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गुरुवार, 04 अगस्त 2022

आत्मनिर्भरता की दिशा में एक और कदम, लेजर-गाइडेड एंटी-टैंक मिसाइल का किया सफल परीक्षण

भारत ने आत्मनिर्भरता की दिशा में एक और सफलता हासिल की है. डीआरडीओ (DRDO) ने आज स्वदेशी रूप से विकसित लेजर-गाइडेड एंटी-टैंक गाइडेड मिसाइल (ATGM) का सफल परीक्षण किया है. लेजर-गाइडेड एंटी-टैंक गाइडेड मिसाइल (एटीजीएम) का ये परीक्षण डीआरडीओ और भारतीय सेना (Army) के द्वारा किया गया. इस कामयाबी पर देश के रक्षा मंत्री राजनाथ सिंह (Rajnath Singh) ने डीआरडीओ और भारतीय सेना को बधाई दी है. ये परीक्षण महाराष्ट्र में केके रेंज में आर्मर्ड कोर सेंटर एंड स्कूल (एसीसी एंड एस) अहमदनगर के सहयोग से मुख्य युद्धक टैंक (एमबीटी) अर्जुन से सफलतापूर्वक किया गया है. मिसाइलों ने सटीकता के साथ प्रहार किया और दो अलग-अलग रेंज में लक्ष्यों को सफलतापूर्वक मात दी.

एटीजीएम को मल्टी-प्लेटफॉर्म लॉन्च क्षमता के साथ विकसित किया गया है और वर्तमान में मुख्य युद्धक टैंक (एमबीटी) अर्जुन की 120 मिमी राइफल्ड गन से तकनीकी मूल्यांकन परीक्षण चल रहा है. लेजर गाइडेड एटीजीएम एक्सप्लोसिव रिएक्टिव आर्मर (ईआरए) संरक्षित बख्तरबंद वाहनों को हराने के लिए एक टेंडेम हाई एक्सप्लोसिव एंटी-टैंक (हीट) वारहेड का इस्तेमाल करता है.

एंटी-टैंक गाइडेड मिसाइल का सफल परीक्षण

आज के परीक्षणों के साथ, एंटी-टैंक गाइडेड मिसाइल (ATGM) की न्यूनतम से अधिकतम सीमा तक लक्ष्यों को शामिल करने की क्षमता की स्थिरता सफलतापूर्वक स्थापित की गई है. रक्षा मंत्री राजनाथ सिंह (Rajnath Singh) ने लेजर गाइडेड एटीजीएम के सफल प्रदर्शन के लिए डीआरडीओ (DRDO) और भारतीय सेना (Army) की सराहना की है. वहीं रक्षा अनुसंधान एवं

विकास विभाग के सचिव और डीआरडीओ के अध्यक्ष जी सतीश रेड्डी ने लेजर गाइडेड एटीजीएम के परीक्षण फायरिंग से जुड़ी टीमों को बधाई दी.

https://www.abplive.com/news/india/drdo-successfully-test-fires-laser-guided-atgms-watch-video-2184697/amp#amp_tf=From%20%251%24s&aoh=16596683597999&referrer=https%3A%2F%2Fwww.google.com

Press Information Bureau
Government of India

Ministry of Defence

Thu, 04 Aug 2022 7:29 PM

DRDO Successfully Test Fires Indigenously Developed Laser-Guided ATGMs

Indigenously developed Laser-Guided Anti-Tank Guided Missiles (ATGM) were successfully test-fired from Main Battle Tank (MBT) Arjun by Defence Research and Development Organisation (DRDO) and Indian Army at KK Ranges with support of Armoured Corps Centre & School (ACC&S) Ahmednagar in Maharashtra on August 04, 2022. The missiles hit with precision and successfully destroyed the targets at two different ranges. Telemetry systems have recorded the satisfactory flight performance of the missiles.

The all-indigenous Laser Guided ATGM employs a tandem High Explosive Anti-Tank (HEAT) warhead to defeat Explosive Reactive Armour (ERA) protected armoured vehicles. The ATGM has been developed with multi-platform launch capability and is currently undergoing technical evaluation trials from 120 mm rifled gun of MBT Arjun. Raksha Mantri Shri Rajnath Singh has complimented DRDO and Indian Army for successful performance of the Laser Guided ATGMs. Secretary, Department of Defence R&D and Chairman DRDO Dr G Satheesh Reddy congratulated the teams associated with the test firing of Laser Guided ATGMs.

https://pib.gov.in/PressReleasePage.aspx?PRID=1848497

HT Hindustan Times

Thu, 04 Aug 2022

Indigenously Developed Laser-Guided Anti-Tank Missiles Successfully Tested by DRDO, Army

Indigenously developed laser-guided anti-tank guided missiles (ATGM) were successfully tested from main battle tank (MBT) Arjun by the Defence Research and Development Organisation (DRDO) and Indian Army at KK Ranges, Ahmednagar, in Maharashtra with the support of Armoured Corps Centre & School (ACC&S) on Thursday. The missiles hit with precision and

successfully defeated the targets at two different ranges. The all-indigenous ATGM employs a tandem high explosive anti-tank (HEAT) warhead to defeat explosive reactive armour (ERA) protected armoured vehicles, news agency ANI reported.

The ATGM has been developed with multi-platform launch capability and is currently undergoing technical evaluation trials from 120-mm rifled gun of MBT Arjun. With Thursday's trials, consistency of ATGM's capability to engage targets from minimum to maximum range has been established successfully. Defence minister Rajnath Singh complimented the DRDO and the army for the successful performance of the ATGMs. Secretary of the department of defence R&D and chairman DRDO G Satheesh Reddy congratulated the teams associated with the test firing of the ATGMs.

https://www.hindustantimes.com/india-news/indigenously-developed-laser-guided-anti-tank-guided-missiles-successfully-tested-by-drdo-army-101659619979331.html

गुरुवार, 04 अगस्त 2022

ब्रह्मोस-2 हाइपरसोनिक मिसाइल से घबराएंगे पाकिस्तान और चीन, पलक झपकते ही मचा देगी तबाही

भारत और रूस साथ मिलकर ब्रह्मोस-2 हाइपरसोनिक मिसाइल बना रहे हैं. ब्रह्मोस (BrahMos) को दुनिया का सबसे तेज और घातक हथियार माना जाता है. भारत की पहली हाइपरसोनिक मिसाइल रूस के जिरकॉन मिसाइल के मॉडल आधारित हो सकती है. जानकारी के मुताबिक ब्रह्मोस-2 मिसाइल को निर्यात नहीं किया जाएगा. प्रदर्शन और ताकत के मामले में ये रूस के जिरकॉन मिसाइल से काफी मेल खाएगी. ब्रह्मोस एयरोस्पेस के सीईओ अतुल राणे (Atul Rane) ने हाल ही में कहा था कि हम हाइपरसोनिक मिसाइल बनाने में सक्षम हैं. 5 से 6 साल के भीतर हम पहले हाइपरसोनिक ब्रह्मोस मिसाइल को बनाने में सफल हो जाएंगे.

ब्रह्मोस-2 की ताकत और खासियत

ब्रह्मोस-2 सुपरसोनिक मिसाइल में स्क्रैमजेट इंजन लगाया जाएगा, जो इसकी ताकत को काफी बढ़ा देगा. स्पीड और ग्लाइड करने की बेहतर क्षमता के साथ इसे विकसीत किया जा रहा है. जानकारी के मुताबिक इस मिसाइल की रेंज 600 किमी होगी. इसकी रेंज को बढ़ाकर 1000 किमी किया जा सकता है. ये मिसाइल एंटी शिप और सतह से सतह पर मार करने वाली हाइपरसोनिक क्रूज मिसाइल होगी. इसे फाइटर जेट, युद्धपोत, पनडुब्बी से दागा जा सकता है.

रडार से भी नहीं आएगी पकड़ में

चीन और पाकिस्तान जैसे चालबाज पड़ोसियों के ये मिसाइल काफी घातक साबित हो सकती है. इसकी स्पीड इतनी अधिक होगी की रडार से भी पकड़ में नहीं आएगी. ये आसमान में ही डायरेक्शन चेंज कर सकती है. हाइपरसोनिक हथियार की विशेषता ये होती है कि ये कम ऊंचाई पर भी उड़ान भरने में सक्षम है. ब्रह्मोस का सुपरसोनिक संस्करण 2.8 मैक की गति से उड़ान भरने में सक्षम होगा.

रूस के किस मिसाइल से मेल खाएगी?

रूस की TASS समाचार एजेंसी के हवाले से ब्रह्मोस एयरोस्पेस (Brahmos Aerospace) के सीईओ अतुल राणे ने कहा कि हाइपरसोनिक ब्रह्मोस- II में रूस की जिरकॉन मिसाइल के समान प्रदर्शन करने की विशेषताएं होंगी. इसका मतलब है कि ब्रह्मोस-2 प्रदर्शन के मामले में जिरकॉन मिसाइल के लगभग बराबर होगा. रूस ने दावा किया है कि उसकी हाइपरसोनिक जिरकॉन मिसाइल (Zircon Missile) ध्वनि की गति से नौ गुना तेज उड़ान भर सकती है.

अभी बनने में कितना वक्त लगेगा?

ब्रह्मोस का सुपरसोनिक संस्करण (Supersonic Version of Brahmos) 2.8 मैक की गति से उड़ान भर सकता है, जो कि ध्वनि की गति से लगभग तीन गुना अधिक है. अतुल राणे ने यह भी बताया कि ब्रह्मोस-2 (BrahMos-2) को पहली उड़ान परीक्षण से पहले पांच-छह साल तक का वक्त लग सकता है. ब्रह्मोस-II का विकास संयुक्त तौर से डीआरडीओ (DRDO) और रूस के NPO Mashinostroyeniya की ओर से किया जा रहा है.

https://www.abplive.com/news/india/defence-news-brahmos-2-hypersonic-missile-could-be-modeled-on-russia-ferocious-zircon-missile-2184141/amp#amp_tf=From%20%251%24s&aoh=16596693957042&referrer=https%3A%2F%2Fwww.google.com

Thu, 04 Aug 2022

IIT Roorkee, DRDO Collaborate to Develop Indigenous Defence Equipment

The Indian Institute of Technology Roorkee (IIT Roorkee) has collaborated with the Defence Research & Development Organization (DRDO) to develop indigenous radio frequency power amplifiers to meet the futuristic requirements of programmable radios. It is being developed by

Defence Electronics Application Laboratory (DEAL), DRDO. The research group led by Prof Karun Rawat at IIT Roorkee, and a group of scientists and engineers led by Pinaki Sen from DEAL, DRDO have designed these amplifiers to be simultaneously able to fulfill the high-efficiency requirements (for thermal management) and good linearity for signal fidelity. The designs have been simultaneously optimized for Size, Weight & Power (SWaP). These amplifier units have superior performance and beat many similar products from global manufacturers achieving high efficiency and gain while simultaneously considering good harmonic and intermodulation suppression. said IIT Roorkee.

“The lack of indigenous components poses a severe challenge to R&D organizations such as in integrating the entire defense equipment in a given timeline from the armed forces. The scientific rigor of an academic R&D has a high potential to bring innovative designs to bolster cutting-edge technology development. However, the challenge is to direct such scientific investigations to product-oriented exercises through collaborative efforts with R&D labs," said the IIT. The improvement in efficiency will result in a significant amount of heat load reduction, which will facilitate easy integration in the programmable radio chassis in the required form factor. The unit will be assembled with the indigenous radio units of DEAL, and DRDO, and will be manufactured by private domestic partners for mass production.

Prof Ajit K Chaturvedi, Director, IIT Roorkee, said, “With Make in India emerging as a powerful beacon to guide the development of defense technologies, we need to synergise the strengths of the government research agencies, industries as well as academics institutions to make India a truly global player in major defense technologies and systems.” Lal Chand Mangal, Director, DEAL DRDO, remarked, “DEAL DRDO with its charter to do research, design, and development is geared up for the development of such futuristic technologies indigenously by involving academia and industry in a big way, to maintain and support India’s Defence system." Prof. Karun Rawat, Department of Electronics & Communication, IIT Roorkee, said” “Keeping in tune with India’s mission for technological upgradation, the current R&D feat of Technology focus is a glimpse of the improvements to existing capabilities and also bringing up new capabilities."

https://www.news18.com/news/education-career/iit-roorkee-drdo-collaborate-to-develop-indigenous-defence-equipment-5688217.html

ThePrint

Thu, 04 Aug 2022

Parliamentary Panel Compliments DRDO for Reducing Dependence on Imported Military Hardware

A parliamentary panel on Thursday complimented the Defence Research and Development Organisation (DRDO) for managing to bring down the import of missiles, radars and other key military systems to an almost “negligible” level by focusing on their indigenous manufacturing. At the same time, the Standing Committee on Defence criticised the government for a shortfall of Rs 3,002 crore in the allocation to the DRDO for 2021-22 as against the proposed outlay at the budget estimate (BE) stage. The 13th report of the committee, headed by Jual Oram and

comprising around 30 lawmakers including Congress MP Rahul Gandhi, was tabled in Parliament on Thursday. “The committee appreciate that DRDO has managed to bring down the imports in missiles, radars, sonars, torpedo, electronic warfare systems, AWACs (Airborne Warning and Control Systems) to almost negligible level due to their indigenisation efforts,” it said. The committee recommend that DRDO must make all efforts to develop a mechanism for regular and steady adoption of the latest technologies to boost the indigenisation process.

On shortfall in allocation to the DRDO, the committee said the government should ensure that the budgetary requirements of the organisation are fully met. “The committee feel that since the role of the DRDO has assumed greater significance in the area of development of futuristic technologies that are required for defence preparedness, it should be ensured that the budgetary requirements of the DRDO are fully met and, if required, even additional funds may be provided,” it said. The committee also noted the steps initiated by the DRDO to ensure better coordination with the armed forces to bring down the rejection rate as well as reduce delays in the supply of products. “It reiterated that more stringent measures need to be taken by the DRDO to ensure adherence to delivery timelines of various products the armed forces.

The report mentioned that the committee was apprised that the authorised strength of scientists in the DRDO is 7,773 while the existing strength is 6,959. “It shows that there is a 10 per cent shortage in scientists in the DRDO. The committee note that the shortage of manpower can prove to be a hindrance towards fructification of committed R&D projects,” it said. In its reply, the government said the DRDO optimally utilises its manpower and listed steps to fill the vacant positions. The standing committee also appreciated the DRDO’s efforts during the crisis facing the country following the COVID-19 pandemic. “The concerted efforts made by the DRDO to help the common man in providing ventilators for Covid patients in hospitals, hand sanitisers and N99 masks, body suits for doctors, medical staff, sanitation workers, para-military forces and other government organisations, overall proved to be very helpful in fighting the pandemic,” the report said.

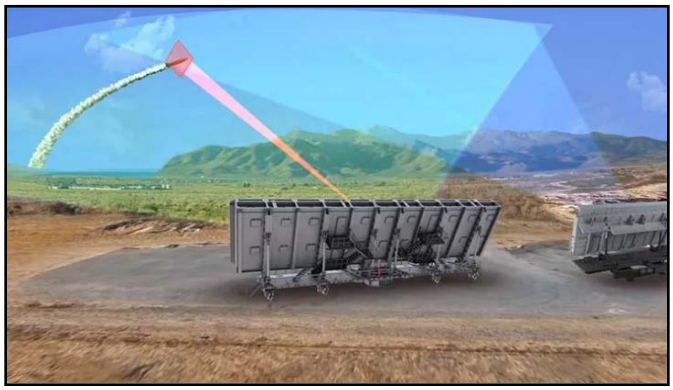
https://theprint.in/india/parliamentary-panel-compliments-drdo-for-reducing-dependence-on-imported-military-hardware/1069622/

Thu, 04 Aug 2022

DRDO Lab Develops AESA Based Electronic Warfare Systems

Defence Electronics Research Laboratory (DLRL), Hyderabad is now working to meet the requirements of EW systems of Indian Armed Forces. The laboratory has designed, developed, and produced a large number of ruggedized systems meeting the state-of-the-art requirements of Army, Navy and Air Force in a dynamically changing operational scenario. The EW system configuration comprises of antenna, microwave frontend modules followed by digital signal processing hardware, software, and man-machine interface modules. The laboratory developed the expertise in design and development of each of these functional technologies and also

subsequently integrating them towards rugged field deployable systems for user exploitation and induction into the Services.



With increasing demand for use of electronics in modern warfare, Electronic Warfare (EW) systems have demanding requirements for the use of Armed Forces on land, air, sea and space. Threats are becoming more and more agile and moving higher in the spectrum, thereby especially putting stringent design criticalities on various technologies for EW systems.

Over five decades, DLRL has developed the expertise and technical competence towards custom indigenous design, development, and production of critical MW technology modules over multi-octave bandwidths meeting the requirements of the Services. Towards this wide range of MW technologies ranging from components, RF frontend modules and multi-channel receiver modules were successfully realised, productionised, field installed, and being exploited by the tri-services. State-of-the-art technologies like LTCC modules, multi-chip modules, T/R modules, core-chip, T/R chips and phased-array systems are also being developed and proposed to configure future systems with enhanced performance features

High Effective Radiated Power (ERP), fast reaction times, High DF accuracies and ability to handle multiple threats are the essential requirements of present day jammer systems. Conventional jammers using TWTs as transmitters along with high gain antenna are mounted on a servo pedestal to achieve wide angular coverage. State-of-the-art next generation EW systems are configured with an active electronic scanned planar antenna array where, each element of the antenna is driven with a low power solid-state amplifier and the phase and amplitude of each element is controlled to form a single sum beam of narrow beam-width, with high gain using spatial combination technique. The active electronic planar antenna array facilitates to form the beam that can steer both in azimuth and elevation planes.

As a technology development, wideband T/R module-based 12X16 active array covering 5-18 GHz is being developed in DLRL. The approach is based on individual MMIC chips, TR, and CORE chips for 28 dBm, 2 w and 4 w respectively. The individual T/R modules are tested and iterations are in progress. Complete AESA system modules comprising of antenna array, plank controller, quadrant RF module, power supply, and other electronics for integration are in advanced stage of development and testing

https://raksha-anirveda.com/drdo-lab-develops-aesa-based-electronic-warfare-systems/

DRDO On Twitter

Defence News

Defence Strategic : National/International

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

गुरुवार, 04 अगस्त 2022 4:04 अपराह्न

बाधाओं को पार कर- भारतीय नौसेना की सर्व-महिला एयरक्रू ने इतिहास रचा

नेवल एयर एन्क्लेव, पोरबंदर में स्थित भारतीय नौसेना के आईएनएएस 314 की पांच अधिकारियों ने 3 अगस्त, 2022 को डोर्नियर 228 विमान पर सवार होकर उत्तरी अरब सागर में पहला सर्व-महिला स्वतंत्र समुद्री टोही और निगरानी मिशन पूरा कर इतिहास रच दिया। विमान की कप्तानी मिशन कमांडर, लेफ्टिनेंट कमांडर आंचल शर्मा ने की। उनकी टीम में पायलट, लेफ्टिनेंट शिवांगी और लेफ्टिनेंट अपूर्वा गीते और सामरिक तथा सेंसर अधिकारी, लेफ्टिनेंट पूजा पांडा और एसएलटी पूजा शेखावत थीं। आईएनएएस 314 पोरबंदर, गुजरात में स्थित एक फ्रंटलाइन नेवल एयर स्क्वाड्रन है और यह अत्याधुनिक डोर्नियर 228 समुद्री टोही विमान संचालित करता है। स्क्वाड्रन की कमान एक योग्य नेविगेशन प्रशिक्षक कमांडर एस के गोयल संभाल रहे हैं। इस ऐतिहासिक उड़ान से पहले महिला अधिकारियों को महीनों का जमीनी प्रशिक्षण और व्यापक मिशन ब्रीफिंग दी गई।

सशस्त्र बलों में परिवर्तन लाने में भारतीय नौसेना सबसे आगे रही है। यह प्रभावी और अग्रणी महिला सशक्तिकरण पहल है, जिसके तहत महिला पायलटों को शामिल करना, हेलीकॉप्टर स्ट्रीम में महिला वायु संचालन अधिकारियों का चयन करना शामिल है और इसने 2018 में दुनिया भर में एक अखिल महिला नौकायन अभियान का संचालन किया। हालांकि अपनी तरह का यह पहला सैन्य उड़ान मिशन अनूठा था और इससे विमानन क्षेत्र में महिला अधिकारियों को अधिक जिम्मेदारी और अधिक चुनौतीपूर्ण भूमिका दिए जाने का मार्ग प्रशस्त होने की उम्मीद है। यह शायद सशस्त्र बलों के लिए एक अनूठी उपलब्धि का प्रतीक है कि केवल महिला

अधिकारियों के एक दल ने एक बहु-चालक समुद्री निगरानी विमान में एक स्वतंत्र परिचालन मिशन को अंजाम दिया।

इन अधिकारियों को सफलतापूर्वक यह मिशन पूरा करने और इसके परिणामस्वरूप भारत और दुनिया भर में लाखों महिलाओं को सभी बंधनों से मुक्त होकर अपने सपनों को पूरा करने की प्रेरणा देने के लिए बहुत-बहुत बधाई। यह वास्तव में एक ऐसा मिशन था, जिसने "नारी शक्ति" का प्रदर्शन किया।

https://pib.gov.in/PressReleasePage.aspx?PRID=1848413

THE TIMES OF INDIA

Thu, 04 Aug 2022

Navy's All-Women Aircrew Creates History by Carrying Out Surveillance Mission Over North Arabian Sea

In a rare feat, five women officers of the Indian Navy carried out the first independent maritime reconnaissance and surveillance mission in the North Arabian Sea onboard a Dornier aircraft. The Navy on Thursday described the mission by the women officers from its 'INAS 314' frontline naval air squadron in Porbandar as "historic". The aircraft was captained by Mission Commander, Lt Commander Aanchal Sharma, and other members of the team are Lt Shivangi and Lt Apurva Gite (both pilots), and tactical and sensor officers, Lt Pooja Panda and Sub Lt Pooja Shekhawat. "On Wednesday, five officers of the Indian Navy's INAS 314 based at naval air enclave in Porbandar created history by completing the first all-women independent maritime reconnaissance and surveillance mission in the North Arabian Sea onboard a Dornier 228 aircraft," spokesperson in the Indian

Navy Commander Vivek Madhwal said. The INAS 314 is a frontline naval air squadron based at Porbandar, Gujarat and operates the state-of-the-art Dornier 228 maritime reconnaissance aircraft. The women officers received months of ground training and comprehensive mission briefings in the run-up to the sortie. Commander Madhwal said the first-of-its-kind military flying mission on Wednesday was unique and is expected to pave the way for women officers in the aviation cadre to assume greater responsibility and aspire for more challenging roles.

"It perhaps marks a unique achievement for the armed forces that a crew of only women officers undertook an independent operational mission in a multi-crew maritime surveillance aircraft," he said. "It was indeed a mission that showcased 'Nari Shakti' in its real spirit," he said. The spokesperson said the Indian Navy has been a front-runner in driving transformation in the armed forces. "It's pioneering women empowerment initiatives include induction of women pilots, selection of women air operations officers into the helicopter stream and conducting an all-women sailing circumnavigation expedition across the globe in 2018," he said

https://timesofindia.indiatimes.com/india/navys-all-women-aircrew-creates-history-by-carrying-out-surveillance-mission-over-north-arabian-sea/articleshow/93351900.cms

Thu, 04 Aug 2022

HALS Helicopter Turboshaft Engine HTSE-1200 Achieves Major Milestones

Hindustan Aeronautics Limited is developing a new indigenous helicopter engine—the Hindustan Turbo Shaft Engine (HTSE) 1200. "The HTSE-1200 can be used for helicopters of 3.5-ton class in the single-engine configuration such as the Light Utility Helicopter and for 5 to 8 ton class in twin engine configuration such as the Indian Multi Role Helicopter, Advanced Light Helicopter and Light Combat Helicopter. The 1200KW Turbo shaft engine would be used as power plant for 3 to 6-ton category helicopters. One technology demonstrator of HTSE-1200 engine was built and it is presently under testing.100% speed run achieved on core engine.

Hindustan Turbo Shaft Engine (HTSE) 1200

Sea level trials of core engine completed successfully.

High altitude cold weather trials of Jet Mode Engine at Leh and High altitude hot weather trials of Jet Mode Engine at Leh, South Pullu and Khardung-La completed. Run of Power mode engine to 80% of the speed achieved.

http://www.indiandefensenews.in/2022/08/hals-helicopter-turboshaft-engine-htse.html

Fri, 05 Aug 2022

MBDA and India, Longstanding Partners

"MBDA has been actively working in partnership with India's government and industry to build India's defence industrial capabilities for over 50 years. Over this time, many tens of thousands of MBDA designed missiles have been built in India and we continue to deepen and deliver on new programs. Our full range of missiles and missile systems portfolio, the main defence domains air, land and sea are such as; Meteor, ASRAAM, Sea Ceptor, Exocet, MARTE, MMP and Mistral," said Boris Solomiac, MBDA General Delegate India.

Defence Co-Operation

The history of co-operation between the Indian Army and MBDA goes right back to the origins of the anti-tank missile and MBDA has provided the Indian Army with battle-winning anti-tank systems. The MILAN anti-tank missile, made in India, is an MBDA-design. This missile, which continues to serve with the Indian Army, provides reliable and combat-proven anti-tank performance. To date over 50,000 examples of the MILAN missile have been made in India.

Launch of MBDA's vertical launch version of the Sea Ceptor Missile

MBDA's joint venture with Larsen and Toubro – L&T MBDA Missile Systems Limited (L&TMMSL) – is is offering a new anti-tank guided missile. A true successor to the highly successful MILAN. We are also very excited for the next stages of our partnership with the Indian Army, and have recently signed an agreement with Bharat Dynamics Limited for the final assembly integration and test line of the Mistral missile. Mistral has already been successfully integrated onto India's combat helicopters, the RUDRA and LCH. This provides a bridge to their use in a ground based VSHORAD role.

Mistral can be utilised as a man portable air defence system (MANPADS) in a very short-range air defence (VSHORAD). Utilising the same missile in multiple roles the Indian Army could reap the reward of major cost savings and operational benefits to be found in maintaining common equipment stockpiles. Not to mention the training and logistics benefits. The missile is fully compliant with India's requirements and outperforms the capabilities of its rivals with a proven single-shot kill probability of over 96%.

MBDA's Platter For Indian Navy?

Sea Ceptor is a latest generation all-weather air defence system is of particular interest as it is under consideration for its Short Range Surface to Air Missile (SRSAM) requirement. Through the use of new advanced technologies, Sea Ceptor provides complete protection against all known and projected air targets including saturation attacks across 360° simultaneously. Sea Ceptor utilises the CAMM missile that features a next generation all-weather fully active RF-seeker, two-way datalink and soft-vertical launch system to provide a step-change in performance compared with previous generation systems.

The Exocet-MM40, which has been offered for the Indian Navy's Medium Range Anti-Ship Missile requirement. Exocet probably ranks as the world's best known anti-ship missile. It is known in India where the submarine variant, SM39, has been delivered to the Indian Navy to arm its Scorpene submarines (Project 75).

Joint Ventures

L&T MBDA Missile Systems Ltd (L&T-MMSL) is to be a major manufacturer of missile systems in India and a significant contributor to Atmanirbhar Bharat and the Make in India program. A key part of this for both local production and local development. The Joint Venture has already set up a facility in Coimbatore that is manufacturing and delivering equipment.

L&TMMSL is bidding on three programs for the Indian armed forces at present: it has offered the vertical launch Sea Ceptor air defence system for the Indian Navy's SRSAM requirement, Exocet MM40 for the Indian's Navy's medium range anti-ship missile requirement, and is offering an antitank missile in the Make in India program.

The high point of the year gone by (2021) was finalising the agreement with Bharat Dynamics Limited to establish a facility for the final assembly, integration and test (FAIT) of ASRAAM missiles in Hyderabad in July 2021, and work on establishing the facility getting underway as per plan. The low point is the human cost of the global pandemic on the people of India, and any effect it had on the many enterprises of India's defence ecosystem.

Future Focus

MBDA has two exciting focuses during 2022: providing the highest performing missile technologies to India, and secondly supporting Atmanirbhar Bharat as part of MBDA's longstanding partnership strategy with India. A superb example of this first pillar are the Indian Air Force's new Rafale fighter aircraft that are flying fully equipped with truly game changing set of weapons from MBDA – the revolutionary Meteor beyond visual range air-to-air missile, MICA air combat missile and SCALP deep strike missile. These are the highest performing missiles of their type available anywhere in the world, providing India the ability to stealthily strike deep at enemy targets and to dominate totally in air combat.

http://www.indiandefensenews.in/2022/08/mbda-and-india-longstanding-partners.html

INDIA TODAY

Thu, 04 Aug 2022

Chinese Missiles Believed to have Landed in Japan's Exclusive Economic Zone: Minister

Ballistic missiles fired by China are believed to have landed in Japan's exclusive economic zone (EEZ) for the first time, Japanese Defence Minister Nobuo Kishi said Thursday. This comes at a time when China is conducting elaborate military drills in response to US House of Representatives Speaker Nancy Pelosi's Taiwan visit. Ballistic missiles fired by China are believed to have landed in Japan's exclusive economic zone (EEZ) for the first time, Japanese Defence Minister Nobuo Kishi said Thursday. This comes at a time when China is conducting elaborate military drills in response to US House of Representatives Speaker Nancy Pelosi's Taiwan visit. The EEZ extends up to 200 nautical miles from Japan's coastline, beyond the limits of its territorial waters.

Nancy Pelosi's Taiwan visit caused China to send in war planes for combat take-offs from different airports and conduct missions in different air spaces in blatant display of their might The increased military activity around Taiwan is also being seen as a tactic to intimidate the island nation. Earlier, when Washington announced Pelosi's Taiwan trip, China put its military on high alert and vowed a series of 'targeted military actions' as countermeasures to Pelosi's visit. "The United States constantly distorts, obscures and hollows out the 'One China' principle. These

moves, like playing with fire, are extremely dangerous. Those who play with fire will perish by it," the Chinese foreign ministry had warned the US in a statement.

https://www.indiatoday.in/world/story/chinese-missiles-believed-to-have-landed-in-japan-s-exclusive-economic-zone-minister-1983813-2022-08-04

THE ECONOMIC TIMES

Thu, 04 Aug 2022

China Claims 'Precision Missile Strikes' in Taiwan Strait

China says it conducted “precision missile strikes” in the Taiwan Strait on Thursday as part of military exercises that have raised tensions in the region to their highest level in decades. China earlier announced that military exercises by its navy, air force and other departments were underway in six zones surrounding Taiwan, which Beijing claims as its own territory to be annexed by force if necessary. The drills were prompted by a visit to the island by U.S. House Speaker Nancy Pelosi this week and are intended to advertise China’s threat to attack the self-governing island republic. Along with its moves to isolate Taiwan diplomatically, China has long threatened military retaliation over moves by the island to solidify its de-facto independence with the support of key allies including the U.S.

“Long-range armed live fire precision missile strikes were carried out on selected targets in the eastern area of the Taiwan Strait," the Eastern Theater Command of the People's Liberation Army, the ruling Communist Party's military wing, said in a statement on its social media platform. “The expected outcome was achieved," it added. No other details were given. Taiwan's Defense Ministry said its forces were on alert and monitoring the situation, while seeking to avoid escalating tensions. Civil defense drills have also been held and notices were placed on designated air raid shelters. China's “irrational behavior" intends to alter the status quo and disrupt regional peace and stability, the ministry said.

“The three service branches will combine efforts with all the people to jointly safeguard national security and territorial integrity" while adapting to the situation as it develops, the statement said. China’s official Xinhua News Agency reported the exercises were joint operations focused on “blockade, sea target assault, strike on ground targets, and airspace control.” While the U.S. has not said it would intervene, it has bases and forward-deployed assets in the area, including aircraft carrier battle groups. U.S. law requires the government to treat threats to Taiwan, including blockades, as matters of “grave concern."

The drills are due to run from Thursday to Sunday and include missile strikes on targets in the seas north and south of the island in an echo of the last major Chinese military drills aimed at intimidating Taiwan's leaders and voters held in 1995 and 1996. While China has given no word on numbers of troops and military assets involved, the exercises appear to be the largest held near Taiwan in geographical terms. The exercises involved troops from the navy, air force, rocket force, strategic support force and logistic support force, Xinhua reported.

https://economictimes.indiatimes.com/news/defence/afp-journalists-see-projectiles-fired-by-chinese-army-into-taiwan-strait/articleshow/93340064.cms

Thu, 04 Aug 2022

US Ratifies Finland, Sweden Accession to NATO

The US Senate ratified the entry of Sweden and Finland into NATO Wednesday, strongly backing the expansion of the transatlantic alliance in the face of Russia's invasion of Ukraine. The Senate voted 95 to 1 in favor of the two Nordic countries' accession, making the US the 23rd of the 30 NATO countries to formally endorse it so far, after Italy approved it earlier Wednesday and France on Tuesday. President Joe Biden hailed the Senate's quick ratification process – the fastest since 1981. "This historic vote sends an important signal of the sustained, bipartisan US commitment to NATO, and to ensuring our Alliance is prepared to meet the challenges of today and tomorrow," Biden said in a statement. The US Senate ratified the entry of Sweden and Finland into NATO Wednesday, strongly backing the expansion of the transatlantic alliance in the face of Russia's invasion of Ukraine.

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https://www.thedefensepost.com/2022/08/04/us-finland-sweden-nato/

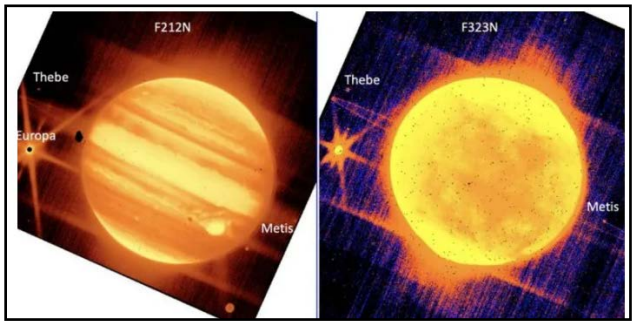
Science & Technology News

Thu, 04 Aug 2022

James Webb Space Telescope Captures the Planet Jupiter in Its Infrared Gaze

After the recent release of the first images from NASA's James Webb Space Telescope, data from the telescope's commissioning period is now being released on the Space Telescope Science Institute's Mikulski Archive for Space Telescopes. The data includes images of Jupiter and images and spectra of several asteroids. They were captured to test the telescope's instruments before science operations officially began July 12. Webb's ability to track solar system targets and produce images and spectra with unprecedented detail is demonstrated in the data. Fans of Jupiter will recognize some familiar features of our solar system's gigantic planet in these images seen through Webb's infrared gaze.

A view from the NIRCam instrument's short-wavelength filter shows distinct bands that encircle the planet as well as the Great Red Spot, a storm big enough to swallow the Earth. Because of the way Webb's infrared image was processed, the iconic spot appears white in this image. After the recent release of the first images from NASA's James Webb Space Telescope, data from the telescope's commissioning period is now being released on the Space Telescope Science Institute's Mikulski Archive for Space Telescopes. The data includes images of Jupiter and images and spectra of several asteroids. They were captured to test the telescope's instruments before science operations officially began July 12. Webb's ability to track solar system targets and produce images and spectra with unprecedented detail is demonstrated in the data. Fans of Jupiter will recognize some familiar features of our solar system's gigantic planet in these images seen through Webb's infrared gaze. A view from the NIRCam instrument's short-wavelength filter shows distinct bands that encircle the planet as well as the Great Red Spot, a storm big enough to swallow the Earth. Because of the way Webb's infrared image was processed, the iconic spot appears white in this image.



Left: Jupiter, center, and its moons Europa, Thebe, and Metis are seen through the James Webb Space Telescope's NIRCam instrument 2.12 micron filter. Right: Jupiter and Europa, Thebe, and Metis are seen through NIRCam's 3.23 micron filter.

"Combined with the deep field images released the other day, these images of Jupiter demonstrate the full grasp of what Webb can observe, from the faintest, most distant observable galaxies to planets in our own cosmic backyard that you can see with the naked eye from your actual backyard," said Bryan Holler. He is a scientist at the Space Telescope Science Institute in Baltimore, who helped plan these observations. Clearly visible at the left is Europa, a moon with a probable ocean below its thick icy crust. It is the target of NASA's forthcoming Europa Clipper mission. Moreover, Europa's shadow can be seen to the left of the Great Red Spot. Other visible Jovian moons in these images include Thebe and Metis.

"I couldn't believe that we saw everything so clearly, and how bright they were," said Stefanie Milam, Webb's deputy project scientist for planetary science based at NASA's Goddard Space Flight Center in Greenbelt, Maryland. "It's really exciting to think of the capability and opportunity that we have for observing these kinds of objects in our solar system." Scientists were especially enthusiastic to see these images because they are proof that Webb can observe the satellites and rings near bright solar system objects such as Jupiter, Saturn, and Mars. Researchers will use Webb to explore the tantalizing question of whether we can see plumes of material spewing out of moons like Europa and Saturn's moon Enceladus. Webb may even be able to see the signatures of plumes depositing material on the surface of Europa. "I think that's just one of the coolest things that we'll be able to do with this telescope in the solar system," Milam said.

In addition, Webb easily captured some of Jupiter's rings, which especially stand out in the NIRcam long-wavelength filter image. That the rings showed up in one of Webb's first solar system images is "absolutely astonishing and amazing," Milam said. "The Jupiter images in the narrow-band filters were designed to provide nice images of the entire disk of the planet, but the wealth of additional information about very faint objects (Metis, Thebe, the main ring, hazes) in those images with approximately one-minute exposures was absolutely a very pleasant surprise," said John Stansberry, observatory scientist and NIRCam commissioning lead at the Space Telescope Science Institute. Webb also obtained these images of Jupiter and Europa moving across the telescope's field of view in three separate observations. This test demonstrated the ability of the observatory to find and track guide stars in the vicinity of bright Jupiter. But just how fast can an object move and still be tracked by Webb? This was an important question for scientists who study asteroids and comets. During commissioning, Webb used an asteroid called 6481 Tenzing, located in the asteroid belt between Mars and Jupiter, to start the moving-target tracking "speed limit" tests.

Webb was designed with the requirement to track objects that move as fast as Mars, which has a maximum speed of 30 milliarcseconds per second. During commissioning, the Webb team conducted observations of various asteroids, which all appeared as a dot because they were all small. The team proved that Webb will still get valuable data with all of the science instruments for objects moving up to 67 milliarcseconds per second, which is more than twice the expected baseline – similar to photographing a turtle crawling when you're standing a mile away. "Everything worked brilliantly," Milam said.

https://scitechdaily.com/james-webb-space-telescope-captures-the-planet-jupiter-in-its-infrared-gaze/

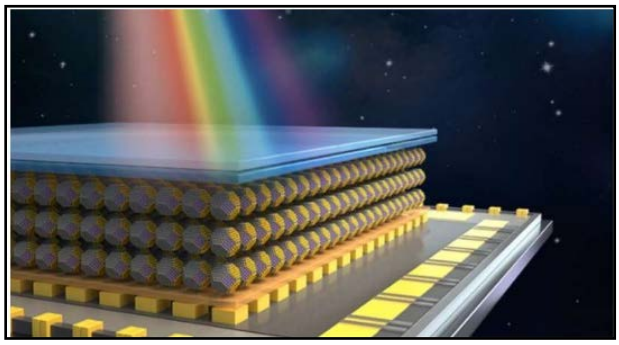
Thu, 04 Aug 2022

A Highly Efficient Colloidal Quantum Dot Imager that Operates at Near-Infrared Wavelengths

Advances in the fields of robotics, autonomous driving and computer vision have increased the need for highly performing sensors that can reliably collect data in different environmental conditions. This includes imagers that can operate at near-infrared wavelengths (i.e., 0.7–1.4 μm), thus potentially collecting high resolution images in complex or unfavorable atmospheric conditions, such as in the presence of rain, fog and smoke. Researchers at Huazhong University of Science and Technology (HUST), HiSilicon Optoelectronics Co. Limited, and Optical Valley Laboratory have recently developed a near-infrared colloidal quantum dot (CQD) imager. This highly efficient imager was presented in a paper published in Nature Electronics.

"Our group was founded at Wuhan National Laboratory for Optoelectronics, HUST in 2012 and continuously conducts research on CQD materials and devices with Associate Prof. Jianbing Zhang," Liang Gao, one of the researchers involved in the study, told TechXplore. The recent work by Tang, Gao and their colleagues is the product of their collaboration with HiSilicon Optoelectronics Co. Limited, a renowned semiconductor company based in Shanghai, which was

initiated in 2018. After they received funding from the company four years ago, the researchers have been focusing much of their research efforts on the development of a highly performing CQD imager. "We have been working on our CQD imager for a long time," Jiang Tang, lead researcher for the study, told TechXplore. "I graduated from University of Toronto under the supervision of Prof. Edward Sargent, a pioneer of CQD infrared photodetectors and founder of the company InVisage. Our team at HUST's primary mission is to build a reliable near and short infrared imager with low costs."



CQD imager by monolithic integration of CQD photodiode array and silicon-based ROIC.

Traditional near-infrared imagers are manufactured by heterogeneously integrating an epitaxially grown photodiode array and a silicon-based readout integrated circuit (ROIC). In contrast, the CQD imager introduced by Tang, Gao and their colleagues was created via the monolithic integration of a CQD photodiode array and a silicon-based ROIC. CQDs are semiconductor crystals of nanometer sizes that contain surface ligands, which allow them to disperse in solvents. These crystals have favorable optical, electronic and physical properties that make them highly promising for the development of numerous technologies, including imagers, light emitting diodes and gas sensors. "The CQD photodiode array transfers incident photons to electrons, and the silicon-based ROIC manipulates photo-generated electrons to output image signals," Gao explained. "The monolithic integration potentially enables smaller pixel size and higher resolution of CQD imager than heterogeneously integrated imager."

Most near-infrared imagers introduced in the past have high production costs, due to the complexity of the integration between infrared photodiodes and silicon-based circuits. The new imager's distinct design and fabrication process, on the other hand, makes it easier to realize, significantly cutting production costs. "We directly deposited the sensing layer on top of the ROIC," Tang explained. "Our imager's unique advantage is the monolithic integration, which enables 12-inch wafer integration and limits production costs. We started from chemicals all the way to final chips, achieving a good imager." This team of researchers was one of the first to demonstrate the integration of a top-illuminated CQD photodiode array with silicon-based ROIC technology. In initial tests, their photodiodes (i.e., photodetectors) exhibited a spectral range of 400–1,300 nm, room-temperature detectivity of 2.1×10^{12} Jones, −3 dB bandwidth of 140 kHz and linear dynamic range of over 100 dB.

Tang, Gao and his colleagues have so far used their newly developed photodiodes to create a large imager (640 x 512 pixels). They found that this imager attained a remarkable efficiency and spatial resolution. "Our CQD imager shows the highest external quantum efficiency of 63% among the reported CQD imagers due to the developed device structure," Gao said. "The detailed presentation of our new CQD imager could serve as a reference for researchers and

technicians specialized in emerging monolithically-integrated imager fields." In the future, this new CQD imager could be used to collect high resolution images of veins, biological systems and matter particles. In their next studies, the researchers plan to develop CQD imagers with longer wavelengths and higher resolutions. In addition, they would like to try to integrate other functional sensors with silicon-based circuits using their monolithic integration strategy. "In our future works, we will increase our imager's resolution (1K x 1K), its wavelength (1700 nm and beyond), and its stability (sustain 120C or even 150C to meet the stringent automobile application requirement), while also trying to create larger wafers (from 4 inch to 12 inch)," Tang added.

More information: Jing Liu et al, A near-infrared colloidal quantum dot imager with monolithically integrated readout circuitry, Nature Electronics (2022). *DOI: 10.1038/s41928-022-00779-x*

https://techxplore.com/news/2022-08-highly-efficient-colloidal-quantum-dot.html

INDIA TODAY

Thu, 04 Aug 2022

Super Earth with Possibility for Life Discovered

The search for an Earth-like planet has taken astronomers not just behind our solar system, but also behind the Milky Way Galaxy and a new planet has raised expectations. Astronomers have discovered a Super-Earth located in the habitable zone of its Red Dwarf star. The only problem is that this planet keeps moving in and out of its habitable zone. However, it still offers hopes of retaining water on its surface and could be an important target for future observation as the James Webb Space Telescope begins science operations. Ross 508 b was discovered by the Subaru Strategic Program using the infrared spectrograph (IRD) on the Subaru Telescope (IRD-SSP). The discovery is the result of a new focus being put on red dwarf stars which comprise three-quarters of the stars in our galaxy and exist in large numbers in the vicinity of our Solar System.

Living through habitable zone

The habitable zone is described as the distance from a star at which liquid water could exist on orbiting planets' surfaces. Also known as the Goldilocks zones, where conditions might be just apt for life to flourish, meaning it will be neither too hot nor too cold. Ross 508 b, moves through this Goldilocks zone in its orbit around the star. The planet is located about 37 light-years away from the Earth, around the star which is one-fifth the mass of the Sun. The planet itself is four times the mass of Earth and the average distance from its central star is 0.05 times the Earth-Sun distance, and it is at the inner edge of the habitable zone.

Researchers maintain that although red dwarfs are important targets for studying life in the Universe, they are difficult to observe because they are too faint in visible light. These stars have low surface temperatures of less than 4000 degrees. The only other star with a habitable planet discovered so far is Proxima Centauri b. Researchers said that the planet is likely to have an elliptical orbit, in which case it would cross into the habitable zone with an orbital period of

about 11 days. "While the current telescopes cannot directly image the planet due to its closeness to the central star. In the future, it will be one of the targets of life searches by 30-meter class telescopes," the team said in a statement. "It has been 14 years since the start of IRD's development. We have continued our development and research with the hope of finding a planet exactly like Ross 508 b. We are committed to making new discoveries," Professor Bun'ei Sato, the principal investigator of IRD-SSP said.

https://www.indiatoday.in/science/story/super-earth-with-possibility-for-life-discovered-1983719-2022-08-04