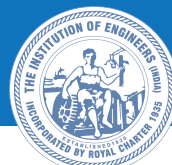




# NATIONAL DESIGN AND RESEARCH

## FORUM (NDRF) The Institution of Engineers (India)



### The Institution of Engineers (India)

The Institution of Engineers (India)/ IEI, is a professional body that brings together fifteen engineering disciplines and provides ample opportunities to interact, discuss and deliberate with the sole objective of finding solutions and dissemination of creative knowledge leading to service to mankind and the nation. It is perhaps the biggest professional body with nearly eighty thousand engineers in its fraternity. The institution has over one hundred twenty-five centres spread across the nation and has six overseas chapters making its working style true to the spirit of Vasudhaiva Kutumbakam. The headquarters of IEI(I) is at Kolkata. The Institution has on its impeccable record of serving the nation through education, assisting in policy framing, national projects and creating monumental edifices through consultation and advisory notes. Even in international arena, it has made its presence through bilateral agreements with thirty-one international bodies, and also affiliated to eight overseas bodies of advanced nations. It is interesting to record further that as the legacy goes, in the year 1935, IEI(I) was incorporated by Royal Charter, which is unique and perhaps with no parallel to this kind. It is heartening to note with pride that the Institution of Engineers (India) has recently crossed its centenary year of service with continuous journey since its inception in 1920.

The core focus areas of NDRF functioning are R& D Management, Micro, Nano and Bio Systems, Micro Air Vehicles (NP-MICAV), Sensors for Societal applications including Chemical and Biosensors, System Identification, Flapping Competitions for MICAVs, Development of Fuel Cells, ProtoLab, Rapid Prototyping and Tooling, Interfacing of Biology and Engineering.

We have consortium partners and associated organizations from industries, laboratories and academia, which helps us to expand in all horizons with expertise. NDRF always looks forward to collaborate with such organizations. Our endeavors and efforts will certainly help the nation by influencing the central and state policies in the current R&D and technology scenarios.

### B.M.S. College of Engineering (BMSCE)

B.M.S. College of Engineering (BMSCE) Bengaluru has the unique distinction of being the first private engineering college established in the country. Started in 1946, the institution owes its existence to the vision of its beloved founders, Late Sri. B. M. Sreenivasaiah and his illustrious son Late Sri. B. S. Narayan. Over the past 75 years, BMSCE has produced more than 40,000 graduates. The institution is approved by the All India Council of Technical Education (AICTE) and is permanently affiliated to Visvesvaraya Technological University (VTU), Belagavi. The college is accredited by the National Assessment and Accreditation Council (NAAC) with the highest grade of A++ in the Second Cycle and a CGPA of 3.83 on a scale of four which is one of the highest in the Country. BMSCE is the only Partner institution in the country of the Melton Foundation, USA, which promotes cross-cultural learning for the selected students along with peers from five other countries. The college offers 14 Undergraduate and 15 Postgraduate courses both in conventional and emerging areas, and also 14 research centres of the college recognized for the Ph.D. degree.

### Mechanical Engineering Department

The Department of Mechanical Engineering of BMSCE came into existence in the year of 1946. The UG program of the department is accredited for 6 years by National Board of Accreditation (NBA), India under Tier-I (According to Washington Accord) and is the first in the country. The Department has 53 well-experienced, qualified and dedicated faculties with specialization covering various areas of Mechanical Engineering. The department is equipped with cutting-edge technology such as Material testing and characterization (SEM/XRD), Non-Traditional Machining (Abrasive Water Jet Cutting (AWJC) and Wire Cut Electric Discharge Machining), CNC Machining (Turning and vertical milling centre), and several others and also has many research projects sponsored by various organizations (DST-SERB, AICTE, DRDO and AR&DB). Further, as part of an academic-industry collaboration, the department has a Product innovation lab (3DPLM-Dassault Systèmes).

The Institute also provides a platform to disseminate the research findings and product development efforts in industries by way of publishing technical papers in journals brought out in collaboration with M/s. Springer. While there have been numerous engineering colleges offering opportunities to pursue engineering education, the institution of Engineers IEI(I) was known earlier for its noble initiative of offering engineering education leading to a certificate with Associate Membership, AMIE, which is recognized as equivalent to engineering degree by any University.

The Institution, in addition to local centres and state centres has seven fora like NDRF, NSDF, RDF, SWF, DAMF and the Engineering Staff College of India (ESCI) dedicated to promote engineering skills, knowledge and technologies in a sustained manner and are all governed by Boards and Council members of eminence and expertise.

Further, it hosts a website [www.ieinida.org](http://www.ieinida.org) to seek all end-to-end professional pursuits of IEI.

### National Design and Research Forum (NDRF)

National Design and Research Forum (NDRF) established by the Institution of Engineers (India), promotes Research, Design, Development, Productization, and Innovation through collaborative effort since 1969. NDRF is anchoring interdisciplinary technological research and plays a major role in deploying engineering and technology services, systems and solutions for nation building. NDRF has emerged as a forum for exploring and disseminating new and emerging design and research concepts.

## Hosting National Conference On Additive Manufacturing in Aerospace, Defence (AMAD - 2022)

2<sup>nd</sup> July 2022

and other Engineering Sectors

Webinar Mode

Co - hosted by Department of Mechanical Engineering,  
BMS College of Engineering, Bengaluru



### Co - Organised By



IIT Kanpur



IIT JAMMU



Azadi Ka  
Amrit Mahotsav



RVCE



NMIT

### Also in Association With

 Society for Failure Analysis (SFA), Bengaluru Chapter	 Indian Welding Society (IWS), Bengaluru Chapter	 Indian society for Advancement of materials and Processing Engineering (ISAMPE)
 Indian Institute of Plant Engineers (IIPe), Bengaluru Chapter	 ASM International, Bengaluru Chapter	 Wipro 3D
 Indian Institute of Information Technology, Kancheepuram (IIITDM Kancheepuram)	 Siddaganga Institute of Technology (SIT), Tumkur	 Sri Krishna Institute Of Technology (SKIT), Bengaluru
 Sambhram Institute of Technology, (SaIT), Bengaluru	 Anna University	 BMS Institute of Technology & Management (BMSIT&M)
 Alliance University		

### Register using below link

[https://docs.google.com/forms/d/e/1FAIpQLSdMwRx6uZbfc\\_d\\_ekTjvX2hDHHoDWjsemXowQXz3cCUFGLvwx/viewform](https://docs.google.com/forms/d/e/1FAIpQLSdMwRx6uZbfc_d_ekTjvX2hDHHoDWjsemXowQXz3cCUFGLvwx/viewform)

National Design and Research Forum  
The Institution of Engineers (India) #3, Dr. B. R. Ambedkar Veedhi, Bengaluru - 560 001  
Email : [ndrf85@gmail.com](mailto:ndrf85@gmail.com) | [ndrf@ieindia.org](mailto:ndrf@ieindia.org) | +91 9901903336  
Website: [www.ndrf.res.in](http://www.ndrf.res.in)



## Conference Theme

Additive manufacturing (AM) also known as 3D Printing being a novel and recently acquired techniques enables increased design freedom via layer-by-layer deposition of powder and having unique structural design features. These are not possible through conventional manufacturing route. AM enables economic production of low-volume engineering components that can be highly specialized. AM finds good lot of applications in aerospace, defense, automotive and other engineering fields. A reasonable amount of work has been reported regarding research and development activities in 3D printing, also known as rapid prototyping for achieving the improved properties in terms of strength, corrosion, wear, residual stress and metallurgical characteristics. In the 3D printing technology, Direct Metal Layer Sintering (DMLS) and Selective Laser Sintering (SLS) processes are quite popular and widely used. The adoption of different input settings such as layer thickness, laser-scan speed and its orientation, types of powders are important to optimize the process parameters. However, AM has certain challenges such as component size, consistency in the product quality, limitations of scalability, usage of very few and expensive material powders and limited multi-material capabilities. Hence the conference addresses and discusses these challenges and issues in various engineering sectors specially aerospace, defence and other industries such as transportation, energy, chemical, electronics, electrical and biomedical implants.

## Objectives

The conference organized on additive manufacturing technologies are designed to provide a good transformation to produce parts/products to near net shape as well to deliberate key issues. Further the conference would serve as a platform and immensely benefits the practicing engineers, industrialists for scientists, researchers, students, academicians from the manufacturing/production units, quality control departments, R & D establishments, education institutes from the point of learning exercise, gaining knowledge, part of problem solving, standardizing the input parameters to get best properties, achieving reliability in the performance and discuss the challenges pertaining to AM by way of interactions and assimilation of facts.

The conference primarily focuses on the technological development and advances in AM, residual stress induced during AM manufacturing, developing Indian standards for AM, repair technologies and exploring development of ecosystem in training and awareness of AM. Exhibition and demonstration of producing AM parts involving automation are planned with the participation of leading manufacturers and software companies.

## Participation

Scientists / Engineers from Industries and R&D Institutes, Research Scholars and Students are encouraged to send abstracts.

## Topics

1. AM Challenges and Advances in Design, manufacturing and product quality.
2. Mitigation, measurements and management of Residual stress in AM process, Components and Structures.
3. Computational, modeling and simulation of AM process, components and structures.
4. AM for Repair, Retrofitting & Restoration Refurbishment Technologies.
5. 3D Printing and Space Exploration
6. Evolving standards for AM production.
7. Eco system development for AM associated laboratories/ R&D institutes/Academia/Industries.

## Call for contributed abstracts / papers

The Participants/persons are invited to submit an abstract of their original work. This will be reviewed by the expert panel. The selected abstract shall be presented as oral paper and also planned to publish in the special issue of a leading journal covered by science citation Index (Scopus Index, Google Index with IESSA number). The one page abstract may be sent to the **E-mail Id: [ndrfncamad2022@gmail.com](mailto:ndrfncamad2022@gmail.com)**. The articles are invited from the practicing engineers, research scientists, academicians, research scholars and students. The merited papers presented in the conference abstract prizes / awards. The delegate participation and abstract submission letters, template for paper submission, registration link, registration form, tentative program schedule and last date for submission of full length paper are provide in the **website: <https://ndrf.res.in/nc.html>**.

## Resource persons

Prof. Satyam Suwas, IISc  
Dr. U. Chandrashekar, WIPRO  
Dr. P. Ramesh Narayanan, VSSC  
Prof. J. Ramkumar, IIT Kanpur  
Dr. S. Anandkumar, IIT Jammu  
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Dr. Bala Vaidhyanathan, Loughborough University, UK  
Dr. Nikhil Gupta, New York University, USA  
Mr. B. K. Nagesh, GTRE, DRDO  
Dr. L. Jyothish Kumar, AMSI

## Registration

Participants / delegates are required to register for the Conference by filling an application available in the website (**[www.ndrf.res.in](http://www.ndrf.res.in)**). The registration fee details are given below.

1. Persons from Industries and National R & D Organizations : Rs. 1000/-
2. IEl and Conference Associating Member : Rs. 500/-
3. Research Scholar / Faculty / Student : Rs. 100/-

The E - Certificates will be issued to the registered participants/delegates. Registration may be done through the link provided in the website, which also covers payment option.

## Important Dates

One Page Abstract submission : 25-06-2022  
Acceptance of Abstract : 29-06-2022  
Last date for Registration : 01-07-2022

## Online Payment

Account Holder Name : “The Institution of Engineers (India) – A/c NDRF”  
Name of the Bank : State Bank of India  
Account No : 64146494189  
Name of the Branch : Dr. B.R. Ambedkar Veedhi, Bengaluru  
IFSC Code : SBIN0040022  
PAN No : AAATT3439Q

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