
November 2016 – December 2018 | Dhaka, Bangladesh

- Developed cost-effective casting processes, enabling exports to European markets.
- Innovated gating and feeding systems for seamless compressor block casting.
- Integrated thermal analysis to ensure metallurgical consistency and reduce costs.
- Scaled up as-cast ferritic gray iron production, minimizing annealing needs.
- Designed economical melting processes, replacing costly pre-conditioners while maintaining quality.
- Optimized inoculant usage across varying sulfur levels to improve process reliability.

Developed and scaled up the metallurgical processing parameters of 1.6 million annual compressor blocks manufacturing foundry and led the technical team exporting compressor blocks from Bangladesh to various European countries.

EDUCATION

UNIVERSITY OF VIRGINIA
PHD IN MATERIALS SCIENCE & ENGINEERING.
Expected Summer; 2025 |
Charlottesville, Virginia

BANGLADESH UNIVERSITY OF ENG. & TECH. (BUET)
BS IN MATERIALS & METALLURGICAL ENGINEERING.
2016 | Dhaka, Bangladesh

COURSEWORK

GRADUATE

Electronic and Crystal Structure of Materials, Thermodynamics of Materials, Continuum Mechanics, Defects & Microstructure in Materials, Kinetics of Solid-State Reactions, Deformation and Fracture of Materials, Characterization of Materials, Fracture Mechanics of Engineering Materials, Additive Manufacturing of Metals.

LABORATORY SKILLS

X-ray Diffraction, Optical and Scanning Electron Microscopy (SEM), Electron Backscattered Diffraction (EBSD), Elemental Analysis (EDS, XRF, OES), Laser Surface Modification, Electrochemical Analysis, Hardness Testing, Universal testing machine (UTM).

TECHNICAL SKILLS

CALPHAD, ANSYS workbench, AutoCAD, Solid Works, TOPAS, STRESS, DIFFRAC.EVA, HighScore, C, MATLAB.

SOCIETIES

Diversity, Equity, and Inclusion Chair, Graduate Student Board, MSE, University of Virginia (UVA).
Life-long blood donor, Quantum blood bank, Bangladesh.
Outreach Chair, Association of Bangladeshi Students (ABS), UVA.
Member of TMS, AVS and ASM international.

INTERESTS

Traveling, Sports, Cooking, Fishing.