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AJUL E

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Career Objectives: Driven by a deep passion for scientific exploration and the pursuit of knowledge, I aim to contribute meaningfully to research that advances humanity's collective understanding. Committed to continuous learning and collaboration, I seek to be part of a research-driven environment where curiosity, perseverance, and scientific inquiry drive progress for a better future.

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

Education

Ph.D, Mechanical Engineering
Indian Institute of Technology Palakkad, India — GPA: 8.5/10 — **2019 — 2025**

M.Tech, Energy Engineering and Management
(Silver medalist - 2^{nd} rank)
National Institute of Technology Calicut, India — GPA: 9.15/10 — **2017 — 2019**

B.Tech, Mechanical Engineering
(University rank: 29^{th}, Included in top 5% students)
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

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.

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.

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.

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.

Software

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

Publications

1. **Ajul, E.**, & Chanda, S. (2023). Estimation of thermal contact conductance of spacecraft heat sink bolted joints. Applied Thermal Engineering, 224, 120078. (**Journal paper**)
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. (**Journal paper**)
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. (**Journal paper**)
4. **E Ajul**, 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 (**Journal paper, Accepted yet to publish**)
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. (**Journal paper**)
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**)
7. 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.. (**Conference paper**)
8. **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 26thNational and 4th International ISHMT-ASTFE Heat and Mass Transfer Conference December 17-20, 2021, IIT Madras, Chennai-600036, Tamil Nadu, India. Begel House Inc.. (**Conference paper**)
9. **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.. (**Conference paper**)
10. **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. (**Conference paper**)

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 (INYAS) SARANSH 2025 sponsored by Springer Nature.
2. Secured **International Travel Grant** from Anusandhan National Research Foundation (ANRF) International Travel Grant for attending 10^{th} 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 and 2^{nd} rank holder** for Master of Technology in the National Institute of Technology, Calicut, India.
5. **State rank 29** in the University of Calicut for Bachelor of Technology in Mechanical Engineering.
6. **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

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

Personal Details

- Nationality : Indian
- Date of Birth: 10^{th} 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. Rohini Kumar B** *: Assistant Professor, NIT Calicut (Email: rohinikumar@nitc.ac.in)*
3. **Dr. Ganesh Natarajan** *: Professor, IIT Palakkad (Email: n.ganesh@iitpkd.ac.in)*
4. **Dr. Suresh. P. R** *: Principal (Retd) NSS College of engineering Palakkad (Email: sureshpr101@gmail.com)*