

# A.J. INSTITUTE OF ENGINEERING & TECHNOLOGY

A Unit of Laxmi Memorial Education Trust ®

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## Department of Mechanical Engineering



**TEQIP 1.3 SPONSORED**

**FIVE DAY FDP ON**

**3D PRINTING**

**08<sup>th</sup> – 12<sup>th</sup> JULY 2019**

*In association with*

**Visvesvaraya Technological University (VTU)**

**“Jnana Sangama” Belagavi**

**Aryabhata Knowledge University, Patna, Bihar**

**Biju Patnaik University of Technology, Rourkela, Odisha**



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## DAY 1 – 08<sup>th</sup> July 2019

### Morning Session:

The FDP started at 9:00 AM with a registration session and breakfast for the delegates and participants. After that FDP is started with inaugural session on 8<sup>th</sup> July, 2019 morning at 9:30 AM at Seminar Hall-1. The program started by an invocation song sung by Ms. Chaitrali and Ms. Harshitha Amin, followed by lighting the lamp. **Dr. C. P. Paul**, Head, Laser Additive Manufacturing Laboratory, RRCAT, Indore, **Mr. Prashanth Shetty**, Vice President, LMET, Mangaluru, **Dr. Shivakumar H. R.**, Special Officer, VTU Extension Center, Mangaluru, **Dr. Shantharama Rai C.**, Principal, AJIET, Mangaluru and **Dr. Rajesh Rai P.** Convener & Head, Mech. Engg. Department, AJIET. Mr. Sunil Kumar S to introduce our Chief Guest Dr. C. P. Paul, to our esteemed audience. Dr. Shantharama Rai C., Principal, gave welcome address by inviting the gathering which includes around 33 external participants from various engineering colleges in and around Karnataka, various department heads and faculty members of A. J. Institute of Engineering and Technology. Dr. Rajesh Rai P. , Convener and Head, explained the significance of the FDP. Presidential address was delivered by **Mr. Prashanth Shetty**, Vice President, LMET, Mangaluru. **Dr. C. P. Paul**, Head, Laser Additive Manufacturing Laboratory, RRCAT, Indore was the chief guest for the inaugural function, shared his valuable thought on 3D Printing and recent development in globally. **Dr. Shivakumar H R** was the guest of honour for the inaugural function and address the gathering. The session was followed by release of the course material by the dignitaries and concluded by proposing vote of thanks by Mr. Vijay kumar H K, CO-Convener of the FDP.



## Session 1:

**Dr. C. P. Paul**, Head, Laser Additive Manufacturing Laboratory, Raja Ramanna Centre for Advanced Technology, Indore to deliver the keynote address on **Additive Manufacturing fuelling Industry 4.0**. In this session participants were learned the application of Additive manufacturing technologies in industry 4.0 which is very much trending aspects of mechanical engineering field.



## Session 2:

Session 2 started at 11:45 AM by **Dr. C. P. Paul**, to deliver the technical talk on **Metal Additive Manufacturing using Lasers**. In this session participants were learned the the different technologies have demonstrated significant advantages compared to conventional manufacturing routes.



**Afternoon Session:**

Prof. M R Doddamani, Department of Mechanical Engineering, NITK Surathkal has delivered a interactive lecture on “Additive manufacturing of Composites”. In his technical talk participants learnt various processing methods, problems in injection molding, processing parameters and results of various composite materials on mechanical properties.





## DAY 2 – 09<sup>th</sup> July 2019

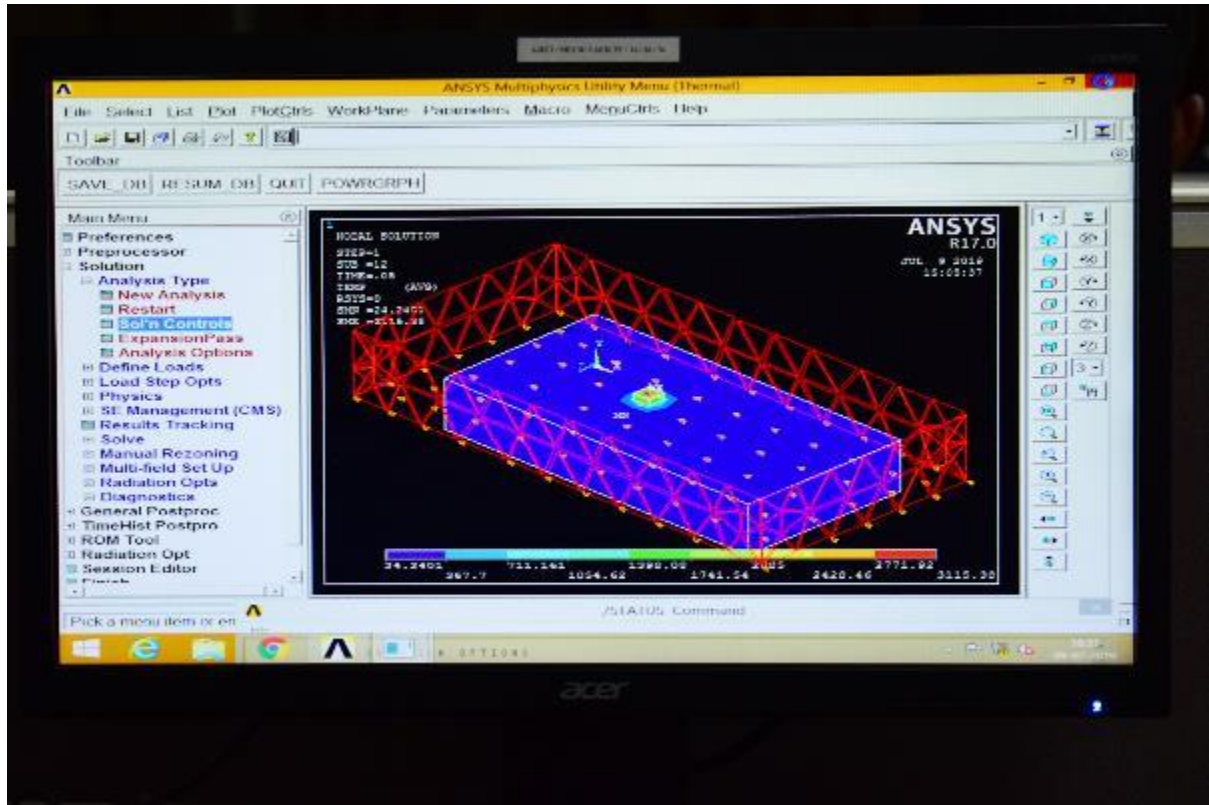
### Morning Session:

An informative lecture on “**Thermo-Mechanical Modeling of Laser Additive Manufacturing Processes**” was discussed by Prof. Shrikanth Bontha, Department of Mechanical Engineering, NITK Surathkal. Participants learned about Laser Additive Manufacturing (LAM) techniques such as Direct Metal Deposition (DMD) which is a powder fed technique and Selective Laser Melting (SLM) which is a powder bed technique both use a Laser to locally melt the powder and build layers to form the desired shape.



## Afternoon Session:

Prof. Shrikanth Bontha and his team also gave demonstration on ANSYS software tool in which he explained about the “Computational Modelling of Metal Additive Manufacturing Processes”. Participants are learnt the ANSYS software tool in which they developed model and used different computational techniques.



## DAY 3 – 10<sup>th</sup> July 2019

### Morning Session:

Prof. Manjaiah M., Department of Mechanical and Manufacturing Engineering, MIT Manipal, has illuminated on “**Metal Additive Manufacturing**”. In this session participants were gained with the knowledge need of metal additive manufacturing in industry with various factors affecting it and solution for those.





**Afternoon Session:**

Afternoon all the participants visited the Additive manufacturing lab at NITK. In this lab demonstration and hands on training is given to participants where they build the 3D printing model. Also participants learnt the actual practical knowledge of 3D printing machine.





## DAY 4 – 11<sup>th</sup> July 2019

### Morning Session:

Prof. **Dr. Deepa Srinivasan** Chief Technology Officer, INTECH DMLS Pvt. Ltd. Bengaluru had delivered technical talk on “**Successfully Qualified Metal Additive Manufacturing Applications**”. In this session participants were familiar with casting techniques along with heat treatment methods used for manufacturing the component.



### Afternoon Session:

Prof. **Dr. Deepa Srinivasan** also given the wonderful information on “**Mechanical Properties of Additive Manufactured Materials**”. In this session participants were learnt various mechanical properties of the materials along with the design aspects of 3D Printing. Also participants came to know about metal additive options, performance matrices and current scenario.



## DAY 5 – 12<sup>th</sup> July 2019

### Morning Session:

A discussion on “**Design for Additive Manufacturing**” was delivered by Prof. B. N. Manjunath, Scientist, Additive Manufacturing Technology, CMTI, Bangalore. In this session participants got the knowledge about industrial product development using additive manufacturing technology. Participants came to know about Direct Metal Laser Sintering with its applications and product developed by CMTI. Also talked about different design parameters involving time management.



### Valedictory Function:

The five days FDP program was concluded with a valedictory program was presided by Dr. Rajesh Rai P., Convener and Head, Department of Mechanical Engineering, AJIET and Dr. B. N. Manjunath, Scientist, Additive Manufacturing Technology, CMTI, Bangalore was the chief guest of the day. Our chief guest of the day handed over the participation certificate to the participants along with feedback.







Group Photo.