ATHARVA EDUCATIONAL TRUST'S

ATHARVA COLLEGE OF ENGINEERING

(Approved by AICTE, Recognized by Government of Maharashtra & Affiliated to University of Mumbai - Estd. 1999 -

ACE/SEMINAR/HAS/FR- 32/2025-26

DATE: 18th November 2025

A Seminar on "Unlocking the Potential of Nanomaterials for Sustainable Energy Storage Technology"

Date:	18.11.2025
Time:	11.00 am to 1:00 pm
Venue:	Seminar Hall, fourth floor, Phase 3
No. of students attended:	FE Students
Resource Person:	Dr. Pravin Walke
Coordinator:	Dr. Shivani Singh, Dr. Sunita Dhawale, Prof. Abhay Bendekar

Objective:

The primary objectives of the lecture were:

1. To introduce students to the fundamentals of nanomaterials and their unique physical and chemical properties.
2. To explain the role of nanomaterials in modern energy storage technologies, including batteries, supercapacitors, and hybrid systems.
3. To expose students to current research advancements in sustainable energy solutions.
4. To build awareness about the environmental and sustainability aspects of using nanostructured materials.
5. To motivate students to explore research and higher studies in the fields of nanotechnology, material science, and renewable energy engineering.
6. To bridge the gap between classroom learning and real-world technological applications through expert insights.

Outcome:

The session successfully resulted in the following outcomes:

1. Enhanced understanding of nanomaterials and their significance in next-generation energy storage devices.
2. Improved awareness of ongoing research, technological innovations, and industry trends in sustainable energy engineering.
3. Motivated students to consider careers and research opportunities in nanotechnology, battery technologies, and green energy.
4. Strengthened technical knowledge related to advanced materials, energy systems, and real-world applications.
5. Increased student participation and interest in advanced engineering topics through an expert-led learning experience.
6. Ability to connect theoretical concepts learned in academics to practical innovations and challenges in the energy sector.

Highlights of the Session:

The key highlights of Dr. Pravin Walke's lecture included:

1. Comprehensive overview of nanomaterials, including nanoparticles, nanostructures, metal oxides, and carbon-based materials.
2. Explanation of how nanoscale engineering enhances energy storage performance, such as improved conductivity, higher surface area, and better stability.
3. Detailed discussion on lithium-ion and sodium-ion batteries, focusing on how nanomaterials improve electrode efficiency and lifecycle.
4. Insights into supercapacitors and hybrid energy storage systems, emphasizing fast-charging capabilities and high power density.
5. Real-world examples and case studies of advanced energy storage technologies used in industries and research labs.
6. Sustainability perspective highlighting eco-friendly nanomaterials and their importance in reducing environmental impact.
7. Interactive Q&A session where students actively engaged with the speaker regarding challenges, innovations, and career pathways.
8. Encouragement for students to pursue interdisciplinary research integrating nanotechnology and renewable energy systems.

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Seminar Photographs:

Dr. Shivani Singh
Dr. Sunita Dhawale

Co-Coordinators

Dr. Ritu Sharma

HOD-HAS

Dr.Ramesh Kulkarni

Principal