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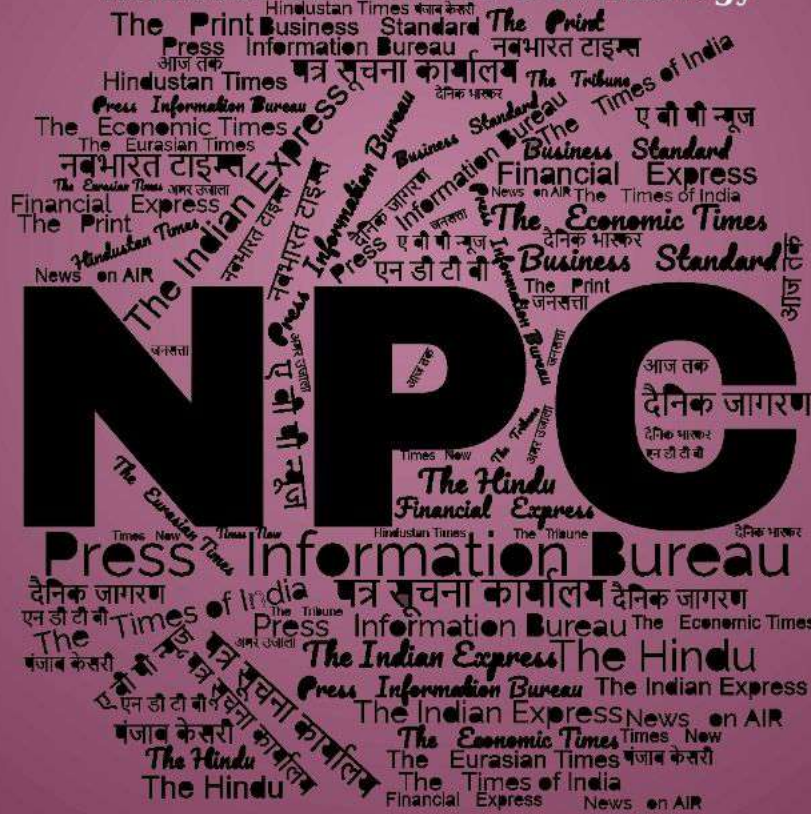
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# समाचार पत्रों से चयनित अंश Newspapers Clippings

डीआरडीओ समुदाय को डीआरडीओ प्रौद्योगिकियों, रक्षा प्रौद्योगिकियों, रक्षा नीतियों, अंतर्राष्ट्रीय संबंधों और विज्ञान एवं प्रौद्योगिकी की नूतन जानकारी से अवगत कराने हेतु दैनिक सेवा

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## DRDO News

### LCA Tejas fighter pilots to be more fierce: DRDO's life life support system to boost their endurance at high-altitudes

Source: The Week , Dt. 06 March 2025,

URL: <https://www.theweek.in/news/defence/2025/03/06/lca-tejas-fighter-pilots-to-be-more-fierce-drdo-s-life-life-support-system-to-boost-their-endurance-at-high-altitudes.html>

The Defence Research and Development Organisation (DRDO), on Tuesday, successfully conducted high-altitude trials of an indigenous life support system for pilots onboard light combat aircraft (LCA) Tejas.

The cutting-edge life support systems, with 90 per cent indigenous content, have been designed to generate and regulate breathable oxygen for pilots during flight, eliminating dependence on traditional cylinder-based oxygen. As this system would ensure real-time oxygen generation, it will effectively enhance pilot endurance and operational effectiveness.

With appropriate modifications, the system, manufactured by L&T as a development-cum-production partner of the DRDO, can also be adapted for use in MiG-29K and other aircraft as well.

"The Defence Bio-Engineering & Electro Medical Laboratory, a Bengaluru-based lab under the DRDO successfully conducted high-altitude trials of the Indigenous On-Board Oxygen Generating System (OBOGS)-based Integrated Life Support System (ILSS) for the LCA Tejas aircraft on March 4," the defence ministry said.

The ILSS underwent rigorous testing on the LCA-prototype vehicle-3 aircraft of Hindustan Aeronautics Limited (HAL), meeting stringent aeromedical standards in varied flight conditions, including altitudes of up to 50,000 feet above mean sea level and high-G maneuvers.

"Performance evaluations covered critical aspects such as oxygen concentration, demand breathing, availability of 100 per cent oxygen, aerobatic maneuvers at required altitudes for full functional testing of Anti – G Valve, Breathing Oxygen System (BOS) ON during taxiing, take off, cruise, G turns and rejoin approach and landing."

Following flight clearance from Centre for Military Airworthiness & Certification (CEMILAC), the system successfully met all specified parameters, the ministry said.

Defence Minister Rajnath Singh congratulated the DRDO, the Indian Air Force, public sector undertakings, and industry partners on the "remarkable achievement" and said this development reinforces India's commitment to cutting-edge defence technologies and aligns with the vision of 'Viksit Bharat 2047'.

## Defence News

### Defence Strategic: National/International

#### CURTAIN RAISER: PASSING OUT PARADE OF FIFTH BATCH OF AGNIVEERS AT INS CHILKA

Source: Press Information Bureau, Dt. 06 March 2025,

URL: <https://pib.gov.in/PressReleasePage.aspx?PRID=2108740>

The Passing Out Parade (POP) of the fifth batch of *Agniveers* is scheduled at INS Chilka on **07 Mar 25**. The POP marks the successful culmination of training of approx. **2972 Agniveers**, including women *Agniveers* who have undergone rigorous training at Chilka. VAdm V Srinivas, Flag Officer Commanding -in- Chief, Southern Naval Command will be the Chief Guest and review the post sunset POP. This momentous event will be witnessed by the proud families of the passing-out *Agniveer* course. Besides this, high achiever veterans and eminent sports personalities will also be present, inspiring the *Agniveers* with their remarkable journey.



FOC-in-C, SNC will also attend the valedictory function and present awards/ trophies to various trainees/ Division and unveil the bilingual trainees' magazine '*Ankur*'. The POP not only signifies the successful completion of **16 weeks** of ab initio Naval training but also their voyage in the **Combat-ready, Credible, Cohesive and Future-ready** Indian Navy. The POP will be **live streamed** on Indian Navy YouTube channel, Facebook page and regional Doordarshan network **at 1730 h on 07 Mar 25**.

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## Committed to working closely with India to promote regional stability and security, Australia says after CDS-level talks

Source: The week Dt. 06 March 2025,

URL: <https://www.theweek.in/news/defence/2025/03/06/committed-to-working-closely-with-india-to-promote-regional-stability-and-security-australia-says-after-cds-level-talks.html>

Chief of Defence Staff Gen Anil Chauhan, who is on a four-day visit to Australia to hold wide-ranging talks with the military brass to explore ways to boost bilateral strategic ties, met with his Australian counterpart Admiral David Johnston.

The two leaders discussed practical ideas to realise the long-term vision of a defence and security collaboration between India and Australia.



It was great to host General Anil Chauhan, India's Chief of Defence Staff, on his first official visit to Canberra this week, Admiral Johnston said in a tweet.

India is a top-tier security partner for Australia. Both countries work together to promote a peaceful, stable and prosperous Indo-Pacific region.

According to the ministry, India and Australia have established a strong tempo of exercises and activities across maritime, land and air domains working through the bilateral comprehensive strategic partnership and as trilateral and quadrilateral partners.

India's defence minister had said the visit "underscores the growing engagement between the two nations which share a commitment towards strengthening diplomatic and military collaboration under comprehensive strategic partnership."

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## **IIT Madras scientists crack the code to make India's military bunkers missile-proof?**

**Source: The Week, Dt. 06 March 2025,**

**URL: <https://www.theweek.in/news/defence/2025/03/06/iit-madras-scientists-crack-the-code-to-make-indias-military-bunkers-missile-proof.html>**

Researchers at the Indian Institute of Technology (IIT), Madras, have developed a framework that can enhance the protection of critical infrastructure in the country against the threat of ballistic missiles. The framework will help designers develop innovative solutions for improving the ballistic resistance of reinforced concrete (RC) panels, according to officials. The findings of the research were published in the peer-reviewed journal 'Reliability Engineering & System Safety'.

Using computational simulations, the researchers studied the impact of missiles on reinforced concrete, which is the main material used to construct vital structures including military bunkers, nuclear power buildings bridges and runways. Alagappan Ponnalagu, assistant professor, Department of Civil Engineering, IIT Madras, pointed out that concrete structures face highly localised damage such as penetration, perforation, scabbing, spalling and crushing under projectile impact load. "Due to the strategic importance of these structures, it is necessary to protect them against projectile and debris impact, which can result in localised damage or even the collapse of the entire structure," news agency PTI quoted him as saying.

Ballistics is a field of engineering that deals with the launching, flight behaviour, and impact effects of projectiles such as bullets, bombs, and rockets. This branch of engineering is used not only for designing bunkers, but also for designing the walls of nuclear power buildings, bridges, and other protective structures.

The researchers conducted the study during Finite Element' (FE) simulation, a computational technique used to simulate and analyse physical phenomena in engineering and science.

"FE simulation relies on the Finite Element Method (FEM), a numerical approach for solving complex problems involving partial differential equations. These problems often arise in fields like structural mechanics, among others. The researchers focused on the development of the novel performance-based design framework based on Depth of Penetration' (DOP) and Crater Damage Area in the RC panels."

"In addition to that, a probabilistic formula for estimating the crater diameter in RC panels is proposed. The study is helpful not only in terms of providing the ballistic design framework and probabilistic crater quantification formula, but also in understanding the ballistic behaviour of RC panels," Ponnalagu has been quoted as saying.

He explained that ballistic design is crucial for widely utilised concrete structures in today's unpredictable world. "Usually, extensive experimental and numerical studies have been done to investigate concrete panels, resulting in design guidelines for local damage parameters. However, with the advent of performance-based design, the ballistic design of concrete structures lacks a

comprehensive design philosophy. Moreover, while quantifying damage parameters, incorrect and inconsistent results are obtained by using deterministic empirical formulations.

"We have now provided a reliable design formula for estimating crater diameter in addition to the development of a novel performance-based ballistic design framework for RC panels. This study is helpful not only in terms of providing the ballistic design framework and probabilistic crater quantification formula but also in understanding the ballistic behaviour of RC panels," he said.

The researchers now intend to extend their study to develop lightweight, cost-effective and sustainable blast-and ballistic-resistant modular panels that can be used in the construction of bunkers along the borders and highly inaccessible areas for the Indian Army.

"We have proposed a novel performance-based design framework for RC panels based on damage states, namely DOP and crater diameter. Each damage state has four damage levels and is effectively coupled. Hence, the framework is a novel design philosophy ensuring resiliency against projectile penetration and crater formation of RC panels," PTI quoted Roouf Un Nabi Dar, research scholar, IIT Madras as saying.

"On the other hand, the local damage response in terms of crater formation in RC panels was studied under projectile impact. A probabilistic approach is taken to formulate a reliable formula for quantifying unexplored crater damage, based on well-established Bayesian methodology for RC panels that takes into account uncertainty," Dar said.

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## **Army's stock of anti-tank guided missiles & launchers is outdated & fast running out**

**Source: The Print, Dt. 06 March 2025,**

**URL: <https://theprint.in/defence/armys-stock-of-anti-tank-guided-missiles-launchers-is-outdated-fast-running-out/2536130/>**

The Indian Army is facing an anti-tank guided missile (ATGM) deficiency. Even in the existing "outdated inventory" of second-generation ATGMs, the Army is short of approximately 50 percent of launchers and nearly 85 percent of missiles with respect to the total requirement, ThePrint has learnt.

Sources in the Army refused to part with the current holding of launchers and missiles, saying that any revelation in that regard would be detrimental to India's security.

However, sources in the defence and security establishment told ThePrint that the infantry is authorised 3,000-5,000 ATGM launchers and more than 2 lakh missiles. "Close to 100 percent of existing inventory is second generation, which is obsolete technology worldwide," a source said. A few years ago, the shortfall stood at 68,000 missiles and 850 launchers. This number has only gone up given the lifecycle completion of the existing inventory, sources said.

Such deficiencies have direct operational implications for the infantry and mechanised infantry battalions operating these systems, a source added. These deficiencies exist despite the Army's repeated attempts at procuring advanced ATGMs to enhance capabilities.



This is an alarming situation as the deficiency will further aggravate as the Army continues to phase out old equipment, the source added.

In October last year, the Army floated a Request for Information (RFI) for new-generation ATGMs, launcher systems and simulators. These systems will be deployed in plains, deserts, and high-altitude mountainous terrain and environmental conditions.

The RFI, in its operational requirements, said that these new systems should be able to destroy enemy tanks, armoured personnel carriers, combat vehicles, low-flying helicopters, concrete structures, and other vehicle-based weapon platforms/positions.

The mainstay ATGMs currently in use by the Army are the French-origin Milan-2T with a 2 km range, and the Soviet semi-automatic wire-guided missile Konkurs with a 4 km range. Both these missiles are produced by Bharat Dynamics. The indigenous Defence Research and Development Organisation's Man Portable Anti-Tank Guided Missile (MPATGM) and Nag missiles are in trials.

In 2014, the Army had shortlisted the Israeli Spike ATGM over the American Javelin following extensive trials. However, the deal could not go through, and India bought a limited number of Spike systems in multiple lots.

However, India and the US are now in talks for the joint production of Javelin missiles.

The Army has been wanting to upgrade its second-generation missiles.

Many other countries including India's adversaries—China and Pakistan—have graduated to the third and fourth generation missiles, like the HJ-12, OMTAS and Karaok, in their inventories..

Third and fourth-generation ATGMs have advanced features, which include fire-and-forget and fire-and-observe capabilities, top attack and direct attack modes, and dual-mode seeker. These ATGMs also have all-terrain and all-weather operational capability.

In addition to ATGMs, the Army also faces a shortage of the 84 mm recoilless launcher. The manufacturing of recoilless launchers in India has stopped for some time now. This is owing to an agreement with the OEM SAAB Sweden—resulting in shortages of up to 40 percent at this point.

The production of the latest version of RL Mark IV will likely start in India in the newly established SAAB Sweden plant only by 2028-2029.

A source in the defence and security establishment, however, said that in the meantime, there is an urgent requirement of 84 mm RL Mk-IV to address the existing deficiencies.

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## **PM Modi talks of India's export boost in defence equipment, toys sector; says over Rs 42 lakh crore transferred to poor through DBT**

Source: Bengaluru Live , Dt. 06 March 2025,

URL: <https://thebengaluruLive.com/pm-modi-talks-of-indias-export-boost-in-defence-equipment-toys-sector-says-over-rs-42-lakh-crore-transferred-to-poor-through-dbt/>

Prime Minister Narendra Modi on Thursday talked of his government's success in checking corruption in the delivery of government schemes and said initiatives taken have boosted the country's exports in several sectors including defence. Speaking at the Republic TV Plenary Summit 2025, he said more than Rs 42 lakh crore have been transferred directly to the accounts of the poor through Direct Benefit Transfer (DBT).

According to a recent report by news agency ANI, the committee has been formed under Defence Secretary Rajesh Kumar Singh and will have members from the Indian Air Force (IAF) and Hindustan Aeronautics Limited (HAL), which is developing the twin-engine fighter for India.

The government is reportedly looking at different models of increasing private sector participation in the development of AMCA, including a possible joint venture between HAL and a private firm, defence officials said.

There is also the possibility of considering the private sector merely as a partner for design and development. Besides the state-run HAL, Tata Group has some experience in aircraft integration.

HAL is already outsourcing a major amount of work to the private sector in the development of jets.

The fifth-generation AMCA, which is expected to have a Mach 2 plus at top speed and a combat range of more than 1,600 km with a 6,500 kg fuel capacity, is likely to be inducted into service in the next 10 years. The fighter jet, according to Director General of the Aeronautical Development Agency (ADA) Jitendra Jadhav, will have sixth-generation technology embedded into it.

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## **INSV Tarini departs from Port Stanley for Cape Town**

**Source: The Statesman, Dt. 07 March 2025,**

**URL: <https://www.thestatesman.com/india/insv-tarini-departs-from-port-stanley-for-cape-town-1503405206.html>**

The Indian Naval Sailing Vessel (INSV) Tarini set sail from Port Stanley, embarking on the next leg of its remarkable journey towards Cape Town.

INSV Tarini arrived at Port Stanley on 18 February after successfully completing the second leg of the prestigious Navika Sagar Parikrama II expedition. This historic circumnavigation of the globe is being undertaken by two courageous women officers of the Indian Navy, Lieutenant Commander Dilna K and Lieutenant Commander Roopa A. Their mission embodies India's growing maritime prowess and commitment to oceanic exploration.

During its stay in Port Stanley, the crew carried out essential repairs and maintenance on the vessel to rectify issues encountered while navigating the perilous Drake Passage, considered one of the most challenging maritime routes in the world. The time in port also provided an opportunity for engagement with the local community. INSV Tarini welcomed numerous visitors, including members of the Indian diaspora, local maritime enthusiasts, and tourists, who were left in awe of the crew's resilience and exceptional achievements.

As INSV Tarini resumes its voyage, the expedition continues to stand as a testament to the skill, determination, and endurance of the Indian Navy's sailors. The journey to Cape Town marks another significant milestone in this inspiring maritime adventure, a statement from the Naval spokesperson read.

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## **Sahil Luthra, Founder & MD of Vijayan Trishul Defence Solution, Honored with Excellence in Defence Entrepreneurship Award at ET Now Business Conclave**

**Source: The Tribune, Dt. 07 March 2025,**

**URL: <https://www.tribuneindia.com/news/business/sahil-luthra-founder-md-of-vijayan-trishul-defence-solution-honored-with-excellence-in-defence-entrepreneurship-award-at-et-now-business-conclave/>**

Sahil Luthra, Founder and Managing Director of Vijayan Trishul Defence Solution, has been honoured with the prestigious Excellence in Defence Entrepreneurship award at the ET Now Business Conclave held in New Delhi. This recognition celebrates his outstanding contributions to the defence sector and his commitment to fostering innovation, self-reliance, and national security.

Under Luthra's visionary leadership, Vijayan Trishul Defence Solution has positioned itself as a leader in the defence technology space, pioneering indigenous solutions that strengthen India's defence ecosystem. His relentless pursuit of excellence has played a significant role in supporting the country's Atmanirbhar Bharat initiative, emphasizing self-sufficiency in critical defence technologies.

Speaking about the honour, Sahil Luthra stated, "This award is not just a personal milestone but a recognition of the hard work and dedication of the entire Vijayan Trishul Defence Solution team. Our mission has always been to advance India's defence capabilities through cutting-edge innovation and indigenous technology. I am deeply humbled by this recognition and remain committed to driving excellence in the sector."

The ET Now Business Conclave serves as a premier platform celebrating industry leaders and innovators who are making a significant impact in their respective fields. Luthra's recognition at the event further cements his role as a key driver of defence entrepreneurship, pushing the boundaries of innovation and strategic collaborations.

About Vijayan Trishul Defence Solution Pvt Ltd

Vijayan Trishul Defence Solution Pvt Ltd (VTDS) is at the forefront of India's defence manufacturing sector, dedicated to enhancing national security through the production of advanced small arms and ammunition. Founded with a vision to support the Indian Armed Forces and law enforcement agencies, VTDS is committed to delivering world-class defence solutions.

With state-of-the-art manufacturing facilities strategically located within the UP Defence Corridor, the company leverages next-generation technologies to ensure precision and quality in every product. VTDS remains steadfast in its mission to contribute to India's defence self-reliance while generating employment and fostering technological advancements in the sector.

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## **TN to host a major aerospace and defence event in Chennai in October**

Source: The Republic, Dt. 03 March 2025,

URL: <https://www.republicworld.com/defence/indian-armed-forces/indian-air-force-to-transform-into-an-aerospace-force-by-2047-focus-on-space-ai-and-high-tech-military-operations>

Tamil Nadu will host a major aerospace and defence event in Chennai from October 7 to 9. The event, in partnership with BCI Aerospace, a global leader in business-to-business aerospace and defence events, will bring together top-tier international and Indian OEMs, suppliers, and manufacturers for pre-arranged business meetings and collaborations, State Industries Minister TRB Rajaa said a social media posting.

The ADM (aerospace, defence meetings) Chennai will be first-of-its-kind event in India, focusing exclusively on aerospace, defence, space and naval sectors. With over 300 companies, over 25 participating countries, and over 8,000 pre-arranged meetings, the event will drive Tamil Nadu's vision as a global hub for aerospace and defence manufacturing, the minister said.

“Building up on our visit to Aeromart Toulouse, Team TN Industries is now bringing the next big A&D event to Chennai. We unveiled the logo for the ADM Chennai, a premier A&D event, which will be held from October 7 to 9,” the minister said.

With one of the two Defence Industrial Corridors in the country, the State is working to attract more investments, build capabilities and generate high-end jobs for TN, he said.

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## Science & Technology News

### **Dr. Jitendra Singh Flags Off CSIR's E-Tractor roadshow from Jammu, to ahead for Kanyakumari , Covering the entire country:**

**The Minister Highlights India's Push for Sustainable Farming, inaugurates E-Tiller of CSIR-CMERI at CSIR-IIIM Chatha Farm**

**Ease of Agriculture, Cost Savings, Green Energy—Dr. Jitendra Singh on CSIR's Agriculture Innovations**

**Source: Press Information Bureau, Dt. 06 March 2025,**

**URL: <https://pib.gov.in/PressReleasePage.aspx?PRID=2108906>**

Union Minister of State (Independent Charge) for Science and Technology; Earth Sciences and Minister of State for PMO, Department of Atomic Energy, Department of Space, Personnel, Public Grievances and Pensions, Dr. Jitendra Singh today flagged off the CSIR-developed e-Tractor roadshow from Jammu, which will ahead for Kanyakumari, covering the entire country.

This marks a significant milestone in India's journey towards sustainable and technology-driven agriculture. The e-tractor, which was initially launched in Delhi, has been put on a nationwide roadshow to raise awareness about eco-friendly and cost-effective solutions in farming. After its stop in Jammu, the e-tractor will travel across various regions before reaching its final destination in Kanyakumari. The Minister has also inaugurated and E-Tiller developed by CSIR-Central Mechanical Engineering Research Institute (CMERI), Durgapur, a constituent lab.

Speaking at the flag-off ceremony, Dr. Jitendra Singh underscored the importance of innovation in agriculture and how CSIR's technology will contribute to the ease of farming, reducing operational costs and promoting sustainability. "This e-tractor is not just an advanced technological intervention but a step towards ensuring affordable and environment-friendly farming solutions. It reflects our commitment to integrating innovation with agriculture, benefiting both farmers and agri-startups," he stated.

Dr. Jitendra Singh highlighted that the e-tractor aligns with the government's broader vision of promoting green energy and self-reliance in agriculture. He pointed out that while traditional farming practices rely on expensive fossil fuels, the electric tractor offers a viable alternative that significantly reduces carbon emissions and operating expenses. "By adopting this technology, farmers will not only reduce their fuel costs but also contribute to environmental conservation. The

roadshow will allow farmers across the country to witness firsthand how this new technology can transform agriculture,” he added.

The Minister further emphasized that CSIR’s initiatives are aimed at bridging the technological divide in Indian farming by bringing scientific innovations directly to the grassroots. “CSIR has been actively working on technologies that enhance efficiency and productivity in the agricultural sector. The e-tractor is an example of how research-driven innovations can be commercialized for widespread adoption,” he said.

In his address, Dr. Jitendra Singh also spoke about the government’s concerted efforts to promote agricultural entrepreneurship through policies that support agri-startups, rural youth, and women entrepreneurs. He reiterated that the government’s Bio-E3 policy—Biotechnology for Environment, Economy, and Employment—is ensuring that scientific advancements translate into economic opportunities for farmers. “The government is providing comprehensive support, from technological assistance to financial aid, to ensure that our farmers and startups can seamlessly adopt modern solutions. The Mudra loan scheme, for example, has empowered thousands of entrepreneurs, including women-led businesses in agriculture,” he added.

The e-tractor roadshow is expected to generate significant interest among farmers, agri-startups, and policymakers as it moves from Jammu to Kanyakumari. Through this initiative, CSIR aims to showcase how clean-energy solutions can revolutionize Indian agriculture, making it more sustainable, cost-effective, and accessible to a larger segment of the farming community.

The Minister also stressed that with increasing awareness and government support, India is witnessing a transformation in its agricultural landscape. He cited examples of successful agritech interventions such as drone-assisted farming, soil health cards, and high-value crops like lavender, which are creating new income avenues for farmers.

On the occasion, Dr. Jitendra Singh also inaugurated the Agro-Soil Research Laboratory at CSIR-IIIM Chatha Farm in which a group of Scientists and researchers would work on Soil testing, agrotechnology development and plant testing.

As the e-tractor makes its journey across the country, the roadshow will serve as an opportunity for direct farmer engagement, demonstrating the tangible benefits of adopting sustainable farming practices. “The roadshow is not just a demonstration—it is an invitation for farmers to be part of India’s agricultural revolution. By embracing new technologies, they can enhance productivity while also protecting the environment,” Dr. Jitendra Singh concluded.

Director CSIR-IIIM Dr Zabeer Ahmed and Director CSIR Durgapur Dr Murmu were present on the occasion.

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## **Reseachers work towards better, fatigue-resistant alloys**

**Source: Press Information Bureau, Dt. 06 March 2025,**

**URL: <https://pib.gov.in/PressReleasePage.aspx?PRID=2108794>**

Researchers have developed an innovative approach to designing fatigue-resistant multi-principal element alloys (MPEAs), opening new possibilities for their application and further exploration.

MPEAs are a novel class of materials composed of multiple principal elements rather than just one or two. Traditionally, it is believed that increasing strength through compositional modifications or the addition of brittle phases adversely affects fatigue life.

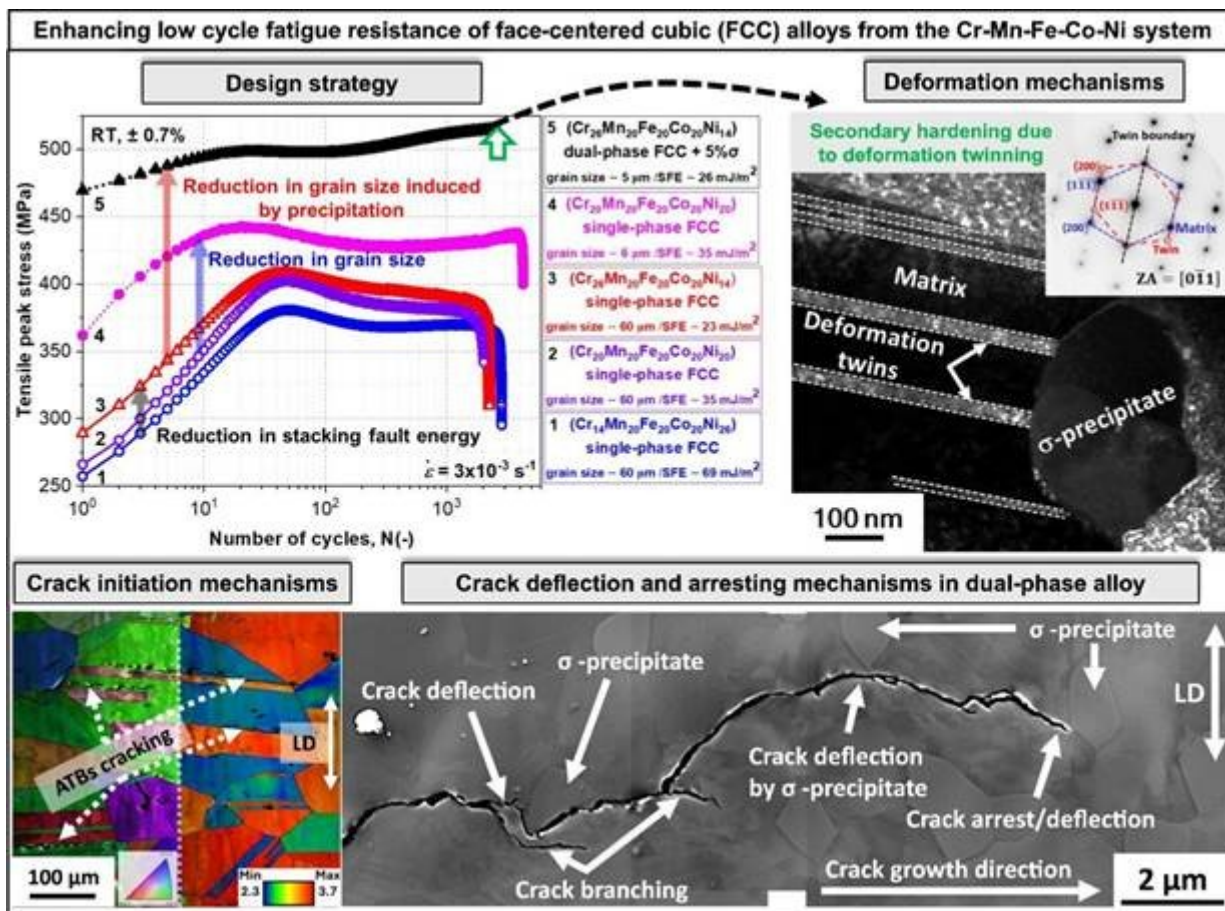
Challenging these notions, Dr. Ankur Chauhan and his team from the Department of Materials Engineering, Indian Institute of Science (IISc) Bangalore, systematically explored the role of two critical microstructural features in enhancing the low-cycle fatigue (LCF) performance of alloys in the Cr-Mn-Fe-Co-Ni system.

By adjusting the Cr/Ni ratio, they synthesized two single-phase face-centered cubic (FCC) MPEAs with distinct SFEs. The low-SFE alloy exhibited 10–20% higher cyclic strength than the high-SFE alloy while maintaining a comparable fatigue life. This improvement is attributed to the delayed evolution of dislocation substructures and a lower crack propagation rate in the low-SFE alloy compared to the high-SFE alloy.

Additionally, the team developed a dual-phase alloy that demonstrated a 50–65% increase in cyclic strength over the single-phase low-SFE alloy while maintaining a similar fatigue life.

This enhanced fatigue resistance is attributed to finer dislocation structures, higher back stresses from reduced grain size, crack deflection by brittle  $\sigma$ -precipitates, and extensive deformation twinning around fatigue cracks, which complement slip activity and slow crack propagation.

These findings provide a framework for designing both single-phase and dual-phase fatigue-resistant MPEAs, with implications for structural applications. By offering deeper insights into deformation and damage mechanisms, this work advances the understanding of how SFE and secondary brittle phases influence the mechanical properties of MPEAs, paving the way for further research into complex alloy systems. This work is supported by the Anusandhan National Research Foundation, a statutory body under the Government of India.



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## **Union Minister Dr. Jitendra Singh says, while India's Bioeconomy grew more than 10 times in last 10 years, the biotech potential of Himalayan territories, particularly their agri-biotech potential, remains still under-explored**

### **Highlights Agri-Biotech Potential in J&K, Credits Prime Minister Modi for India's Bio-Economy Growth**

**India's biotech economy, which soared from a \$10 billion valuation in 2014 to over \$130 billion in 2024, is set to reach a massive \$300 billion by 2030,**

**Jammu & Kashmir: A Hub for Agricultural Biotechnology and Innovation**

**DBT's Budget from 1485crores in 2013-14 to 3447 crores in 2025-26 almost marking 130% increase.**

**India's Bio-Economy Set to Soar to \$300 Billion by 2030, Says Dr. Jitendra Singh**

**Source: Press Information Bureau, Dt. 06 March 2025,**

**URL: <https://pib.gov.in/PressReleasePage.aspx?PRID=2108904>**

Union Minister Dr. Jitendra Singh said here today that while India's Bioeconomy grew more than 10 times in last 10 years, the biotech potential of Himalayan territories including Jammu & Kashmir, particularly their agri-biotech potential remains still under-explored.

India's biotech economy, which soared from a \$10 billion valuation in 2014 to over \$130 billion in 2024, is set to reach a massive \$300 billion by 2030, according to Dr. Jitendra Singh's projections. He highlighted the ongoing Bio-revolution in India, comparing it to the IT revolution in the West and underscoring the importance of India's rich natural and biodiversity resources in fueling this transformation. He underscored the rise in DBT's Budget from 1,485 crores in 2013-14 to 3,447 crores in 2025-26 almost marking 130% increase.

The Minister underscored the transformative potential of Agri-Biotechnology J&K, with a special focus on the success of initiatives like the Aroma Mission and the floriculture revolution. He further highlighted India's remarkable growth in biotechnology, positioning the country as a global leader in the field.

Dr. Jitendra Singh was speaking at the PBBCON-2025, International and National Conference on "Emerging Innovations in Biochemistry and Biotechnology for Holistic Development of Agriculture" conference, in Jammu coinciding with the celebrations of India's scientific achievements. He lauded Prime Minister Narendra Modi's clarion call during the Mann Ki Baat for

the nation to celebrate the day with festive fervor, a call echoed across Indian embassies worldwide.

The Union Minister emphasized how Agri-Biotech initiatives such as the Aroma Mission and the floriculture revolution have been instrumental in boosting J&K's agricultural economy. These programs have helped local farmers cultivate aromatic plants and flowers, creating a thriving industry for essential oils and floriculture products. Dr. Singh praised the region's favorable climate and how biotechnological innovations are reshaping traditional agriculture into a lucrative startUp industry.

Dr. Jitendra Singh also shared some key highlights from India's biotech sector in 2024, including the development of the world's first HPV vaccine, a breakthrough indigenous antibiotic 'Nafithromycin', and the pioneering gene therapy experiment for Hemophilia. He attributed these achievements to the Mission Suraksha initiative, which facilitated the creation of indigenous DNA-based vaccines during the COVID-19 pandemic. The world's largest vaccination drive was one of India's proudest moments.

India is now ranked third in the Asia-Pacific region and 12<sup>th</sup> globally in terms of biomanufacturing, a fact Dr. Singh proudly highlighted. He noted the New BioE3 Policy, launched under Prime Minister Modi's leadership, which places a special focus on biomanufacturing and bio-foundries, marking a new era for India's biotechnology sector.

The Anusandhan National Research Foundation (NRF), allocated ₹50,000 crores in the 2024 budget, is set to foster innovation, with a 60% contribution from the private sector. This will play a crucial role in nurturing India's growing deep-tech and biotech startup ecosystem, which has seen exponential growth—from just 50 biotech startups in 2014 to nearly 9,000 today.

Reflecting on the past decade of India's scientific journey, Dr. Singh noted the rise of India as the third-largest startup ecosystem globally, driven by youth-led innovation. He mentioned that 5352 Indian Scientific Minds now feature in the Top 2% globally, underscoring India's rise as a global hub for talent and innovation.

India's progress in the Global Innovation Index has been remarkable, jumping from 80<sup>th</sup> in 2014 to 39<sup>th</sup> in 2024, further solidifying its place among the world's most innovative nations. Dr. Singh credited Prime Minister Modi for starting the "Start Up India, Stand Up India" movement, empowering young entrepreneurs to transform India's economy.

In addition to biotechnology, Dr. Singh also touched upon India's growing prominence in nuclear energy. Once met with skepticism, India's nuclear energy program is now recognized globally for its peaceful and sustainable ambitions. India has set an ambitious target of 100 gigawatts of nuclear energy by 2047. This vision is reshaping global climate strategies, with India's nuclear policy, envisioned by Homi Bhabha, now seen as a model for responsible energy development.

Dr. Jitendra Singh concluded by urging the youth of J&K to prepare for the region's crucial role in India's growth story, emphasizing that J&K, with institutions like SKUAST University, can be at the forefront of driving innovation in Agri-Biotech and other emerging sectors. He encouraged young minds to leverage the opportunities created by India's expanding biotech sector and global scientific leadership.

Earlier Vice Chancellor SKUAST Prof B.N. Tripathi and President National Society of Biochemistry & Biotechnology in Agriculture Dr Sharma also addressed the audience.

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## एलन मस्क को फिर लगा झटका, स्पेसएक्स का स्टारशिप रॉकेट लॉन्च के बाद फटा, आसमान में दिखा मलबा, वीडियो

Source: Navbharat Times

Dt. 07 March 2025,

URL: <https://navbharattimes.indiatimes.com/world/science-news/elon-musk-spacex-loses-control-of-starship-in-space-after-launch-ends-with-explosion/articleshow/118772341.cms>

दुनिया के सबसे अमीर लोगों में शुमार एलन मस्क की कंपनी स्पेसएक्स को एक बार फिर झटका लगा है। गुरुवार को स्पेसएक्स ने लॉन्च के कुछ मिनट बाद ही अंतरिक्ष में अपने स्टारशिप रॉकेट से संपर्क खो दिया। इसके बाद रॉकेट आसमान में फट गया और ये मलबे में तब्दील हो गया। इस मिशन की लाइव स्ट्रीम में अंतरिक्ष में स्टारशिप के टूटने के बाद दक्षिण फ्लोरिडा और बहामास के पास आसमान में आग के मलबे की लकीरें दिखाई दीं, जो इसके इंजन कटाऑफ के साथ अनियंत्रित रूप से घूमने के तुरंत बाद हुआ।

स्पेसएक्स ने बताया है कि लॉन्च के बाद इसके इंजन बंद हो गए और रॉकेट अंतरिक्ष में बेकाबू होकर घूमने लगा। इसके वीडियो में दक्षिण फ्लोरिडा और बहामास के पास शाम के आकाश में आग के गोले जैसा मलबा गिरता देखा गया है। अंतरिक्ष लॉन्च मलबे की वजह से मियामी, फोर्ट लॉडरडेल, पाम बीच और ऑरलैंडो हवाई अड्डों पर कम से कम रात 8 बजे तक ग्राउंड स्टॉप भी जारी किया।

### स्पेसएक्स ने जारी किया बयान

स्पेसएक्स ने इस मिशन में असफलता के बाद अपने बयान में कहा, 'स्टारशिप के ऊपर जाने के दौरान इसमें अनियोजित रूप से चीजें हुई और संपर्क टूट गया। हम इसके मूल कारण को बेहतर ढंग से समझने के लिए इस परीक्षण के डेटा की समीक्षा करेंगे। हालांकि हमेशा की तरह ही आज की उड़ान भी हमें स्टारशिप की विश्वसनीयता में सुधार के लिए अतिरिक्त सबक प्रदान करेगी।'

स्टारशिप को करीब दो महीने में यह दूसरी नाकामयाबी मिली है। इसे पहले जनवरी में भी कंपनी का लॉन्च असफल होकर रॉकेट का जलता हुआ मलबा टर्क्स और कैकोस द्वीप पर बरस गया था। स्पेसएक्स ने गुरुवार को विशाल स्टारशिप रॉकेट को नकली सैटेलाइट को अंतरिक्ष में छोड़ने के लिए परीक्षण उड़ान पर लॉन्च किया था। 403 फुट (123 मीटर) लंबा रॉकेट टेक्सास से उड़ा। जब यब दूर हिंद महासागर के ऊपर बढ़ रहा था तो इसका चालक दल से संपर्क टूट गया।

इस मिशन का लक्ष्य अंतरिक्ष में कुछ नकली सैटेलाइट्स को छोड़ना और फिर सुरक्षित रूप से पृथ्वी पर लौटना था, जिसमें यह असफल रहा। शुरुआती चरण में रॉकेट की लॉन्चिंग और पहले स्टेज का अलग होना सफल रहा था लेकिन इसके बाद इससे संपर्क टूट गया। नासा भी इस मिशन पर बारीकी से नजर रख रहा था क्योंकि अंतरिक्ष एजेंसी ने इस दशक के अंत में चंद्रमा पर अंतरिक्ष यात्रियों को उतारने के लिए स्टारशिप को बुक किया है।

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## Sunita Williams reveals what she'll miss about space after returning to Earth

Source: Hindustan Times

Dt. 05 March 2025,

**URL : <https://www.hindustantimes.com/trending/sunita-williams-reveals-what-she-ll-miss-about-space-after-returning-to-earth-i-dont-want-to-lose-101741176354235.html>**

Sunita Williams, the Indian-origin astronaut who has spent nine months in space after her 8-day trip to the the International Space Station (ISS) in June last year was unexpectedly extended is finally returning to Earth. NASA in collaboration with Elon Musk's SpaceX will send its crew into space on March 12 to bring back the stranded astronauts.

NASA astronauts Sunita Williams and Butch Wilmore are preparing for their homecoming and shared their excitement about returning to Earth in a press conference. The duo have spent months in space since after their Boeing Starliner spacecraft encountered several technical glitches and returned home without them.

In the press conference from the space station, Williams was asked about what she would miss the most about space. Quickly replying she said, "Everything."

"This has been Butch and mine third flight to the ISS. We helped put it together, we have been up here watching it change. Just living here gives us a unique perspective -- not just outside the window, obviously -- but on how to solve problems. I don't want to lose that spark of inspiration and perspective when I leave so I am going to have to bottle it up, somehow," she said.

Williams also spoke at length about the hardest part of being stranded in space for months without a clear date of return in sight. "It has been a rollercoaster for them [family and supporters], probably more than it has been for us. We are here, we have a mission. We do what we have to do every day. The hardest thing has been not knowing when we'd come back. All of that uncertainty has been the most difficult part," she added.

#### Sunita Williams' homecoming

NASA astronauts Williams and Wilmore are now closer than ever to their homecoming. Williams, who has been the commander of the ISS, and her fellow astronaut Wilmore are awaiting their replacements' arrival at the ISS next week

NASA's Crew-10 mission, which was originally set to bring the due home by the end of March or mid-April has been moved up and is set to launch from Earth on March 12. SpaceX has provided an old capsule to bring the astronauts home by March 19.

The Crew-10 includes NASA astronauts Anne McClain and Nichole Ayers, Japan Aerospace Exploration Agency astronaut Takuya Onishi, and Roscosmos cosmonaut Kirill Peskov. The team will stay on the ISS for a six-month mission.

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## **Europe's Ariane 6 deploys spy satellite in first full mission**

**Source: Reuters     Dt. 07 March 2025**

**URL : <https://www.reuters.com/business/aerospace-defense/europes-ariane-6-stages-first-commercial-launch-2025-03-06/>**

Europe's new Ariane 6 rocket successfully deployed a French spy satellite in its first fully operational launch on Thursday, completing a return to space for a continent facing questions over its role amid a security rift with the United States.

The uncrewed launcher lifted off from Europe's spaceport in Kourou, French Guiana, at 1:24 p.m. local time (1624 GMT). Controllers later said its CSO-3 reconnaissance satellite had separated smoothly, completing a trio of military platforms.

The twice-postponed launch gave a symbolic boost to European efforts to expand its autonomy on a day that European leaders were holding a summit to sharply boost European defence, though Ariane launch capacity remains dwarfed by U.S. rival SpaceX.

"We are consolidating our independent access to space and helping to guarantee sovereignty on behalf of our citizens," David Cavailloles, CEO of launch operator Arianespace, said.

European nations agreed in 2014 to develop Ariane 6 for commercial and institutional launches in response to growing competition. But its arrival, originally due in 2020, was repeatedly delayed.

The delays left Europe relying on Elon Musk's SpaceX for some launches including part of its Galileo positioning system.

### **COMMERCIAL DEBUT**

Since the retirement of the workhorse Ariane 5 in 2023, Europe has had little independent access to space, with war in Ukraine cutting Western ties to Russian Soyuz rockets and Italy's Vega C grounded for two years until last December.

European Space Agency chief Josef Aschbacher has repeatedly warned of a "crisis" in European space access.

Ariane 6 had staged a partially successful inaugural test flight on July 9 last year, carrying out a series of trials but leaving its upper stage in orbit after a software glitch.

Thursday's launch was carried out for the French Air Force's Space Command.

Although carrying a military payload, the journey was technically considered a commercial debut because it was handled by Arianespace, rather than the European Space Agency.

Ariane 6 is built by ArianeGroup, co-owned by Airbus (AIR.PA) and Safran (SAF.PA)

Airbus also built the satellite, while its high-definition optical instrument was built by Franco-Italian Thales Alenia Space (TAS), controlled by Thales (TCFP.PA) and Leonardo (LDOF.MI)

Airbus and TAS are discussing setting up a new venture to combine money-losing satellite activities as part of their target telecoms market shifts to Musk's Starlink in lower orbit. Thales CEO Patrice Caine said this week talks remained "exploratory".

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## **Isro's Chandrayaan-3 detects hidden ice beneath Moon's surface**

**Source: Money Control Dt. 07 March 2025**

**URL :<https://www.moneycontrol.com/science/isro-s-chandrayaan-3-detects-hidden-ice-beneath-moon-s-surface-article-12958779.html>**

A recent study based on Chandrayaan-3 data suggests ice deposits may be more widespread beneath the Moon's polar surface than previously thought. Scientists believe local temperature changes could influence ice formation, offering insights into its origins and development.

Durga Prasad Karanam, a researcher at Ahmedabad's Physical Research Laboratory, shared insights with PTI. He stated that understanding these ice particles could reveal crucial details about their history and evolution. The study was published in Communications Earth and Environment.

The Chandrayaan-3 mission, launched by ISRO from Bengaluru, achieved a historic soft landing near the Moon's south pole on 23 August 2023. The landing site was later named Shiv Shakti Point on 26 August. Located at about 69 degrees south latitude, the site experiences extreme temperature changes.

Temperature Variations and NASA Connection  
At the landing location, which sits on a six-degree Sun-facing slope, daytime temperatures reached 82°C, while nighttime temperatures dropped to -170°C. A nearby flat surface, just a metre away, recorded a lower peak of 60°C. These conditions match NASA's proposed Artemis landing sites, which aim to establish a long-term lunar presence.

Chandrayaan-3's Vikram lander carried the ChaSTE (Chandra's Surface Thermophysical Experiment) probe to measure surface and subsurface temperatures. The instrument, developed by ISRO, analyses the Moon's thermal properties. It features a temperature probe with ten sensors and a controlled penetration system reaching 10 cm below the surface. Scientists hope these findings will aid future lunar exploration and research.

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