Md Shahed Hossain Sohan

Contact Informations

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Research Interests

• Molecular Dynamics • Computational Mechanics • Energy Storage • Aerodynamics • Fluid Mechanics • Renewable Energy

Education

Bangladesh University of Engineering and Technology, Dhaka, Bangladesh

Bachelor of Science in Mechanical Engineering **March 2018 - May 2023**
CGPA: **3.81/4.00 (In the top 15th percentile)**

Research Experiences

Undergraduate Thesis

Supervisor: Dr. Md. Ashiqur Rahman, Professor, Dept. of ME, BUET
Title: *Analysis of Mechanical Performance of Crumpled Graphene: A Molecular Dynamics Approach.* *(Details)*

- Under Dr. Rahman's supervision, worked on a molecular dynamics study of the mechanical properties of crumpled graphene with varied degrees of porosity and crumpleness. Graphene was crumpled and stabilized using LAMMPS, and features under tensile and compressive stress were then assessed for various degrees of crumpleness and porous state. The capacity of a crumpled graphene structure to withstand stress is reduced by porosity. The tendency, however, turns the other way when crumpleness increases.

CFD Research Group, BUET

Supervisor: Dr. Sumon Saha, Professor, Dept. of ME, BUET

- Worked on CFD study of MHD mixed convection in a quadrantal enclosure with heat conducting rotating cylinder under the supervision of Dr. Saha.
- Worked on assessment of electronic cooling system in a C-shaped channel using temperature dependant P, PI, PID controller under the supervision of Dr. Saha.

Publications

Journal articles [under preparation]

- **Title: "Mechanical Performance Analysis of Crumpled Graphene: A Molecular Dynamics Approach".**
  Investigated the mechanical properties like elastic modulus, fracture strength, strain energy for different cases of crumpled graphene in non-porous and porous conditions.
- **Title: "CFD Study of MHD Mixed Convection in a Quadrantal Cavity with Heat Conducting Rotating Cylinder"**
  Numerically analyzed mixed convection heat transfer inside a cavity with a rotating cylinder at the centroid to find out the heat transfer phenomenon for various combinations of Reynolds, Grashof, and Richardson numbers.

Academic Projects

- **Accident Reduction System Design.**
  Supervisor: Dr. Kazi Arafat Rahman, Professor, Dept. of ME, BUET
  A gyroscope based drowsiness detection system was designed and modeled to alert and reduce vehicle speed to reduce collision.
  Role: Design and Analysis *DOI: 10.5281/zenodo.8265893*

- **Thermo-Fluid Equipment Design (Shell and Tube HX with Helical Baffles)**
  Supervisor: Dr. A.K.M. Monjur Morshed, Professor, Dept. of ME, BUET
  Using HTRI, the design parameters were optimized for the best configuration. 3EPlus, an energy management software, was utilized for calculating optimal insulation requirements to enhance energy efficiency. A three-dimensional numerical simulation was conducted by FEM using ANSYS to analyze for a shell and tube HX.
  Role: Design and Simulation *DOI: 10.5281/zenodo.8265931*

Technical Skills

Design Software:	SolidWorks, AutoCAD
Simulation Software:	LAMMPS, COMSOL Multiphysics, ANSYS Workbench, MATLAB
Programming Languages:	Python, C, Arduino
Microsoft Office:	Microsoft Office Suite, LaTex
Operating Systems:	Unix/Linux, Windows.
Other Software:	Tecplot 360, HTRI, 3EPlus, Avogadro, OVITO
Soft Skills:	Project and Time Management, Teaching, Leadership, Writing.

Standard Test Scores

- TOEFL iBT Test
  Will appear on Sep 30, 2023

Awards and Other Credentials

- **University Merit Scholarship, BUET (three times - January 2019, January 2020, January 2022)**
  - *Awarded to the students with academic excellence (GPA:3.90+) in a semester.*
- **Dean's List Award, BUET (three times - First, Second and Fourth year)**
  - *Offered to the students obtaining an average GPA of 3.75+ in two consecutive semester of an academic year*
- University Stipend (three times – 2018, 2019, 2021)
- Board Scholarships: HSC (2017), SSC (2015), JSC (2012)
- **Perfect Attendance Certificate, Notre Dame College, 2017**
  - *Students with 100% attendance receive this certification as a reward for their consistent commitment*
- **First Runners up, HULT Prize, On Campus championship, BUET 2023**
- Introduction to MATLAB, Coursera — Cr. ID: 6CQJHLXPAH44
- Excel for Begineers, Coursera — Cr. ID: E3ASUG9VNET8
- Getting started with Python, Coursera — Cr. ID: 3CYULTWLKJ6U

Professional Experience

- **Industrial trainee** — **Oct 2022 - Nov 2022**
  North-West Power Grid Company Limited
  Khulna 225 MW Combined Cycle Powerplant
  Khalishpur, Khulna, Bangladesh
- **Teaching and Mentoring** — **2018 - 2020**
  UDVASH- Academic and Admission Care

Extracurricular Activities

- Affiliate member of the IMechE — Membership ID: 80702539
- Affiliate Member of BUET Robotics Club — May 2018 – May 2023
- Affiliate Member of BUET Automobile Club — May 2018 – May 2023
- Member of BADHON - BUET (A Blood Donation Group) — May 2018 – May 2023
  - Donated blood for 6 times.

References

Dr. Md. Ashiqur Rahman, Professor
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Dr. Md. Ehsan, Professor
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