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AJUL E
A stardust

Research Area: • Heat transfer and thermal management of electronic packages, spacecraft components and batteries • Surface modification for heat transfer enhancement/pool boiling • Experiments in simulated outer space conditions • Energy auditing • Computational Heat transfer • Renewable energy • Professional writing • Thermal requirements for quantum computing • Contact/interface heat transfer • Thermal interface materials .

EDUCATION

Ph.D, Mechanical Engineering

(1st in INYAS SARANSH National Level Thesis Competition)

Indian Institute of Technology Palakkad, India

GPA: 8.5/10

2019 — 2025

M.Tech, Energy Engineering and Management

(Silver medalist - 2nd rank)

National Institute of Technology Calicut, India

GPA: 9.15/10

2017 — 2019

B.Tech, Mechanical Engineering

(Included in top 5% students)

Calicut University, NSS College of Engineering Palakkad, India

GPA: 8.31/10

2012 — 2016

Higher Secondary Education (Computer science)

Rahmania Higher Secondary School Calicut, India

Score: 94.44 %

2010 — 2012

High School Education (SSLC)

Govt.HSS, Iringallur Calicut, India

Score: 98.79 %

2009-2010

RESEARCH EXPERIENCE

ISRO funded research project

Indian Institute of Technology (IIT) Palakkad, India, 2025 - Present

Identification and characterization of Thermal Interface Materials (TIMs) for Cryogenic temperature in range of 4 to 100K to reduce thermal contact resistance between metal joints *IITPKD/ICSR/REC/2025/129, Grant no: RES-SAC-2023-029:*

ISRO funded research project

Indian Institute of Technology (IIT) Palakkad, India, 2021 - 2023

Estimation of the thermal contact conductance of realistic spacecraft bolted joints. *Grant no: ISRO/RES/3/873/20-21;DS-2B-13012(2)/19/2020-Sec.2.)*

Ph.D Thesis

Indian Institute of Technology (IIT) Palakkad, India, 2019 - 2024

Studies on the estimation of thermal contact conductance of heat sink joints (combining experiments, simulations, and inverse heat transfer techniques (IHT) to improved methodologies and regression-based prediction models for estimate in-plane variation of thermal contact conductance in Spacecraft bolted joints, Metal Matrix Composites, and metal-foam heat-sink interfaces.

Hands on Experience

Indian Institue of Technology (IIT) Palakkad, India, 2019 - 2025

• Optical surface profilometer • Stylus type surface profilometer • Micro Hardness Tester • Conventional machines like lathe and milling machines • Coordinate Measuring Machine • Vacuum based systems.

M.Tech Project

National Institute of Technology (NIT) Calicut, India, 2018 - 2019

Experimental investigation of heat transfer enhancement by using vortex generators in a rectangular channel with cylindrical band heater.

Successfully conducted Energy Audit in NIT Calicut National Institute of Technology (NIT) Calicut, India, **2018 - 2019**
 Conducted a comprehensive energy audit and developed actionable strategies to lower energy usage and costs.

B.Tech Major Project NSS College of Engineering Palakkad, India, **2015 - 2016**
 Design, inverse kinematic analysis, fabrication, and validation of a robotic arm for pick-and-place operations.

B.Tech Minor Project NSS College of Engineering Palakkad, India, **2014 - 2015**
 Design and analysis of light duty sheet metal cutting machine.

PUBLICATIONS

JOURNALS

1. **Ajul, E.,** & Chanda, S. (2023). Estimation of thermal contact conductance of spacecraft heat sink bolted joints. Applied Thermal Engineering, 224, 120078.
2. Kishor, E., **Ajul, E.,** Chanda, S., & Das, S. L. (2024). Estimation of spatially varying thermal contact conductance of non-conformal bolted joint. Heat and Mass Transfer, 60(2), 263-280.
3. **Ajul, E.,** Kishor, E., & Chanda, S. (2025). An Inverse Heat Transfer Based Technique for Estimating Thermal Contact Conductance and its Validation with Experiments. Applied Mechanics and Materials, 926, 27-37.
4. **Ajul, E.,** Shanmuga Priyan V G, Samarjeet Chanda, Kanmani Subbu S, Measurement of Thermal Contact Conductance of Powder Metallurgy Fabricated Al-SiC Metal Matrix Composites. International Communications in Heat and Mass Transfers
5. Sreenath V R, **Ajul, E.,** and Samarjeet Chanda. "Thermal behavior of PCM-metal foam composite heat sink under varying ambient temperatures in vacuum environment." In: Applied Thermal Engineering.
6. **Ajul, E.** and Samarjeet Chanda. "Modeling and Analysis of Thermal Contact Conductance in Metal Foam Heat Sink Joints Using Measured In-Plane Contact Pressure Distribution." In: International Journal of Heat and Mass Transfer. **(Journal paper submitted)**

CONFERENCE PROCEEDINGS

1. Kishor, E., **Ajul, E.,** Chanda, S., & Das, S. L. (2023). Thermal contact conductance of bolted joint. In International Heat Transfer Conference Digital Library. Begel House Inc..
2. **Ajul, E.,** Kishor, E., & Chanda, S. (2021). Prediction of thermal contact conductance in conforming rough metal contacts through regeneration of surface profile. In Proceedings of the 26th National and 4th International ISHMT-ASTFE Heat and Mass Transfer Conference December 17-20, 2021, IIT Madras, Chennai-600036, Tamil Nadu, India. Begel House Inc..
3. **Ajul, E.,** Singh, R., Kishor, E., & Chanda, S. (2025). A Coupled 2d Thermo-Mechanical Analysis For The Estimation Of Thermal Contact Conductance In Conforming Rough Metal Contacts Using Recreated Measured Surface Profile. In ASTFE Digital Library. Begel House Inc..
4. **Ajul, E.,** E, Ajul and Samarjeet Chanda. "Simultaneous Estimation of Orthotropic Thermal Conductivity and Spatial Variation of Interface Thermal Contact Conductance of Aluminum Honeycomb Plates Through Inverse Heat Transfer Technique: A Case Study on Bolted Joints." In: Proceedings of the ASME 2025 International Mechanical Engineering Congress and Exposition IMECE-INDIA2025 September, 10 – 13, 2025, Hyderabad, India.

SOFTWARE

- COMSOL Multiphysics
- ABAQUS CAE
- ANSYS Fluent
- AutoDesk Flow Design
- Fusion 360
- CATIA v5
- AutoCAD
- C/C++
- MATLAB
- MiniTab
- LaTeX & other writing tools

AWARDS & HONORS

1. Secured **First prize for Ph.D thesis** under the Engineering Science category in the **national level competition for PhD scholars** organized by Indian National Young Academy of Science (INYNAS) SARANSH 2025 sponsored by Springer Nature.
2. Secured **International Travel Grant** from Anusandhan National Research Foundation (ANRF) International Travel Grant for attending 10th Thermal and Fluids Engineering Conference, USA, 2025.
3. Is a **Peer reviewer** in the International Journal of Heat and Mass Transfer since 2024.
4. **Silver medalist (2nd rank holder)** for Master of Technology in the National Institute of Technology, Calicut, India.
5. **Included in top 5% students (State rank 29)** in the University of Calicut for Bachelor of Technology in Mechanical Engineering.
6. **Best poster award** in the annual research scholars day competitions at Indian Institute of Technology Palakkad 2023.
7. **Captained and participated in different cricket championships** including Inter-IIT sports meet, Inter-NIT sports meet, University Zonal and Inter-zone championships and Kerala cricket association B-Division championships.

WORKSHOPS ATTENDED & TRAINING UNDERGONE

1. AICTE ATAL-Faculty Development Program on *"Innovations in electric vehicle engineering: Battery thermal management and generative design perspectives."*
2. Global Initiative of Academic Network (GIAN) Course on *"Contact Mechanics: Understanding Interaction at the Material Interface"*
3. 10 Days residential training at regional workshop of Kerala Road Transport Corporation, Kozhikode

TEACHING ASSISTANTSHIP

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| 1. Advanced Heat Transfer (ME5620, IIT Palakkad) | 6. Engineering Graphics (ZZ1002D, NIT Calicut) |
| 2. Heat and Mass Transfer (ME3050, IIT Palakkad) | 7. Fluid Machinery Lab (ME2092D, NIT Calicut) |
| 3. Heat Transfer Lab (ME3190, IIT Palakkad) | 8. Heat Transfer Lab (ME3091D, NIT Calicut) |
| 4. AM/FM Lab (ME2140, IIT Palakkad) | 9. Heat Engines Lab (ME4091D, NIT Calicut) |
| 5. Engineering Drawing (ME1130, IIT Palakkad) | 10. Central Workshop (ZZ1091D, NIT Calicut) |

PERSONAL DETAILS

- Nationality : Indian
- Date of Birth: 10th April 1995
- Marital Status: Unmarried
- Hobbies: Phone photography, Trekking, Traveling, Music and Cricket.
- Address: Ajul E, Arangu (H), Nambili Parambu, Palazhi Pala, P.O.Guruvayoorappan College, Kozhikode, India, Pin: 673014.

REFEREES

1. **Dr.Samarjeet Chanda** : Associate Professor, IIT Palakkad (Email: samarjeet@iitpkd.ac.in)
2. **Dr. Ganesh Natarajan** : Professor, IIT Palakkad (Email: n.ganesh@iitpkd.ac.in)
3. **Dr. Suresh. P. R** : Principal (Retd) NSS College of engineering Palakkad (Email: sureshpr101@gmail.com)
4. **Dr. Rohini Kumar B** : Assistant Professor, NIT Calicut (Email: rohinikumar@nitc.ac.in)