Department/ ~~Centre~~: MECHANICAL ENGINEERING

Year of Establishment of the Department /~~Centre~~: 1995

Academic Programmes Offered:

Bachelor of Technology (BTech) in
i. Mechanical Engineering
Master of Technology (MTech) in
(1) Machine Design,
(2) Fluid and Thermal Engineering,
(3) Manufacturing Science and Engineering,
(4) Computational Mechanics,
(5) Aerodynamics and Propulsion
Doctor of Philosophy (PhD)

LABORATORY FACILITIES:
No. of Laboratories with brief introduction:

Department Labs: Brief Description of each

- Advanced Manufacturing Laboratory: Equipped with advanced equipments for manufacturing including micro-fabrication facility using CO2 Laser cutting technology.
- Strength of Materials Laboratory: Basically dedicated for doing all kinds of testing including tensile testing, fatigue testing, compressive testing, torsion testing, hardness testing, impact testing etc.
- Materials Science Laboratory: Dedicated for carrying out metallographic studies using highly precise microscope, XRD etc.
- Fluid Mechanics Laboratory: This lab has basic fluid mechanics set-up. The lab is equipped with different flow measuring set-ups such as venturimeter, orifice-plate, pitot tube, rotometer etc., where students can visualize the basic theory of working of the flow meter.
- Thermal Science Laboratory: This lab consists of heat exchangers, equipments for conducting experiments on conduction, convection and radiation, refrigeration systems etc. All these equipments facilitate learning of basic Thermodynamics and Thermal Engineering at undergraduate level.
- Turbo-machinery Laboratory: This lab has different tabletop model of pumps and turbines where students can study the performance characteristics of those machines. Students can strengthen their basic understandings of working and applications of these machines.
- IC Engine Laboratory: This lab is for both undergraduates and graduate students. Some of the experiments which are performed by under-graduate students are performance studies of both C.I. and S.I. engines, etc. Moreover studies on the calorific values, exhaust gas characteristics, extensive studies of bio-diesel with both engines are done by post-graduate students in their respective project works.
- Vibrations and Acoustics Laboratory: This lab demonstrates basic vibrational instruments to students at undergraduate level. Also provides facilities for measurement of frequency signals, rpm etc, and facilities for data-acquisition which are very much beneficial for research activities in the domain of vibrational analysis.
- Instrumentation and Control Laboratory: This lab performs calibration of pressure transducer/ gauge and other mechatronics apparatus, provides strain-gauge measurement facilities etc.
- Theory of Machines Laboratory: This lab consists of all basic equipments for understanding mechanisms, apparatus etc. at undergraduate level such as gyroscope, governor, jib-crane, screw jack, worm-wheel apparatus etc.
- Tribology Laboratory: Provides facilities for carrying out wear test of specimens of diff erent materials under the condition of with lubrication/without lubrication.
- CAD/CAM Laboratory: Specialized in extending computer-assisted software tools needed for design and analysis such as ABAQUS, ANSYS, Master CAM, Pro/E, ADAMS etc.

- 3D Printer Laboratory: Provides facilities for 3D printing.

Department Research Labs: 19 Research Labs

- Dynamics and Vibration Lab
- AnuPravaha CFD Lab
- Biomedical Devices and Biomaterials laboratory
- Biomimetics and Artificial Intelligence Laboratory
- CFD Lab
- Composite Structures and Fracture Mechanics Lab: Caters to the development of composite laminates and enables NDT through ultrasonic scanning of the composite structures.
- Computational Mechanics and Optimization Lab
- Electromechanics and Microsystems Lab
- Gas Dynamics Lab
- Materials and Design in Mechanical Systems & Science and Technology in Traditional Systems
- Mechatronics and Robotics Laboratory: The Mechatronics and Robotics lab is equipped with various facilities to educate the students at the undergraduate and postgraduate levels. Most of the robotics activities are facilitated to students by this lab.
- Micro-machining Lab
- Microfluidics and Microscale Transport Processes Laboratory
- Miniature Thermal Systems Research Laboratory
- Precision Manufacturing Lab
- Smart Materials and Structures Lab
- Thermal Hydraulics and Gasification Lab
- Welding Lab
- Wind Tunnel Laboratory: Provides facilities for carrying out wind tunnel related experiments.

MAJOR AREAS OF RESEARCH AND DEVELOPMENT:

Groupwise Research Areas are

Fluids and Thermal Engineering

- Computational Methods for Incompressible Flows
- DNS and LES of Turbulence
- Energy management and conservation
- High speed aerodynamics
- Interfacial heat and mass transport
- Metal hydride based thermal machines
- Micro and nano-scale thermal/fluid transport
- Micro-fuel cells
- Thermal aspects of biological systems
- Thermal radiation

Machine Design Engineering

- Acoustics
- Active Materials
- Composites
- Dynamics and Vibrations
- Finite Element Method and Analysis
- Fracture Mechanics and Design
- Mechatronics
- Robotics and Control
- Micromechanics
- Nanocomposites
- Rolling Element Bearings Design and Analysis
- Smart Structures
- Tribology

Manufacturing Engineering

- Bio-MEMS
- Casting
- CAD/CAM/CIM
- Coating
- Composites
- Computer Application in Metal Forming
- Design and Manufacturing
- Electromagnetic pulse processing
- FEM, Neural Network
- Fuzzy Set Application
- Genetic Algorithms and Fuzzy logic in manufacturing
- Mechatronics
- Metal Forming
- Unconventional machining processes
- Welding of light weight metals
- Welding Process Monitoring and Control

A list of research projects for which grants have been obtained by ME faculty is as below.

Sr. No.	Principal Investigator	Name of Project	Sponsoring Agency	Amount Sanctioned (Rs)	Start-Date	End-Date
1.	P.K.Mondal	Development of Underwater Organism-supported Breathing System: A Plant-based approch	TIH, IIT Guwahati and DST	26.66 Lacs	28-08-2023	
2.	P. K. Mondal	Development and leveraging small-scale fluidic Platform towards understanding the plant root system: A Convergence of Engineering and Biology	SERB (DST), Govt. of India	75 lacs	20-06-2023	
3.	Tapan K Mankodi	Nozzle Jet Plume Simulations and Interactions with Double Cone Configurations at Rarefied Altitutdes	DRDL ANSP	8.85 lacs	18-12-2023	18-5-2024
4.	R K Mittal	A Chatter Prediction Approach in the Milling Process using Machine Learning Algorithms	IIT Guwahati	11 Lacs	29-01-2024	
5.	Sajan Kapil	Computer-Aided Design and Analysis of Floating Solar Panels	Quant Solar Pvt. Ltd.	1.5 Lakhs	01-05-2024	01-12-2024
6.	Sajan Kapil	Design for Additive Manufacturing	TCS iON	3.675	April 2023	
7.	Sajan Kapil	CAD for 3D Design	TCS iON	0.7	April 2023	
8.	Sajan Kapil	PGC in Digital Manufacturing	Coursera	5.0 Lakhs	April 2023	March 2024
9.	Ujendra Kumar Komal	Green Reinforcements: Developing Sustainable Biocomposites for Interior Application	SRG, IIT Guwahati	5.0 Lakhs	Sep 2023	Sep 25
10.	Ujendra Kumar Komal	Development of Innovative FRP Solutions for Underwater Structural Rehabilitation	TIH, IIT Guwahati	16.95 Lakhs (1st Year)	Feb 2024	Feb 26
11.	A. Banerjee	Design and Development of Active Morphing Wing based on Shape Memory Alloy Actuators	SERB (DST), Govt. of India	40.92 Lakhs	March 2021	March 2024
12.	Sachin Singh Gautam	Three-Dimensional Large Deformation Isogeometric Impact and Self-contact Using Varying-Order NURBS Discretization Approach	SERB (DST), Govt. of India	29.76 Lakhs	June 2023	May 2026
13.	Poonam Kumari	Design and Development of batterypack for flood relief electric boat and underwater exploration	Technology Innovation Hub (TIH)	11.0 lakh	###########	###########
14.	Poonam Kumari	Nanofiber Reinforced protective clothing for underwater applications	Technology Innovation Hub (TIH)	16. lakh	###########	###########
15.	Tarkes Dora Pallicity	Mathematical Homogenization and Local Field Statistics in a Thermoelastic Composite	SRG, IIT Guwahati	5 lakh	###########	

		with Unidirectional Fibers				
16.	Tarkes Dora Pallicity	Development of a Digital Polariscope and a Multiscale Software for Hydro-mechanical Analysis of Polymer and its Composites	TIH, IIT Guwahati	25 lakh	###########	
17.	Niranjan Sahoo	Design, fabrication and calibration of a coaxial surface junction thermocouple for transient heat flux measurement in hypersonic shock tube/tunnels	Centre for Advanced System (CAS), DRDO, Hyderabad	9.88 Lakhs	June 2023	June 2024
18.	B. Sandeep Reddy	PGC in Robotics and Mechatronics	Coursera	10 Lakh	April 2023	
19.	B. Sandeep Reddy	PGC in Robotics and Mechatronics	Coursera	10 Lakh	April 2023	
20.	B. Sandeep Reddy	Design and Development of Technologies for Underwater Applications	IITG-TIDF	20 Lakh	July 2023	July 2024
21.	B. Sandeep Reddy	Center for Advanced Training Program	IITG-TIDF	60 Lakh	July 2023	July 2024

A list of research publications in prestigious journals can be found as below

Sl. No.	*Authors*	*Paper Title*	*Journal Name*	*Year*	*Volume*	*Issue Number (If any)*	*Starting Page*	*Ending Page*
1.	Rathor UH, Kulkarni V, and Saha UK	Predicting the optimum performance of a vertical-axis Savonius wind rotor with parametric modelling using artificial neural network and golden section method	ASME Journal of Computing and Information Science in Engineering	2023	23	2	021016(1)	021016(12)
2.	Rathor UH, Kulkarni V, and Saha UK	Evolving a bio-inspired blade shape of the drag-based vertical-axis wind rotor derived from orange sea-pen (Ptilosarcus Gurneyi)	ASME Journal of Solar Energy Engineering	2023	145	3	031007(1)	031007(15)
3.	Das AK, Acharyya K, Mankodi TK, and Saha UK	Fluidic thrust vector control of aerospace vehicles: State-of-the-art review and future prospects	ASME Journal of Fluids Engineering	2023	145	8	080801 (1)	080801(29)
4.	Haque N, Singh A, and Saha UK	A new method to develop homogeneous and heterogeneous porous micromodels applicable to enhanced oil recovery and flow visualization experiments	ASME Journal of Energy Resources Technology	2023	145	10	102601(1)	102601(10)
5.	More SM, Kakati J, and Saha UK	Evaluating the operating parameters of a compression ignition engine fueled with waste cooking oil – diesel	ASME Journal of Engg for Gas Turbines and Power	2023	145	7	701010(1)	701010(16)

		blends using artificial neural network and ensemble methods						
6.	S. K. Mehta, and P. K. Mondal	Electroosmotic mixing of viscoplastic fluids in a microchannel	Physical Review Fluids	2024	9		023301 (1)	023301 (26)
7.	S. K. Mehta, A. Ghosh, P. K. Mondal, and S. Wongwises	Electroosmosis of viscoelastic fluids in pH-sensitive hydrophobic microchannels: Effect of surface charge-dependent slip length	Physics of Fluids	2024	36		023101(1)	023101(13)
8.	P. P. Behera, S. K. Mehta, R. K. Arun, and P. K. Mondal	Solute imbibition in paper strip: Pore-scale insights into the concentration-dependent permeability	Physics of Fluids	2023	35		122007(1)	122007(15)
9.	D. Wankawala, and P. K. Mondal	Experimental investigation of non-Newtonian droplet splitting mechanism in a cross-flow type microfluidic device	Sadhana	2023	48	274	1	7
10.	S. K. Mehta, D. Kumar, P. K. Mondal, and S. Wongwises	Characterization of conjugate forced convection in a wavy solar power plant: The role of porous metallic blocks	Chemical Engineering and Processing-Process Intensification	2023	196		109615 (1)	109615 (10)
11.	S. K. Mehta, and P. K. Mondal	Viscoelectric effect on the chemiosmotic flow in charged soft nanochannels	Physics of Fluids	2023	35		112005(1)	112005(9)
12.	D. Arya, A. Ghosh, R. Kulkarni, and P. K. Mondal	Measurement of fluid viscosity using lensless digital holography	IEEE Transactions on Instrumentation and Measurement	2023	72			
13.	S. K. Mehta, and P. K. Mondal	AC Electrothermal Effect Promotes Enhanced Solute Mixing in a Wavy Microchannel	Langmuir	2023	39		16797	16806
14.	S. Saisorn, P. Benjawun, A. Suriyawong, L. G. Asirvatham, P. K. Mondal, and S. Wongwises	Two-phase flow structures in a helically coiled microchannel: An experimental investigation	Physics of Fluids	2023	35			
15.	P. P. Behera, N. Kumar, M. Kumari , S. Kumar, P. K. Mondal, and R. K. Arun	Integrated microfluidic devices for point-of-care detection of bio-analytes and disease	Sensors & Diagnostics	2023	2		1437	1459
16.	S. K. Mehta, R. Kakati, A.	Reaction characteristics of non-Newtonian species in a	Physics of Fluids	2023	35			

	Rahman, P. K. Mondal, and S.Wongwises	microreactor: The role of electroosmotic vortices						
17.	M. Kumar, N. Kumar N, and P. K. Mondal	Irreversibility analysis of hydromagnetic viscoelastic Ag-Al2O3/water hybrid nanofluid over a stretching sheet	Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering	2023				
18.	D. Pandey, and P. K. Mondal	Dielectric Layer Modulated Nanofluidic Transport: Formation of Parent-Sister Vortices	Physics of Fluids	2023	35		082002(1)	082002(9)
19.	M. Kumar, and P. K. Mondal	Leveraging perturbation method for the analysis of field-driven microflow of Carreau fluid	Microfluidics and Nanofluidics	2023	27	51	1	13
20.	S. K. Mehta, A. R. Raj, P. K. Mondal	Salinity Gradient-Induced Power Generation in Nanochannels: The Role of pH-Sensitive Polyelectrolyte Layers	Langmuir	2023	39		12302	12312
21.	S. K. Mehta, D. Kumar, P. K. Mondal, S. Wongwises	Characterization of thermal-hydraulics in wavy solar power plant: effect of thermal dispersion	Microsystem Technologies	2023			1	13
22.	D. Kumar, S. K. Mehta, P. K. Mondal	Enhanced bio-fluids mixing by the soft polyelectrolyte layer-modulated electroosmotic vortices	Physics of Fluids	2023	35		072019(1)	072019(14)
23.	M. Kumar, and P. K. Mondal	Magneto-convective transport of immiscible binary fluids in inclined channel	J. Fluids Eng.	2023	145		091402(1)	091402(10)
24.	S. Kalia , Y. Rawat, P. K. Mondal, and S. Wongwises	Capillary imbibition of inelastic non-Newtonian fluids in an asymmetric flow assay	European Journal of Mechanics/B Fluids	2023	101		22	29
25.	D. Kumar, H. S. Gaikwad, P. Kaushik, and P. K. Mondal	Swirl driven solute mixing in narrow cylindrical channel	Physics of Fluids	2023	35		063604(1)	063604(13)
26.	M. Kumar, J. Mansukhani, A. Tripathy, and P. K. Mondal	Biomimetic micropump: Leveraging a novel propagative rhythmic membrane function	Physics of Fluids	2023	35		042014(1)	042014(11)
27.	D. Pandey, P. K. Mondal, and S. Wongwises	Dielectric polarization mediated efficient solute mixing: Effect of the geometrical configuration of polarizing blocks	Electrophoresis	2023		DOI: 10.1002/elps.202200223		

28.	G.C. Shit, A. Sengupta, and P. K. Mondal	Stability analysis of electro-osmotic flow in a rotating microchannel', Journal of Fluid Mechanics	Journal of Fluid Mechanics	2024	**983**	A13	A13-1	A13-25
29.	Aparna Zagabathuni, Kishore Kumar Padi,Mohan Kameswaran and S. Kanagaraj	Development of Automated Tool for Electrode Array Insertion and itsStudy on Intracochlear Pressure	The Laryngoscope	2024	134	3	1388	1395
30.	Rituraj Bhattacharjee, Susmita Datta, Ahmed Hammad and Pankaj Biswas	Prediction of various defects and material flow behavior during dissimilar FSW of DH36 shipbuilding steel and marine grade AA5083 using FE-based CEL approach	Modelling and Simulation in Materials Science and Engineering	2023	31	3	035004-01	035004-29
31.	Rituraj Bhattacharjee, Susmita Datta, Pankaj Biswas	Thermomechanical and Material Flow Analysis during Friction Stir Welding of Marine Grade Aluminum Alloy 5083	Journal of ship production and design	2023	39	1	1	24
32.	Pardeep Pankaj, Tanmoy Medhi, Lakshmi Narayan Dhara, Avinish Tiwari, Pankaj Biswas	A route for properties enhancement by utilizing external auxiliary energy systems for FSW of aluminum-steel	CIRP Journal of Manufacturing Science and Technology	2023	46		204	229
33.	Avinish Tiwari, Pardeep Pankaj, Pankaj Biswas, Arvind Kumar	Characterization of ultrafine grain tungsten carbide tool and its wear investigation in friction stir welding of HSLA steel	Tribology International	2023	186			
34.	Bhattacharjee, R., Medhi, T., & Biswas, P	Numerical Modeling for Prediction of Surface Morphology and Volumetric Defect Using Coupled Eulerian–Lagrangian Approach during Friction Stir Welding of Marine Grade Aluminum Alloy	Journal of Materials Engineering and Performance	2023	NA	NA	1	18
35.	Das, A., Medhi, T., Kapil, S., & Biswas, P	Different build strategies and computer-aided process planning for fabricating a functional component through hybrid-friction stir additive manufacturing	International Journal of Computer Integrated Manufacturing	2023	NA	NA	1	22
36.	Das, A., Medhi, T., Kapil, S., & Biswas, P	Multi-track multi-layer friction stir additive manufacturing of AA6061-T6 alloy	International Journal of Computer Integrated Manufacturing	2023	NA	NA	1	21
37.	Warsi, S. B. F.,	Investigating the impact of	Innovative	2024	9	1	1	23

	Srinivas, D., Panda, B., & Biswas, P	coarse aggregate dosage on the mechanical performance of 3D printable concrete	Infrastructure Solutions					
38.	Warsi, S. B. F., Panda, B., & Biswas, P	Exploring fibre addition methods and mechanical properties of fibre-reinforced 3D printed concrete: A review.	Developments in Built Environment	2023	16	NA	100	295
39.	Sanjay Raj, Pankaj Biswas	Experimental investigation of the effect of induction preheating on the microstructure evolution and corrosion behaviour of dissimilar FSW (IN718 and SS316L) joints	Journal of Manufacturing Processes	2023	95	NA	143	159
40.	Deepati Anil Kumar, Pardeep Pankaj, Biswas Pankaj	Friction Stir Welding Tool Life Assessment Through Fatigue Analysis	Journal of Mechanical Engineering	2023	73	2	163	180
41.	Bhabesh Mahanta, Arup Kumar Sarma & Sashindra Kumar Kakoty	Harmonising Stakeholders' Perspectives: a Watershed Project Desirability Index	Water Conservation Science and Engineering	2024	9	10		
42.	Bibhuti Ranjan Bhattacharjya, Saradindu Bhaduri & Sashindra Kumar Kakoty	Co-creating community-led frugal innovation: An adapted Quadruple Helix?	Technovation	2023	124	102752		
43.	Debajit Das & Sashindra Kumar Kakoty	Effect of lubricant inertia on steady-state characteristics of textured hydrodynamic journal bearing	Industrial Lubrication and Tribology	2023	75	3	333	342
44.	Deepak Kumar, Sachin D Kore, Arup Nandy	Electromagnetic Joining of Multimaterial Tubular Components: A Comprehensive Review	International Journal of Precision Engineering and Manufacturing - Green Technology	2024				
45.	Bombarde D. S., Narayan S.L., Gautam S. S., and Nandy A.	A Comprehensive Comparative Review of Various Advanced Finite Elements to Alleviate Shear, Membrane and Volumetric Locking	Archives of Computational Methods in Engineering	2024				
46.	Bombarde D. S., Agrawal M., Gautam S. S., and Nandy A.	Development of quadratic enhanced assumed strain elements for three dimensional linear elasticity	Computers and Structures	2024	291		107217	
47.	Durgarao	Comparative performance of	Journal of	2023	37	1	133	161

	Kamireddy, Saurabh M Chavan, Arup Nandy	novel nodal-to-edge finite elements over conventional nodal element for electromagnetic analysis	Electromagnetic Waves and Applications					
48.	Agnihotry, A., Prasad, N.K., and Dalal, A.	Numerical Study of Bubble Rise in a Three-Dimensional Sinusoidal Channel	Physics of Fluids	2023	35		092109-1	092109-11
49.	Sarma, B., Dalal, A., and Basu, D.N.	Jetting Dynamics of Viscous Droplets on Superhydrophobic Surfaces	Langmuir	2023	39	39	14040	14052
50.	Prasad, N.K., Ghosh, S.S., and Dalal, A.	Understanding Deformation and Breakup Tendency of Shear-Thinning Viscoelastic Drops in Constricted Microchannels	Langmuir	2023	39	34	11975	11991
51.	Deb, R., Sarma, B., and Dalal, A.	Magnetic-Field Mediated Active Propulsion of Ferrofluid Droplets on a Wire	Langmuir	2023	39	23	8244	8254
52.	Kumar, D., and Dalal, A.	A Numerical Study of the Thermal and Hydraulic Parameters of a Finned Tube Heat Exchanger Using Shear-thinning Fluid and Rectangular Winglet	International Journal of Thermal Sciences	2024	195		108653-1	108653-12
53.	Gond, A. K., Dalal, A., and Basu, D. N.	Thermalhydraulic Characterization and Feasibility Assessment of Double-cooled Annular Channel Under Supercritical Heat Transfer	International Journal of Thermal Sciences	2023	193		108508-1	108508-17
54.	Parida, A., Prasad, J. S., Muthukumar, P., and Dalal, A.	A Dynamic Model for Predicting the Absorption and Desorption Behaviors of Metal Hydride Systems and Its Implementation for Screening of Alloys for Metal Hydride Hydrogen Compressor	International Journal of Hydrogen Energy	2023	51		454	472
55.	S Marjit, PJ Das, U Talukdar, Shyamanta M Hazarika	A hybrid sequential forward channel selection method for enhancing EEG-Based emotion recognition	Journal of Experimental & Theoretical Artificial Intelligence	2024	-			
56.	Chayanika D. Nath & Shyamanta M. Hazarika	Exploring diagram-based visual problem representation and relational abstraction	Spatial Cognition & Computation	2024				
57.	A. Dey, H. Basumatary and Shyamanta M. Hazarika	A Decade of Haptic Feedback for Upper Limb Prostheses	IEEE Transactions on Medical Robotics and Bionics	2023	5	4	793	810
58.	Ejtehadi O.,	Gas-particle flows in a	Physics of	2023	35		103324	

	Mankodi T. K., Sohn I., Kim B. J., Myong R. S.	microscale shock tube and collection efficiency in the jet impingement on a permeable surface	Fluids					
59.	Mankodi T. K., Ejtehadi O., Chourushi T., Rahimi A., Myong R. S.	nccrFOAM suite: Nonlinear coupled constitutive relation solver in the OpenFOAM framework for rarefied and microscale gas flows with vibrational non-equilibrium	Computer Physics Communications	2024	296		109024	
60.	Mittal, R. K., Kulkarni, S. S. and Singh, R	A Rotor Dynamics based Higher-Order Stability Model to Investigate the Stability of High-Speed Micromilling	Journal of Vibration Engineering & Technologies	2023				
61.	Atul Singh Rajput, Manas Das, and Sajan Kapil	Investigation of surface Characteristics on Post Processed Additively Manufactured Biomaterial through Magnetorheological Fluid Assisted Finishing process	Wear Journal	2023	522		204684	
62.	Atul Singh Rajput, Sajan Kapil, and Manas Das	Computer-aided process planning system for super finishing of flat surfaces with pockets through magnetorheological finishing process	International Journal of Computer Integrated Manufacturing	2023			1	17
63.	Anand Mohan Pandey, Sajan Kapil, and Manas Das	Experimental investigation of localized electrochemical deposition-based micro-additive manufacturing process.	Materials and Manufacturing Processes	2023			1	13
64.	Atul Singh Rajput, Sajan Kapil, and Manas Das	Surface Enhancement of Additively Manufactured Bone Plate Through Hybrid-Electrochemical Magnetorheological Finishing Process	3D Printing and Additive Manufacturing	2023				
65.	Atul Singh Rajput, Sajan Kapil, and Manas Das	A post processing technique to achieve nanofinishing for functionality enhancement of Ti-6Al-4V femoral head fabricated by Laser Powder Bed Fusion	CIRP Journal of Manufacturing Science and Technology	2023	45		99	112
66.	Atul Singh Rajput, Abhishek Patil, Manas Das, and Sajan Kapil	Post processing of a low cost Aligners fabricated by additive manufacturing process to enhance the surface quality and functionality	Journal of the Mechanical Behavior of Biomedical Materials	2023			106003	
67.	Amritesh Kumar, Ritam Sarma, Swarup	Physics-informed machine learning models for the prediction of transient	Science and Technology of Welding and	2023			1	9

	Bag, V. C. Srivastava, and Sajan Kapil	temperature distribution of ferritic steel in directed energy deposition by cold metal transfer.	Joining					
68.	Brijesh Kumar Singh, Sajan Kapil, and Shrikrishna N. Joshi	Numerical modeling of phase prediction and geometry evolution of micro-drilling using single pulse laser	Materials Today: Proceedings	2023	90	1	262	266
69.	Atul Singh Rajput, Manas Das, and Sajan Kapil	Optimization of surface roughness parameters in Hybrid-Chemo Magnetorheological Finishing (HC-MRF) process using Response Surface Methodology and Genetic Algorithm	Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science	2023				
70.	Ankan Das, Tanmoy Medhi, Sajan Kapil, and Pankaj Biswas	Multi-track multi-layer friction stir additive manufacturing of AA6061-T6 alloy	Progress in Additive Manufacturing	2023			1	21
71.	Anand Mohan Pandey, Sajan Kapil, and Manas Das	Numerical and experimental analysis of the localized electrodeposition (LED) based micro additive manufacturing process	Materials Today: Proceedings	2023				
72.	Ankan Das, Pankaj Biswas, and Sajan Kapil	Influence of Friction Stir Additive Manufacturing Parameters on Dry Friction and Wear Properties of Al–Mg–Si Alloy's Built Surfaces Fabricated by Sheet Lamination	Journal of Tribology	2024	146	5		
73.	Ankan Das, Tanmoy Medhi, Sajan Kapil, and Pankaj Biswas	Different build strategies and computer-aided process planning for fabricating a functional component through hybrid-friction stir additive manufacturing	International Journal of Computer Integrated Manufacturing	2024	37	3	350	371
74.	Atul Rajput, Manas Das, and Sajan Kapil	A Hybrid-Electrochemical Magnetorheological (H-ECMR) Finishing Process for Surface Enhancement of Biomedical Implants	Journal of Manufacturing Science and Engineering	2024			1	41
75.	Atul Singh Rajput, Ambrish Singh, Sajan Kapil, and Manas Das	Nanofinishing of DED topologically optimized fixation plates with H-ECMR finishing	Materials and Manufacturing Processes	2023			1	12
76.	Daya Shankar, Manmohan Pandey, and	Nonlinear analysis of coupled neutronic-thermohydraulic stability characteristics of	Annals of Nuclear Energy	2024	195		110197-1	110197-12

	Dipankar N. Basu	supercritical water-cooled reactor						
77.	P. Paul, K. S. R. K. Murthy and D. Chakraborty	Experimental studies on the extent of 3D and 2D stress–strain states at sharp V-notches	*Theoretical and Applied Fracture Mechanics*	2024	129		104199	
78.	Atchuta Rao C, K. S. R. K. Murthy, D. Chakraborty	Improving resistance to embedded delaminations by adding CNTs to epoxy in carbon/(epoxy+CNT) composites		2024	https://doi.org/10.1177/14644207241230234			
79.	Shiv Sahaya Shukla, K. S. R. K. Murthy	A study on the effect of different Paris constants in mixed mode (I/II) fatigue life prediction in Al 7075-T6 alloy	International Journal of Fatigue	2023	176		107895	
80.	Shiv Sahaya Shukla, K. S. R. K. Murthy and S. Sajith	Numerical and experimental studies of mixed-mode (I/III) fracture using a new specimen setup	International Journal of Mechanical Sciences	2023	243		108036	
81.	Mirzaul Karim Hussain, K. S. R. K. Murthy and D. Chakraborty	Application of quarter point elements in sharp V-notch problems for the computation of mixed mode NSIFs.	Iranian Journal of Science and Technology, Transactions of Mechanical Engineering	2023	48		381	395
82.	Atchuta Rao C, Krishna Murthy K. S. R., Chakraborty D	Role of CNTs on the resistance to delamination growth in three-phase FRP laminates with embedded delamination: Finite element analysis	Journal of The Institution of Engineers (India): Series C	2023	105		115	126
83.	Atchuta Rao C, Krishna Murthy K. S. R., Chakraborty D	Enhancement of resistance to interfacial delamination in carbon/epoxy laminates with part-through-the-width ply break by adding CNTs to adhesive	Journal of Adhesion Science and Technology	2023	37		721	739
84.	Chukka Atchuta Rao, K. S. R. Krishna Murthy, and Debabrata Chakraborty	Influence of CNTs on interface delamination resistance in broken ply carbon/CNT-epoxy composites	Mechanics Based Design of Structures and Machines	2023	51		1189	1200
85.	N.K. Choudhry, B. N. Panda and U.S. Dixit	Energy absorption characteristics of FDM 3D printed Auxetic Re-entrant structures: A review	Journal of Materials Engineering and Performance	2023	32	20	8981	8999
86.	P.K. Singh, S. Kumar, P.K. Jain and U.S. Dixit	Effect of Build Orientation on Metallurgical and Mechanical Properties of Additively Manufactured Ti-6Al-4V Alloy	Journal of Materials Engineering and Performance	2023	in press			

87.	Shubham Maurya, Dhrutiman Dey, Biranchi Panda, U.S. Dixit	Inline reinforcement of steel cable in 3D concrete printing	Materials Today: Proceedings	2023	in press			
88.	N. Mahanta and U.S. Dixit	A study on degradation of N95 respirator after disinfecting it by various techniques	Journal of Institution of Engineers (India): Series C	2023	104	5	887	895
89.	R. Shufen, N.P. Singh and U.S. Dixit	Thermally-assisted rotational autofrettage of long cylinders with free ends	ASME Journal of Pressure Vessel Technology	2023	145	5	51303	
90.	N. Bhardwaj, R.G. Narayanan and U.S. Dixit	Experimental and Numerical Investigation on the Effect of Rotational Speed on Exit-Hole-Free Friction Stir Spot Welding with Consumable Pin	International Journal of Material Forming	2023	16	5		
91.	P.K. Singh, S. Kumar, P.K. Jain and U.S. Dixit	Effect of heat treatment on electrochemical behaviour of additively manufactured Ti-6Al-4V alloy in Ringer's solution	Journal of Materials Engineering and Performance	2023	in press			
92.	Chinmaya Panda, Parth Sharma, Uday S. Dixit, Lalit M. Pandey	Potential and prospective of traditional Indian medicinal plants for the treatment of diabetes	Journal of Biologically Active Products from Nature	2023	13	4	316	360
93.	K. Chatterjee, J. Zhang and U.S. Dixit	Kalman filtering for estimation of closed-die forging load based on shop floor data	Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science	2023	238	7	2782	2800
94.	B. Das, B. Panda, F. Sharma and U.S. Dixit	Recent developments in cladding and coating using cold metal transfer technology	Journal of Materials Engineering and Performance	2023	10.1007/s11665-023-08940-z			
95.	Faruque Aziz, S. M. Kamal and U. S. Dixit	Enhancing Fatigue Life of Thick-walled Cylinders Through a Hybrid Rotational-Swage Autofrettage Induced Residual Stresses	Journal of Materials Engineering and Performance	2024	https://doi.org/10.1007/s11665-023-09090-y			
96.	Nilkamal Mahanta, Laipubam Gayatri Sharma,	Artificial ageing of rice using a sterilization box equipped with infrared heating and ultraviolet-C radiation	Journal of Food Process Engineering	2024	47	2	e14544	

	Lalit M. Pandey and Uday Shanker Dixit							
97.	Animesh Kundu and Atanu Banerjee	Simulation of SMA-based engineering applications considering large displacement and rotation, thermomechanical coupling and partial phase transformation	Thin-Walled Structures	2024	195		111338	
98.	Kiran U., Sharma, D., and Gautam, S. S.	Development of GPU-based matrix-free strategies for large-scale elastoplasticity analysis using conjugate gradient solver	International Journal for Numerical Methods in Engineering	2024	125		e7421	
99.	Kumar, S., Agrawal, V., and Gautam, S. S.	Assessment of various isogeometric contact surface refinement strategies	Journal of the Brazilian Society of Mechanical Sciences and Engineering	2024	46		e175	
100.	Kiran U., Sharma, D., and Gautam, S. S.	An efficient framework for matrix-free SpMV computation on GPU for elastoplastic problems	Mathematics and Computers in Simulation,	2024	216		318	346
101.	Kiran U., Sharma, D., and Gautam, S. S.	A GPU-based framework for finite element analysis of elastoplastic problems	Computing	2024	105		1673	1696
102.	Pandian, A. K., Gautam, S. S., and Senthilvelan S.	Influence of tooth asymmetry and mating gear material on the tooth deflection characteristics of polymer gears	”, IMechE Part L: Journal of Mechanical Engineering Science	2023	237	4	985	1004
103.	Ozarde, A. P., McNay, G. H., and Gautam, S. S.	Fretting fatigue damage and life evaluation of cylinder head gasket using deviatoric strain amplitude-based parameter corrected for surface wear damage	SAE International Journal of Materials and Manufacturing	2023	16	4	413	427
104.	M. J. Baishya, N. Muthu, P. Khanikar	In pursuit of a high-performance mechanical metamaterial: simple-cubic-octahedral plate lattice	International Journal of Mechanical Sciences	2024	272		109189	
105.	B. J. Sahariah, M. Dalakoti, P. Khanikar	A high-performance design of tubular lattice structure having zero Poisson’s ratio	Mechanics of Advanced Materials and Structures	2023			1	21
106.	S. Tamuly, S. Dixit, B. Kombaiah, V. Parameswaran, P. Khanikar	High strain rate deformation behavior of Al0. 65CoCrFe2Ni dual-phase high entropy alloy	Intermetallics	2023	161		107983	

107.	B. J. Sahariah, M. J. Baishya, A. Namdeo, P. Khanikar	A novel strategy to design lattice structures with zero Poisson's ratio	Engineering Structures	2023	288		116214	
108.	Hari Narayan Singh Yadav, and Manas Das	Design and development of medium-pressure plasma process for optical substrate finishing: A comparative study with wet chemical etching	Journal of Manufacturing Processes	2024	109		628	642
109.	Hari Narayan Singh Yadav, and Manas Das	Development and performance evolution of mediumpressure He/SF6/O2-based plasma and wet chemical etching process for surface modification of fused3 silica	Plasma Chemistry and Plasma Processing	2024				
110.	Hari Narayan Singh Yadav, and Manas Das	Advances in finishing of optical complex substrates: A comprehensive review	Optics and Laser Technology	2024				
111.	Hari Narayan Singh Yadav, Manas Das	Experimental investigations through modeling and optimization for fabrication of fused silica in medium-pressure plasma process	Optical Materials	2023	143		114157	
112.	Hari Narayan Singh Yadav, Manas Das	Surface characteristics of fused silica in medium-pressure plasma process	Materials Today Proceedings	2023				
113.	Arnab Sarmah, Raghav Aggarwal, Sarth Sameer Vitekar, Shunsuke Katao, Lipika Boruah, Satoshi Ito, Subramani Kanagaraj	Framework for early detection and classification of balance pathologies using posturography and anthropometric variables	Clinical Biomechanics	2024	113			
114.	Vaibhav Jaiswal, Subramani Kanagaraj	Structural testing of a passive polycentric knee joint with advanced functionalities designed and developed for patient-specific fitting	journal of the Brazilian Society of Mechanical Sciences and Engineering	2024	46	article no -254		
115.	Bora, M., Sharma, A.V., Kumari, P. and Sahoo, N	Investigation of bamboo-based vertical axis wind turbine blade under static loading	Ocean Engineering	2023	285		115317	
116.	Mukesh Kumar, Poonam Kumari	P (VDF-TrFE)/ZnO nanocomposite synthesized by electrospinning: effect of ZnO nanofiller on physical, mechanical, thermal, rheological and piezoelectric	Polymer Bulletin	2023	80		4859	4878

		properties						
117.	Nikhil Dilip Kulkarni, Mukesh Kumar, Poonam Kumari	PVDF/RGO based piezoelectric nanocomposite films for enhanced mechanical and dielectric properties	Materials Today: Proceedings	2023	76		81	87
118.	Nikhil Dilip Kulkarni, Abir Saha, Poonam Kumari	Nikhil Dilip Kulkarni, Abir Saha, Poonam Kumari The development of a low-cost, sustainable bamboo-based flexible bio composite for impact sensing and mechanical energy harvesting applications	Journal of Applied Polymer Science	2023	140		e54040	
119.	Abir Saha, Nikhil Dilip Kulkarni, Mukesh Kumar, Poonam Kumari	The structural, dielectric, and dynamic properties of NaOH-treated Bambusa tulda reinforced biocomposites—an experimental investigation	Biomass Conversion and Biorefinery	2023			1	20
120.	Abir Saha, Nikhil Dilip Kulkarni, Poonam Kumari	Development of Bambusa tulda-reinforced different biopolymer matrix green composites and MCDM-based sustainable material selection for automobile applications	Environment, Development and Sustainability	2023			1	37
121.	Viwek Kumar and Poonam Kumari	Two-dimensional analytical solutions for multi-segmented piezoelectric panels: An EKM approach	Composite Structures	2024	329		117461	
122.	Mukesh Kumar, and Poonam Kumari	Design and fabrication of self-powered flexible P (VDF-TrFE)/ZnO/TiO2 fiber mats as nanogenerator for wearable applications	Materials Science in Semiconductor Processing	2024	160		107429	
123.	ND Kulkarni, A Saha, P Kumari	Utilizing multicriteria decision-making approach for material selection in hybrid polymer nanocomposites for energy-harvesting applications	Polymer Composites	2024			1	14
124.	M Kumar, ND Kulkarni, P Kumari	Piezoelectric performance enhancement of electrospun functionally graded PVDF/BaTiO3 based flexible nanogenerators	Materials Research Bulletin	2024	174		112739	
125.	Sima Nayak, Niranjan Sahoo, Masaharu Komiyama	Soft Computing Model for Inverse Prediction of Surface Heat Flux From Temperature Responses in Short-Duration Heat Transfer Experiments	Journal of Thermal Science and Engineering Applications	2024	16	3	31011	
126.	Ashutosh Kumar Singh, Kuldeep Singh, Dushyant Singh, Niranjan	Experimental and Numerical Study of the Effect of Double Row Slot Injection Locations on Film Cooling Performance	Experimental Heat Transfer	2023			1	27

	Sahoo	of a Corrugated Surface						
127.	Abhishek Kamal, Niranjan Sahoo, Viren Menezes, Vinayak Kulkarni	Viscous damping theory based recovery algorithm for force measurement in hypersonic flow regime.	Measurement	2023	216		112962	
128.	Rathor UH, Kulkarni V, and Saha UK	Predicting the optimum performance of a vertical-axis Savonius wind rotor with parametric modelling using artificial neural network and golden section method	ASME Journal of Computing and Information Science in Engineering	2023	23	2	021016(1)	021016(12)
129.	Rathor UH, Kulkarni V, and Saha UK	Evolving a bio-inspired blade shape of the drag-based vertical-axis wind rotor derived from orange sea-pen (Ptilosarcus Gurneyi)	ASME Journal of Solar Energy Engineering	2023	145	3	031007(1)	031007(15)

CONFERENCES/WORKSHOPS/SYMPOSIA ATTENDED: NATIONAL/ INTERNATIONAL (1 APRIL 2023– 31 MARCH 2024)

Total No. of papers published in Conference Proceedings: 99 No.s

Sl. No.	Name of Faculty	Paper Title	Name of Conf./Workshop	Place and Date
1.	Alom A, Talukdar PK, Sarkar BK, and Saha UK	Influence of Concentrated Augmenter on the Performance of a Two-bladed Savonius Wind Rotor Composed of an Arc-Elliptical Blade Profile	ASME 2023 Gas Turbine India Conference, Bangaluru, India	
2.	Kumar R, Siram O, Saha UK, and Sahoo N	Wind tunnel assisted analysis on the effect of span-wise separation of small wind turbines: a near wake region study	ASME 2023 Gas Turbine India Conference, Bangaluru, India	
3.	Rathod UH, Kulkarni V, and Saha UK	Computational analysis of a Savonius wind rotor using bio-inspired corrugated blades	ASME 2023 Turbo Expo, Boston, Massachusetts, USA	
4.	Rathod UH, Nalavade CS, Saha UK, and Kulkarni V,	A systematic probe into the starting torque characteristics of a bio-inspired orange sea-pen bladed Savonius wind rotor	ASME 2023 Turbo Expo, Boston, Massachusetts, USA	
5.	Das AK, Mankodi TK, and Saha UK	Influence of inflection mach number and base nozzle length on the shock vector control of a planar nozzle with double divergence	25th AIAA International Space Planes and Hypersonic Systems and Technologies Conference	
6.	Shrivastava K, Das AK, and Saha UK	A neural network based design of a planar double divergent nozzle	25th AIAA International Space Planes and Hypersonic Systems and Technologies Conference	
7.	Sunit Sarkar, Pranab Kumar Mondal, and Shubhadeep Mandal	Cross-stream migration of a spherical particle in a pressure driven flow of nematic liquid crystal	1st Indian conference on Micro Nano Fluidics: From soft matter to bioengineering (ICOM 2023)	
8.	Sudhanshu Singh, Pranab Kumar Mondal, and	Self-propelled droplet in confinement	1st Indian conference on Micro Nano Fluidics: From soft	

	Shubhadeep Mandal		matter to bioengineering (ICOM 2023)	
9.	Kumar Pijush Kataky, Pranab Kumar Mondal, and Shubhadeep Mandal	Hydrodynamics of a Janus swimmer near a plane wall	1st Indian conference on Micro Nano Fluidics: From soft matter to bioengineering (ICOM 2023)	
10.	Kaushal Agarwal, Sumit Kumar Mehta, and Pranab Kumar Mondal	Flow induced thigmomorphogenesis of plant root: The role of microfluidics	1st Indian conference on Micro Nano Fluidics: From soft matter to bioengineering (ICOM 2023)	
11.	Dhruvkumar Wankawala, and Pranab Kumar Mondal	Unraveling non-uniform magnetic field effects on an isolated magnetofluidic droplet splitting phenomenon	International conference on recent advances in fluid mechanics and nanoelectronics (ICRAFMN 2023)	
12.	Ankan Das, Himangshu Kalita, Sajan Kapil, and Pankaj Biswas	Feasibility Study for Fabricating Smart Structures Using Hybrid Additive Manufacturing Based on Friction Stir Welding	ACMFMS	
13.	Ankan Das, Himangshu Kalita, Sajan Kapil, and Pankaj Biswas	A numerical technique of analyzing temperature distribution in friction stir lap welding of Al-Mg-Si alloys under different process parameters	AIMTDR	
14.	Sanjay Raj, P jayant Kumar Reddy and Pankaj Biswas	Design and Development of FSW Tool for Carbon-Manganese Steel	AIMTDR-23	
15.	Tanmoy Medhi, Pranav Dev Srivyas, Pankaj Biswas	Consequences of addition of nanoparticles on tribological behaviour of coconut oil grease	AIMTDR-23	
16.	Rituraj Bhattacharjee, Susmita Datta, Tanmoy Medhi, Pankaj Biswas	Defect Prediction, Surface Morphology and Residual Stress Analysis of Friction Stir Welded Marine Grade AA5083	4th International Conference on 'Smart & Green Technology for Shipping including Offshore Decommissioning	
17.	Bhattacharjee, R. Datta, S. and Biswas, P.	Metallographic characterization and species transport simulation of dissimilar FSWed high strength DH36 shipbuilding steel and AA6061	Second International Conference on Advances in Mechanical Engineering and Material Science (ICAMEMS)	
18.	Bhattacharjee, R, Yadav, I, Biswas, P.	Metallurgical characterization of friction stir welded marine grade aluminum alloy: Experimental investigation and ALE FE approach.	9th International & 30th All India Manufacturing Technology, Design and Research Conference, 2023, IIT BHU	
19.	Maity,M.K.,Suman,S.,Biswas, P	Autonomous Robotic Underwater Welding - A Review		
20.	Maity,M.K.,Suman,S.,Biswas, P	AI and Robotics: Humanity's New Frontier		
21.	Susmita Datta, Pankaj Biswas	THE OPPORTUNITY OF ADDITIVE MANUFACTURING, A STATE OF THE ART METHOD AND NEAR-NET-SHAPE MANUFACTURING, FOR THE ASSEMBLY OF NITI IMPLANTS: A REVIEW	INCOM-24	
22.	Ankan Das, Sajan Kapil, Pankaj Biswas	Investigation of copper core - aluminum bimetallic sandwich structure fabrication by friction stir	SMATECH-24	

		additive manufacturing		
23.	Susmita Datta, Saket Khare and Pankaj Biswas	Comparative study on induction heating assisted hybrid friction stir welding with friction stir welding of NiTinol in lap welding configuration	AIMTDR-23	
24.	Himangshu Kalita, Indrajeet Singh Yadav, Nisith Ranjan Mandal, Pankaj Biswas	A study on the effect of welding process parameters on the weld quality of marine grade HSLA (DMR-249A) steel	SMATECH-24	
25.	Susmita Datta, Pankaj Biswas	Comparative study on induction heating assisted hybrid friction stir welding with friction stir welding of Nitinol in lap welding configuration	AIMTDR-23	
26.	Rockey Kumar, P. S. Robi, Pankaj Biswas	Analysis of glass fibre reinforced composite properties for the outer hull manufacturing of a human-crewed mini submarine	SMATECH-24	
27.	Debajit Das & Sashindra Kumar Kakoty	Influence of Texture Geometry in the Steady State Performance of Dimple Textured Journal Bearings under the Effect of Lubricant Inertia	iNaCoMM 2023	
28.	Debajit Das & Sashindra Kumar Kakoty	Influence of Lubricant Inertia and Texture Geometry on Steady-State Performance of Journal Bearing with Protrusion Texturing	VETOMAC 2023	
29.	Hari Narayan Singh Yadav, and Manas Das	Investigation of plasma process for finishing of fused silica and its characterizational Science	ICAMEMS-23	
30.	Hari Narayan Singh Yadav, and Manas Das	Plasma-based finishing process applied on optical component and its characterization	Research &industrial conclave	
31.	Hari Narayan Singh Yadav, and Manas Das	The evolution of morphology and chemistry in fused silica surface after He:(SF6/O2) medium pressure plasma processing	AIMTDR-2023	
32.	A. Chetry and A. Nandy	Development of a Hybrid BCGA Tuner for Artificial Neural Network in assessing the performance of Electromagnetic Forming and Perforation (EMFP) of Al6061-T6 tube	6th National Conference on Multidisciplinary Design, Analysis and Optimization, NCMDAO 2023.	
33.	A. Chetry and A. Nandy	Development of Multi-physics finite element model to investigate Electromagnetic Forming and Simultaneous Multi-point perforation of Aluminum Tube	Second International Conference on Advances in Mechanical Engineering and Material Sciences, ICAMEMS 2023.	
34.	A. Adhikary, R. Shaw, and A. Nandy	Outward Wave Favouring formulation in exterior acoustics: an assessment of its high frequency performance	International Conference on Vibration Problems, ICOVP 2023	
35.	Prasad, N. K., Dalal, A., and Ghosh, S.	Assessment of The Viscoelastic Normal Stress Difference	1st Indian conference on Micro Nano Fluidics: From soft	

		Distribution Inside Shear-Thinning Viscoelastic Drop Migrating Through Constricted Microchannel	matter to bioengineering (ICOM 2023)	
36.	Deb, R., Sarma, B., and Dalal, A.	Magnetowetting dynamics of an actuating ferrofluid droplet under the influence of non-uniform magnetic field	1st Indian conference on Micro Nano Fluidics: From soft matter to bioengineering (ICOM 2023)	
37.	Kalita N., Muthukumar P., and Dalal A.	Performance Investigation of a Hybrid Solar Dryer Integrated with Electric Backup Heater for Chilli Drying	Seven International Conference on Polygeneration (ICP 2023)	
38.	Parida, A., Kumar, A., Muthukumar, P. and Dalal, A.	Experimental and Numerical Studies on Metal Hydride based Embedded Cooling Tube reactor for Controlled Hydrogen Discharge	Seven International Conference on Polygeneration (ICP 2023)	
39.	Parida, A., Muthukumar, P. and Dalal, A.	Investigation of the effect of bed heterogeneities in multi-stage metal hydride hydrogen compressor: An improved numerical model	International Conference on Advances in Renewable and Green energy Technology (ICARGET2023)	
40.	More, A., Parida, A., Kalita, P., Muthukumar, P. and Dalal, A.	Comparative Performance Analysis of Finned and Metal Foam Metal Hydride Reactors for Efficient Heating and Cooling Operations	International Conference on Refrigeration and Air Conditioning (NCRAC2024)	
41.	Kumar, D., and Dalal, A.	A numerical study of thermohydraulic performance of a finned tube heat exchanger using an aqueous solution of carboxymethyl cellulose and rectangular winglet pair	17th International Heat Transfer Conference (IHTC)	
42.	Kumar, D., and Dalal, A.	Heat transfer and pressure drop analysis of fin-tube heat exchanger with delta winglet and shear-thinning fluid	14th International Conference on Computational Heat and Mass Transfer (ICCHMT2023)	
43.	Bhattacharjee, S., Singh, A., and Dalal, A.	Three-dimensional numerical study to identify temperature non-uniformity in air-cooled lithium-ion battery pack	14th International Conference on Computational Heat and Mass Transfer (ICCHMT2023)	
44.	Deepak K Rathour, Atul K Soti	Effect of support location on vortex-induced vibration of cantilever beam mounted circular cylinder	The 10th International and 50th National Conference on Fluid Mechanics and Fluid Power	
45.	A Dey, S Hazarika	Object Stiffness Discrimination from Fingertip Forces	Advances in Robotics 2023: 6th International Conference of the Robotic Society	
46.	H Basumatary, S Hazarika, P Kanbaskar, A Shrawge	Low Level Grasp Controller for Slippage and Deformation Prevention exploiting Deep Reinforcement Learning	Advances in Robotics 2023: 6th International Conference of the Robotic Society	
47.	S Pratap, K Ito, SM Hazarika	Grasp Synergies in Activities of Daily Living: A Cross-Sectional Study using a Multi-sensory Data Glove.	Advances in Robotics 2023: 6th International Conference of the Robotic Society	

48.	N Sarmah, P Bordoloi, S Hazarika	Real-time Surface EMG based Recognition of Finger Movements.	Advances in Robotics 2023: 6th International Conference of the Robotic Society	
49.	VV Chakravadhanula, T Agarwal, SM Hazarika	Motion Planning using Reinforcement Learning for Serial Manipulators	Advances in Robotics 2023: 6th International Conference of the Robotic Society	
50.	Srivastava H., Mankodi T. K., Myong R. S.,	Nonlinear coupled constitutive relations based approach to study non-equilibrium flows in chemically inert binary gas mixture	34th International Symposium on Shock Wave, Daegu, Republic of Korea	
51.	Shaik N., Gavasane A., Mankodi T. K., Bhandarkar U. V.	Effect of Surface Topographyon Ground Shocks During Lunar Landing	34th International Symposium on Shock Wave, Daegu, Republic of Korea	
52.	Shaik N., Bhandarkar U. V., Mankodi T. K., Gopalakrishnan S.	Coupled Discontinuous Galerkin-Direct Simulation Monte Carlo Simulation of Rocket Plume Impingement on Non-Flat Lunar Surfaces	76th Annual Meeting of the Division of Fluid Dynamics, Washington DC	
53.	Srivastava H., Mankodi T. K., Myong R. S.	Effect of viscosity models on diatomic shock structure using multi-temperature approach	10th International and 50th National Conference on Fluid Mechanics and Fluid Power, IIT Jodhpur, Jodhpur	
54.	Saiprakash R. N., Sahoo N., Mankodi T. K.	Boundary condition-based Machine Learning algorithm for incompressible viscous flows	10th International and 50th National Conference on Fluid Mechanics and Fluid Power, IIT Jodhpur, Jodhpur	
55.	Shaik N., Gavasane A., Mankodi T. K., Bhandarkar U. V.	Effect of Surface Undulations on Flow Field During Lunar Landing	10th International and 50th National Conference on Fluid Mechanics and Fluid Power, IIT Jodhpur, Jodhpur	
56.	Punia, A. and Mittal, R. K.	Cutting Force and Chatter Prediction in Dry and Lubricated High-Speed Micromilling Process using Machine Learning Algorithms	18th International Conference on Vibration Engineering and Technology of Machinery, VETOMAC, 2023	
57.	Bhowmik, D., Kumar, S., Singh, R. K., Kapil, S. and Mittal, R. K.	Influence of Hydrogen-Free DLC Coated Micro Ball Endmills on Machining Response and Tool Wear in High-Speed Micromilling of Ti6Al4V	World Congress on Micro and Nano Manufacturing (WCMNM), 2023, Evanston, USA	
58.	Kumar, S., Mittal, R. K., and Singh, R. K.,	Comparative Data Analytics of Measurement Sensors for Instability Detection Efficacy in High-Speed Micromilling	World Congress on Micro and Nano Manufacturing (WCMNM), 2023, Evanston, USA	
59.	Shaik Mushraf Parvez, Rinku Kumar Mittal	Development of Vibration Monitoring and Diagnostic System for Electrical Submersible Pumps	4th International Conference on River Corridor Research and Management (2024)	
60.	Chandan Nashine, Manmohan Pandey, and Kamlesh K. Baraya	Experimental Studies on Startup and Steady-State Characterisation of Miniature Loop Heat Pipe	10th Interantional and 50th National Conference on Fluid Mechanics and Fluid Power (FMFP)	
61.	Toni Kumari, Chandan Nashine, and Manmohan pandey	Experimental Investigation of Sintered Bi-porous Capillary Wicks for Miniature Loop Heat	10th Interantional and 50th National Conference on Fluid Mechanics and Fluid Power	

		Pipes	(FMFP)	
62.	Arman Mohaddin Nadaf, Sandip Kumar Sarma, and Manmohan Pandey	Experimental Investigation of Flow Boiling In Straight and Diverging Rectangular Miniature Channels with High-Speed Flow Visualization	10th Interantional and 50th National Conference on Fluid Mechanics and Fluid Power (FMFP)	
63.	Rohit Kumar, Nabadeep Choudhury, and Manmohan Pandey	Numerical Investigation of Fluid Flow and Heat Transfer in the Microchannel Channel Heat Sink with Different Geometric Fins	10th Interantional and 50th National Conference on Fluid Mechanics and Fluid Power (FMFP)	
64.	Rohit Kumar, Abhipsa Das, and Manmohan Pandey	The Effect of Microfin Orientation in Fluid Flow and Heat Transfer in Microchannel Heat Sink	10th Interantional and 50th National Conference on Fluid Mechanics and Fluid Power (FMFP)	
65.	Rohit Kumar, Amit Kumar, and Manmohan Pandey	Numerical Investigation of Effect of Porous Microfins in Thermal and Fluid Flow Behavior in Miniature Channels	International Conference on Futuristic Advancements in Materials, Manufacturing and Thermal Sciences (ICFAMMT 2024)	
66.	Bhushan, Bharat, Ramkumar, Janakarajan and Dixit, Uday	Simulation of incremental sheet metal forming for making U-channel in two light-weight alloys	International ESAFORM Conference	
67.	Bharat Bhushan, J. Ramkumar and Uday S. Dixit	Numerical Modelling of Incremental Sheet Metal Forming Process for Generating Complex Shapes on Ti6Al4V	The 29th International Conference on Processing and Fabrication of Advanced Materials (PFAM)	
68.	Bappa Das, Biranchi N. Panda and Uday S. Dixit	Surface property enhancement of AA 6061-T6 alloy using friction stir processing with Fe-based chip and zircoat powder	9th International and 30th All India Manufacturing Technology, Design and Research (AIMTDR) Conference	
69.	U.S. Dixit	Modelling and Simulation of Manufacturing Processes for achieving Sustainable Development Goals	9th International and 30th All India Manufacturing Technology, Design and Research (AIMTDR) Conference	
70.	A.M. Dhulekar, F. Sharma and U.S. Dixit	Conceptual design of a low cost underwater glider for educational purpose	INCOM24	
71.	U.S. Dixit, B.N. Panda, F. Sharma and A.M. Dhulekar	Development of surface and underwater vehicles for river education	4th International Conference on River Corridor Research Management	
72.	Chakraborty, A., Dey, A. and Gautam, S. S.	Impoundment-Associated Hydro-Mechanical Changes and Ongoing Seismicity in Koyna, India	Indian Geotechnical Conference 2023	
73.	Nath, D., Ankit, Neog, D. R. and Gautam S. S.,	Application of artificial neural network in impact and crashworthiness: a review	2nd International Conference on Modern Research in Aerospace Engineering (MRAE 2023).	
74.	Subhash, T. V., Ankit, Nath, D. and Gautam S. S.,	Machine learning assisted development of eight noded hexahedral finite element	2nd International Conference on Modern Research in Aerospace Engineering (MRAE 2023).	
75.	Ankit, Nath, D., Sauer, R. S. and Gautam, S. S.	Evaluating the Performance of Different Optimizers for Deep Learned Finite Elements	6th National Conference on Multidisciplinary Design, Analysis and Optimization	

			(NCMDAO 2023)	
76.	Kini, A. P., Nath, D., Gautam, S. S.	Physics informed neural network for adhesive problems	2nd International Conference on Modern Research in Aerospace Engineering (MRAE 2023).	
77.	Srinivasulu D., Das S. K., Gautam S. S.	Performance of Various Distance Minimization Algorithms for Isogeometric Contact Analysis	6th National Conference on Multidisciplinary Design, Analysis and Optimization (NCMDAO 2023)	
78.	Gouravaraju, S., Sauer, R. A., and Gautam, S. S.	A Coupled Adhesion-friction Model and its Application to 3D Gecko Spatula Peeling	7th International Conference on Structural Adhesive Bonding AB2023	
79.	Nath, D., Ankit, Neog, D. R., and Gautam, S. S.,	Evaluation of optimizers in DNN-based classification model for quadrature rule in isogeometric analysis	6th National Conference on Multidisciplinary Design, Analysis and Optimization (NCMDAO 2023)	
80.	Praveen Raj, Sanngesh P L, Arnab Sarmah, Subramani Kanagaraj	Understanding the contributions of Trunk in Human Posture Control in Unperturbed and Perturbed Surfaces	Research and Industrial Conclave'23, IIT Guwahati	
81.	Arnab Sarmah, Lipika Boruah, Satoshi Ito, Subramani Kanagaraj	Degree of Association between Knee Health with Pelvis Mobility and Plantar Pressure	ISB-JSB, Fukuoka, Japan.	
82.	**Viwek Kumar and Poonam Kumari**	2-D Analytical Solutions of Segmented Piezoelectric Panel Using Extended Kantorovich Method	11th International Conference on Materials on Advanced Technologies (ICMAT-2023), 26-30 June,2023, SUNTEC Singapore	
83.	**Mridusmita Bora, Niranjan Sahoo, Poonam Kumari**	A numerical study on the structural design and analysis of bamboo wind turbine blade	11th International Conference on Materials on Advanced Technologies (ICMAT-2023), 26-30 June,2023, SUNTEC Singapore	
84.	**Nikhil Dilip Kulkarni, Abir Saha and Poonam Kumari**	PVDF-FS based piezoelectric nanocomposites	International Conference on Sustainable Materials for Engineering Applications (ICSMEA 2024), 2024 Feb 1-3, IIT Madras, Madras, India.	
85.	**Abhimanyu Singh, Poonam Kumari**	Deciphering relationship among design variables of a battery pack system through multi-objective optimization	6th National Conference on Multidisciplinary Design, Analysis and Optimization (NCMDAO 2023), 6-8 December, 2023, IIT Guwahati, India.	
86.	**Abir Saha, Nikhil Dilip Kulkarni, Poonam Kumari**	Design and Development of North-Eastern Bamboo based Sustainable Bio-Composites	11th International Conference on Materials on Advanced Technologies (ICMAT-2023), 26-30 June,2023, SUNTEC Singapore	
87.	**Mukesh Kumar, Poonam Kumari**	Hybrid Nanocomposite Mat-based Nanogenerator with Enhanced Performance for Energy Harvesting Application	11th International Conference on Materials on Advanced Technologies (ICMAT-2023), 26-30 June,2023, SUNTEC Singapore	
88.	**Nikhil Dilip Kulkarni, and Poonam Kumari**	Design and Development of Highly Flexible Piezoelectric	11th International Conference on Materials on Advanced	

		PVDF-BaTiO3 Nanocomposites Films for Sensing Applications	Technologies (ICMAT-2023), 26-30 June,2023, SUNTEC Singapore	
89.	Sushmita Deka, Sanjukta Patra, Niranjan Sahoo	Assessment of Accuracy of Multi-Point Calibration and Single Point Calibration Technique using an Accelerometer Force Balance	58th 3AF International Conference on Applied Aerodynamics, Polytech Orléans, France, 27 – 29 March, 2024	
90.	Aditya Sharma, Babalesh Kumar, Niranjan Sahoo, Vinayak Kulkarni	Underwater Blast Studies Using Shock Tube	46th National Conference on Fluid Mechanics and Fluid Power, , IIT Jodhpur, Jodhpur, 20-22 December 2023	
91.	Manosh Jyoti Das, Niranjan Sahoo	Conceptualization of A Portable Vacuum Pumping System for Dead Volume Dispensing of Crude Oil from Crude Oil Storage Tanks	ASME 2023 Gas Turbine India Conference, Bangalore, 7–8 December 2023	
92.	Md S Mujaheed Khan, Niranjan Sahoo	A Review of the Performance and Emission Characteristics of Diesel Engine Operated with Nanoparticles Added Different Fuel Blends	Recent Advances in Fluid Mechanics and Nanoelectronics (ICRAFMN)-2023, Manipal Institute of Technology Bengaluru, 12-14th July 2023	
93.	Alom A, Talukdar PK, Sarkar BK, and Saha UK	Influence of Concentrated Augmenter on the Performance of a Two-bladed Savonius Wind Rotor Composed of an Arc-Elliptical Blade Profile	ASME 2023 Gas Turbine India Conference, Bangaluru, India	
94.	Shivani Raj, B. Sandeep Reddy	Emergency Braking Control Design for a Dual Cart-Trolley Overhead Crane	3rd International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME)	2023
95.	Shivani Raj, B. Sandeep Reddy	Anti-Swing Control in an Underactuated Dual Overhead Crane	23rd International Conference on Control, Automation and Systems (ICCAS 2023)	2023
96.	Shivani Raj, B. Sandeep Reddy	An Adaptive Control Law for Emergency Braking of a Dual Cart-Trolley Overhead Crane	iNacomm 2023	2023
97.	Ankur Deka, B. Sandeep Reddy	Kinematic and Dynamic Manipulability of the rotary double pendulum,	iNacomm 2023	2023
98.	Ankur Deka, B. Sandeep Reddy	Comparison of different manipulability indices for a 2-DOF aerial manipulator	5th International Conference on Recent Advancements in Mechanical Engineering	2024
99.	B. Sandeep Reddy	4th INTERNATIONAL CONFERENCE On RIVER CORRIDOR RESEARCH AND MANAGEMENT	IIT Guwahati	2024

INVITED LECTURES OF FACULTY: IN INDIA, ABROAD (1 APRIL 2023 – 31 MARCH 2024)

Sl.No.	Name of Faculty	Name of Lecture	Name of Inst./Org.	Place	Date
1.	U. K. Saha	Indian Space Missions: From Aryabhata to Chandrayaan 3	NIT Silchar	Silchar, Assam	February 27, 2024

		(Institute Lecture)			
2.	U. K. Saha	Pursuing a Career in Mechanical Engineering	ASTEC and IIT Guwahati	Guwahati, Assam	February 08, 2024
3.	U. K. Saha	Spaceflight without Formulae	Nowgong Polytechnic	Nagaon, Assam	November 22, 2023
4.	U. K. Saha	Small Wind Turbines: Fundamentals, Recent Trends and Opportunities	Department of Agriculture & Farmers Welfare, GOI	Hyderabad, Telangana	November 8, 2023
5.	U. K. Saha	Liquid Rocket Propulsion	KIIT, Bhubaneswar	Bhubaneswar, Odisa	November 06-15, 2023
6.	U. K. Saha	Indian Space Missions (Teachers' Day Lecture)	NIT Meghalaya	Shillong, Meghalaya	September 05, 2023
7.	U. K. Saha	Harnessing Wind Energy for Local Power Production	Assam Agricultural University Extension Centre	Khanapara, Guwahati, Assam	July 13, 2023
8.	P.K.Mondal	Plant Root Dynamics: The Role of Microfluidics	Manipal Institute of Technology Bengaluru	Bengaluru, Karnataka	July 12-14, 2023
9.	P. K. Mondal	Studies of the effect of abiotic stress on the plant root system using phytofluidic approaches	IQSE Seminar Room, University of Teaxs (A&M), USA	Texas, USA	February 14. 2024
10.	Pankaj Biswas	Some Advanced Research on Welding Technology	Golden Jubilee Celebration of Kolkata Branch of The Indian Institute of Welding by organizing “Weld 2023”, the Annual Seminar	Indian Institute of Welding, Kolkata	March 11 & 12, 2023
11.	Pankaj Biswas	Principle and Safety of Underwater Welding	5-day workshop on Underwater Welding, IIT Guwahat	Guwahati, Assam	10th-14th October, 2023
12.	Pankaj Biswas	Thermo-mechanical Transient Elasto-plastic Analysis of Underwater welding fusion welding process by Commercially Available FE Package	5-day workshop on Underwater Welding, IIT Guwahati	Guwahati, Assam	10th-14th October, 2024
13.	Pankaj Biswas	Types and Principles of Underwater Welding	IIT Guwahati	Guwahati, Assam	November 6, 2023
14.	Pankaj Biswas	Safety and Equipments for Safety of Underwater Welding	IIT Guwahati	Guwahati, Assam	November 7, 2023
15.	Pankaj Biswas	Underwater Friction Stir Welding	IIT Guwahati	Guwahati, Assam	November 8, 2023
16.	Pankaj Biswas	Underwater SMAW, MIG Welding Details	IIT Guwahati	Guwahati, Assam	November 9, 2023
17.	Pankaj Biswas	Latest Welding Technology used in Underwater Welding	IIT Guwahati	Guwahati, Assam	November 10, 2023
18.	Pankaj Biswas	Weld Induced Residual Stress Prediction by Thermo-mechanical Transient Elasto-plastic Analysis by Commercially Available FE Package	ON-LINE COURSE (Via ZOOM) on Distortion Control in Ship Building	ASRANet Ltd. Sutton, Surrey, UK	24th - 25th August 2023
19.	Pankaj Biswas	Residual Stresses in Engineering Components: Types, Causes, Effects and Estimation,	ON-LINE COURSE (Via ZOOM) on Distortion Control in Ship Building	ASRANet Ltd. Sutton, Surrey, UK	24th - 25th August 2024
20.	Pankaj Biswas	Thermomechanical Analysis of	International Workshop	NIT Mizoram,	12th- 16 March

		3D Printing Process by FE software ANSYS	on 3D printing and additive manufacturing insights, NIT Mizoram	India	2024
21.	Pankaj Biswas	Transient Elastoplastic Thermomechanical Analysis of 3D printing Process	VIT	India	11 September
22.	Pankaj Biswas	Residual Stresses in Engineering Components: Types, Causes, Effects and Estimation	VIT	India	September 14
23.	Pankaj Biswas	Drone Manufacturing Technology	3 Month Certificate Course on Drone Technology, IIT Guwahati	Guwahati, Assam	October 10, 2023
24.	Pankaj Biswas	Drone Manufacturing Technology Process Details	3 Month Certificate Course on Drone Technology, IIT Guwahati	Guwahati, Assam	October 11, 2023
25.	Pankaj Biswas	Welding Technology Used in Drone Technology	3 Month Certificate Course on Drone Technology, IIT Guwahati	Guwahati, Assam	October 12, 2023
26.	Amaresh Dalal	The role of Computational Fluid Dynamics (CFD) in solving engineering problems	SERB-Karyashala sponsored Short Term Training on Computational Fluid Dynamics with OpenFoam	MANIT Bhopal, Bhopal, India	3rd to 9th July, 2023
27.	Amaresh Dalal	The fundamentals of Computational Fluid Dynamics (CFD) used by engineers, scientists and researcher	SERB-Karyashala sponsored Short Term Training on Computational Fluid Dynamics with OpenFoam	MANIT Bhopal, Bhopal, India	3rd to 9th July, 2023
28.	Tapan K Mankodi	Thermal Protection Systems in Re-entry Vehicles	Nirma University	Ahmedabad, Gujarat	October 26th, 2023
29.	Tapan K Mankodi	Fundamentals of Particle Computational Methods for Rarefied Gas Dynamics	Gyeongsang National University	Jinju, Republic of Korea	11-14 July, 2023
30.	Sajan Kapil	CAPP for Additive Manufacturing	INFINITY SOLUTIONS: Autodesk	Pune	25 April 2023
31.	Sajan Kapil	CAPP for Robotic DED Systems	AMChronicle	Bangalore	25-26 May 2023
32.	Sajan Kapil	Computer-Aided Process Planning for Additive Manufacturing and DFAM	Karyashala High-End Workshop: NIT Tiruchirappalli	Online	6 June 2023.
33.	Sajan Kapil	Toolpath for obtaining homogeneous microstructural and mechanical properties in wire arc additive Manufactured parts	Recent Trends in Direct energy Deposition (DED): One Day Seminar by School of Mechanical Engineering VIT, Vellore	Online	7 June 2023.
34.	Sajan Kapil	Introduction to Additive Manufacturing	Faculty Development Program (FDP), Center for De Novo Technologies & Ergonomics in Industry	Delhi	25th July 2023

			4.0, GGSIPU		
35.	Sajan Kapil	Research and Development Activities of AM Lab IIT Guwahati	Semiconductor Technology, Additive Manufacturing, and Packaging (STAMP-2023), IIT Guwahati	IIT Guwahati	27 Oct 2023.
36.	Sajan Kapil	Research and Development Activities at Additive Manufacturing Lab IIT Guwahati	Democratising 3D Technology with Education & Research to Benefit all 3D GEM	IIT Bombay	9-10 Dec 2023
37.	Sajan Kapil	Utilisation of Traveling Salesman Problem for Generating Toolapth to Fabricate Density based FGMs by Additive Manufacturing	ASME Areo 3D conference	RMIT Bangalore	13-14 Dec 2023
38.	Sajan Kapil	Realization of Large-to-Small Objects by Metal Additive Manufacturing	Aeronautical Development Agency (ADA), Bangalore	Bangalore	15th Dec 2023
39.	Sajan Kapil	3-axis Toolpath for WAAM	Online Training Programme on “Wire-Arc Additive Manufacturing Process”, Organized by Corporate R&D BHEL	Online	18th December 2023
40.	Sajan Kapil	5-axis Toolpath for WAAM	Online Training Programme on “Wire-Arc Additive Manufacturing Process”, Organized by Corporate R&D BHEL	Online	19th December 2023
41.	Sajan Kapil	3D Printing: Introduction, Application and Research	India International Science Festival -2023, DST	Faridabad	Jan 17-20 2024
42.	Sajan Kapil	Research and Development Activities of AM Lab IIT Guwahati	CoE Cyber Physical Defence Systems, IIT Guwahati	IIT Guwahati	Feb 2024
43.	Manmohan Pandey	Experimental Characterization and Mathematical Modelling of Micro and Miniature Loop Heat Pipes	Huawei Future Device Technology Summit 2023	Hilton Kalastajatorppa, Helsinki, Finland	October 9-11, 2023
44.	Manmohan Pandey	Miniature Cooling Devices for High Heat Flux Thermal Management	International Conference on Futuristic Advancements in Materials, Manufacturing and Thermal Sciences (ICFAMMT-2024)	IITRAM, Ahmedabad, India	January 19-21, 2024
45.	Ujendra Kumar Komal	Pushing the Envelope: Additive Manufacturing's Role in Next-Generation Composite Materials	C. V. Raman Global University	Bhubaneswar, Odisha	Dec 15, 2023
46.	Uday S. Dixit	Past, Present and Future of Mechanical Engineering (in Hindi)	International conference “Recent Trends in Engineering and Sciences” (RTES – 2023)”	online mode by SVNIT, Surat	May 2, 2023

47.	Uday S. Dixit	Optimization: Engineering Philosophy and Some Examples of its Application	One-Week Training Program on "Optimization in Engineering Design and Applications	DST-STUTI	August 4, 2023
48.	Uday S. Dixit	Mechatronic Systems for Drone Applications	Drone Technology Certificate program by CET-IITG in collaboration with CICPS-IITG, and IITG-TIDF	IIT Guwahati	October 26, 2023
49.	Uday S. Dixit	Education as per NEP 2020	workshop on National Education Policy (NEP) 2020	NIT Meghalaya	December 11, 2023
50.	Uday S. Dixit	Future trends in manufacturing technology and education	2nd International Conference on Futuristic Advancements in Materials, Manufacturing and Thermal Sciences (ICFAMMT 2024)	the Institute of Infrastructure Technology Research and Management (IITRAM), Ahmedabad, India	January 19-21, 2024
51.	Uday S. Dixit	Heat Transfer Modelling in Manufacturing: Relevance and Issues	International Conference on Thermofluids and Manufacturing Science-2024	KIIT Bhubaneswar	7-8 March, 2024
52.	Sachin Singh Gautam	Machine Learning In Computational Solid Mechanics – Review, Results, and Future	2nd International Conference on Modern Research in Aerospace Engineering	Amity University	21-22 September 2023
53.	Poonam Kumari	Two dimensional models of plates	Rajasthan Higher Technical Education Improvement Scheme (RHTEIS) Sponsored 5 Days Hybrid Mode FDP on Finite Element Methods for Engineering Application	MBM Jodhpur	17-21st August, 2023
54.	Niranjan Sahoo	Domain Lecture Series (4 Nos.) in Aerodynamics – Compressible Flow: Theory and Experimental Facilities	School of Mechanical Engineering, Kalinga Institute of Industrial Technology (KIIT)	Bhubaneswar, Odisha	02-04 November 2023
55.	Niranjan Sahoo	Renewable Energy Technology by Harnessing Wind Power	Veer Surendra Sai University of Technology (VSSUT), Burla	Sambalpur, Odisha	03 February 2024
56.	B. Sandeep Reddy	Kinematics and Dynamics of Robotic Systems	JNTU	Hyderabad, India	19 February 2024

VISITORS FROM OTHER INSTITUTES/UNIVERSITIES/ORGANISATIONS/INVITED LECTURES (1 APRIL 2023 – 31 MARCH 2024)

Sl.	Name	Name of Inst./Univ./Org.	Purpose/ Name of Lecture	Date	Remarks

No.					
01	Mr. Ashirwad Parashar	GEFERTEC, GmbH, Germany	Involvement of GEFERTEC towards industrialization of the Wire-Arc Directed Energy Deposition Process	30th Jan 2024	Mr. Ashirwad Parashar

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SEMINARS/WORKSHOPS/CONFERENCES/SHORT-TERM COURSES ORGANISED (1 APRIL 2022 – 31 MARCH 2023)

Sl. No.	Name of Faculty (Convener/ Co-ordinator, etc.)	Name of Sem./Wor./Con.	Funded By	Date	International/ National	No. of participants
01	Manmohan Pandey	Workshop on High Heat Flux Thermal Management Systems	SERB	March 16-17, 2024	National	25
02	Deepak Sharma and Sachin Singh Gautam	6th National Conference on Multidisciplinary Design, Analysis and Optimization	IIT Guwahati, Aeronautical Society of India, IITG TIDF, Phillips Machine Tool, CMTI, COMSOL, BosonQ Psi	6-8 December 2023	National	100

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A brief report on the major NATIONAL and INTERNATIONAL events with photographs may also be given separately in addition to the format given above

PATENTS (1 APRIL 2023– 31 MARCH 2024)

No. of Patents Applied: 20.

No. of Patents Granted: 7

Sl. No.	Name of Faculty and co researcher	Name	Date Applied/Granted	Application No.	Remarks
1.	01 P. K. Mondal, Dhruvkumar Wankawala, Sudip Shyam	A passive droplet formation and splitting microfluidic device for symmetric or asymmetric droplet generation and a process thereof	10-10-2023	**2.02231E+11**	Granted
2.	Rituraj Bhattacharjee, Himangshu Kalita, Tanmoy Medhi, Pankaj Biswas	COMPRESSED AIR TOOL COOLING AND INDUCTION HEATING-ASSISTED FSW OF HIGH MELTING-POINT ALLOYS USING LOW-COST WC-TOOL	10-03-2023	2.02331E+11	Published
3.	Rituraj Bhattacharjee, Pankaj Biswas	FRICTION STIR WELDING TOOL WITH INTEGRATED CUTTER FOR CONTINUOUS	17-11-2023	2.02331E+11	Published

		FLASH REMOVAL.			
4.	Rituraj Bhattacharjee, Himangshu Kalita, Pankaj Biswas	DEVELOPMENT OF MULTI-PASS MULTI-LAYER MULTI-TRACK SINGLE SIDED FRICTION STIR WELDING FOR JOINING OF THICK SECTION MATERIAL	12-02-2024	5602/ASA/PP-4248	Submitted
5.	Ankan Das, Pankaj Biswas, Sajan Kapil	SYSTEMS AND METHODS FOR INCREASING JOINING AREA IN FRICTION STIR ADDITIVE MANUFACTURING	16-01-2024	2.02431E+11	Filed
6.	Vaibhav Jaiswal, Subramani Kangaraj	Passive Polycentric Knee Joint	27-12-2024	2.02031E+11	Granted
7.	Juan Chowdhury, Gaurav Kumar, Karuna Kalita, and Sashindra Kumar Kakoty	High Force Density Quad Air Gap Reluctance Motor	12-01-2024	Patent No: 498441	Granted
8.	Anand Mohan Pandey, Sajan Kapil, Manas Das	Systems and Methods for Removal of Micro-Printed Parts Deposited by Electrodeposition	19.04.2023	2.02331E+11	Filed
9.	Atul Singh Rajput, Sajan Kapil, Manas Das	Systems for Enhancing the Surface Quality of Additively Manufactured Parts Through Chemical Vapour Smoothing	18.07.2023	2.02331E+11	Filed
10.	Harsh Ajay Rana, Atul Singh Rajput, Sajan Kapil	Systems for Hybrid Kinematic Collaborative Additive Manufacturing Process	07.09.2023	2.02331E+11	Filed
11.	Ambrish Singh, Sajan Kapil, Manas Das	Apparatus for Multi-Material, Simultaneous and Continuous, Powder Metering and Delivery in Directed Energy Deposition	22.08.2023	2.02331E+11	Filed
12.	Ambrish Singh, Sajan Kapil, Manas Das	A gravity-based, Gas-Free and Omnidirectional Laser Powder Cladding Head	26.07.2023	2.02031E+11	Granted
13.	Manmohan Pandey, Chandan Nashine, Toni Kumari, Rohit Kumar, Arman Mohaddin Nadaf	A LOOP HEAT PIPE WITH BI-POROUS CAPILLARY WICK	13-12-2023	2.02331E+11	Filed
14.	Manmohan Pandey, Rohit Kumar, Arman Mohaddin Nadaf, Chandan Nashine	A MICROCHANNEL HEAT EXCHANGER	12-12-2023	2.02331E+11	Filed
15.	Manmohan Pandey, Arman Mohaddin Nadaf Chandan Nashine, Toni Kumari, Rohit Kumar	A BI-POROUS HEAT SINK FOR ELECTRONIC COOLING	14-01-2024	2.02431E+11	Filed
16.	Manmohan Pandey, Rohit Kumar, Arman Mohaddin Nadaf, Chandan Nashine	MICROCHANNEL HEAT SINKS FOR MECHANICALLY PUMPED FLUID LOOP SYSTEM	15-03-2024	2.02431E+11	Filed

17.	Manmohan Pandey, Chandan Nashine, Arman Mohaddin Nadaf, Rohit Kumar, Toni Kumari, Seshraj Pratihari	NOVEL VAPOUR CHAMBER HEAT SPREADER	15-02-2024	407682-001	Filed
18.	U.S. Dixit, A.Ch. Borsaikia, A. Raj	AUTOCLAVED AERATED CONCRETE(AAC) BLOCK UNIT COMPRISING IN-BUILT ANCHORAGE/FROG ON SURFACE FOR ENHANCEMENT OF BONDING AND LATERAL/SHEAR STRENGTH IN MASONRY WALL SYSTEM	15-12-2023	2.01831E+11	Granted
19.	HARISH PANDURANGA JEEVAJI, U.S. Dixit, Amit Raj and Shashikant Soren	**RIDER OPERATABLE AND RETRACTABLE STABLIZER WHEELS SYSTEM IN BICYCLE**	06-07-2023	2.01941E+11	Granted
20.	A.N. Reddy, Saurav Kumar Dutta, B. Sandeep Reddy, S.K. Dwivedy	**Bistable compliant gripper for pipe climbing robot**	21 March 2024	202031037108	Granted

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AWARDS AND HONOURS (1 APRIL 2023 – 31 MARCH 2024)

Sl. No.	**Name of Faculty**	**Name of Award**	**Name of Institute/ Organization/ Foundation bestowing the award**	**Reason for award**	**Form of Award (Citation/ Medal/ Cash etc)**
1.	P.K.Mondal	First Prize' for the presentation on 'Gravitropism on plant Root Dynamics: The role of Microfluidics'	Mizoram University	Best presentation	Citation
2.	P.K.Mondal	Front cover art for article 'Salinity Gradient-Induced Power Generation in Nanochannels: The Role of pH-Sensitive Polyelectrolyte Layers'	ACS Langmuir		Citation
3.	P.K.Mondal	Front cover art for article 'AC	ACS Langmuir		Citation

		Electrothermal Effect Promotes Enhanced Solute Mixing in a Wavy Microchannel'			
4.	P.K.Mondal	Awarded Institue of Physics(IOP) Trusted Reviewer status	IOP Publishing , The Distillery, Glassfields, Avon Street, Bristol, BS2 0GR, England	A high level of peer review competence, with the ability to critique scientific literature to an excellent standard	Citation
5.	RK Mittal	DST SERB ITS Grant	SERB DST	To attend WCMNM 2023, Evanston, USA, 2023	Travel Grant
6.	Uday S. Dixit	The article "Energy Absorption Characteristics of Fused Deposition Modeling 3D Printed Auxetic Re-entrant Structures: A Review" chosen as Editor's Choice paper	Journal of Materials Engineering and Performance for 2023	Only six papers are chosen in a year	Citation

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STUDENTS' ACHIEVEMENTS (1 APRIL 2023– 31 MARCH 2024)

Sl. No.	**Name of Student**	**Name of Award**	**Name of Institute/ Organization/ Foundation bestowing the award**	**Reason for award**	**Form of Award (Citation/ Medal/ Cash etc)**
1.	Umang H. Rathod	U. K. Saha and V. Kulkarni	ASME Students Advisory Committee Travel Award (SACTA), USD2000	American Society of Mechanical Engineers	Computational analysis of a Savonius wind rotor using bio-inspired corrugated blades, ASME 2023 Turbo Expo, June 26-30, Boston, Massachusetts, USA.
2.	Mohamad Alhady Mohamad Ali	P.K.Mondal	First Prize' for the presentation on 'Gravitropism on plant Root Dynamics: The role of Microfluidics'	Mizoram University	Best presentation
3.	Niraj Kr Prasad	Amaresh Dalal	Best poster award	American Chemical Society (ACS) in the first	Best poster award

				Indian Conference on Micro nano fluidics (ICOM) held at IIT Madras, India during Sep 29 to Oct 1, 2023.	
4.	Agniva Ghsoh	P.K.Mondal	DAAD Fellowship	The German Academic Exchange Service (DAAD)	
5.	Sathesh Raja V	Sajan Kapil & Nelson Muthu	1st runner-up price	ASME Areo 3D conference 2023	Poster Presentation
6.	Umesh Melkani	Sajan Kapil & Swarup Bag	2nd runner-up price)	ASME Areo 3D conference 2023	Poster Presentation
7.	Ritam Sarma	Sajan Kapil & S N Joshi	runner-up prize	The Austrian Society for Metallurgy and Materials (ASMET), Vienna/ Austria, 17-19 October 2023	Poster Presentation
8.	Arnab Sarmah	S. Kanagaraj & Satoshi Ito (Gifu University)	One among the five winners of "Developing Countries Grant Competition"	International Society of Biomechanics in ISB/JSB Congress, Fukuoka, Japan, August, 2023	Poster and Oral Presentation
9.	Mr. Abir Saha	Poonam Kumari	2024 Winter Research Internship Program	Polytechnique Montréal, Canada	$1500 per month for 5 month.
10.	Aditya Sharma	Niranjan Sahoo	Prime Minister's Research Fellowship, Cycle – 10, 2023	Ministry of Education, Govt of India	Reseatch fellowship
11.	Dr. Sushmita Deka (Postdoc)	Niranjan Sahoo	Awarded International Travel Grant by SERB	DST, India	Conference Participation

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FACULTY MEMBERS

Sl. No.	Name	Name of the University/Institute/Org PhD degree received from	Designation	Areas of Interest
1.	Bag, Swarup	IIT Bombay	Associate Professor	Fusion welding processes, Finite element method, Laser micro joining, Heat transfer and fluid flow in fusion welding, Residual stress and distortion, Recrystallization in hot metal forming process, Optimization in manufacturing process
2.	Bandopadhya, Dibakar	IIT Kanpur	Associate Professor	Active materials, Artificial muscle materials, Smart structures, Robotics and mechanism, Composites, MEMS, Bio inspired design
3.	Banerjee, Atanu	IIT Kanpur	Associate Professor	Complaint Mechanism, Shape memory alloy, Bio-memetic devices
4.	Basireddy, Sandeep Reddy	IISc Bangalore	Assistant Professor	Nonlinear Dynamics of Mechanical Systems, Robotics and Control, Nonlinear Control for Underactuated Systems
5.	Basu, Dipankar Narayan	IIT Kharagpur	Associate Professor	Nuclear Thermalhydraulics, Supercritical Natural Circulation Loops, Domestic Air-conditioning, Computational Fluid Dynamics and Heat Transfer
6.	Biswas, Pankaj	IIT Kharagpur	Associate Professor	Manufacturing and Design: Computational weld mechanics, Solid state welding, Soft computing modeling of welding processes, FEM, Line

				heating
7.	Chakraborty, Debabrata	IIT Kharagpur	Professor	FRP, Composites, FEM, Fracture Mechanics and Design
8.	Dalal, Amaresh	IIT Kanpur	Associate Professor	Computational Fluid Dynamics, Heat Transfer, Structured Grid Techniques in Curvilinear Coordinates, Finite Volume Methods and Unstructured Grid Techniques, Natural and Mixed Convection Flows, Electrochemical Energy Conversion and Storage
9.	Das, Manas	IIT Kanpur	Associate Professor	Advanced Finishing and Nano-finishing Processes, Non-traditional Machining Processes, Machining of Advanced Engineering Materials, Micromanufacturing, Micromachining, Tribology, Laser Welding
10.	Dass, Anoop K.	IISc Bangalore	Professor	Computational Fluid Dynamics and Turbomachines
11.	De, Arnab Kumar	IIT Kanpur	Associate Professor	Numerical Methods in Fluid Flow and Heat Transfer, Convection, Turbulence
12.	Dixit, Uday S.	IIT Kanpur	Professor	Design and Manufacturing : FEM, Neural Network and Fuzzy Set Application; Mechatronics
13.	Dwivedy, Santosha K.	IIT Kharagpur	Professor & HOD	Non-linear Dynamics, Design and Robotics, vibrations
14.	Gautam, Sachin S.	IIT Kanpur	Assistant Professor	Design and Manufacturing : Nonlinear Finite Element Analysis, Computational Contact Impact Analysis, Adhesion, Rough Surfaces, Time Integration Schemes, Mixed Time Integration Schemes, Plasticity, Ductile Fracture, Continuum Damage Mechanics
15.	Hazarika, Shyamanta M.	University of Leeds, England	Professor	Robotics, Cognitive Systems, Knowledge Representation and Reasoning
16.	Joshi, Shrikrishna N.	IIT Bombay	Associate Professor	Micro fabrication: Laser micro forming, Micro machining: Micro electric discharge machining (EDM), Web based manufacturing, Process modeling and optimization of advanced manufacturing processes, Application of soft computing techniques in manufacturing
17.	Kakoty, Sashindra K.	IIT Kharagpur	Professor & Dean, Infrastructure, Planning and Management	Tribology, Duct Acoustics, Mechanical System Design, Rural Technology
18.	Kalita, Karuna	University of Nottingham	Associate Professor	Rotordynamics, Coupled Dynamics of Electro-Mechanical Systems, Vibration
19.	Kanagaraj, S.	IIT Kharagpur	Professor	Biomaterials, Carbon nanotubes based nanocomposites, Nanofluids, Materials characterization
20.	Kapil, Sajan	IIT Bombay	Assistant Professor	Rapid Manufacturing (3D Printing), Welding/Cladding Processes, CNC, Manufacturing Automation
21.	Khanikar, Prasenjit	North Carolina State University	Assistant Professor	Microstructural Materials Modeling, Micro-mechanics, Dislocation Density Based Crystal Plasticity, Deformation and Failure Mechanisms of Metallic Materials, Finite Element Method, Dynamic Behavior of Materials, Fracture Mechanics, Aluminum Alloys, Microstructural Characterization
22.	Kulkarni, Vinayak	IISc Bangalore	Associate Professor	High enthalpy flows, scramjet engine, experimental, aerodynamics, measurement

				science, CFD simulations
23.	Kumar, Bhaskar	IIT Kanpur	Assistant Professor	Hydrodynamic Stability, Bluff Body Flows, Computational Fluid Dynamics
24.	Kumari, Poonam	IIT Delhi	Associate Professor	Theory of plates and shells, Computational mechanics, Smart structures
25.	Madhusudhana, Gavara	IISc Bangalore	Assistant Professor	Computational Fluid Dynamics, Heat Transfer, Cooling of Electronics, Multi-phase flows, Cooling at Micro/Mini scales, Turbulent Fluid Flow and Heat transfer
26.	Mahanta, Pinakeswar	IIT Guwahati	Professor	Thermal Radiation with Participating Media, Fluidization, Energy Conservation and Renewable Energy
27.	Mandal, Shubhadeep	IIT Kharagpur	Assistant Professor	Microswimmers, Complex Fluids, Droplet Microfluidics, Electrohydrodynamics
28.	Mankodi, Tapan Krishnakumar	IIT Bombay	Assistant Professor	Rarefied Gas Dynamics, Computational Gas Dynamics, Hypersonic Aerothermodynamics, Non-equilibrium Flows, Galerkin Methods
29.	Mittal Rinku Kumar	IIT Bombay	Assistant Professor	Machining Dynamics: Chatter Free Machining
30.	Satish Kumar Panda	National University of Singapore (NUS), Singapore	Assistant Professor	Artificial Intelligence in Healthcare, Medical Image Processing, Diagnosis, Ophthalmology, Biomechanics, and Finite Element Analysis
31.	Mondal, Pranab Kumar	IIT Kharagpur	Assistant Professor	Microfluidics, Electrokinetics, Two Phase Transport, Microscale Transport of Heat, Flow Through Porous Media.
32.	Murthy, K. S. R. Krishna	IIT Kharagpur	Professor	Finite Element Methods, Error Estimation and Fracture Mechanics
33.	Muthu, Nelson	IIT Bombay and Monash University	Assistant Professor	Meshfree Methods, FEM, Fracture Mechanics, Composites, Structural Health Monitoring, Medical Device Innovation
34.	Muthukumar, P.	IIT Madras	Professor	Coupled heat and mass transfer analysis; Metal hydride based thermal machines, Conventional and Non-conventional refrigeration systems
35.	Nandy, Arup	IISc Bangalore	Assistant Professor	Finite Element Development and Analysis in Structure, Acoustics, Electromagnetics, Structural acoustic interaction, Magnetohydrodynamics, MEMS; Optimization
36.	Narayanan, Ganesh R.	IIT Bombay	Associate Professor	Material Forming and Joining
37.	Pal, Sukhomay	IIT Kharagpur	Associate Professor	Welding Process Monitoring and Control, Tool Condition Monitoring, Non-Conventional Machining Process Application of Artificial Neural Network, Genetic Algorithms and Fuzzy logic in manufacturing
38.	Panda, Biranchi	NTU Singapore	Assistant Professor	Advanced manufacturing and design, 3D/4D printing, Modelling and Characterization, Energy and sustainable environmental technologies
39.	Panda, Satyajit	IIT Kharagpur	Associate Professor	Composite materials, Nonlinear vibrations, Smart materials and structures, FEM, Functionally Graded materials and structures, Micromechanics.
40.	Pandey, Manmohan	IIT Kanpur	Professor	Dynamics and Control of Fluid-Thermal Systems, Nuclear Reactor Thermal-Hydraulics
41.	Robi, P. S.	IIT Bombay	Professor	Coating, Fracture Mechanics, Materials Processing, Metal Matrix composite, Metal Casting, P/M Processing

42.	Saha, Ujjwal K.	IIT Bombay	Professor	Propulsion, Turbomachinery, Wind Energy Conversion, Internal Combustion Engines
43.	Sahasrabudhe, Anil D.	IISc Bangalore	Professor (On deputation as Chairman of the All India Council for Technical Education)	Vibration and Noise, Condition Monitoring, CAD/CAM
44.	Sahoo, Niranjan	IISc Bangalore	Professor	Fluid and Thermal Engineering, Aerodynamics, Gas Dynamics, Instrumentation, Measurements and Experiments in Fluid
45.	Senthilvelan, S.	IIT Madras	Professor	Composites, Fatigue, Wear and Failure Analysis
46.	Soti, Atul	Monash University and IIT Bombay	Assistant Professor	Computational Fluid Dynamics and Heat Transfer, Fluid-Structure Interaction, Renewable energy, High Performance Computing, Immersed-Boundary Method, Spectral-element Method
47.	Sharma, Deepak	IIT Kanpur	Associate Professor	Optimal Design: Modeling and Computation, Engineering Design and Optimization, Genetic Algorithms, Multi-objective Optimization
48.	Tarkesh Dora Pallicity	IIT Madras	Assistant Professor	Continuum Mechanics of Solids and Fluids, Multiphysics and Multi-Scale Modeling and Simulation
49.	Tiwari, Rajiv	IIT Kanpur	Professor	Rotor Dynamics, Vibrations, Identification in Mechanical Systems, Rolling Element Bearing Design and Analysis, Application of Active Magnetic Bearings in Rotors, Vibrations based Condition Monitoring of Industrial Rotating Machines
50.	Ujendra Kumar Komal	IIT Roorkee	Assistant Professor	Additive Manufacturing of Polymer Composites, Bio-Composites, Natural Fibers