

Dr. Manash Protim Boruah

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PERSONAL INFORMATION

Date of birth: 07 September, 1991

Nationality: Indian

Place of birth: Dergaon (Golaghat), Assam, India

Present residence: Silchar, India

EDUCATION

Doctor of Philosophy

2017 - 2022

Department of Mechanical Engineering

National Institute of Technology Silchar, India

Thesis: *Generation, coalescence and migration of droplets: Perspectives of wettability, inertia and electric field*

Advisor: Dr. Pitambar R. Randive

Jt. Advisor: Dr. Sukumar Pati

Master of Technology

2015 - 2017

Department of Mechanical Engineering (Spl. – Applied Mechanics)

Tezpur University, Assam, India

CGPA: 9.39/10

Thesis: *Thermo-Hydraulic Performance of a Tapered Microchannel Heat Sink with Al₂O₃-water Nanofluids*

Advisor: Prof. Tapan Kumar Gogoi

Bachelor of Engineering

2010 - 2014

Department of Mechanical Engineering

Dibrugarh University Institute of Engineering and Technology (DUIET),

Assam, India

CGPA: 8.93/10

Higher Secondary Education (12th Standard)

2010

Dergaon Kamal Dowerah College, Assam, India

Assam Higher Secondary Education Council (AHSEC)

Percentage: 81.6

Secondary Education (10th Standard)

2008

Don Bosco High School, Dergaon, Assam, India

Secondary Education Board of Assam (SEBA)

Percentage: 88.50

RESEARCH INTEREST

Droplet/Bubble Dynamics, Electrohydrodynamics, Heat Transfer

PUBLICATIONS

Peer-reviewed Journal Papers

1. **Boruah, M. P.**, Randive, P. R., Pati, S., & Chakraborty, S. (2022) Morpho-dynamic evolution due to inertia-mediated impact of a compound drop on a deep liquid pool. *Physics of Fluids*, 34, 032106.
2. **Boruah, M. P.**, Randive, P. R., Pati, S & Sahu, K. C. (2022) Charge convection and interfacial deformation of a compound drop in plane Poiseuille flow under an electric field. *Physical Review Fluids*, 7, 013703.
3. Borah, A., **Boruah, M. P.**, Randive, P. R., Pati, S. (2022) Critical Review on Local Thermal Equilibrium and Local Thermal Non-Equilibrium approach for the Analysis of Forced Convective Flow through Porous Media. *International Communication in Heat and Mass Transfer*, 132, 105889.
4. **Boruah, M. P.**, Sarker, A., Randive, P. R., & Pati, S. (2021) Tuning of regimes during two-phase flow through a cross-junction. *Physics of Fluids*, 33(12), 122101.
5. Sarker, A., **Boruah, M. P.**, Randive, P. R., & Pati, S. (2021) The role of compound droplet size on transition from jetting to bubble entrapment during its impact on liquid. *Physics of Fluids*, 33(10), 102103.
6. Deka, D.K., **Boruah, M.P.**, Randive P.R., Pati, S., & Mukherjee, P.P. (2020). Tuning the Splitting Behaviour of Droplet in a Bifurcating Channel through Wettability-Capillarity Interaction. *Langmuir* 36 (35), 10471-10489.
7. Pati, S., Roy, R., Deka, N., **Boruah, M.P.**, Nath, M., Bhargav, R., Randive, P.R., & Mukherjee P.P. (2020). Optimal heating strategy for minimization of peak temperature and entropy generation for forced convective flow through a circular pipe. *International Journal of Heat and Mass Transfer*, 150, 119318.
8. Borah, A., **Boruah, M. P.**, & Pati, S. (2019). Conjugate heat transfer in a duct using nanofluid by two-phase Eulerian–Lagrangian method: Effect of non-uniform heating. *Powder Technology*, 346, 180-192.
9. **Boruah, M. P.**, Randive, P. R., & Pati, S. (2019). Effect of non-uniform asymmetric heating on the thermal and entropy generation characteristics for flow of Al_2O_3 -water nanofluid in a micro- channel. *International Journal of Numerical Methods for Heat & Fluid Flow*, 29(3), 981-999.
10. **Boruah, M. P.**, Pati, S., & Randive, P. R. (2019). Implication of fluid rheology on the hydrothermal and entropy generation characteristics for mixed convective flow in a backward facing step channel with baffle. *International Journal of Heat and Mass Transfer*, 137, 138-160.
11. **Boruah, M. P.**, Sarker, A., Randive, P. R., Pati, S., & Chakraborty, S. (2018). Wettability-mediated dynamics of two-phase flow in microfluidic T-junction. *Physics of Fluids*, 30(12), 122106.

12. **Boruah, M. P.**, Randive, P. R., & Pati, S. (2018). Hydrothermal performance and entropy generation analysis for mixed convective flows over a backward facing step channel with baffle. *International Journal of Heat and Mass Transfer*, 125, 525-542.

Conference Presentations/Posters

1. **Boruah, M. P.**, Randive, P. R., & Pati, S. (2020). Minimization of droplet size using baffle in a T-junction, *HEFAT*, Amsterdam.
2. **Boruah, M. P.**, Randive, P. R., & Pati, S. (2019). Conjugate Mixed Convection Heat Transfer in a Backward Facing Step Channel, *IHMTC*, IIT Roorkee.
3. Nath, N. R., **Boruah, M. P.**, Pati, S., & Randive, P. R. (2019). Thermophoretic effects on microparticle transport, *IHMTC*, IIT Roorkee.
4. Sarker, A., **Boruah, M. P.**, Randive, P. R., & Pati, S. (2018). Effect of Capillarity-Viscosity Interaction on Coalescence of Droplets in a Confined Channel, *FMFP*, IIT Bombay.
5. **Boruah, M. P.**, & Gogoi, T. K. (2017). Thermal performance of tapered microchannel heat sink using Al₂O₃/water nanofluid, *SMETB*, Tezpur University.

EXPERIENCES

Teaching Experiences

<i>Teaching Assistant for</i> ME530: Numerical Methods	Department of Mechanical Engineering, Tezpur University	January'17- May'17
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Teaching Assistant for

ME101: Engineering Mechanics ME326: Computational Fluid Dynamics ME405: Viscous Fluid Flow ME111: Workshop Practice ME213: Thermo-Fluid Lab-I ME313: Heat Transfer Lab	Department of Mechanical Engineering, National Institute of Technology, Silchar	July'17 - Present
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Student Mentoring

- Student Mentor of B. Tech and M. Tech projects during July'18 to December'21 at the Department of Mechanical Engineering, NIT Silchar.

COMPUTER SKILLS

Programing Languages: C, C++, Python Operating Systems: Microsoft Windows, Linux (Ubuntu) CFD Packages: Comsol Multiphysics, Ansys Fluent, OpenFOAM	Math Packages: MATLAB, Maple Tools: MS Office, Latex
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PROFESSIONAL ACTIVITY

- Referee of the following peer-reviewed journals:
Physics of Fluids,
Thermal Science and Engineering Progress,
International Journal of Hydrogen Energy, and
Enzyme and Microbial Technology
- Delivered *hands on training on COMSOL Multiphysics* during the Faculty Development Program (FDP) on “Fundamentals and Applications of Computational Fluid Dynamics in Fluid-Thermal Systems.”
- Attended workshop on “Fundamentals of Energy Storage”.
- Attended GIAN course on “Modelling and Simulation in Energy Storage”.

ACHIEVEMENTS

- Gold Medalist (for securing the First position) in the M. Tech program from the Department of Mechanical Engineering, Tezpur University in the year 2017.

LIST OF REFERENCES

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| Dr. Pitambar R. Randive
Assistant Professor, Department of Mechanical Engineering,
National Institute of Technology Silchar, Silchar - 788010, India
Mobile: +917896544874
Email: pitambar@mech.nits.ac.in | <i>PhD Advisor</i> |
| Dr. Sukumar Pati
Assistant Professor, Department of Mechanical Engineering,
National Institute of Technology Silchar, Silchar - 788010, India
Mobile: +918133042296
Email: sukumar@mech.nits.ac.in | <i>PhD Jt. Advisor</i> |
| Dr. Suman Chakraborty
Professor, Department of Mechanical Engineering,
Indian Institute of Technology Kharagpur, Kharagpur - 721302, India
Phone: +91-3222-282990
Mobile: +919831402939
Email: suman@mech.iitkgp.ac.in | <i>Collaborator</i> |
| Dr. Kirti Chandra Sahu
Professor, Department of Chemical Engineering,
Indian Institute of Technology Hyderabad, Sangareddy - 502 285, India
Phone: +91-4023-016201
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