JAYABRATA DHAR

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BRIEF OUTLINE OF RESEARCH

I have worked on a variety of problems involving creeping flows of liquid crystals and complex fluids during my Masters-Ph.D tenure. My doctoral research focused on investigating the dynamics of nematic liquid crystals (NLCs) and electrorheological (ER) fluids and their modulation in micro-confinements. The primary focus of my work targeted the theoretical and numerical treatment of electrokinetics and related flows of NLCs and ER fluids. Specifically, I studied how electrical double layers can be used to activate and modulate the rheological complexity and flow structures of NLCs and ER fluids in narrow conduits. Besides my primary PhD related research, I am also involved in experimental and numerical studies related to capillary filling dynamics of Newtonian and non-Newtonian fluids, and AC electrothermal flows.

My first Post-Doctoral research involved the design and setup of experiments analysing the Rayleigh-Taylor instability phenomena in porous media. I have used the refractive index-matched technique to visualize 2D fingering of the hydrodynamics. Simultaneously, I worked on the developing a 2D and 3D numerical simulation framework on Rayleigh-Taylor Instability in consideration of porous dispersion using OpenFOAM. During my second Post-Doctoral research, I used experimental and numerical tools to study the dynamics in two distinct biologically active systems a) Growth of sessile bacteria; and b) Bioconvection of swimming phytoplankton. The former study (*i.e.,* a) investigates the self-regulated synergy across growing bacterial colonies and maps their most hydrodynamically active point to the first onset of 2D-to3D geometrical transition of their colony. The synergy is shown to be guided by the statistics of their inherent growth dynamics, which has a log-normal signature. In the latter study (*i.e.,* b), my focus was to study the mixing signatures of the active systems when subjected to various environmental cues (such as variation of temperature and nutrients) that are relevant to the recent increase in global warming effects. The overall focus on both the research topics is to exploit the induced transport and auto-feedback mechanisms of the *intelligent* biological systems to reduce the delirious effects these systems may pose to its immediate environment.

RESEARCH EXPERIENCE

- **Post-Doctoral Fellow, Geosciences Rennes, University of Rennes 1, France,** May 2018 – October 2019. Research Topic – Rayleigh-Taylor Instability in porous medium: Refractive-index matched experiments and 2D and 3D numerical simulations.

- **HFSP Post-Doctoral Fellow, Department of Physics and Materials Science, University of Luxembourg,** November 2019 – Till date. Research topic: Active biological system (Phytoplankton and non-motile bacterial) and its associated hydrodynamics and transport: Experiments, image processing, PIV Techniques and Modelling.

RESEARCH GRANTS RECEIVED

- **SERB – SRG (2023 call). Status: Grant Awarded**

RESEARCH & EDUCATION

Assistant Professor, 2022 (April) – 2022 (September),
Department of Mechanical Engineering,
BITS Pilani, Hyderabad Campus

Human Frontiers (Post-Doctoral) Fellow, 2019 – 2022,
Physics of Living Matter Group
The Physics and Materials Science Department,
University of Luxembourg - Limpertsberg Campus,
L-1511 Luxembourg
Advisor: Dr. Anupam Sengupta

Post-Doctoral Fellow, 2018 – 2019,
Team DIMENV, Geosciences Rennes (UMR 6118),
Université Rennes 1, France
Advisor: Dr. Yves Méheust

PhD student, 2013 - 2017,
Department of Mechanical Engineering,
Indian Institute of Technology Kharagpur, India
PhD advisor: Dr. Suman Chakraborty

Master of Technology (MTech), 2011–2013,
Department of Mechanical Engineering,
Indian Institute of Technology Kharagpur, India
MTech specialization: Thermal Science and Engineering

Bachelor of Engineering (BE), 2007–2011,
Department of Mechanical Engineering,
National Institute of Technology Durgapur, India

Higher Secondary Education (12th Standard), 2006,
St. Joseph's College, West Bengal, India
Indian School Certificate Board

Secondary Education (10th Standard), 2004,
St. Joseph's College, West Bengal, India
Indian Council of Secondary Education

PUBLICATIONS

Referred Journal Papers:

1. Bandopadhyay, A., **Dhar, J.**, & Chakraborty, S. (Sept, 2013). "*Effects of solvent-mediated nonelectrostatic ion-ion interactions on a streaming potential in microchannels and nanochannels*". Physical Review E, 88(3), 33014, APS. https://doi.org/10.1103/PhysRevE.88.033014 (SCI/Scopus Indexed) (Q1)
2. **Dhar, J.**, Bandopadhyay, A., & Chakraborty, S. (Nov., 2013). "*Electro-osmosis of electrorheological fluids*". Physical Review E, 88(5), 53001, APS. https://doi.org/10.1103/PhysRevE.88.053001 (SCI/Scopus Indexed) (Q1)
3. **Dhar, J.**, Ghosh, U., & Chakraborty, S. (March, 2014). "*Alterations in streaming potential in presence of time periodic pressure-driven flow of a power law fluid in narrow confinements with nonelectrostatic ion-ion interactions*". Electrophoresis, 35(5), 662–669, Wiley-VCH. https://doi.org/10.1002/elps.201300428 (SCI/Scopus

Indexed) (Q2)

4. **Dhar, J.**, Bandopadhyay, A., & Chakraborty, S. (July 2015). "*Taylor–Couette flow of electrorheological fluids under electrical double layer phenomenon*". Journal of Non-Newtonian Fluid Mechanics, 223, 165–175, Elsevier. https://doi.org/10.1016/j.jnnfm.2015.07.001 (SCI/Scopus Indexed) (Q1)
5. Majumder, S., **Dhar, J.**, & Chakraborty, S. (October, 2015). "*Resolving Anomalies in Predicting Electrokinetic Energy Conversion Efficiencies of Nanofluidic Devices*". Scientific Reports, 5, 14725, Nature Research. https://doi.org/10.1038/srep14725 (SCI/Scopus Indexed) (Q1)
6. **Dhar, J.**, Ghosh, U., & Chakraborty, S. (Aug., 2015). "*Electro-capillary effects in capillary filling dynamics of electrorheological fluids*". Soft Matter, 11(35), 6957–6967, Royal Society of Chemistry. https://doi.org/10.1039/C5SM01092F (SCI/Scopus Indexed) (Q1)
7. **Dhar, J.**, Jaggi, P., & Chakraborty, S. (June, 2016). "*Oscillatory regimes of capillary imbibition of viscoelastic fluids through concentric annulus*". RSC Adv., 6(65), 60117–60125, Royal Society of Chemistry.. https://doi.org/10.1039/C6RA05002F (SCI/Scopus Indexed) (Q1)
8. Goswami, P., **Dhar, J.**, Ghosh, U., & Chakraborty, S. (March, 2017). "*Solvent-mediated nonelectrostatic ion-ion interactions predicting anomalies in electrophoresis*". Electrophoresis, 38(5), 712–719, Wiley-VCH. https://doi.org/10.1002/elps.201600394 (SCI/Scopus Indexed) (Q2)
9. Poddar, A., **Dhar, J.**, & Chakraborty, S. (July, 2017). "*Electroosmosis of Nematic Liquid Crystals under Weak Anchoring and Second-Order Surface Effects*". Physical Review E, 96(1), 013114. https://doi.org/10.1103/PhysRevE.96.013114 (SCI/Scopus Indexed) (Q1)
10. Mukherjee, S., Goswami, P., **Dhar, J.**, Dasgupta, S., & Chakraborty, S. (July, 2017). "*Ion-Size Dependent Electroosmosis of Viscoelastic Fluids in Hydrophobic Microchannels: An Analytical Approach*". Physics of Fluids, 29(7), 072002, AIP Publishing. http://dx.doi.org/10.1063/1.4990841 (SCI/Scopus Indexed) (Q1)
11. **Dhar, J**., & Chakraborty, S. (Sept., 2017) "*Spontaneous Electrorheological Effect in Nematic Liquid Crystals under Taylor-Couette Flow Configuration*". Physics of Fluids, 29(9), 092008, AIP Publishing. http://dx.doi.org/10.1063/1.5003379 (SCI/Scopus Indexed) (Q1)
12. Mukherjee, S., Das, S. S., **Dhar, J.**, Dasgupta, S., & and Chakraborty, S. (Sept., 2017) "*Electroosmosis of Viscoelastic Fluids: The Role of Wall Depletion Layer*" Langmuir, 33(43), 12046-12055, American Chemical Society. http://pubs.acs.org/doi/abs/10.1021/acs.langmuir.7b02895 (SCI/Scopus Indexed) (Q1)
13. **Dhar, J.** and Chakraborty, S. (April, 2018) "*Electrically modulated capillary filling imbibition of nematic liquid crystals*" Phys. Rev. E, 97(4), 043107, American Physical Society. https://journals.aps.org/pre/abstract/10.1103/PhysRevE.97.043107 (SCI/Scopus Indexed) (Q1)
14. Kunti, G., **Dhar, J.**, Bhattacharya, A. and Chakraborty, S. (June, 2018) "*Electro-thermally driven transport of a non-conducting fluid in a two-layer system for MEMS and biomedical applications*" J. App. Phys, 123(24), 24490, American Institute of Physics. https://doi.org/10.1063/1.5011659 (SCI/Scopus Indexed) (Q2)
15. Kunti, G., **Dhar, J.,** Bandyopadhyay, S., Bhattacharya, A. and Chakraborty, S. (Sept., 2018) "*Energy-Efficient Generation of Controlled Vortices on Low-Voltage Digital Microfluidic Platform*" App. Phys. Lett, 113(12), 124103, American Institute of Physics. https://doi.org/10.1063/1.5042143 (SCI/Scopus Indexed) (Q1)
16. Kunti, G., **Dhar, J.**, Bhattacharya, A. and Chakraborty, S. (Feb., 2019) *"Joule heating-induced particle manipulation on a microfluidic chip"* Biomicrofluidics, 13(1), 014113, American Institute of Physics. https://doi.org/10.1063/1.5082978 (SCI/Scopus Indexed) (Q1)
17. Mukherjee, S., **Dhar**, J., Dasgupta, S., and Chakraborty, S. (Jan., 2019) "*Patterned surface charges coupled with thermal gradients may create giant augmentations of solute dispersion in electro-osmosis of viscoelastic fluids*" Proc. R. Soc. A, 475, 20180522, Royal Society. http://dx.doi.org/10.1098/rspa.2018.0522 (SCI/Scopus Indexed) (Q1)
18. **Dhar**, J., Mukherjee, S., Raj M, K. and Chakraborty, S. (Jan., 2019) "*Universal oscillatory dynamics in capillary filling*" Europhys. Lett, 125 (1) , 14003, IOP Publishing. https://doi.org/10.1209/0295-5075/125/14003 (SCI/Scopus Indexed) (Q2)
19. Kunti, G., **Dhar**, J.**,** Bhattacharya, A. and Chakraborty, S. (Sept., 2019) "*Directionally controlled open channel microfluidics*" Phys. of Fluids 31 (9), 092003, AIP Publishing. https://doi.org/10.1063/1.5118728 (SCI/Scopus Indexed) (Q1)

20. Kunti, G., **Dhar, J.**, Chakraborty, S. and Bhattacharya, A. (June, 2020) "*Alternating Current Electrothermal Flow for Cooling of Localized Hot Spots in Microelectronic Devices*" IEEE Transactions on Components, Packaging and Manufacturing Technology 10 (6) 1020 – 1027. IEEE. https://ieeexplore.ieee.org/abstract/document/9025244 (DOI: 10.1109/TCPMT.2020.2976659) (SCI/Scopus Indexed) (Q2)
21. Paul, A., Mukherjee, S., **Dhar, J.**, S, Ghosal and Chakraborty, S. (April, 2020) "*The effect of the finite size of ions and Debye layer overspill on the screened Coulomb interactions between charged flat plates*" Electrophoresis 41 (7-8), 607-614, Wiley-VCH. https://doi.org/10.1002/elps.201900318 (SCI/Scopus Indexed) (Q2)
22. **Dhar, J.**, Meunier, P. and Meheust, Y. (June, 2022) "*Convective dissolution of carbon dioxide in two- and three-dimensional porous media: The impact of hydrodynamic dispersion*" Physics of Fluids 34, 064114; https://doi.org/10.1063/5.0086370 (SCI/Scopus Indexed) (Q1)
23. **Dhar, J.,** Thai, A. L. P., Ghoshal, A., Giomi, L. and Sengupta, A. (July, 2022) "*Self-regulation of phenotypic noise synchronizes emergent organization and active transport in confluent microbial environments*" Nat. Phys. 18, 945–951. https://doi.org/10.1038/s41567-022-01641-9 (SCI/Scopus Indexed) (Q1)
24. Mukherjee, S., **Dhar, J.,** DasGupta, S. and Chakraborty, S. (July, 2022) "*Electrokinetically Augmented Load Bearing Capacity of a Deformable Microfluidic Channel*" Physics of Fluids, 34, 082019; https://doi.org/10.1063/5.0101298 (SCI/Scopus Indexed) (Q1)
25. **Dhar, J.***, Sengupta, A, Danza, F., Ghoshal, A., Müller, S. and Kakavand, N. (Nov, 2022) "*Active reconfiguration of cytoplasmic lipid droplets governs migration of nutrient-limited phytoplankton*" (*Joint first author), Science Advances, 8 (44). 1-16; https://www.science.org/doi/10.1126/sciadv.abn6005 (SCI/Scopus Indexed) (Q1)
26. Gomathi, S., Deepika, S., Thangavel, S., Patra, S., **Dhar, J.** and Karmakar, S. (Jan 2024) "*Effect of Nonlinear Reaction on Miscible Gravitational Instability through Dispersive Porous Medium*", Journal of Energy Engineering 150 (2); https://doi.org/10.1061/JLEED9.EYENG-5165 (SCI/Scopus Indexed) (Q2)
27. Di Nezio, F., Ong, ILH., Riedel, R., Goshal, A., **Dhar, J.**, Roman, S., Storelli, N. and Sengupta, A. (Nov 2024) "*Synergistic phenotypic adaptations of motile purple sulphur bacteria Chromatium okenii during lake-to-laboratory domestication*", PLOS One, 19(10), e0310265; https://doi.org/10.1371/journal.pone.0310265 (SCI/Scopus Indexed) (Q1)
28. Basu, I and **Dhar, J.** (Feb 2025) "*Enhancement in Electroosmotic Mixing in Obstruction-Laden Microchannels*" Microfluidics and Nanofluidics, 29(3), 13; https://doi.org/10.1007/s10404-025-02786-8 (SCI/Scopus Indexed) (Q1)
29. Goshal, A., Mishra, S., **Dhar, J.**, Grossart, H. P. , and Sengupta, A. (Dec 2025) "*Phytoplankton Tune Local pH to Actively Modulate Circadian Gravitactic Behavior*", Advanced Physics Research, e00189; https://doi.org/10.1002/apxr.202500189 (ESCI/DOAJ Indexed)
30. Biswas, S., Mahato, S. and **Dhar, J.** (Sept 2025) "*A review on microbial bioconvection in porous media: Mechanisms, bloom formation, and technological Frontiers*" International Communications in Heat and Mass Transfer, 167, 109394; https://doi.org/10.1016/j.icheatmasstransfer.2025.109394 (SCI/Scopus Indexed) (Q1)

Patents granted:

1. Kunti, G., **Dhar, J.**, Bhattacharya, A., Chakraborty, S. (Filed: 05/06/2019, Granted: 26/09/2022) "System For Particle Manipulation And Aggregation", Patent No.: 407594; Ref. No. 201931022341 (Indian Institute of Technology Kharagpur)

Referred Conference Papers:

1. Mukherjee, S., **Dhar, J.**, Dasgupta, S., & and Chakraborty, S. (2017) "*Forced convection in electroosmotic flow of Phan-Thien-Tanner fluids*". INCOM 2018, pp: INCOM18-062, 4th Jan to 6th Jan, 2018, Jadavpur University, Kolkata, India.
2. **Dhar, J.**, Nadal, F., Borgne, TL., Meunier, P. and Méheust, Y. (2019) "*Solubility Trapping Of CO2: Analog Experiment and Three-Dimensional Numerical Modeling*". EGU General Assembly 2019, Geophysical Research Abstracts vol. 21, pp: EGU2019-17594, 7th April to 12th April, 2019, Vienna, Austria. (Poster presentation)

3. Kunti, G., **Dhar**, J.**,** Bhattacharya, A. and Chakraborty, S. (2019) "*Alternating Current Electrothermal Flow for Energy Efficient Thermal Management of Microprocessor Hot Spots*" 25th International Workshop on THERMINIC, 25th Sept. to 27th Sept., 2019, Lecco, Italy.
4. **Dhar, J.**, Nadal, F., Borgne, TL., Meunier, P. and Méheust, Y. (2019) *"Gravitational Instability and Convection in a Granular Porous Medium: Pore Scale Experimental Study and Implications for Solubility Trapping Of CO2*" American Geophysical Union, Fall Meeting 2019, pp: abstract #H41E-01, 9th Dec. to 13th Dec., 2019, San Francisco, California, USA. (Oral presentation)
5. **Dhar, J.**, Danza, F., Ghoshal, A. and Sengupta, A. (2021) "*Emergent activity of motile phytoplankton in nutrient landscapes*" DPG BPCPPDYSOE 2021, BP 2.3 BPb-pp-1, 22nd March to 24th March, 2021, Dresden, Germany. (Online Oral presentation)
6. **Dhar, J.**, Ashraf, S., Meunier, P., Nadal, F. and Méheust, Y. (2021) "*Gravitational instabilities in a 2D porous medium for carbon dioxide sequestration*". Interpore 2021, 31st May to 3rd June, 2021, University of Stuttgart, Germany. (Online Oral presentation)
7. **Dhar, J.**, Meunier, P., Nadal, F. and Méheust, Y. (2021) "*Rayleigh-Taylor Instability in 2D and 3D Dispersive Porous Medium*". Interpore 2021, 31st May to 3rd June, 2021, University of Stuttgart, Germany. (Online Oral presentation)
8. **Dhar, J.**, Ghoshal, A. and Sengupta, A. (2021) "*Bioconvective chaos shapes dynamics and lifetime of harmful algal blooms*". 20th HFSP Awardees Meeting 2021, Session 1-32, pp: 106, 5th July to 8th July, 2021, HFSP Office Online Event. (Online Poster presentation)
9. Ashraf, S., **Dhar, J.**, Nadal, F., Meunier, P. and Méheust, Y. (2022) "*Experimental study of miscible Rayleigh-Taylor convection in a granular porous medium*" EGU General Assembly Conference Abstracts, EGU22-11813.
10. Ashraf, S., **Dhar, J.**, Nadal, F., Meunier, P. and Méheust, Y. (2023) "*Experimental characterization of Rayleigh-Taylor convection in granular media for CO2 sequestration by dissolution trapping*". EGU General Assembly Conference Abstracts, EGU-17523.
11. Paramanik, S., **Dhar, J.** and Kumar, D. (2024) "*Effect of aspect ratio on unsteady flow past elliptic cylinders*". Proceedings of the 11th International and 51st National Conference on Fluid Mechanics and Fluid Power (FMFP), FMFP2024-06-158, 2024.
12. Kumar, A., Mondal, S. and Dhar, J. (2025) "*Viscous Instability in Structured Porous Systems with Spherical Obstructions*" 1st international conference on Thermofluids Engineering (INCOTHERM) 2025, IIT (ISM) Dhanbad.

REVIEWER OF RESEARCH JOURNAL

1. Physical Review Letters
2. Soft Matter
3. Communications Physics
4. Journal of Porous Media
5. Chemical Engineering and Processing - Process Intensification.
6. Fluid Dynamics Research.

RESEARCH AREAS

Topics Analytically and Numerically researched on:

1. Electrokinetic flows of Dielectric Electrorheological and Viscoelastic Fluids.
2. Nematic Liquid Crystals
3. Rayleigh-Taylor Instability in porous medium
4. Stability of shape-changing phytoplankton

5. Bioconvection flows
6. Stokesian Dynamics
7. Capillary filling dynamics

Topics Experimentally researched on:

1. Capillary filling Phenomenon of complex fluids.
2. Crack Dynamics and Prevention.
3. Refractive Index Matched visualization of porous medium flows
4. Bioconvection flow of algae (Species: *HA3017* and *HA3374*)
5. Active nematic flow in *E. Coli* bacterial suspensions.

COMPUTER SKILLS

Programming Language: Python / MATLAB / C++
Math Packages: MATLAB, MAPLE
Image Processing: MATLAB / OpenCV
CFD Packages: COMSOL Multiphysics, OpenFOAM, FEniCS
FDM: 2D and 3D codes for Rayleigh-Taylor Instability using Geometric Multigrid Methods and Parallelization.
Editor Tools: MS Office, LaTeX
Post-processing Tools: Paraview, ImageJ, MATLAB
Operating Systems: Microsoft *Windows*, Linux *Ubuntu* 20.04 LTS

POST-PHD EXPERIENCE (TOTAL – 5+ YEARS)

December 2017 – March 2018	Dr. S. Chakraborty	OEM Project SRF in IIT Kharagpur
May 2018 – October 2019	Dr. Y Meheust	Postdoctoral Fellow in the University of Rennes 1
November 2019 – March 2022	Dr. A Sengupta	HFSP Fellow in the University of Luxembourg
April 2022 – September 2022	Assistant Professor	Mechanical Engg. Dept., BITS Pilani, Hyderabad Campus
September 2022 – Present	Assistant Professor	Mechanical Engg. Dept., NIT Durgapur

OTHER ACHIEVEMENTS

National Grants

SERB-Start-Up Research Grant 2023-2025 (INR 22.68 lacs)

International Fellowships/Grants

Human Frontier Science Program (HFSP) 2019: "The microscale biophysics of toxin dispersion during harmful algal blooms" (Applicant: LT000368/2019-C). Laboratory: Anupam SENGUPTA, Physics and Materials Science/Physics of Living Matter Group, University of Luxembourg. (Joined: November, 2019): *Awarded among 10 candidates internationally*.

Proposal/Project Assistance

Assisted in drafting the proposal on "*Nanoscale Transport and Biological Interfaces*" for **Indo-U.S. Virtual Networked Center** Project 2017 under **Indo-U.S. Science and Technology Forum (IUSSTF)**. **Principle PI (India)**: Prof. Suman Chakraborty (*IIT Kharagpur*). **Principle PI (USA)**: Prof. Narayana R. Aluru (*UIUC, Illinois*) **Co. PI (USA)**: Prof. Rohit N. Karnik (*Massachusetts Institute of Technology*). **Co. PI**

(USA): Prof. Sandip Ghosal (*Northwestern University, Chicago*). **Co. PI (India)**: Prof. Vishal Nandigana (*IIT Madras*). *Status:* **Accepted**.

Assisted in drafting the proposal on "Diffusion Limited SRES for High-Efficiency Biomedical Devices" for IIT Kharagpur **Institute Challenge Grant** 2017. **Principle PI**: Prof. Suman Chakraborty (*IIT Kharagpur*). **Co. PI**: Prof. Sandip Ghosal (*Northwestern University, Chicago*). *Status:* **Accepted**.

Teaching Experience:

Teacher for the UG course **Fluid Mechanics** [Odd Semester, 3rd Semester, 2023-onwards] in the Department of Mechanical Engineering, NIT Durgapur.

Teacher for the UG course **Convective Heat and Mass Transfer** [Odd Semester, 7th Semester, 2023-24 to 2025-26] in the Department of Mechanical Engineering, NIT Durgapur.

Teacher for the UG course **Engineering Mechanics** [Odd Semester, 1st Semester, 2023-24 & 2024-25] in the Department of Mechanical Engineering, NIT Durgapur.

Teacher for the PG course **Advanced Turbomachinery** [Even Semester, 2nd Semester, 2024-onwards] in the Department of Mechanical Engineering, NIT Durgapur.

Teacher for the PG course Biof**luidmechanics** [Even Semester, 2nd Semester, 2025-26] in the Department of Mechanical Engineering, NIT Durgapur.

Other mentions:

Tutorial Teacher for the UG course **Thermodynamics** [Odd Semester, 1st Semester, 2022-23] in the Department of Mechanical Engineering, BITS Pilani, Hyderabad Campus.

Teaching Assistant for the UG course **Thermodynamics** [Autumn Semester 2019-20] in The Physics and Materials Science Department, University of Luxembourg.

Teaching Assistant for the PG course Technical **Seminar** [Spring Semester 2015-17] in the Department of Mechanical Engineering at IIT Kharagpur.

Teaching Assistant for the UG course **Gas Dynamics and Jet Propulsion Laboratory** [Autumn Semester 2014-16] in the Department of Mechanical Engineering at IIT Kharagpur.

Teaching Assistant for the PG course **Thermodynamics** [Autumn Semester 2013-14] in the Department of Mechanical Engineering at IIT Kharagpur.

Student Mentoring:

PhD Supervisor (Present): Abhishek Kumar, Subhash Chandra Paramanik, and Sachidananda Mahato in the Department of Mechanical Engineering, NIT Durgapur.

M. Tech Mentor: Abhishek Suman in the Department of Mechanical Engineering, NIT Durgapur (passed out 2025).

Other Student Mentor mentions: During PhD tenure, I have mentored several students from the undergraduate and dual-degree course at IIT Kharagpur leading to multiple international high-impact publications during that interval.