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# समाचार पत्रों से चयित अंश Newspapers Clippings

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**Ministry of Defence**

*Tue, 20 Oct 2020 4:52PM*

## **Raksha Mantri Shri Rajnath Singh releases DRDO Procurement Manual 2020**

To encourage more participation of Indian industry, including Start-ups and Micro, Small & Medium Enterprises (MSMEs) in Defence Research & Development (R&D) for achieving 'Atmanirbhar Bharat', Raksha Mantri Shri Rajnath Singh released a new version of Defence Research and Development Organisation (DRDO) Procurement Manual 2020 (PM-2020) here today.

Speaking on the occasion, Shri Rajnath Singh said, "The new DRDO Procurement Manual will facilitate the indigenous Defence Industry by simplifying the processes and ensure their participation in design and development activities. The PM-2020 will help towards realising Prime Minister Shri Narendra Modi's dream of 'Atmanirbhar Bharat'." He appreciated the contribution of all the officials of DRDO and Finance wing in the Ministry of Defence for their contribution in bringing out the revised PM-2020.

The PM-2020, will facilitate faster execution of R&D projects/programmes. The modified features the Manual will go a long way to facilitate participation of industry in various R&D projects.

Bid security declaration option for earnest money deposit, increase of threshold limit for advance payment, placement of order on lowest bidder 2 (L2) in case L1 backs out are some of the salient features of the new manual, which will assist the industry for the speedy execution of projects.

Some more enabling measures of PM-2020 are exemption of bid security and performance security up to Rs 10 lakh, no negotiations for commercial off-the-shelf (COTS) items/services wherever price discovery is happening through market forces.

Performance security for service contracts is linked to the payment cycle instead of total contract value. Procurement of stores from development partners, safeguarding of free issue material through insurance cover instead of bank guarantee (BG) are other facilitating measures adopted to help the industry.

In the new PM-2020, the liquidated damage (LD) rate for development contracts has been reduced. The delivery period (DP) extension process has been simplified for faster decision making. Many of the internal procedures have been further simplified for faster engagement with industry. It may be noted that the previous Procurement Manual of DRDO was last modified in 2016.

Those present on the occasion included Secretary Department of Defence Research & Development and Chairman DRDO Dr G Satheesh Reddy, Secretary (Defence Finance) Smt Gargi Kauland other senior officials of Ministry of Defence.

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1666125>



## रक्षामंत्री श्री राजनाथ सिंह ने रक्षा अनुसंधान और विकास संगठन की खरीद प्रक्रिया संबंधी नियमावली-2020 को जारी किया

'आत्मनिर्भर भारत' के उद्देश्य की प्राप्ति के लिए रक्षा अनुसंधान और विकास (आरएंडडी) में स्टार्ट-अप्स एवं सूक्ष्म, लघु और मध्यम उद्यम (एमएसएमई) सहित भारतीय उद्योगों की अधिकतम भागीदारी को प्रोत्साहित करने के लिए, रक्षा मंत्री श्री राजनाथ सिंह ने आज रक्षा अनुसंधान और विकास संगठन (डीआरडीओ) की खरीद प्रक्रिया संबंधी नियमावली का एक नया संस्करण (पीएम-2020) जारी किया।

इस अवसर पर सम्बोधित करते हुए, श्री राजनाथ सिंह ने कहा, "नई डीआरडीओ खरीद नियमावली प्रक्रियाओं को सरल बनाकर स्वदेशी रक्षा उद्योग को सुविधा प्रदान की गई है। इससे परिकल्पना और विकास गतिविधियों में उनकी भागीदारी को सुनिश्चित करने के भी अधिक अवसर मिलेंगे। पीएम-2020, प्रधानमंत्री श्री नरेन्द्र मोदी के 'आत्मनिर्भर भारत' के सपने को साकार करने की दिशा में सहायता प्रदान करेगा। श्री राजनाथ सिंह ने संशोधित पीएम-2020 को लाने के लिए डीआरडीओ और रक्षा मंत्रालय के वित्त विभाग के सभी अधिकारियों के योगदान की सराहना की।

पीएम-2020 अनुसंधान एवं विकास परियोजनाओं तथा कार्यक्रमों के तेजी से निष्पादन की सुविधा प्रदान करेगा। इससे संशोधित खरीद प्रक्रिया द्वारा विभिन्न अनुसंधान एवं विकास परियोजनाओं में उद्योगों की भागीदारी को सुविधाजनक बनाने का एक लम्बा रास्ता तय होगा।

बयाना जमा के लिए बोली सुरक्षा घोषणा विकल्प, अग्रिम भुगतान के लिए प्रारंभिक सीमा में वृद्धि, न्यूनतम बोलीदाता 2 (एल 2) पर एक आदेश की नियुक्ति के मामले में एल 1 बैक आउट, इस नई नियमावली की कुछ प्रमुख विशेषताएं हैं। जो परियोजनाओं के त्वरित निष्पादन में उद्योगों को सहायता उपलब्ध कराएगा।

पीएम-2020 में शामिल किये गए कुछ अन्य उपाय इस प्रकार हैं- 10 लाख रुपये तक की बोली की सुरक्षा और निष्पादन सुरक्षा की छूट, जहां कहीं भी बाजार के माध्यम से मूल्य पर बातचीत हो रही है, वहां वाणिज्यिक और व्यावसायिक बिक्री (सीओटीएस) वस्तुओं/सेवाओं के लिए कोई समझौता नहीं होगा।

सेवा अनुबंधों के लिए निष्पादन सुरक्षा कुल अनुबंध मूल्य के बजाय भुगतान चक्र से जुड़ी हुई है। विकास भागीदारों से भंडार खरीद, बैंक गारंटी के बजाय बीमा कवर के माध्यम से खरीद सामग्री की सुरक्षा, उद्योगों की मदद के लिए अपनाए जाने वाले अन्य सुविधाजनक उपाय हैं।

नए पीएम-2020 में विकास अनुबंध के लिए परिनिर्धारित क्षति (एलडी) दर को कम कर दिया गया है। तेजी से निर्णय लेने के लिए वितरण अवधि (डीपी) विस्तार प्रक्रिया को सरल बनाया गया है। उद्योगों के साथ तेजी से जुड़ाव के लिए कई आंतरिक प्रक्रियाओं को और आसान बनाया गया है। यह ध्यान देने योग्य है कि, डीआरडीओ की पिछली खरीद नियमावली को आखिरी बार वर्ष 2016 में संशोधित किया गया था।

इस अवसर पर रक्षा अनुसंधान एवं विकास विभाग के सचिव तथा डीआरडीओ के अध्यक्ष डॉ. जी सतीश रेड्डी, सचिव (रक्षा वित्त) श्रीमती गार्गी कौल और रक्षा मंत्रालय के अन्य वरिष्ठ अधिकारी भी उपस्थित थे।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1666178>



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**రక్షణ మంత్రిత్వ శాఖ**

*Tue, 20 Oct 2020 4:52PM*

**డిఆర్డిఓ ప్రొక్యూర్మెంట్ మాన్యువల్ 2020ని విడుదల చేసిన రక్షణ మంత్రి**

**రాజ్ నాథ్ సింగ్**

రక్షణ పరిశోధన & అభివృద్ధి (ఆర్ & డి)లో పాలుపంచుకునేందుకు స్టార్ట్ అప్ లు సహా, చిన్న మధ్య తరహా పరిశ్రమల ను భారతీయ పరిశ్రమలో భాగస్వాములను చేసి ప్రోత్సహించి, ఆత్మనిర్భర్ భారత్ ను సాధించడం కోసం ఉద్దేశించిన డిఫెన్స్ రీసెర్చ్ అండ్ డెవలప్ మెంట్ (డిఆర్డిఓ) నవీన ప్రొక్యూర్మెంట్ మాన్యువల్ (సమీకరణ పత్రం) 2020 (పిఎమ్ - 2020)ను మంగళవారంనాడు రక్షణ మంత్రి రాజ్ నాథ్ సింగ్ విడుదల చేశారు.

ఈ సందర్భంగా మాట్లాడుతూ, దేశీయ రక్షణ పరిశ్రమకు నూతన డిఆర్డిఓ పత్రం ప్రక్రియలను సరళతరం చేసి, డిజైన్, అభివృద్ధి కార్యకలాపాలలో పాలుపంచుకునే సౌకర్యాన్ని కల్పిస్తుందని ఈ సందర్భంగా రాజ్ నాథ్ సింగ్ చెప్పారు. ప్రధాన మంత్రి నరేంద్ర మోడీ ఆత్మనిర్భర్ భారత్ కలను సాకారం చేసేందుకు పిఎమ్ -2020 తోడ్పడుతుందని ఆయన అన్నారు. సవరించిన పిఎమ్ -2020ని తీసుకురావడంలో దోహదం చేసిన డిఆర్డిఓ అధికారులు, రక్షణ మంత్రిత్వ శాఖలోని విత్త విభాగ అధికారులను ఆయన అభినందించారు.

నూతన పిఎమ్ -2020 పరిశోధన, అభివృద్ధి కార్యక్రమాలను వేగవంతంగా అమలు చేసేందుకు తోడ్పడుతుంది. వివిధ ఆర్ & డి ప్రాజెక్టులలో పరిశ్రమ పాలుపంచుకునేందుకు ఈ పత్రంలో సవరించిన కొన్ని అంశాలు దీర్ఘకాలంలో తోడ్పడతాయి.

ముందస్తుగా సొమ్మును డిసాజిట్ చేసిన వారికి బిడ్ భద్రత ప్రకటన ప్రత్యామ్నాయం, ముందస్తు చెల్లింపుల ప్రారంభ పరిమితి పెంపు, ఒక వేళ తక్కువ బిడ్ చేసిన సంస్థ (ఎల్ 1) వెనక్కి మళ్ళితే ఆ తర్వాత అతి తక్కువగా బిడ్ చేసిన వారికి (ఎల్ 2) ఆర్డర్ ఇవ్వడం అన్నవి నూతన మాన్యువల్లో ప్రముఖ అంశాలు. ప్రాజెక్టుల వేగవంతంగా అమలు చేసేందుకు పరిశ్రమలకు ఇది తోడ్పడుతుంది.

ఈ పత్రంలోని మరికొన్ని ముఖ్యాంశాలు ఏమిటంటే, బిడ్ భద్రత, పనితీరు భద్రతకు రూ. 10 లక్షల వరకు మిన హాయింపు, మార్కెట్ శక్తుల ద్వారా ధరల నిర్ణయం జరుగుతున్నప్పుడు తయారైన వస్తువుల/ సేవల (COTS )పై సంప్ర దింపులకు, చర్చలకు తావుండదు.

సేవా కాంట్రాక్టుల పనితీరు భద్రతను, మొత్తం కాంట్రాక్టు విలువకు బదులుగా చెల్లింపుల చట్టంతో అనుసంధానం చేశారు. పరిశ్రమకు తోడ్పడేందుకు, భాగస్వాముల నుంచి దుకాణాలను సేకరించడం, ఉచితంగా అందించిన సామగ్రికి బ్యాంకు గ్యారంటీకి బదులుగా బీమా కవర్ ను ఇచ్చిన వాటిని పరిరక్షించడం వంటి సౌకర్యాలను కల్పించారు.

నూతన పిఎమ్ -2020లో అభివృద్ధి కాంట్రాక్టులలో నిర్ణయ యోగ్య నష్టపరిహారం రేటును తగ్గించారు. వేగవంతమైన నిర్ణయాలు తీసుకునేందుకు పంపిణీ కాల కొనసాగింపు ప్రక్రియను సరళతరం చేశారు. పరిశ్రమతో వేగవంతంగా ఒప్పందాలు చేసుకునేందుకు అనేకమైన అంతర్గత విధానాలను మరింతగా సులభతరం చేశారు. డిఆర్డిఓకి చెందిన గత ప్రొక్యూర్మెంట్ మాన్యువల్ ను ఆఖరిసారి 2016లో సవరించడం గమనార్హం.

ఈ కార్యక్రమంలో డిఆర్డిఐ చైర్మన్ డాక్టర్ జి. సతీష్ రెడ్డి, రక్షణ విత్త విభాగ కార్యదర్శి శ్రీమతి గార్గి కొలండ్ సహా రక్షణ మంత్రిత్వ శాఖకు చెందిన పలువురు సీనియర్ అధికారులు పాల్గొన్నారు.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1666201>

# THE ECONOMIC TIMES

Wed, 21 Oct 2020

## Rajnath Singh unveils new version of DRDO's procurement manual to engage private sector in defence R&D

### Synopsis

*The government has already announced its vision to make India a global hub of defence manufacturing, and initiated a series of reform measures to encourage the domestic defence industry.*

Defence Minister Rajnath Singh on Tuesday unveiled a new version of the procurement manual of the premier military research institute DRDO featuring simplified procedures for involvement of the private sector in various research and development projects. Defence ministry officials said the new version of the manual has been brought out to encourage participation of private industry, including start-ups and micro, small and medium enterprises in defence research in sync with the government's 'Atmanirbhar Bharat' (self-reliant India) initiative.

All deals, projects and research initiatives in DRDO are guided by the procurement manual.

The government has already announced its vision to make India a global hub of defence manufacturing, and initiated a series of reform measures to encourage the domestic defence industry.

"The procurement manual-2020 will facilitate faster execution of R&D projects/programmes. The modified features in the manual will go a long way to facilitate participation of industry in various R&D projects," the defence ministry said.

Some of the salient features of the new manual include increase of threshold limit for advance payment, placement of order on second lowest bidder (L2) in case lowest bidder L1 backs out and 'bid security declaration option' for depositing earnest money.

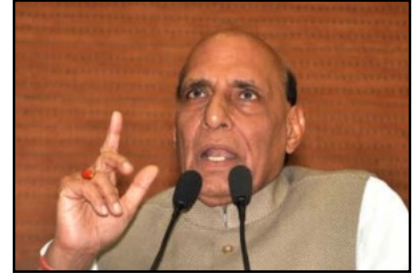
Several other enabling measures are exemption of bid security and performance security of up to Rs 10 lakh and not having negotiations for commercial off-the-shelf (COTS) items/services where price discovery takes place by market forces, the officials said.

They said the process for extension of the delivery period (DP) has been simplified for faster decision making and many of the internal procedures have been further simplified for deeper engagement with industry.

The previous revision of the procurement manual of the DRDO was last carried out in 2016.

In May, Finance Minister Nirmala Sitharaman rolled out a number of reform measures for the defence sector including making separate budgetary outlay to procure Indian-made military hardware, increasing FDI limit from 49 per cent to 74 per cent under the automatic route and generating a year-wise negative list of weapons which will not be allowed to import.

India is one of the most lucrative markets for global defence giants as it figured among top three importers of military hardware in the world for the last eight years.



The government has already announced its vision to make India a global hub of defence manufacturing, and initiated a series of reform measures to encourage the domestic defence industry.

According to estimates, the Indian armed forces are projected to spend around USD 130 billion in capital procurement in the next five years.

The government is eyeing a turnover of Rs 1.75 lakh crore (USD 25 billion) in defence manufacturing by 2025.

<https://economictimes.indiatimes.com/news/defence/rajnath-singh-unveils-new-version-of-drdo-procurement-manual-to-engage-private-sector-in-defence-rd/articleshow/78771062.cms>



Wed, 21 Oct 2020

## **DRDO tweaks manual for ‘self-reliance’ push**

***Defence minister Rajnath Singh on Tuesday released the procurement manual (PM-2020) that seeks to encourage more participation from Indian industry, especially start-ups and micro, small and medium enterprises (MSMEs), for achieving self-reliance in the defence sector, the defence ministry said in a statement.***

***By Rahul Singh***

The Defence Research and Development Organisation’s new procurement manual has raised the limit of advance payment to vendors, allowed awarding contracts to the second lowest bidder (L2) if L1 (the lowest bidder) backs out, and done away with the need to furnish performance bank guarantees — key measures that seek to provide a boost to the indigenous defence industry, DRDO chief G Satheesh Reddy said.

Defence minister Rajnath Singh on Tuesday released the procurement manual (PM-2020) that seeks to encourage more participation from Indian industry, especially start-ups and micro, small and medium enterprises (MSMEs), for achieving self-reliance in the defence sector, the defence ministry said in a statement.

The changes in the manual were suggested by a high-powered committee after a year-long study. The current industry base of DRDO consists of 1,800 MSMEs, defence public sector undertakings, ordnance factories and large-scale industries.

“The new DRDO procurement manual will facilitate the indigenous defence industry by simplifying the processes and ensure their participation in design and development activities,” Singh said.

The last major revamp of the manual was carried out in 2006, with some changes introduced a decade later in 2016. “Some more enabling measures of PM-2020 are exemption of bid security and performance security up to ₹10 lakh, no negotiations for commercial off-the-shelf (COTS) items/services wherever price discovery is happening through market forces and procurement of stores from development partners,” the ministry said, adding that the PM-2020 will facilitate faster execution of R&D projects.

The DRDO’s annual budget for procurement, R&D and grant-in aid is around ₹15,000 crore.

Reddy said the new manual has simplified internal processes as well. “What took six months earlier will now be achieved in a month. Procurement will move at a faster pace. The delivery period extension process has been simplified too, with project directors being empowered to take quick decisions.”

He added that PM-2020 has introduced a provision for leasing of equipment required for a short period if it is a better option to an outright purchase.

“In the new PM-2020, the liquidated damage (LD) rate for development contracts has been reduced,” the statement said. The changes in the procurement manual were suggested by a high-powered committee set up in October 2019 and headed by director general (naval systems and materials) Samir V Kamat. The new manual incorporates at least 60 changes, most of them focused on supporting MSMEs.

# New rules of engagement

DRDO's new procurement manual seeks to encourage more participation from Indian industry, especially start-ups and MSMEs. Here are some key changes

**HIGHER ADVANCE PAYMENT:** The amount given to vendors has been raised to almost 40% of the cost, instead of 15%

**NEW BIDDING SYSTEM:** To avoid delay, the organisation can place order with second lowest bidder (L2) if L1 (the lowest bidder) backs out

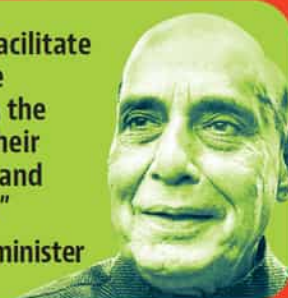
**LEASING OPTION:** It introduces a provision for leasing of equipment required for a short period if it is a better option to an outright purchase

**DELIVERY PERIOD EXTENSION:** The new manual empowers project directors to take decisions on delivery period extension

**KEEPING IT SIMPLE:** Internal processes have been simplified for ensuring faster procurement

"The new manual will facilitate the indigenous defence industry by simplifying the processes and ensure their participation in design and development activities"

Rajnath Singh, defence minister



**ENABLING EXEMPTIONS:** Another enabling measure includes exemption of bid security and performance security up to ₹10 lakh

Raising the limit for advance payment to vendors/partners is seen as a significant step by analysts. Until now, they were receiving only 15% of the cost as advance but the new manual has raised it to almost 40%, the DRDO chief said. The decision to place orders with L2 if L1 backs out will do away with the need for re-tendering that causes delays in procurement, Reddy added.

CII national MSME council co-chairman Ashok Saigal said MSMEs would benefit significantly from the increase in advance from 15% to 40%.

"It is an important move as it will help MSMEs sustain themselves during the long gestation period of product introduction, qualification and coming into use in commercially meaningful quantities," Saigal said. CII has around 9,000 members, with MSMEs accounting for 70% of that figure.

In August, DRDO came out with a list of 108 systems and sub-systems that it would help the Indian industry design and develop to strengthen the local defence ecosystem — from mini unmanned aerial vehicles to fire detection systems and bullet proof vehicles to tank transporters.

The other items on the list include NBC (nuclear, biological and chemical) shelters, missile canisters, navigation radars, satellite navigation receivers, mine-laying equipment and armoured engineering reconnaissance vehicles.

The government has already announced that it will ban the import of 101 different types of weapons, systems and ammunition over the next five years, a significant step on the long road towards achieving self-reliance in the defence sector.

The negative import list included artillery guns, light military transport aircraft, conventional submarines and long-range land attack cruise missiles.

The detailed list of equipment published by the defence ministry in August also spelled out that the embargo on import will kick in between December 2020 and December 2025 for different categories of military hardware.

The military hardware on the negative import list includes assault rifles, sniper rifles, short-range surface-to-air missiles, beyond visual range air-to-air missiles, corvettes, missile destroyers,



light combat helicopter, ship-borne cruise missiles, light combat aircraft, a variety of radars and different types of ammunition.

<https://www.hindustantimes.com/india-news/drdo-tweaks-manualfor-self-reliance-push/story-YClki9Zf8HwEbcPSySEUsJ.html>



*Tue, 20 Oct 2020*

## **XRSAM Missile: India's Next Big Upcoming Missile System**

XRSAM (eXtra Long Range Surface to Air Missile) Weapon system is been developed for the Indian Air Force (IAF) and according to DRDO, IAF has accepted the configuration offered by the DRDO with the capabilities to develop a Long Range Surface to Air Missile Weapon system to neutralize aircraft's, Sea skimming Anti-ship missiles (AShM) and Ballistic missiles in the terminal stage.

DRDO has revealed that XRSAM Air Missile Weapon system will have a range of 350km against targets like Bombers, AWACS and Mid-Air refuellers which usually operate from the depth of its own air space and it will be able to take down fighter size targets at a 250km range which is quite similar to the 48N6E3 Surface to Air Missile system which India will be getting with Russian S-400 advanced air defense systems. DRDO also says that the XRSAM Air Missile Weapon system will also be able to engage Stealth fighters and Ballistic Missile in the terminal stage.

XRSAM will be used to bridge the gap between MR-SAM (70 km) and S-400 (400 km) Air Defence System and will be using spin-off technologies developed for countries Anti-Ballistic missile Defence system. XR-SAM will complement the S-400 systems in their role and filling the need for a robust Multi-Layered Air Defence System and a family of Ground Based Air Defence Weapon Systems (GBADWS).

The total system will be consisting of two different surface to air missiles. One will have 250km range another will have 400km range.

XR-SAM is actually a spin-off of the AAD-1 endo-atmospheric interceptor with a service ceiling of 120 km and has supposedly Anti-Ballistic Missile features though its not confirmed.

India is buying two different type of surface-to-air missile for its S-400 system : 40N6 ( range : 400 km ) and 48N6 ( range : 250 km ). XR-SAM will have active radar homing guidance GaN ( Gallium Nitride ) based UHF radars aimed at engaging Aircrafts , Cruise Missiles , Unmanned Drones and even ballistic targets.

<https://www.defenceaviationpost.com/2020/10/xrsam-missile-indias-next-big-upcoming-missile-system/>

## How India surprised world by testing 12 new missiles in one month

*India has surprised everyone in the defence sector world by testing 12 new missiles continuously in the last one month*

*Edited By Ravi Dubey*

India successfully test-fired the SANT anti-tank missile off the Odisha coast on Monday. The Defence Research and Development Organization (DRDO) has developed this missile for the Indian Air Force. This missile specialty is that it will be equipped with both post-launch lock-on and lock-on capability before launch. All tests of this missile were completed, and now the Air Force will be handed over to use once it is in full attack mode. India has surprised everyone in the defence sector world by testing 12 new missiles continuously in the last one month.

This SANT anti-tank missile was tested at 11.30 am on the Chandipur test range off the Odisha coast. The SANT missile is built by upgrading the Dhruvastra Helena anti-tank guided missile. It is being prepared under the joint operation of the DRDO Research Center and Indian Air Force. It is considered one of the best anti-tank missiles. The range of the Nag missile was increased, and it was named the Dhruvastra Helina missile. It was launched with a twin-tube stub wing-mounted launcher on HAL's Rudra and Light Combat helicopters. Its structure is different from the Nag missile.



### **Demonstrated ability to hit at last minute changed target**

The missile was launched for the first time in 2011 by locking on a target. During the flight, a second target was given to hit, which was destroyed by the missile. In this way, the missile demonstrated the ability to hit a suddenly changed target while in flight.

Subsequently, on 13 July 2015, HAL conducted three tests with a Rudra helicopter at Chandhan firing range of Jaisalmer, Rajasthan. These missiles succeeded in firing two targets at a 7 km distance, while one missed the target. Subsequently, the Dhruvastra Helena Anti-Tank Guided Missile was upgraded to the name of Saint Anti Tank Missile. The first successful trial of this improved version was conducted in November 2018 at the Pokhran Field Firing Range in Jaisalmer, Rajasthan. It then destroyed a dummy tank. It is a wholly indigenous missile of India with a range of 15 to 20 km.

The DRDO and Indian Army conducted a 7-8 km range from the Integrated Test Range at Chandipur, Odisha, on 8 February 2019 to test its maximum missile range and accuracy. Three developmental flight tests have been conducted from 15 to 16 July 2020 in Balasore (Odisha) with ground-based launchers. After successful testing today, this SANT anti-tank missile is in direct and top attack mode, upgraded with new features.

<https://www.dnaindia.com/india/report-how-india-surprised-everyone-in-the-world-of-defence-capability-by-testing-12-new-missiles-in-a-month-drdo-2851054>

# Anti-Tank Guided Missiles: All you need to know

*Anti-Tank Guided Missile: The Laser-Guided Anti-Tank Guided Missile (ATGM) was successfully test-fired on 1 October, 2020. It is indigenously developed and defeating a target located at a longer range. Let us read more about Anti-Tank Guided Missile and why are they important?*

*By Shikha Goyal*

**Anti-Tank Guided Missile:** On 1 October, 2020, Laser Guided Anti-Tank Guided Missile (ATGM) was successfully test-fired defeating a target located at a longer range. It is indigenously developed.

On 22 September, 2020, from MBT Arjun at KK ranges (ACC&S) Ahmednagar, the test was conducted in continuation of a successful trial done.

Rajnath Singh, Minister of Defence congratulated DRDO for this successful feat. Also, Secretary of DD R&D and Chairman DRDO congratulated DRDO personnel for this achievement which paves the way for the Atmanirbhar Bharat pledge of Prime Minister Narendra Modi.



Anti-Tank Guided Missile

## What is Anti-Tank Guided Missile?

It is a medium or long-range missile whose primary objective is to destroy tanks and other armoured vehicles. As we know that various rockets and missiles are employed against armoured vehicles, but the most sophisticated are Anti-Tank Guided Missiles (ATGM). They can be directed to the target by several different guidance systems like laser guiding, television camera, or wire guiding.

In fact, ATGMS can be launched from aircraft or land vehicles or by infantry. It can also be used against fortified positions or low-speed aircraft.

In the late 1950s and early 1960s, the first ATGMs were developed. They employed with manual guidance systems that require the operator to steer the missile to the target by wire with a joystick or similar control device.

In September 2019, the indigenously developed low weight, fire, and forget Man Portable Anti-Tank Guided Missile (MPATGM) were successfully tested. In February, 2018, Anti-Tank Guided Missiles (ATGM), Nag, was successfully tested in desert conditions against two tank targets at different ranges and timings. DRDO has indigenously developed NAG ATGM.

## Are Laser-Guided Anti-Tank Guided Missiles (ATGM) are different?

On 22 September and later on 1 October, the laser-guided ATGM was successfully tested and is different from other ATGMs developed till date. It is designed to be fired from tanks. It employs a tandem HEAT warhead to defeat Explosive Reactive Armour (ERA) protected armoured vehicles in ranges from 1.5 to 5 km. Here 'tandem' basically refers to the missiles that use more than one detonation in order to effectively penetrate the protective armours.

## Where this Laser Guided Missile has been developed?

It has been developed by Armament R&D Establishment (ARDE), Pune in association with High Energy Materials Research Laboratory (HEMRL), Pune and Instruments Research & Development Establishment (IRDE), Dehradun.

Currently, undergoing tests are to be integrated with India's Main Battle Tank (MBT) Arjun. According to the scientists of DRDO "more tests for hitting targets at different ranges and for testing other flight, parameters are planned in the coming days. After these series of validation

tests, the system will be ready for the user trial by the Army, when it will be tested for various weather conditions, among other things."

The missile was tested on 22 September for a target placed at 3 km range while on 1 October it was successfully test-fired for a slightly longer range.

#### **About Man-Portable Anti Tank Guided Missile**

Man-Portable Anti Tank Guided Missile is for infantry and Parachute (Special Forces) of the Indian Army. By using an Ejection Motor, it is 'Soft' launched from a canister and uses a state-of-the-art IIR seeker for homing on to the target. The man-portable missile, and launched using a tripod is designed with a launch weight less than 15 Kg.

#### **About HELINA**

HELINA is Helicopter based NAG which is third generation fire and forget class anti-tank guided missile (ATGM) system which is mounted on the Advanced Light Helicopter (ALH). Let us tell you that the system has all day and night that is the all-weather capability and can defeat battle tanks with conventional armour as well as explosive reactive armour. The targets of HELINA missile can be engaged in both direct hit mode as well as top attack mode. The Weapon systems of HELINA is being inducted into the Indian Army (IA). DHRUVASTRA is a variant of the HELINA Weapon System which is being inducted into the Indian Air Force (IAF).

As per the scientists of DRDO, the key feature in armoured warfare is the operability of the missile from a tank. As, the missile has the capability of engaging with the target even if it is not in the line of sight, therefore further enhancing its capability.

<https://www.jagranjosh.com/general-knowledge/anti-tank-guided-missile-1603186693-1>



Wed, 21 Oct 2020

### Indian Defence Secretary to review weaponry order in Russia in the event of a clash with China

Amid India's longest-ever border standoff with China, the nation's military is rushing to provide winter gears and weaponry to thousands of troops in the high-altitude region Ladakh amid freezing conditions. India has expedited several defence purchases, including that of air defence missile systems and 33 fighter jets from Russia.

As India continues to acquire winter gear amid boiling tensions with China, Defence Secretary Ajay Kumar will visit Moscow on Monday to ensure the replacement of weaponry and discuss the progress of a new project.

The visit is to review weapon purchase orders and discuss the manufacture of AK-203 assault rifles in India, in addition to other reasons, sources informed Times Now.



The visit also comes ahead of a scheduled visit by Russian President Vladimir Putin to India for the annual bilateral summit between the two countries.

The two countries have marked several high-level visits following India's border stand-off with China, which began this spring, with Indian Defence Minister Rajnath Singh visiting Moscow twice and external affairs minister S. Jaishankar visiting to attend a Shanghai Co-operation Organisation meeting.

During the visit to Moscow in June, Rajnath Singh urged the Russian side to expedite the delivery of air defence missile systems and spare parts for the military equipment. Sources in New Delhi confirmed that the two countries are also in the advance stage of negotiations for India to acquire Russian made Sprut light tanks at cost of around \$68 million. India also hopes to receive a short range air defence missile system at an early date.

Russia continues to remain one of India's largest defence equipment suppliers despite the threat of sanctions from the US. The Indian defence ministry recently approved the purchase of 21 MiG-29 planes and a dozen Su-30 jets from Russia, worth over \$2.43 billion.

The India-China tensions have yielded one of the biggest military logistics exercises in years, entailing a build-up of thousands of troops, vast quantities of ammunition, winter supplies and food in sub-zero temperature Ladakh, where tensions escalated in June following hand-to-hand combat between the armies.

<https://www.defencenews.in/article/Indian-Defence-Secretary-to-Review-Weaponry-Order-in-Russia-in-the-Event-of-a-Clash-with-China-982666>

## 100 km tunneling planned for LAC and LoC: All weather road connectivity for Ladakh

China's irritation over India's rapid infrastructure development close to the borders has not stopped New Delhi from bolstering its road connectivity.

After new roads, at least 10 tunnels running up to 100 km are planned in Ladakh and Kashmir to facilitate smooth movement of military and civilian vehicles all through the year across mountain passes to forward locations, officials privy to developments said.

Some of these are at heights more than 17,000 feet making it a challenging task.

Atal Tunnel at 10,000 feet in Rohtang was inaugurated by Prime Minister Narendra Modi on October 3 not only shortening travel time between Manali in Himachal Pradesh and Leh, Ladakh but giving 12-month connectivity to people of Lahaul and Spiti in the hill state.

Officials said Border Roads Organisation (BRO) has proposed eight tunnels that will enhance connectivity to Ladakh, a couple of similar projects are also planned for Kashmir linking roads to the Line of Control.



India has been ramping up its border infrastructure amid the ongoing tussle with China. While Beijing has been objecting to India's road construction close to the Line of Actual Control but New Delhi has maintained there is no violation of existing protocols.

Last week 44 bridges built by the Border Roads Organisation (BRO) ready for use were inaugurated by Defence Minister Rajnath Singh.

Most of these bridges enhance connectivity to areas leading up to the Line of Actual Control as a push to infrastructure amid the India-China standoff.

Eight of these bridges are in Ladakh where a military standoff between Indian and Chinese armies is continuing for more than five months.

Another 10 of these bridges are in Jammu and Kashmir that will improve road connectivity to the Line of Control with Pakistan.

The proposed tunnels are now a must for all weather connectivity.

### **Zojila Tunnel at 11,500 feet**

While the work for construction of 14 km tunnel has already started at Zojila Pass at more than 11,500 feet that will keep Srinagar connected to Leh all year round has immense strategic importance but it will also be a boost for civilians who get cut off during the winter.

The tunnel will keep Srinagar connected with Kargil, Dras and Leh through the year.

The current tensions with China in Ladakh have prompted a relook at the current strategy and expedited several infrastructure projects.

"Without tunnelling, all-weather connectivity is not possible because of the heavy snow. The tunnels have been planned keeping in mind the need for road connectivity to the forward most locations," said an official.

Prime Minister Narendra Modi had laid the foundation stone of the project in May 2018. The over 4,500 crore project was announced in 2018.

### **Tunnel for alternate route to DBO at 17,800 feet.**

Among the proposed tunnels one at 17,800 feet needed on the crucial road that will provide an alternate connectivity to Daulat Beg Oldie (DBO) and Depsang Plains in Eastern Ladakh in addition to existing road. The work on the original DBO road was one of the triggers for the current India-China standoff.

"A tunnel of about 10 km is needed at Saser La to ensure the 100 km alternate route to DBO can be used through the year. 50 km stretch from Sasoma to Saser La is almost complete but a tunnel is a must beyond this," said an official privy to the details of the project.

DBO and Depsang are areas where there has been a huge build-up amid the current tensions that started in early May.

With the tunnel the 25 km distance between Saser-Brengasa to Murgo where work has started and 6-7 km road formation has taken place will be reduced to 10 km.

The road will also provide better connectivity between Siachen Glacier and DBO in Eastern Ladakh and is considered important for strategic purposes as it will allow easy movement of troops between the two militarized zones.

### **Tunnels at Khardung La and Chang La at more than 17,580 ft.**

The seven-kilometer Khardung La Tunnel connecting Nubra Valley and Leh would improve connectivity to the forward areas close to the LAC.

Nubra Valley is a strategically important area of Ladakh bordering both China and Pakistan including the famous Siachen Glacier, besides being a tourist attraction.

The road connecting Nubra to Ladakh by Khardungla is considered the highest motorable road in the world but is cut off due to heavy snow for five to six months.

The area is also accident-prone as is prone to avalanches and is considered a highly glaciated road.

G Kishan Reddy, Minister of State for Home last week interacted with workers at the project during his visit to Ladakh on an election campaign.

Like Khardung La, Chang La is also a dangerous road due to the terrain and weather and is cut off in the winter. The 8 km tunnel at the pass connecting Karu to Tangste in Ladakh 17,580 ft will ensure all-weather movement to areas close to the Pangong Lake, the focus of the current tensions with China that has emerged as the biggest flashpoint.

### **Tunnels on Manali- Leh highway**

After the Atal Tunnel there are at least four more such projects at heights between 16,000 and 17,000 plus feet being planned for better connectivity between Himachal Pradesh and Ladakh that will also be a boost to the civilians living in these areas. But officials say there are several challenges that need to be overcome to achieve the task.

For year-round connectivity to Ladakh, another tunnel at one of the mountain passes Shnku La is in the pipeline on the Nimmu-Darcha-Padam Road. The seven-kilometre tunnel is being planned at a height of 16,703 ft.

"The 5 km tunnel is planned at Shnku La (pass). It might take another three years. But once it's complete it will provide all-weather connectivity to Ladakh," Lt Gen Harpal Singh Director General Border Roads Organisation told India Today TV after the inauguration of Atal Tunnel on October 3.

While the Nimmu-Padam-Darcha route provide alternate connectivity to Ladakh is almost complete a tunnel at the pass is a must to ensure unhindered movement during winter when there is heavy snowfall.

The other tunnels on the Manali-Leh road planned are at Baralacha Pass at 16,000 feet and 13.7 km long on the Manali- Sarchu Road. The 14.7 km long tunnel at Lachung Pass at 16,600 feet and 7.32 km at Tanglang Pass, 17, 480 feet.

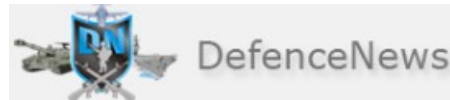
### **Tunnels for all year round connectivity to LoC**

There are at least two tunnels being planned for improving connectivity in Kashmir leading up to the Line of Control.

An 18 km tunnel at Razdan Pass at a height of 11,672 ft is required for connectivity to Gurez. Another 6 km tunnel at Sadhna Pass at a height of 10,269 feet is in the pipelines to ensure all-weather connectivity to Tangdhar.

Both the forward locations in North Kashmir get cut off in the winter and are prone to ceasefire violations and infiltration bids and are crucial for the army's operations.

<https://www.defencenews.in/article/100-km-tunneling-planned-for-LAC-and-LoC-All-weather-road-connectivity-for-Ladakh-982675>



*Wed, 21 Oct 2020*

## **US-made jackets for soldiers in Ladakh**

The government has started transporting winter jackets for troops in Ladakh along the Line of Actual Control (LAC) from the storage base in North Delhi.

The jackets will be part of the reserve stock for more than 45,000 troops stationed along the 826-km LAC in Ladakh.

The jackets have been imported from the US as part of emergency purchase. The first lot of 15,000 arrived in Delhi two weeks ago. With additional troops along the LAC in Ladakh, the emergency purchase was needed. The night temperature dropped below freezing a couple of weeks ago at altitudes over 14,000 feet near the LAC.

Soldiers will also be provided arctic tents and special high-nutrient diet. The Army already has a heated habitat facility with bunker-type beds.

It is the first time that so many troops will be stationed during winter in eastern Ladakh. Under normal circumstances, there are no more than two brigades (around 10,000 troops). This year, 30,000 additional troops have been stationed since May to ward off any misadventure by China.

Clothing and boots are provided in multiple pairs as they tend to get wet in the snow. Just the clothing and gear to tackle the cold — night temperatures are expected to hover around minus 30°C in peak winter — will cost over Rs 1 lakh for each soldier, sources said.

Normally, patrolling is curtailed in winter. But this time, it is expected to be different as the People's Liberation Army is stationed just across the LAC. The winter set in in the first week of September.

<https://www.defencenews.in/article/US-made-jackets-for-soldiers-in-Ladakh-982665>





## **Indian Army Vice Chief visits US Indo-Pacific Command in Hawaii, discuss strategic partnership in Region**

*The visit by the Vice Chief of Army Staff to the command comes in the backdrop of renewed efforts between India and the US to bolster cooperation in the Indo-Pacific region, which has been witnessing growing Chinese muscle-flexing*

Vice Chief of Army Lt Gen SK Saini on Tuesday visited the US Indo-Pacific Command in Hawaii and held talks with senior American military commanders on ways to enhance strategic cooperation between the two forces, officials said. The US Indo-Pacific Command (USINDOPACOM), comprising over 3,75,000 military and civilian personnel, is one of the largest unified formations of the US armed forces and it is tasked to protect Washington's interests in the Indo-Pacific region.

The visit by the Vice Chief of Army Staff to the command comes in the backdrop of renewed efforts between India and the US to bolster cooperation in the Indo-Pacific region, which has been witnessing growing Chinese muscle-flexing. Military officials said Lt Gen Saini interacted with Lt Gen Mike Minihan, Deputy Commander of the Command, on military cooperation and future engagements between the two forces.

The Vice Chief of Army Staff is on a four-day visit to the US from Saturday. Lt Gen Saini also visited the 25th Infantry Division Lightning Academy of the US Army where he interacted with troops and witnessed a jungle training session.

"Lt Gen S K Saini #VCOAS #IndianArmy visited US Army 25th Infantry Division Lightning Academy. He interacted with troops after witnessing Jungle Training & Chinook Helicopter Sling Load Carriage," the Army tweeted. The visit by Lt Gen Saini to the US took place ahead of the third edition of the two-plus-two dialogue which is expected to take place on October 26 and 27. US Secretary of State Pompeo and Defence Secretary Mark Esper are scheduled to visit India for the dialogue.

The Indian side at the talks will be represented by External Affairs Minister S Jaishankar and Defence Minister Rajnath Singh. The first two-plus-two dialogue was held in Delhi in September 2018 after the mechanism was approved by Prime Minister Narendra Modi and President Donald Trump.

The second edition of the dialogue took place in Washington in December last year. The new framework of the ministerial dialogue was initiated in order to provide a forward-looking vision for the strategic partnership between the two countries.

In the third edition of talks, both sides are also expected to delve into the situation in the Indo-Pacific region as well as in India's neighbourhood besides key bilateral issues.

<https://www.news18.com/news/india/indian-army-vice-chief-visits-us-indo-pacific-command-in-hawaii-discuss-strategic-partnership-in-region-2986775.html>



Lt. Gen. Satinder K. Saini, Indian Army Vice Chief met with Maj Gen Ronald P. Clark, USINDOPACOM Chief of Staff, to discuss the US and Indian partnership in the region. (Image: Indian Army)

## A novel, low-cost method detects nanoscale contaminants during manufacture of semiconductor devices

As computer chips and other electronic devices continue to shrink in size, they become ever more sensitive to contamination. However, detecting the nanoscale equivalent of a water spot on a window is incredibly challenging. It is essential, though, since these nearly invisible defects of these components may interfere with proper functioning.

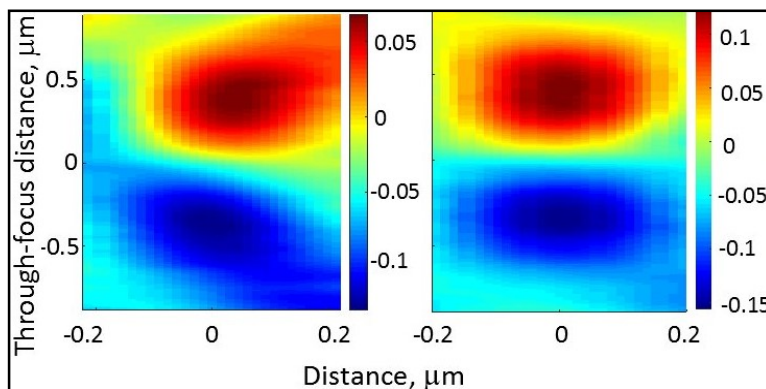
Researchers at the National Institute of Standards and Technology (NIST) have now adapted a low-cost optical method of examining the shape of small objects so that it can detect certain types of nanocontaminants smaller than 25 nanometers (nm) in height—about the size of a small virus. The technique could easily be incorporated into the manufacturing process for semiconductor devices, said NIST researcher Kiran Attota.

At NIST, Attota helped pioneer the method, known as Through-Focus Scanning Optical Microscopy (TSOM), about 15 years ago. TSOM transforms a conventional, inexpensive optical microscope into a powerful three-dimensional shape-measuring tool at the nanometer scale. Instead of recording a single, sharp image when a sample lies at a fixed distance from the lens, the microscope takes several out-of-focus, two-dimensional images, each with the sample at a different distance from the instrument and source of illumination. (Collectively, these images contain much more information than does a single in-focus image.)

A computer then extracts the variation in brightness—the so-called brightness profile—across each image. Each brightness profile is different because for each image, the sample resides at a different distance from the light source. Combining these two-dimensional profiles, the computer constructs a finely detailed, three-dimensional image of the sample.

Indeed, Attota and his colleagues originally developed the technique to record the full three-dimensional shape of small objects, not to detect nanocontaminants. But by optimizing both the wavelength of the light source and the alignment of the microscope, the team produced TSOM images with the high sensitivity required to reveal the presence of nanocontaminants in a small sample of semiconductor material.

Because the optimized TSOM method does not require costly equipment and can image samples in real time, the technique is ready to be adopted by manufacturers, Attota noted.



Two composite pictures, each using the TSOM method, show a single nanocontaminant on a semiconductor sample, recorded at several different distances from the lens of an optical microscope. Red indicates highest intensity of scattered light; blue the lowest. Credit: NIST

**More information:** Min-Ho Rim et al. Detecting nanoscale contamination in semiconductor fabrication using through-focus scanning optical microscopy, *Journal of Vacuum Science & Technology B* (2020). DOI: [10.1116/6.0000352](https://doi.org/10.1116/6.0000352)

<https://phys.org/news/2020-10-low-cost-method-nanoscale-contaminants-semiconductor.html>



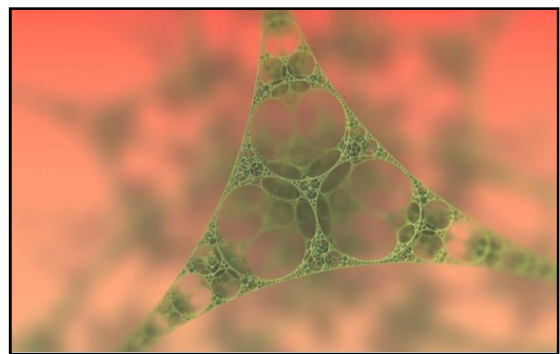
Wed, 21 Oct 2020

## Energy scavenging nanogenerator finds power all around us

Imagine a mobile phone charger that doesn't need a wireless or mains power source. Or a pacemaker with inbuilt organic energy sources within the human body.

Australian researchers led by Flinders University are picking up the challenge of "scavenging" invisible power from low-frequency vibrations in the surrounding environment, including wind, air or even contact-separation energy (static electricity).

"These so-called triboelectric nanogenerators (or TENGs) can be made at low cost in different configurations, making them suitable for driving small electronics such as personal electronics (mobile phones), biomechanics devices (pacemakers), sensors (temperature/pressure/chemical sensors), and more," says Professor Youhong Tang, from Flinders University's College of Science and Engineering.



Credit: CC0 Public Domain

Further research aims to further develop this renewable form of energy harvesting by designing simple fabrication from cheap and sustainable materials, with high efficiency.

"They can use non-invasive materials, so could one day be used for implantable and wearable energy harvesting aims," says Ph.D. candidate Mohammad Khorsand, co-lead author on recent papers in international journal *Nano Energy*.

The latest paper uses AI-enhanced mathematical modeling to compare the function of the number of segments, rotational speed and tribo-surface spacing of an advanced TENG prototype to optimize the storage and performance.

The researchers, with colleagues at the University of Technology Sydney and elsewhere, are working to improve power generation of TENGs and store the generated power on supercapacitor or battery.

"We have been able to effectively harvest power from sliding movement and rotary motion which are abundantly available in our living environment," says Professor Tang.

The latest paper, "Artificial intelligence enhanced mathematical modeling on rotary triboelectric nanogenerators under various kinematic and geometric conditions," (2020) by Mohammad Khorsand, Javad Tavakoli (University of Technology Sydney), Haowen Guan and Youhong Tang, has been published in *Nano Energy*.

**More information:** Mohammad Khorsand et al. Artificial intelligence enhanced mathematical modeling on rotary triboelectric nanogenerators under various kinematic and geometric conditions, *Nano Energy* (2020). DOI: [10.1016/j.nanoen.2020.104993](https://doi.org/10.1016/j.nanoen.2020.104993)

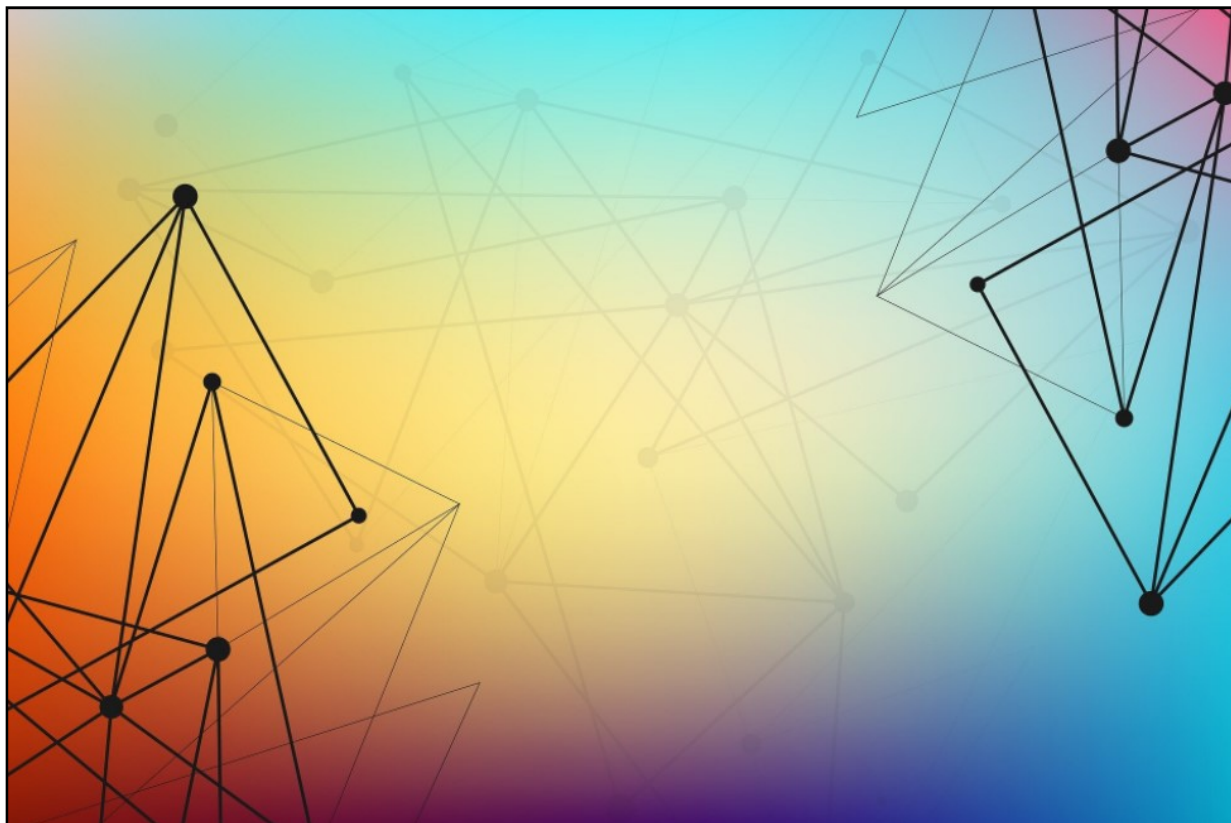
Mohammad Khorsand et al. Simulation of high-output and lightweight sliding-mode triboelectric nanogenerators, *Nano Energy* (2019). DOI: [10.1016/j.nanoen.2019.104115](https://doi.org/10.1016/j.nanoen.2019.104115)

**Journal information:** [Nano Energy](https://doi.org/10.1016/j.nanoen.2020.104993)

<https://phys.org/news/2020-10-energy-scavenging-nanogenerator-power.html>

## Researchers create a single-molecule switch

A team of researchers has demonstrated for the first time a single-molecule electret—a device that could be one of the keys to molecular computers.



Credit: Pixabay/CC0 Public Domain

Smaller electronics are crucial to developing more advanced computers and other devices. This has led to a push in the field toward finding a way to replace silicon chips with molecules, an effort that includes creating single-molecule electret—a switching device that could serve as a platform for extremely small non-volatile storage devices. Because it seemed that such a device would be so unstable, however, many in the field wondered whether one could ever exist.

Along with colleagues at Nanjing University, Renmin University, Xiamen University, and Rensselaer Polytechnic Institute, Mark Reed, the Harold Hodgkinson Professor of Electrical Engineering & Applied Physics demonstrated a single-molecule electret with a functional memory. The results were published Oct. 12 in *Nature Nanotechnology*.

Most electrets are made of piezoelectric materials, such as those that produce the sound in speakers. In an electret, all the dipoles—pairs of opposite electric charges—spontaneously line up in the same direction. By applying an electric field, their directions can be reversed.

"The question has always been about how small you could make these electrets, which are essentially memory storage devices," Reed said.

The researchers inserted an atom of Gadolinium (Gd) inside a carbon buckyball, a 32-sided molecule, also known as a buckminsterfullerene. When the researchers put this construct (Gd@C82) in a transistor-type structure, they observed single electron transport and used this to understand its energy states. However, the real breakthrough was that they discovered that they could use an electric field to switch its energy state from one stable state to another.

"What's happening is that this molecule is acting as if it has two stable polarization states," Reed said. He added that the team ran a variety of experiments, measuring the transport characteristics while applying an electric field, and switching the states back and forth. "We showed that we could make a memory of it—read, write, read, write," he said.

Reed emphasized that the present device structure isn't currently practical for any application, but proves that the underlying science behind it is possible.

"The important thing in this is that it shows you can create in a molecule two states that cause the spontaneous polarization and two switchable states," he said. "And this can give people ideas that maybe you can shrink memory down literally to the single molecular level. Now that we understand that we can do that, we can move on to do more interesting things with it."

**More information:** Kangkang Zhang et al. A Gd@C82 single-molecule electret, *Nature Nanotechnology* (2020). DOI: [10.1038/s41565-020-00778-z](https://doi.org/10.1038/s41565-020-00778-z)

**Journal information:** [Nature Nanotechnology](https://www.nature.com/news/2020-10-single-molecule.html)  
<https://phys.org/news/2020-10-single-molecule.html>

## COVID-19 Research News

THE HINDU  
**BusinessLine**

Wed, 21 Oct 2020

### Ability to smell can detect asymptomatic Covid-19 infection: Pune researchers

*IISER researchers develop olfactory-action meter;  
seek industries' help utilise the research for masses*

*By Radheshyam Jadhav*

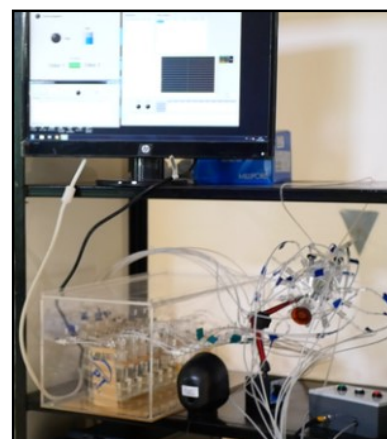
Pune: In a paper published in The Lancet's *EClinicalMedicine* on October 16, researchers from IISER Pune report that by accurately measuring the ability to smell, one could detect an asymptomatic Covid-19 infection caused by the SARS-CoV-2 virus.

The research team led by Indian Institute of Science Education and Research (IISER) faculty Nixon Abraham along with PhD student Anindya Bhattacharjee and collaborators from the BJ Medical College and Sassoon General Hospitals in Pune, the team tested if anosmia (total loss of sense of smell) / hyposmia (reduction in the ability to smell) could be an indicator of Covid-19 infection in individuals who tested positive for the virus but showed no other typical symptoms of the disease.

#### **Olfactory-action meter**

The team first designed and custom-built an olfactory-action meter, that can determine with precision how well, one can smell.

"Our instrument offers many advantages over the existing clinical methods for assessing olfaction. It delivers odours in a controlled fashion, assesses the olfactory health status in less than 20 minutes of testing, and can innocuously quantify deficits under infective conditions as it has built-in safety precautions to prevent cross-contamination," Abraham said in a statement.



**Research Instrument**

The methods and parameters established by the study can potentially be translated into a sensitive, fast and economical olfaction-based screening assay that can be self-administered by large populations, according to Abraham.

### **Mass screening**

Speaking to *BusinessLine*, Abraham said: “The instrument we have developed could be used for infectious and non-infectious diseases. Mass screening could be carried out using this instrument and there is a need to make it a practice in hospitals.”

He said the first instrument is being used in BJ medical college. “We appeal companies to come forward and help us further optimise the research,” Abraham added.

Through this method of screening, the team has analysed detection indices at varying odour concentrations as well as olfactory matching abilities across various odours.

“This allowed us to generate an olfactory function score, which was unique to each individual tested,” said Anindya Bhattacharjee.

### **Experimental parameters**

The research team optimised the experimental parameters by first testing normal healthy subjects. They then assessed olfaction in asymptomatic Covid-19 patients admitted in the hospital. The method optimised by the team identified olfactory dysfunction in 82 per cent of asymptomatic Covid-19 carriers. In comparison, only 15 per cent of the same set of patients reported a loss of olfaction in self-reporting paradigms.

Using this method, the team says that they can analyse both sensory (pertaining to sensory neurons in the nose) and cognitive aspects (problems at the central nervous system, beyond the nose) of olfaction.

The research received funding from the DBT/Wellcome Trust India Alliance.

<https://www.thehindubusinessline.com/news/science/ability-to-smell-can-detect-asymptomatic-covid-19-infection-pune-researchers/article32899160.ece#>



Wed, 21 Oct 2020

## **Covid-19: Vardhan launches portal for info on clinical trial of repurposed drugs**

- *Apart from information about CSIR repurposed drugs, the website also provides details about clinical trials of diagnostics and devices in which the scientific body is involved*
- *The health minister had earlier launched COVID Vaccine and Clinical Registry portal for information and updates on the various Covid-19 vaccines being produced*

New Delhi: Amid the novel coronavirus pandemic in India and government's attempts to contain the spread, Union Science and Technology Minister Harsh Vardhan on Tuesday launched an online portal that provides information about CSIR ushered repurposed drugs and their current stage of trials.

The Council for Scientific and Industrial Research (CSIR) has been exploring multiple combination clinical trials of antivirals with host-directed therapies for a potential treatment of COVID-19 since the beginning of the pandemic.

It has been working with the AYUSH Ministry for clinical trials of AYUSH drugs and has undertaken safety and efficacy trials of prophylactics and therapeutics based on individual plant-based compounds.

Apart from information about CSIR repurposed drugs, the website -- CuRED -- also provides details about clinical trials of diagnostics and devices in which the scientific body is involved.

Five clinical trials, involving *Withania somnifera*, *Tinospora cordifolia* plus *Piper longum* (in combination), *Glycyrrhiza glabra*, *Tinospora cordifolia* and *Adhatoda vasica* (individually and in combination) and AYUSH-64 formulation are undergoing safety and efficacy trials, according to an official release.

A key clinical trial by CSIR is that of Sepsivac (Mw) against COVID-19 in partnership with Cadila. The phase-two clinical trial of this drug has been completed successfully on critically ill COVID-19 patients and a more extensive phase-three trial is on the anvil, the scientific body said.

Also, the phase-two trial of phytopharmaceutical AQCH on COVID-19 patients with Sun Pharma and DBT is underway.

In addition to clinical trials of repurposed drugs and vaccines, CSIR has been involved in clinical trials of diagnostics and devices.

Vardhan lauded the efforts of CSIR for being at the forefront of the ongoing fight against COVID-19 and prioritising clinical trials, generating data for their regulatory approval and helping the launch of drugs and diagnostics in the market.

He commended the approach of using repurposed drugs, synthesising COVID-19 drugs through new processes and transferring it to the industry.

Along with that, the health minister had earlier launched COVID Vaccine and Clinical Registry portal for information and updates on the various Covid-19 vaccine being produced in the country.

The two online portals hosted by Indian Council of Medical Research (ICMR) site, will be a repository for all information related to vaccine development in India. You can access the website from here.

"Everyone will be able to go online to that portal a look-up all contemporary research-development and clinical trials related information about such vaccinations," said Vardhan during the press conference on ICMR's 100-year timeline of history.

<https://www.livemint.com/news/india/covid-19-varadhan-launches-portal-for-info-on-clinical-trial-of-repurposed-drugs-11603189347143.html>



India may pay the price for non-adherence to appropriate covid-19 behaviour with winter setting in, says health minister Harsh Vardhan

