



FMFP 2021

**48th National Conference on
Fluid Mechanics and Fluid Power
27th December to 29th December, 2021**



**Birla Institute of Technology and Science
Pilani, Pilani Campus, Rajasthan-333031,
India**

Information Brochure

**48th National Conference
on
Fluid Mechanics and Fluid Power
December 27th-29th, 2021
Birla Institute of Technology and Science
Pilani, Pilani Campus
Rajasthan-333031, India**



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<http://bitspilanithermal.in/>

Welcome to FMFP-2021:

The National Society for fluid Mechanics and Fluid Power (NSFMFP) is a registered Society that has been functioning quite successfully over the past 49 years. One of the Society's main activities is to conduct the annual Fluid Mechanics and Fluid Power (FMFP) Conference. The main aim of the conference is to bring together the national experts on a common platform and share the state of the art on various topics related to fluid mechanics and fluid power. The previous editions of the national conference were held in IIT Guwahati, IIT Delhi, IIT Bombay, AmritaVishwaVidyapeetham University, etc. The upcoming national conference will be held at BITS Pilani, Pilani Campus, Rajasthan 27th to 29th December 2021.



Organizing Institute: BITS Pilani

Pilani, Campus

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Prof. Souvik Bhattacharyya, Vice Chancellor, BITS Pilani

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Advisor:

Prof. Raganayakulu C, Dept. of Mechanical Engineering, BITS Pilani, Pilani Campus.

Dr. Anirudh Singh Rana, Dept. of Mathematics, BITS Pilani, Pilani Campus.

Instruction for Author:

❖ Call for Papers

Original research articles broadly within the scope of the conference topics, written in English language are, solicited. The topics/tracks of the conference are as follows:

Track – 01: Fundamental studies in Fluid Mechanics

This track deals with various fundamental issues and perspectives in fluid mechanics. The topics of interest would include, but are not limited to:

- Boundary-layer flows
- Separated flows
- Unsteady and pulsating flows
- Supersonic and hypersonic flows
- Vortex dynamics

Track – 02: Measurement Techniques in Fluid Flows

This track deals with the state-of-the-art measurement techniques applied to various kinds of fluid flows. The topics may include one or more of the following:

- Velocity measurements such as Laser Doppler velocimetry, hot-wire/hot-film anemometry, PIV, Holography etc.
- Pressure and temperature measurement
- Force measurement
- Flow visualization techniques
- Flow actuators
- Sensors and sensor development

Track – 03: Computational Fluid Dynamics

This track would address various recent advances in the development and application of various computational fluid and gas dynamics techniques. The track includes, among others, the following areas:

- High resolution schemes
- Mesh-free methods
- Finite volume, finite difference and finite element methods
- Lattice Boltzmann method
- High performance computing
- Immersed boundary method

Track – 04: Instability, Transition and Turbulence

This track seeks fundamental as well as applied research contributions to instability, transition and turbulent flows. The topics of interest would include, but are not limited to:

- Fundamental studies in flow instability and transition
- Turbulence modeling
- Simulation on turbulence
- Turbulence mixing studies and heat transfer
- Turbulence in atmospheric studies
- LES and DNS

Track – 05: Fluid-structure Interaction

This track covers theoretical, experimental and numerical analyses of various fluid-structure interaction problems both from the fundamental and applied engineering domains. The topics of interest may include, but not limited to:

- Flow-induced vibrations
- Aeroacoustic
- Biological flows
- Flow control devices
- Floating Structure
- Underwater vehicles
- Bluff body

Track – 06: Multiphase Flows

This track will cover the novel measuring techniques, theoretical and computational modelling as well as experimental studies on multiphase flows. The topics of interest include:

- Liquid-solid flows
- Flow Boiling
- Cavitation
- Porous media flows
- Solid liquid flows with phase change
- Bubble and droplet dynamics

Track – 07: Micro-Nano Scale Transport

This track is devoted to the latest developments in fluid flow processes in micro-and nano-devices used in mechanical, chemical, aerospace, and biological engineering. The topics may include one or more of the following:

- Electro kinetic/magnetic flows
- Capillarity and wetting
- Bio MEMS

- Multiphase flows in micro channels
- Microfluidic instability
- Micro-scale experimental techniques
- Droplets
- Droplet evaporation
- Droplet dynamics

Track – 08: Bio-Fluid Mechanics

This track will cover the general area of bio-inspired fluid mechanics and engineering, and would include the following areas:

- Insects, birds and fish dynamics
- Bio-fluidics (micro/macro)
- Targeted drug delivery
- Lab on a Chip device development
- Hemodynamics

Track – 09: Aerodynamics

This track is dedicated to the recent developments in the various fields of aerodynamics and the related areas. The topics of interest would include, but are not limited to:

- Airplane aerodynamics
- Helicopter dynamics
- Unmanned/micro aerial vehicles
- Intake and nozzle aerodynamics
- Bluff body aerodynamics
- Sports ball aerodynamics
- Wind Engineering and Industrial aerodynamics

Track – 10: Turbomachinery

This track is devoted to the advancement of technology in the areas of turbomachinery flows, and would include the following topics:

- Hydraulic, steam, gas and wind turbines
- Pumps, fans, blowers and compressors
- Compressors/turbines
- Micro pumps
- Unsteady flows, stator-rotor interactions
- Aerothermal analysis of blades, turbine blade cooling

Track – 11: Propulsion and Power

This track will include new concepts, technologies, computational and/or experimental results in the areas of reciprocating internal combustion (IC) engines, gas turbine (GT) engines and rocket engines. The topics of interest would include, but are not limited to:

- IC engines for various applications
- Gas turbine engines and rocket engines
- Biofuel-run reciprocating IC and GT engines
- Combustion and emission studies
- Fuel injection
- Atomization and sprays
- Modeling and simulation

Track – 12: Miscellaneous Topics

This track will cover the theories, concepts, ideas, emerging technologies, computational and experimental analyses (as applicable) to the areas that are closely related to fluid mechanics and fluid power. The track includes, among others, the following:

- Non Newtonian fluid flows
- Nanofluid
- MHD and EHD flows
- Granular flows
- Nuclear reactor thermal hydraulics
- Fluidized bed technology
- Environmental fluid mechanics
- Data-driven fluid mechanics
- Transport phenomena in materials processing and manufacturing processes
- Energy engineering
- Ocean engineering
- Petroleum engineering
- Fluid Mechanics and Fluid Power Education

❖ Full Papers Submission:

- The maximum page limit for full paper - **5 pages**.
- The official language of the FMFP-2021 is English (Plagiarism: Less than 20%).
- Template of full length paper is available in the conference website.
- The authors will directly present their work at the conference as per the format recommended by the committee (oral presentation or poster presentation).
- All full-length manuscripts received in time, will be provided in electronic format at the time of the conference.
- Efforts are on to identify a reputed international publisher who will bring out the proceedings of the conference. Details on the publication procedure will be notified in the conference website as soon as it is finalized.
- At least one of the authors must register per full-length paper/poster.

❖ Papers Submission Link: <https://easychair.org/conferences/?conf=fmfp2021>

Registration:

Indian and SAARC participants:

Registration Fee	Academic Institute (Rs.)	Industry/R&D Organization (Rs.)	Students (Rs.)	Accompanying Person (Rs.)
Early bird registration	7,000/-	10,000/-	5,000/-	5,000/-
Late Registration (after 10 th Nov, 2021)	8,000/-	11,000/-	5,500/-	4,000/-

The above fee structure is exclusive of taxes.

Non- SAARC participants:

Registration Fee	Academic Institute (Rs.)	Industry/R&D Organization (Rs.)	Students (Rs.)	Accompanying Person (Rs.)
Early bird registration	20,000/-	30,000/-	10,000/-	10,000/-
Late Registration (after 10 th Nov, 2021)	25,000/-	35,000/-	15,000/-	10,000/-

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NSFMFP Members:

Registration Fee	Academic Institute (Rs.)	Industry/R&D Organization (Rs.)	Students (Rs.)	Accompanying Person (Rs.)
Early bird registration	6,000/-	9,000/-	4,000/-	4,000/-
Late Registration (after 10 th Nov, 2021)	7,000/-	10,000/-	4,500/-	4,000/-

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Important Dates:

Submission of full length paper:	10 th August, 2021
Authors (s) notification after review:	15 th September, 2021
Final Paper Submission:	15 th October, 2021
Notification of final acceptance:	30 th October, 2021
Early bird registration:	10 th November, 2021
Last Date of Registration:	20 th November, 2021
Date of Conference:	27th - 29th December, 2021

VENUE:

Venue:

The venue of the conference is **Birla Institute of Technology and Science, Pilani, Pilani Campus, Rajasthan, India.**

Lodging and Boarding:

All registered participants are expected to stay together in the Institute Hostels at nominal cost, during the conference. Sharing preference may be indicated during the online registration process. More details about the accommodation will be provided in the conference website in future.



Contact Details:



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Conference Website: <http://bitspilanithermal.in/>