MICROBIOLOGISTS SOCIETY, INDIA STUDENT CHAPTER,
Department of Biotechnology,
KLEF, Vaddeswaram, Guntur, Andhra Pradesh

A REPORT ON GUEST LECTURE ON 12/08/2025

KLEF Deemed to be University
Department of Biotechnology
Report on Guest Lecture

Title of the Lecture: *Mechanically Optimized Scaffolds for Bone Tissue Engineering Applications*
Date: 12th August 2025
Time: 11:30 AM – 12:45 PM
Venue: Rose Hall, KLEF Deemed to be University, Andhra Pradesh
Speaker: Dr. Raghavendra Gujjala, Professor, NIT Warangal
Event Coordinator: Dr. Nadeem Siddiqui, Associate Professor, Department of Biotechnology

1. Introduction

The Department of Biotechnology, KLEF Deemed to be University, organized an insightful guest lecture on *Mechanically Optimized Scaffolds for Bone Tissue Engineering Applications* on 12th August 2025. The talk was delivered by **Dr. Raghavendra Gujjala**, a distinguished academician and researcher from NIT Warangal, renowned for his contributions in the field of biomaterials, tissue engineering, and scaffold design. The event aimed to expose students and faculty to recent advances in biomaterial development and its translation into bone regeneration therapies.

2. Overview of the Session

Dr. Gujjala began his lecture by introducing the concept of **bone tissue engineering**, highlighting the limitations of traditional bone grafting methods and the potential of synthetic scaffolds. He elaborated on the **mechanical optimization of scaffolds**, emphasizing parameters such as porosity, compressive strength, and bioactivity.

The session covered:

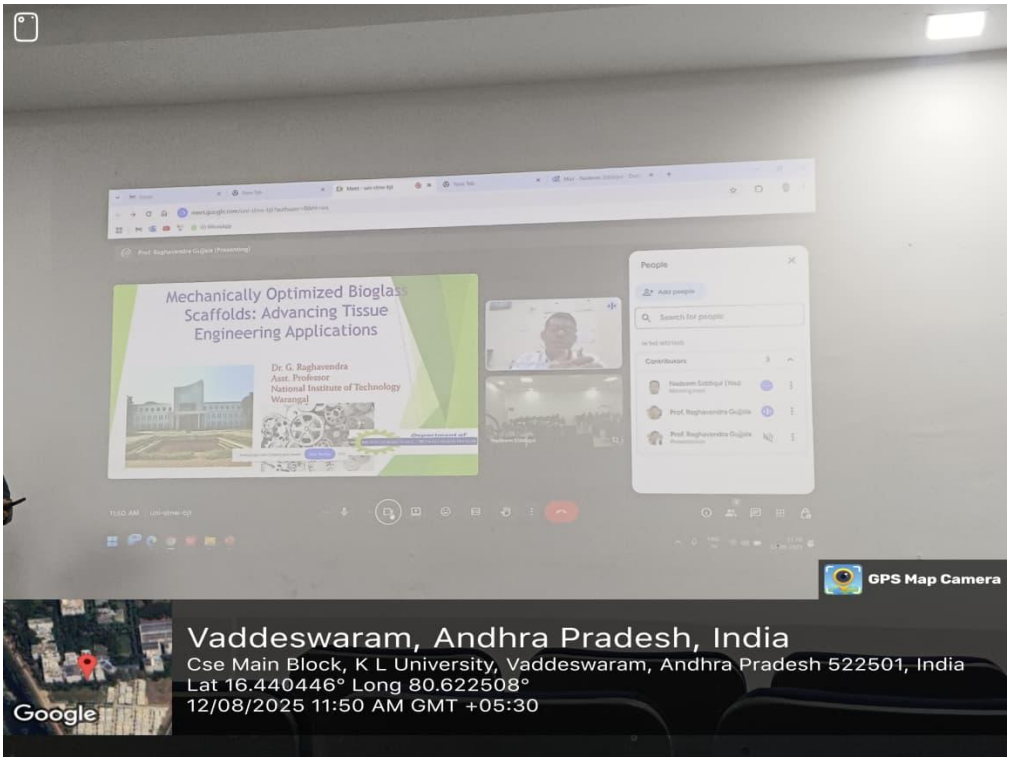
- Overview of scaffold fabrication techniques including 3D printing and freeze-drying.
- Material choices such as bioglass, hydroxyapatite, and composite scaffolds.
- Design considerations for matching the mechanical properties of natural bone.
- In vitro and in vivo evaluation methods for scaffold performance.
- Case studies and ongoing research projects at NIT Warangal.

3. Key Takeaways

- Mechanically optimized scaffolds are crucial for load-bearing bone regeneration.
- Scaffold architecture must balance mechanical strength with biological compatibility.
- Innovations in additive manufacturing enable patient-specific scaffold designs.
- Translational challenges include scalability, regulatory approvals, and clinical testing.

4. Interaction Session

The lecture concluded with an engaging Q&A session, where students and faculty interacted with Dr. Gujjala on topics such as drug delivery via scaffolds, bioactive coatings, and emerging trends in regenerative medicine.



Dr. Nadeem Siddiqui, during discussion with Resource person

5. Outcome and Impact

The lecture enriched the participants' understanding of **advanced biomaterials in orthopedics** and inspired UG and PG students to consider research opportunities in biomaterials and biomedical engineering. It also provided faculty with insights into possible collaborative research avenues.

6. Acknowledgements

The Department of Biotechnology extends its gratitude to **Dr. Raghavendra Gujjala** for his valuable time and knowledge sharing, and to the **Registrar and Management of KLEF** for their support in organizing the event. Special thanks to Dr. Nadeem Siddiqui for coordinating the lecture.

Prepared by:
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Date: 13th August 2025

Dr. V. Praveen Kumar

Department chair