

Ranadip Saha

Personal Profile

A First-Year Ph.D. student of Mechanical Engineering at Purdue University with research focused on thermo-electrochemical interactions and metrology in lithium-ion and lithium-metal battery chemistries.

Education

Purdue University

Ph.D. in Mechanical Engineering
1st Year student

West Lafayette, USA

AUGUST 2023

Jadavpur University

B.E in Chemical Engineering
CGPA - 8.93/10

Kolkata, India

JULY 2019 - JUNE 2023

Patha Bhavan

12th Grade (WBCHSE)
Percentage - 92.4

Kolkata, India

MARCH 2019

Patha Bhavan

10th Grade (WBBSE)
Percentage - 92

Kolkata, India

MARCH 2017

Experience

Jadavpur University

Undergraduate Researcher | Supervisor Dr. Achintya Mukhopadhyay, Prof., Mechanical Engineering

Kolkata, India

Feb 2021 - Jan 2023

- Designing a **0-D model** to study the pre-cooling of air using a water mist spray for the thermal management system of a battery.
- **Modelling of evaporation, heat transfer, and electrochemical reactions** taking place inside a battery based on a 0-D model using MATLAB - SIMULINK.
- Testing of two basic methods of triggering mist precooling based upon temperature of the battery and SEI degradation.

École Polytechnique de Montréal

Mitacs Globalink Research Intern | Supervisor Dr. David Vidal, Asst. Prof., Mechanical Engineering

Montréal, Canada

May 2022 - August 2022

- Working on **Exploration of deep learning algorithms for computational fluid dynamics**.
- Developed MATLAB code to generate geometries with periodic boundary conditions resembling porous media
- Worked with a pre-existing Lattice Boltzmann method code to simulate flow in a pseudo-porous media

Jadavpur University

Undergraduate Researcher | Supervisor Dr. Sudeshna Saha, Asst. Prof., Chemical Engineering

Kolkata, India

Mar 2022 - May 2023

- Working on **Thermodynamic considerations of Temperature swing CO2 adsorption**.
- Assisting a Graduate student in conducting laboratory experiments
- Developing a membrane to absorb CO2 after surface modification using Bacterial Nanocellulose (BNC)

Publications

JOURNALS

A CRITICAL REVIEW ON GRAPHENE AND GRAPHENE-BASED DERIVATIVES FROM NATURAL SOURCES EMPHASIZING ON CO2 ADSORPTION POTENTIAL

Kolkata, India

Environmental Science and Pollution Research, Springer Nature

Sept 2023

- Authors: Saswata Chakraborty, **Ranadip Saha**, Sudeshna Saha
- DOI: 10.1007/s11356-023-30093-8

EARLY DETECTION AND MANAGEMENT OF THERMAL RUNAWAY IN BATTERIES USING WATER MIST FOR AIR PRE-COOLING

Kolkata, India

International Journal of Energy for a Clean Environment, Begell House

Nov 2022

- Authors: Aritra Jana, **Ranadip Saha**, Debamita Pal, Sourav Sarkar, Achintya Mukhopadhyay
- Volume 24, Issue 4, 2023, pp. 1-16
- DOI: 10.1615/InterJEnerCleanEnv.2022043273

CONFERENCES

CONTROL OF THERMAL RUNAWAY IN LI-ION BATTERIES USING WATER MIST FOR AIR PRECOOLING

Indian Institute of Chemical Engineers, India

INTERNATIONAL CONFERENCE ON ADVANCES IN CHEMICAL AND MATERIAL SCIENCES

Apr 14-16, 2022

- Authors: **Ranadip Saha**, Debamita Pal, Aritra Jana, Sourav Sarkar, Achintya Mukhopadhyay
- Presented at the International Conference On Advances in Chemical and Material Sciences ACMS - 2022, pp. 209-215
- Organized by Indian Institute of Chemical Engineers, Kolkata in association with National Institute of Technology, Jalandhar, Heritage Institute of Technology, Kolkata, and Osmania University College of Technology, Hyderabad

MANAGEMENT OF THERMAL RUNAWAY IN BATTERIES USING WATER MIST FOR AIR PRECOOLING

Indian Institute of Technology Madras, India

ISHMT-ASTFE Indian Heat and Mass Transfer Conference

Dec 17-20, 2021

- Authors: Aritra Jana, **Ranadip Saha**, Samriddha Ray, Debamita Pal, Sourav Sarkar, Achintya Mukhopadhyay
- Proceedings of the 26th National and 4th International ISHMT-ASTFE Heat and Mass Transfer Conference, pp. 209-215
- DOI: 10.1615/IHMTC-2021.310

OTHERS

ONLINE BATTERY HEALTH MONITORING SYSTEM FOR ELECTRIC VEHICLES

Jadavpur University, India

Innovation Fair - PRAGYAJU 1.0

5th August, 2023

- Members: Saumendra Nath Mishra, Ajit Das **Ranadip Saha**, Aritra Jana, Achintya Mukhopadhyay, Sourav Sarkar, Swarnendu Sen
- Development of an IoT based cost effective, reliable online battery health monitoring system for electric vehicle which can detect and mitigate thermal runaway successfully for Lithium ion batteries
- Model successfully displayed at the Innovation Fair hosted by Intellectual Property Cell in association with Jadavpur University Entrepreneurship Cell

Skills

Programming MATLAB, Python, C

Miscellaneous MATLAB-SIMULINK, AutoCAD, SOLIDWORKS, ANSYS Fluent, DWSIM, Machine Learning

Soft Skills Time Management, Teamwork, Problem-solving, Documentation, Engaging Presentation.

Achievements and Certifications

2022	316/340 , GRE General Test	India
2022	111/120 , TOEFL iBT	India
2022	MITACS , Globalink Research Internship Award	Canada
2021	A+ , Industrial Training and Internship on SOLIDWORKS and ANSYS by ASD	India
2020	Featured , International Yuva Music Festival	India
2018	2nd , Environmental Quiz Competition organized by West Bengal Pollution Control Board	India

Interests

Music I like to indulge myself in different genres of music and have been playing sitar since 2014

Photography I love capturing the blissful moments in nature through a lens.

Languages

English Professional proficiency

Bengali Native proficiency

Hindi Bilingual proficiency

French Basic Reading