



CENTURION UNIVERSITY OF TECHNOLOGY & MANAGEMENT, ODISHA

NATIONAL WEBINAR

on

“NUMERICAL PREDICTION OF MICROSCALE FLUID FLOW AND HEAT TRANSFER”

22nd December 2021

Resource Person:

**Dr. Manoj Kumar Moharana.
Assistant Professor,
Department of Mechanical Engineering,
IIT, Rourkela**

No. of Participants: 50

Organized

By

**Department of Mechanical Engineering and Center for Computational Mathematics,
Centurion University of Technology and Management**

Coordinator: Prof. Manas Ranjan Padhi, Asst. Professor, Mechanical Department,
Centurion University

Time and duration: 2-4 PM (2 Hours)

Date: 22.12. 2021

Topic: Numerical prediction of microscale fluid flow and heat transfer

Resource Person: Dr. Manoj Kumar Moharana, Assistant Professor Grade I, Department of Mechanical Engineering, National Institute of Technology Rourkela

No of Participants: 50 participants from different schools of Centurion University of Technology and Management had registered and attended this webinar.

Objectives:

- To predict accurate fluid flow and heat transfer effects in micro channels under H2 boundary condition.
- To study the effects of structured roughness on pressure drop and heat transfer.

The program was conducted via Zoom.

Agenda

- 1) Welcome address by Prof. Manas Ranjan Padhi
- 2) Introduction of our Resource Persons by Prof. Manas Ranjan Padhi

- 3) Session taken by Dr. Manoj Kumar Moharana
- 4) Question and Answer Session
- 5) Vote of Thanks by Prof. Manas Ranjan Padhi

Resource Person Profile:

Dr. Manoj Kumar Moharana is working as Assistant Professor in Mechanical Engineering in National Institute of Technology Rourkela. He has completed his B.Tech in Mechanical Engineering from College of Engineering & Technology, OUAT and M.Tech in Thermal and & Environmental Engineering, IIT Kharagpur. He has completed his PhD. in Mechanical Engineering, IIT Kanpur. He has around 20 years of teaching experience and 10 years of research experience. He has published 21 papers in journals and presented papers in 41 national and international conferences. He is a member of reputed Professional Organizations. His research area includes Computational fluid dynamics, Micro-scale heat transfer, Cryogenic heat transfer, Two-phase heat transfer and Renewable energy systems.

Outcome

Through the webinar, it can be interpreted that, although the results are seen as relevant in microscale applications, they are applicable to any sized channels. Depending on the numeral results obtained for a wide range of aspect ratios, generalized correlations for fully developed laminar Nusselt numbers as a function of channel aspect ratio are discussed. This information can provide better understanding and insight for participants into the transport processes in the microchannels.

Photographs during Webinar conducted on Numerical Prediction of Microscale Fluid Flow & Heat Transfer:

The screenshot shows a Zoom webinar interface. The main slide is titled "Ranges of channel diameters employed in various applications" and displays a diagram with the following categories and their corresponding channel diameters:

- Boilers:** 25 mm
- Power condensers:** 2.5 mm
- Compact heat exchangers:** 2.5 mm
- Refrigeration evaporators/condensers:** 2.5 mm
- Large veins and arteries:** 2.5 mm
- Alveolar ducts:** 250 μm
- Alveolar sacs:** 250 μm
- Electronics cooling:** 250 μm
- Tubules:** 25 μm
- Henle's loop:** 25 μm
- Capillaries:** 2.5 μm

The Zoom meeting title is "Microscale Fluid Flow & Heat Transfer" and the host is "Dr. Manoj Kumar Moharana". The participant list on the right includes:

- Manas Padhi
- Debarjan Sen
- Dr. Manoj Moharana
- Pintu Kumar
- Dr.C.N.Kowthaman
- Sal Swagat Behera
- Dr. Manoj Moharana
- 200705110001 Snigdha Sudha ...
- 200705110002 SP PUJARANI BIS...
- 200705110003 ASWINI BISWAL
- BIKASH KUMAR BHOI
- Debarjan Sen
- Debashree Behera
- Debashish Pradhan
- Dr. Ashok Mishra
- Dr. Santosh Patro
- Dr.C.N.Kowthaman
- Jayajatalin Dehury
- Manas
- Pintu Kumar
- Prajna Paramita Debata
- PSVRamanaRao

Zoom Meeting

Manas Padhi (Host, me) | Dr. Manoj Moharana | Sai Swagat Behera | BINOD KUMAR DAS | SOUMYARANJAN RO... | Ashish Kumar Palej

Department of Mechanical Engineering
National Institute of Technology Rourkela
Rourkela (Odisha), India

What is Axial Back Conduction?

Microscale Fluid Flow & Heat Transfer | Dr. Manoj Kumar Moharana

Participants (30)

Q Find a participant

- Manas Padhi (Host, me)
- Dr. Manoj Moharana
- 200705110002 SP PUJARANI BIS...
- 200705110003 ASWINI BISWAL
- 200705110015 Sasmita Panda
- Ashish Kumar Palej
- B.Revanth. 190101161069
- BIKASH KUMAR BHOI
- BINOD KUMAR DAS
- Debanjan Sen
- Debashree Behera
- Dr. Ashok Mishra
- Dr. Santosh Patro
- Dr. C.N.Kowthaman
- Jayajatalin Dehury
- Pintu Kumar

Brochure related to the event:

Centurion UNIVERSITY

WEBINAR ON NUMERICAL PREDICTION OF MICROSCALE FLUID FLOW AND HEAT TRANSFER

Date: 22.12.2021
Time: 2 PM

Organised by :
Department of Mechanical Engineering (SOET)
in collaboration with Center for Computational Mathematics

Speaker
Dr. Manoj Kumar Moharana
Assistant Professor,
Department of Mechanical Engineering,
National Institute of Technology, Rourkela

centurion university of technology and management
Shaping Lives... Empowering Communities...

Participant List

Name	Faculty/Student	Name of University	Name of School	Department
Mukundjee Pandey	Faculty	Centurion University of Technology and Management	SoET	Aerospace
Sujit Mishra	Faculty	Centurion University of Technology and Management	Engineering and Technology	Mechanical
Gyanendra Kumar Mishra	Faculty	Centurion University of Technology and Management	School of Applied Science	Physics
Saugat kumar Shaw	Student	Centurion University of Technology and Management	School of Engineering and Technology	Mechanical Engineering
B PAVAN KALYAN	Student	Centurion University of Technology and Management	SOET	Mechanical
Debashree Debadatta Behera	Faculty	Centurion University of Technology and Management	SOET	Mechanical
Debanjan Sen	Student	Centurion University of Technology and Management	School of Engineering and Technology	Mechanical Engineering
Shiuli Patra	Student	Centurion University of Technology and Management	SOET	Aerospace Engineering
Sibasundar Mirda	Student	Centurion University of Technology and Management	SOET	Mechanical
Subhashree panda	Student	Centurion University of Technology and Management	SOAS	Department of Applied science
Shubham Chakraborty	Student	Centurion University of Technology and Management	School Of Engineering & Technology	Mechanical Engineering
Jayajatalin Dehury	Student	Centurion University of Technology and Management	SOAS	Applied mathematics
Aswini Biswal	Student	Centurion University of Technology and Management	School of Applied Science	Mathematics
Sourmya Ranjan Rout	Student	Centurion University of Technology and Management	Centurion university of technology and management	Mathematics
Ashish Kumar Palei	Student	Centurion University of Technology and Management	Centurion University, Bhubaneswar	MSc Applied Physics
Binod Kumar das	Student	Centurion University of Technology and Management	Soas	Mathematics
T.prasanth kumar	Student	Centurion University of Technology and Management	School of engineering and technology	Mechanical
Dillip Mohanta	Faculty	Centurion University of Technology and Management	School of Engineering	Mechanical
Bikash Kumar Bhoi	Student	Centurion University of Technology and Management	School of applied science	M.Sc. Physics
Saamita Panda	Student	Centurion University of Technology and Management	SOAS	M.sc Mathematics
Saka sonali	Student	Centurion University of Technology and Management	Centurion University of technology and management	Aerospace
Sujeet kumar padhi	Student	Centurion University of Technology and Management	Centurion University of Technology and Management	School of Applied Sciences
Anwesha Dalai	Student	Centurion University of Technology and Management	SOAS	Msc. Mathematics
Suryakanta Rout	Student	Centurion University of Technology and Management	Centurion university of technology and managemet	Mechanical
Shailesh Hessa	Student	Centurion University of Technology and Management	Centurion institute of technology	Mechanical
Pintu Kumar	Student	Centurion University of Technology and Management	Centurion University, paralakhemundi	Mechanical engineering
sp pujarani biswal	student	Centurion University of Technology and Management	Applied science	mathematics
Niyati Nitipragnya	Student	Centurion University of Technology and Management	Centurion University Of Technology And Management	Msc.in applied mathematics
SHASWAT SUBHANKAR SAHU	STUDENT	Centurion University of Technology and Management	SCHOOL OF APPLIED SCIENCES	MATHEMATICS
Santosh jena	Student	Centurion University of Technology and Management	School of applied science	SOAS
B.Revarth	Student	Centurion University of Technology and Management	school of engineering and technology	Mechanical
Subasini Sahu	Student	Centurion University of Technology and Management	School of applied science	Mathematics
Chhatra pal	Student	Centurion University of Technology and Management	School of engineering and technology	Mechanical engineering
DWITY SUNDAR ROUT	Student	Centurion University of Technology and Management	SCHOOL OF APPLIED SCIENCES	Physics
Rakesh swain	Student	Centurion University of Technology and Management	SOET	Mechanical
Khageswar V	Faculty	Centurion University of Technology and Management	School of engineering and technology	Mechanical
Lalatendu rout	Student	Centurion University of Technology and Management	School of engineering and technology	Mechanical
Vijay Miditana	Faculty	Centurion University of Technology and Management	School of Engineering and Technology	Mechanical
Prajna Paramita Debata	Faculty	Centurion University of Technology and Management	centurion university of technology and management	Mechanical Engineering
B. Jyoti Prakash	Student	Centurion University of Technology and Management	School of Engineering and Technology	Mechanical
Suryakanta Rout	Student	Centurion University of Technology and Management	Centurion university of technology and management	Mechanical
Somenik Sen	Student	Centurion University of Technology and Management	Centurion University of Technology and Management	Mechanical
Manas ranjan saho	Faculty	Centurion University of Technology and Management	CUTM	Mechanical engineering
Md jawed Akhtar	Student	Centurion University of Technology and Management	Centurion University of technology and management	Mechanical
Ramesh baskey	Student	Centurion University of Technology and Management	Centurion University of Technology and Management	Mechanical engineering
Sahil Dastgir Mulla	Student	Centurion University of Technology and Management	SOET	Mechanical
Dr Psv Ramana Rao	Faculty	Centurion University of Technology and Management	Centurion University of Technology & Management, VI	Mechanical
Sujit Kumar Rout	Student	Centurion University of Technology and Management	School of Engineering and Technology	Mechanical
Srigdha Sudha Mishra	Student	Centurion University of Technology and Management	School of Applied Sciences	M.Sc. Mathematics
Ashutosh Narayan Routray	Student	Centurion University of Technology and Management	Scholl of applied sciences	Mathematics



Prabhat K. Pattnaik
FDP Coordinator



Dr. Prasanta Ku. Mohanty
Dean Academic