



ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Report of Technical Talk-II


Topic: "Additive Manufacturing and its Applications"

Resource Person: Dr. Roopa S

Associate professor, Department of Polymer Science and Technology,
JSSTU Mysore


Date: 27-05-2023

Time: 11:00AM to 12:30 PM.




**ALVA'S INSTITUTE
OF ENGINEERING & TECHNOLOGY**
Shobhavana Campus, Mijar, Moodbidri, Karnataka-574225

ELECTRONICS AND COMMUNICATION ENGINEERING



**A TECHNICAL TALK
in Association with
Envision Lab**



Talk
#2

27 June 2023 @ 11:00AM
"Additive Manufacturing and Its
Applications"
Venue: Alva's Civil department
Seminar Hall

ECE

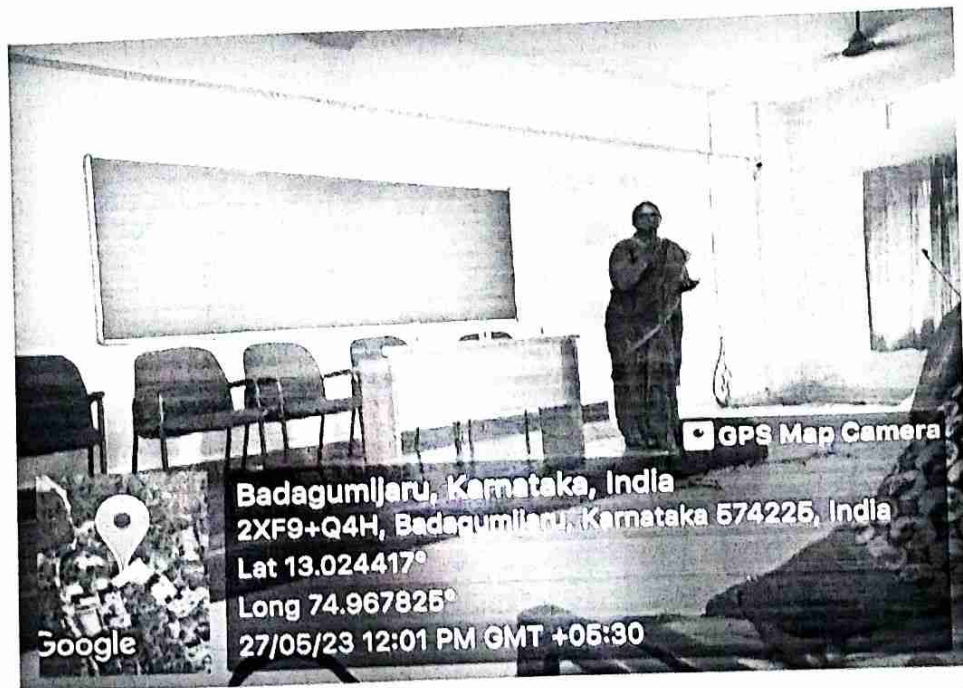
By
Dr. Roopa S
Associate professor,
JSSTU Mysore

Department of ECE in Association with Envision Lab conducted the second technical talk of the even semester 2022-23 on "Additive Manufacturing and Its Applications" by **Dr. Roopa S**, Dept. of ECE JSSTU Mysore on 27/5/2023.

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Resource person for the talk was **Dr. Roopa S.**, Associate professor, Department of Polymer Science and Technology, JSSSTU Mysore. She has teaching experience more than 25 years. She guided UG and PG projects. She is - Life Member of Indian Society for Technical Education (ISTE), New Delhi. Associate Member of Indian Rubber Institute, Life Member - Indian plastic Institute. She published papers in 12 international journals and contributed papers in 18 conferences.

The talk aimed to provide an overview of additive manufacturing, commonly known as 3D printing, and highlight its diverse applications in various engineering fields. The talk commenced with an introduction to additive manufacturing. It explained that additive manufacturing is a process of creating three-dimensional objects by layering materials based on a digital model. Unlike traditional subtractive manufacturing techniques, such as cutting or machining, additive manufacturing builds objects layer by layer, offering greater design flexibility and customization.



Key Principles of Additive Manufacturing: The speaker discussed the key principles underlying additive manufacturing



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- a. **Digital Design:** The process begins with a digital model of the object, created using computer-aided design (CAD) software or obtained from a 3D scan.
- b. **Layer-by-Layer Construction:** The object is divided into cross-sectional layers, and the printer adds material layer by layer, fusing or curing it to create the final product.
- c. **Material Selection:** Additive manufacturing employs a wide range of materials, including plastics, metals, ceramics, and composites, depending on the application requirements.
- d. **Post-Processing:** After printing, the object may require post-processing steps, such as curing, polishing, or painting, to achieve the desired final properties and appearance.

Applications of Additive Manufacturing:

The talk explored the extensive applications of additive manufacturing in various engineering domains:

- a. **Prototyping:** Additive manufacturing enables rapid prototyping, allowing engineers to quickly produce and test designs before committing to large-scale production.
- b. **Aerospace:** The aerospace industry utilizes additive manufacturing for lightweight and complex component production, reducing material waste and improving fuel efficiency.
- c. **Biomedical Engineering:** Additive manufacturing plays a crucial role in creating patient-specific medical devices, prosthetics, implants, and even human tissue scaffolds.
- d. **Automotive:** Additive manufacturing finds applications in automotive manufacturing for producing lightweight parts, custom components, and specialized tools.

Advantages:

- **Design Flexibility:** Complex geometries and intricate designs can be easily fabricated.
- **Rapid Prototyping:** Accelerated product development and reduced time-to-market.
- **Customization:** Tailoring products to specific user needs or preferences.
- **Material Efficiency:** Reduced material waste compared to traditional manufacturing.
- **On-Demand Manufacturing:** Cost-effective production of low-volume or niche products.

Limitations:

- **Limited Material Selection:** Certain materials may not be suitable for additive manufacturing.
- **Size Constraints:** Large-scale objects may pose challenges due to printer size limitations.
- **Surface Finish:** Achieving high-quality surface finish may require additional post-processing.
- **Cost:** Initial setup costs and material expenses can be relatively high.

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Finally Dr. Siddesh HOD, dept. of ECE expressed gratitude for giving such an informative talk to the students.



The technical talk on additive manufacturing provided engineering students with a comprehensive understanding of the principles, applications, advantages, and limitations of this transformative technology. By exploring various industries benefiting from additive manufacturing, the talk aimed to inspire students to leverage its potential in their future engineering careers.

