

MOHAMMAD REJAUL HAQUE,
PHD (US Permanent Resident, 12D Faculty Drive,
Alamosa, CO-81101, Phone no: +17024191831, email:
md.rejaulh37@gmail.com)

EDUCATION

- August, 2019 **PhD, Mechanical engineering**
Kansas State University, Manhattan, Kansas, USA
- Academic Achievement Award; **CGPA 3.76/ 4.00**
 - Coursework in Boiling Heat Transfer, Radiation Heat Transfer, Convection Heat Transfer, Engineering Analysis 2, Intermediate Fluid Mechanics, Intermediate Heat Transfer, Carbon Nano-Manufacturing, Integrated Food Energy Water System
 - **PhD dissertation title: Understanding and controlling condensation and frosting phenomena on engineered surfaces** -NSF Award # 1604183 (Dr. Amy Betz -Principal Investigator, I worked as a research assistant in this project)
- July, 2016 **Master of Science, Mechanical Engineering**
Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh
- **Thesis title: Numerical study of forced convection heat transfer over circular and oval tube banks using vortex generators**
- February, 2013 **Bachelor of Science (honors), Mechanical Engineering**
Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh
- Academic Achievement Award: **GPA: 3.80/4.00, 6th/143 (within top 4.2%)**
 - Coursework in Computer Programming Language, Basic Thermodynamics, Mechanics of Solids, Machine Design-I, Machine Design-II, Aerodynamics etc.
 - **Thesis title: A Computational Study on Fluid Structural Interaction for Flow through a Model Arterial Stenosis**

EXPERIENCE

- 01/2025-current - **Non-Tenured Teaching faculty, Department of Mechanical engineering, Colorado State University/Adams State University Cohort, USA**
-Teaching courses on ‘Heat and Mass transfer’, ‘Thermodynamics’, ‘IC Engines’ as well as ‘thermal/fluids science’ lab
- 10/2024 – 12/2024 -**Postdoctoral Scholar, Department of Mechanical engineering, University of Nevada-Las Vegas, USA**
- *Working on Fast electrowinning process for iron processing in order to reduce carbon emission for a greener world*
- 03/2024 – 09/2024 -**Associate Professor, Ahsanullah University of Science and Technology, Dhaka, Bangladesh**
- *Conducted 3 credits course on ME-3205- “Heat and Mass Transfer”*
 - *Conducted lab lecture and demonstration of experiments for heat transfer lab*

- **Mentoring around 7 undergraduate students for project and thesis using CFD and machine learning techniques**
- Assisted in planning and development of teaching materials, workbooks and class projects.

01/2020 – 03/2024

-Assistant Professor, Ahsanullah University of Science and Technology, Dhaka, Bangladesh

- Conducted 3 credits course on ME 1103 - "Introduction to Mechanical and production engineering", ME 3201-"Machine design", ME 3105-"Fluid Mechanics", ME-3205- "Heat and Mass Transfer", etc.
- Conducted lab lecture and demonstration of experiments for fluid lab, heat transfer lab, design lab, Applied mechanics lab, and Engineering drawing, etc
- **Mentoring around 18 undergraduate students for project and thesis using CFD and experimental tools**
- Developed engaging and interesting research projects, increasing university exposure.
- Assisted in planning and development of teaching materials, workbooks and class projects.

11/2022-02/2023

-Adjunct faculty, Bangladesh University of Engineering and Technology (BUET)

- Conducted lab lectures and demonstration of experiments for fuel testing lab (bomb calorimeter, flash and fire point demonstration, etc.), heat transfer lab (boiling and condensation heat transfer & Forced convection heat transfer over a flat plate, etc.), power plant sessional (Boiler and Jet engine, etc.)

01/2017 - 06/2019

Graduate Research Assistant, Kansas State University, Manhattan, Kansas, USA

- Done condensation and frosting experiments with fabricated and coated engineered surfaces.
- Surface characterization with wettability check (contact angle measurement) through the goniometer and various surface morphological test.
- In-situ optical microscopy test of condensate droplet formation on fabricated surfaces at a different relative humidity of the environment and detailed statistical quantification of a different generation of droplets to reveal the droplet dynamics.
- Different modeling of the frost formation, CFD modeling of natural convection, and validation of the results.
- Drafted manuscript for impact journals and conferences as a first and corresponding author.
- Maintained close collaboration with Missouri S&T and Auburn University research groups

08/2016 - 12/2016

Graduate Teaching Assistant, Kansas State University, Manhattan, Kansas, USA

- Conducted TA activities (problem class solving, grading for assignment, proctoring) for 3 credits course on 'Fluid Mechanics' under Dr. Mingjun Wei, Associate Professor, Kansas State University

04/2013 - 07/2016

Lecturer, Ahsanullah University of Science and Technology, Dhaka, Bangladesh

- Conducted 3 credits course on ME 3109 – "Measurement and Instrumentation", ME 3201-"Machine design", ME 3105-"Fluid Mechanics", etc.
- Conducted lab lecture and demonstration of experiments for fluid lab, heat transfer lab, design lab, Applied mechanics lab, and Engineering drawing, etc.

GOOGLE SCHOLAR LINK:

<https://scholar.google.com/citations?user=3FpiBoQAAAJ&hl=en> , Citations: 627 (till date 10.24.2025)

COURSE CONDUCTED SO FAR (AROUND 50 STUDENTS IN A CLASS):

- 1) USA- FLUID MECHANICS- TEACHING ASSISTANT AT KSU, USA (AROUND 80-90 STUDENTS UNDER DR. MINGJUN WEI (ASSOCIATE PROFESSOR) FOR FALL 2016, MECH 344 HEAT AND MASS TRANSFER, MECH 337 THERODYNAMICS, MECH 338-THERMAL/FLUID SCIENCES LAB FOR SPRING 2025 AT CSU/ASU COHORT
- 2) ME 3205- HEAT AND MASS TRANSFER
- 3) ME 3201- MACHINE DESIGN
- 4) ME 3106- FLUID MECHANICS
- 5) ME 3131- FLUID MECHANICS AND MACHINERY
- 6) ME 1103- INTRODUCTION TO MECHANICAL AND INDUSTRIAL ENGINEERING
- 7) ME 103- MECHANICS OF MATERIALS
- 8) ME 2110: ENGINEERING DRAWING
- 9) ME 4000: PROJECT AND THESIS (SUPERVISING AROUND 25 STUDENTS SO FAR)
- 10) SESSIONAL CLASSES RELATED TO ALL THIS THEORY CLASSES

STUDENT PROJECT SUPERVISIONS (AROUND 30 STUDENTS SO FAR) ON-

1. NUMERICAL INVESTIGATION OF THE THERMAL PERFORMANCE OPTIMIZATION INSIDE A HEAT EXCHANGER TUBE USING DIFFERENT NOVEL COMBINATION OF PERFORATIONS ON Y-SHAPED INSERT - **HEAT EXCHANEGR OPTIMIZATION USING ANSYS AND SOLIDWORKS**
2. ENHANCING FORMULA STUDENT CAR PERFORMANCE: NOSE SHAPE OPTIMIZATION VIA ADJOINT METHOD- **ANSYS, ADJOINT BASED SOLVER, AND SOLIDWORKS**
3. NUMERICAL INVESTIGATION OF THE EFFECT OF PERFORATED ALMOND, TUNNEL, AND BISHOP SHAPED PIN FIN HEAT SINKS ON THE HYDROTHERMAL PERFORMANCE ENHANCEMENT- **NOVEL PIN FIN HEAT SINK DESIGNS USING ANSYS AND SOLIDWORKS**
4. NUMERICAL INVESTIGATION OF A LID-DRIVEN HEXAGONAL ENCLOSURE WITH WAVY WALL AND NANOFUIDS (SWCNT- MWCNT) IN THE PRESENCE OF AN INCLINED MAGNETIC FIELD- **NATURAL CONVECTION MODELING USING COMSOL MULTIPHYSICS AND SOLIDWORKS**
5. NUMERICAL INVESTIGATION OF THE AERODYNAMIC PROPERTIES OF NEWLY MODIFIED BLENDED AIRFOILS UTILIZING S-809, S-829, AND NACA 2412 BASELINE SHAPES- **NOVEL AIRFOIL GENERATION USING ANSYS AND SOLIDWORKS**
6. A NOVEL PIN FINED STRUCTURE-EMBEDDED MICROCHANNEL HEAT SINK: CFD-DATA DRIVEN MLP, MLR, AND XGBR MACHINE LEARNING MODELS FOR THERMAL AND FLUID FLOW PREDICTION- **MICROCHANNEL DESGIN USING ANSYS AND SOLIDWORKS**
7. MECHANICAL, CHEMICAL, THERMAL, AND PHYSICAL CHARACTERIZATION OF RATTAN-WASTE HAIR FIBER REINFORCED HYBRID EPOXY COMPOSITE- **NATURAL FIBER REINFORCED COMPOSITE FABRICATION WITH EXPERIMENTAL CHARACTERIZATION (SEM, FTIR, TGA, DTA, UTM, HARDNESS, IMPCAT, BIODEGRADABLE TEST)**

CORE QUALIFICATIONS

Teaching:

- **Effective communicator, team player, and multi-tasking capabilities with**
 - **strong analytical skills and expertise.**
 - **Effective in teaching mechanical engineering core courses with proficiency in providing lectures and presentations.**
 - **Supervising students as team players and doing cutting-edge research**
 - **Managing a group of 18 students to organize themselves for different research projects with various workloads.**
 - **Instructional technologies knowledge**
 - **Interactive teaching**
 - **Curriculum reviews**
 - **OBE based education**
 - **Google classroom**
 - **Hybrid learning models**
 - **Student engagement techniques**
- Journal publication procedures
 - Paper grading
 - More than eight years of experience in teaching and
 - research regarding thermal engineering, CFD, phase change heat transfer, data, and project management
 - Good writing and analytical skills with 22 peer-reviewed impact Journals and 13 conference paper publications
 - in the USA, Vietnam, Algeria, and Croatia

Modeling & Simulations Software:

- CFD, COMSOL Multiphysics, ANSYS (Fluent), SolidWorks, AutoCAD, Autodesk Fusion 360, MATLAB, C etc.
- COMSOL modeling of energy saving in different devices (heat sink design, CPU cooling, cavity design), energy harvesting system, modeling of Fluid-Structure Interaction (FSI).
- ANSYS workbench for CFD analysis for different engineering applications such as airfoil simulation at various angle of attack
- Design of Experiments, Statistical analysis
- Data science Software:
- Python (Pandas, NumPy, Matplotlib, seaborn, ggplot, etc), R, SAS, SQL, Machine learning with Python, Github, Zoom, Webex, Microsoft Excel, etc.

- Statistical Software: JMP, Minitab, SigmaPlot

Experimentation:

- Thermo-fluids, Multi-scale thermal transport, Phase change heat transfer
- Wind tunnel testing
- Condensation and condensate frosting test setup, Optical microscopy for the visualization of droplets
- Different coating techniques (CVD, dip coating, spin coating etc.) to fabricate engineered surfaces
- Goniometer for contact angle measurement and Montage, SEM images for surface characterization
- PMC Composite fabrication, Mechanical and surface characterization
- Micro Milling machine, Raman microscopy for water, Ice etc., SEM, EDX, FTIR, TGA

PEER-REVIEWED KEY TOTAL JOURNALS-35 (RELATED TO THERMO-FLUIDS):

1. **Haque, M. R.**, Das, S. R., & Betz, A. R. (2019). Experimental investigation of condensation and freezing phenomena on hydrophilic and hydrophobic graphene coating. *Applied Thermal Engineering*, 160, 113987 (I.F=6.1, Q1)
2. Zohora, F. T., **Haque, M. R.**, & Haque, M. M. (2023). Numerical investigation of the hydrothermal performance of novel pin-fin heat sinks with hyperbolic, wavy, and crinkle geometries and various perforations. *International Journal of Thermal Sciences*, 194, 108578 (I. F=4.9, Q1)- as corresponding author
3. **Rejaul Haque, M.**, Zhu, C., Qu, C., Kinzel, E. C., & Rachel Betz, A. (2021). Experimental Investigation of Condensation and Freezing Phenomenon on Hydrophilic and Hydrophobic Titanium Nanopillared Glass Surfaces. *Heat Transfer Engineering*, 42(6), 533-548. (I.F=2.3, Q2)
4. Bohm, R., **Haque, M. R.**, Qu, C., Kinzel, E. C., & Betz, A. R. (2018). Accelerated freezing due to droplet pinning on a nanopillared surface. *AIP Advances*, 8(12), 125228 (I.F=1.4)
5. **Haque, M. R.**, Qu, C., Kinzel, E. C., & Betz, A. R. (2018). Droplet Growth Dynamics during Atmospheric Condensation on Nanopillar Surfaces. *Nanoscale and Microscale Thermophysical Engineering*, 22(4), 270-295. doi:10.1080/15567265.2018.1495282 (I.F=4.1, Q2)
6. **Mohammad Rejaul Haque**, Tajin Jahan Hridi, M Merajul Haque, "CFD Studies on Thermal Performance Augmentation of Heat Sink using Perforated Twisted, and Grooved Pin Fins ", *International Journal of Thermal Sciences*, Volume 182, December 2022, 107832 (I. F=4.9, Q1).
7. **Rejaul Haque, M.**, Redu, R.R., Rafi, M.A., Haque, M. Rahman, M. Z., "Numerical investigation of heat transfer performance for Rectangular, Elliptical, and Airfoil shaped pin fin heatsinks through the novel combination of perforation and bulge inserts", *International Communications in Heat and Mass Transfer*, Volume 138, November 2022, 106352, (I. F=6.40, Q1).
8. **Haque, M. R.**, & Rahman, A. (2020). Numerical investigation of convective heat transfer characteristics of circular and oval tube banks with vortex generators. *Journal of Mechanical Science and Technology*, 34(1), 457-467. doi:10.1007/s12206-019-1044-0 (I.F=1.5, Q2)
9. Kazi Masuk Elahi, Nabil Mohammad Chowdhury, **Mohammad Rejaul Haque (PI)***, Md. Mamunur Rashid, Md. Meraj Hossain, Tahmid Sadi, "A Novel Honeycomb Shaped Pin Fin Heat Sink: CFD-Data Driven Machine Learning Models for Thermal and Fluid Flow Prediction", under review In *Case Studies in Thermal Engineering*, Elsevier (Q1, I.F=6.40)- as corresponding author
10. Mostafa Kamal Fahad, Nowroze Farhan Ifraj, **Mohammad Rejaul Haque***, Nabil Mohammed Chowdhury, Fatema-Tuj-Zohora, "Numerical Investigation on Consecutive Charging and Discharging of PCM material along with Modified Longitudinal Fins in Shell and Tube Heat Exchanger", *Results in Engineering*, Elsevier (Q1, I.F=6.00)- as corresponding author

PEER-REVIEWED KEY JOURNALS (RELATED MATERIAL SCIENCE):

1. Munshi, M. R., Alam, S. S., Haque, M. M., Shufian, A., **Rejaul Haque, M.**, Gafur, M. A., ...Hasan, M. (2020). An Experimental Study of Physical, Mechanical, and Thermal Properties of Rattan-Bamboo Fiber Reinforced Hybrid Polyester Laminated Composite. *Journal of Natural Fibers*, 1-15. (I.F=3.5, Q1)
2. **M. R. Haque et al.**, "Mechanical Characterization of Banana-Nylon fiber reinforced hybrid Vinyl Ester Composite", accepted in *Advances in Materials and Processing Technologies* (I.F =2.2, Q2)- as corresponding author
3. Antor et al., "Mechanical, Thermal, Chemical, Physical Properties of Sponge Gourd Outer Skin Fiber Reinforced Vinyl Ester Composites" accepted In *Biomass Conversion and Biorefinery*, **Springer** (I.F=3.5, Q2)- as corresponding author
4. Md. Kharshiduzzaman, **Mohammad Rejaul Haque**, Md Shahnewaz Bhuiyan, Sabrul Alam, Md. Mashuk, S.K. Nayeem Ahmed, Shahidul Haque Afgani, M. A. Gafur, "Evaluation of the Mechanical Properties of a Novel Hybrid Composite Composed of Rattan and Date Palm Fiber: An Experimental Study", just accepted in *Advances in Polymer Technology* (Q2, I.F= 2)

PEER- REVIEWED KEY CONFERENCE PAPERS (PUBLISHED-7 AS 1ST AUTHORED):

- 1. Mohammad Rejaul Haque**, Dr. Amy Rachel Betz, "Frost Formation on Aluminum and Hydrophobic Surfaces", -Proceedings of the *ASME 2018 International Conference on Nanochannels, Microchannels, and Minichannels*, June 10-13, 2018, Dubrovnik, Croatia. DOI:10.1115/ICNMM2018-7609
- 2. Mohammad Rejaul Haque**, Dr. Amy Rachel Betz, "Atmospheric Condensation Performance of Plain Copper and Graphene Oxide Coated Copper surfaces"- Proceedings of the *ASME 2018 International Conference on Nanochannels, Microchannels, and Minichannels*, June 10-13, 2018, Dubrovnik, Croatia. DOI:10.1115/ICNMM2018-7610
- 3. Mohammad Rejaul Haque**, Dr. Suprem R. Das, Dr. Amy Rachel Betz, "The Insight of Condensation and Freezing Phenomena on Hydrophilic and Hydrophobic Graphene Coating"- Proceedings of the *ASME 2018 International Conference on Nanochannels, Microchannels, and Minichannels*, June 10-13, 2018, Dubrovnik, Croatia.
- 4. Mohammad Rejaul Haque**, Chuang Qu, Edward C. Kinzel, Dr. Amy Rachel Betz, "Condensation dynamics and droplet size distribution", -Proceedings of the *ASME 2017 International Conference on Nanochannels, Microchannels, and Minichannels*, August 27-31, 2017, Cambridge, Massachusetts, USA. DOI:10.1115/ICNMM2017-5562
- 5. Mohammad Rejaul Haque**, Dr. Amy Rachel Betz, "Heat transfer enhancement by insertion of Vortex Generators in Electronic Chip Cooling: A Numerical Study", -Proceedings of the *ASME 2017 International Conference on Nanochannels, Microchannels, and Minichannels*, August 27-31, 2017, Cambridge, Massachusetts, USA. DOI:10.1115/ICNMM2017-5523
- 6. Mohammad Rejaul Haque**, Dr. Amy Rachel Betz, "Numerical Study of Natural Convection Heat transfer Over a Cooling Stage", -Proceedings of the *ASME 2017 International Mechanical Engineering Congress and Exposition*, November 3-9, 2017, Tampa, Florida, USA. DOI:10.1115/IMECE2017-71868.

COMPLETED FUNDED PROJECTS:

AUST –CASR Project- "Optimization of Heat Transfer Performance for Different Industrial Cooling Systems (Heat Exchanger and Heat Sinks) Through CFD Simulation with Machine Learning Algorithms" (**P.I.= Dr. Mohammad Rejaul Haque, Awarded Amount- Around \$7500**). Done this project with 4 research assistants

- **CFD data driven Machine learning modeling of -microchannel combined with pin fin heat sink**
- **CFD data driven Machine learning modeling of -tubular HX with different ribs geometries and alignment**
- **CFD data driven Machine learning modeling of -different novel shaped pin fin heat sink**
- **CFD modeling of tubular heat exchanger with fin and Phase change materials**

CERTIFICATIONS

Design of Experiments Specialization (Coursera issued by Arizona State University, USA), What is Data Science? (Coursera), Data Analysis with Python (Coursera), Data Science Methodology (Coursera), Databases and SQL for Data Science with Python (Coursera), Python for Data Science, AI & Development (Coursera), Tools for Data Science (Coursera), The Data Scientist's Toolbox (Coursera), etc.

HONORS AND AWARDS

- Got the **second position** in Graduate display at Openhouse 2018, Kansas State University, USA
- **"Dr. Pau-Chang Lu Graduate Scholarship"** in Mechanical Engineering was awarded for Fall 2017 and Spring 2018. The amount of the award was 1000 dollars in total
- Awarded two times with Kansas State University **"College of Engineering 2025 Fellowship"**

- **Graduate Student Council (GSC) travel Grant** for ICNMM 2017, IMECE 2017, ICNMM 2018, MNF 2018 during graduate studies at Kansas State University, USA
- **National Science Foundation (NSF-USA) travel Grant** for ICNMM 2017 and IMECE 2017

ACTIVE REVIEWER (INTERNATIONAL PEER-REVIEWED 22 JOURNALS SO FAR AND 3 CONFERENCES)

- Case Studies in Thermal Engineering- Elsevier
- Experimental Thermal and Fluid Science- Elsevier
- Results in Engineering- Elsevier
- Energy-Elsevier
- Applied Thermal Engineering-Elsevier
- Numerical Heat Transfer, Part A: Applications- Taylor & Francis
- Energy Technology- Wiley
- Heat Transfer- Wiley
- ASME –Journal of Heat Transfer
- ASME- The Journal of Thermal Science and Engineering Applications
- International Journal of Heat and Mass Transfer- Elsevier
- International Communications in Heat and Mass Transfer- Elsevier
- International Journal of Thermal Sciences- Elsevier
- Journal of Natural Fibers (Taylor and Francis)

REFERENCES

1. Dr. Amy Betz

Associate Professor
 Department of Mechanical and Nuclear Engineering
 Kansas State University, Manhattan, USA
 Phone no: 785-532-5440
 Email: arbetz@ksu.edu
 Relation: [PhD Advisor](#)

2. Dr. Melanie Derby

Professor
 Department of Mechanical and Nuclear Engineering
 Kansas State University, Manhattan, USA
 Phone no: 518 727 3618
 Email: derbym@ksu.edu
 Relation: [PhD research mentor and course teacher](#)

3. Dr. Dewan Hasan Ahmed

Professor
 Department of Mechanical and Production Engineering
 Ahsanullah University of Science and Technology, Dhaka
 Phone no: +8801720164490
 Email: dhahmed.mpe@aust.edu
 Relation: [Research collaboration and current professional relationship](#)

4. Dr. Md. Mahbub Hasan

Professor

Department of Materials & Metallurgical Engineering

Bangladesh University of Engineering and Technology, Dhaka

Phone no: +8801820291811

Email: mahbubh@mme.buet.ac.bd

[Relation: Research collaboration and current professional relationship](#)