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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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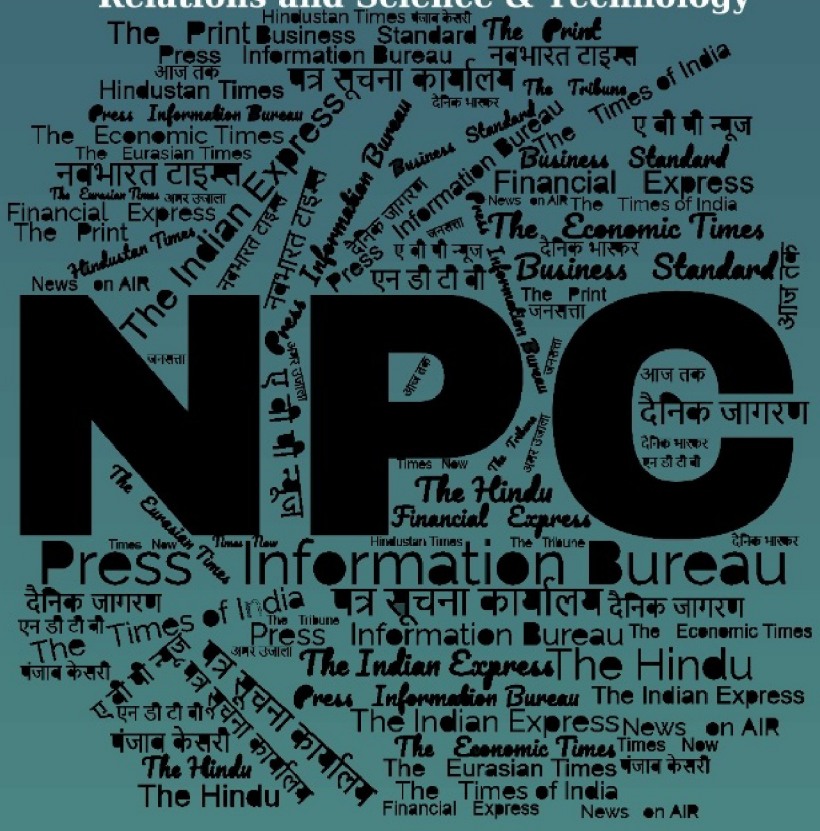

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Wed, 18 Dec 2024

Accident in mumbai harbour involving indian navy craft and civil ferry neel kamal: Rescue operations underway

At about 1600 h on 18 Dec 24 a Navy craft undergoing engine trials lost control and collided with a passenger ferry Neel Kamal off Karanja, Mumbai. The ferry was carrying passengers from Gateway of India to Elephanta Island.

Search and Rescue efforts were immediately launched by the Navy in coordination with the Coast Guard and Marine Police. Four naval helicopters, 11 naval craft, one Coast Guard boat and three Marine Police boats are undertaking rescue efforts.

The survivors picked up by Navy and civil craft in the area have been transferred to jetties and hospitals in the vicinity. So far 99 survivors have been rescued.

The accident has reportedly led to the tragic loss of 13 lives including 1 Naval personnel and 2 OEM (Original Equipment Manufacturers) reps onboard the Naval craft.Accounting of all personnel is in progress along with SAR efforts in the area.

https://pib.gov.in/PressReleasePage.aspx?PRID=2085874

Press Information Bureau
Government of India

Ministry of Defence

Wed, 18 Dec 2024

Raksha Rajya Mantri presides over Commissioning of Indian Navy's 2nd State-of-the-Art Survey vessel INS Nirdeshak

INS Nirdeshak, the second ship of Survey Vessel (Large) project, was commissioned into the Indian Navy, in a ceremony presided over by Raksha Rajya Mantri, Shri Sanjay Seth on 18 December 2024 at Naval Dockyard, Visakhapatnam. Vice Admiral Rajesh Pendharkar, Flag Officer Commanding-in-Chief, Eastern Naval Command hosted the commissioning ceremony marking the formal induction of the second of the four ships of Survey Vessel (Large) project under construction at M/s Garden Reach Shipbuilders & Engineers (GRSE) Kolkata. The ship is designed to conduct hydrographic surveys, aid in navigation, and support maritime operations.

Speaking on the occasion RRM said that highly specialised ships – the Survey Vessels – play a vital role in charting the oceans. These are sophisticated niche platforms that allow for a more accurate collation of oceanic data, its precise processing and as a result, highly reliable charts that enhance maritime operations and safety, he added.

RRM further said that the Survey Ships also act as a credible maritime diplomacy tool. "When our Survey Ships undertake missions in support of a friendly country, they epitomise what India believes in – helping a friend in need without asking for something in return. This would help in strengthening our bilateral ties and in opening up and promoting trade opportunities in the long term. The new Survey Ships will make us more potent also, as foreign fleets are looking towards Bharitya Nausena for hydrographic cooperation, he added.

Built with over 80% indigenous content, the ship is embedded with advanced hydrographic systems such as Multi Beam Echo Sounders, Side Scan Sonars, Autonomous Underwater Vehicle (AUV), Remotely Operated Vehicle (ROV) etc. These enable precise mapping for safe navigation and planning in deep-sea operations, expands survey capabilities in hazardous and restricted zones and facilitates faster and safer data collection for wreck identifications and environmental studies.

The vessel will contribute significantly to the Indian Ocean Region's security and environmental health and strengthening India's leadership in regional collaboration, scientific exploration, and peacekeeping missions. The ship will strengthen the SAGAR (Security and Growth for All in the Region) initiative by promoting shared maritime data with friendly foreign countries.

The construction of ship was a collaborative endeavour of Indian Navy's Warship Design Bureau, GRSE, L&T, SAIL, IRS and a significant number of MSMEs exemplifying India's commitment to self-reliance in defence manufacturing and maritime capabilities.

https://pib.gov.in/PressReleasePage.aspx?PRID=2085722

Business Standard

Thu, 19 Dec 2024

Indian Navy Chief hosts deck reception aboard INS Mysore in Jakarta

Chief of Naval Staff (CNS) Admiral Dinesh K Tripathi hosted a deck reception onboard Indian Navy's indigenous guided missile destroyer, INS Mysore in Jakarta during his four-day official visit to Indonesia.

The details of the event were shared on X by the Spokesperson of the Indian Navy.

"Adm Dinesh K Tripathi, #CNS, hosted a deck reception onboard #IndianNavy's indigenous guided missile destroyer #INSMysore at Jakarta, fostering cultural exchange, friendship & camaraderie between #India & #Indonesia."

The post added, "Adm Muhammad Ali, Chief of Staff, #IndonesianNavy, Senior Military Leadership of Indonesia, Ambassador of India in Indonesia, and members of the diplomatic community in #Indonesia attended the event.

The Indian Embassy in Indonesia also shared the details of the Indian Navy Chief's visit.

It stated on X, "Very eventful & successful goodwill visit of INS Mysore to Jakarta. The 4-day visit saw several high level bilateral engagements between Indian and Indonesian Navy".

"It was an honour for the ship to receive and host Laksmana Muhammad Ali, KASAL during deck reception onboard, jointly hosted by Chief of the Indian Navy Admiral Dinesh Kumar Tripathi and Ambassador Sandeep Chakravorty, which was also graced by several senior officials of Indonesian Navy, Military and MoD", it said in another post.

"Professional discussions held onboard, deepening military and defence Industry collaboration & partnerships, is another major highlight of the ship visit, underscoring the robust & active bilateral cooperation between the maritime neighbours", the post concluded.

Earlier, Admiral Dinesh K Tripathi met General Agus Subiyanto, Commander of the Indonesian Armed Forces, to discuss strengthening bilateral defence ties, with a particular focus on enhancing naval cooperation.

According to the Indian Navy spokesperson, the discussions also aimed to strengthen information sharing, capacity building, and collaboration in the defence industry between India and Indonesia.The visit, which took place from December 15 to December 18, was part of ongoing efforts to further consolidate bilateral defence relations between the two countries, in line with the deepening Comprehensive Strategic Partnership, with a focus on enhancing Naval Cooperation.

https://www.business-standard.com/external-affairs-defence-security/news/indian-navy-chief-hosts-deck-reception-aboard-ins-mysore-in-jakarta-124121900274_1.html

Thu, 19 Dec 2024

Ambassador Kwatra, US Deputy Secy Campbell Meet Indian Astronauts, Discuss Space Sector, Defence Space Cooperation

Indian Ambassador to the U.S. Vinay Mohan Kwatra, along with U.S. Deputy Secretary Kurt Campbell and Principal Deputy National Security Advisor Jon Finer, visited NASA's Johnson Space Center in Houston on Wednesday and met with representatives from NASA and ISRO, including two Indian astronauts undergoing training at the facility.

These astronauts are preparing for a proposed mission to the International Space Station (ISS) scheduled for 2025, which will mark a significant milestone in India-U.S. collaboration on human spaceflight.

A press statement from the US Department of State highlighted the importance of this collaboration. The discussions included plans to launch the NASA-ISRO Synthetic Aperture Radar (NISAR) satellite in 2025, a joint Earth science mission aimed at providing critical environmental data.

In a post on X, Ambassador Kwatra said, "Wonderful to visit the Johnson Space Center of @NASA with @DeputySecState Kurt Campbell and Deputy National Security Advisor Jon Finer. Had the opportunity to discuss India and US space cooperation including in human space flight program and enhancing partnership between the two private sectors in the fields of innovation and technology. Was also glad to meet the Indian astronauts training at Houston."

The visit aligns with the broader vision outlined by President Joe Biden and Prime Minister Narendra Modi during their June 2023 meeting to work together to "reach new frontiers across all sectors of space cooperation" and India's signing of the Artemis Accords, our two nations reached an inflection point on collaboration across civil, security, and commercial space sectors," the White House said in a press briefing.

Reflecting on recent achievements, officials emphasized the successful selection of Indian astronauts for training at NASA, the progress on the Axiom-4 mission, and the completion of a Strategic Framework for Human Spaceflight Cooperation. These milestones are seen as key steps in enhancing interoperability between the two nations in space exploration.

In addition to civil space collaboration, the discussions touched on defence-related space initiatives.

These include India's participation in the US Space Command's Global Sentinel exercise, the launch of a joint space situational awareness challenge under the India-US Defense Acceleration Ecosystem (INDUS-X), and advancing reviews on missile technology exports.

The visit also provided an opportunity to engage with private sector representatives from both countries' space industries. Discussions focused on innovative ways to strengthen commercial space partnerships, further bridging technological and industrial collaboration between the two nations.

https://ddnews.gov.in/en/ambassador-kwatra-us-deputy-secy-campbell-meet-indian-astronauts-discuss-space-sector-defence-space-cooperation/

Business Standard

Thu, 19 Dec 2024

India-Liberia review bilateral ties, plan next round of talks in New Delhi

The first round of Foreign Office Consultations (FOC) between India and Liberia took place in Monrovia. The meeting was attended by top officials from both the countries.

In a press statement by the Ministry of External Affairs, it was noted that the consultations were co-chaired by Sevala Naik Mude, Additional Secretary, Ministry of External Affairs, and Sara Beysolow Nyanti, Minister of Foreign Affairs, Republic of Liberia, held on December 17.

During the visit, Mude also called on Jeremiah Kpan Koung, Vice President and Louise M Kpoto, Minister of Health and Social Welfare amongst other ministers.

In a significant gesture, the Liberian Ministers expressed their deep appreciation for India's efforts in making the African Union a permanent member of the G20. Liberia has also been an active participant in the Voice of Global South Summits hosted by India, and the Ministers recognized that membership of the G20 for the Africa Union will reinforce the Global South's standing at the forum, the MEA observed.

During the FOC, both sides undertook a comprehensive review of the entire gamut of India-Liberia bilateral relations encompassing key areas of bilateral cooperation including trade, investment, mining, agriculture, health & pharmaceuticals, education, capacity building and people-to-people exchanges. The two countries agreed to further deepen and diversify bilateral ties in key areas of

contemporary relevance such as Digital Public Infrastructure (DPI), energy development and development cooperation, the MEA noted.

India and Liberia share warm and friendly relations.As per the MEA, there have been regular visits from both sides. The opening of India's Resident Mission in Monrovia in 2021 has enhanced more interactions. The Liberian side have expressed their desire to open their resident Mission in New Delhi soon.

The India-Liberia bilateral trade has registered $256 million during 2023-24, a significant portion of the bilateral trade was India's export to Liberia. Also, Liberia is a beneficiary of the duty-free tariff preference scheme extended by India which will facilitate Liberian exports of timber, vegetable oil, rubber and other commodities to India. There exists significant potential in other sectors particularly in agriculture, mineral exploration and pharmaceuticals. At present, there are over 200 Indian companies operating in Liberia in various sectors including automobiles, mining, health care, electronics, pharmaceuticals etc. Some of them are traders and some of them are having their manufacturing and mining activities. Liberia is a member of the International Solar Alliance.

https://www.business-standard.com/external-affairs-defence-security/news/india-liberia-review-bilateral-ties-plan-next-round-of-talks-in-new-delhi-124121900195_1.html

THE ECONOMIC TIMES

Wed, 18 Dec 2024

Cochin Shipyard begins construction of next-gen missile vessels for Indian Navy

Cochin Shipyard Ltd (CSL) held the steel cutting ceremony for the Next Generation Missile Vessels (NGMVs) being built for the Indian Navy, marking its foray into building advanced weapon-intensive platforms for the nation. The ceremony, a significant milestone in the shipbuilding process, was conducted on December 16 by Commodore S Parthiban, Warship Production Superintendent of the Warship Overseeing Team (WOT), CSL stated in a release on Wednesday.

In March 2023, CSL signed a contract to construct and supply six NGMVs for the Indian Navy at an estimated cost of Rs 9,804 crore. The first ship is expected to be delivered by March 2027, with the others following in subsequent years.

Designed as high-speed vessels, the NGMVs will be equipped with an array of advanced weaponry and sensors, including surface-to-surface missile systems, anti-missile defence systems, and air surveillance and fire control radars.

"The primary role of the NGMVs will be to provide offensive capabilities against enemy warships, merchant vessels, and land targets. They will support maritime strike and anti-surface warfare operations while serving as a potent tool for sea denial at choke points," the release said.

The vessels will also have defensive roles, including local naval defence and safeguarding offshore development areas. They will feature state-of-the-art integrated platform management systems, propulsion and auxiliary machinery, power generation systems, and damage control equipment.

https://economictimes.indiatimes.com/news/defence/cochin-shipyard-share-price-begins-construction-of-next-gen-missile-vessels-for-indian-navy/articleshow/116442244.cms?from=mdr

Press Information Bureau
Government of India

Ministry of Defence

Thu, 19 Dec 2024

Raksha Mantri exhorts scientists & engineers to specialise in high-end tech for strengthening India's position in cutting-edge innovation

Raksha Mantri Shri Rajnath Singh has called upon the scientists and engineers to gain command over high-end technologies, such as Artificial Intelligence & Quantum Computing, in tune with the changing times, with the aim to further strengthen India's position in the field of advance, frontier & cutting-edge innovation. He was addressing the inaugural session of Indian National Academy of Engineering's Annual Convention at IIT Delhi on December 19, 2024.

Raksha Mantri emphasised that these niche technologies are going to impact almost every sector in a big way in the coming times. "Right now, we are in the initial phase. Our aim should be to first gain command over these technologies, so that in the future, they can be used for the welfare of the people to fulfil their immediate basic needs," he added.

Shri Rajnath Singh pointed out that the world is continuously evolving, and the defence sector cannot remain untouched by this change. He stated that earlier, due to some reasons, India was left behind in terms of modern weapons and technology, but ever since the Government, under the leadership of Prime Minister Shri Narendra Modi, has come to power, the country has moved towards self-reliance in defence at an unprecedented pace.

"Modern warfare is changing rapidly, therefore there is a need to adopt high-end technology. Towards this, we have brought out schemes like Innovations for Defence Excellence (iDEX) and Technology Development Fund (TDF) to bring out the talent of the youth, through which their as well as the nation's dreams can come true," said Raksha Mantri.

Shri Rajnath Singh asserted that India is passing through a defining moment as it is exporting even those weapons which it once imported. He credited this revolutionary transformation to the collective efforts of the public & private sectors, academia, and engineers & innovators, exuding confidence that the country will soon achieve a formidable technical edge in the global arena.

While Raksha Mantri lauded the role of IITs in the scientific development of the country in collaboration with DRDO, he called for establishing an even better organic relationship among the industry, research & development organisations and academia. "In developed countries, academic

campuses play an important role in progressing frontier technologies. There is a need to explore ways on how to co-opt IIT Delhi and similar institutions of higher scientific learning & excellence with the government's development campaign," he added.

"India is the youngest country at present. Our youth have the passion and the ability to innovate. Our government stands with them at every step. We encourage their innovation and provide them funds as per their needs. Today, India has become a hub of innovation and start-ups, due to which we are continuously gaining technological prowess. We will always stand with our engineers and innovators. With our combined efforts, we will realise our dream of 'Aatmanirbhar Bharat'," said Shri Rajnath Singh.

Raksha Mantri commended Indian National Academy of Engineering (INAE) for playing a crucial role in making India self-reliant. By focusing on innovation, collaboration and modernisation, this institute has started a technological revolution in India, he said.

Shri Rajnath Singh also urged the engineers and innovators to never forget the country's heritage as they make headway in new & disruptive technologies. He stated that there is no harm in adopting the western model as per the needs, but staying connected with the heritage would help in paving the way ahead. "Illuminate the path of your future with the light of your history. Build the tallest building of your future by making your past as a base," he said.

https://pib.gov.in/PressReleasePage.aspx?PRID=2085947

ThePrint

Wed, 18 Dec 2024

House panel flags low Army budget for modernisation, urges hike for sufficient deterrence capacity

The parliamentary standing committee on defence has flagged the Army's low budget for modernisation, saying that it should be increased to enable the force to have sufficient deterrence capacity.

Keeping in view that the Army is a 12-lakh strong force and needs to perform all duties that fall under its domain, the committee, led by Lok Sabha MP Radha Mohan Singh, has asked the defence ministry to focus on procurement of state-of-the-art equipment and keeping the Army's expenditure on a par with the defence spending of India's neighbours.

"The committee understands that the Capital Budget usually provides for expenditure on modernisation, enhancement of force level, infrastructure development, etc, which are essential not only for the modernisation of the Army but also to safeguard territorial integrity of the nation. The committee feels that Capital Projection should be incremental in nature, invariably consistent and it should not be less than that of a previous year so that it can absorb the inflationary trends," the panel has said in its report titled 'Demand for Grants (2024-25)', which was made public Tuesday.

The Army budget has a capital component that comprises allocations for modernisation and infrastructure development, and a revenue component that comprises salaries, risk and hardship allowance and budget for operations, maintenance and sustenance.

Under the capital head, the Army's projection was Rs 35,665 crore for fiscal 2024-25 and the same was allocated to it. This was, however, less than the budget estimate for fiscal 2023-24 when the projection was Rs 37,341 crore, says the report.

For fiscal 2024-25, against the revenue head, the projection was Rs 2,14,577 crore while the allocation to be made is Rs 1,91,320 crore, it adds.

In the previous financial year, under the revised estimates for the capital head, the projection of the Army was Rs 33,412 crore and the same was allocated to the force. However, expenditure by the Army at the time was only Rs 28,613 crore, the report points out.

Referring to the spending, the report says: "The committee opines that though the expenditure on salaries of manpower deployed is fixed and is an essential component, the budget should cater as

to induct state-of-the-art weapon systems and development of other infrastructure at the borders which, at any cost, cannot be compromised. Our expenditure should be in proportion to the increase in defence spending of our neighbours."

It further asserts that the Army's capital budget should be sufficient to have a deterrent capacity to ward off adversaries in case of hostility.A total of 330 capital acquisition contracts have been signed under capital procurement for the Army, of which 278 contracts have been signed with Indian vendors, according to the report.

In its presentation to the committee, the Army outlined its major focus areas that were detailed in the report.With regard to the modernisation budget, the Army said it would be utilised to make "delivery-based payments" for weapons, ammunition and other equipment as well as for payment for new procurements.

The Army also said that its major focus has been in the areas of precision targeting, long-range vectors, intelligence, surveillance and recce systems, satellite communication enablement, night vision equipment, unmanned aerial systems and counter unmanned aerial systems.In the current financial year, an acceptance of necessity (AoN) worth Rs 1,06,974 crore has been accorded for the procurement of new equipment and weapons from Indian companies.

Under the infrastructure budget, Eastern Command infrastructure and roads along the Chinese border together account for approximately 16 percent of the budget. The Army also plans to utilise the funds for enhancing infrastructure in the North Eastern Region and for roads that lead to the Line of Actual Control (LAC). At present, to guard the LAC, more than 169 infantry battalions are deployed along with requisite elements of armour and fire support systems, the report states.

In addition, under the infrastructure budget, the Army is looking at ammunition storage, vital logistic infrastructure and construction in four border areas as also storage facilities and habitat. Land acquisition accounts for approximately 4 percent of the budget. Under this, the Army will acquire land for training areas, field firing ranges and accommodation for troops.

https://theprint.in/defence/house-panel-flags-low-army-budget-for-modernisation-urges-hike-for-sufficient-deterrence-capacity/2408750/

Science & Technology News

Press Information Bureau
Government of India

Ministry of Science & Technology

Wed, 18 Dec 2024

New strategy for IR regulation could be effective as radiative heat barrier

A novel strategy to control and regulate infrared (IR) radiation using 2-dimensional nanosheets of a chemical called hexagonal boron nitride have potential for deployment as radiative heat barrier, thermal camouflage and in thermal management applications.

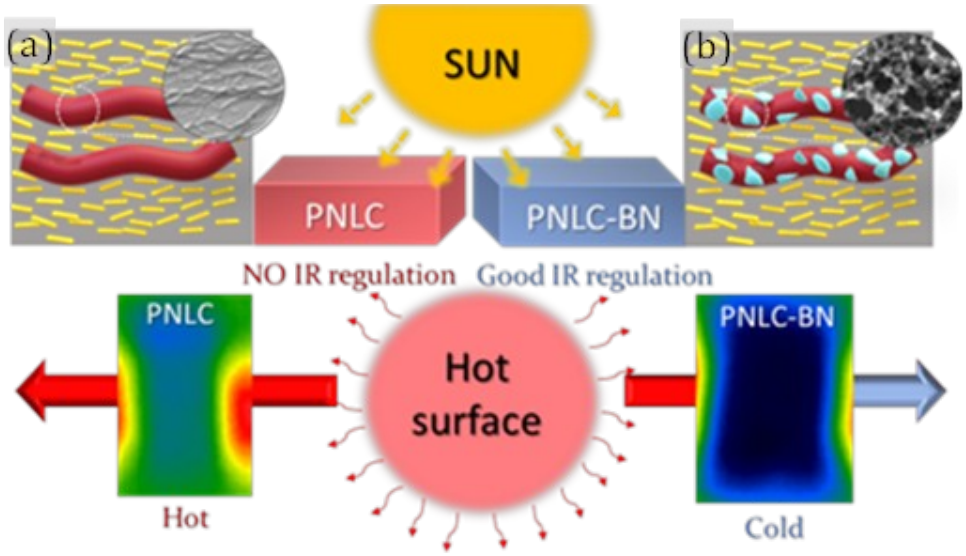
Infrared (IR) radiation with wavelength ranging from 780 nm to 1000 nm, present in solar radiation, sustains life on Earth. However, excess exposure to IR radiation, which constitutes about 50% of Sun's radiation, can be undesirable from the viewpoints of both discomforting ambient temperature and possible health disorders. Effective control and management of IR radiation has attracted much attention for reducing the ever-increasing energy demands, such as, air-conditioning.

Scientists from the Centre for Nano and Soft Matter Sciences (CeNS), Bengaluru, an autonomous institute of Department of Science and Technology have come up with a novel strategy to control and regulate IR radiation. The method employs solution-processed 2-dimensional nanoflakes of hexagonal boron nitride (h-BN) developed by Dr. HSSR Matte and his student Priyabrata Sahoo, and preferentially assembling them in a polymer network liquid crystal.

The new concept could be a paradigm shift in this area as every single constituent of this multicomponent material is IR transparent, but their careful combination under specific conditions and preferential placement brings about a device that is extremely effective in IR regulation, explained Dr. Krishna Prasad and Dr. Shankar Rao who jointly supervised this research,.

This feature is demonstrated in several ways including scattering measurements, thermal imaging, passive radiative cooling, and reflectivity features, and is well supported by numerical simulations carried out by Dr. Sikdar at IIT Guwahati.

The system also has much higher mechanical strength as confirmed by nanoindentation studies. Gayathri Pishorady, a student and primary researcher in this work, foresees the strategy to offer a more generic way of developing IR regulators.



https://pib.gov.in/PressReleasePage.aspx?PRID=2084921

ThePrint

Wed, 18 Dec 2024

IIT Madras releases detailed 3D images of human foetal brain. Can help understand developmental disorders

IIT Madras has developed the most detailed, three-dimensional high-resolution images of the foetal brain—a significant landmark in visualising the human brain, its functions and deformities.

Named DHARANI, the data set contains 5,132 brain sections captured digitally using brain mapping technology at the Sudha Gopalakrishnan Brain Centre in the IIT Madras campus. The research team has also developed a detailed 3D atlas of the brain, marking over 500 regions with cellular resolutions. The work is expected to help scientists understand brain development from the

foetal stage to adulthood, besides understanding the causes of developmental disorders such as autism and cerebral palsy.The data stis available to the public for free.

“We have also mapped the regions in the brain, where we can decipher and see how it develops,” Professor Mohanasankar Sivaprakasam, head of the Sudha Gopalakrishnan Brain Centre, said at a press conference in Chennai Tuesday.

The brain centre was launched at IIT Madras in 2022 to boost multidisciplinary efforts in science, technology, computing and medicine.

“It’s the first step of a big journey. When we understand and study the brain, we will be able to understand its future deformities,” Professor V. Kamakoti, director of IIT Madras, said at the press conference.He explained that the study faced multiple challenges, including those posed by the pandemic due to the unavailability of equipment to conduct such a study.

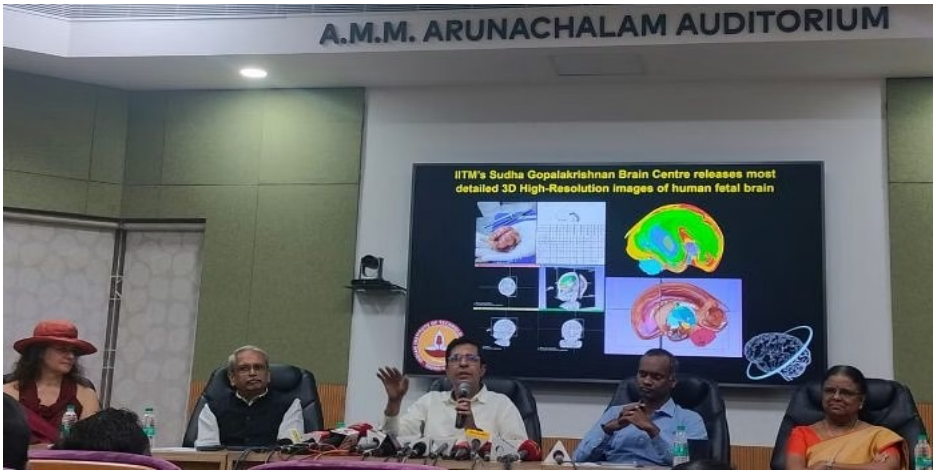
“So we developed the equipment indigenously,” he said, adding that IIT Madras used a fund of US$15 million for the initiative, which is less than one-tenth the cost spent on similar studies in Western countries. They did so because they wanted to limit the expenses.

The project was supported by the office of the principal scientific advisor to the government of India; IIT Madras alumnus and co-founder of Infosys Kris Gopalakrishnan; Premji Invest; Fortis Healthcare and Agilus Diagnostic.Congratulating the team on its success, Gopalakrishnan said the accomplishment reconfirms that India can achieve world-class milestones in science and technology.

As part of the study, which started during the COVID-19 pandemic, the team analysed five foetal brains during the second trimester (14-24 weeks). Sivaprakasam said it took about a year to complete the reconstruction of one brain.

According to Kamakoti, the study will motivate researchers and enthusiasts to understand and develop frontier AI with a wide range of applications and human elements, including emotions. Frontier AI refers to an AI model that is the most advanced in its capabilities and the range of tasks it can perform.He said the team will also expand their research to study diverse brains including those of rabid creatures.Highlighting the significance of the study in healthcare, Dr J. Kumutha, dean and professor of neonatology at Saveetha Medical College in Chennai, said that the major area the study would be helpful in is understanding developmental disorders.

“For example, we don’t know why some babies who were showing normal development early in their lives develop autistic behaviour later,” she said at the press conference, adding that the study would help in understanding these issues at a functional level.



https://theprint.in/india/iit-madras-releases-detailed-3d-images-of-human-foetal-brain-can-help-understand-developmental-disorders/2396596/

WION

Wed, 18 Dec 2024

ISRO simulates space conditions for astronauts in 'Habitat-1'

Indian space agency ISRO is creating "Habitat-1 or Hab-1" which is its first-ever "analogue mission" in which space conditions are simulated to prepare astronauts before they go for real space missions.

Scientists recently tested it for three weeks in the Himalayan mountain ranges of India's Union Territory of Ladakh.Speaking to the BBC, Gujarat-based firm Aaka's space architect Aastha Kacha-Jhala said that the simulations help in identifying and addressing the issues that equipment and astronauts may face before space missions.

Habitat-1 has been built using space-grade Teflon and is insulated with industrial-use foam.

It has a bed as well as a stowaway tray which one can pull out and use like a workstation. There is storage space for keeping emergency kits, supplies, a toilet as well as a kitchenette for heating meals.

The astronauts remained holed up in the simulation for three weeks."Hab-1 is designed keeping in mind that space is going to be very limited on the Moon or Mars. The astronaut will also have very limited water so we designed a dry toilet. We also put in place a system for a proper disposal of waste and ensured that the habitat remained odour-free," said Kacha-Jhala.

Kacha-Jhala is now holding talks with ISRO for constructing the country's first permanent simulation space facility in Ladakh. This is happening at a time when India is making preparations for sending its first astronauts into space.

ISRO's Gaganyaan mission has decided to place its three astronauts for three days into low-Earth orbit. The orbit is at an altitude of 400 km (248 miles).If everything happens as per the plan, ISRO will launch the mission next year. India is planning to set up the country's first space station by 2035 and send its first astronaut to the Moon by 2040.

Dozens of simulation missions are carried out by space programmes of NASA, European Space Agency, Russia, China, and other countries. Meanwhile, two Indian astronauts were selected for the Gaganyaan mission and are receiving their training at NASA currently.

"Once we have our own simulation mission, we won't have to depend on foreign space agencies to train our astronauts," said Prof. Subrat Sharma, Dean of Research Studies at Ladakh University. The university has collaborated with ISRO on the project.

Speaking to BBC, Prof. Sharma said that the experiment is being carried out in Ladakh because "from a geographical perspective, its rocky, barren landscape and soil have similarities with the material and rocks found on Mars and some parts of the lunar terrain, which make it ideal for space research".

https://www.wionews.com/science/isro-simulates-space-conditions-for-astronauts-in-habitat-1-heres-what-it-is-785041