Contact

www.linkedin.com/in/shaikh-tofazzel-hossain (LinkedIn)

Top Skills

Battery SOX Algorithms
Battery Electric Vehicle (BEV)
Project Management

Certifications

Battery State-of-Health (SOH) Estimation
Introduction to battery-management systems
Applied AI with DeepLearning
Equivalent Circuit Cell Model Simulation
Battery Pack Balancing and Power Estimation

Honors-Awards

Outstanding Poster Presentation
Member of The Honor Society of Phi Kappa Phi

Publications

Electrochemical Exfoliation of Graphite: Effect of Temperature and Hydrogen Peroxide Addition
A γ to α type transition of CuO species over CeO2-SiO2 composites supported CuO catalysts
Effect of Reduction Treatment on CO Oxidation with CeO2 Nanorod-Supported CuOx Catalysts
Support structure effect on CO oxidation: A comparative study on SiO2 nanospheres and CeO2 nanorods supported CuOx catalysts
A Comparative Study of CO Oxidation over Cu-O-Ce Solid Solutions and CuO/CeO2 Nanorods Catalysts

Patents

Shaikh Tofazzel Hossain, PhD

Battery Modeling Engineer
Greater Phoenix Area

Summary

I consider myself highly self-motivated, innovative, and creative to improve the current process and solve any challenges for different applications by using my extended knowledge in Materials Science and Data Science. I also consider myself to be efficient in handling multi projects simultaneously.

Materials Characterization: SEM, TEM, FIB, EDS, XRD, XRF, XPS, AFM, Raman, FTIR, TGA, DSC, TMA, Profilometer, UV-Vis, GC-MS, Metallography, Mechanical tests,

Battery characterization: Cyclic voltammetry, Impedance spectroscopy, Capacity test, Battery cycler, Aging test

Battery modeling: MATLAB/Simulink, COMSOL, PyBamm

Computer Language: Python, SQL, MATLAB, PHP, HTML
Data Analytics Tools: Excel, Apache Spark, BigQuery, Apache Beam, Google Cloud, IBM SPSS, Origin

Data Management: Data mining/processing, Data visualization, Quantitative analysis, Predictive modeling, Machine learning algorithms, Data warehousing, Big Data queries

Experience

Peak Energy
Sr. Battery Modeling Engineer
May 2025 - Present (4 months)

Nikola Motor Company
4 years 1 month

Lead Battery Modeling and Analysis Engineer
September 2023 - April 2025 (1 year 8 months)

Systems and Methods for Intelligent Battery Thermal Runaway Detection

Phoenix, Arizona, United States

Senior Battery Modeling Engineer
April 2021 - August 2023 (2 years 5 months)
Phoenix, Arizona, United States

Freelance
Freelance Data Scientist
April 2020 - March 2021 (1 year)

Kaggle Projects:

• CNN related: Predicting various types of prostate cancer from biopsy images using CNN method with keras.
https://www.kaggle.com/c/prostate-cancer-grade-assessment/overview

• Regression related: Used regression modeling where both numerical and categorical features were considered to predict the house prices of Ames, Iowa.
https://www.kaggle.com/tofazzelhossain/house-prices-prediction-advanced-regression

• NLP related: Predicted which tweets are about real disasters and which are not, using SVM.
https://www.kaggle.com/tofazzelhossain/nlp-with-disaster-tweets

SUNY Oneonta
Assistant Professor
January 2019 - July 2020 (1 year 7 months)
Oneonta, NY

Courses: Introductory Physics, Strength of Materials, Solid State Physics, Engineering CAD

Research mentoring: Metal oxide-based supercapacitors, Li-ion batteries, nanomaterials, heterogeneous catalysis

Youngstown State University
7 months

Part-Time Faculty
August 2018 - December 2018 (5 months)
Youngstown, Ohio Area

Present lecture, and prepare and grade quizzes for the following courses:

• Fundamental Physics 1 (PHYS 1501): Fall 2018

• Fundamental Physics 2 (PHYS 1502: Fall 2018

• General Physics 1 (PHYS 2610): Fall 2018

• General Physics 2 (PHYS 2611): Fall 2018

Lab Manager
June 2018 - December 2018 (7 months)
Youngstown, Ohio Area

• Provide training on SEM, TEM, EDS, FIB, and dual beam to graduate students
• Assist students to collect high quality data using EM
• Analyze collected data and reported to various faculties
• Assist Instrumental Specialist in maintenance of EM lab

Youngstown State University
3 years 7 months

Research Assistant
May 2015 - March 2018 (2 years 11 months)
Youngstown, Ohio Area

“Synthesis and kinetic study of metal oxide supported CuO catalysts for automotive catalytic converter application”
Conducted research to understand the structure-property relationship of catalysts for CO oxidation. Achieved 100% CO conversion at 211 degree C (65% lower than conventional temperature) over CeO2 nanorods supported CuO catalysts. Established reaction mechanism through developing kinetic models using numerical simulations and experimental data. Led a research group of 3 undergraduate and one Master’s students on similar projects.

Designing of experiments to understand the structure-property relationship of catalysts
Preparation of shape-controlled metal oxide supported CuO catalysts
Characterization of catalysts using XRD, Raman spectroscopy, SEM, EDS, and TEM
Catalytic activity measurements using temperature programmed techniques (TPR, TPO, TPD) and gas chromatography for CO oxidation
Kinetic study of synthesized catalysts for CO oxidation reaction
In-depth analysis of collected data to design highly efficient catalysts for low-temperature catalytic activity

Research Project
September 2014 - May 2015 (9 months)
Youngstown, Ohio Area

"Improving electrochemical exfoliation route for synthesis of high-quality low defect-density graphene"

Improved the quality of graphene using electrochemical exfoliation synthesis method. Succeeded in synthesizing of low-defect and single-layer graphene with less than 1% unstable carbon using H2O2 in electrolyte solution which was held at 95oC.

Designing of experiments to improve electrochemical exfoliation method
Prepared various electrolyte solutions for exfoliation process
Executed the exfoliation of graphite using a temperature-controlled electrochemical cell
Characterized exfoliated graphene using XRD, Raman spectroscopy, TGA, and TEM
Achieved high-quality single-layer graphene as the final product

Missouri State University
1 year 9 months

Teaching Assistant
August 2012 - May 2013 (10 months)

Gave lecture in Physics lab class of undergraduate science major students. Prepared quizzes, homework, tests, graded tests and held office hours to answer questions.

Research Assistant
September 2011 - April 2013 (1 year 8 months)
Springfield, Missouri Area

“Development of amorphous silicon thin films for anode applications in lithium ion batteries”

Preparation of Si thin films using RF sputtering and pulse laser deposition
Characterization of thin films using XRD, Raman spectroscopy, UV-VIS, profilometer, and SEM
Specific capacity measurement using half-cell reaction in cyclic voltammetry technique
Accomplished 500 mAh/g specific capacity which retained 82% after 100 cycles.
In-depth investigation of collected data to correlate structure-capacity of Si thin films

Project
August 2012 - December 2012 (5 months)
Springfield, MO

"Fabrication of n-type ZnO LED"

Designed of LED fabricated using n-type ZnO and p-type Si
Used pulsed laser deposition technique to fabricate UV emitted LED
Characterized the I-V characteristics of LED
Established the turn-on voltage of 1.3 V

Dynamic Steel Complex Ltd.
Assistant Engineer
December 2009 - May 2011 (1 year 6 months)
Narayangonj, Bangladesh

Performed quality check of steel before and after making the billets using casting process
Planned and executed mechanical tests on the steels to meet customer requirements
Analyzed and solved complications of melting, casting and forging processes
Attended monthly general meeting to discuss product quality improvement and company's growth
Executed root-cause analysis to improve quality and reduced the production costs of about 2-8%

Bangladesh University of Engineering and Technology
Undergraduate Researcher
August 2008 - October 2009 (1 year 3 months)
Dhaka, Bangladesh

"Analyzing the effect of nickel addition in heat treated carburized Cr-steel"
Analyzed the effect of nickel addition in heat treated carburized Cr-steel by executing metallography, hardness test, tensile test and wear test. Exhibited 12% decrease in hardness and 8% decrease in wear property for Cr-steel due to the formation of higher amount of retained austenite after Ni addition.

Preparing various percentages of Ni-Cr steels
Performing carburization and heat treatment on Ni added Cr-Steel
Analyzing microstructure of carburized alloy steel with light microscope
Testing various hardness tests and wear properties of Ni-Cr-Steel

Education

Youngstown State University
Doctor of Philosophy (PhD), Materials Science and Engineering · (2014 - 2018)

edX

Micro Masters, Data Science · (2019 - 2020)

Missouri State University

Master's degree, Materials Science · (2011 - 2013)

Bangladesh University of Engineering and Technology

Bachelor of Science (B.Sc.), Materials and Metallurgical Engineering · (2004 - 2009)