Curriculum Vitae of Dr. Suman Ghosh

[Google Scholar ID: QzyvYokAAAAJ&pagesize=80]
[ORCID ID: 0000-0001-7384-2610]
[Researcher ID: H-3959-2018]

PERSONAL INFORMATION:

Gender: Male | Marital Status: Married | Date of Birth: 13 December 1980
Age: 42+ years | Father's Name: Rajkumar Ghosh | Place of Birth: Golatun, West Bengal

CURRENT STATUS:

29 March 2023 onwards: Associate Professor in the Department of Mechanical Engineering (Thermo-Fluid Sciences and Engineering specialization), NIT Rourkela, Rourkela-769008, India.

25 July 2011 to 28 March 2023: Assistant Professor in the Department of Mechanical Engineering (Thermo-Fluid Sciences and Engineering specialization), NIT Rourkela, Rourkela-769008, India.

BROAD RESEARCH AREA:

Multiphase flow; Heat-exchanger; Natural and forced convection; Natural convection of nanofluid in cavities, Battery Thermal Management; Inverse method in heat transfer; Duct shape optimization in thermo-fluid systems; Supercritical minichannel heat sinks; Pulse Tube Refrigeration; Roots blowers; Fluid power control; Computational Intelligence, and Soft Computing.

TEACHING EXPERIENCE:

11 Years 08 Months as the regular Assistant Professor, and 04 Months as the regular Associate Professor at NIT Rourkela. As the Assistant and Associate Professor in NIT Rourkela, the courses taught by Prof Suman Ghosh at the UG level to date are given below in the format of 'Course Name (Course ID; L-T-P/credit; average number of students; number of times taught)':

- Engineering Thermodynamics (ME251; 3-1-0/4; 98; 4)
- Heat Transfer (ME350 & ME451; 3-1-0/4; 87; 4)
- Thermal Sciences (ME250; 3-1-0/4; 90; 1)
- Thermal Engineering (ME255; 3-1-0/4; 90; 1)
- Fluid Mechanics (ME351; 3-1-0/4; 93; 3)
- Fluid Mechanics (ME2302; 3-0-0/3; 141; 5)
- Hydraulic Machines and Fluid Power (ME352; 3-0-0/3; 93; 2)
- Fluid Dynamics and Hydraulic Machines (ME3303; 3-0-0/3; 133; 3)
- Thermal Engineering Design Project (ME480; 0-0-3/2; 78; 3)
- Thermal Engineering Laboratory (ME271; 0-0-3/2; 44; 1)
- Heat Transfer and Refrigeration Laboratory (ME370; 0-0-3/2; 79; 1)
- Basic Thermal Engineering Laboratory (ME273; 0-0-3/2; 106; 1) for Sections S1 & S2
- Fluid Mechanics and Fluid Machines Laboratory (ME372; 0-0-3/2; 94; 2) for Section S1 & S2
- Workshop Practice-1 (WS1151; 0-0-3/2; 655; 3) for Section P1, P2, P3, P4 & P5
- Workshop Practice-1 (WS1151; 0-0-3/2; 614; 3) for Section P6, P7, P8, P9 & P10
- Comprehensive Viva-Voce (ME496; 0-0-0/2; 89; 1)
- Seminar and Technical Writing - II (ME4904; 0-0-3/2; 66; 2)

The courses taught by Prof Suman Ghosh at PG level in NIT Rourkela to date are given below in the format of 'Course Name (Course ID; L-T-P/credit; average number of students; number of times taught)':

- Gas Turbines and Jet Propulsion (ME656; 3-1-0/4; 29; 2)

- Gas Dynamics and Free Molecular Flow (ME750 & ME6336; 3-0-0/3; 34; 6)
- Advanced Thermodynamics (ME654; 3-0-0/3; 19; 3)
- Heat Transfer and Fluid Flow Laboratory (ME774; 0-0-3/2; 42; 1)
- Seminar and Technical Writing – I (ME685; 0-0-0/2; 40; 4) for Section S3 & S4
- Computational Fluid Flow Laboratory (ME677; 0-0-3/2; 33; 1)
- Computational Heat Transfer Laboratory (ME676; 0-0-3/2; 39; 3)
- Vacuum Laboratory (ME871; 0-0-3/2; 26; 2)
- Research Practice (ME690; 0-0-0/2; 36; 4)
- Research Project – II (ME 6994; 0-0-0/2; 13; 1)

6 months (complete 1st semester of the session 2006-2007) as a Guest Lecturer from Jadavpur University. At that time, I had taught Applied Mechanics Lab., Engineering Drawing.

RESEARCH EXPERIENCE AND COMPUTER PROFICIENCY:

- Research experience in different multiphase flow phenomena and complex interface tracking, Different kind of sensors sensor signal processing, Sensing technology, Heat-exchanger and heat transfer, Flow characteristics in the hot leg of PWR in nuclear power plant, Inverse method in heat transfer, Natural convection and nanofluid heat transfer, Duct shape optimization in thermo-fluid systems, Pulse tube refrigeration, Transient fluid flow and heat transfer characteristics in roots blower, Fluid power control.
- Research experience in CFD, Artificial intelligence, Computational intelligence, Soft Computing, Experimentation on several multiphase flow phenomena, Control analysis using artificial inheritance and pole placement methods.
- Working experience with coding using different programming languages like C, C++, Matlab, etc.
- Working experience with different software packages like Ansys, Fluent, Workbench, Gambit, Origin, Tecplot, Matlab, Lab view, Simulink in Lab view, Simulink in Matlab, Minitab, Labfit, Autocad, etc.
- Working experience with different Operating Systems like Windows (Windows 98, Windows 2000, Windows XP, Windows 7, Windows 8, Windows10, Windows 11), Linux (Fedora, Ubuntu, Suse, Red Hat), Android (Android 5, Android 6, Android 7, Android 8, Android 9, Android 10, Android 11, Android 12, and Android 13).
- Working experience with different DTP packages (like MS Office 2003 to MS Office 2019, Office 365, Adobe Acrobat, Latex, etc.).
- Have handled and working experiences with advanced instruments like different kinds of Data acquisition systems (NI) [NI USB-6218-32 Inputs-16 bit-250 kS/s DAQ, Chassis slots and voltage cards-based NI DAQ, NI 9203 Current Input Card-8 Channel-20 mA for DAQ system, NI 9216-8 Channel 400 S/s Aggregate 0 to 400 0 Temperature −200°C to 850°C PT100 RTD C Series Temperature Input Module for DAQ system], High-speed cameras (Basler, Nikkon, Phantom), High-resolution DSLR cameras (Nikkon), Pressure transducers and sensors [Differential Pressure Transducer with the pressure range of ± 175 to ± 350 mbar, Piezoresistive Pressure Transducer (Model-8510B-500-120) with Pressure Sensor 500 psig and 10-32 UNF-2A, etc.], Differential pressure transmitters [Differential Pressure Transmitter with digital indicator with Range: ±10 mili bar to ±40 bar, etc.], Different gas flow meters, Different liquid flow meters, Coriolis mass flow meters, Liquid volume measuring cups, Optical probes, In-house fabricated conductivity probes, Acoustic Doppler velocimetry, PT-100 RTD temperature sensors, Contact Angle Measurement System, Force Tensiometer, etc.

EDUCATION:

2007-2011 **IIT Kharagpur** **Kharagpur (WB)**

Ph.D.: Ph.D. under the guidance of Prof. P.K. Das, Prof. B. Maiti, and Prof. D.K. Pratihar from Mechanical Engineering Department (in Thermal Science and Engineering specialization).

2004-2006 **Jadavpur University** **Jadavpur, Kolkata (WB)**
Postgraduate Studies: Master of Mechanical Engineering (Fluid Mechanics Specialization). Scored CGPA 9.5/ 10.00 (88.05 % marks) and received First class Degree with University Medal.

1999-2003 **Jadavpur University** **Jadavpur, Kolkata (WB)**
Undergraduate Course: Bachelor of Mechanical Engineering. Scored 72.75 % marks and received First Class degree.

1996-1998 **Bansberia High School** **Bansberia, Hooghly (WB)**
Higher Secondary: Scored 76.70 % marks with First Division under West Bengal Council of Higher Secondary Education.

1994-1996 **Bansberia High School** **Bansberia, Hooghly (WB)**
Secondary: Scored 78.55 % marks with First Division under West Bengal Board of Secondary Education.

ACADEMIC AWARDS AND HONORS:

- University Medal from Jadavpur University (2006).
- State Government Fellowship in 2006 from Jadavpur University.
- National Scholarship (1996).
- Awarded in 'All India Science Aptitude & Talent Search Test-1990'

ACADEMIC RESEARCH AND PROJECT:

25 July 2011 onwards (as a regular Assistant and Associate Professor at NIT Rourkela)

The major part of the research was involved in performing experiments, development of sensors, and developing numerical schemes (VOF-FVM, LBM, etc.) for the prediction of complex nonlinear interfacial behavior in Multiphase flow (Flow structure & flooding analysis of counter-current two-phase flow, inertial & rotary entrainment, bubbles & drop dynamics under different flow situations, condensing & evaporating bubble & drop, phase split phenomena in T-junctions and Y-junctions, Airlift pumps characteristics, two-phase flow around multi-shape obstacles, etc.). A part of the research was engaged in cryogenic engineering (Development of indigenous cryocooler using GM type Pulse Tube Refrigerator, indigenous compact LN_2 generator, KW class indigenous helium turboexpander, Numerical investigation on Roots blower and pump, etc.). A part of the research was involved in developing efficient hybrid computing schemes through the synergy of numerical simulation (CFD simulation), computational intelligence (soft computing), & experimental results (through experimentation) to solve complex real-world thermo-fluid problems and inverse heat transfer problems. One may get better & realistic solutions by using those hybrid schemes. A part of the research was involved in numerically investigating the natural convection from the hot bodies of different shapes, indigenous development of a novel scheme for the IRS system in ocean-liners, natural convection of nanofluid in cavities (of various shapes) with different positions and orientations of cylinders (of different shapes), etc. One part of the research was involved in the thermal-hydraulic assessment, and performance prediction of supercritical mini-channel heat sinks with airfoil-shaped obstructions using CFD and computational intelligence.

2007-2011

Ph.D. Work: Thesis title: 'Synergy of CFD, Experimentation and Soft computing techniques for modeling, optimization and prediction of Thermo-Fluid problems'.

2005-2006

Master's Thesis work: Thesis title: 'Control Analysis of Nonlinear Hydraulic Servo-System by Pole Placement and Fuzzy Logic Techniques'.

2002-2003

B.E. Project: Prime mover design: Steam turbine design; Non-prime mover design: Centrifugal pump design

Vocational Training: Undergone a structured observational training program from Hindustan Motors Limited, Hindmotor, West Bengal.

RESEARCH GUIDANCE (TILL TODAY):

Details about the UG Projects guided by me

Sl	Title of the Thesis	Name & Roll No. of student	University / Institute	Date of Award /Submission	Status
1	Liquid drop movement over an inclined surface using Volume of Fluid model with Finite Volume Method	Bijoy Kumar Duwary (Roll No. 109ME0368)	NIT Rourkela	30 May 2013	Completed
2	Liquid drop dynamics under the effect of an induced horizontal wettability gradient	Suseet Panigrahi (Roll No. 109ME0401)	NIT Rourkela	30 May 2013	Completed
3	Numerical inspection of crack in solid bar using conduction	Umasankar Sethi (Roll No. 110ME0257)	NIT Rourkela	30 May 2014	Completed
4	Numerical investigations of flooding for two-phase counter-current flow	Atul Dewangan (Roll No. 110ME0291)	NIT Rourkela	30 May 2014	Completed
5	Experimental and numerical investigation of strength of inertial entrainment (Part 1)	Nitish Varma (Roll No. 110ME0343)	NIT Rourkela	30 May 2014	Completed
6	Experimental and numerical investigation of strength of inertial entrainment (Part 2)	Priyanka Agrawal (Roll No. 110ME0439)	NIT Rourkela	30 May 2014	Completed
7	Effect of obstacle-size on the flow structure of two-phase flow through enlarging channel	Sabyasachi Mohanty (Roll No. 111ME0219)	NIT Rourkela	30 May 2015	Completed
8	Numerical simulation of airlift pump	Vivek Manna (Roll No. 111ME0310)	NIT Rourkela	30 May 2015	Completed
9	Numerical simulation of inertial entrainment phenomenon	Jatin Kumar Patro (Roll No. 111ME0334)	NIT Rourkela	30 May 2015	Completed
10	Numerical inspection of crack in solid bar using conduction (Part 2: Crack detection in a homogeneous solid bar using conduction analysis)	Aman Bharti (Roll No. 112ME0328	NIT Rourkela	30 May 2016	Completed
11	Unsteady flow characteristics in a 2D Wavy / Corrugated channel	Sourav De (Roll No. 112ME0336)	NIT Rourkela	30 May 2016	Completed

12	Two-phase flow analysis in Airlift pump	Kallul Hazarika (Roll No. 112ME0338)	NIT Rourkela	30 May 2016	Completed
13	Dynamics of drop on a horizontal flat plate under shear flow with and without heat flux	Tanmoy Rakshit (Roll No. 112ME0361)	NIT Rourkela	30 May 2016	Completed
14	Capturing of jump discontinuities using an efficient numerical technique	Rishiraj Chakraborty (Roll No. 113ME0359)	NIT Rourkela	30 May 2017	Completed
15	Numerical analysis of entrainment phenomena in a stratified liquid layer using rotary motion	Rohit Jose (Roll No. 113ME0372)	NIT Rourkela	30 May 2017	Completed
16	Study on flow dynamics of a moving water droplet under the action of heated shear flow	Soumya Satyakanta Sethi (Roll No. 113ME0421)	NIT Rourkela	30 May 2017	Completed
17	Experimental investigation of counter-current gas-liquid two-phase flow	Shikher Verma (Roll No. 113ME0431)	NIT Rourkela	30 May 2017	Completed
18	CFD Analysis of droplet formation in an inkjet printer	Pravendra Kumar (Roll No. 113ME0563)	NIT Rourkela	31 May 2017	Completed. I was Co-supervisor
19	CFD analysis of flow over a ground vehicle	Arpan Kumar Padhi (Roll No. 114ME0489)	NIT Rourkela	30 May 2018	Completed
20	Experimental study of entrainment phenomena	Nihar Ranjan Panda (Roll No. 114ME0490)	NIT Rourkela	30 May 2018	Completed
21	Sliding wear behavior of Epoxy Composites Reinforced with Short Sisal Fibers	Bibek Sahu (Roll No. 114ME0248)	NIT Rourkela	31 May 2018	Completed. I was Co-supervisor
22	Two-phase flow separation in T-junction	Garima Pratyush Bal (Roll No. 115ME0039)	NIT Rourkela	30 May 2019	Completed
23	Counter-current flow regime classification	Debabrata Behera (Roll No. 115ME0414)	NIT Rourkela	30 May 2019	Completed
24	Influence of fluid properties on counter-current flow structure	Debashish Kalita (Roll No. 115ME0432)	NIT Rourkela	30 May 2019	Completed
25	Crack detection using conduction analysis	Mohit Modi (Roll No. 115ME0446)	NIT Rourkela	30 May 2019	Completed
26	Numerical simulation on gas liquid entrainment	Vishal Singh Dauneria (Roll No. 116ME0438	NIT Rourkela	30 May 2020	Completed

27	Numerical investigation of the phase-separation of liquid-liquid two-phase flow through inclined T-junction	Tarun Thomas Jose (Roll No. 116ME0447)	NIT Rourkela	30 May 2020	Completed
28	Numerical investigation on the characteristics of airlift pump	Guthikonda Vamshi Krishna (Roll No. 116ME0504)	NIT Rourkela	30 May 2020	Completed
29	Influence of the airflow rate on the performance and flow-structure of an airlift pump: A numerical investigation	Saheel Damodar Thali (Roll No. 117ME0591)	NIT Rourkela	30 May 2021	Completed
30	Numerical Investigation on IRS Devices Using Hyperbolic Shaped Funnels	Abhinav Patidar (Roll No. 119ME0366)	NIT Rourkela	30 May 2023	Completed
31	Natural Convection in Closed Cavities: Numerical Exercise	Divyam Ojas (Roll No. 119ME0696)	NIT Rourkela	30 May 2023	Completed
32	Phase Separation of Two-Phase Flow in T-junction: Numerical Exercise	Prem Prakash (Roll No. 119ME0731)	NIT Rourkela	30 May 2023	Completed
33	Numerical Investigation on the Pressure-drop across Different Obstacles in Gas-Liquid Two-phase Flow	Krishna Ghadiyali (Roll No. 119ME0923)	NIT Rourkela	30 May 2023	Completed
34	Shape Optimization of IRSS Systems for Warship: Numerical Investigation	Utkarsh Parmeshwar Bhalerao (Roll No. 120ME0276)	NIT Rourkela	30 May 2024	Completed
35	Phase separation of liquid-liquid two-phase flow in Y-junction: A Numerical Exercise	Kondamarri Manoj Kumar (Roll No. 120ME0912)	NIT Rourkela	30 May 2024	Completed
36	Numerical Investigation on Natural Convection in Cavities with Constant Flux Heating	Rishi Jhawar (Roll No. 120ME1010)	NIT Rourkela	30 May 2024	Completed
37	Battery thermal management using forced convection	Sriharsha Mishra (121ME0476)	NIT Rourkela	Expected in May 2025	Ongoing
38	Thermal management of lithium-ion battery using mist cooling	Sujeet Kumar Patro (121ME0484)	NIT Rourkela	Expected in May 2025	Ongoing
39	Design and optimization of IRSS systems in aircraft and helicopters (CFD and CI)	Punagani Kuladeep (121ME0856)	NIT Rourkela	Expected in May 2025	Ongoing
40	Numerical investigation on free and forced convective heat transfer (CFD)	Shivam Singh (121ME0925)	NIT Rourkela	Expected in May 2025	Ongoing

Details about the PG Projects (Regular M.Tech projects) guided by me

Sl	Title of the Thesis	Name & Roll No. of student	University / Institute	Date of Award /Submission	Status
1	Numerical inspection of heterogeneity: Homogeneous intrusion in bulk	Ankit Kumar Dubey (Roll No. 210ME3143)	NIT Rourkela	30 May 2012	Completed
2	Mobility of air bubble entrapped through jet impingement	Ajay Kawade (Roll No. 211ME3173)	NIT Rourkela	30 May 2013	Completed
3	Dynamics of liquid droplet on flat plate under shear flow with adiabatic condition	Sukanta Nayak (Roll No. 211ME3191)	NIT Rourkela	30 May 2013	Completed
4	Prediction of coating thickness through thermal analysis	Gaurav Katendra (Roll No. 211ME3172)	NIT Rourkela	30 May 2013	Completed
5	Prediction of bubbles and drop dynamics under different flow situations and phase change: Lattice-Boltzmann study	Shahnawaz Ahmed (Roll No. 211ME3195)	NIT Rourkela	30 May 2013	Completed
6	Lattice-Boltzmann method for single phase heat transfer and two phase drop & bubble dynamics	Sandeep Shreshth (Roll No. 211ME3186)	NIT Rourkela	30 May 2013	Completed
7	Numerical investigation on the performance of roots blower varying rotor profile	Satish Kumar (Roll No. 212ME5411)	NIT Rourkela	30 May 2014	Completed
8	Numerical investigation on the performance of inertance tube pulse tube refrigerator by varying compressor amplitude	Chanchal K Gautam (Roll No. 212ME5444)	NIT Rourkela	30 May 2014	Completed
9	Numerical investigation on the performance of inertance tube pulse tube refrigerator varying compressor frequency	B. Mohan Kumar (Roll No. 212ME5446)	NIT Rourkela	30 May 2014	Completed
10	Dynamics of bubble and drop in multiphase flow through numerical simulation	Gagandeep (Roll No. 213ME3421)	NIT Rourkela	30 May 2015	Completed
11	Numerical investigation of heat transfer enhancement in corrugated /wavy channel	Sapkale Vinod Damu (Roll No. 213ME3429)	NIT Rourkela	30 May 2015	Completed
12	Phase-split in two-phase flow through T-junction	Ananta Kumar Das (Roll No. 213ME3430)	NIT Rourkela	30 May 2015	Completed
13	Entrainment phenomenon in stratified liquid layers by imposing rotary motion	Jishnu M (Roll No. 213ME3436)	NIT Rourkela	30 May 2015	Completed
14	Hydrodynamics of drop in an inclined plane	Praveen Mishra (Roll No. 214ME3286)	NIT Rourkela	30 May 2016	Completed

15	Phase separation phenomena through Tee junction	Dibyendu Ghosh (Roll No. 214ME3309)	NIT Rourkela	30 May 2016	Completed
16	Entrainment through rotation in multiphase system	Chandrakant Pradhan (Roll No. 214ME3318)	NIT Rourkela	30 May 2016	Completed
17	Numerical simulation of heat transfer mechanism in a 'V' type corrugated channel	Yogesh Sureka (Roll No. 214ME3440)	NIT Rourkela	30 May 2016	Completed
18	Numerical simulation of chilldown in LN_2 transfer line	Horaj Chakradhari (Roll No. 214ME5324)	NIT Rourkela	30 May 2016	Completed
19	Entrainment using rotary motion	Upasana Chaini (Roll No. 215ME3209)	NIT Rourkela	30 May 2017	Completed
20	Phase splitation through T-junction	Amit Kumar Gupta (Roll No. 215ME3405)	NIT Rourkela	30 May 2017	Completed
21	Identification of flow regime of two-phase flow	Deepika Nayak (Roll No. 215ME3407)	NIT Rourkela	30 May 2017	Completed
22	Chilldown process in cryogenic transfer line	Debashish Chakraborty (Roll No. 215ME5410)	NIT Rourkela	30 May 2017	Completed
23	Flow-regime of a liquid-liquid counter current two-phase flow	Binay Krishna Sarkar (Roll No. 216ME3390)	NIT Rourkela	30 May 2018	Completed
24	Numerical analysis of pulse tube refrigerator using mixture of gases as the working fluid	Bhanu Chandar Pagidipalli (Roll No. 216ME5404)	NIT Rourkela	30 May 2018	Completed
25	Design calculation of compact plate fin heat exchanger for helium liquefaction system	Gunamani Sahoo (Roll No. 216ME5409)	NIT Rourkela	30 May 2018	Completed
26	Development of helium re-condenser for 1.5 T ZBO MRI scanner	Abhishek Kumar Singh (Roll No. 216ME5411)	NIT Rourkela	30 May 2018	Completed
27	Investigation on inertial entrainment	Palla Srikar Reddy (Roll No. 217ME3244)	NIT Rourkela	30 May 2019	Completed
28	Phase separation in T-junction	Md Abu Saleh (Roll No. 217ME3245)	NIT Rourkela	30 May 2019	Completed
29	Numerical investigation on GM-PTR for high-TC applications	Raju (Roll No. 217ME5251)	NIT Rourkela	30 May 2019	Completed

30	Investigation on cryogenics chilldown	Meghna Das Chaudhury (Roll No. 217ME5253)	NIT Rourkela	30 May 2019	Completed
31	Effect of baffles in combustion instability suppression in semi-cryogenic engines	Vishal V (Roll No. 217ME5451)	NIT Rourkela	30 May 2019	Completed
32	Controlled droplet formation in a microfluidic flow-focusing device-Numerical study	Prashant Kumar Mahto (Roll No. 218ME3185)	NIT Rourkela	30 May 2020	Completed
33	Design of expander wheel for aerodynamic expansion turbine of low temperature helium liquefier plant	Rajmane Swapnil Narayan (Roll No. 218ME5248)	NIT Rourkela	30 May 2020	Completed
34	Design of bearing for aerodynamic expansion turbine of He refrigerator/liquefier plant	Narkhede Aditya Prafull (Roll No. 218ME5394)	NIT Rourkela	30 May 2020	Completed
35	Design and analysis of internal 80 K helium gas purification system for the kW class helium refrigerator/liquefier	Karan Narula (Roll No. 218ME5472)	NIT Rourkela	30 May 2020	Completed
36	Studies of properties after cryogenic treatment of aluminium bronze (CuAl10Fe5Ni5)	Rabin Biswas (Roll No. 218ME5391)	NIT Rourkela	29 May 2020	Completed. I was Co-supervisor
37	Fluid flow and heat transfer characteristics of slug flow through microchannels with numerical approach	Elbhor Ashish Shankar (Roll No. 218ME5249)	NIT Rourkela	29 May 2020	Completed. Co-supervisor
38	Controlled droplet generation in microfluidic channel	Pappala Durga Prasad (Roll No. 219ME3293)	NIT Rourkela	30 May 2021	Completed
39	3D CFD analysis of heat transfer through wavy microchannel with different cross-sections	Vinay Sharma (Roll No. 219ME3570)	NIT Rourkela	30 May 2021	Completed
40	CFD Investigation on a coaxial inertance tube stirling type pulse tube cryocooler	E Prashanth (Roll No. 219ME5294)	NIT Rourkela	30 May 2021	Completed
41	Evaporation of liquid nitrogen droplets and tracking the growth rate of resulting nitrogen vapor bubble interface in a super heated immiscible bulk fluid	Madugula Venkata Srinuvas Sai Kiran (Roll No. 219ME5295)	NIT Rourkela	30 May 2021	Completed
42	Transient numerical analysis of chilldown phenomena in a LN_2 transfer line	Chamarthi Bharat Surya (Roll No. 219ME5406)	NIT Rourkela	30 May 2021	Completed
43	Free convection on hollow conical surfaces: A numerical exercise	Srujan Bondugula (Roll No. 220ME3410)	NIT Rourkela	30 May 2022	Completed

44	Numerical investigation on the heat transfer in microchannels with ribs and wavy microchannels	Pinapotu Sai Kumar (Roll No. 220ME3416)	NIT Rourkela	30 May 2022	Completed
45	CFD modeling and simulation of micro coaxial stirling type pulse tube cryocooler	Gouri Sankar Pattanaik (Roll No. 220ME5631)	NIT Rourkela	30 May 2022	Completed
46	Two-phase flow characteristics of nitrogen flow in mini channels in diabatic/adiabatic condition	Satyam Rai (Roll No. 220ME5436)	NIT Rourkela	30 May 2022	Completed
47	Flow characteristics during chill-down phenomena in the cryogenic transfer lines.	Tanuj Chauhan (Roll No. 220ME5053)	NIT Rourkela	30 May 2022	Completed
48	Natural Convection from Open Elliptical Surfaces: A Numerical Investigation	Gudipalle Abhilash Krishi Kumar (Roll No. 221ME3531)	NIT Rourkela	31 May 2023	Completed
49	Chill-down in Cryogenic Transfer Line: A Transient Numerical Analysis	Vishal Uday Sankpal (Roll No. 221ME5129)	NIT Rourkela	31 May 2023	Completed
50	Flow-regimes Study of Two-phase N_2 Flow in A Vertical Microchannel: A Numerical Exercise	Adhyan Saxena (Roll No. 221ME5545)	NIT Rourkela	31 May 2023	Completed
51	CFD Analysis on the Phase Separation of Liquid and Gaseous Nitrogen Mixture in Microchannel Network	Sambit Bishi (Roll No. 221ME5538)	NIT Rourkela	31 May 2023	Completed. I was Co-supervisor
52	Natural convection in a triangular fin-shaped cavity	Ramaraman Choudhary (Roll No. 222ME3468)	NIT Rourkela	31 May 2024	Completed
53	Natural Convection of Nanofluid in A Square Cavity with Different Orientation of Elliptical Cylinder in the Centre of the Cavity	Pinninti Rohit Kumar (Roll No. 222ME3469)	NIT Rourkela	31 May 2024	Completed
54	Phase split phenomena of two-phase flow through T-junction and Y-junction: A Numerical Exercise	G. Gopal Krishna (Roll No. 222ME5502)	NIT Rourkela	31 May 2024	Completed
55	Numerical modelling 2D heat pipe for electronics gadget cooling	Briny V K Kimson (223ME3382)	NIT Rourkela	Expected by May 2025	Ongoing

M-Tech-Research Guidance:

Sl. No.	Name of Student(s)	Title of the Dissertation(s)	Status [Awarded /Submitted/ Ongoing]
1	Pranjal Bhuyan (Roll No.: 613ME1003) M-Tceh-Research student	Effect of operating conditions, lobe-number, clearance size and rotor profile on the	Submitted: 02 August 2017.

		transient hydrodynamics, heat interaction, and performance of a Root Blower	Awarded: 15 February 2018.

Ph.D. Guidance:

Sl. No.	Name of Student(s)	Title of the Dissertation(s)	Status [Awarded /Submitted/ Ongoing]
1	Kumar Samal (Roll No.: 514ME1007) Ph.D. student	Recognition, characterization, categorization, and forecasting of counter-current gas-liquid and liquid-liquid two-phase flow-structures: experimental, computational, and numerical attempts	Thesis Submitted on 21 March 2022 Degree awarded on 27 September 2022
2	Animesh Kumar (Roll No.: 514ME1019) Ph.D. student	Identification of the influencing input parameters and their effects on the split dynamics of the liquid-liquid two-phase mixture through T-junction: Forecasting the phase split performance	Ongoing Going to submit the synopsis
3	Kamaraju Narayana Sai Manoj (Roll No. 516ME1007) Ph.D. student	Development of high refrigerating capacity GM-type pulse tube refrigerator-experimental investigation	Ongoing
4	Shashwat Seth (Roll No. 919ME5072)	Multiphase Flow, Microfluidics, And Heat Transfer	Ongoing
6	Maheswar Rout (Roll No. 522ME6010)	Indigenous development of a novel scheme for the IRS system in ocean-liners	Ongoing

SPONSORED RESEARCH PROJECT HANDLING:

Sl No.	Funding Agency	Title of Project	Project Cost	Project Duration	(PI/Co-PI)
1	Science and Engineering Research Board (SERB), Department of Science & Technology (DST).	A Comprehensive Investigation on Flow Structure of Counter-Current Gas-Liquid and Liquid-Liquid Two-Phase Flow.	Rs. 23,63,000/-	03 years	PI
2	(i) Department of Science & Technology (DST), India. (ii) Foundation for Science & Technology (FCT), Portugal.	Experimental and Numerical Study of Entrainment Phenomena in Stratified Liquid Layers by Imposing Rotary Motion. (It is an Indo-Portuguese Research Cooperation in Science & Technology).	Rs. 5,01,800/-	03 years	PI
3	Board of Research in Nuclear Sciences (BRNS)	Development of KW Class Cryogenic Helium Turboexpander – Phase 1: Design and Modelling	Rs. 09,41,250/-	01 years	Co-PI
4	Board of Research in Nuclear Sciences (BRNS)	Development of a compact indigenous cryocooler based on single-stage GM type Pulse Tube refrigerator	Rs. 37,02,100/-	04 years	PI

5	NIT Rourkela	Design and development of low cost oxygen concentrator.	Rs. 2,00,000/-	01 year	Co-PI
6	Science and Engineering Research Board (SERB), Department of Science & Technology (DST)	Indigenous Development of a Novel Scheme for IRS System in Ocean-liners: Numerical and Experimental Investigations	Rs. 36,17,900	03 years	Co-PI

PUBLICATIONS:

a) Refereed International Journal Papers Published till Today:

Ghosh, S., Pratihar, D.K., Maiti, B., Das, P.K., 2010. An evolutionary optimization of diffuser shapes based on CFD simulations. *International Journal for Numerical Methods in Fluids* 63, 1147–1166. https://doi.org/10.1002/fld.2124

Ghosh, S., Pratihar, D.K., Maiti, B., Das, P.K., 2010. Optimum design of a two step planar diffuser: A hybrid approach. *Engineering Applications of Computational Fluid Mechanics* 4(3), 415–424. https://doi.org/10.1080/19942060.2010.11015328

Ghosh, S., Pratihar, D.K., Maiti, B., Das, P.K., 2010. A hybrid computing scheme for shape optimisation in thermo-fluid problems. *International Journal of Computational Intelligence Studies* 1, 207–226. https://doi.org/10.1504/IJCISTUDIES.2010.034886

Ghosh, S., Pratihar, D.K., Maiti, B., Das, P.K., 2010. Reply to Comments on "optimum Design of a Two Step Planar Diffuser: A Hybrid Approach", *Engineering Applications of Computational Fluid Mechanics* 4(4), 624. https://doi.org/10.1080/19942060.2010.11015347

Ghosh, S., Ghosh, I., Pratihar, D.K., Maiti, B., Das, P.K., 2011. Optimum stacking pattern for multi-stream plate-fin heat exchanger through a genetic algorithm. *International Journal of Thermal Sciences* 50, 214–224. https://doi.org/10.1016/j.ijthermalsci.2010.07.003

Ghosh, S., Pratihar, D.K., Maiti, B., Das, P.K., 2011. Inverse estimation of location of internal heat source in conduction. *Inverse Problems in Science & Engineering* 19, 337–361. https://doi.org/10.1080/17415977.2011.551876

Ghosh, S., Pratihar, D.K., Maiti, B., Das, P.K., 2012. Identification of flow regimes using conductivity probe signals and neural networks for counter-current gas–liquid two-phase flow. *Chemical Engineering Science* 84, 417–436. https://doi.org/10.1016/j.ces.2012.08.042

Ghosh, S., Pratihar, D.K., Maiti, B., Das, P.K., 2013. Automatic classification of vertical counter-current two-phase flow by capturing hydrodynamic characteristics through objective descriptions. *International Journal of Multiphase Flow* 52, 102–120. https://doi.org/10.1016/j.ijmultiphaseflow.2012.12.007

Sharma, A.K., Agarwal, V., Das, A.K., Ghosh, S., Das, P.K., 2013. Conduction in composite slabs: reliability of 1-D and 2-D calculations. *Energy and Buildings* 65, 242–247. https://doi.org/10.1016/j.enbuild.2013.05.044

Ahmed, S., Sreshth, S., Ghosh, S., Das, A. K., 2015. Study of the dynamics of a condensing bubble using lattice Boltzmann method. *Journal of Computational Multiphase Flows* 7, 117–127. https://doi.org/10.1260/1757-482X.7.2.117

Pati, A.R, Panda, A., Munshi, B., Kumar, A., Sahoo, A., Ghosh, S., Mohapatra, S.S., 2018. Dropwise evaporative cooling of hot water: A novel methodology to enhance heat transfer rate at very high surface temperatures. *International Journal of Thermal Sciences* 127, 335–350. https://doi.org/10.1016/j.ijthermalsci.2018.01.028

Bhuyan, P., Ghosh, S., 2019. Performance prediction of Roots blower based on shape of the rotor-profile using FVM with adaptive mesh redistribution technique and GA-tuned neural network. *Journal of the Brazilian Society of Mechanical Sciences and Engineering* 41, 433.1–433.28. https://doi.org/10.1007/s40430-019-1900-y

Ghosh, S., Dubey, A.K., Das, A.K., 2020. Numerical Inspection of Heterogeneity in Materials using 2D Heat-Conduction and Hybrid GA-tuned Neural-Network. *Applied Artificial Intelligence*, 125–154. https://doi.org/10.1080/08839514.2019.1691843

Samal, K., Ghosh, S., 2020. Characterization and prediction of flow-conditions in the hot-leg of PWR during loss of coolant accident. *Nuclear Engineering and Design* 359, 110446.1–27. https://doi.org/10.1016/j.nucengdes.2019.110446

Kumar, A., Ghosh, S., Ghosh, S., 2020. Identification of the influencing input parameters and their effects on the split dynamics of liquid–liquid two-phase mixture through T-junction: a numerical analysis. *Journal of the Brazilian Society of Mechanical Sciences and Engineering* 42, 572. https://doi.org/10.1007/s40430-020-02650-6

Bhuyan, P., Ghosh, S., 2021. Influence of rotor-speed, discharge-pressure, and clearance-size on the unsteady flow-dynamics and heat-interaction of roots-blower. *Journal of the Brazilian Society of Mechanical Sciences and Engineering* 43, 48.1–25. https://doi.org/10.1007/s40430-020-02729-0

Sai Manoj, K.N., Anbarasu, S., Ghosh, S., and . Sarangi, S.K, 2021. Thermal performance of a single stage double inlet pulse tube refrigerator: experimental investigation and CFD simulation. *Experimental Heat Transfer*, 325–340. https://doi.org/10.1080/08916152.2021.1873875

Samal, K., Ghosh, S., 2021. Kerosene-water counter-current two-phase flow-structures varying flow-orientation in 15 mm diameter duct. *Flow Measurement and Instrumentation* 81, 102016.1–18. https://doi.org/10.1016/j.flowmeasinst.2021.102016

Sahoo, S.P., Datta, S., Roy, T., Ghosh, S., 2021. Machining performance of Ti6Al4V under dry environment, pressurized air supply and water-MQL: analysis of machining-induced vibration signals and captured thermographs. *Sādhanā* 46, 208.1–22. https://doi.org/10.1007/s12046-021-01738-6

Samal, K., Ghosh, S., 2022. Categorization of liquid-liquid counter-current two-phase flow-structures in 11 mm ID tube at different conduit-orientations. *International Journal of Multiphase Flow* 150, 104010.1–28. https://doi.org/10.1016/j.ijmultiphaseflow.2022.104010

Kumar, N., Ghosh, S., Basu, D. N., 2023. Thermalhydraulic assessment and performance prediction of supercritical minichannel heat sink with airfoil-shaped obstructions using GA-tuned neural network. *Applied Thermal Engineering* 227, 120352. 1–15. https://doi.org/10.1016/j.applthermaleng.2023.120352

Rout, M., Chandrakar, V., Mukherjee, A., Ghosh, S., Senapati, J. R., 2024. Air entrainment study of a converging-diverging type IRS device: A numerical exercise. *International Journal of Thermal Sciences* 197, 108822.1–12. https://doi.org/10.1016/j.ijthermalsci.2023.108822

(b) Refereed International Conference Papers Published till Today:

Ghosh, S., Mookherjee, S., Sanyal, D., Nonlinear model-referenced output-feedback tracking control by pole placement for hydraulic servo-system with symmetric actuator. Proceedings of the 33rd National & 3rd International Conference on Fluid Mechanics and Fluid Power, Paper No. NCFMFP2006-1915, pp. NCFMFP2006-1915_1-8, December 7-9, 2006, IIT Bombay, India.

Mishra, P., Mukhopadhyay, A., Sen, S., Saha, B., Ghosh, S., Numerical simulation and control of jet impingement cooling of a steel plate by pole placement techniques. Proceedings of the 33rd National & 3rd International Conference on Fluid Mechanics and Fluid Power, Paper No. NCFMFP2006-1917, pp. NCFMFP2006-1917_1-8, December 7-9, 2006, IIT Bombay, India.

Ghosh, S., Pratihar, D.K., Maiti, B., Das, P.K., Application of Genetic Algorithm for shape optimization of 2D planar diffuser. Proceedings of the 4th BSME-ASME International Conference on Thermal Engineering, Paper No. 10 Paper-60, pp.441-447, December 27-29, 2008, Dhaka, Bangladesh.

Ghosh, S., Das, P.K., Pratihar, D.K., Maiti, B., Flow regimes and their transition in counter current gas liquid flow through a vertical pipe. Proceedings of the 7th International Conference on Multiphase Flow (ICMF 2010), Paper No. ICMF2010-P3.30, pp. ICMF2010-P3.30_1, May 30-June 4, 2010, Tampa, Florida, USA.

Varma, N., Agarwal, P., Ghosh, S., Das, A.K., Determination of strength in inertial entrainment: an experimental study. Proceedings of the 8th International Conference on Multiphase Flow (ICMF-2013), Paper No. ICMF2013-138, pp. ICMF2013-138_1-6, May 26-May 31, 2013, Jeju, South Korea.

Ahmed, S., Sreshth, S., Ghosh, S., Das, A.K., Study of the dynamics of a condensing bubble using Lattice Boltzmann method. Proceedings of the 8th International Conference on Multiphase Flow (ICMF-2013), Paper No. ICMF2013-307, pp. ICMF2013-307_1-7, May 26-31, 2013, Jeju, South Korea.

Nayak, S., Ghosh, S., Dynamics of liquid droplet on flat plate in shear flow with adiabatic conditions. Proceedings of the 22nd National and 11th International ISHMT-ASME Heat and Mass Transfer Conference, Paper No. HMTC1300547, pp. HMTC1300547_1-8, December 28-31, 2013, IIT Kharagpur, India.

Kawade, A., Ghosh, S., Mobility of air bubble entrapped through jet impingement. Proceedings of the 22nd National and 11th International ISHMT-ASME Heat and Mass Transfer Conference, Paper No. HMTC1300551, pp. HMTC1300551_1-7, December 28-31, 2013, IIT Kharagpur, India.

Ahmed, S., Ghosh, S., Das, A.K., Study of the dynamics of an evaporating bubble using lattice boltzmann method. Proceedings of the 22nd National and 11th International ISHMT-ASME Heat and Mass Transfer Conference, Paper No. HMTC1300555, pp. HMTC1300555_1-6, December 28-31, 2013, IIT Kharagpur, India.

Bhuyan, P., Ghosh, S., Sarangi, S. K., A numerical investigation to capture the unsteady internal flow phenomena and heat transfer mechanism in roots type blower or pump. Proceedings of the 26th International Cryogenic Engineering Conference & International Cryogenic Material Conference 2016 (ICEC 26 - ICMC 2016), Paper No. 10-P3-269, pp. 189-190, March 7-11, 2016, New Delhi, India.

Chakradhari, H., Samal, K., Ghosh, S., Numerical Investigation on Chilldown Process in Cryogenic Transportation Line. Proceedings of the 6th International and 43rd National Conference on Fluid Mechanics and Fluid Power (FMFP-2016), Paper ID: FMFP2016-210, pp. FMFP2016–210_1-3, December 15-17, 2016, Motilal Nehru National Institute of Technology Allahabad, India.

Mishra, P., Samal, K., Ghosh, S., Dynamics of Liquid Droplet over an Inclined Surface. Proceedings of the 6th International and 43rd National Conference on Fluid Mechanics and Fluid Power (FMFP-2016), Paper ID: FMFP2016-211, pp. FMFP2016–211_1-3, December 15-17, 2016, Motilal Nehru National Institute of Technology Allahabad, India.

Sureka, Y., Samal, K., Ghosh, S., Numerical Investigation on Fluid Flow and Heat Transfer Characteristics in a 3D V-Type Corrugated Channel. Proceedings of the 6th International and 43rd National Conference on Fluid Mechanics and Fluid Power (FMFP-2016), Paper ID: FMFP2016-213, pp. FMFP2016–213_1-3, December 15-17, 2016, Motilal Nehru National Institute of Technology Allahabad, India.

Samal, K., Ghosh, S., Experimental Investigation on Flow Regimes of Vertical Counter-Current Gas Liquid Two Phase Flow through Circular Tube with Diameter 11 mm. Proceedings of the 6th International and 43rd National Conference on Fluid Mechanics and Fluid Power (FMFP-2016), Paper ID: FMFP2016-222, pp. FMFP2016–222_1-3, December 15-17, 2016, Motilal Nehru National Institute of Technology Allahabad, India.

Ghosh, D., Kumar, A., Ghosh, S., Liquid-Liquid Two Phase Flow Separation through a Horizontal T-junction. Proceedings of the 6th International and 43rd National Conference on Fluid Mechanics and Fluid Power (FMFP-2016), Paper ID: FMFP2016-449, pp. FMFP2016–449_1-3, December 15-17, 2016, Motilal Nehru National Institute of Technology Allahabad, India.

Kumar, A., Ghosh, S., Experimental Investigation on Liquid-Liquid Two-phase flow Separation through Horizontal T-junction. Proceedings of the 24th National and 2nd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2017), Paper ID: IHMTC2017-13-1028, December 27-30, 2017, BITS Pilani, Hyderabad, India. (Begell House Publication: Pages 2141-2147, ISBN:978-1-56700-478-6) https://doi.org/10.1615/IHMTC-2017.3000

Chaini, U., Ghosh, S., Samal, K., Kumar, A., Rotary Entrainment in Two-Phase Stratified Liquid-Liquid Layers. Proceedings of the 24th National and 2nd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2017), Paper ID: IHMTC2017-13-1029, December 27-30, 2017, BITS Pilani, Hyderabad, India. (Begell House Publication: Pages 2149-2156, ISBN:978-1-56700-478-6) https://doi.org/10.1615/IHMTC-2017.3010

Chakraborty, D., Ghosh, S., Characteristics of Two-Phase Flow during Chilldown Process in a Cryogenic Transfer Line. Proceedings of the 24th National and 2nd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2017), Paper ID: IHMTC2017-05-1209, December 27-30, 2017, BITS Pilani, Hyderabad, India. (Begell House Publication: Pages 1233-1240, ISBN Online: 978-1-56700-478-6) https://doi.org/10.1615/IHMTC-2017.1710

Samal, K., Panda, N.R., Ghosh, S., 2D Conduction through Homogeneous Bulk with Hairline Crack: Inspection of Crack in Homogeneous Bulk. Fifth International Conference on Computational Methods for Thermal Problems (THERMACOMP2018), Page No. 842-845, July 9-11, 2018, Indian Institute of Science, Bangalore, India.

Samal, K., Ghosh, S., Recognition and Categorization of Flow-regimes of Liquid-liquid Counter-current Two-phase Flow through Inclined Conduit. Proceedings of the 7th International and 45th National Conference on Fluid Mechanics and Fluid Power (FMFP-2018), Paper No.: FMFP2018-213, December 10-12, 2018, IIT Bombay, Mumbai, India.

Kumar, A., Ghosh, S., Phase Split of Petrol-Water Liquid-Liquid Two-Phase Flow through Horizontal T-junction. Proceedings of the 7th International and 45th National Conference on Fluid Mechanics and Fluid Power (FMFP-2018), Paper No.: FMFP2018-211, December 10-12, 2018, IIT Bombay, Mumbai, India.

Kumar, A., Ghosh, S., Phase Splitting in Vertical T-junction using Diesel-Water Liquid-liquid Two-Phase Flow. Proceedings of the 7th International and 45th National Conference on Fluid Mechanics and Fluid Power (FMFP-2018), Paper No.: FMFP2018-212, December 10-12, 2018, IIT Bombay, Mumbai, India.

Samal, K., Ghosh, S., Parameterization of Flooding in Pressurized Water Reactor During Loss of Coolant Accident. 27th International Conference on Nuclear Engineering (ICONE-27), Paper ID.: ICONE27-1595 May 19-24, 2019, Ibaraki, Japan.

Samal, K., Ghosh, S., Identification and Categorization of Flow-regimes of Counter-current Liquid-liquid Two-phase Flow through Inclined (45^0) Conduit of 11 mm Diameter. 10th International Conference on Multiphase Flow (ICMF 2019), Paper No.: ICMF 2019-RS167985, May 19-24, 2019, Windsor Convention & Expo Center, Windsor Barra Hotel, Rio de Janeiro, Brazil.

DasChaudhury, M., Ghosh, S., Numerical Inspection of Chilldown Process in Cryogenic Transportation Line. Proceedings of the 25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2019), Paper ID: IHMTC2019-CRY-572, December 28-31, 2019, IIT Roorkee, Roorkee, India.

Raju, Ghosh, S., Numerical Study of Single Stage GM-Type Pulse Tube Refrigerator for HTc-Superconductors. Proceedings of the 25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2019), Paper ID: IHMTC2019-CRY-576, December 28-31, 2019, IIT Roorkee, Roorkee, India. (Begell House Publication: Pages 175-180, ISBN : 978-1-56700-497-7 (Flash Drive) ISBN : 978-1-56700-496-0) https://doi.org/10.1615/IHMTC-2019.300

Kumar, A., Pan, H., Ghosh, S., Phase Separation of Kerosene-Water Two-phase Flow in T-Junction. Proceedings of the 25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2019), Paper ID: IHMTC2019-MPF-578, December 28-31, 2019, IIT Roorkee, Roorkee, India.

Behera, D., Kalita, D., Kumar, A., Ghosh, S., Categorization of Inclined Counter-Current Gas-Liquid Flow by Experimentation and EM algorithm. Proceedings of the 25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2019), Paper ID: IHMTC2019-POS-559, December 28-31, 2019, IIT Roorkee, Roorkee, India.

Sai Manoj, K.N., Anbarasu, S., Ghosh, S., Sarangi, S.K., Experimental Studies on a GM Type Double Inlet Pulse Tube Refrigerator. Proceedings of the International Conference on Innovations in Thermo-Fluid Engineering and Sciences (ICITFES-2020), Paper ID: 13865, February 10-12, 2020, NIT Rourkela, Rourkela, India.

Samal, K., Nayak, D., Ghosh, S., Counter-Current Gas-Liquid Two-Phase Flow through a Small Diameter Horizontal Conduit. Proceedings of the International Conference on Innovations in Thermo-Fluid Engineering and Sciences (ICITFES-2020), Paper ID: 13831, February 10-12, 2020, NIT Rourkela, Rourkela, India.

Kumar, A., Ghosh, S., Phase-Separation of Liquid-Liquid Two-Phase Flow in a T-Junction having a Branch angle of 90 degree. Proceedings of the International Conference on Innovations in Thermo-Fluid Engineering and Sciences (ICITFES-2020), Paper ID: 13867, February 10-12, 2020, NIT Rourkela, Rourkela, India.

Rout, M., Senapati, J.R., Ghosh, S., The effect of Reynolds number on mass suction and outlet temperature in IRS device. Proceedings of the 9th International and 49th National Conference on Fluid Mechanics and Fluid Power (FMFP-2022), Paper ID: FMFP2022–9214, December 14-16, 2022, IIT Roorkee, Roorkee-247667, Uttarakhand, India.

Rout, M., Ghosh, S., Senapati, J.R., Effect of inlet velocity and temperature on the performance of a converging-diverging type IRS device: A numerical exercise. International Conference on Mechanical and Aerospace Engineering (ICAMAE 2023), November 9-11, 2023.

Rout, M., Senapati, J.R., Ghosh, S., The effect of radial gap on the performance of an IRS device. 27th National and 5th International ISHMT-ASTFE Heat and Mass Transfer Conference, Paper ID: IHMTC-2023–319, December 14-17, 2023, IIT Patna, Patna-801106, Bihar, India.

Saxena, A., Choudhary, R., Ghosh, S., Flow-regimes Study of Two-phase N_2 Flow in A Vertical Microchannel: A Numerical Exercise. 10th International and 50th National Conference on Fluid Mechanics and Fluid Power (FMFP-2023), Paper No.: FMFP2023–MPF–105, December 20-22, 2023, IIT Jodhpur, India.

Sankpal, V.U., Krishna, G., Ghosh, S., Chill-down in LN2 Transfer Line Initially Filled with Air: A Transient Analysis. 10th International and 50th National Conference on Fluid Mechanics and Fluid Power (FMFP-2023), Paper No.: FMFP2023–MPF–414, December 20-22, 2023, IIT Jodhpur, India.

(c) Refereed National Conference Papers Published till Today:

Ghosh, S., Das, K.C., Mookherjee, S., Sanyal, D., Design and simulation of a fuzzy logic controller for velocity tracking of a hydraulic actuation system. Proceedings of the 32nd National Conference on

Fluid Mechanics and Fluid Power, Paper No. FMFP2005-E3, pp. E3-1 to E3-10, December 15-17, 2005, Osmanabad, India.

Vishal, V., Kumar, B., Ghosh, S., Effect of Baffles in Combustion Instability Suppression in Semi-cryogenic Engines. National Conference on Emerging Trends in Mechanical Engineering (NCETME-2019), VIT Pune, Pune, Maharashtra, India, Feb 07-08, 2019.

CONFERENCE/SHORT COURSES/WORKSHOP ATTENDED:

Sl No.	From	To	Institute / Industry	Organized by / Sponsored by	Name of the course
1	15 December 2005	17 December 2005	TPCT College of Engineering, Osmanabad, Maharashtra	National Society for Fluid Mechanics and Fluid Power	32nd National Conference on Fluid Mechanics & Fluid Power
2	09 January 2009	11 January 2009	IIT Kharagpur	Indo-US Science and Technology Forum	Indo-US Workshop on Microfluidics and Fabrionics (Microfabrication)
3	21 December 2009	22 December 2009	IIT Kharagpur and Bengal Science & Engineering University Shibpur	Indo-US Centre for Research Excellence on Fabrionics	Short Course on Mechanics over Micro & Nano Scales (STCMMN 09)
4	24 March 2012	24 March 2012	NIT Rourkela, Rourkela-769008	Intellectual Property Rights Cell, NIT Rourkela	A Seminar on Patent Search and Patenting
5	28 December 2013	31 December 2013	IIT Kharagpur	ISHMT and ASME	22nd National and 11th International ISHMT-ASME Heat and Mass Transfer Conference
6	10 March 2014	13 March 2014	EQUATE, New Delhi	TEQIP-II	Pedagogy-Enhancing Teacher Effectiveness
7	01 July 2014	05 July 2014	NIT Rourkela (Experts: Prof A K Ray from IIT Kharagpur and Prof Mangala Sunder from IIT Madras)	TEQIP-II	Faculty Development Programme in Pedagogy and E-Learning Technology
8	23 August 2014	23 August 2014	Indian Cryogenics Council (West Zone) C/O: Department of Mechanical Engineering, I.I.T. Powai, Mumbai-400076	Inox India Limited, 4th Floor, ABS Towers, Old Padra Road, Vadodara, Gujarat, Pin: 390007	Theme Meeting on Researchers & Industry Interaction in Cryogenics
9	14 April 2015	23 April 2015	IIT Kharagpur, Kharagpur-721302, India	Cryogenic Engineering Centre, IIT Kharagpur	Short term course on "Vacuum Technology and Process Application"

10	07 March 2016	11 March 2016	Manekshaw Center, New Delhi	Inter-University Accelerator Centre, New Delhi; and Indian Cryogenics Council. Venue: Manekshaw Center, New Delhi	26th International Cryogenic Engineering Conference & International Cryogenic Material Conference 2016
11	19 May 2019	24 May 2019	Windsor Barra Hotel, Rio de Janeiro, Brazil	ICMF Governing Board, Local committee: USP & UERJ**, Rio de Janeiro, Brazil Sponsored by Elsevier, Begell House, Unicamp, A2 Photonic Sensors, Capes, etc.	10th International Conference on Multiphase Flow (ICMF 2019)
12	07 December 2020	11 December 2020	IIT Roorkee	Department of Chemestry & Department of Mechanical and Industrial Engineering, IIT Roorkee	Short Course on Sustainable Energy Technologies Synthesis of Alternative Fuels, Characterization, and Molecular Simulations; Sponsored by MHRD and assisted by TEQIP

SHORT-TERM COURSES AND CONFERENCES CONDUCTED:

Sl. No.	Title	Number of Participants	Duration	Organizing Committee
1	A three-day Short Term Course on 'Fundamentals of Computational Fluid Dynamics: A Practical Approach'	25	22 –24 December 2014	Coordinators: Prof. Manoj K. Moharana, Prof. Suman Ghosh, Prof. Amitesh Kumar, Department of Mechanical Engineering, NIT Rourkela
2	National Conference on 'Recent Developments in Mechanical Engineering' (NCRDME-2018)	25	27 – 29 July, 2018	Organizing Secretaries: Prof. J. Srinivas, Prof. S. Ghosh, Prof. S. K. Behera, Department of Mechanical Engineering, NIT Rourkela
3	10th Short Term Training Programme on 'CNC Machining with Programming Practice'	10	16 – 20 Dec 2019	Course coordinators: Prof. S.K. Sahoo, Prof. S. Ghosh, Department of Mechanical Engineering, NIT Rourkela
4	International Conference on Innovations in	149	10 – 12 Feb 2020	Conference Chair: Prof. S. Murugan, Department of Mechanical Engineering

	Thermo-Fluid Engineering and Sciences [ICITFES-2020]			Co-Chair: Prof. Suman Ghosh and Prof. Manoj Kumar Moharana, Department of Mechanical Engineering

LECTURER DELIVERED:

Sl. No	Title of lecture	Date	Place	Programme name where lectures delivered	Other relevant information
1	Fundamentals of Fluid Mechanics	08 June 2017	Seminar Hall, Mechanical Engineering Department, NIT Rourkela	Analytical and Experimental Techniques in Thermal Engineering (AETTE-2018)	It is a Continuing Education Programme
2	Prediction and Estimation of Two-Phase Flow Regimes	29 July 2018	Seminar Hall, Mechanical Engineering Department, NIT Rourkela	National Conference on 'Recent Developments in Mechanical Engineering'	I was one of the Organizing Secretaries
3	Prediction & Estimation of Two-Phase Flow Regimes	12 November 2020	Department of Metallurgical and Materials Engineering, Indira Gandhi Institute of Technology, Sarang, Odisha-759146. The lecture was delivered in online mode using Google Meet.	'TEQIP-III Sponsored Short Term Course' on 'Transport Phenomena in Industrial Processes (9th Nov-13th Nov 2020)'. Where lecture delivered: Department of Metallurgical and Materials Engineering, Indira Gandhi Institute of Technology, Sarang, Odisha-759146. The lecture was delivered in online mode using Google Meet.	The total number of participants was 25

VISITS TO OUTSIDE INSTITUTIONS:

Sl No.	Institute Visited	Purpose of Visit	Date
1	The University of Porto (Universidade do Porto)	Research under the Indo-Portuguese Programme of Cooperation in Science & Technology where the '*Department of Science and Technology (DST), Ministry of Science & Technology of India*' and the '*Foundation for Science and Technology (FCT), Ministry of Science, Technology & Higher Education*' are the nodal agencies to implement the programme in India and Portugal on the respective sides. The project title is "*Experimental and numerical study of entrainment phenomena in stratified liquid layers by imposing rotary motion*".	12 – 17 December 2014

MEMBERSHIP OF PROFESSIONAL BODIES:

- ASME Membership, Membership no. 000100667015
- ISHRAE Membership, Membership no. 34568

FACILITIES & EXPERTISE CREATED AT NIT ROURKELA (LAB DEVELOPED)

Sl.	Name of Lab Established	List of equipment/software	Sponsoring Agency
1	Multiphase Flow Laboratory (Research Laboratory)	List of equipment already purchased and included by Dr. Suman Ghosh in this lab to date: High sped video camera (Quantity: 01), Different differential pressure transmitters in different ranges (Quantity: 07), Differential Pressure Transducer (Quantity: 02), Piezoresistive Pressure Transducer (Quantity: 01), Pressure Sensor (Quantity: 01), In-house fabricated conductivity probes and their processing circuits (Quantity: 5), Pressure Sensor, Different NI data acquisition system (DAQ, Quantity: 02), NI-9203 C series current input module (Quantity: 01), NI-9216 C series temperature input module (conformal coated, 8-channel, 400 S/s, D-SUB), Chassis slots and voltage cards-based NI DAQ (Quantity: 01), Different in-house fabricated DAQ Processing Circuits (Quantity: 02), Different liquid flow meters (06), Different gas flow meters (04), Liquid volume measuring cups (03), Different gas-liquid and liquid-liquid two-phase flow regimes test-rig with different cross-sections and inclination angles (02), Coriolis mass flow sensor and transmitter (Quantity: 01), PT-100 RTD temperature sensors (Quantity: 12), Contact angle measurement system (Quantity: 1 Unit), Force tensiometer (Quantity: 1 Unit) List of the Softwares included by Dr. Suman Ghosh in this Lab: LabVIEW, MATLAB, Origin, Tecplot, Ansys, and different image analysis softwares from Phantom (Like Phantom CV 2.8, Phantom MultiCam, Phantom Video Player, PCC 2.6, etc.).	a) DST, b) SERB, c) BRNS,

2	Fluid Mechanics and Hydraulic Machine Laboratory (UG and PG)	It is in the development stage. To date, 5 pieces of equipment have already been purchased, and many are in under purchase process. The equipment have already been purchased for this lab are: Reciprocating Pump Test Rig (Quantity: 01), Francis Turbine Test Rig (Quantity: 01), Pelton Wheel Turbine Test Rig (Quantity: 01), Magnetic Gas and Liquid Flow Flow Meter, Differential Pressure Transducer with Three Way Manifold Valve. The equipment, which are in under purchase process are: Optical probe for the measurement and diagnosis of two-phase interfacial distribution (Quantity: 1 Unit), Differential Pressure Transducer with 3-way manifold valve as per (Quantity: 1 Unit), Magnetic Gas and Liquid flow meter (Quantity: 1 Unit), Venturimeter apparatus (Quantity: 1 Unit), Pitot Tube Setup (Quantity: 1 Unit), Laminar and Turbulent Flow Table: Reynolds' Apparatus (Quantity: 1 Unit), Setup for Viscosity Measurement: Ball Drop Method (Stokes's law) (Quantity: 1 Unit), Darcy's Law Apparatus (Quantity: 1 Unit), Flow Over Notch Apparatus (Quantity: 1 Unit),	a) OH-35, b) HEFA
3.	Computational Heat Transfer	The content of this theoretical lab was defined and designed by Dr. Suman Ghosh.	NIT Rourkela

ACADEMIC OUTREACH ACTIVITIES:

1. I reviewed an International Journal Paper on 09 March 2014; Journal Name: Physics Letters A; Manuscript Number: PLA-D-14-00032; Manuscript Title: Analysis of weak signal based on phase space reconstruction combined with data reduction sub-frequency band wavelet; Publisher: Elsevier;
2. I reviewed an International Journal Paper on 23 March 2015; Journal Name: International Journal of Energy and Power Engineering (IJEPE); Manuscript Number: IJEPE_1641042_20150209; Manuscript Title: Expanded Microchannel Heat Exchanger: Finite Difference Modeling; Publisher: Science PG;
3. An International Conference paper was reviewed by me on 29 December 2015; Conference Name: International Conference on Advances in Dynamics, Vibration and Control 2016 (ICADVC2016); Venue of conference: NIT Durgapur, India; Conference Date: February 25-27, 2016; Paper Number: ICADVC2016-58; Manuscript Title: Momentum Correction for Energy Conservation in Smooth Particle Hydrodynamics;
4. I reviewed an International Conference paper on 30 December 2015; Conference Name: International Conference on Advances in Dynamics, Vibration and Control 2016 (ICADVC2016); Venue of conference: NIT Durgapur, India; Conference Date: February 25-27, 2016; Paper Number: ICADVC2016-59; Manuscript Title: Hydrodynamic Viscous Friction Analysis of Piston Ring and Cylinder Liner Contact;
5. An International Conference paper was reviewed by me on 27 August 2016; Conference Name: 6th International and 43rd National Conference on Fluid Mechanics and Fluid Power (FMFP2016); Paper Number: FMFP2016-577; Venue of conference: MNNITA, Allahabad, U.P., India; Conference Date: December 15-17, 2016; Manuscript Title: Application of CFD Code FLUIDYN to Simulate Air–Steam Flow with Condensation in CONAN Facility;
6. I reviewed an International Conference paper on 05 September 2016; Conference Name: International Conference on Recent Advancement in Air Conditioning and Refrigeration (RAAR 2016); Venue of conference: Bhubaneswar, India; Conference Date: November 10-12, 2016; Paper Number: RAAR_2016_paper_42; Manuscript Title: Thermodynamic Analysis of Modified Vapour Compression Refrigeration System using R-134a; Publisher: Energy Procedia, Elsevier;
7. An International Conference paper was reviewed by me on 10 September 2016; Conference Name: 6th International and 43rd National Conference on Fluid Mechanics and Fluid Power (FMFP2016); Paper Number: FMFP2016-556; Venue of conference: MNNITA, Allahabad, U.P., India; Conference Date: December 15-17, 2016; Manuscript Title: Helium Flow Dynamics and Heat Transfer in a Cable in Conduit Conductor of Superconducting Magnets: A review;

8. I reviewed a Journal Paper on 24 August 2017; Journal Name: Indian Journal of Cryogenics (IJC); Manuscript Number: MS 50/43 IJC; Manuscript Title: Numerical Analysis of Miniature Coaxial Stirling Type Pulse Tube Cryocooler with a Modified Reservoir; Publisher: Indian Cryogenics Council;
9. An International Conference paper was reviewed by me on 20 September 2017; Conference Name: 1st International Conference on Mechanical Engineering (INCOM18); Venue of conference: Jadavpur University, Kolkata-700032, India; Conference Date: January 4-6, 2018; Paper Number: INCOM_2018_paper_171; Manuscript Title: Stabilizing of the Rotary Inverted Pendulum by using PID and Fuzzy-PID Controller;
10. I reviewed a Journal Paper on 20 September 2017; Journal Name: Indian Journal of Cryogenics (IJC); Manuscript Number: MS 30/43 IJC; Manuscript Title: Design Analysis and Development of a Thermoacoustic engine; Publisher: Indian Cryogenics Council;
11. A national conference paper was reviewed by me on 19 June 2018; Conference Name: National Conference on Recent Developments in Mechanical Engineering (RDME-2018); Paper ID: RDME-2018-1001; Venue of the conference: NIT Rourkela, Rourkela, India; Conference Date: July 27 -29, 2018; Manuscript Title: Performance analysis of a shell and tube heat exchanger using CFD;
12. I reviewed a national conference paper on 19 June 2018; Conference Name: National Conference on Recent Developments in Mechanical Engineering (RDME-2018); Paper ID: RDME-2018-1013; Venue of conference: NIT Rourkela, Rourkela, India; Conference Date: July 27 -29, 2018; Manuscript Title: Design Optimization of Nozzle and Second Throat Diffuser System for High Altitude Test using CFD;
13. A national conference paper was reviewed by me on 19 June 2018; Conference Name: National Conference on Recent Developments in Mechanical Engineering (RDME-2018); Paper ID: RDME-2018-1014; Venue of conference: NIT Rourkela, Rourkela, India; Conference Date: July 27 -29, 2018; Manuscript Title: Design and Fabrication of an Indoor Hot Plate for various heat applications by using Scheffler Reflector;
14. I reviewed a national conference paper on 19 June 2018; Conference Name: National Conference on Recent Developments in Mechanical Engineering (RDME-2018); Paper ID: RDME-2018-1017; Venue of conference: NIT Rourkela, Rourkela, India; Conference Date: July 27 -29, 2018; Manuscript Title: Solution of Incompressible Viscous Flow in a Lid-driven Cavity using Crank-Nicholson;
15. An International Journal Paper was reviewed by me on 07 September 2018; Journal Name: Progress in Computational Fluid Dynamics; Article ID: PCFD-222061; Manuscript Title: Effect of umbrella angle and nozzle rotation on Dispersion of fuel using numerical analysis; Publisher: Inderscience Publishers (Inderscience Enterprises Ltd.);
16. I reviewed an International Conference paper on 08 September 2018; Conference Name: 7th International and 45th National Conference on Fluid Mechanics and Fluid Power (FMFP-2018); Paper ID: FMFP2018-54; Venue of the conference: IIT Bombay, Mumbai, India; Conference Date: December 10-12, 2018; Manuscript Title: Heat Transfer Analysis of Triple pipe heat exchanger Cooled using Nanofluids;
17. An International Conference paper was reviewed by me on 15 September 2018; Conference Name: 7th International and 45th National Conference on Fluid Mechanics and Fluid Power (FMFP-2018); Paper ID: FMFP2018-594; Venue of conference: IIT Bombay, Mumbai, India; Conference Date: December 10-12, 2018; Manuscript Title: Is It Worthful to Use Nano-enhanced Phase Change Material in Finned Heat Sink? Numerical and Experimental Verification;
18. I reviewed an International Conference paper on 15 September 2018; Conference Name: 7th International and 45th National Conference on Fluid Mechanics and Fluid Power (FMFP-2018); Paper ID: FMFP2018-612; Venue of conference: IIT Bombay, Mumbai, India; Conference Date: December 10-12, 2018; Manuscript Title: Perturbation Solution of a Viscoelastic Fluid Squeezed and Extruded Between Two Parallel Plates;
19. An International Conference paper was reviewed by me on 17 September 2018; Conference Name: International Conference on Recent Innovations and Developments in Mechanical Engineering (IC-RIDME2018); Paper ID: IC-RIDME18:194; Venue of conference: NIT Meghalaya, Shillong, India; Conference Date: November 8-10, 2018; Manuscript Title: A Coupled Level Set and Volume-Of-Fluid Method for Modelling Two-Phase Flows;
20. I reviewed an International Journal Paper on 10 October 2018; Journal Name: Journal of Enhanced Heat Transfer; Manuscript ID: JEH(T)-28156; Manuscript Title: Measurement of Heat Transfer Coefficient and Pressure Drops in a Compact Heat Exchanger with Lance and Offset Fins for Water Based Al_2O_3 Nanofluids; Publisher: Begell House;
21. An International Journal Paper was reviewed by me on 11 November 2018; Journal Name: Annals of the Brazilian Academy of Sciences; Manuscript ID: AABC-2018-0553; Manuscript Title: Numerical Study on the Orientation

Effects of Diathermal Partition on Unsteady Natural Convection in a Porous Enclosure; Publisher: Academia Brasileira de Ciências (Brazilian Academy of Sciences);

22. An International Journal Paper was reviewed two times by me on 01 January 2019 and 02 February 2019; Journal Name: Multiphase Science and Technology; Manuscript ID: MST-28722; Manuscript Title: Frictional Pressure Drop of Gas-Liquid-Liquid Dispersion in an Ejector Induced Down Flow Column; Publisher: Begell House;
23. I reviewed an International Conference paper on 10 March 2019; Conference Name: International Conference on Applied Mechanical Engineering Research (IC-AMER2019); Paper ID: Paper ID is not provided in the paper (The number will be assigned when the paper is accepted); Venue of conference: NIT Warangal, India; Conference Date: May 02-05, 2019; Manuscript Title: Mixed convective heat transfer with surface radiation in a vertical channel in presence of Heat spreader;
24. A book chapter for the monograph in the area of 'Dynamics and Control of Energy Systems' under 'International Society for Energy, Environment and Sustainability (http://isees.in/)' in collaboration with 'Springer' was reviewed by me on 17 June 2019; Title of the Book Chapter: Dynamic Instabilities and Their Control in Flow Boiling in Microchannels; Editor: Dipankar Narayan Basu (dnbasu@iitg.ac.in), Indian Institute of Technology Guwahati, India.
25. An International Journal Paper was reviewed by me two times on 04 August 2019 and 25 October 2019; Journal Name: Chemical Product and Process Modeling; Manuscript number: DGCPPM.2019.0071 & DGCPPM.2019.0071.R1; Manuscript title: Numerical evaluation of liquid mixing in a serpentine square convergent-divergent passive micromixer; Publisher: DE Gruyter;
26. An International Conference paper was reviewed by me on 19 August 2019; Conference Name25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2019); Paper ID: 677; Venue of the conference: IIT Roorkee, India; Conference Date: Dec 28-31, 2019; Manuscript Title: Design Improvement of Axial Flow Blood Pump by Computational Fluid Dynamics;
27. I reviewed an International Conference paper on 20 August 2019; Conference Name25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2019); Paper ID: 252; Venue of conference: IIT Roorkee, India; Conference Date: Dec 28-31, 2019; Manuscript Title: Modelling and Simulation of Radio Frequency Ablation for Liver Tumors and Performance Analysis using Crossed Array Design of Experiments Approach;
28. An International Conference paper was reviewed by me on 25 August 2019; Conference Name25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2019); Paper ID: 28; Venue of the conference: IIT Roorkee, India; Conference Date: Dec 28-31, 2019; Manuscript Title: Fluid-Structure Interaction based Simulations of Blood Flow through Internal Carotid Artery;
29. I reviewed an International Conference paper on 25 August 2019; Conference Name25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2019); Paper ID: 54; Venue of the conference: IIT Roorkee, India; Conference Date: Dec 28-31, 2019; Manuscript Title: Prediction of drying characteristics of potato during the convective drying process;
30. An International Conference paper was reviewed by me on 25 August 2019; Conference Name25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2019); Paper ID: 129; Venue of the conference: IIT Roorkee, India; Conference Date: Dec 28-31, 2019; Manuscript Title: Numerical investigation of the amount of breast tissue contraction during microwave ablation;
31. I reviewed an International Conference paper on 25 August 2019; Conference Name25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2019); Paper ID: 134; Venue of the conference: IIT Roorkee, India; Conference Date: Dec 28-31, 2019; Manuscript Title: Thermal Investigation of Multi-Branched Micro-Grooved Micro Heat Pipe - A CFD Approach;
32. An International Conference paper was reviewed by me on 26 August 2019; Conference Name25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2019); Paper ID: 136; Venue of the conference: IIT Roorkee, India; Conference Date: Dec 28-31, 2019; Manuscript Title: Determination of Heat and Mass Transfer Parameters During Hot Air Drying of Carrot;
33. I reviewed an International Conference paper on 26 August 2019; Conference Name25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2019); Paper ID: 157; Venue of the conference: IIT Roorkee, India; Conference Date: Dec 28-31, 2019; Manuscript Title: Velocity correlation of pressure driven flow in a nanochannel;
34. An International Conference paper was reviewed by me on 27 August 2019; Conference Name25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2019); Paper ID: 160; Venue of

conference: IIT Roorkee, India; Conference Date: Dec 28-31, 2019; Manuscript Title: SCALING ANALYSIS OF NANOFLUID FLOWING INSIDE A CIRCULAR MICRO CHANNEL;

35. I reviewed an International Conference paper on 27 August 2019; Conference Name25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2019); Paper ID: 169; Venue of the conference: IIT Roorkee, India; Conference Date: Dec 28-31, 2019; Manuscript Title: Experimental Comparison of Thermal Resistance for Micro Pin Fin Heat Sinks with Different Shapes and Arrangements;
36. An International Conference paper was reviewed by me on 27 August 2019; Conference Name25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2019); Paper ID: 185; Venue of conference: IIT Roorkee, India; Conference Date: Dec 28-31, 2019; Manuscript Title: Comparison of Sudden Expansion and Contraction Behaviour at Tube Junction in Gaseous Slip Flow;
37. I reviewed an International Conference paper on 28 August 2019; Conference Name25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2019); Paper ID: 201; Venue of the conference: IIT Roorkee, India; Conference Date: Dec 28-31, 2019; Manuscript Title: Numerical Simulation of Conjugate Heat Transfer with Slip Flow for Gaseous Substance in Microchannels;
38. I reviewed an International Conference paper on 02 September 2019; Conference Name25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2019); Paper ID: 501; Venue of the conference: IIT Roorkee, India; Conference Date: Dec 28-31, 2019; Manuscript Title: Thermal Hydraulic Analysis of Decay Heat Exchanger using a FVM Based Network Model;
39. An International Conference paper was reviewed by me on 02 September 2019; Conference Name25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2019); Paper ID: 609; Venue of the conference: IIT Roorkee, India; Conference Date: Dec 28-31, 2019; Manuscript Title: Condensation Heat Transfer Enhancement using an applied electric field on Structured surfaces;
40. I reviewed an International Conference paper on 02 September 2019; Conference Name25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2019); Paper ID: 611; Venue of the conference: IIT Roorkee, India; Conference Date: Dec 28-31, 2019; Manuscript Title: Combustion characteristics of coaxial non-premixed flames of Natural Gas and Biogas;
41. An International Conference paper was reviewed by me on 03 September 2019; Conference Name25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2019); Paper ID: 647; Venue of the conference: IIT Roorkee, India; Conference Date: Dec 28-31, 2019; Manuscript Title: Flow dynamic study of a square natural circulation loop using supercritical water;
42. I reviewed an International Conference paper on 04 September 2019; Conference Name25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2019); Paper ID: 776; Venue of the conference: IIT Roorkee, India; Conference Date: Dec 28-31, 2019; Manuscript Title: Flow analysis of large diameter cryogenic pipeline during chilldown process;
43. An International Journal Paper was reviewed by me on December 03, 2019; Journal Name: Journal of the Brazilian Society of Mechanical Sciences and Engineering; Manuscript number: BMSE-D-19-01406R1; Manuscript title: Investigating the effect of rhombic vortex generators with different attack angles inside a rectangular microchannel on laminar flow and heat transfer of water/MgO nanofluid with two phase and single phase approaches; Publisher: Springer;
44. I reviewed an International Journal Paper on 20 December 2019; Journal Name: Vacuum; Manuscript number: VAC-D-19-00136; Manuscript title: Research of a novel eccentric involute rotor and its performance analysis for twin-screw vacuum pumps; Publisher: Elsevier;
45. An International Journal Paper was reviewed by me on 09 March 2020; Journal Name: Flow, Turbulence and Combustion; Manuscript number: APPL-D-19-00308; Manuscript title: Impact of Reactor Geometry on the Particle-Residence-Time in Flame Spray Process; Publisher: Springer;
46. I reviewed an International Conference paper on 18 December 2019; Conference Name: International Conference on Innovations in Thermo-Fluid Engineering and Sciences (ICITFES-2020); Paper ID: 15472; Venue of conference: NIT Rourkela, India; Conference Date: Feb 10-12, 2020; Manuscript Title: Numerical Study of Effect of Efflux Concentration on Flow Parameters in Sand-Water Slurry Flows through Horizontal Pipeline;
47. An International Journal Paper was reviewed by me on 28 November 2020; Journal Name: Journal of Intelligent & Fuzzy Systems; Manuscript number: JIFS-202241; Manuscript title: Thermal Error Analysis of TaurenEDM Machine Tool Based on FCM Fuzzy Clustering and RBF Neural Network; Publisher: IOS Press.

48. An International Journal Paper was reviewed by me on 20 October 2020; Journal Name: Journal of Enhanced Heat Transfer; Manuscript number: JEH(T)-36185; Manuscript title: Enhancement of Air-Side Heat Transfer in Air-Cooled Heat Exchangers Using Dimpled Fins; Publisher: Begell House.
49. I reviewed an International Conference paper on 18 October 2020; Conference Name: 8th International and 47th National Conference on Fluid Mechanics and Fluid Power (FMFP2020); Paper ID: FMFP2020_216; Venue of the conference: IIT Guwahati, Guwahati-781039, Assam, India; Conference Date: Dec 09–11, 2020; Manuscript Title: Heat Transfer Enhancement using Surface Geometry Modification.
50. An International Conference paper was reviewed by me on 18 October 2020; Conference Name: 8th International and 47th National Conference on Fluid Mechanics and Fluid Power (FMFP2020); Paper ID: FMFP2020_237; Venue of the conference: IIT Guwahati, Guwahati-781039, Assam, India; Conference Date: Dec 09–11, 2020; Manuscript Title: Effect of longitudinal translation of toe-out type vortex generators on wake modifications in finned tube heat exchangers.
51. I reviewed an International Conference paper on 28 September 2021; Conference Name: 26th National and 4th International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC2021); Paper ID: IHMTC2021-667; Venue of the conference: IIT Madras, Chennai-600036, Tamil Nadu, India; Conference Date: Dec 17–20, 2021; Manuscript Title: Numerical investigation of turbulent heat transfer enhancement in partially corrugated tube using water based nanofluid.
52. I reviewed an International Conference paper on 28 September 2021; Conference Name: 26th National and 4th International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC2021); Paper ID: IHMTC2021-675; Venue of the conference: IIT Madras, Chennai-600036, Tamil Nadu, India; Conference Date: Dec 17–20, 2021; Manuscript Title: Performance Enhancement Investigations in a Solar Parabolic Trough Collector using Vortex Generators.
53. I visited (12 December to 17, 2014) the 'University of Porto (Universidade do Porto)' in Portugal to perform research under 'Indo-Portuguese Programme of Cooperation in Science & Technology' where the 'DST under MHRD in India and the 'Foundation for Science and Technology (FCT) under Ministry of Science, Technology & Higher Education' in Portugal were the nodal agencies to implement the programme in India and Portugal on the respective sides. The research project title was "Experimental and numerical study of entrainment phenomena in stratified liquid layers by imposing rotary motion".
54. IIT Kharagpur appointed me as the External Examiner for M. Tech students of Cryogenic Engg. Centre, IIT Kharagpur. I accepted the appointment and went there on 04 May 2019 as the external examiner for evaluating the project dissertations and conducting the viva-voce examination of M.Tech students in the specialization of 'Cryogenic Engineering' at the 'Centre of Cryogenics Engineering' of IIT Kharagpur.
55. On 08 June 2018, I delivered an expert talk for the 'Indian National Science Academy, New Delhi sponsored five-day short-term course on 'Analytical and Experimental Techniques in Thermal Engineering (AETTE-2018)' during June 4 - 8, 2018. The topic of the talk was "Fundamentals of Fluid Mechanics"
56. On 11 December 2020, I Chaired a session ('Session 7D Hall 4 (Multiphase Flows (5))') at the 8th International and 47th National Conference on Fluid Mechanics and Fluid Power (FMFP2020). 5 papers were presented in this session. They are FMFP2020_214, FMFP2020_225, FMFP2020_229, FMFP2020_244, FMFP2020_250.
57. On 11 & 12 February 2020, I Chaired multiple sessions in Thermo-Fluid Engineering and Sciences (ICITFES-2020), February 10-12, 2020, NIT Rourkela, Rourkela, India.
58. On 29 July 2018, I delivered an expert talk at a National Conference on 'Recent Developments in Mechanical Engineering (NCRDME-2018)' during July 27–29, 2018. The topic of the talk was 'Prediction and Estimation of Two-Phase Flow Regimes'.
59. On 12 November 2020, I delivered an expert talk for the 'TEQIP-III Sponsored Short Term Course' on 'Transport Phenomena in Industrial Processes (TPIP-2020, Nov 9-13, 2020)'. The topic of the talk was 'Prediction & Estimation of Two-Phase Flow Regimes'
60. Made question papers for the 'Subject Knowledge Test' for the recruitment of various non-teaching posts: (i) Junior Technician in Diploma Level, (ii) Junior Technical Superintendent Degree Level in 'Indian Institute of Information Technology, Design and Manufacturing Kancheepuram' on Nov 04 -20, 2019
61. Made question papers for the 'Practical Knowledge Test' for the recruitment of various non-teaching posts: (i) Junior Technician in Diploma Level, (ii) Junior Technical Superintendent Degree Level in 'Indian Institute of Information Technology, Design and Manufacturing Kancheepuram' on Nov 04 -20, 2019

62. I reviewed an International Conference paper on 28 September 2021. Conference Name: 26th National and 4th International ISHMT-ASTFE Heat and Mass Transfer Conference) Paper ID: IHMTC2021_675 Venue of the conference: IIT Madras, Chennai-600036, Tamil Nadu, India Conference Date: Dec 17–20, 2021 Manuscript Title: Performance Enhancement Investigations in a Solar Parabolic Trough Collector using Vortex Generators.
63. I reviewed an International Conference paper on 28 September 2021. Conference Name: 26th National and 4th International ISHMT-ASTFE Heat and Mass Transfer Conference) Paper ID: IHMTC2021_667 Venue of the conference: IIT Madras, Chennai-600036, Tamil Nadu, India Conference Date: Dec 17–20, 2021 Manuscript Title: Numerical investigation of turbulent heat transfer enhancement in partially corrugated tube using water based nanofluid.

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