



MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE

Madanapalle-517325, Annamayya Dist., Andhra Pradesh, India.

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Report on

Alumni Guest Lecture held on 8.09.2025

Emerging Trends in Special Concrete for Modern Structures

 **MITS** **MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE** 
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ASCE STUDENT CHAPTER
Madanapalle Institute of Technology & Science

     

Alumni Guest Lecture
on
**Emerging Trends in Special Concrete
for Modern Structures**

 11am - 12pm
 8th September 2025
 Seminar hall - C

Shakeer Ahamed Shaik
Ph.D. Scholar (Structural Engineering)
NIT Warangal

Organized By: ASCE MITS Student Chapter, Department of Civil Engineering & Alumni Cell

Chief-Patron Dr. N. Vijaya Bhaskar Choudary Founder & Chancellor	Patron Mrs. N. Keerthi Executive Director	Co-Patron Dr. C. Yuvraj Vice Chancellor (I/c)
Chief Co-ordinator Dr. Dipankar Roy HOD of Civil & ASCE Faculty Advisor	Faculty Coordinator Dr. Sudheer Kumar y Asso. Professor, Civil	Faculty Co Coordinator Mrs. Kandukuri Anitha Asst. Professor, Civil
Student Coordinator D.Dilli Prasad President ASCE student chapter		

Submitted by: Dr. Sudheerkumar Y, Assoc. Professor, Department of Civil Engineering, MITS.

Organized By: Alumni Cell in collaboration with ASCE MITS Student Chapter

Participants: Civil Students and Staff (No. of Participants: 80)

The inauguration of the alumni guest lecture was started at 11:00 A.M in Seminar hall-C the dignitaries were **Dr. Dipankar Roy**, HoD-Civil & ASCE Faculty Advisor

Dr. Sudheerkumar Y Associate Professor and, **Dr. Kiran Kumar R**, MITS Alumni coordinator, **Mr. Shakeer Ahamed Shaik**, Alumni of Civil engineering department MITS and **Mrs. Kandukuri Anitha**, Department Alumni Coordinator.

The interaction was started with opening remarks by **Dr. Sudheerkumar Y**, who thanked the management for creating an opportunity to invite the alumni members of the institute and enabling them to interact with the students and enlightening them with the current developments. introduced the speaker and invited him to share his valuable experiences with the students. Approximately 70 students participated in the lecture. After the inaugural session, the main session started at 11:00 A. M.. **Mr. Shakeer Ahamed Shaik** explained the **Emerging Trends in Special concrete for modern structures**. The session was interactive, and he clarified the doubts raised by the students. **Mr. Shakeer Ahamed Shaik** mostly concentrated on explaining the **Emerging Trends in Special concrete for modern structures**, which could provide valuable insights for both students and professionals interested in special concrete materials.

Introduction:

Concrete has been the most widely used construction material for decades because of its strength, durability, and versatility. However, with the rapid growth of infrastructure and demand for sustainable and high-performance structures, traditional concrete no longer meets all modern requirements. This has led to the development of *special concrete* designed to perform beyond the limitations of conventional mixes.

Emerging trends in special concrete focus on improving its strength, durability, workability, sustainability, and resistance to extreme environmental conditions. Advanced types such as Self-Compacting Concrete (SCC), High-Performance Concrete (HPC), Ultra-High-Performance Concrete (UHPC), Geopolymer Concrete, Fibre-Reinforced Concrete, and Lightweight Concrete are being increasingly used in modern construction. These innovations aim to reduce environmental impact, enhance structural performance, and extend the service life.

The integration of nanotechnology, industrial by-products, and smart materials is further revolutionizing concrete technology, making it more eco-friendly and intelligent than before. Consequently, special concretes play a key role in shaping the future of sustainable, durable, and innovative construction for modern infrastructure.

Importance of the Special concrete has become increasingly important in modern construction because of the growing need for durable, efficient, and sustainable materials. Conventional concrete often faces limitations, such as poor workability, low durability under aggressive environments, and high maintenance requirements. To overcome these issues, special concretes such as Self-Compacting Concrete (SCC), High-Performance Concrete (HPC), fiber-reinforced concrete (FRC), and Geopolymer Concrete have been developed. These concretes are engineered to provide enhanced mechanical properties, better durability, and improved performance under challenging conditions, making them suitable for large-scale and critical applications.

In the current era of rapid urbanization and technological advancement, structures are expected to perform well under various stresses, such as heavy loads, temperature variations, and environmental attacks. Special concretes play a vital role in achieving these goals. For example, SCC ensures easy placement without vibration in congested reinforcement areas, whereas HPC and UHPC offer superior strength and long-term durability. Moreover, the addition of fibers, nanomaterials, and mineral admixtures enhances the resistance to cracking, segregation, and corrosion, ensuring the long service life of buildings, bridges, and marine structures.

Another significant aspect of special concrete is its contribution to sustainability. The use of industrial by-products such as fly ash, silica fume, ground granulated blast furnace slag (GGBS), and limestone powder reduces cement consumption, thereby minimizing carbon emissions. This not only helps in effective waste utilization but also supports green construction practices in the future. By improving structural efficiency, reducing maintenance costs, and promoting eco-friendly solutions, special concretes are shaping the future of modern infrastructure and playing a crucial role in achieving sustainable development goals in the construction industry.

Outcome of the event:

The event was highly impactful and beneficial to the student community. The following outcomes were observed.

- Enhanced Knowledge: Participants gained a clear understanding of the latest advancements and innovative techniques in the use of special concrete for modern structures.
- Awareness of Sustainability: The event created awareness of the importance of using eco-friendly materials such as fly ash, slag, and limestone powder in sustainable concrete production.
- Understanding of Performance Benefits: Attendees learned how special concrete improve strength, durability, and workability compared to conventional concrete.
- Exposure to New Technologies: Participants were introduced to modern technologies such as nanomaterials, self-compacting concrete, and fiber-reinforced systems.
- Research Motivation: The event encouraged students and researchers to explore new areas of research on advanced and sustainable concrete materials.
- Practical Insights: Real-time case studies and expert lectures provided practical insights into the application of special concrete in modern infrastructure projects.
- Skill Development: Participants developed technical and analytical skills related to the design, testing, and evaluation of special concretes.

- Networking Opportunities: The event offered a platform for interaction between academics, researchers, and industry professionals to exchange ideas and experiences.
- Encouragement for Innovation: The program inspired participants to adopt innovative and smart construction practices using advanced materials.
- Contribution to Sustainable Development Goals: The event highlighted how modern concrete technologies can contribute to reducing environmental impact and promote sustainable construction practices.

The use of industrial by-products, nanomaterials, and smart technologies not only enhances performance but also contributes to sustainability by reducing carbon emissions and promoting waste utilization. These innovations support eco-friendly construction while ensuring the longevity and safety of the structures under diverse conditions. Overall, the emerging trends in special concrete reflect the industry's shift toward smarter, greener, and more efficient building materials. By adopting these advancements, engineers and researchers can create durable and sustainable infrastructure that meets the needs of future generations.



Vote of Thanks:

Ms. Radiya proposed a vote of thanks to the resource person, HOD, and III Year B.Tech Students for attending the interaction programme. He extended his thanks to the Principal and the Management for their support in conducting the programme. We thank the Alumni Cell and ASCE MITS Student Chapter for their continuous support in making this event a success.

Feedback Analysis

8-9-2025

Alumni Guest Lecture on Emerging Trends in Special concrete for Modern Structures

