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समाचार पत्रों से चयित अंश Newspapers Clippings

A Daily service to keep DRDO Fraternity abreast with DRDO Technologies, Defence Technologies, Defence Policies, International Relations and Science & Technology

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CONTENTS

S. No.	TITLE	Page No.
DRDO News		1-10
DRDO Technology News		1-10
1.	India's First Indigenously Developed 9mm Machine Pistol	1
2.	भारत का पहला स्वदेश में विकसित 9एमएम मशीन पिस्तौल	2
3.	On Veterans Day, Rajnath Singh lays wreath at IAF HQ Bengaluru, says 'Tejas acquisition to generate 50k jobs'	3
4.	Tejas far better, advanced than Chinese and Pakistan joint venture JF-17 fighter: IAF Chief RKS Bhadauria	4
5.	IAF Chief asked to compare India's Tejas with China-Pak JF-17 jets. He responds	5
6.	IAF Chief says Tejas far 'better, advanced' than JF-17 Thunder A look its specifications, features and how well it competes with CAC-PAC fighter jet	6
7.	Indian Army Day 2021: BrahMos, the unparalleled weapon system	7
8.	The Indian Army's 'General Kalashnikov' gives it a new 9 mm sub-machine gun India Today Insight	9
Defence News		10-14
Defence Strategic National/International		10-14
9.	Indian Army Chief General Naravane sends powerful message on 73rd Army Day	10
10.	Army Day 2021: Why January 15 is celebrated as Army Day in India? Significance and history	11
11.	Ex-IITians' company bags ₹130-cr order from Indian Army to make drones	12
12.	Navy conducts major review of combat-readiness of its Eastern Fleet	13
13.	India's maritime preparedness tested in 2-day mega exercise	14
Science & Technology News		15-19
14.	New way to control electrical charge in 2-D materials: Put a flake on it	15
15.	How aerosols are formed	16
16.	Giving the hydrogen economy an acid test	17
COVID-19 Research News		18-19
17.	Bengaluru research institute's Covid test that can be altered to 'identify mutant strains'	18



Press Information Bureau
Government of India

Ministry of Defence

Thu, 14 Jan 2021 4:23PM

India's First Indigenously Developed 9mm Machine Pistol

India's first indigenous 9mm Machine Pistol has been jointly developed by DRDO and Indian Army. Infantry School, Mhow and DRDO's Armament Research & Development Establishment (ARDE), Pune have designed and developed this weapon using their respective expertise in the complementary areas. The weapon has been developed in a record time of four months. The Machine Pistol fires the in-service 9mm ammunition and sports an upper receiver made from aircraft grade Aluminium and lower receiver from carbon fibre. 3D Printing process has been used in designing and prototyping of various parts including trigger components made by metal 3D printing.



The weapon has huge potential in Armed forces as personal weapon for heavy weapon detachments, commanders, tank and aircraft crews, drivers/dispatch riders, radio/radar operators, Closed Quarter Battle, counter insurgency and counter terrorism operations etc. This is also likely to find huge employability with the central and state police organizations as well as VIP protection duties and Policing. The Machine Pistol is likely to have production cost under rupees 50000 each and has potential for exports.

The weapon is aptly named "Asmi" meaning "Pride", "Self-Respect" & "Hard Work".

Keeping the Hon'ble Prime Minister's vision of Aatmnirbhar Bharat in view, this small step will pave way for self reliance and it is expected that the Services and Paramilitary Forces (PMFs) will induct this expeditiously.

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1688547>



पत्र सूचना कार्यालय
भारत सरकार

Ministry of Defence

रक्षा मंत्रालय

Thu, 14 Jan 2021 4:23PM

भारत का पहला स्वदेश में विकसित 9एमएम मशीन पिस्तौल

भारत का पहला स्वदेशी 9 एमएम मशीन पिस्तौल संयुक्त रूप से डीआरडीओ तथा भारतीय सेना द्वारा विकसित किया गया है। इस हथियार का डिजाइन और विकास कार्य इंफ्रेंटरी स्कूल, महोव तथा डीआरडीओ के आर्मामेंट रिसर्च एंड डेवलपमेंट स्टैब्लिशमेंट (एआरडीई), पुणे द्वारा अपनी विशेषज्ञताओं का उपयोग करते हुए किया गया है। यह हथियार 4 महीने के रिकार्ड समय में विकसित किया गया है। मशीन पिस्तौल इनसर्विस 9 एमएम हथियार को दागता

है। इसका ऊपरी रिसीवर एयरक्राफ्ट ग्रेड एलुमिनियम से तथा निचला रिसीवर कार्बन फाइबर से बना है। ट्रिगर घटक सहित इसके विभिन्न भागों की डिजाइनिंग और प्रोटोटाइपिंग में 3डी प्रिंटिंग प्रक्रिया का इस्तेमाल किया गया है। सशस्त्र बलों में हेवी वेपन डिटेचमेंट,



कमांडरों, टैंक तथा विमानकर्मियों ड्राइवर/डिस्पैच राइडरों, रेडियो/राडार ऑपरेटरों, नजदीकी लड़ाई, चरमपंथ विरोधी तथा आतंकवाद रोधी कार्यवाइयों में व्यक्तिगत हथियार के रूप में इसकी क्षमता काफी अधिक है। इसका इस्तेमाल केंद्रीय तथा राज्य पुलिस संगठनों के साथ-साथ वीआईपी सुरक्षा इयूटियों तथा पुलिसिंग में किया जा सकता है। प्रत्येक मशीन पिस्तौल की उत्पादन लागत 50 हजार रुपये के अंदर है और इसके निर्यात की संभावना भी है।

पिस्तौल का नाम 'अस्मी' रखा गया है जिसका अर्थ गर्व, आत्मसम्मान तथा कठिन परिश्रम है।

प्रधानमंत्री के आत्मनिर्भर भारत के विजन को ध्यान में रखते हुए यह कदम आत्मनिर्भरता के लिए मार्ग प्रशस्त करेगा और सेना तथा अर्धसैनिक बलों में इसे तेजी से शामिल किया जाएगा।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1688629>

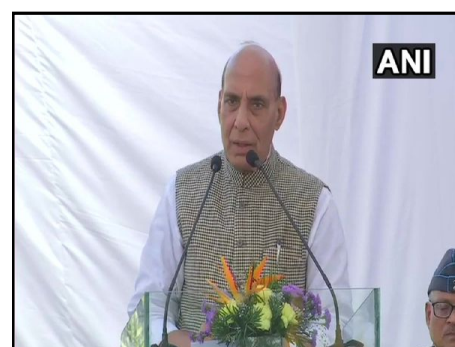
On Veterans Day, Rajnath Singh lays wreath at IAF HQ Bengaluru, says 'Tejas acquisition to generate 50k jobs'

The government has authorised the Local Formation Commanders to include private hospitals in the ECHS (Ex-servicemen Contributory Health Scheme) panel, the defence minister said at the event

Bengaluru: Defence Minister Rajnath Singh on Thursday laid a wreath at the Headquarters Training Command of the Indian Air Force in Bengaluru, Karnataka on the occasion of the fifth Armed Forces Veterans' Day. Addressing Veterans Day programme, the defence minister said: "January 14 represents both 'Jai Jawan' and 'Jai Kisan' because the day is celebrated as Veterans' Day and Makar Sankranti/Bihu, harvest festival."

Raising morale of the soldiers, Rajnath Singh said, "I believe once a soldier, always a soldier. The society draws inspiration from the veterans of the armed forces. They have an important role to play in the society."

He also added that the government has authorised the Local Formation Commanders to include private hospitals in the ECHS (Ex-servicemen Contributory Health Scheme) panel.



83 indigenous LCA Tejas fighter jets from HAL to generate more than 50,000 jobs

Speaking over the acquisition of 83 indigenous LCA Tejas fighter jets from HAL, Singh said that the approval given for acquisition will help generate more than 50,000 job opportunities in the country.

The government will procure 73 LCA Tejas Mk-1A fighter aircraft and 10 LCA Tejas Mk-1 Trainer aircraft. It is the first "Buy (Indian-Indigenously Designed, Developed and Manufactured)" category procurement of combat aircraft with an indigenous content of 50 per cent which will progressively reach 60 per cent by the end of the programme.

"The CCS chaired by PM Sh. @narendramodi today approved the largest indigenous defence procurement deal worth about 48000 Crores to strengthen IAF's fleet of homegrown fighter jet 'LCA-Tejas'. This deal will be a game changer for self reliance in the Indian defence manufacturing," Singh had tweeted.

"The LCA-Tejas is going to be the backbone of the IAF fighter fleet in years to come. LCA-Tejas incorporates a large number of new technologies many of which were never attempted in India. The indigenous content of LCA-Tejas is 50% in Mk1A variant which will be enhanced to 60%," Singh said.

Don't want war with China

India does not want a war but its soldiers are capable of giving befitting reply if any 'superpower' hurts the country's pride, Rajnath Singh said amid the eight-month-old border standoff with China.

"We don't want war and we are in favour of protecting everyone's security but I want to say this in clear terms that if any superpower wants to hurt our pride then our soldiers are capable of giving them a befitting reply," Singh said.

"India always wanted peace and friendly ties with its neighbours because it's in our blood and culture," he said.

Singh also hailed the Indian soldiers who showed extraordinary courage in "eliminating terrorists on the Pakistan soil".

<https://www.timesnownews.com/india/article/on-veterans-day-rajnath-singh-lays-wreath-at-iaf-hq-bengaluru-says-tejas-acquisition-to-generate-50k-jobs/707234>



Fri, 15 Jan 2021

Tejas far better, advanced than Chinese and Pakistan joint venture JF-17 fighter: IAF Chief RKS Bhadauria

RKS Bhadauria said, "The 83 aircraft will look after four squadrons. The current strength of the two squadron plan of LCA will now increase to six. Essentially the deployment will be frontline."

Edited By Arun Kumar Chaubey

- *The LCA is equipped with critical operational capabilities of AESA Radar, Beyond Visual Range Missile, Electronic Warfare Suite and Air to Air Refuelling*
- *It would be a potent platform to meet the operational requirements of IAF, which has already inducted a batch of Tejas aircraft as part of its initial order of 40 jets*

New Delhi: After the government approved the largest indigenous defence procurement deal worth about Rs 48,000 crores to buy 83 LCA Tejas Mark1A fighter jets, IAF Chief RKS Bhadauria on Thursday (January 14) said that it is a huge step for IAF capability building.

The IAF chief told ANI, "It is also a big boost to our indigenous industry. It is also a big recognition of our designers. It is a huge step for the Indian Air Force and for the country."

RKS Bhadauria said, "The 83 aircraft will look after four squadrons. The current strength of the two squadron plan of LCA will now increase to six. Essentially the deployment will be frontline," adding "Indian aircraft Tejas far better and advanced than the Chinese and Pakistan joint venture JF-17 fighter."

On Wednesday, Chief of Defence Staff General Bipin Rawat said that it was a boost for the Centre's Make in India initiative and that the ultimate objective is to reach a stage where the country can win conflicts with home-made weapon systems.

Rawat told ANI, "Our ultimate objective is to engage in and win future conflicts with home-made solutions," adding "Our focus will remain on indigenisation and efforts to progressively support Atmanirbhar Bharat is our mission.

We hope to see our Air Force touch the sky with glory with aircraft that has major components including engines that are Made in India."

Notably, the Cabinet Committee on Security (CCS) chaired by Prime Minister Narendra Modi approved the largest indigenous defence procurement deal worth about Rs 48,000 crores to buy 83 LCA Tejas Mark1A fighter jets. The deal to be signed in the next few days with HAL would strengthen the Indian Air Force's fleet of homegrown fighter jet 'LCA-Tejas' and overall combat capability."

This deal is expected to be a game-changer for self-reliance in the Indian defence manufacturing," Defence Minister Rajnath Singh tweeted to announce the final approval given to

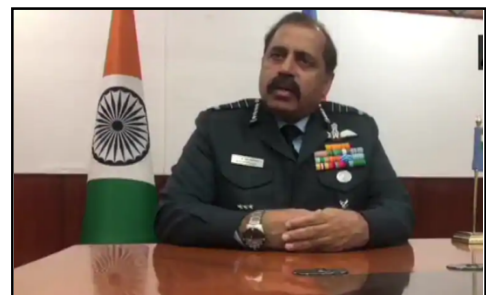


Image courtesy: ANI

the mega deal. He further said that the indigenous content of the LCA-Tejas was 50 per cent in the MK1A variant and it would be enhanced to 60 per cent by the end of the programme.

The deal would be a major boost for the IAF and help it to arrest the fall in the number of its fighter aircraft squadrons. Light Combat Aircraft Mk-1A variant is an indigenously designed, developed and manufactured state-of-the-art modern 4+ generation fighter aircraft.

The Light Combat Aircraft is reportedly equipped with critical operational capabilities of Active Electronically Scanned Array (AESA) Radar, Beyond Visual Range (BVR) Missile, Electronic Warfare (EW) Suite and Air to Air Refuelling (AAR).

It would be a potent platform to meet the operational requirements of Indian Air Force, which has already inducted a batch of Tejas aircraft as part of its initial order of 40 jets.

In a statement, the defence ministry said the government approved procurement of 73 LCA Tejas of Mk-1A variant and 10 LCA Tejas Mk-1 trainer aircraft at the cost of Rs 45,696 crore along with design and development of infrastructure worth Rs 1,202 crore.

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

<https://zeenews.india.com/india/tejas-far-better-advanced-than-chinese-and-pakistan-joint-venture-jf-17-fighter-iaf-chief-rks-bhadoria-2335863.html>



Fri, 15 Jan 2021

IAF Chief asked to compare India's Tejas with China-Pak JF-17 jets. He responds

The LCA Mk-1A will come with additional improvements over the FOC aircraft, making it the most advanced Tejas variant so far, as previously reported by Hindustan Times

Indian Air Force Chief Air Chief Marshal RKS Bhadoria on Thursday said that the soon-to-be ordered LCA (light combat aircraft) Mk-1A jets would be way ahead of the JF-17 fighter planes operated by the Pakistan Air Force.

The JF-17 has been jointly developed by China and Pakistan.

With its advanced weapons and sensors, the LCA Mk-1A jets will have good strike capability, he told news channels a day after India's Cabinet Committee on Security, headed by Prime Minister Narendra Modi, approved a ₹48,000-crore proposal to buy 83 advanced jets to bolster the IAF's combat potential.

"There is no comparison with the JF-17," he said.

The air chief added that even the existing final operational clearance (FOC) variant of the LCA was superior to the JF-17. He said the LCA Mk-1 jets would be equipped with the indigenous Astra beyond visual range missiles.

The CCS approval came 10 months after the ministry gave a green light to the purchase of 83 Mk-1A jets from state-owned plane maker Hindustan Aeronautics Limited (HAL).

The aircraft to be ordered include 73 Mk-1A fighter jets and 10 LCA Mk-1 trainer aircraft. HAL is expected to deliver the first Mk-1A jet to the IAF three years after the deal is signed, with all the aircraft likely to be delivered by 2028-29. The Mk-1A programme is expected to generate thousands of jobs and will involve the participation of more than 500 Indian companies.



With its advanced weapons and sensors, the LCA Mk-1A jets will have good strike capability, said the air force chief. (Photo @IAF MCC)

The deal for the 83 Mk-1A jets will take the total number of Tejas variants ordered to 123. The 40 LCAs already ordered by the IAF are in the initial operational clearance (IOC) and the more advanced FOC configurations.

The LCA Mk-1A will come with additional improvements over the FOC aircraft, making it the most advanced Tejas variant so far, as previously reported by Hindustan Times.

<https://www.hindustantimes.com/india-news/tejas-jets-no-comparison-to-china-pak-s-j-17-fighters-air-force-chief-101610635825525.html>



Fri, 15 Jan 2021

IAF Chief says Tejas far 'better, advanced' than JF-17 Thunder | A look its specifications, features and how well it competes with CAC-PAC fighter jet

Indian Air Force Chief Air Marshal RKS Bhadauria has said that the Tejas fighter jet is far "better and advanced" than the Chinese and Pakistan joint venture JF-17 Thunders

New Delhi: In a big push to make India's defence sector 'Atmanirbhar', the Cabinet Committee on Security (CCS) on Wednesday approved a Rs 48,000 crore deal with Hindustan Aeronautics Limited to procure 83 Light Combat Aircraft (LCA) Tejas for the Indian Air Force.

Following the deal, Indian Air Force Chief Air Marshal RKS Bhadauria said that the Tejas fighter jet is far "better and advanced" than the Chinese and Pakistan joint venture JF-17 Thunders.

"Order of 83 aircraft is huge. When this kind of order takes shape in the next 8 to 9 years, the entire ecosystem will get set up. For military aviation, it will be a big step. It will make a big base for fighter aircraft production, maintenance and support," he said while speaking to news agency ANI.



(Left: JF-17 Thunder/ Right: LCA Tejas)

So as India seals a deal with Hindustan Aeronautics Limited, here's a detailed comparison of Tejas with JF-17 Thunders:

A look at the history of the two fighter jets:

The Tejas is a multi-role light fighter jet that will replace the ageing MiG-21s in the Indian Air Force. Jointly designed by Hindustan Aeronautics Limited and Aeronautical Development Agency, Tejas was first introduced in January 2001. 14 years later, it was inducted in the Indian Air Force which currently holds 34 units of Tejas.

Speaking about JF-17 Thunder, it is multi-role fighter jet that has been jointly designed by Pakistan's Aeronautical Complex and China's Chengdu Aircraft Corporation. It will replace the A-5C, F-7P/PG, Mirage III, and Mirage V combat aircraft in the Pakistan Air Force. Currently, the Pakistan Air Force has 123 JF-17 Thunders.

What about the specifications of Tejas and JF-17 Thunder?

The LCA Tejas is a single-seat multi-role fighter jet that is powered by a single General Electric engine rated at 53.9 kN thrust dry and 90 kN with afterburner. The Tejas can reach a maximum speed of Mach 1.8 and has a service life of 9,000 flying hours. It has a unit cost of Rs 162 crore for Mark I and Rs 299.45 crore for Mark II

Speaking about its weapons, the Tejas, which has a length of 13.2 metres and a wingspan of 8.2 metres, can carry air-to-air and air-to-surface missiles and laser-guided bombs. The Indian Air Force can also use Israel's Elta EL/M2032 multi-mode fire control radar in Tejas to mark targets more accurately.

The plane weighs 6500 kg (dry) and has a total takeoff weight of 13000 kg with a Sustained Turn Rate (STR) of 16 degrees per second. It also has an Instantaneous Turn Rate (ITR) of 30 degrees per second. Media reports suggest that the Defence Institute of Advanced Technology (DIAT) is developing aircraft health and usage monitoring system (HUMS) to integrate various sensors onboard Tejas.

On the other hand, JF-17 Thunder is available in both single-seat and double-seat variant. The per-unit cost of the multirole fighter jet is USD 25-32 million and it has a length of 14.93 metres and a wingspan of 9.48 metre.

Powered by a Guizhou WS-13 or Klimov RD-93 afterburning turbofan, the JF-17 can reach a speed of Mach 1.6. It has a Sustained Turn Rate (STR) and Instantaneous Turn Rate (ITR) of 14.4 degrees per second and 24.4 degrees per second respectively.

Speaking about its weapons, the JF-17 Thunder can carry air-to-air and air-to-surface missiles, 23 mm GSh-23-2 twin-barrel autocannon and laser-guided bombs. It can also use the Airborne Pulse-Doppler Fire-Control Radar on-board which has been developed by China.

Can Tejas compete with JF-17 Thunder?

Though this depends on a lot of factors, including support from the airbase and in what kind of terrain the two jets are fighting, experts suggest that Tejas can manoeuvre more aggressively than JF-17 Thunder because of its weight ratio. They also feel that Tejas will be able to detect JF-17 Thunder more easily and comparatively lighter and faster than it.

<https://english.jagran.com/india/iaf-chief-says-tejas-far-better-advanced-than-jf17-thunder-a-look-its-specifications-features-and-how-well-it-competes-with-cacpac-fighter-jet-10022299>



Fri, 15 Jan 2021

Indian Army Day 2021: BrahMos, the unparalleled weapon system

The induction of the BrahMos supersonic cruise missile system has given the Indian Army the much-needed capability and punch to undertake deep surgical strikes

Indian Army, one of the largest standing armies in the world, has proved its mettle in a number of battles and military operations, and carved a distinct niche for itself and the nation. Not deterred by the spectrum of threat, the Indian Army soldier, infused with set of values, is prepared to face challenges in adverse climatic conditions and trained to protect the nation's integrity and sovereignty. The Indian Army has time and again lived up to its tradition of valour, heroism, sacrifice and fortitude.

Given India's volatile neighbourhood, it is imperative that the armed forces are well-stocked with appropriate arms and state-of-the-art weapon systems. The induction of the BrahMos supersonic cruise missile system has given the Indian Army the much-needed capability and punch to undertake deep surgical strikes.

The advanced weapon system, with its versatility, potentiality and striking capability, has maintained a leading edge over world's other missiles.



BrahMos is capable of flying at a top speed of Mach 3 and is extremely lethal in striking down an enemy target in no time. The supersonic speed of the missile also makes it difficult for interception by the enemy's air defence system.

The missile, with pinpoint accuracy, can be launched at targets from long distances. The missile has successfully demonstrated its speed, precision and power numerous times from naval ships and Mobile Autonomous Launchers. The launches have been carried out in sea-to-sea, sea-to-land, land-to-land and land-to-sea configurations.

The mobile land-based configuration of BrahMos has achieved several advancements over the years in the form of Block I, Block II and Block III variants with each having its own distinct potentiality to hit and destroy enemy target. The Block-I variant of land-attack version showcases the missile's manoeuvring power, precision hitting of the target and other operative capabilities. The Block II version was introduced with target discrimination capabilities. The Block III variant of BrahMos missile demonstrated its mountain warfare capability. Indian Army has, therefore, raised several regiments of the formidable weapon in different configurations, the latest being the "near vertical dive" trait to strike down an enemy target from a 90-degree angle.

The weapon has become the mainstay of the Indian Army's artillery firepower. Similarly, for many of the Navy's frontline surface ships, BrahMos has been inducted as a prime strike weapon. In its sub-sea launch configuration, the supersonic cruise missile is set to increase the Navy's underwater weapons delivery capability manifold by being armed in the future submarines.

The Indian Air Force's (IAF) frontline fighter aircraft Sukhoi-30MKI, after being modified to carry 2.5 tonne missile integrated with half a tonne launcher, successfully demonstrated BrahMos missile's firing capability. The successful induction of BrahMos in all the three services has made India the first and only country in the world to complete the "supersonic cruise missile triad".

BrahMos has also achieved historic milestones in the flagship "Make In India" programme by successfully indigenising major sub-systems such as booster, nose cap, canister, fuel management system and other major non-metallic airframe components taking the Indian contribution to more than seventy percent. All launcher systems for the weapon are also being manufactured domestically. Hundred percent of ground support equipment for the weapon complex are also being made in India.

The Indian Army has truly benefited from the induction of BrahMos weapon system. Jointly developed by DRDO of India and NPOM of Russia, the potent BrahMos missile has significantly grown from strength to strength over the years and added new capabilities to meet divergent war scenarios.

BrahMos felicitates the Indian Army on Army Day!

<https://www.freepressjournal.in/india/indian-army-day-2021-brahmos-the-unparalleled-weapon-system>



Fri, 15 Jan 2021

The Indian Army's 'General Kalashnikov' gives it a new 9 mm sub-machine gun | India Today

Insight

Prototype 9 mm weapon designed by army officer from the Infantry School could replace World War 2 era submachine guns and could find country-wide use

By Sandeep Unnithan

Delhi: For decades, the Indian Army struggled to replace its vintage Sterling carbine, a weapon that entered service in the closing stages of World War 2. The weapon chambered to fire the 9x19 mm cartridge. Over the past 15 years, the has often resorted to piecemeal imports of alternatives like the German H&K MP5, MP9 and the Uzi.

The answer, it turned out, lay within the world's second largest army. An army officer has designed and produced the first prototypes of a compact 9 mm sub-machine gun. The 'Asmi' (pride), as it is called, was designed by Lt Colonel Prasad Bansod of the army's Mhow-based Infantry school. The prototype weapon was produced in just four months in collaboration with the DRDO's Pune-based Armament Research and Development Establishment (ARDE). The weapon was tested by firing over 300 rounds each. A smaller, sub-compact version of the weapon weighing less than 1.5 kg is in development. (An empty AK-47 type rifle weighs 3.4 kg). The weapon operates on a simple blowback principle, has a 33-round high-capacity magazine, a range of 100 metres and a rate of fire of 600 rounds per minute. It has an 8-inch barrel and an upper made of aircraft aluminium and a lower made of carbon fibre. The Indian Army is to file a patent for the weapon and is looking for a production partner to mass produce the weapon, recently displayed at an exhibition of indigenous innovations at the Delhi cantonment.

The Asmi will not replace primary assault rifles like the AK-47 and the INSAS which are in frontline service and which fire high-velocity ammunition. It is designed for use as a second-line personal weapon for tank and aircraft crews and in close combat situations like counter-terrorist operations and room interventions, in confined spaces like warships and merchant vessels and by VIP protection forces. Because it fires a subsonic 9x19 mm round, it could potentially find a huge market with the Central Police Organisations, state police forces as well as exports. With a likely production cost of between Rs 40,000 and 50,000 a weapon it is just one-third the cost of imported sub-machine guns like the MP5.



Lt Col Prasad Bansod of the Indian Army's Infantry School, Mhow with a prototype of the 'Asmi' sub-machine gun (Rajwant Rawat)

Some of the world's best small arms have been designed by military personnel. The legendary AK-47 was designed by a tank commander, General Mikhail Kalashnikov, during World War 2. Israel's iconic Uzi submachine gun was designed by Major Uziel Gal in the late 1940s. Lt Colonel Prasad first caught the attention of army top brass in 2019 when he reverse-engineered an INSAS rifle to produce a 'bull-pup' carbine variant, with a shorter barrel. This simple solution seemed to have eluded the original INSAS designers. The failure of the INSAS carbine variant (that was supposed to replace the 9 mm carbine in the 1990s) was one reason for a rush of imports.

Seen from the army perspective, the Asmi is the perfect solution for kitting out their soldiers with new gear like bulletproof jackets and carbines. Top army officials told INDIA TODAY that they want military personnel to drive import substitution technology. Major Anoop Mishra of the

College of Military Engineering in Pune has designed an AK-47 bullet resistant helmet and bulletproof jacket and anti-personnel mine resistant boots. A report being prepared by the Army's Shimla-based ARTRAC command is already identifying areas where army engineers can provide indigenous high technology solutions.

But with all defence hardware, the key challenge for the Asmi will begin when the weapon enters mass production. This is where issues like consistency of production, quality control and manufacturing processes will come into play. The INSAS is a case in point—an excellent design dogged by quality control issues throughout its service career. Its patchy past killed the promising future variant—the INSAS 1C and the Army strangely abandoned the design altogether. Kalashnikov's during World War 2, was successful because it was backed by the resources of the Soviet state which put it into mass production and stabilised the design.

<https://www.indiatoday.in/india-today-insight/story/the-indian-army-s-general-kalashnikov-gives-it-a-new-9-mm-sub-machine-gun-1759202-2021-01-14>

Defence News

Defence Strategic: National/International



Fri, 15 Jan 2021

Indian Army Chief General Naravane sends powerful message on 73rd Army Day

By Alphonse Joseph

New Delhi: On January 15, India marks the 73rd Army Day to commemorate the first Indian army chief who took over the post on 15 January 1949 from the British, and COAS General MM Naravane extended warm wishes to the troops and their families but also gave a powerful message to India's adversaries.

Making veiled references to China and Pakistan, General Naravane said, "While remaining committed to resolving disputes through dialogue and diplomacy, the Indian Army has been swift and decisive in its response to counter any attempts to unilaterally change the status quo on the Line of Actual Control. Relentless operations against state-sponsored terrorism have reinforced moral and operational ascendancy along the Line of Control."



The Army Chief said the forces are taking rapid steps to acquire new capabilities and a large number of projects to acquire better technologies are underway.

"The Indian Army enjoys a distinctive space in the hearts and minds of our citizens. I am sanguine that we shall continue to uphold our core values and ethos and live up to the trust reposed in us by the nation. The Indian Army is and will always remain strong and capable," General Naravane added.

President Ram Nath Kovind also extended his wishes on the momentous day and said "India will remain forever grateful to courageous" soldiers.

"On Army Day, greetings to the valiant men and women of the Indian Army. We remember the bravehearts who made the supreme sacrifice in service to the nation. India will remain forever grateful to courageous and committed soldiers, veterans and their families. Jai Hind," President Kovind said.

<https://www.oneindia.com/india/indian-army-chief-general-naravane-sends-powerful-message-on-73rd-army-day-3202619.html>



Fri, 15 Jan 2021

Army Day 2021: Why January 15 is celebrated as Army Day in India? Significance and history

Army Day is celebrated on January 15 every year. General (later Field Marshal) KM Cariappa was appointed as Commander-in-Chief of Indian Army on January 15, 1949

Army Day 2021: India is celebrating its 73rd Army Day today. Army Day is celebrated on January 15 every year to honor the soldiers of the country, who have set the greatest example of selfless service and brotherhood and more than anything the love for the country.

Army Day is celebrated every year at all Army Command headquarters.

On the occasion of the 73rd Indian Army Day, the Indian Arm will organise a marathon 'Vijay Run' to commemorate Swarnim Vijay Varsh celebrations of India's resounding victory over Pakistan in 1971.

The nation also pays tribute to the valour of the bravehearts on this day and thank them for their selfless service.



History of Army Day

Army Day is celebrated on January 15 every year. It was on this date in 1949, the Indian Army got its first army chief Lieutenant General KM Cariappa. General (later Field Marshal) KM Cariappa was appointed as Commander-in-Chief of Indian Army on January 15, 1949. He was the first Indian to be appointed as Commander-in-Chief. He took over the reins of the Indian Army from General Sir Francis Butcher, the last British Commander-in-Chief of India.

He adopted the slogan 'Jai Hind' which means 'Victory of India'.

He is also one of only two Indian Army officers to hold the Five-star rank of Field Marshal; the other being Field Marshal Sam Manekshaw.

Cariappa led Indian forces on the Western Front during the Indo-Pakistani War of 1947.

<https://www.indiatvnews.com/news/india/indian-army-day-2021-why-celebrated-on-january-15-significance-history-need-to-know-678218>

Ex-IITians' company bags ₹130-cr order from Indian Army to make drones

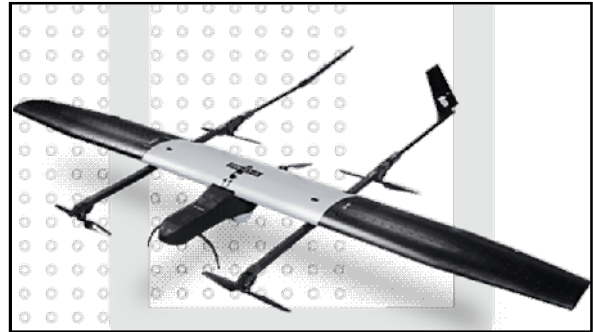
The fixed-wing UAV, capable of vertical takeoff and landing, can be deployed at high altitude and harsh environments for day-and-night surveillance

By Sneha

An "undisclosed quantity" of a high-altitude variant of SWITCH unmanned aerial vehicles (UAVs) will soon be in the possession of the Indian Army after it signed a contract with ideaForge at a cost of approximately \$20 million.

According to the drone startup, founded by IIT Bombay alumni, the fixed-wing UAV, capable of vertical takeoff and landing, can be deployed at high altitude and harsh environments for day-and-night surveillance. It is man-portable and has the highest time on target compared to any other UAV in its class.

"ideaForge has been awarded this contract after it emerged as the only vendor that qualified the operational requirements in an evaluation done in real-world conditions, for a fast-track procurement," the Mumbai-based company said.



The drone will be delivered to the army during the course of a year.

ideaForge CEO Ankit Mehta stated that SWITCH UAV is the culmination of insights and knowledge the company has gained over years of experience in helping the Indian forces operationalise UAVs in their ranks.

"The trials saw about a dozen national and global players compete to meet the operational requirements. SWITCH UAV is the only product that cleared the Indian Army's stringent product trials and surpassed expectations," he noted.

With the deal, a strategic shift in the procurement process of the Indian defence services has emerged. The Indian Army is on its way to attain an aggressive modernization drive. It has also cemented ideaForge's position as India's largest manufacturer of drones for defence, homeland security and industrial applications.

The company has a diverse set of clientele, including Indian Armed Forces, central armed police forces and state police forces. It also has a list of industrial customers in areas such as geospatial surveying, oil and gas, and mining.

After the news of the deal broke, the alma mater of the company's founders IIT Bombay congratulated them on their feat.

"Congratulations to SINE and our hearty congratulations to Ankit, Rahul and Ashish. It is worth mentioning that they were bestowed with the Young Alumni Achiever award last year," IIT-Bombay posted on its official Facebook page.

<https://www.livemint.com/news/india/exiitians-company-bags-rs-130-cr-order-from-indian-army-to-make-drones-11610634303167.html>

Navy conducts major review of combat-readiness of its Eastern Fleet

By Rajat Pandit

New Delhi: The Navy has conducted a major review of the operational preparedness and combat-readiness of its Eastern Fleet, which is deployed in the Bay of Bengal and beyond to protect Indian interests and keep track of hostile forces on the high seas.

With an eye firmly on China as well as in tune with India's "Act East" policy, the Navy has been bolstering force-levels on the eastern seaboard with new warships, maritime patrol aircraft and spy drones. The ongoing military confrontation with China in eastern Ladakh, which is into its ninth month now, has added a sense of urgency to the ongoing rebalance to the eastern seaboard.

Officers said Eastern Naval Command Chief Vice Admiral Atul Kumar Jain embarked on different warships over the last four days for a first-hand assessment during the "operational readiness inspection" of the Eastern Fleet.



Twenty-two warships, including the Ranvir-class guided-missile destroyers and Shivalik-class stealth frigates, participated in the review, which saw drills involving force protection against asymmetric attacks, weapon firings, anti-submarine warfare and fleet manoeuvres under realistic conditions.

"The fleet was put through paces to showcase the multi-dimensional warfare capabilities in protecting the vast maritime borders and offshore assets of the country," said an officer.

"Despite the challenges posed by the Covid-19 pandemic, the Eastern Fleet has maintained a very high tempo of operations to meet all national tasking in and beyond the Indian Ocean Region (IOR), including events in wake of the Galwan incident in Ladakh," he added.

As earlier reported by TOI, India has also fast-tracked plans for "force accretion" and "military infrastructure development" in the strategically-located Andaman and Nicobar Islands, as an effective counter to China's expanding footprint in the IOR.

The archipelago can serve as a military outpost to overlook China's critical sea lanes transporting the bulk of its crude oil imports and other trade through the Malacca Strait

<https://timesofindia.indiatimes.com/india/navy-conducts-major-review-of-combat-readiness-of-its-eastern-fleet/articleshow/80270413.cms>

India's maritime preparedness tested in 2-day mega exercise

By Alphonse Joseph

New Delhi: India's preparedness to deal with all possible challenges in the maritime domain, including contingencies from peace to war-time, was tested in a two-day multi-agency military exercise that covered the 7,516 km-long coastline and exclusive economic zone, officials said on Thursday. The second edition of exercise 'Sea Vigil', which concluded on Wednesday evening, particularly focused on the efficacy of the measures initiated to plug gaps in the coastal security set up following the Mumbai terror attack in 2008, they said.

The Indian Navy said the "envisaged objectives" of the exercise were met by the whole-hearted participation of all stakeholders. The exercise involved deployment of the entire coastal security apparatus and more than 110 surface assets of the Indian Navy and the Coast Guard participated in the exercise that was billed as India's largest coastal defence drill, the senior officials said. "The conceptual and geographical expanse of Sea Vigil included the entire coastline and exclusive economic zone of the country and contingencies from peace to war-time were exercised. In addition, mitigation measures, on shore, in case of any breach in coastal security were also validated,"

the Navy said in a statement. The Indian Navy and the Coast Guard have taken a series of measures to bolster India's coastal security after the Mumbai terror attack in which over 166 people, including 28 foreigners from 10 nations, were killed by a group of Pakistani terrorists.

The group of 10 Pakistani terrorists carried out the coordinated attack on a railway station, two luxury hotels and a Jewish centre on November 26, 2008, after they sneaked into India's financial capital using a route in the Arabian Sea. The inaugural edition of the Sea Vigil exercise took place in January 2019. In addition to assets of the Indian Navy, a large number of platforms of the Marine Police and the Customs Department were also deployed during the second edition of the mega drill. "The entire coastline was kept under surveillance by the Indian Navy and Coast Guard aircraft, and helicopters were also pressed into service to reinforce special operations personnel operating onboard offshore platforms," the Navy said. It said the security mechanism of ports was validated and their crisis management plans were assessed to tackle emergencies. State police teams, Indian Navy Marine Commandos and Commandos from the National Security Guard carried out drills to tackle possible acts of "maritime terrorism", the Navy said. "This exercise also validated the technical surveillance infrastructure called the National Command, Control, Communication and Intelligence (NC3I) Network.

The Information Management and Analysis Centre (IMAC) at Gurugram and its various nodes across Indian Navy and Coast Guard stations were exercised for coordinating the surveillance and information dissemination mechanism," the Navy said. It said the cooperation and coordination among various agencies involved in the maritime domain is a "reassuring sign" of progress made in the realm of coastal defence. "The exercise would go a long way in enhancing coastal defence and national security in the maritime domain," the Navy said. The Sea Vigil exercise took place at a time when India and China are locked in a bitter border standoff in eastern Ladakh. In sync with the national security doctrine, the Indian Navy significantly increased its deployment of warships, submarines and other assets in the Indian Ocean Region, in an attempt to send across a message to China that Indian Armed Forces are fully prepared to deal with any challenge.

<https://www.thehitavada.com/Encyc/2021/1/15/India-s-maritime-preparedness-tested-in-2-day-mega-exercise.html>



The 2-day coastal defence exercise named Sea Vigil being conducted. Exercise covered 7,516 km-long coastline. (ANI)

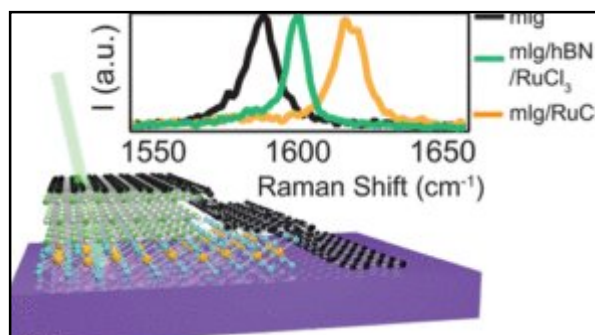
New way to control electrical charge in 2-D materials: Put a flake on it

By Talia Ogliore

Physicists at Washington University in St. Louis have discovered how to locally add electrical charge to an atomically thin graphene device by layering flakes of another thin material, alpha-RuCl₃, on top of it.

A paper published in the journal *Nano Letters* describes the charge transfer process in detail. Gaining control of the flow of electrical current through atomically thin materials is important to potential future applications in photovoltaics or computing.

"In my field, where we study van der Waals heterostructures made by custom-stacking atomically thin materials together, we typically control charge by applying electric fields to the devices," said Erik Henriksen, assistant professor of physics in Arts & Sciences and corresponding author of the new study, along with Ken Burch at Boston College. "But here it now appears we can just add layers of RuCl₃. It soaks up a fixed amount of electrons, allowing us to make 'permanent' charge transfers that don't require the external electric field."



A layered device transfers electric charge. Credit: Nano Letters

Jesse Balgley, a graduate student in Henriksen's laboratory at Washington University, is second author of the study. Li Yang, professor of physics, and his graduate student Xiaobo Lu, also both at Washington University, helped with computational work and calculations, and are also co-authors.

Physicists who study condensed matter are intrigued by alpha-RuCl₃ because they would like to exploit certain of its antiferromagnetic properties for quantum spin liquids.

In this new study, the scientists report that alpha-RuCl₃ is able to transfer charge to several different types of materials—not just graphene, Henriksen's personal favorite.

They also found that they only needed to place a single layer of alpha-RuCl₃ on top of their devices to create and transfer charge. The process still works, even if the scientists slip a thin sheet of an electrically insulating material between the RuCl₃ and the graphene.

"We can control how much charge flows in by varying the thickness of the insulator," Henriksen said. "Also, we are able to physically and spatially separate the source of charge from where it goes—this is called modulation doping." Adding charge to a quantum spin liquid is one mechanism thought to underlie the physics of high-temperature superconductivity.

"Anytime you do this, it could get exciting," Henriksen said. "And usually you have to add atoms to bulk materials, which causes lots of disorder. But here, the charge flows right in, no need to change the chemical structure, so it's a 'clean' way to add charge."

More information: Yiping Wang et al. Modulation Doping via a Two-Dimensional Atomic Crystalline Acceptor, *Nano Letters* (2020). DOI: [10.1021/acs.nanolett.0c03493](https://doi.org/10.1021/acs.nanolett.0c03493)

Journal information: *Nano Letters*

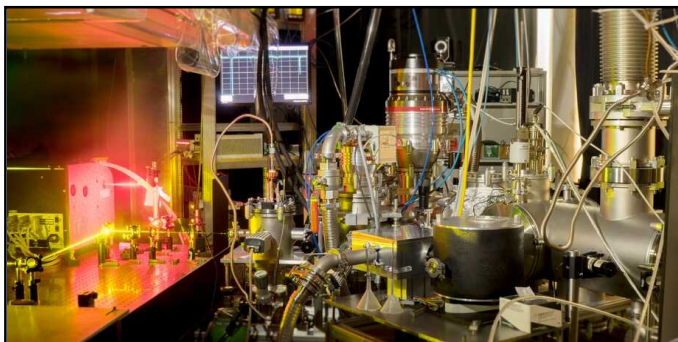
<https://phys.org/news/2021-01-electrical-d-materials-flake-onit.html>

How aerosols are formed

By *Fabio Bergamin*

ETH Zurich researchers conducted an experiment to investigate the initial steps in the formation of aerosols. Their findings are now aiding efforts to better understand and model that process—for example, the formation of clouds in the atmosphere.

Aerosols are suspensions of fine solid particles or liquid droplets in a gas. Clouds, for example, are aerosols because they consist of water droplets dispersed in the air. Such droplets are produced in a two-step process: first, a condensation nucleus forms, and then volatile molecules condense onto this nucleus, producing a droplet. Nuclei frequently consist of



The experimental setup in an ETH Zurich laboratory. Credit: ETH Zurich / Ruth Signorell

molecules different to those that condense onto them. In the case of clouds, the nuclei often contain sulphuric acids and organic substances. Water vapor from the atmosphere subsequently condenses onto these nuclei.

Scientists led by Ruth Signorell, Professor at the Department of Chemistry and Applied Biosciences, have now gained new insights into the first step of aerosol formation, nucleation. "Observations have shown that the volatile components can also influence the nucleation process," Signorell says, "but what was unclear was how this was happening at the molecular level." Previously it was impossible to observe the volatile components during nucleation in an experimental setting. Even in a famous CERN experiment on cloud formation, certain volatile components could not be directly detected.

Volatile components detected for the first time

The ETH researchers developed an experiment aimed at the first microseconds of the nucleation process. In the experiment, the particles formed remain intact during this time and can be detected using mass spectrometry. The scientists looked at nucleation in various gas mixtures containing CO₂ and for the first time, they were able to detect the volatile components as well—in this case, the CO₂. The researchers could show that the volatile components were essential for the formation of nuclei and also accelerated this process.

An analysis of the experimental data revealed that this acceleration is the result of the volatile components catalyzing the nucleation of other, less volatile components. They do this by forming short-lived, heterogeneous molecular aggregates, known as chaperon complexes. "Because temperature determines the volatility of gas components, it also plays a decisive role in these processes," Signorell explains.

One reason the new research results are interesting is that they improve the understanding of nucleation, its molecular mechanisms and speed, in order to properly account for it in models for, say, cloud formation in the atmosphere. In addition, the results should help to improve the efficiency of technical processes for producing aerosols—such as the use of rapid cooling to capture CO₂ from natural gas.

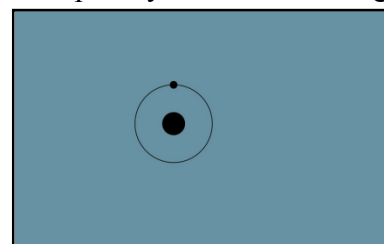
More information: Chenxi Li et al. How volatile components catalyze vapor nucleation, *Science Advances* (2021). DOI: [10.1126/sciadv.abd9954](https://doi.org/10.1126/sciadv.abd9954)

Journal information: *Science Advances*
<https://phys.org/news/2021-01-aerosols.html>

Giving the hydrogen economy an acid test

A team of researchers led by the Institute of Applied Physics at the University of Tsukuba has demonstrated a method for producing acid-resistant catalysts by covering them with layers of graphene. They show that using few layers allows for greater proton penetration during a hydrogen evolution reaction, which is crucial for maximizing the efficiency when producing H_2 as fuel. This work may lead to industrial-scale manufacturing of hydrogen as a completely renewable energy source for vehicles that do not contribute to climate change.

The dream of hydrogen-powered cars has excited many people as a solution for the huge amount of carbon dioxide fossil-fuel burning vehicles emit into the atmosphere daily. However, the production of hydrogen gas has been slowed by the lack of cheap catalysts required to split water efficiently. In this process, hydrogen nuclei, called protons, need to combine to form hydrogen gas, H_2 . Nickel and Ni-based alloy are seen as promising cheap alternatives to platinum, but these metals corrode easily when exposed to the acidic conditions of the reaction. One solution is to use graphene, a single sheet of carbon atoms arranged in a honeycomb lattice, to protect the catalyst. However, the mechanism by which the reaction takes place remained poorly understood.



Credit: CC0 Public Domain

Now, an international research collaboration led by the University of Tsukuba has shown that using three-five layers of graphene can efficiently prevent corrosion while still partly allowing protons to combine at the catalyst through defects in the honeycomb structure. In addition, they found that the catalytic efficiency decreased linearly as more layers of graphene were added.

"This result allowed us to conclude that protons must penetrate through the graphene layers in order to react at the surface of the metal," says Dr. Kailong Hu, senior author on the study. The alternative explanation, that electrons travel up from the metal so the protons can react at the outer surface of the graphene, was not a major reaction process supported by the experiments. Future work will focus on the optimization of the number of graphene layers to balance the corrosion resistance with catalytic activity.

"Hydrogen fuel is particularly eco-friendly because it produces zero greenhouse gasses, and still has a larger energy density than gasoline," Professor Yoshikazu Ito explains. "So we may soon be able to step on the accelerator without leaving a carbon footprint."

More information: Kailong Hu et al. Catalytic activity of graphene-covered non-noble metals governed by proton penetration in electrochemical hydrogen evolution reaction, *Nature Communications* (2021). DOI: [10.1038/s41467-020-20503-7](https://doi.org/10.1038/s41467-020-20503-7)

Journal information: *Nature Communications*
<https://phys.org/news/2021-01-hydrogen-economy-acid.html>

Bengaluru research institute's Covid test that can be altered to 'identify mutant strains'

National Centre for Biological Sciences says its Covid test doesn't require PCR machine but produces results with similar accuracy to RT-PCR tests in 2 hrs and a half

By Simrin Sirur

New Delhi: The National Centre for Biological Sciences, a Bengaluru-based research organisation, has come out with a Covid-19 test that does not require a PCR (polymerase chain reaction) machine and can be altered to detect mutant strains of the virus.

The test, developed in collaboration with research body Institute for Stem Cell Science & Regenerative Medicine (DBT-inStem), is called PHANTOM and does not rely on DNA amplification, which is required in an RT-PCR test and produces results with similar accuracy.

"It's a two-step process. In the first step, the sample is put in a tube containing a cocktail of enzymes and a primer in a heat block, which amplifies the RNA present in the sample. The second step is shifting the tube to another heat block and adding an RNA toehold switch, which will prompt a change in colour if the sample is positive," Dr Arati Ramesh faculty researcher at the NCBS, told ThePrint.

The test was developed by Ramesh and Dr Akash Gulyani, a professor at the University of Hyderabad.

A toehold switch is a biosensor that can be designed to bind to any part of an RNA strand of choice. Once bound, the switch produces a protein that can generate colour or light visible to the naked eye — indicating a positive sample.

"The test in its current form is designed to change colour if it's a positive sample regardless of the strain. But the sensor can be easily altered to bind to specific parts of the RNA that have undergone mutation, which could then be used to identify different strains," Ramesh added.

Currently, genome-sequencing is the only method being used to identify different strains of the virus in India, which requires scientists to compare the DNA from a sample with that of the mutant strain.

A paper on the test, not peer-reviewed, was published on the pre-print site *medRxiv* on 8 January.

How the test works

In the PHANTOM test, the viral RNA is amplified to detectable levels when it is heated at a steady temperature with three enzymes and a primer pair — short, single-stranded DNA sequences. The primer binds to the RNA, and the enzymes work to produce DNA, which is then converted back to RNA and multiplied.

The second step involves adding the toehold switch, which will produce colour if the virus is present in the sample.

"It's a fragment of the SARS-CoV-2 genome that is amplified, not the whole thing. This test is more accessible because a single temperature is easier to obtain than the varying temperatures required for a PCR test," Dr Ramesh said, adding that the whole process will take about two and a half hours.

So far, only naso-pharyngeal swabs have been used for the test, but the lab is hopeful that it will work with saliva as well, and is currently conducting experiments with Baptist Hospital in Bengaluru.

“We have applied for a provisional patent and have sent out the paper for publication. We’re also looking for companies to take this up on a large scale, so it can become a viable assay,” Dr Satyajit Mayor, director of NCBS, told ThePrint.

“What we’ve learned through this pandemic is that you need a variety of tests because no one test can do everything or answer all questions. We hope this one will answer a few,” said Dr Ramesh.

<https://theprint.in/health/bengaluru-research-institute-develops-covid-test-that-can-identify-different-strains/585321/>

