MIND'S PARK

NEWS LETTER

Department of Mechanical Engineering

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Kalpana Chawla (17 March 1962 – 1 February 2003) was an Indian-born American astronaut and aerospace engineer who was the first woman of Indian origin to fly to space. She first flew on Space Shuttle Columbia in 1997 as a mission specialist and primary robotic arm operator aboard.

Chawla's second flight was on STS-107, the final flight of Columbia, in 2003. She was one of the seven crew members who died in the Space Shuttle Columbia disaster when the spacecraft disintegrated during its re-entry into the Earth's atmosphere on 1 February 2003 Chawla was posthumously awarded the Congressional Space Medal of Honor and several streets, universities, and institutions are named in her honor

First space mission of Kalpana Chawla

Chawla's first space mission began on 19 November 1997, as part of the six-astronaut crew that flew the Space Shuttle Columbia flight STS-87. Chawla was the first Indian woman to go in space. Chawla had traveled 10.67 million km, as many as 252 times around the Earth. On her first mission, Chawla travelled 10.4/6.5 million miles in 252 orbits of the Earth, logging more than 376 hours (15 days and 16 hours) in space. During STS-87, she was responsible for deploying the Spartan Satellite which malfunctioned, necessitating a spacewalk by Winston Scott and Takao Doi to capture the satellite.

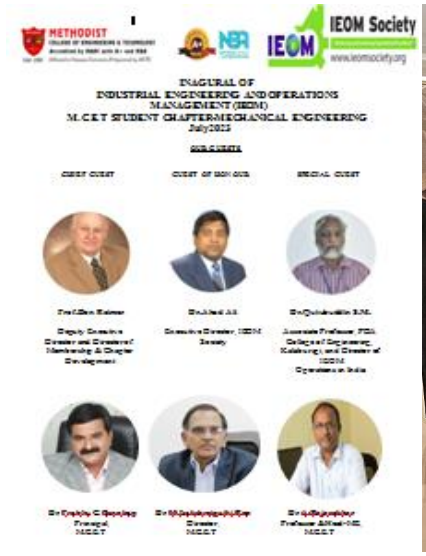
Second space mission and death

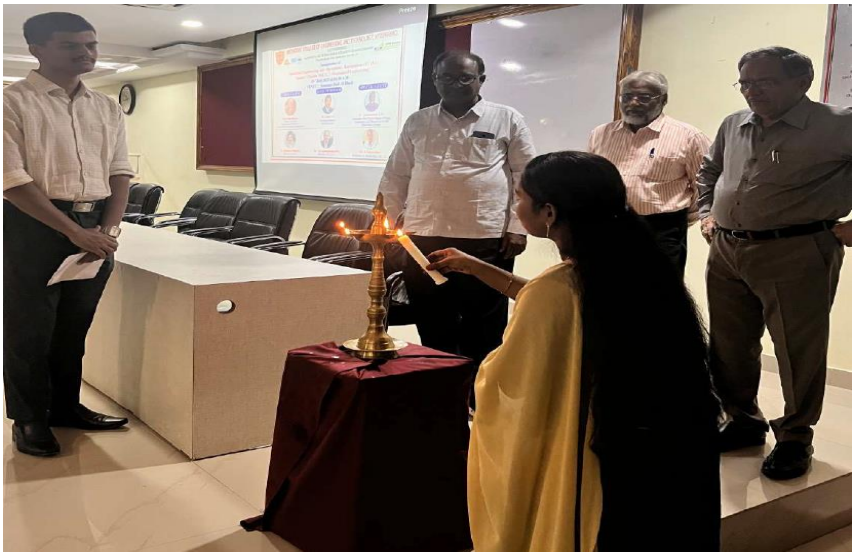
Chawla, Anderson, McCool, Ramon. In 2000, Chawla was selected for her second flight as part of the crew of STS-107. This mission was repeatedly delayed due to scheduling conflicts and technical problems such as the July 2002 discovery of cracks in the shuttle engine flow liners. On 16 January 2003, Chawla finally returned to space aboard Space Shuttle Columbia on the ill-fated STS-107 mission. The crew performed nearly 80 experiments studying Earth and space science, advanced technology development, and astronaut health and safety.

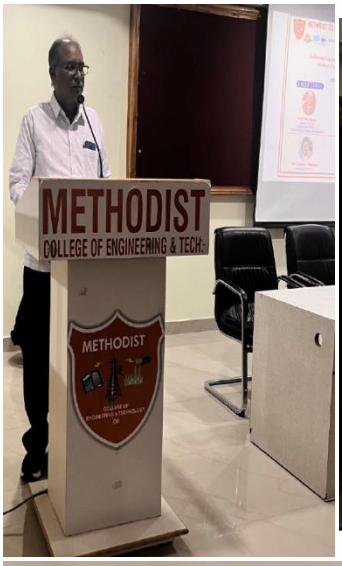
When Columbia re-entered the atmosphere of Earth, the damage allowed hot atmospheric gases to penetrate and destroy the internal wing structure, which caused the spacecraft to become unstable and break apart. After the disaster, Space Shuttle flight operations were suspended for more than two years, similar to the aftermath of the Challenger disaster. Construction of the International Space Station (ISS) was put on hold; the station relied entirely on the Russian Roscosmos State Corporation for resupply for 29 months until Shuttle flights resumed with STS-114 and 45 months for crew rotation.

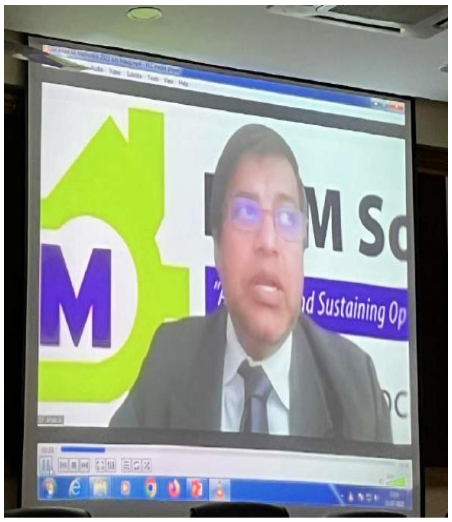
Chawla died on 1 February 2003, in the Space Shuttle Columbia disaster, along with the other six crew members, when Columbia disintegrated over Texas during re entry into the Earth's atmosphere, shortly before it was scheduled to conclude its 28th mission, STS-107. Her remains were identified along with those of the rest of the crew members and were cremated and scattered at Zion National Park in Utah in accordance with her wishes.

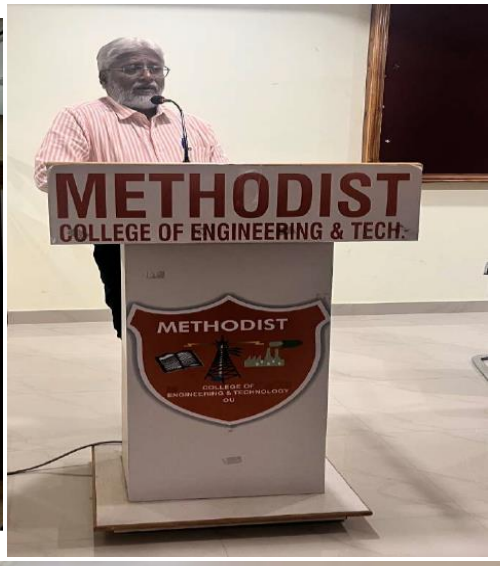
On 15th July 2023 inauguration function was held marking the successful opening of IEOM student chapter @Methodist College of Engineering & Technology, organised by Department of Mechanical Engineering











MECHANICAL JOURNAL PUBLICATIONS

- Effect of retrogression & re aging (RRA) on pitting & stress corrosion cracking (SSC) resistance of stir zone of high strength AA7075-T651 alloy joined by friction stir welding. By P.Prabhu Raj, S.Rajakumar, Tushar Sonar, Mikhail Ivanov Published in Scoupus dated June 2023.
- Investigating the microstructure, tensile, strength & acidic corrosion behaviour of liquid metal stir casted aluminium-silicon carbide composite. By P.Prabhu Raj. S.Prathap Singh, D.Ananthapadmanaban, Tushar Sonar, Mikhail Ivanov, Published in SCIE dated June 2023.
- Optimization of drilling Parameters in sisal-human hair hybrid composite using grey relational analysis. By P Prabhu Raj, D Elil Raj, S PanneernSelvan, Tushar Sonar. Published in SCIE dated 2023.
- Effect of pH value, concentration and salt spraying time on salt fog corrosion resistance of friction stir welded AA7075-T651 alloy joints chloride ion**.** By P. Prabhuraj S. Rajakuma, V. Balasubramanian Tushar Sonar,Mikhail Ivanov, D. Elil Raj Published in Springer dated 2023.

GENERAL ARTICLE:FUTURE OF ELECTRICAL VEHICLES GLOBALLY & INDIA:

Electric vehicles (EVs) have emerged as a transformative force in the automotive industry, with a promising future both globally and in India. As concerns over climate change, pollution, and energy security continue to rise, governments, automakers, and consumers are increasingly turning towards electric vehicles as a sustainable and efficient alternative to traditional internal combustion engine (ICE) vehicles. Let's explore the future of EVs on a global scale and specifically in the context of India.

Global Trends and Outlook for EVs:

Technological Advancements: The rapid advancements in battery technology, particularly in terms of energy density and cost reduction, have been driving the growth of EVs globally. This has resulted in longer driving ranges, faster charging times, and more affordable EV options, making them increasingly attractive to consumers.

Government Policies: Many countries have implemented or are planning to implement stringent regulations and incentives to promote EV adoption. This includes subsidies, tax incentives, emission standards, and infrastructure investments aimed at supporting the growth of EVs and phasing out ICE vehicles.

Market Expansion: Major automakers are investing heavily in EV development and production. Companies like Tesla, Volkswagen, General Motors, and others are introducing a wide range of electric models across different vehicle segments, from sedans to SUVs and trucks, thereby expanding the EV market and providing consumers with more choices.

Charging Infrastructure: The expansion of charging infrastructure is a key factor in the widespread adoption of EVs. Governments, businesses, and utilities are working together to develop a comprehensive network of charging stations, including fast chargers along highways and urban areas, to address range anxiety and improve the overall EV ownership experience.

Consumer Demand: Growing environmental awareness, lower operating costs (due to reduced fuel and maintenance expenses), and improved performance (such as instant torque and quiet operation) are driving consumer demand for EVs. As prices continue to drop and more models enter the market, EVs are becoming increasingly mainstream.

The Future of EVs in India:

Government Initiatives: The Indian government has set ambitious targets to promote EV adoption in the country. Initiatives such as the Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME) scheme, which provide incentives for EV buyers and supports charging infrastructure development, are driving growth in the Indian EV market.

Automaker Investments: Both domestic and international automakers are ramping up their EV offerings in India. Companies like Tata Motors, Mahindra Electric, Hyundai, and MG Motor have launched electric models or announced plans to introduce EVs in the Indian market, catering to the increasing demand for cleaner mobility solutions.

Challenges and Opportunities: Despite the progress, challenges such as limited charging infrastructure, high upfront costs of EVs, and concerns about battery recycling and disposal need to be addressed. However, these challenges also present opportunities for innovation, investment, and collaboration across the EV ecosystem.

Localization and Manufacturing: To drive EV adoption further, there is a focus on localizing EV components and manufacturing to reduce costs and create jobs within the Indian EV industry. This includes battery manufacturing, electric drive train production, and other critical components.

Urban Mobility Solutions: Given India's dense urban population and growing congestion issues, EVs are seen as part of the solution for sustainable urban mobility. Initiatives like electric buses, e-rickshaws, and shared electric mobility services are gaining traction in cities across India, contributing to cleaner air and reduced carbon emissions.

In conclusion, the future of electric vehicles globally and in India looks promising, driven by technological advancements, supportive government policies, increasing consumer demand, and a growing ecosystem of stakeholders. As EV technology continues to evolve and become more accessible, it is expected to play a significant role in shaping the future of transportation and combating climate change on a global scale.

Department of Mechanical Engineering

VISION

To be a reputed centre of excellence in the field of Mechanical Engineering by synergizing innovative technologies & research for the progress of society.

MISSION

M1: To impart quality education by means of state-of-the-art infrastructure.

M2: To be involved in training & activities on leadership qualities & social responsibilities.

M3: To inculcate the habit of lifelong learning, practise professional ethics & serve the society.

M4: To establish industry- institute interaction for stakeholder development