

DEPARTMENT OF MECHANICAL & INDUSTRIAL ENGINEERING

Annual Report 2016-2017

Academic Staff: **43** Students Admitted: UG **140 (ME-100, PI-40)**; PG **71**; Ph.D. **46**
Publications in: Journals **75**, Conferences **32**, Book/Books Chapters **05**
Projects: Research (Rs. in Lacs) **785.928**, Consultancy (Rs. in Lacs) **81.896**

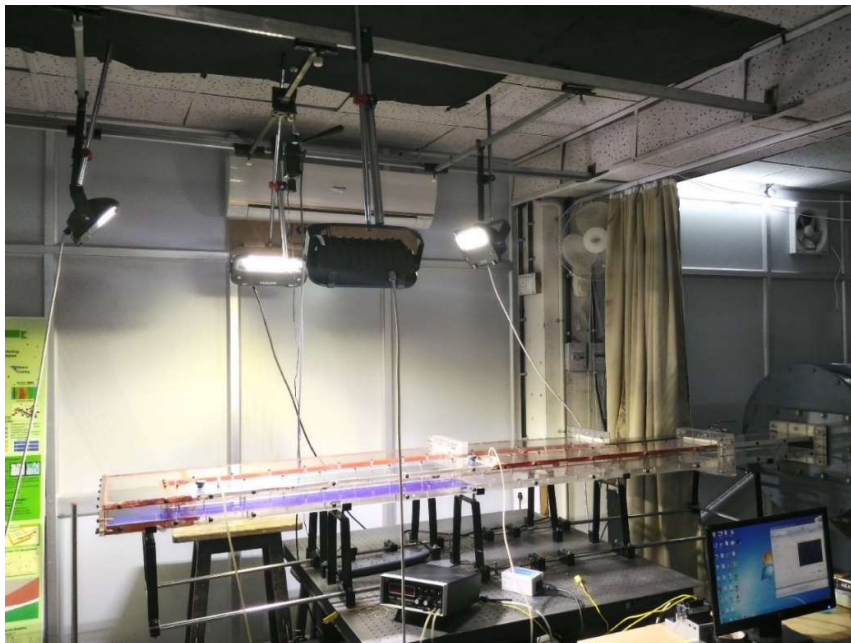
1. SALIENT FEATURES

The Mechanical Engineering department came into existence in the year 1946 and the first batch of fifteen students received their Bachelor's degree in 1949. The department started its second undergraduate program of Production & Industrial Engineering in 1973. In the year 1982, the welding research lab was established under Indo-German collaboration program. Further, in the year 1990-1991 the department was recognized as the Center of Advanced Studies (CAS) by the U.G.C in two areas namely Computer Aided Engineering and Industrial Noise Pollution and its control. Presently, the Department of Mechanical and Industrial engineering offers two undergraduate and five post graduate courses.

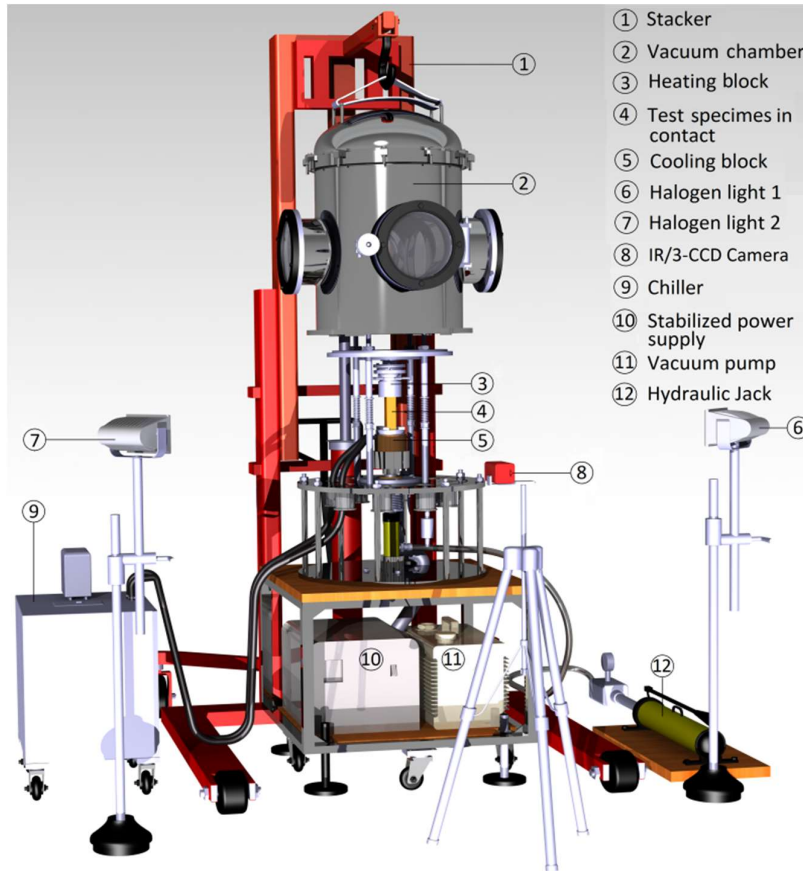
The expertise by the faculty members of the department developed through research is being effectively utilized by providing solution to industrial problems in the form of design, analysis, testing and training through numerous industrial consultancies project from reputed private and government organizations. The department conducts National and International conferences to provide an insight of latest research trends in the field of Mechanical and Industrial engineering. The undergraduate students of the department are actively involved in student initiative activities like development of all-terrain vehicle, formula racing cars, wheel chair for disabled and elderly, robots etc. These developed products are showcased at various national and international forums.

2. DEVELOPMENT OF NEW COURSES/ LABORATORIES/ EQUIPMENT

A unique facility for gas turbine blade cooling has been developed at MIED in collaboration with the GTRE, DRDO, India. Present research facility is based upon the liquid crystal thermography, which is successful in mapping the heat transfer distribution efficiently of the test surfaces.



A unique experimental facility to estimate the TCC at cryo temperature has been set at MIED, IITR



PI- Dr Andallib Tariq

3. LIST OF FACULTY MEMBERS

i. Professors

Kumar, Dinesh, PhD (Roorkee) **Head of the Department**

Supply chain management, Industrial Engineering, Maintenance Engineering, Process Planning & Optimization, Modeling and Simulation

Arora, Navneet, PhD (Kurukshetra)

Welding Engineering, Reliability Engineering

Dwivedi, D.K., PhD (Jaipur)

Welding metallurgy, Surface modification, Fracture & fatigue properties, Weld-bonding & Friction stir welding, Structure-property-relationship

Gandhi, B.K., PhD (IIT Delhi)

Slurry erosion and cavitation wear. Flow measurement, Hydraulic Turbines & Pumps, Performance Testing of SHP stations

Gupta, Akhilesh, PhD (Roorkee)

Thermal Engineering, Heat Transfer, Solar Energy, Refrigeration & Air Conditioning

Jain, P.K., PhD (Roorkee) **(on EOL)**

CAD/CAM/CIM/DFM, Operations Management

Kumar, Pradeep, PhD (Roorkee)

Advanced Manufacturing Processes, Metal Casting, Logistics and Supply Chain Management, Quality and Reliability Engineering,

Kumar, Ravi, PhD (Roorkee)

Refrigeration & Air-Conditioning, Two-Phase Flow & Heat Transfer, Instrumentation & Measurement

Mishra, B.K., PhD (IT, BHU)

Composite materials, Fracture mechanics, Wave propagation

Sahoo, P. K., PhD (IIT Kharagpur)
Refrigeration & Air-conditioning, Thermodynamics, Building Energy Simulation,
Liquid Desiccant Air Conditioning
Sharma, Satish C., PhD (Roorkee)
Machine Design, Tribology, Instrumentation & Measurement, Vibration and Controls.

ii. **Associate Professors**

Dutta, Sushanta, PhD (IIT Kanpur)
Active and Passive control of flow field, Optical measurement techniques, Turbulence
measurements and wake dynamics

Dvivedi, Akshay, PhD (IIT Roorkee)
Metal Matrix Composites, Quality Function Deployment, Advanced Manufacturing
Processes

Harsha, S.P., PhD (BITS Pilani)
Nonlinear Dynamics & Chaos, Unmanned Surface/Air Vehicles, Rotor Vibrations &
Control

Jha, P.K., PhD (IIT Kharagpur)
Modeling of steelmaking processes, Continuous casting, Process modeling, Foundry
Engineering

Karunakar, D.B., PhD (IIT Kharagpur)
Manufacturing Science, Metal Casting, FEM in Manufacturing, CAD/CAM

Kumar, Anil, PhD (Roorkee)
Thermal Engineering, Heat Transfer, Refrigeration & Air-Conditioning

Mahapatra, M. M., PhD (IIT Kharagpur)
Welding distortion & residual stress control, Modeling, Line heating, laser
cladding and joining, Improved Al alloys

Mishra, Manish, PhD (IIT Kharagpur)
Thermal and Fluids Engineering, Heat exchangers, Renewable Energy, Soft computing
tool applied to Thermal Engineering

Murugesan, K., (IIT Madras)
Finite element modeling of systems with heat and mass transfer, Hydrogen energy,
PEM Fuel cell

Pal, Kaushik, PhD (IIT Kharagpur)
Advanced Composites, Non-conventional machining, Welding of Polymers, Fracture
and fatigue mechanism, Nanofillers, Coating, Wear and Abrasion, Bio polymers.

Pathak, P. M., PhD (IIT Kharagpur)
Robotics, Dynamics, Control, Bond Graph Modeling

Saran, V.H., PhD (Roorkee)
Machine design, Low frequency vibration comfort

Saxena, Dhish K., PhD (IIT Kanpur)
Engineering Design, Evolutionary Multi-objective Optimization, Multi-Criteria
Decision Making, Machine Learning, C.A.D.

Sharma, A.K., PhD (IIT Madras)
Advance Manufacturing, Microwave Material Processing, Surface Engineering

Singh, Inderdeep, (IIT Delhi)
Machining of Composites, Experimental and Simulation, Machining of Composites,
Experimental and Modeling

Singh, Indra Vir, PhD (BITS Pilani)
FEM, X-FEM, Meshfree Methods, Fracture, Composites, FGM, Nano and Bio-
Materials, Multiscale Simulations

Singh, K.M., PhD (IIT Kanpur)
DNS/LES of turbulent flows, Parallel algorithms, Modeling, simulation and CAD of
energy systems

Subudhi, Sudhakar, PhD (IISc Bangalore)

Heat transfer, Ventilation, Energy systems, Natural convection, Natural Ventilation, Non-conventional energy systems

Tariq, Andallib, PhD (IIT Kanpur)

Heat Transfer, Thermal Contact Conductance, Flow Control, Turbulence, Proper Orthogonal Decomposition (POD), Micro-fluidics, Optical Techniques.

Upadhyay, Sanjay, PhD (Roorkee)

Non-linear Dynamics, Vibration, Smart material and structures

iii. **Assistant Professors**

Bansal, Ankit, PhD (The Pennsylvania State Univesity)

Radiative heat transfer, Hypersonic Flow, Flow radiation interaction, spectral modeling of gases.

Das, Arup Kumar, PhD (IIT Kharagpur)

Two phase flow, Microfluidics, Boiling and condensation, Augmentation of boiling heat transfer coefficient.

Ganapule, Shailesh, PhD (University of Nebraska-Lincoln, USA) Biomechanics, brain injury, optic nerve injury, Computational modeling, Quantitative imaging

Joglekar, M.M., PhD (IIT Bombay)

Mechanics of MicroElectroMechanical Systems (MEMS), Capacity fade modeling of lithium-ion batteries, Mathematical modeling and simulation

Kumar, Anil, PhD (University of Trento, ITALY)

Machine Design, Vibration, System Identification, Vibration Mitigation, Piping Systems

Mishra, Kirti Bhushan, PhD (University of Duisburg-Essen, Germany)

Combustion and Fuels, Fire and Explosion Safety, Disaster/Incident modelling and prevention, CFD

Mulik, R.S., PhD (IIT Delhi)

Non-conventional machining, abrasive based finishing processes, micro-machining, Rapid Prototyping

Pal, Siladitya, PhD (Michigan)

Finite Element Modeling, Multi-scale/ Multi-physics Modeling, Fracture Mechanics, Mechanics of Energy Storage and Soft Materials, Biomechanics.

Parashar, Avinash, PhD (University of Alberta)

Material Science, Nanotechnology, Composites, Nanocomposites, Atomistic Modeling, Finite element modeling, Molecular dynamics

Swain, Abinash, PhD (IISc Bagalore)

Product Design and Development, CAD/CAM, Computer Aided Prototyping, Virtual Product Development, Virtual reality, Product Lifecycle Management (PLM)

Emeritus/ Visiting Professor/ Fellow

4. HONOURS AND AWARDS TO FACULTY MEMBERS

[A]	<u>Most Citations per Paper:</u> First Rank among the Indian researchers with 9.40 Citations per paper. (SOURCE: “Glimpses of Research Productivity of Indian Universities and Research Institutions” – A Report based on ‘Indian Citation Index 2016’, Published by Confederation of Indian Industries (CII).
[B]	<u>Top 100 Authors of IITs:</u>

	65th Rank in the Top 100 Authors of IITs based on Number of Articles. (SOURCE: “Glimpses of Research Productivity of Indian Universities and Research Institutions” – A Report based on ‘Indian Citation Index 2016’, Published by Confederation of Indian Industries (CII).
[C]	<p>Indian Patents: The following TWO Indian Patents have been filed:</p> <ol style="list-style-type: none"> 1. Apurbba Kumar Sharma, Radha Raman Mishra, Mohit Choudhury and Saurabh Puri, A Device for in-situ microwave casting of metals and alloys. (Application No.: 201611037834, November 05, 2016). 2. Akshay Dvivedi, Manjot Singh Cheema and Apurbba Kumar Sharma, A Flexible Device for Multiple Ultrasonic Machining Operations. (Application No.: 201611041640, December 06, 2016).

5. PARTICIPATION OF FACULTY IN CONFERENCES/ SEMINAR/ SYMPOSIA/ WORKSHOP/ GUEST LECTURES.

Name of Faculty	Details of Conf./Semi./Symp./ Workshop /Guest Lecture	Venue	Date
Dr. Sudhakar subudhi	Icmf2016	Firenze, Italy	May 22-27, 2016
Pradeep kumar	Tms 2017: annual convention	San diego	Feb 26 - march 2, 2017
Dr. Arup kumar das	Guest lecture in ap hrdi	Bapatla, guntur, ap	22 nd march, 2017
Dr. Sushanta dutta	Presented paper in thirteenth international conference on fluid dynamics, icfd-2016	Tohoku university, sendai, japan	10-12 th oct, 2016
Dr. Apurbba kumar sharma	Expert lectures on ‘specialized training programme’ for the employees and researchers of bharat forge limited	Kalyani centre for technology & innovation Bharat forge limited Keshavnagar, pune – 411 036, maharashtra	May 13, 2017
Dr. Apurbba kumar sharma	Expert lecture in the teqip program	Bipin tripathi kumaon institute of technology, dwarahaat, uttarakhand, india	December 30, 2016
Dr. Apurbba kumar sharma	Expert lecture in the teqip program	Nit, kurukshetra	October 18, 2016

6. PARTICIPATION OF FACULTY IN SHORT TERM COURSES

Name of Faculty	Name of Course	Venue	Date
-----------------	----------------	-------	------

Pradeep kumar	Make in india: dreams to reality	Iit roorkee	Jan 3 - jan 14, 2017
Dr. Apurbba kumar sharma	Training programme module for technical committee members (pgd08, bis)	National institute of training for standardization (nits) Bureau of indian standards, institutional area, Sector - 62, noida 201 307	October 04 – 05, 2016.

7. DISTINGUISHED VISITORS TO THE DEPARTMENT (NATIONAL/INTERNATIONAL)

Name	Designation and Affiliation	Purpose	Dates

7(a). INTERNSHIPS BY IIT – ROORKEE STUDENTS

Sl. No.	Name of student	Name of the Internship Programme	Under Graduate	Post Graduate	Name of Institute	Period

7(b). INTERNSHIPS TO OTHER STUDENTS IN IIT – ROORKEE

Sl. No.	Name of student	Name of Supervisor	Under Graduate	Post Graduate	Name of Institute	Period
1	Sahil Arora	Dr. Sudhakar Subudhi	√		Shri Mata Vaishno Devi University, J&K, India	24-05-2017 to 10-07-2017
1	Priya Pal	Manish Mishra	Yes		MNNIT Allahabd	May 15-Jul 15, 2017

8. ACADEMIC ACTIVITIES ORGANIZED BY THE DEPARTMENT

Name of the conf./seminar/symp./workshop	Name of the Chairman Coordinator	Sponsored by	Dates
Vibration mitigation techniques: theory & application	Dr anil kumar	Qip	27 june 2016-01 july 2016
Advances in fluid flow control and measurement techniques	Dr. Sushanta Dutta Dr. B K Gandhi	QIP, MHRD	5-9 th December, 2016

9. SPONSORED RESEARCH PROJECTS:

i. COMPLETED SPONSORED RESEARCH PROJECTS

Principal Investigators	Title of the Projects	Sponsoring Agency	Outlay Amt. (Rs. in Lacs)
Dr. Sudhakar subudhi	Flow visualization and temperature measurements for turbulent natural convection over a heated bottom surface of an enclosure	Nit calicut	5
Dr. Sudhakar subudhi	Natural convection in nanofluids	Iit roorkee	10
Pradeep kumar	Parametric studies during machining of glass and mmc (al-7075) using electrochemical discharge machining(ecdm)	Csir, new delhi	6.5 lacs
Dr. Arup kumar das	A comprehensive study of drop dynamics and its manipulation due to electrowetting	Department of science and technology	16 lakhs
Dr.a.parashar	Tailoring of polymer properties using nanofillers	Iit roorkee	10
Ravi kumar	Assessment of radiation heat transfer for 19 pin phwr fuel bundle under heat-up condition	Brns	54.96
Dr Andallib Tariq	Detailed Heat Transfer Investigation Inside Rectangular Duct With Matrix Cooling Using Liquid Crystal Thermography	GTRE, DRDO	88.7 lac

ii. CONTINUING SPONSORED RESEARCH PROJECTS

Principal Investigators	Title of the Projects	Sponsoring Agency	Outlay Amt. (Rs. in Lacs)
Dr. Sudhakar subudhi	Experimental investigation of convective heat transfer characteristics and pressure drop in forced convection using nanofluids	Dst	23
Dr. Arup kumar das	Development of unified model for micro and macroscopic two phase interfaces by coupling eulerian and lagrangian interfaces	Department of atomic energy	23 lakhs
Dr. Arup kumar das	Enhancement of inside tube flow boiling heat transfer of eco-friendly refrigerants	Department of science and technology	44 lakhs
Dr.a.parashar	A molecular dynamics based atomistic simulation to study the effect of nanofillers on the mechanical and thermal properties of polymer based nanocomposites.	Nanomission (dst)	24.09
Dr.a.parashar	Molecular dynamics based simulations to invetigate the effect of radiation on the mechanical and fracture properties of single phase zirconium (zr) and zr-1% nb alloy	Brns (dae)	22.792
Manish mishra (pi), p.k. jha	Investigations of the effect of temperature and flow nonuniformities on the performance of three-fluid compact heat exchanger	Serb, dst	22.42
Ravi kumar	Sustainable technologies for distributed level application and energy support to rural development, department of science & technology	Total	66.90 + euro 29,625

K B Mishra	Computational modeling of industrial fire and explosion hazards	IIT Roorkee	10
------------	---	-------------	----

iii. **NEW SPONSORED RESEARCH PROJECTS**

Principal Investigators	Title of the Projects	Sponsoring Agency	Outlay Amt. (Rs. in Lacs)
Manish Mishra (PI), P.K. Sahoo	Investigation on Hydrogen Generation from a PHWR Disassembled Channel	BRNS, DAE	48.187
Manish Mishra (PI)	Optimization of Three-Fluid Heat Exchanger Performance – A Numerical & Experimental Investigation	CSIR	21.96
Ravi Kumar	Experimental Investigation of 700 MWe Specific Full Length Channel Deformation (Sagging) Behaviour under Heat-up Condition	BRNS	68.48
Akhilesh Gupta	Experiments in Design Fire Environment Facility Relevant to NPPS	BARC	199.95
Ravi Kumar	Channel heat-up Study under Slumped Fuel Condition for PHWR	BARC	69.02
K B Mishra	Thermal radiation hazards from biofuels pool fires	SERB-DST	40
Dr Andallib Tariq	High temperature Thermal contact conductance (TCC) measurement for PT-CT contact	BARC	154

10. SERVICE TO INDUSTRIES:

i. **COMPLETED CONSULTANCY PROJECTS**

Principal Investigators	Title of the Projects	Sponsoring Agency	Outlay Amt. (Rs. in Lacs)
Manish Mishra (PI), I.D. Singh	Vetting of <u>Central Air-Conditioning Design</u> For PROVN of OTM ACCN for Headquarter SWC (Phase-I) at Jaipur	Design Action Group, New Delhi	0.54
Ravi Kumar	Experimental Investigation of the Rewetting of Fuel Rod Cluster	BARC	18.0

ii. **CONTINUING CONSULTANCY PROJECTS**

Principal Investigators	Title of the Projects	Sponsoring Agency	Outlay Amt. (Rs. in Lacs)

iii. **NEW CONSULTANCY PROJECTS**

Principal Investigators	Title of the Projects	Sponsoring Agency	Outlay Amt. (Rs. in Lacs)

b. NEW TESTING SERVICES

No.	Name of the Industry/ Organization	Total Outlay Amt. (Rs. in Lacs)

11. SUMMARY OF MAJOR SPONSORED RESEARCH SCHEMES AND CONSULTANCY PROJECTS (Rs. 10 lacs) (A brief Write-up upto 100 words) (New Projects during the year 2015-16).

1. Experimental Investigation of 700 MWe Specific Full Length Channel Deformation (Sagging) Behaviour under Heat-up Condition: PI Ravi Kumar

In a 700 kWe Pressurized Heavy Water Reactor (PHWR), Loss of Coolant Accident (LOCA) with the simultaneous failure of Emergency Core Cooling System (ECCS) would eventually lead to core voiding. This scenario may lead to Pressure Tube (PT) deformation at high temperature and contact with the Calandria Tube (CT). The core heat would then dissipate to the moderator on PT-CT contact area. It is important to estimate thermo-mechanical deformation pattern for pressure tube as well as heat transfer aspect during PT-CT contact and the boiling of coolant over calandria tube. This information shall be helpful to predict the heat transfer from fuel bundle to moderator under this situation.

An experimental programme has been planned to access the channel heat-up specific to 700 MWe Indian PHWR. The experimental set-up shall consist of simulation of a single reactor channel (6.3 m length) of a typical 700 MWe Indian PHWR, submerged in water. The decay heat will be simulated by resistance heating of pressure tube using 490 kW (70VDC/7000A) Rectifier.

2. Experiments in Design Fire Environment Facility Relevant to NPPS, PI: Akhilesh Gupta

The objective of the project is to understand and develop design fire environment in an enclosure in terms of heat flux (over and above temperature) relevant to NPPs. Different combustibles with varying distribution in horizontal and vertical configuration will be studied. The key component of these experiments will be an enhanced understanding of the fire-induced design fire environment for a foreseeable fire scenario in order to develop a mathematical/experimental basis of fire impact near flame and far flame region so as to evolve a Design basis fire (DBF). Few experiments will also be carried out for spill plume behavior which affect secondary fire generation in fire influence based approach used in NPPs. A set of experiments will be carried out to cater to demand to localized heat flux based Fire hazard analysis (FHA) approach developed at BARC which is being used for mandatory FHA for BARC reprocessing facilities, New Research Facilities, Research reactors, PFBR, 700 IPHWR etc.

3. Channel heat-up Study under Slumped Fuel Condition for PHWR: PI Ravi Kumar

The objective of the project is to establish a test facility to carry out an experimental investigations for the channel heat-up under slumped fuel condition of 37 fuel element specific to 700 MWe PHWR. The heat transfer, hydrogen generation, contact conductance and oxidation pattern shall be determined for the complex configuration under low steam flow conditions. The data generated during the investigation shall be used to validate the severe accident analysis BARC's computer code PRABHAVINI, adapted international code ASTEC and NPCIL's licensing code ATMIKA/CONTACT. The experimental set-up consists of simulation of a part of single reactor channel (1m length) of a typical 700 MWe Indian PHWR, submerged in water. The decay heat will be simulated by resistance heating of the 37 pin fuel bundle simulator with zircalo-4 clad. Experiments will be performed under both oxidizing and

non-oxidizing condition. The effect of sagging on the temperatures of fuel bundle will also be studied changing the position of PT with respect to CT.

3. High temperature Thermal contact conductance (TCC) measurement for PT-CT contact: PI Dr Andallib Tariq

The objective of the project is to carryout experimental investigations, and creates a reliable and accurate experimental database for TCC between the interface of Pressure Tube (PT) and Calandria Tube (CT). These zirconium alloys, routinely used in Pressurised Heavy Water Reactor (PHWR) for manufacturing coolant channels. These tubes may come into contact during a severe accident scenario due to thermo mechanical deformation of PT (sagging or ballooning) and establish a firm contact with CT. An evaluation of TCC helps to determine the heat flow from fuel to PT and further from PT to CT. A realistic fuel temperature evaluation helps to determine the hydrogen generation and fission gas release. A correlation will be developed from the generated data base. The correlation will be used in safety analysis codes for safety evaluation. BARC’s integrated severe accident code PRABHAVINI, international code ASTEC adapted for PHWRs and NPCIL’s licensing code will get benefitted from this assessment.

4. Detailed Heat Transfer Invest. Inside Rectangular Duet with Matrix Cooling using Liquid Crystal Thermography: PI- Dr Andallib Tariq

In the present research plan, a systematic study has been performed to assess the potential benefit of matrix cooling with varying range of geometrical parameters. In this regard, a novel optical based temperature-mapping technique entitled, the “liquid crystal thermography (LCT)” over the uniquely designed matrix surfaces inside a rectangular duct. Subsequently, it is planned to trace The footprints of surface heat transfer enhancement by evaluating the convective heat transfer coefficients over the heated surfaces covered with the layers of matrix geometries, has been obtained while solving the conduction scheme based on the temperature patterns. Finally, the effect of different matrix configurations and its performance has been evaluated based on the associated pressure penalty data, and the heat transfer measurements. One of the aim of the present research investigation is to systematically study the thermal performance variation of matrix cooling channel under different structural parameters; and for this here a quadratic response surface model is applied in order to find the optimal parameters combination. The experimental results which are used to find the optimal condition of matrix cooling channel in terms of rib angel (α), number of sub channels (N) and Reynolds number (Re), which will certainly enhance the scope and utility of this project. Eventually, the optimum value of geometrical parameter is found for the range of flow conditions under considerations, and suitable correlations are developed for estimating the Nusselt number, friction factor for the matrix channels as well as against the smooth duct.

12. SCIENTIFIC AND TECHNICAL REPORTS

Title of the Projects	Participants	Authors	Remarks

13. RESEARCH PUBLICATION

Journals Papers

1. Kumar P., Kumar A., Erlicher S. (2017), A nonlinear oscillator model to generate lateral walking force on a rigid flat surface, *Int. Journal of Structural Stability and Dynamics*, DOI: 10.1142/S0219455418500207.
2. Sharma S.K., Kumar A. (2017), Ride comfort of a higher speed rail vehicle using a magnetorheological suspension system, *Proc IMechE Part K: J Multi-body Dynamics*, 0(0) 1–17.
3. Sharma S.K., Kumar A. (2017), Ride performance of a high speed rail vehicle using controlled semi active suspension system, *Smart Materials and Structures*, 26 (2017) 055026.
4. Sharma S.K., Kumar A. (2016), Impact of electric locomotive traction of the passenger vehicle ride quality in longitudinal train dynamics in the context of Indian railways, *Mechanics & Industry*, Vol. 18 (02).

5. Kumar A., Erlicher S., Argoul P. (2016), "Phase difference in lateral synchronization of pedestrian floors using a modified hybrid Van der pol/ Rayleigh oscillator", *Int. Journal of Structural Stability and Dynamics*, Vol. 16 (08).
6. L Gangadhara Kiran Kumar, Shailesh Ranjan Kumar & Sudhakar Subudhi, "Experimental study of the turbulent free convection over horizontal smooth or grooved surfaces in an open cavity". *Heat and Mass Transfer*, Vol.52, page.245-253,2016.
7. Deepak Khurana, Rajesh Choudhury & Sudhakar Subudhi, "A critical review of forced convection heat transfer and pressure drop of Al₂O₃, TiO₂ and CuO Nanofluids". *Heat and Mass Transfer*, vol. 53, page:343-361, 2017.
8. Rajesh Choudhury, Deepak Khurana, Aditya Kumar & Sudhakar Subudhi, "Stability analysis of Al₂O₃/Water nanofluids". *Journal of Experimental Nanoscience*. DOI: 10.1080/17458080.2017.1285445., 2017.
9. Rajesh Choudhury & Sudhakar Subudhi, "Aspect ratio dependence of turbulent natural convection in Al₂O₃/water nanofluids". *Applied Thermal Engineering*, vol. 108, page:1095-1104, 2016.
10. Deepak Khurana, Rajesh Choudhury & Sudhakar Subudhi, "Investigation of Thermal Conductivity and Viscosity of Al₂O₃/Water Nanofluids using Full Factorial Design and Utility Concept". *Nano*, Vol. 11, No. 8, 1650093 (10 pages), 2016.
11. Devang Marvania & Sudhakar Subudhi, "Compressed Air Powered Engine". *Renewable and Sustainable Energy Reviews*, vol. 70, page: 1119-1130, 2017.
12. L Gangadhara Kiran Kumar, P Muthukumar & Sudhakar Subudhi, "Thermal comfort analysis of hostels in National Institute of Technology Calicut, India". *Sadhana (Springer)*, Vol.42, page.63-73, 2017.
13. Aditya Kumar, Vivekanand & Sudhakar Subudhi, "Cooling and Dehumidification using Vortex tube". *Applied Thermal Engineering*, Vol.122, page.181-193, 2017.
14. Ambrish Maurya and Pradeep Kumar Jha, "Numerical investigation of M-EMS for fluid flow and solidification". *COMPEL: The International Journal for Computation and Mathematics in Electrical and Electronic Engineering*, (Accepted-2017) (Emerald).
15. Ambrish Maurya and Pradeep Kumar Jha, "Influence of electromagnetic stirrer position on fluid flow and solidification in continuous casting mold". *Applied Mathematical Modelling*, 2017 (In-press), (Elsevier). DOI: 10.1016/j.apm.2017.02.029
16. Ambrish Maurya and Pradeep Kumar Jha, "Study of fluid flow and solidification in billet caster continuous casting mold with electromagnetic stirring". *Archives of Metallurgy and Materials* (Accepted-2016), (De-Gruyter).
17. Chandan Pandey, Anoj Giri, Manas Mohan Mahapatra, Pradeep Kumar, (2017), "Characterization of Microstructure of HAZs in As-Welded and Service Condition of P91 Pipe Weldments", *Metals and Materials International*, Vol. 23, no. 1, pp. 148-162.
18. Chandan Pandey, Manas Mohan Mahapatra, Pradeep Kumar, Nitin Saini, (2017), "Effect of Normalization and Tempering on Microstructure and Mechanical Properties of V-Groove and Narrow-groove P91 Pipe Weldments", *Material Science and Engineering A*, Vol. 685, pp. 39-49.
19. Chandan Pandey, Nitin Saini, Manas Mohan Mahapatra, Pradeep Kumar, (2017), "Study of the fracture surface morphology of impact and tensile tested cast and forged (C&F) Grade 91 steel at room temperature for different heat treatment regimes", *Engineering Failure Analysis*, Vol. 71, pp. 131-147.
20. Chandan Pandey, Manas Mohan Mahapatra, Pradeep Kumar, Nitin Saini, (2017), "Diffusible hydrogen level in deposited metal and their effect on tensile properties and flexural strength of P91 Steel", *Journal of Engineering Materials and Technology*, Vol. 139 , pp. 1-11.

21. Chandan Pandey, Manas Mohan Mahapatra, Pradeep Kumar, Nitin Saini, (2017), "Effect of creep phenomena on room-temperature tensile properties of cast & forged P91 steel", *Engineering Failure Analysis*, Vol. 79, pp. 385-396.
22. Sachin Kumar Mangla, Kumar, Pradeep, Mukesh Kumar Barua, (2016), "A fuzzy DEMATEL Based Approach for Evaluation of Risks in Green Supply Chain, *International Journal of Logistics Systems Management*, Vol. 24, no. 2, pp. 224-243.
23. Sachin Mangla, Kumar, Pradeep Barua, M. K (2016), "An integrated methodology of FTA and fuzzy AHP for risk assessment in green supply chain". *International Journal of Operational Research*, Vol. 25, No.1, pp. 77-99.
24. Sumeet Gandhi, Mangla SK, Kumar Pradeep, Kumar D.(2016), A Combined Approach Using AHP and DEMATEL for Evaluating Success Factors in Implementation of Green Supply Chain Management in Indian Manufacturing Industries, *International Journal of Logistics Research and Applications*, Vol 19, No. 6, pp 537-561
25. Mohit Tyagi, Kumar, Pradeep, Dinesh Kumar, (2016) "Permutation of fuzzy AHP and AHP methods to prioritizing the alternatives of SCP system", *International Journal of Industrial Engineering: Theory, Applications and Practice*, VOL 22(6), ISSN 1943-670X
26. G Mandaloi, S Singh, Kumar, Pradeep, K Pal, (2016), Effect on crystalline structure of AISI M2 steel using tungsten–thorium electrode through MRR, EWR, and surface finish, *Measurement* 90, 74-84.
27. Chandan Pandey, Nitin Saini, Manas Mohan Mahapatra, Pradeep Kumar, (2016), "Hydrogen induced cold cracking of creep resistant ferritic P91 steel for different diffusible hydrogen levels in deposited metal", *International Journal of Hydrogen Energy*, Vol. 41, no. 39, pp. 17695-17712.
28. S. Datta, A. K. Das, P. K. Das, "Wetting behaviour of a translating sessile nanodrop under electrostatic actuation", *RSC Advances* Vol 6, 2016, pp. 9796-9802.
29. Y. Sharma, P. Kumar, B. K. Rana, A. K. Das, "Rotary Entrainment in stratified gas-liquid layers: an experimental study", *Proceedings of the Indian National Science Academy*, Vol 82, 2016 pp. 1-9.
30. S. Datta, M. Sharma, A. K. Das, "Unravelling Electrostatic Actuation on inclined and humped surfaces: Effect of Substrate Contact Angle", *Industrial Engineering and Chemistry Research*, Vol 55, 2016 pp. 3949-3959.
31. P. Kumar, A. K. Das, S. Mitra, "Physical understanding of gas-liquid annular flow and its transition to dispersed droplets", *Physics of Fluids* Vol 28, 2016, pp. 072101.
32. C. Singh, A. K. Das, P. K., Das, "Single-mode instability of a ferrofluid-mercury interface under a nonuniform magnetic field", *Physical Review E*, Vol 94, 2016, pp. 012803.
33. C. Singh, A. K. Das, P. K., Das, "Flow restrictive and shear reducing effect of magnetization relaxation in ferrofluid cavity flow", *Physics of Fluids*, Vol 28, 2016, pp. 087103.
34. B. K. Rana, A. K. Das, P. K. Das, "Asymmetric bursting of Taylor bubbles in inclined tube", *Physics of Fluids*, Vol 28, 2016, pp. 082106.
35. M. Ahmadlouydarab, C. Lan, A. K. Das, Y. Ma, "Coalescence of sessile microdroplets subject to a wettability gradient on a solid surface" *Physical Review E*, In Press.
36. B. K. Rana, A. K. Das, P. K. Das, "Numerical Study of Air Entrainment and Liquid Film Wrapping around a Rotating Cylinder" *Industrial and Engineering Chemistry Research*, Vol 55, 2016, pp. 11950-11960.
37. Ansari Mohd. Miqdad, S. Datta, A. K. Das, P. K. Das, "Effect of Electrostatic Incitation on Wetting Mode of a Nano-Drop over Pillar-Arrayed Surface" *RSC Advances*, Vol 6, 2016, pp. 110127-110133.
38. A. Kushwaha, A. K. Das, "On Formation and Instabilities of a Liquid Bell", *Multiphase Science and Technology*, Vol. 18, 2016, pp. 35-52.

39. A. Deep, C. S. Meena, A. K. Das, "Interaction of Asymmetric Films around Boiling Cylinder Array: Homogeneous Interface to Chaotic Phenomenon" *Journal of Heat Transfer*, Vol 139, 2017, pp. 041502-1-11.
40. B. K. Rana, A. K. Das, P. K. Das, "Towards the understanding of bubble-bubble interaction upon formation at submerged orifices: a numerical approach", *Chemical Engineering Science*, Vol 161, 2017, pp. 316-328.
41. P. Kumar, A. K. Das, S. Mitra, "Bending and Growth of Entrained Air Filament under Converging and Asymmetric Rotational Fields", *Physics of Fluids*, Vol. 29, 2017, pp. 022101-1-13.
42. B. K. Rana, A. K. Das, P. K. Das, "Study of interaction pattern between bubbles at three inline orifices in a submerged pool", *Chemical Engineering Science*, Vol. 168, 2017, pp. 41-54.
43. C. S. Meena, A. Deep, A. K. Das "Understanding of interactions of bubbles generated at neighboring nucleation sites", *Heat Transfer Engineering*, (In Press).
44. B. K. Rana, A. K. Das, P. K. Das, " Collapse of a Taylor bubble at free surface", *Multiphase Science and Technology* (In Press).
45. Rajesh Kumar, Avinash Parashar, (2017) Fracture toughness enhancement of h-BN monolayers via hydrogen-passivation of crack surface. *Nanotechnology*, 28, 165702
46. Rajasekaran G., Avinash Parashar, (2017) Enhancement of Fracture Toughness of Graphene via Crack Bridging with Stone-Thrower-Wales Defects. *Diamond and related materials*. 74, 90-99
47. Avinash Parashar, Divya Singh, (2017) Molecular dynamics based study of an irradiated single crystal of niobium. *Computational materials science*. 131, 48-54
48. Rajasekaran G., Avinash Parashar, (2016) Anisotropic compressive response of Stone-Thrower-Wales defects in graphene: A molecular dynamics study. *Materials research express*, 9, 095015
49. Rajesh Kumar, Pierre Pertiny, Avinash Parashar, (2016) Effects of Different Hydrogenation Regimes on Mechanical Properties of h-BN: A Reactive Force Field Study: A Reactive Force Field Study. *The Journal of physical chemistry C*. 120, 21932–21938
50. Muse Degefe, Avinash Parashar, (2016) Effect of non-bonded interactions on failure morphology of defective graphene. *Materials research express*, 4, 045009
51. Rajasekaran G., Avinash Parashar, (2016) Molecular Dynamics Study on Mechanical Response and Failure Behaviour of Graphene: Performance Enhancement via 5-7-7-5 Defects. *RSC Advances*, 6, 26361-26373
52. Rajasekaran G., Avinash Parashar, (2016) Molecular dynamics based simulations to study the effect of modified cut-off function for Tersoff potential on estimating mechanical properties of graphene. *Material research express*, 3, 035011.
53. Rajesh Kumar, Rajasekaran G, Avinash Parashar, (2016), Optimised cut-off function for Tersoff like potentials for BN nanosheet: A molecular dynamics study. *Nanotechnology*, 27, 085706
54. Rajesh Kumar, Avinash Parashar, (2016), Atomistic modelling of mechanical and thermal properties of BN nanofillers: a review. *Nanoscale*, 8, 22-49.
55. Rajasekaran G., Avinash Parashar (2016) Effect of point and line defects on the properties of graphene. *Critical reviews in solid state and materials sciences*. 41, 46-70.
56. D.B.Jani, Manish Mishra, P.K.Sahoo, Performance Prediction of Rotary Solid Desiccant Dehumidifier in Hybrid Air-Conditioning System Using Artificial Neural Network Applied Thermal Engineering, Vol. 98, 2016, pp. 1091-1103.
57. D.B.Jani, Manish Mishra, P.K.Sahoo, Performance Analysis of Hybrid Solid Desiccant Vapour Compression Air- Conditioning System in Hot and Humid Weather of India, *Building Services Engineering Research and Technology* (SAGE), 37(5), pp-523-538, 2016. (DOI: 10.1177/0143624416633605)
58. D.B.Jani, Manish Mishra, P.K.Sahoo, Solid Desiccant Air Conditioning - A State of the Art Review *Renewable & Sustainable Energy Reviews*, vol. 60, 2016, pp. 1451–1469.

59. D.B.Jani, Manish Mishra, P.K.Sahoo, Performance Prediction of Solid Desiccant – Vapor Compression Hybrid Air-Conditioning System Using Artificial Neural Network Energy, vol.113, 2016, pp. 618-629.
60. Sanjay Kumar Singh, Manish Mishra, P. K. Jha, Performance of Co-Current and Counter-Current Parallel Flow Three-Fluid Heat Exchanger Due to Perturbations in Flow, International Journal of Global Energy Issues (Inderscience), vol. 39 (¾), 2016, pp. 144-156.
61. D.B.Jani, Manish Mishra, P.K.Sahoo, Experimental investigation on solid desiccant - vapor compression hybrid air- conditioning system in hot and humid weather, Applied Thermal Engineering, vol. 104, 2016, pp. 556-564.
62. D.B.Jani, Manish Mishra, P.K.Sahoo, Exergy Analysis of Solid Desiccant- Vapor Compression Hybrid Air Conditioning System International Journal of Exergy (Inderscience), vol. 20 (4), 2016, pp. 517-535.
63. Chitranjan, Ravi Kumar, Akhilesh Gupta, Barun Chatterjee, Rewetting of Hot Vertical Rod during Jet Impingement Surface Cooling, Heat and Mass Transfer, Vol. 52, pp. 1203–1217, 2016.
64. Chitranjan, Ravi Kumar, Akhilesh Gupta, Barun Chatterjee, Rewetting of Vertical Hot Surface with Round Water Jet Impingement Cooling, Heat and Mass Transfer, Vol 18 (13), 2017.
65. A. Chaudhary, Akhilesh Gupta, Kumar, S., Ravi Kumar, Thermal environment induced by jatropa oil pool fire in a compartment, Journal of Thermal Analysis and Calorimetry, DOI: 10.1007/s10973-016-5722-1, July 2016.
66. Mithlesh Kumar, D. Mukhopadhyay, A. K. Sen, Ravi Kumar, Radial Jet Induced Rewetting Study for Heated Rod, Experimental Thermal and Fluid Science, Vol. 79, 283–293, 2016.
67. A.K. Khatua, Parmanand Kumar, H.N. Singh, Ravi Kumar, Measurement of enhanced heat transfer coefficient with perforated twisted tape inserts during condensation of R-245fa, Heat and Mass Transfer, Vol (52), pp. 683-692, 2016.
68. Chitranjan, Ravi Kumar, Akhilesh Gupta, Barun Chatterjee, Determination of Rewetting Velocity during Jet Impingement Cooling of Hot Vertical Rod, J. Thermal Analysis and Calorimetry, Vol. 123 (1), pp. 861–871, 2016.
69. Dheerendra Gamit, Radha Raman Mishra and Apurbba Kumar Sharma, “Joining of mild steel pipes using microwave hybrid heating at 2.45 GHz and joint characterisation”, *Journal of Manufacturing Processes*, 27, June (2017), pp. 158-168. (<https://doi.org/10.1016/j.jmapro.2017.04.028>).
70. Sunny Zafar and Apurbba Kumar Sharma, “Microstructure and mechanical properties of microwave post processed Ni coating”. *Journal of Materials Engineering and Performance*, (2017), (DOI:10.1007/s11665-017-2540-y).
71. Goud, M. and Apurbba Kumar Sharma, “On performance studies during micromachining of quartz glass using electrochemical discharge machining”, *Journal of Mechanical Science and Technology*, 31 (3) (2017), pp.1365-1372, (DOI 10.1007/s12206-017-0236-8).
72. Amit Bansal, Apurbba Kumar Sharma, Pradeep Kumar, “Galvanic corrosion behaviour of microwave welded and post-weld heat treated Inconel-718 joints”, *Journal of Materials Engineering and Performance*, April (2017), (DOI: 10.1007/s11665-017-2665-z)
73. Radha Raman Mishra and Apurbba Kumar Sharma, “Structure-property correlation in Al-Zn-Mg alloy cast developed through in-situ microwave casting”, *Materials Science and Engineering A*, (DOI: <http://dx.doi.org/10.1016/j.msea.2017.02.021>), (2017).
74. Radha Raman Mishra and Apurbba Kumar Sharma, “On melting characteristics of bulk Al-7039 alloy during in-situ microwave casting”, *Applied Thermal Engineering*, 111, (2017), pp. 670–685. (DOI: dx.doi.org/10.1016/j.applthermaleng.2016.09.122).
75. Radha Raman Mishra and Apurbba Kumar Sharma, “On mechanism of in-situ microwave casting of aluminium alloy 7039 and cast microstructure”, *Materials and Design*, Vol. 112, (2016), pp. 97–106. (DOI:10.1016/j.matdes. 2016.09.041).

76. K. B. Mishra, Multiple BLEVE's and fireballs of gas bottles: Case of a Russian road carrier accident, *Journal of Loss Prevention in process Industries*, 41 (2016), 60-67.
77. Surya Kumar, Andallib Tariq, Steady state experimental investigation of thermal contact conductance between curvilinear contacts using Liquid Crystal Thermography, *Int. J. Therm. Sci.* 118 (2017) 53–68. doi:10.1016/j.ijthermalsci.2017.04.014.
78. Surya Kumar, Andallib Tariq, Determination of thermal contact conductance of flat and curvilinear contacts by transient approach, *Exp. Therm. and Fluid Sci.* (Accepted)
- 79.

Conferences / Symposia / Seminar / Workshop

1. Sharma S.K., **Kumar A.** , The Impact of Rigid-Flexible System on the Ride Quality of Passenger Bogies using a Flexible Carbody, *The Third International Conference on Railway Technology: Research, Development and Maintenance (RW 2016)*, April 05-08,2016, Cagliari- Sardinia, Italy
2. Rajesh Choudhary, Sudhakar Subudhi, ‘Study of Natural Convection in an Enclosure with Water and α -Al₂O₃/Water Nanofluid for different Aspect Ratios using Statistical Analysis’, ICMF2016, May 22-27, 2016, Firenze, Italy.
3. Deepak Khurana, Sudhakar Subudhi, "Stability of Al₂O₃/water Nanofluids: An Experimental Design Approach", Proceedings of the FMFP-2016 Conference, 2016.
4. Deepak Khurana, Nikhilkumar Kheni, Sudhakar Subudhi, "Experimental Investigation of the Effect of Varying Temperature on the Thermal Conductivity of Low Particle Concentration Al₂O₃/water Nanofluids", Proceedings of the FMFP-2016 Conference, 2016.
5. Deepak Khurana, Nikhilkumar Kheni, Sudhakar Subudhi, "Effect of Temperature on Forced Convection Heat Transfer of Al₂O₃/water Nanofluids", Proceedings of the FMFP-2016 Conference, 2016
6. Deepak Khurana, Sudhakar Subudhi, Long term forced convection heat transfer analysis of nanofluids, IHMTC-2017 Conference, Hyderabad. (accepted).
7. Deepak Khurana, Sudhakar Subudhi, Investigation of heat transfer enhancement/deterioration with nanofluids, IHMTC-2017 Conference, Hyderabad. (accepted).
8. Pradeep Kumar Jha and Ambrish Maurya, “Study of mold level fluctuation with electromagnetic stirring in continuous casting mold”. *International Conference on “Processing and Fabrication of Advanced Materials XXV”*, Department of Mechanical Engineering, Faculty of Engineering, The University of Auckland, Auckland, New Zealand, 2017, pp. 217-226.
9. Hamender Kumar Aggarwal, Rahul Chhibber, **Navneet Arora** and Rajeev Mehta, ‘Experimental analysis of thermal fatigue in bimetallic welds’, **Materials Science Forum** Vol. 880, pp. 124-127, 2017.
10. Yogesh Kumar Singla, D.K. Dwivedi, **Navneet Arora**, ‘Modeling the impact-sliding wear characteristics of rare earth additive iron-based hardfacing alloys’, Proceedings of the **Institution of Mechanical Engineers**, Part J: Journal of Engineering Tribology, Vol. 0, No. 0, pp. 1-14. March, 2017.
11. Deepak Bhandari, Rahul Chhibber, **Navneet Arora**, Rajeev Mehta, ‘Investigations on design and formulation of buttering layer electrode coatings for bimetallic welds’, **Materials Science Forum**, Vol. 880, pp. 37-40, 2017.

12. Lalit Thakur, **Navneet Arora**, 'A study of processing and slurry erosion behaviour of multi-walled carbon nanotubes modified HVOF sprayed nano-WC-10Co-4Cr coating', **Surface and Coatings Technology**, Vol. 309, pp. 860-871, January 2017.
13. Hamender Kumar Aggarwal, Rahul Chhibber, **Navneet Arora** and Rajeev Mehta, 'Analysis of mechanical behaviour of heat affected zone on ferritic side of bimetallic welds under thermal fatigue conditions', **Materials Science Forum**, Vol. 880, pp. 41-44, 2017.
14. Deepak Bhandari, Rahul Chhibber, **Navneet Arora**, Rajeev Mehta, 'Investigations on weld metal chemistry and mechanical behaviour of bimetallic welds using CaO-CaF₂-SiO₂-Ni based electrode coatings', Proceedings of the **Institution of Mechanical Engineers**, Part L: Journal of Materials: Design and Applications, pp. 1-17, Dec 2016.
15. Yogesh Kumar Singla, **Navneet Arora** and D.K. Dwivedi, 'Dry sliding adhesive wear characteristics of Fe-based hardfacing alloys with different CeO₂ additives – A statistical analysis' **Tribology International**, Vol. 105, pp. 229-240, October 2016.
16. Yogesh Kumar Singla, Rahul Chhibber, **Navneet Arora**, Karanpreet Singh, Kishore Khanna, 'On the wear behavior of Fe-xCr-4Mn-3C hardfacing alloys', **Transactions of Indian Institute of Metals**, pp. 1-7, September 2016.
17. Deepak Bhandari, Rahul Chhibber, **Navneet Arora**, Rajeev Mehta, 'Investigation of TiO₂-SiO₂-CaO-CaF₂ based electrode coatings on weld metal chemistry and mechanical behaviour of bimetallic welds', **Journal of Manufacturing Processes**, Vol. 23, pp. 61-74, August 2016.
18. Rajesh Choudhary, Sudhakar Subudhi, 'Study of Natural Convection in an Enclosure with Water and α -Al₂O₃/Water Nanofluid for different Aspect Ratios using Statistical Analysis', ICMF2016, May 22-27, 2016, Firenze, Italy.
19. Deepak Khurana, Sudhakar Subudhi, "Stability of Al₂O₃/water Nanofluids: An Experimental Design Approach", Proceedings of the FMFP-2016 Conference, 2016.
20. Deepak Khurana, Nikhilkumar Kheni, Sudhakar Subudhi, "Experimental Investigation of the Effect of Varying Temperature on the Thermal Conductivity of Low Particle Concentration Al₂O₃/water Nanofluids", Proceedings of the FMFP-2016 Conference, 2016.
21. Deepak Khurana, Nikhilkumar Kheni, Sudhakar Subudhi, "Effect of Temperature on Forced Convection Heat Transfer of Al₂O₃/water Nanofluids", Proceedings of the FMFP-2016 Conference, 2016
22. Deepak Khurana, Sudhakar Subudhi, Long term forced convection heat transfer analysis of nanofluids, IHMTC-2017 Conference, Hyderabad. (accepted).
23. Deepak Khurana, Sudhakar Subudhi, Investigation of heat transfer enhancement/deterioration with nanofluids, IHMTC-2017 Conference, Hyderabad. (accepted).
24. Pradeep Kumar Jha and Ambrish Maurya, "Study of mold level fluctuation with electromagnetic stirring in continuous casting mold". *International Conference on "Processing and Fabrication of Advanced Materials XXV"*, Department of Mechanical Engineering, Faculty of Engineering, The University of Auckland, Auckland, New Zealand, 2017, pp. 217-226.
25. Hamender Kumar Aggarwal, Rahul Chhibber, **Navneet Arora** and Rajeev Mehta, 'Experimental analysis of thermal fatigue in bimetallic welds', **Materials Science Forum** Vol. 880, pp. 124-127, 2017.
26. Yogesh Kumar Singla, D.K. Dwivedi, **Navneet Arora**, 'Modeling the impact-sliding wear characteristics of rare earth additive iron-based hardfacing alloys', Proceedings of

- the **Institution of Mechanical Engineers**, Part J: Journal of Engineering Tribology, Vol. 0, No. 0, pp. 1-14. March, 2017.
27. Deepak Bhandari, Rahul Chhibber, **Navneet Arora**, Rajeev Mehta, 'Investigations on design and formulation of buttering layer electrode coatings for bimetallic welds', **Materials Science Forum**, Vol. 880, pp. 37-40, 2017.
 28. Lalit Thakur, **Navneet Arora**, 'A study of processing and slurry erosion behaviour of multi-walled carbon nanotubes modified HVOF sprayed nano-WC-10Co-4Cr coating', **Surface and Coatings Technology**, Vol. 309, pp. 860-871, January 2017.
 29. Hamender Kumar Aggarwal, Rahul Chhibber, **Navneet Arora** and Rajeev Mehta, 'Analysis of mechanical behaviour of heat affected zone on ferritic side of bimetallic welds under thermal fatigue conditions', **Materials Science Forum**, Vol. 880, pp. 41-44, 2017.
 30. Deepak Bhandari, Rahul Chhibber, **Navneet Arora**, Rajeev Mehta, 'Investigations on weld metal chemistry and mechanical behaviour of bimetallic welds using CaO-CaF₂-SiO₂-Ni based electrode coatings', Proceedings of the **Institution of Mechanical Engineers**, Part L: Journal of Materials: Design and Applications, pp. 1-17, Dec 2016.
 31. Yogesh Kumar Singla, **Navneet Arora** and D.K. Dwivedi, 'Dry sliding adhesive wear characteristics of Fe-based hardfacing alloys with different CeO₂ additives – A statistical analysis' **Tribology International**, Vol. 105, pp. 229-240, October 2016.
 32. Yogesh Kumar Singla, Rahul Chhibber, **Navneet Arora**, Karanpreet Singh, Kishore Khanna, 'On the wear behavior of Fe-xCr-4Mn-3C hardfacing alloys', **Transactions of Indian Institute of Metals**, pp. 1-7, September 2016.
 33. Deepak Bhandari, Rahul Chhibber, **Navneet Arora**, Rajeev Mehta, 'Investigation of TiO₂-SiO₂-CaO-CaF₂ based electrode coatings on weld metal chemistry and mechanical behaviour of bimetallic welds', **Journal of Manufacturing Processes**, Vol. 23, pp. 61-74, August 2016.
 34. Yadav V K, Kumar, P and Dwivedi A, "Investigations on rotary tool near-dry electric discharge machining," The Minerals, Metals & Materials Society (TMS 2017), San Diego, California, Feb 26- Mar 2, 2017.
 35. Kumar S., Dwivedi A. and Kumar P. , "On tool wear in rotary tool micro-ultrasonic machining," The Minerals, Metals & Materials Society (TMS 2017), San Diego, California, Feb 26- Mar 2, 2017.
 36. Mangla S K., Luthra, S, Tyagi, M. **Kumar, Pradeep**, Barua MK. (2016). A mixed methodology to evaluate the competitiveness through green initiatives in supply chain: a case example in Indian scenario. E-Business and Supply Chain Competitiveness (EBSCC 2016), IIT Kharagpur, 12-14 February, 2016
 37. B. K. Rana, **A. K. Das**, P. K. Das, "Liquid-liquid entrainment and film wrapping around a rotating cylinder in stratified layer", ICMF 2016, Firenze, Italy, May 22-27, 2016.
 38. S. Datta, **A. K. Das**, P. K. Das, "Electrostatic control of impact dynamics of a droplet on solid surfaces: superhydrophobic behavior" ICMF 2016, Firenze, Italy, May 22-27, 2016.
 39. C. Singh, **A. K. Das**, P. K. Das, "Levitation of water droplet inside ferrofluid: computational simulation and experimental demonstration", ICMF 2016, Firenze, Italy, May 22-27, 2016.

40. V. Sanjay, **A. K. Das**, "On the gas-liquid entrainment by impingement of liquid jet onto a pool", ICMF 2016, Firenze, Italy, May 22-27, 2016.
41. M. Kumar, **A. K. Das**, P. K. Das, "Effect of oscillatory flow field on boiling in small diameter tube at atmospheric pressure", ICMF 2016, Firenze, Italy, May 22-27, 2016.
42. P. Kumar, S. Mitra, **A. K. Das**, "Towards the understanding of transformation of annular to droplet annular gas-liquid flow," 14th International Conference on Nanochannels, microchannels and Minichannels 2016, Washington, USA, July 10-14, 2016.
43. P. Agarwal, **A. K. Das**, "Simulation of static Leidenfrost droplet", 6th International and 43rd National conference of Fluid Mechanics and Fluid Power 2016, Allahabad, December 15-17, 2016
44. S. Dutta, V. Sanjay, P. Kumar, **A. K. Das**, "Investigation of jet atomization: a multiscale approach", 6th International and 43rd National conference of Fluid Mechanics and Fluid Power 2016, Allahabad, December 15-17, 2016
45. S. Mukherjee, S. Dutta, **A. K. Das**, "Development of molecular microscope for boiling heat transfer: A numerical study", 6th International and 43rd National conference of Fluid Mechanics and Fluid Power 2016, Allahabad, December 15-17, 2016
46. A. Agarwal, **A. K. Das**, "Study of liquid sheet formation by oblique impingement of liquid jets", 6th International and 43rd National conference of Fluid Mechanics and Fluid Power 2016, Allahabad, December 15-17, 2016
47. P. Kumar, **A. K. Das**, S. Mitra, "Rotary entrainment of stratified layers: cylinder-cylinder interactions", 6th International and 43rd National conference of Fluid Mechanics and Fluid Power 2016, Allahabad, December 15-17, 2016
48. B. K. Rana, **A. K. Das**, P. K. Das, "A numerical study of entrainment and film flow around horizontal rollers in stratified liquid-liquid interface", 6th International and 43rd National conference of Fluid Mechanics and Fluid Power 2016, Allahabad, December 15-17, 2016
49. C. S. Meena, M. A. Khan, **A. K. Das**, "Experimental investigation of boiling heat transfer on inclined wires", 6th International and 43rd National conference of Fluid Mechanics and Fluid Power 2016, Allahabad, December 15-17, 2016
50. N. Arora, **A. K. Das**, "Numerical study of jet dynamics under transverse electric field", 6th International and 43rd National conference of Fluid Mechanics and Fluid Power 2016, Allahabad, December 15-17, 2016
51. T. Sudhakar, **A. K. Das**, "3D lattice Boltzmann model for two immiscible liquids in T channel", 6th International and 43rd National conference of Fluid Mechanics and Fluid Power 2016, Allahabad, December 15-17, 2016
52. P. Seerha, P. Kumar, **A. K. Das**, "Climbing droplet on stairs using patterned wettability gradient", 6th International and 43rd National conference of Fluid Mechanics and Fluid Power 2016, Allahabad, December 15-17, 2016
53. S. Dutta, **A. K. Das**, P. K. Das, "A low cost means of wettability manipulation by electrostatic influence", CHEMCON 2016, Chennai, December 27-30, 2016
54. D. Singh, **A. K. Das**, "Numerical simulation of hydraulic jump using vertical jet impingement over horizontal surface", CHEMCON 2016, Chennai, December 27-30, 2016
55. P. Kumar, **A. K. Das**, S. Mitra, "Understanding of asymmetric cusped interfaces using differential rotational field", CHEMCON 2016, Chennai, December 27-30, 2016
56. M. Prajapati, P. Kumar, **A. K. Das**, "Entrainment of stratified liquid liquid layers using external rotational field: an experimental study", CHEMCON 2016, Chennai, December 27-30, 2016
57. P. Kumar, **A. K. Das**, S. Mitra, "Rotary entrainment of stratified layers: cylinder-cylinder interactions", 6th International and 43rd National conference of Fluid Mechanics and Fluid Power 2016, Allahabad, December 15-17, 2016
58. Narendra Sikarwar, Naveen Sharma, Andallib Tariq and Manish Mishra, **Experimental Study of Heat Transfer Enhancement in Rectangular Channel with Different Geometries of Rib Turbulators**, 6th International and 43rd National

- Conference on Fluid Mechanics and Fluid Power, MNNIT Allahabad, India; Dec.15-17, **2016**.
59. Naveen Sharma, Andallib Tariq and Manish Mishra, **Detailed Flowfield Investigation in a Rib Turbulated Channel Using PIV Measurements**, 6th International and 43rd National Conference on Fluid Mechanics and Fluid Power, MNNIT Allahabad, India; Dec.15-17, **2016**.
 60. Sreehari, D., and **Apurbba Kumar Sharma** (2017). Simulation studies of different Si-microchannels for heat transfer applications, Proceedings of International Conference on Manufacturing Technology and Simulation, 2017, IIT Madras. (*Accepted*).
 61. Sreehari, D., and **Apurbba Kumar Sharma** (2016). Influence of process parameters on surface roughness in 3D silicon microchannels fabricated by micro-USM, Proceedings of International Conference on Design and Manufacturing, 2016, IITDM, Kancheepuram, pp: 189-192.
 62. Radha Raman Mishra and **Apurbba Kumar Sharma**, Effect of microwave power on properties of in-situ cast of aluminium at 2.45 GHz, Proceedings of the 6th International & 27th All India Manufacturing Technology, Design and Research Conference (AIMTDR-2016), December 2016, Pune, p.991.
 63. Nitin Kumar Lautre, **Apurbba Kumar Sharma**, Pradeep Kumar and Shantanu Das , Comparison of Microwave Assisted and Conventional Method for Drilling of Perspex, Proceedings of the 6th International & 27th All India Manufacturing Technology, Design and Research Conference (AIMTDR-2016), December 2016, Pune, Page 257.
 64. Mudimallana Goud and **Apurbba Kumar Sharma**, Analysis of Material Removal and Radial Overcut during Micro-drilling of Soda Lime Glass using Electrochemical Discharge Machining (ECDM), Proceedings of the 6th International & 27th All India Manufacturing Technology, Design and Research Conference (AIMTDR-2016), December 2016, Pune, Page 213.
 65. P. Blankenhagel, K. B. Mishra, K.-D. Wehrstedt, J. Steinbach, Fireballs as a possible hazard scenario of organic peroxides in steel drums, 5th Magdeburg Fire and Explosion Days, 23-24 March 2017, Magdeburg, Germany.
 66. K. B. Mishra, K.-D. Wehrstedt, H. Krebs, Prediction of overpressure in underground gas pipeline explosions, 5th Magdeburg Fire and Explosion Days, 23-24 March 2017, Magdeburg, Germany.
 67. A. Sharma, K.B. Mishra, P. Blankenhagel, LES of Large Ethanol Pool Fires, European Combustion Meeting 2017, PSS-05-06, 1-6 18-21 April, 2017, Dubrovnik, Croatia.
 68. P. Blankenhagel, K.B. Mishra, K.-D. Wehrstedt, J. Steinbach, Prediction of Organic Peroxide Fireball Characteristics Using CFD Simulation, European Combustion Meeting 2017, 18-21 April, 2017, PSS-05-07, 1-6, Dubrovnik, Croatia
 69. A. Sharma, K.B. Mishra, High Rise Building Fires: Effective Smoke Extraction & Optimum Fan location, 12th IAFSS Symposium, 12-16 June 2017, Lund, Sweden.
 70. A. Dasgotra, GVV Varun Teja, K. B. Mishra, 3D physics-based modelling of large-scale flammable cloud dispersion using FLACS, International Conference on Safety, January 2017, IIT Gandhinagar, India

Book Chapters

1. Naveen Sharma, Andallib Tariq, Manish Mishra, **Detailed Heat Transfer Investigation inside a Rectangular Duct with an Array of Ventilated Rib Turbulators, Book Chapter (73)** - Fluid Mechanics and Fluid Power – Contemporary Research, Lecture Notes in Mechanical Engineering (Proceedings of the 5th International and 41st National Conference on FMFP 2014), Springer India, **2016**. (DOI: 10.1007/978-81-322-2743-4_73)

2. Contributed a Chapter (Chapter 3.10) Titled “**Electrochemical Discharge Machining**” (pp. 277–290) on Invitation in the McGraw-Hill Education Handbook with following details: Author: **Apurbba Kumar Sharma**, C S Jawalkar, Editor: LaRoux Gillespie *Dr. Eng., FSME, PE, CMfgE, Former President SME*
Publisher: McGraw Hill Education; 1 edition (March 13, 2017) Language: English, ISBN10: 1259587452, ISBN13: 9781259587450, Hardcover: 624 pages

Monograph:

Postulated LOCA analysis in Indian Pressurized Heavy Water Reactors