

Event Report

Invited Lecture on “CFD Backed Decision Support Tools for the Cerebral Circulatory Disorders” on 4th February 2026, 4:00 PM onwards **at Homi Jahangir Bhabha Hall, CDC**

Organized by Department of Biomedical Engineering under the initiative of Industry Institution Collaboration Cell

Resource Person

Prof. Prasad Patnaik BSV
Department of Applied Mechanics & Biomedical Engineering
Indian Institute of Technology Madras, Chennai

Facilitators

- Dr. Sudip Paul, IICC-Coordinator and Associate Professor, Department of Biomedical Engineering, NIT Raipur
- Dr. Arindam Bit, Head of the Department and Associate Professor, Department of Biomedical Engineering, NIT Raipur

Objective of the Event

The invited lecture was organized with the objective of exposing students, research scholars, and faculty members to advanced computational techniques used in biomedical applications, particularly the role of Computational Fluid Dynamics (CFD) in developing decision support tools for cerebral circulatory disorders. The session aimed to bridge the gap between theoretical knowledge and real-world clinical applications.

Summary of the Lecture

The lecture commenced with a brief introduction of the speaker and the theme of the event by the organizers. Prof. Prasad Patnaik BSV delivered an insightful and technically rich talk focusing on the application of CFD in understanding cerebral blood flow and its implications in diagnosing and managing cerebrovascular disorders.

The speaker elaborated on:

- Fundamentals of cerebral circulation and hemodynamics
- Importance of CFD modeling in biomedical engineering
- Patient-specific modeling using medical imaging data
- Role of CFD-based simulations in predicting disease progression
- Development of decision support systems for clinicians
- Case studies highlighting aneurysms, stenosis, and other cerebral vascular disorders

Prof. Patnaik emphasized how CFD-backed tools can assist clinicians in treatment planning, risk assessment, and outcome prediction, thereby improving patient care. The lecture also highlighted current challenges, validation issues, and future research directions in computational biomechanics.

Interactive Session

The lecture was followed by an engaging interactive session where participants actively asked questions related to:

- Clinical reliability of CFD simulations
- Integration of CFD tools in hospital settings
- Computational challenges in large-scale simulations
- Research opportunities for students in biomedical CFD

Prof. Patnaik addressed all queries with clarity, encouraging students and scholars to pursue interdisciplinary research combining engineering, medicine, and computation.

Participants

The event witnessed active participation from:

- Postgraduate students of Biomedical Engineering
- Research scholars
- Faculty members from NIT Raipur and allied departments

Outcome of the Event

- Enhanced understanding of CFD applications in biomedical engineering
- Exposure to real-world research problems in cerebral circulatory disorders
- Motivation among students to explore computational modeling and translational research
- Strengthened academic and research interaction with IIT Madras

Conclusion

The invited lecture was highly informative and successful in achieving its objectives. The Department of Biomedical Engineering, NIT Raipur, expresses sincere gratitude to Prof. Prasad Patnaik BSV for sharing his expertise and valuable insights. The event significantly contributed to the academic enrichment of students and researchers and reinforced the importance of interdisciplinary approaches in modern biomedical research.

Glimpses:











