AMALGAM 2023

TATA STEEL

METSA

# AMALGAM 2023

**Name:**

**College:**

# PASSPORT

# AMALGAM 2023

## What is Amalgam?

"Amalgam" is an annual technical event hosted by the Department of Metallurgical and Materials Engineering at IIT Madras. This event is a platform for students to showcase their technical prowess and creativity in the field of Metallurgy and Materials Science through various competitions, workshops, and lectures, as well as to celebrate our culture and diversity through cultural events.

## About METSA:

MetSA is a student-led organization at IIT Madras, focused on promoting a strong sense of community among MME students. The group organizes various events, including Industrial Visit, Fresher's Night, Farewell, and Informal Games, to provide opportunities for students to excel academically and socially.

# AMALGAM 2023

# WORKSHOPS:

## Computational Workshop:

This workshop is designed for researchers, scientists, and engineers interested in gaining a deeper understanding of thermodynamics and its applications in materials science and metallurgical engineering. The participants will learn the principles and techniques used in thermodynamic modeling and simulation.

## Material Characterisation Workshop:

This workshop is designed for researchers, scientists, and engineers interested in gaining a deeper understanding of thermodynamics and its applications in materials science and metallurgical engineering. The participants will learn the principles and techniques used in thermodynamic modeling and simulation.

# AMALGAM 2023

## Additive Manufacturing for Bio-Implants Workshop:

This workshop is designed for researchers, scientists, and engineers interested in gaining a deeper understanding of thermodynamics and its applications in materials science and metallurgical engineering. The participants will learn the principles and techniques used in thermodynamic modeling and simulation.

## Machine Learning in Material Science Workshop:

This informative workshop covers the basic concepts of Machine Learning, data preprocessing techniques, feature selection, model selection, and model evaluation. Participants will be exposed to the application of Machine Learning in materials science, such as in material design, discovery, and characterization.

# AMALGAM 2023

# COMPETITIONS:

## Nano-Artography:

Nano-Artography is an online competition to test your imaging skills and creativity. You can present the image obtained through any kind of microscopic equipment, such as Scanning Electron Microscopy, Atom Probe Tomography, etc., by adding creativity to your microstructure.
The Winning microstructure will be displayed on the Amalgam 2023 website and social platforms of the MME department of IITM

## Etch it:

Etch it is an offline event that involves presenting your microstructure in the form of a hard-colored printed copy at the symposium venue. The image of the microstructure can be obtained through any kind of microscopic equipment.
The Winning microstructure will be displayed on the Amalgam 2023 website and social platforms of the MME department of IITM

# AMALGAM 2023

## Industry-Defined Problem:

Participants will be presented with problem statements related to various aspects of space exploration and nuclear research. They will then have to develop innovative and practical solutions to these problems. The solutions will be evaluated based on their feasibility, originality, and potential impact.

## Prize Money:

The shortlisted participants will get a chance to present their solutions in front of the scientists from ISRO and IGCAR, and the best solutions will be awarded (prize money)
Winners will get a certificate along with a cash prize.

# AMALGAM 2023

## Coding Competition:

This event has 2 rounds; where in the first round, the participants will be quizzed on basic Metallurgical and Materials science questions. The second round will consist of coding problems that you will have to solve as fast as possible.

## Meta Quiz:

This event has 2 rounds. The first round of the quiz is a general knowledge round. The second round of the quiz is a problem-solving round that challenges participants to apply their knowledge to solve real-world problems related to metallurgy and materials science.

# AMALGAM 2023

## Debate Competition:

There are 3 levels of tests present in this competition. The 1st round is a general aptitude test, where only shortlisted participants will move to the next round. The 2nd round is a buzzer round, where the top 4 teams proceed to the final round. The 3rd round is a debate round.

## Treasure Hunt:

This event involves the participants to answer questions that take them to different points of the maze until they exit victoriously.

# AMALGAM 2023

## Workshops:

| FULL-DAY WORKSHOP | | Date | Timings | Venue |
|---|---|---|---|---|
| SEM | Lecture | 21-04-2023 | 12:00 PM - 12.45 PM | Hall 3 (ICSR) |
| | Demonstration | 21-04-2023 | 4:00 PM - 6:00PM | MSB |
| TEM | Lecture | 21-04-2023 | 12.45 PM - 1.30 PM | Hall 3 (ICSR) |
| | Demonstration | 21-04-2023 | 4:00 PM - 6:00PM | HSB |
| APT | Lecture | 22-04-2023 | 11:30 AM - 12:00 PM | TTJ (ICSR) |
| | Demonstration | 22-04-2023 | 12:30 PM - 01:15 PM | TTJ (ICSR) |

# AMALGAM 2023

| Workshop | | Date | Timings | Venue |
|---|---|---|---|---|
| Computational Thermodynamics | Lecture | 21-04-2023 | 2.00 PM - 3:00 PM | Hall 1 (IC&SR) |
| | Demonstration | 21-04-2023 | 3:00 PM - 4:00 PM | Hall 1 (IC&SR) |
| ML in materials | Lecture | 23-04-2023 | 11:30 AM - 12:30 PM | Hall 2 (IC&SR) |
| | Demonstration | 23-04-2023 | 12:30 PM - 1:30 PM | Hall 2 (IC&SR) |
| Additive Workshop | Lecture | 22-04-2023 | 11:30 AM - 12:30 PM | NAC Seminar Hall |
| | Demonstration | 22-04-2023 | 12:30 PM - 1:30 PM | NAC Seminar Hall |

# COMPETITIONS:

| Name of the Competition | Date | Timings | Venue |
|---|---|---|---|
| Quiz | 22.04.2023 (R-1) | 16.00 - 18:00 | NAC - 204, 205 |
| Microstructure competition | 22.04.2023 | 10.30-11.30 | ICSR (outside TTJ) |
| Coding Competition | 23.04.2023 | 9:30 - 11:30 | NAC 204 |
| Debate | 23.04.2023 | 9:30 - 11:30 | NAC - 205 |
| IPSC | 23.04.2023 | 14.30 - 16.30 | NAC - 205 |
| Treasure hunt | 23.04.2023 | 14.30 - 17.30 | NAC |

# National Symposium

## 22 April 2023

| Timing | KeyNote Lecture | Venue |
|---|---|---|
| 11:25 - 12:05pm | Dr. Anil Kumar V<br>Prof. A S Panwar | Hall 1<br>Hall 2 |
| 12:10- 12:50pm | Dr. Chittaranjan Das | Hall 1 |
| 3:35 - 4:15pm | Prof. Krishanu Biswas | Hall 1 |
| | Prof. Somjeet Biswas | Hall 2 |
| | Prof. Rowthu Sriharitha | Hall 3 |

# National Symposium

## 23 April 2023

| Timing | KeyNote Lecture | Venue |
|---|---|---|
| 10:35 - 11:15 AM | Prof. Chenna Rao Borra | Hall 1 |

# Plenary Lecture

## 21 April 2023

### Debashish Bhattacharjee

*Vice President Technology & New Materials Business – TATA STEEL*

### A.G. Ponn Manickavel

*Inspector General of Police of Idol Wing, Economic Offences Wing of Tamil Nadu Police.*

### Dr. Narayana Murty SVS

*General Manager of Materials Development and Production, Liquid Propulsion Systems Centre (LPSC); HOD of Vikram Sarabhai Space Centre.*

### Rajendra M Kelkar

*Principal engineer at GE Additive in Ohio. Specializes in powder Metallurgy, Additive Manufacturing, and developing binder jet materials and processes.*

### Dr. Sudarsanam Suresh Babu

*Director of Bredesen Center for Interdisciplinary Research and Graduate Education; Member of the National Science Board, USA.*

# Plenary Lecture

## 22 April 2023

### Dr. B. S. Murty

*Director Indian Institute of Technology, Hyderabad;*
*Recipient of Metallurgist of the Year award and Young Metallurgist award of Ministry of Steel and Mines.*

### Dr. Satyam Suwas

*Professor, Dept. of Materials Engineering, IISC; Indian Institute of Metals (Currently Chairman, Bangalore Chapter)*

### Dr. R Gopalan

*Adjunct faculty MME, IIT Madras.*
*Retired Head ARCI Hydrabad*

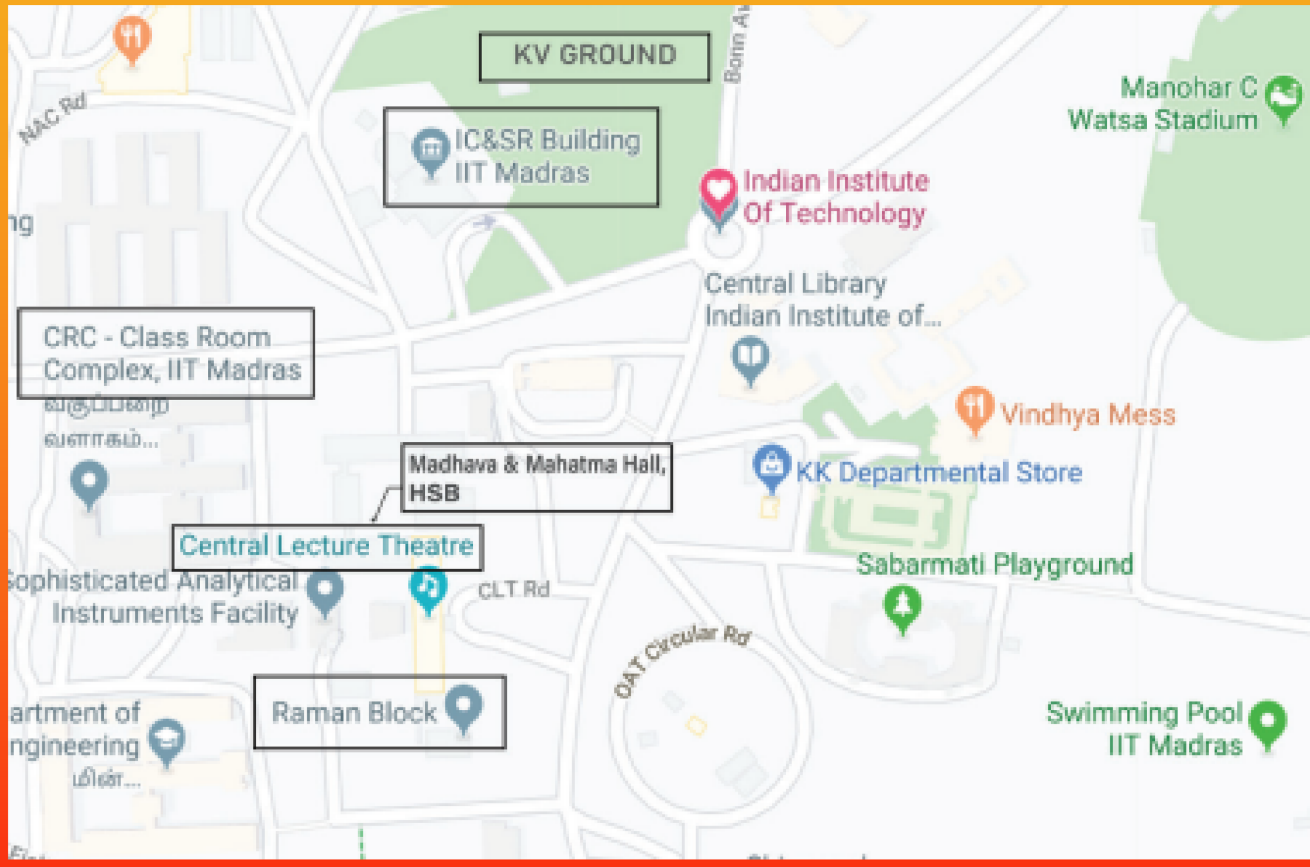
# Plenary Lecture

## 23 April 2023

### Dr. S. Venugopal

*Director of National Institute of Technology Nagaland;*
*Ex- IGCAR Kalpakkam;*
*Elected as "Fellow of American Society of Materials International (FASM)".*

# MAP


KV GROUND
NAC Rd
IC&SR Building
IIT Madras
Indian Institute
Of Technology
Manohar C
Watsa Stadium
Central Library
Indian Institute of...
CRC - Class Room
Complex, IIT Madras
Vindhya Mess
KK Departmental Store
Madhava & Mahatma Hall,
HSB
Central Lecture Theatre
CLT Rd
Sabarmati Playground
OAT Circular Rd
Raman Block
Swimming Pool
IIT Madras

# NOTES

# NOTES

# NOTES

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# Metallurgical & Materials Engineering Student Association