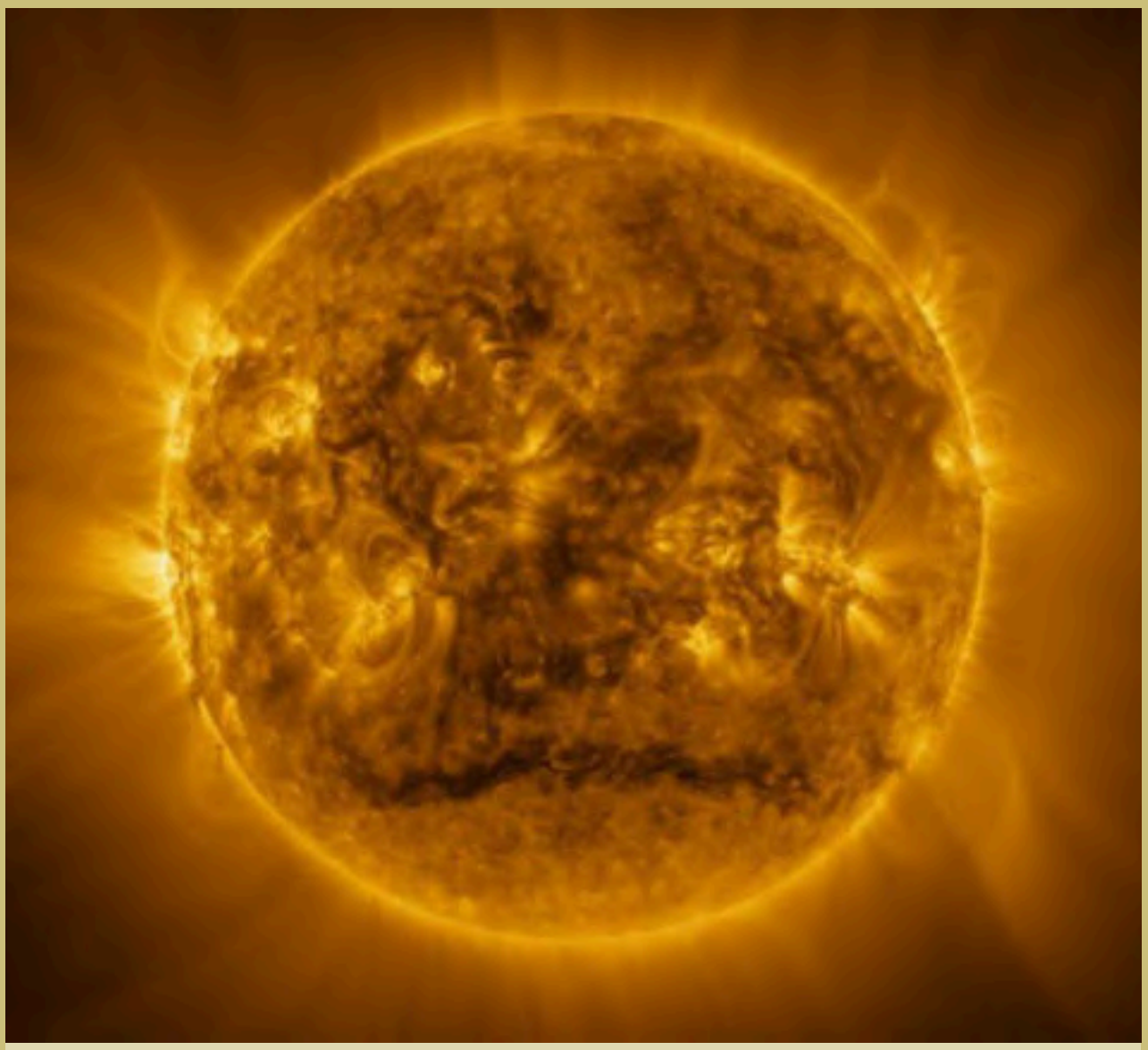
ISSUE 43 | 30 APRIL 2025

Space Beacon



Witness the Sun Like Never Before

Stay up-to-date with the latest in spacetech

INDIAN TECHNOLOGY CONGRESS ASSOCIATION

Orbital

Lead with the most significant celestial events and discoveries

Did you Know
Neptune has supersonic winds can reach speeds of up to 2,100 kilometers per hour (1,300 miles per hour), faster than the speed of sound on Earth

Five Huge Dangers Astronauts Face on Mars Trips

Sending astronauts to Mars is a daring dream, but NASA highlights five major risks making it a monumental challenge. From intense cosmic radiation and the psychological toll of isolation to communication delays and prolonged exposure to low gravity, the threats are real and daunting. Additionally, potential equipment failures far from Earth could put lives at serious risk. These factors demand breakthrough solutions before any manned mission can safely reach the Red Planet. As space agencies advance, tackling these risks is vital for future Mars missions.


entertainmenttimes.com

Earth's Missing Elements Blame Cosmic Smash-Ups

New research reveals that massive planetary collisions in the early solar system may have robbed Earth of key life-sustaining elements like potassium and phosphorus. These violent impacts, which shaped young planets, caused volatile elements to vaporize or get flung into space. The findings suggest Earth's composition—and its capacity to support life—was heavily influenced by catastrophic events. This helps explain why some planets are rich in certain elements while others are deficient. These collisions offer insight into Earth's unique evolution.


scitechdaily.com

Lunar Space Station Nears Launch Milestone Soon

NASA's upcoming Lunar Gateway, a key part of the Artemis mission, is nearing completion. This small space station will orbit the Moon, supporting long-term human exploration and acting as a staging point for lunar surface missions. Final components are being prepared for launch, including habitation and power modules. The Gateway will also host science experiments and enable deeper space travel, including missions to Mars. As part of Artemis' broader vision, it represents a crucial step in establishing a sustained human presence beyond Earth.


dailygalaxy.com

cosmosmagazine.com

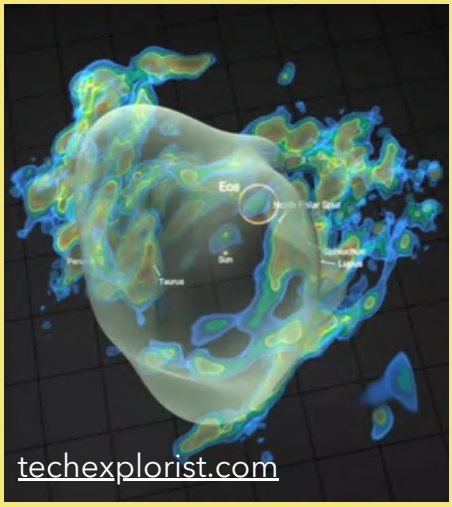
New Telescope to Unveil Billions of Galaxies

Roman Space Telescope is poised to revolutionize our understanding of the cosmos. This groundbreaking mission will map billions of galaxies, unlocking new insights into the universe's structure and evolution. The telescope is equipped with powerful instruments designed to detect rogue planets, supernovae, and exoplanets in distant star systems. Its expansive view will allow astronomers to study the universe in unprecedented detail, offering fresh clues about dark energy, galaxy formation, and the origins of life.

space.com

Discovery Dark Matter Bridge Unveiled

Astronomers have uncovered a remarkable dark matter bridge connecting two colliding galaxies, a discovery that provides vital insights into the mysterious substance. This cosmic link offers crucial evidence of dark matter's role in the universe's structure. The bridge, previously theorized but never seen, could hold the missing piece to understanding how galaxies merge and evolve. As scientists explore this extraordinary finding, it promises to reshape our comprehension of the cosmos.



techexplorist.com

Exploring EOS's Vast Cloud for Hydrogen in Space

EOS, in collaboration with Vast Cloud Technology, is pushing the boundaries of space exploration with a pioneering hydrogen initiative. Their goal is to develop an efficient system to produce hydrogen in space, potentially transforming space missions. The project taps into solar energy to generate hydrogen, which can be used as fuel or stored for further missions. This groundbreaking project has the potential to revolutionize both space travel and sustainable energy solutions for future space exploration.

The search for life beyond Earth, intensifies with new findings

Genspace

Cover broader space news not fitting into other categories

Did you Know
Dark Matter and Dark Energy, together, they make up about 95% of the universe, yet their exact nature remains unknown.

3D-Printed Solar Skyscraper Coming to the Moon

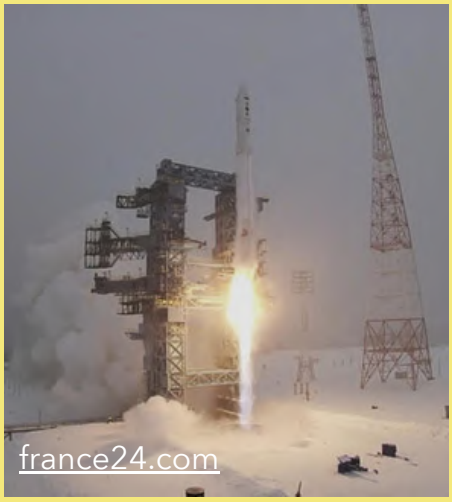
The first-ever 3D-printed solar-powered skyscraper is set to be built on the Moon, marking a significant milestone in space construction. This innovative skyscraper will harness solar energy to power lunar missions and potentially support human settlements. By utilizing advanced 3D printing technologies, the project promises to reduce costs and reliance on Earth-based supplies. Designed to withstand the Moon's harsh environment, it opens the door for future space infrastructure. The ambitious project paves the way for sustainable lunar habitats and space exploration.

Space Threats, GPS Spoofing, Cyber Attacks, and More

Recent reports from the CSIS reveal growing risks in space, highlighting Russia and Israel's use of GPS spoofing in Ukraine and Gaza. These tactics, once rare, are now commonplace in hybrid warfare. Russia's suspected space-based anti-satellite weapon raises alarms. If deployed, it could devastate low Earth orbit infrastructure, while commercial satellites are increasingly targeted as military assets. Cyber threats from nations like Iran, China, and North Korea further complicate space security. The space is becoming dangerous domain.

International Space Station on High Critical Alert

NASA has issued a stark warning about the International Space Station (ISS), calling its current condition "unsustainable." After over two decades of continuous service in orbit, the ISS is showing signs of severe wear and tear, raising serious concerns about its structural integrity and long-term safety. Engineers report aging hardware and growing maintenance challenges that threaten its operational viability. Discussions are underway about the station's future, including potential replacements or commercial alternatives.



Russian Satellite Sparks Alarm Over Space Weaponry

Russia's Cosmos-2553 satellite, believed to be part of a military space weapons program, appears to be malfunctioning in orbit, raising concerns among Western defense analysts. Launched in 2022, the satellite has been monitored for signs of weapons testing or intelligence-gathering operations. Recent data suggests it may have deviated from its intended trajectory or ceased functioning altogether. Analysts warn this could signal instability in Russia's space strategy or potential testing failures.

Aerogel Antennas Transform Airspace Communication

Engineers have developed a groundbreaking aerogel-based antenna that seamlessly integrates into aircraft surfaces, enhancing communication while reducing drag. Composed of 95% air, this lightweight material forms the core of an active phased array antenna, offering flexibility akin to plastic wrap or rigidity similar to plexiglass. Tested aboard a Britten-Norman Defender aircraft and ground platforms, the antenna successfully connected with both geostationary and low Earth orbit satellites, ensuring uninterrupted satellite communication.

A New Era Begins with ESA's Biomass Satellite Launched

The Biomass satellite successfully launched on 29 April, marking a milestone in forest observation. This groundbreaking mission will provide invaluable data on forest biomass, helping to better understand forest ecosystems and carbon storage. By leveraging advanced radar technology, the satellite will monitor global forests, contributing to efforts in climate change mitigation and conservation. The mission is a vital step toward achieving more accurate climate models and forest management strategies.

Satellogy

Focus on recent and upcoming satellites and launches

Did you Know
Syncom 3 (1964 - USA), the first geostationary communication satellite, making it a game-changer for global television broadcasting, including live coverage of the Tokyo Olympics

OneWeb Boosts Global Internet with New Satellites

OneWeb has successfully launched 36 new satellites, marking a significant step toward providing global internet coverage from space. This expansion enhances connectivity, particularly benefiting rural areas with limited broadband access. However, concerns remain about the impact on astronomical observations and environmental effects. Experts emphasize the need for solutions to mitigate these challenges while embracing the benefits of satellite-based internet. OneWeb nears full operation, set to reshape global connectivity.


warwick.ac.uk

Interstellar Tech Advances Space Innovation with JAXA

A visionary alliance to transform space infrastructure and rocket manufacturing. The strategic partnership, bolstered by significant capital investment and operational collaboration, aims to accelerate production while reducing costs. By adopting industry-leading automation and precision engineering, the collaboration will improve satellite launch efficiency and expand global space access. This groundbreaking deal marks a pivotal turn as the company scales its capabilities for advanced space solutions.


istellartech.com

Kongsberg, SpinLaunch Power Satellite Broadband Leap

Kongsberg NanoAvionics is set to manufacture 280 lightweight satellites for SpinLaunch's Meridian Space constellation, aiming to revolutionize global broadband connectivity. Each 70 kg satellite is engineered for high-throughput, secure communications, catering to sectors like maritime and remote infrastructure. The partnership includes a minority investment from Kongsberg Defence & Aerospace in SpinLaunch, underscoring their commitment to cost-effective and sustainable satellite solutions. Production will scale up at Kongsberg's new Vilnius facility.


spacedaily.com


upinews.com

SpaceX Launches More Starlink Satellites Successfully

SpaceX has successfully launched another batch of Starlink satellites into low Earth orbit, reinforcing its mission to provide global internet coverage. The launch, carried out from Cape Canaveral, continues the company's rapid expansion of the Starlink network, now comprising thousands of satellites. This development is a major step toward reducing internet dead zones and improving connectivity in remote regions. SpaceX remains a leader in satellite-based broadband, pushing the boundaries of space technology and communications.


climatecosmos.com

Track Fault Lines in Real-Time with Satellites

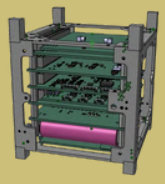
A network of 12 satellites is revolutionizing the way we track Earth's fault lines. This advanced system provides real-time data, offering crucial insights into seismic activity and enabling better earthquake prediction. By utilizing cutting-edge technology, these satellites monitor Earth's tectonic shifts, enhancing our understanding of global geological risks. The real-time data collected can lead to quicker responses, saving lives and improving safety measures for communities worldwide.

nytimes.com

Amazon's Kuiper Satellites Begin Space Journey

Amazon successfully launched 27 Project Kuiper satellites on 28 April, 2025, aboard a United Launch Alliance Atlas V rocket from Cape Canaveral. This marks the first major step in Amazon's $10 billion initiative to build a 3,236-satellite constellation aimed at providing global high-speed internet. The satellites are already active and communicating with ground control, with customer service expected later in 2025. Amazon plans to meet a U.S. FCC deadline to place 1,618 satellites in orbit by mid-2026.

CubeTech



Showcase innovative CubeSat missions and unique payloads

Did you Know
First Interstellar CubeSat StarChips, proposed Breakthrough Starshot mission envisions thousands of CubeSat-sized probes traveling to Alpha Centauri at 20% the speed of light

AI Revolutionizes Small Satellites for Space Operations

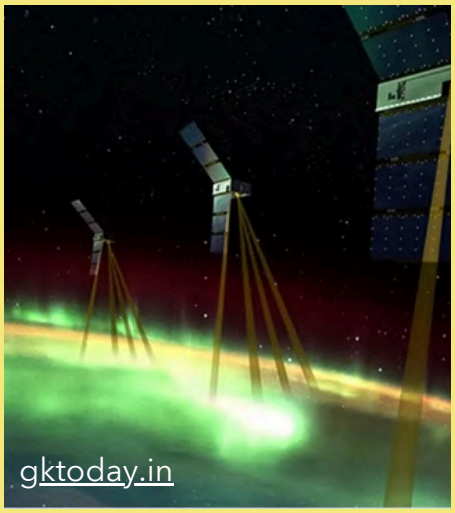
Artificial intelligence is transforming the small satellite industry, enhancing Earth observation, communications, defense, and scientific missions. AI-driven onboard data processing enables satellites to prioritize key observations, reducing congestion and delivering real-time insights. Autonomous operations allow satellites to self-manage orbit adjustments, collision avoidance, and power optimization. AI also improves satellite communication, optimizing bandwidth and mitigating interference.

Satellite Bus Subsystems Market Drives Forward

The satellite bus subsystems market is evolving rapidly, powering the next generation of space technology. Advancements in modular satellite designs are enhancing efficiency, reducing costs, and improving mission flexibility. With growing demand for satellite-based communication, Earth observation, and deep-space exploration, companies are investing in cutting-edge subsystems to optimize performance. Innovations in propulsion, thermal control, and power management are shaping the future of satellite operations.

Tiny Satellites Set to Transform Moon Missions Forever

The upcoming Artemis mission will carry six tiny satellites—CubeSats—set to redefine how we explore the Moon and beyond. These compact spacecraft, no larger than a shoebox, will gather data on lunar water ice, radiation, and deep space navigation. Their small size and low cost enable faster innovation and more frequent missions, potentially revolutionizing space exploration. As these CubeSats test new technologies and scientific methods, they pave the way for future deep-space missions, including Mars.


gktoday.in

EZIE Mission to Unlock Space Secrets

The Electrojet Zeeman Imaging Explorer (EZIE) mission to study electric currents in Earth's upper atmosphere, specifically auroral electrojets. These currents play a key role in space weather, which can impact satellites, GPS, and power grids. EZIE will use three small satellites to measure magnetic fields in the ionosphere, helping scientists understand how solar winds interact with Earth's magnetosphere. The mission is expected to enhance our predictive capabilities for space weather disruptions and deepen our understanding of the Earth-Sun connection.


ibtimes.com

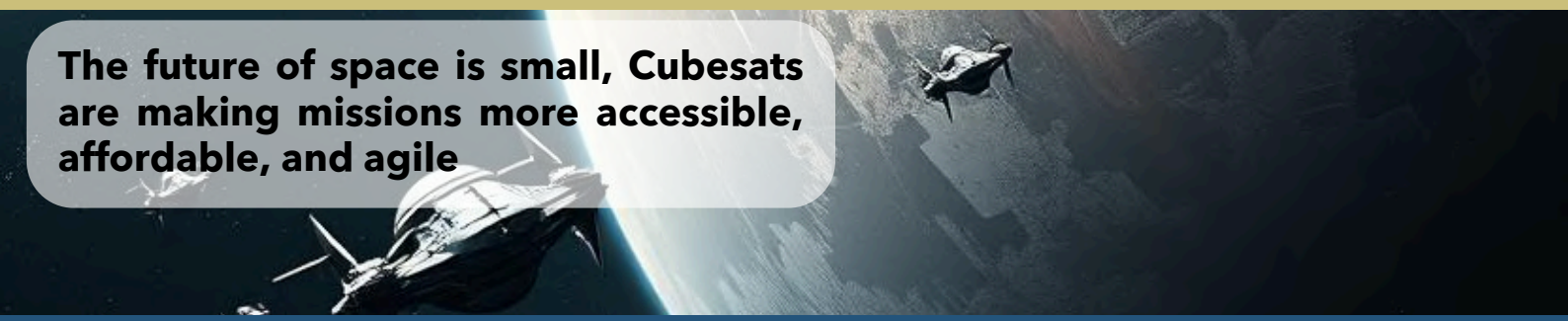
Rescues CubeSat Data from Digital Obscurity

AI is transforming space data management by preventing valuable CubeSat information from being lost in the digital graveyard. Wolfgang Luck highlights how artificial intelligence can sort, recover, and analyze vast volumes of satellite data that often go unused due to resource constraints. With AI-driven tools, researchers can now unlock hidden insights, extending the usefulness of CubeSat missions far beyond their lifespans.


businesswire.com

SFL Reaches Major Milestone for Aspera Microsatellite

The Space Flight Laboratory (SFL) has announced a critical milestone in the development of the Aspera space astronomy microsatellite, marking a significant step toward its 2026 launch. Aspera will investigate galactic evolution by observing faint ultraviolet light emitted from hot gas in the intergalactic medium. Developed for the University of Arizona and NASA, the satellite leverages SFL's expertise in precision pointing and compact design. This milestone showcases how microsatellites are revolutionizing deep-space science.



The 75SSM

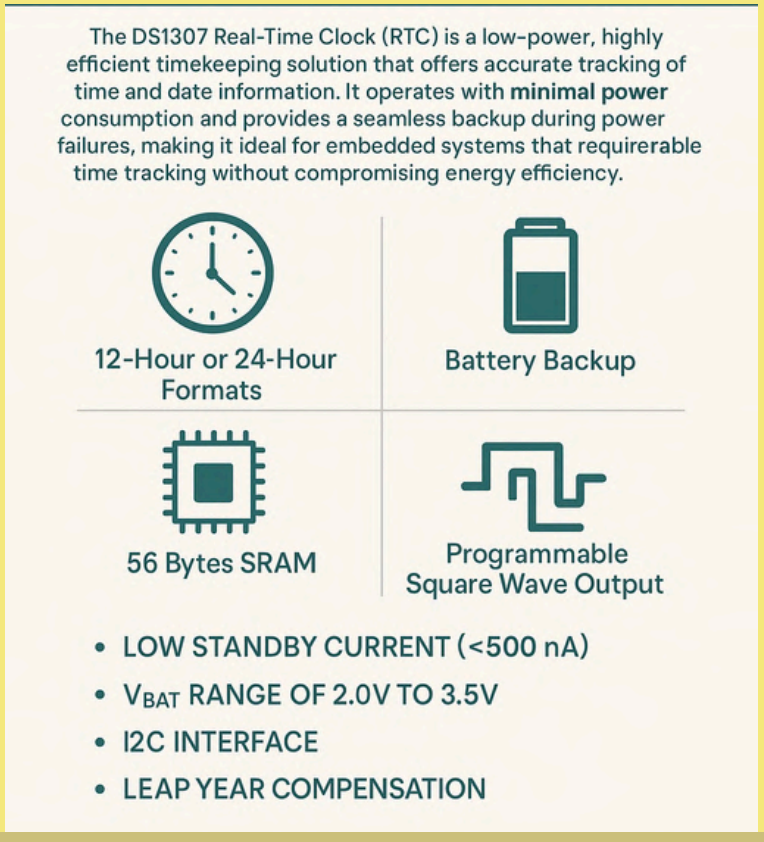
SSM: Students' Satellites Mission

Update readers on our ITCA internal space-based innovations

Did you Know
The MT3608 and MIC29302 regulators ensure efficient power management in satellites by stabilizing voltage for key subsystems.

DS1307 RTC: Real Time Clock with Low-Power Consumption

CRSat gives students hands-on experience with satellite tech, mirroring CubeSats. It integrates solar power, sensors, and real-time data collection, bridging theory and practice to build skills in power management, data analysis, and communication for real-world space challenges. The DS1307 Real-Time Clock (RTC) is a low-power, highly efficient timekeeping solution that offers accurate tracking of time and date information. It operates with minimal power consumption and provides a seamless backup during power failures, making it ideal for embedded systems that require reliable time tracking without compromising energy efficiency. This RTC supports both 12-hour and 24-hour formats, with an AM/PM mode, and ensures continuous timekeeping even when the main power is lost, thanks to its battery backup. This compact and reliable RTC is ideal for applications that demand low-power operation, such as wearable devices, IoT systems, and embedded electronics. The DS1307's easy integration and robust feature set ensure accurate timekeeping even under harsh conditions, providing an essential component for time-sensitive projects.



Space@India

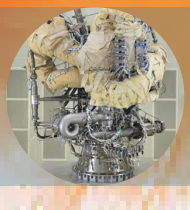
Glimpses into India's space chronicle, every week

Did you Know

NavIC (Navigation with Indian Constellation), India's regional navigation satellite system provides accurate positioning services across the Indian region, serving industries like agriculture and defense.

ISRO Plans to Launch 100 to 150 Satellites Over the Next Three Years to Boost National Safety and Security, According to the Chairman Dr V Narayanan

Read more at: presstrustofindia.com



Bharat Reaches has Achieved a Major Milestone in its Semi Cryogenic Engine Project with the Successful Completion of a Hot Test.

Read more at: indiatoday.com

Dr. K. Kasturirangan, a Visionary Space Scientist and the Principal Architect of India's National Education Policy, Passed Away

Read more at:freepressjournal.com

IN-SPACe Launches Initiative to Assist Private Companies in Developing Small Satellite Bus Platforms

Read more at: inc42.com

India's Space Agency Signs MoU for Space Medicine and Leads Space-Based Disaster Management Efforts Starting April 2025

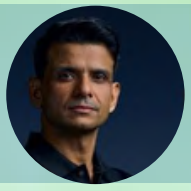
Read more at: newindianexpress.com

The Microgravity Research Portfolio in the Upcoming Axiom Mission

Read more at: isro.gov.in

Seven Groundbreaking Experiments, Ranging from Space Farming to Muscle Regeneration, are Set to Launch on Axiom-4

Read more at:theprint.com



Astronaut Shubhanshu Shukla Set for Historic Spaceflight to ISS is Set to Launch on 29 May 2025

Read more at: indiatoday.com

75 Students' Satellites Mission

ITCA's Engineering Prowess and Ingenuity

ITCA: Pioneering India's Tech Future

Innovating India's tech for 22 years, we pioneered the '75 Students' Satellites Mission' and made a global impact in space tech, precision agriculture, and Industry 4.0.

Events

Space Tech Expo

02- 04 June 2025
California, USA
ste2025.com

International Astronautical Congress

29 Sep - 03 Oct 2025
Syndney, Australia
iac2025.com

6th COSPAR Symposium

03 - 07 Nov 2025
Nicosia, Cyprus
cospar2025

Upcoming... Launches

SpaceX | Falcon 9 Block 5 | Starlink Group 6-75

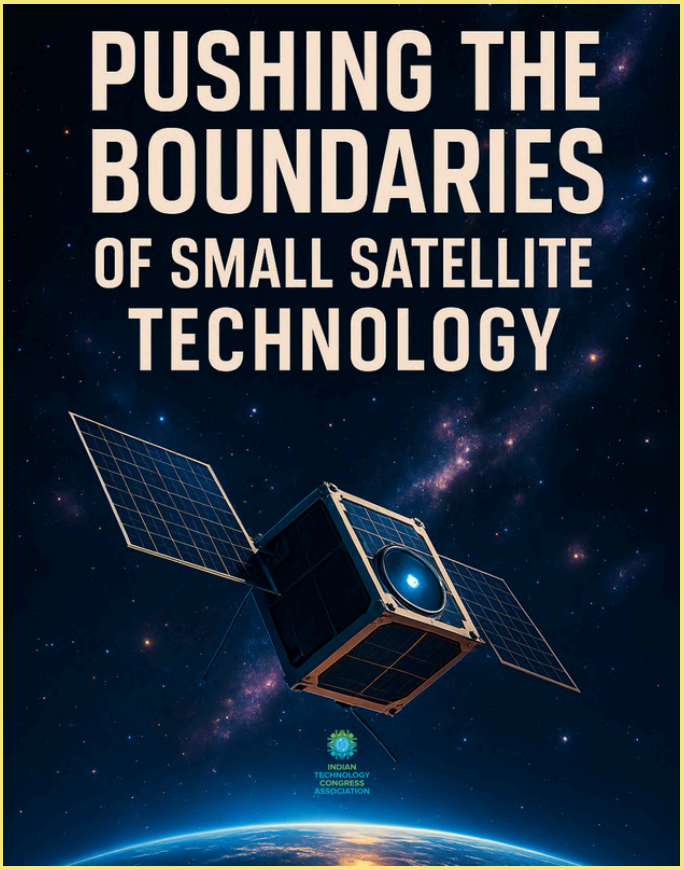
02 May 2025 07:21 IST
SLC-40, Cape Canaveral SFS, Florida, USA

CASC | Long March 12 | SatNet LEO

05 May 2025 16:35 IST
Commercial LC-2, Wenchang Space Launch Site, China

ISRO | PSLV-XL | EOS-09

19 May 2025 TBA
Satish Dhawan Space Centre, India



SPACE BEACON
cosmic cadences on our radar

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