International Conference on Thermo-Fluids and System Design

ICTFSD 2022
22-23 March 2022

Department of Mechanical Engineering
Birla Institute of Technology
Mesra, Ranchi-835215, Jharkhand
## DAY 1: 22.03.22

**Inauguration, 09:00 AM to 09:55 AM**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>9:00 AM to 9:05 AM</td>
<td>Prayer</td>
</tr>
<tr>
<td>9:05 AM to 9:10 AM</td>
<td>Brief Introduction by the Convenor, <strong>Professor Dipti Prasad Mishra</strong></td>
</tr>
<tr>
<td>9:10 AM to 9:15 AM</td>
<td>Welcome Address by Vice Chancellor, <strong>Professor Indranil Manna</strong></td>
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</table>
| 9:15 AM to 9:35 AM | Address by Guest of Honor **Dr. Sarit Kumar Das**  
**Professor, Indian Institute of Technology Madras**
(Former Director, Indian Institute of Technology Ropar) |
| 9:35 AM to 9:50 AM | Address by Chief Guest **Dr. Sanak Mishra**  
Former President Indian National Academy of Engineering and Indian Institute of Metals |
| 9:50 AM to 9:55 AM | Note of Gratitude                                                    |
| 9:55 AM – 10:00 AM | Break                                                                 |

**Keynote Lecture, 10:00 AM to 10:45 AM**

**Professor Prabal Talukdar (Indian Institute of Technology Delhi, India)**

Modelling of Heat and Mass Transfer: Fire-Clothing – Skin

[MS Teams Link: Click here to join the meeting]  
Joining code: 6s86uuc
### DAY 1: 22.03.22

**1st Session, 11:00 AM to 01:30 PM**

<table>
<thead>
<tr>
<th>Session 1A (Session Chair: Dr. AK Roy; Dr. Arun Sharma)</th>
<th>Session 1B (Session Chair: Dr. Bappa Acharjee ; Dr. Faisal Rahmani)</th>
<th>Session 1C (Session Chair: Dr. AC Mahato; Dr. Ritwik Maiti)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Performance analysis of a Phase Changing Material Based Thermocycler for Nucleic Acid Amplification</td>
<td>4. Numerical study of packed bed thermal energy storage with natural sandstone rock as a filler material</td>
<td>4. CFD Analysis of 2x2 Rod Bundles at Supercritical Flow Condition</td>
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</tbody>
</table>

**Session 1A:**  
Click here to join the meeting  
Joining code: gxkrpcl

**Session 1B:**  
Click here to join the meeting  
Joining code: 1vjm3nh

**Session 1C:**  
Click here to join the meeting  
Joining code: 2a48s4y

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**Lunch Break, 01:30 PM to 02:30 PM**

**Keynote Lecture, 02:30 PM to 03:00 PM**

**Professor Brian Norton (Tyndall National Institute, Ireland)**

Thermal Management of Photovoltaics

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Joining code: 6s86uuc
### DAY 1: 22.03.22

#### 2nd Session, 03:15 PM to 05:30 PM

<table>
<thead>
<tr>
<th>Session 2A (Session Chair: Dr. Abhijit Nag; Dr. Paritosh Mahata)</th>
<th>Session 2B (Session Chair: Dr. R.P. Sharma; Dr. Richa Pandey)</th>
<th>Session 2C (Session Chair: Dr. SK Dhiman; Dr. Mukesh Sharma)</th>
<th>Session 2D (Session Chair: Mr. Praveen J. Sanga; Dr. Joyjeet Ghose)</th>
</tr>
</thead>
</table>
| 1. Aerodynamic Performance of Dragonfly Inspired Corrugated Airfoils in Freestream Turbulence at Higher Angle of Attack  
2. Numerical treatment of cylindrical coordinate singularities for fluid flow simulations  
3. Magnetohydrodynamic Convective Instabilities in Binary Nanofluids with Thermodiffusion for H2O-LiBr Absorption Refrigeration System  
4. Electronic cooling using Thermal Interface material  
5. Computational investigation of performance characteristics due to geometric modification of vortex generators placed in finned tube arrays  
2. Numerical Analysis of Fluid Flow and Aerodynamic Performance of Dragonfly Wing Section at Low Reynold Numbers  
3. Design and CFD Analysis of Conical Cavity Receiver for Scheffler Dish  
4. A Simulation to Predict the behavior of Wet Cooling Tower in a Steam Power Plant  
2. Optimization and Thermal Performance Investigation of Cylindrical Rods Filled with PCM Material using CFD Simulation Method  
3. Performance evaluation of fin and tube heat exchanger based on different shapes of the winglets  
4. Quick and accurate estimation of nonlinear heat flux profile in steel billet continuous casting process with limited temperature sensors  
5. Effect of Antioxidant (Clove Oil) Additive to Evaluate Characteristics of Biodiesel-Fueled engines in terms of Performance and Emissions  
2. Nanostructured CeO2/Si-NWs: Synthesis, Characterization, and Applications in Energy Conversion and Storage Devices  
3. Characterization of Thin-Film Photovoltaic Modules Through Indoor Electroluminescence (EL) Imaging and Indoor Infrared Thermography (IR) Techniques  
4. Modeling of a Gd-Based Active Magnetic Regenerator for Near Room Temperature Magnetic Cooling System  
5. Numerical Investigation of Flow Control in Low Pressure Turbine Cascade using Gurney Flaps  

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**Session 2B:**  
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**Session 2C:**  
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**Session 2D:**  
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Joining code: bxbmtd0
## DAY 1: 22.03.22

### 2nd Session, 03:15 PM to 05:30 PM

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</table>

### Break, 05:30 PM to 06:30 PM

<table>
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<tr>
<th>ANSYS Training, 06:30 PM to 07:30 PM (Thermal Management of Battery)</th>
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</table>
# DAY 2: 23.03.22

**Keynote Lecture, 09:00 AM to 09:45 AM**

Professor Srinath Ekkad (North Carolina State University, USA)

The Key Role of Heat Transfer Analysis in Energy Systems Research

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**Break, 09:45 AM to 10:00 AM**

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### 3rd Session, 10:00 AM to 11:30 PM

<table>
<thead>
<tr>
<th>Session 3A (Session Chair: Dr. Praveen Mishra; Dr. Puja Rajhans)</th>
<th>Session 3B (Session Chair: Dr. OP Pandey; Dr. Sujeet Kr Mishra)</th>
<th>Session 3C (Session Chair: Dr. Anand Bharti; Dr. Debasree Ghosh)</th>
</tr>
</thead>
</table>
2. Numerical modelling of mixed mode solar dryer with latent heat storage for red chilli drying  
3. Convective Instability in Binary Nano fluids for Absorption Phenomenon with Cross Diffusions and Internal Heat Source  
4. Study of viscosity effect on Rayleigh-Taylor instability in two-fluid layers with Marangoni effect  
5. Surface water quality assessment of Harmu River of Ranchi district  
2. Numerical Simulation on kerosene- water flow through Sudden Contraction pipe  
3. Water Droplet Motion Dynamics on Linear Wettability Graded Surface for Microgravity Applications  
4. Design of Therminol VP-1 oil based parabolic trough collector  
5. Simulation of Mechanical Heart Valves  
2. Suitability of Eddy Viscosity Based Turbulence Models in Cyclone Separators  
3. Investigation of wear rate of AISI 1040 steel at different relative humidity and temperature  
4. Flow Regimes and Flow Patterns for Kerosene - Water Flow Through 15o Inclined Return Bend  
5. Performance evaluation of cyclone separator with different transient formulation schemes in omega based RSM  

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**Session 3A :**

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**Session 3B:**

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**Session 3C:**

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**Break, 11:30 AM to 12:00 PM**
# DAY 2: 23.03.22

**4th Session, 12:00 PM to 01:30 PM**

<table>
<thead>
<tr>
<th>Session 4A (Session Chair: Dr. Rajeev Kumar; Dr. Nirmal Kumar)</th>
<th>Session 4B (Session Chair: Dr. Sudeepan Jayapalan; Dr. GT Mohanraj)</th>
<th>Session 4C (Session Chair: Dr. AK Kadian; Dr. Arkadeb Mukhopadhyay)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Day 2 Session</strong></td>
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<tr>
<td>inlets spiral microchannel</td>
<td>Plates Subjected to Blast Loading</td>
<td>Composite by using ZrB2: A systematic Review</td>
</tr>
<tr>
<td>Si-Mo-Cr Ductile Cast Iron</td>
<td>g Wedge High Tibial Osteotomy</td>
<td>2. Dynamic modeling and analysis of a hybrid power</td>
</tr>
<tr>
<td>4. Parametric Study of Stress Distribution in Bimodal</td>
<td>Casting Method</td>
<td>Steel Using Grey Relational Analysis</td>
</tr>
<tr>
<td>Curved Beam</td>
<td>4. Fabrication of Aluminium Based Metal Matrix Composites</td>
<td>4. Preparation and Investigation of Mechanical Properties</td>
</tr>
<tr>
<td>5. Computational Investigation of Porosity Effect on Free</td>
<td>Using Stir Casting Method and Characterize its Tribological</td>
<td>of 1350-h19 Al-Zn-Al2O3 Hybrid Metal Matrix Composites by</td>
</tr>
<tr>
<td>Vibration of Cracked Functionally Graded Plates using</td>
<td>Properties</td>
<td>Stir Casting Process</td>
</tr>
<tr>
<td>XFEM</td>
<td>5. Computational investigation for deformation of lipid</td>
<td>5. A Critical Review on Classification of Materials used in</td>
</tr>
<tr>
<td>6. Effect of graphene platelets reinforcement on vibration</td>
<td>membrane by BAR proteins due to electrostatic interaction</td>
<td>3D Printing Process</td>
</tr>
<tr>
<td>behavior of functionally graded porous arches under</td>
<td>6. Some investigations on the intermittent electromagnetic</td>
<td><strong>Session 4A</strong></td>
</tr>
<tr>
<td>thermal environment</td>
<td>radiation during plastic deformation of sintered powder</td>
<td><strong>Session 4B</strong></td>
</tr>
<tr>
<td></td>
<td>zinc specimens under compression</td>
<td><strong>Session 4C</strong></td>
</tr>
</tbody>
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### Session 4A:
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**Lunch Break, 01:30 PM to 02:00 PM**
# DAY 2: 23.03.22

## Keynote Lecture, 02:00 PM to 02:45 PM
**Professor Ashoke De (Indian Institute of Technology Kanpur, India)**
Viscous interaction between shock waves and separation region in hypersonic flow over a corner

## Break, 02:45 PM to 03:00 PM

## ANSYS Training, 03:00 PM to 04:00 PM
(Optimization using Ansys CFD – Parametrization, DoE, Adjoint, ROM)

## Break, 04:00 PM to 04:10 PM

## Valedictory, 04:10 PM to 04:45 PM
**Welcome to Dias** 4:10 PM to 4:12 PM
**Speech by Convenor, Professor R.P. Sharma** 4:12 PM to 4:20 PM
**Speech by Professor S. Konar** 4:20 PM to 4:30 PM
**Ex-Vice Chancellor and BM Birla Chair Professor** 4:30 PM to 4:32 PM
**Best Paper Award** 4:32 PM to 4:40 PM
**Vote of Thanks from Conference Secretary** 4:40 PM to 4:45 PM

**National Anthem** 4:45 PM to 4:50 PM

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