

## **“Carbon Fiber”**

The Department of Physics organised a guest lecture entitled **“Carbon fibre: Next generation high-strength material for Automotive and industrial applications”**. The event was conducted on 27/05/2025 in the auditorium. The event started at 10.15 am and ended at 12.30 pm. Approximately 300 students of the Physics cycle attended the guest lecture.



Fig. 1 Guest lecture on Carbon fibre

Dr. Prosenjit Ghosh delivered an insightful talk on the emerging material, carbon fibre, and its potential as a high-strength solution for various industrial and automotive applications. He began the session by explaining the basics of polymers, including their structure, properties, and diverse

applications. These applications span across smart materials, liquid crystals, food technology, drug delivery systems, and tissue engineering scaffolds.



Fig. 2. Dr Ghosh speaking about the mechanical properties of Carbon fibre

The focus then shifted to the mechanical properties of carbon fibre, particularly its tensile strength, and methods for enhancing it. Dr. Ghosh elaborated on the major applications of carbon fibre, particularly in aerospace industries, where its lightweight and high-strength characteristics are critical. He also discussed its role in automotive engineering, especially in manufacturing high-end, performance-oriented vehicles.

A special mention was made of the early development of carbon fibre technology in India, and Dr. Ghosh showcased some pioneering works in this area. He then detailed the production process of carbon fibre via the PAN (Polyacrylonitrile) route, which involves three main stages and subsequent heat treatments to obtain the final carbon fibre product.

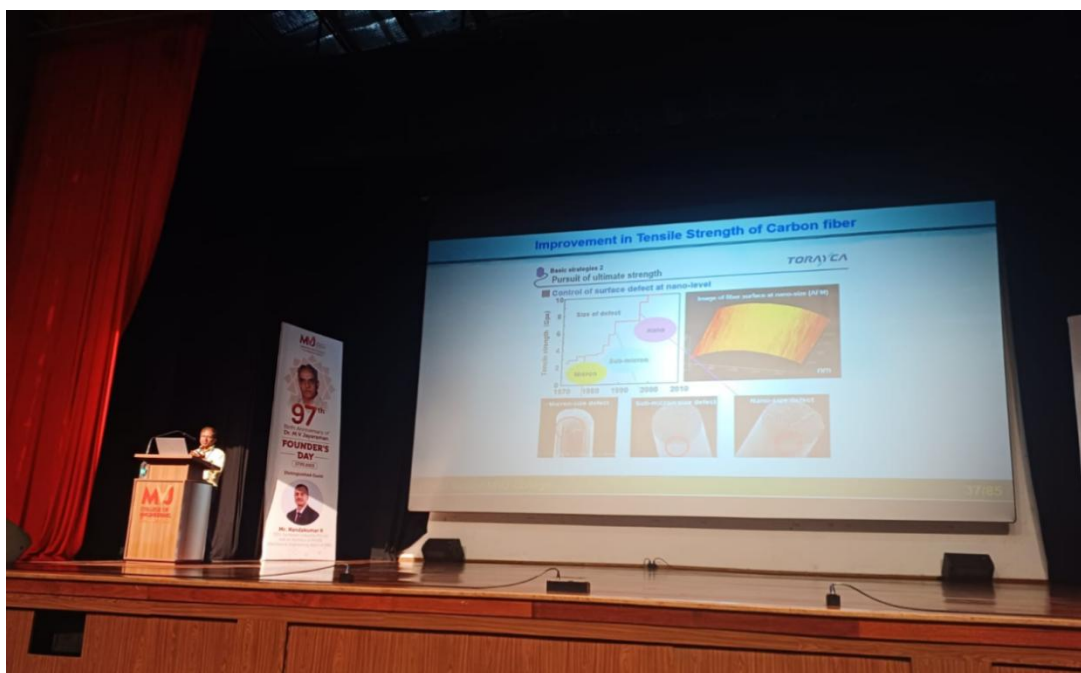


Fig. 3 Dr, Ghosh explaining the tensile strength of carbon fibre



Fig. 4 Students listening to Dr Ghosh's lecture

The talk concluded with an overview of the student opportunities at the National Aerospace Laboratories (NAL), encouraging participants to explore internships, research projects, and collaborative ventures. The session was highly interactive, with students actively participating in the Q&A.

Then Dr Sathish S. concluded the guest lecture with a vote of thanks.

### **Outcome of the Event**

The session bridged academic knowledge with real-world applications in the aerospace and automotive sectors. The discussion on polymer basics and production processes added to students' foundational knowledge in materials science and engineering. The open and engaging format helped clarify concepts and encouraged students to think critically about the role of materials in engineering design. Information about opportunities at NAL inspired students to explore research and career prospects in advanced material science and aerospace sectors.

The session by Dr. Prosenjit Ghosh was both educational and motivational. It broadened the students' perspective on the practical applications of high-strength materials like carbon fibre and opened avenues for further exploration in the field of advanced materials and aerospace technology.

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