TONMOY SHARMA

CURRICULUM VITAE

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ACADEMIC QUALIFICATIONS

Degree	Institute	Year	% / CGPA	Academic awards
PhD (Thermal Engineering)	Indian Institute of Technology Patna	Pursuing	9.50	▪ Dr. R. S. Daryan Young Scientist Awardee in Society of Physical Chemistry Conference 2025 ▪ Best presentation award in Asian Microgravity Symposium 2024 ▪ Awarded the Prime Minister's Research Fellowship
M.Tech. (Mechanical Engineering)	Indian Institute of Technology Patna	2021	9.33	▪ 2nd rank in the department
B.E. (Mechanical Engineering)	Jorhat Engineering College, Assam	2019	88%	▪ First class, 3rd rank in the department with Honours
Higher secondary (AISSCE)	KV ONGC, Jorhat, Assam	2015	95%	▪ Commendation certificate from the Minister of HRD, Govt. of India ▪ Certificate of merit for ranking within top 1.5% of K.V.S students
Matriculation (ICSE)	Carmel School, Jorhat, Assam	2013	85%	~

ACHIEVEMENTS IN ALL INDIA LEVEL EXAMINATIONS

1) Graduate Aptitude Test in Engineering (GATE): Secured 98.42 percentile with a rank of 2647 in 2019.

ACADEMIC AND PROFESSIONAL EXPERIENCE

Type	Topic	Period
Teaching Associate	Teaching Associate in the following courses of National Programme on Technology Enhanced Learning (NPTEL): (a) Power Plant Engineering (b) IC Engines and Gas turbine	20 weeks
Faculty	Part-time faculty in New Government Polytechnic, Patna, Bihar.	2 semesters
Team Project	Constructing an automated space compatible experimental setup for conducting microgravity boiling experiments in the upcoming unmanned Gaganyaan mission of Indian Space Research Organization.	Ongoing
B.E. Project	Design, fabrication and performance evaluation of a solar still unit.	1 year
Internship	Internship on the topic "Analysis of Dual Axis Tracking Two Motion Programming using Servo Motors in the Pilot Project using Arduino" in the North East Renewable Energy Research Lab, Jorhat, Assam.	10 days
Internship	Summer internship at Asian Institute of Technology, Thailand, on the topic "Basics of Arduino programming and DC Motor Control", under the guidance of Dr. Manukid Parnichkun.	15 days
Internship	Internship at Centre of Rural Technology, IIT Guwahati, on a project "Fabrication of cold storage" under the guidance of Dr. Siddhartha Singha.	1 month
Training	Training on "Mechanical Maintenance" in the Indian Oil Corporation Ltd, Digboi, Assam.	1 month
Training	Training on "Cooling systems in diesel locomotives" in the North Frontier Railways, Bamunimaidan, Guwahati, Assam.	15 days

RESEARCH INTEREST

- Condensation heat transfer
- Bubble dynamics during boiling
- Molecular dynamics simulation
- Automation and robotics
- Droplet dynamics on surfaces
- Solar desalination

SKILLS DEVELOPED

- Programming with MATLAB, C, C++, JAVA
- Simulation in GROMACS and ANSYS
- Designing with AutoCAD and CATIA
- Automation using Arduino
- Deep Learning

RELEVANT COURSE WORK

B.E.	Engineering Mathematics, Engineering Chemistry, Engineering Thermodynamics, Fluid Mechanics, Heat & Mass Transfer, Internal Combustion Engine, Theory of machines, Machine Design, Fundamentals of Computing, Manufacturing Science, Industrial Engineering, Mechanics of Materials, Workshop practices.
M.Tech.	Computational Fluid Dynamics, Finite Element Method, Advanced Fluid Mechanics, Advanced Engineering Mathematics, Advanced Heat Transfer, Refrigeration and Air Conditioning, Renewable and Non-Conventional Energy Sources.

EXTRACURICULAR ACHIEVEMENTS

- Chair of American Society of Mechanical Engineers (ASME) student chapter at IIT Patna, 2024 – continuing.
- Completed Visharad course in Tabla
- Sports representative of IIT Patna for M.Tech. & M.Sc. boys in the academic year 2020-21.
- Ex NCC Senior Under Officer, passed 'C' certificate examination with A grade.

PUBLICATIONS

Journal:

[1] **Sharma, T.,** Azad, R., Martin, D., Daschakraborty, S., Raj, R. (**2024**). Unravelling the Surface Activity of Ethanol-Water Mixtures through Experiments and Molecular Dynamics Simulations, *Langmuir,* 40 (33), 17577-17589.

[2] **Sharma, T.**, Erimban S., Azad, R., Nam, Y., Raj, R., Daschakraborty, S. (**2023**). Investigating the Vapor-Phase Adsorption of Aroma Molecules on Water-Vapor Interface using Molecular Dynamics Simulations, *Langmuir*, 39 (49), 17889-17902.

International Conferences:

[1] **Sharma, T.**, Raj, R., Daschakraborty, S., In-Silico Exploration of Wettability Tuning via Volatile Amphiphiles from the Vapor Phase, *3rd Society of Physical Chemistry Conference,* IIT Patna, Bihar, India**, October 11-14, 2025**.

[2] **Sharma, T.**, Azad, R., Daschakraborty, S., Raj, R., Utility of Lubricant Infused Surfaces for Enhancing Droplet Removal in Microgravity Applications, *14th Asian Microgravity Symposium,* IIT Madras, Chennai, India**, December 1-6, 2024**.

[3] **Sharma, T.**, Raj, R., Daschakraborty, S., Scented Slippery Surfaces: Designing Aroma-Infused Lubricants through Experiments and Simulations, *2nd Society of Physical Chemistry Conference*, IIT Bombay, Powai, Mumbai, India, **October 22−25, 2024**.

[4] **Sharma, T.**, Daschakraborty, S., Raj, R., Molecular understanding of in-situ lubricant infused surface formation by adding aroma molecules in the vapor phase, *4th Conference on Micro Flow and Interfacial Phenomena (μFIP)*, Hong Kong Polytechnic University, Kowloon, Hong Kong, **June 21 – 24, 2024**.

[5] **Sharma, T.**, Raj, R., Daschakraborty, S., Effect on stability of thin liquid film with vapor phase adsorption of aroma compounds: A molecular dynamics study, *2nd Recent Trends in Chemical Science and Technology (RTCST)*, IIT Patna, Bihar, India, **March 1– 2, 2024**.

[6] **Sharma, T.**, Erimban S., Azad, R., Nam, Y., Daschakraborty, S., Raj, R., Decoding the vapor phase adsorption of aroma compounds on the vapor-liquid interface by molecular dynamic simulations, *9th International and 49th National Conference on Fluid Mechanics and Fluid Power (FMFP),* IIT Roorkee, Uttarakhand, India, **December 14-16, 2022**.

[7] **Sharma, T.**, Erimban S., Azad, R., Nam, Y., Daschakraborty, S., Raj, R., Molecular dynamic simulations of aroma compounds adsorbed on vapor-liquid interface, *International Chemical Engineering Conference 2022*, IIT Patna, Bihar, India, **November 12-13, 2022**.

[8] **Sharma, T.,** Kumar, V., Sinha, K. N. R., and Raj, R., Deep Learning Time-Frequency Representations of Boiling Acoustics for Accurate Prediction of Transition between Heat Transfer Regimes, *26th National and 4th International ISHMT-ASTFE Heat and Mass Transfer Conference*, IIT Madras, Tamil Nadu, India, **December 17-20, 2021**.

[9] Azad, R., **Sharma, T.**, Nam, Y., Daschakraborty, S., Raj, R., On-demand rupture of condensate film via interfacial adsorption of aroma compounds, *75th Annual Session of Indian Institute of Chemical Engineers CHEMCON-2022*, Harcourt Butler Technical University, Kanpur, India, **December 27-30, 2022**.

[10] **Sharma, T.,** Kumar, V., Sinha, K. N. R., and Raj, R., Physics Informed Deep Learning for Acoustic Detection of Departure from Nucleate Boiling, *26th National and 4th International ISHMT-ASTFE Heat and Mass Transfer Conference*, IIT Madras, Tamil Nadu, India, **December 17-20, 2021**.

[11] Kumar, V., Sinha, K. N. R., **Sharma, T.,** and Raj, R., Acoustic Detection of Departure from Nucleate Boiling as a Precursor to the Critical Heat Flux, *26th National and 4th International ISHMT-ASTFE Heat and Mass Transfer Conference*, IIT Madras, Tamil Nadu, India, **December 17-20, 2021**.