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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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Thu, 16 July 2020

## ITI to produce 15 lakh face shields, dozens of ventilators

*The ventilator will be priced at ₹2 lakh per unit*

*By Mini Tejaswi*

Bengaluru: Joining in the efforts to combat COVID-19, public sector undertaking ITI Ltd. will manufacture 15 lakh face shields and dozens of portable ventilators per month.

The production facility at Dooravani Nagar in the city will produce over 5 lakh units of face shields every month while another 10 lakh will be made at its plants at Mankapur, Naini and Raebareli and in Uttar Pradesh.

ITI is also in the process of readying its portable ventilators, designed on a transfer of technology (TOT) basis with the Defence Research and Development Organisation (DRDO).



ITI CMD Rakesh Mohan Agarwal told *The Hindu*:

“We have put together five units of these ventilators and they are currently going through various tests at DRDO. Once the research organisation completes its technical validation process, we will install them at select hospitals in Bengaluru. Then, we will go for mass production and we have a capacity to make 1,000 units per month.”

ITI is readying its portable ventilators designed on a transfer of technology basis with the DRDO.

As per ITI, the ventilator will be priced at ₹ 2 lakh per unit and the company has already sourced materials and critical components required to design 25 such units.

### **Sourcing material**

“There is a big scramble in markets that sell raw materials and components for ventilators as everyone around the globe is busy purchasing these items. Currently, we are sourcing the components from Singapore and Hong Kong,” Mr. Agarwal said.

ITI has roped in government e-com portal GeM and private e-tailers such as Amazon and Flipkart to market its face shields. “I’ve written to Heads of all PSUs, government secretaries, Chief Secretaries, public and private hospitals, and Heads of local administration bodies, including Mayors, across the country seeking their support. We are now witnessing an overwhelming response for our face shields,” he added.

<https://www.thehindu.com/news/national/karnataka/iti-to-produce-15-lakh-face-shields-dozens-of-ventilators/article32095578.ece>

## DRDO का संपर्क (SAMPARK) रखेगा क्वारांटाइन किए गए लोगों पर नजर

रक्षा अनुसंधान और विकास संगठन (DRDO) ने सॉफ्टवेयर पेशेवरों के संगठन तेलंगाना इंफॉर्मेशन टेक्नोलॉजी एसोसिएशन (Telangana Information Technology Association) के साथ साझेदारी की है।

### खास बातें

- तेलंगाना इंफॉर्मेशन टेक्नोलॉजी एसोसिएशन के साथ DRDO ने की है साझेदारी
- यह सॉफ्टवेयर नियमों का उल्लंघन करने पर अधिकारियों को अलर्ट भेजेगा।

नई दिल्ली: कोरोना संकट के बीच देश के अलग-अलग उपक्रम और अनुसंधान केंद्र कोरोना से लड़ाई में संबल प्रदान कर रहे हैं। इस दौरान कई उपकरण और कई अनुसंधानों ने देश के लिए उत्पाद बनाए हैं। इसी कड़ी में DRDO ने क्वारांटाइन किए जाने वाले लोगों की निगरानी के लिए एक सॉफ्टवेयर टूल विकसित किया है।

### संपर्क (SAMPARK) रखेगा नजर

जानकारी के मुताबिक, रक्षा अनुसंधान और विकास संगठन (DRDO) ने सॉफ्टवेयर पेशेवरों के संगठन तेलंगाना इंफॉर्मेशन टेक्नोलॉजी एसोसिएशन (Telangana Information Technology Association) के साथ साझेदारी की है।



इस साझेदारी के तहत डीआरडीओ ने स्मार्ट ऑटोमेटिड मैनेजमेंट ऑफ पेशेंट एंड रिस्क फोर कोविड-19 (SAMPARK) नामक सॉफ्टवेयर को तैयार किया है, जो कोरोना वायरस के कारण क्वारांटाइन किए गए लोगों पर नजर रखेगा।

### साझेदारी पर किए हस्ताक्षर

दोनों ही संगठनों ने सोमवार को सॉफ्टवेयर के स्वचालित प्रबंधन को लागू करने के लिए एक समझौते पर हस्ताक्षर भी किए हैं। इसके जरिए क्वारांटाइन या आइसोलेशन में रह रहे लोगों की ट्रैकिंग में आसानी होगी। यह सॉफ्टवेयर नियमों का उल्लंघन करने पर अधिकारियों को अलर्ट भेजेगा।

### ओपन सोर्स सॉफ्टवेयर के संयोजन पर आधारित

पुलिस और स्वास्थ्य अधिकारियों द्वारा दी गई जानकारी के आधार पर जियोफेंसिंग, चेहरे की पहचान, मैप पर डेटा उपलब्ध कराएगा। इसके लिए मरीजों से कोई चार्ज नहीं लिया जाएगा, स्थानीय प्राधिकरण को सिर्फ एक उपयुक्त कंप्यूटर की आवश्यकता होगी। यह सॉफ्टवेयर ओपन सोर्स सॉफ्टवेयर के संयोजन पर आधारित है।

<https://zeenews.india.com/hindi/zee-hindustan/utility-news/drdo-contact-sampark-will-keep-an-eye-on-the-quarantined-people/711805>

### युद्ध के मैदान में भी सात टन का मिलिट्री स्टोर पैराशूट गिरा सकता है भारत, DRDO ने विकसित किया P7 हैवी ड्रॉप सिस्टम

डीआरडीओ की इस स्वदेशी तकनीक के लिए लार्सन एंड टूब्रो सिस्टम प्लेटफॉर्म और ऑर्डनेंस फैक्ट्री पैराशूट बना रही है।

Edited By कीर्तिवर्धन मिश्र

#### नई दिल्ली:

भारत ने स्वदेशी रक्षा उत्पादों के निर्माण में भी तरक्की करना शुरू कर दिया है। वैज्ञानिकों ने भारत की पैरा-ड्रॉपिंग क्षमताओं को बढ़ाने के लिए एक पी7 हैवी ड्रॉप सिस्टम डेवलप किया है, जो कि हेवी लिफ्ट एयरक्राफ्ट से 7 टन तक वजनी सैन्य उपकरण और जरूरत का सामान मौके पर पैराशूट के जरिए सप्लाई कर सकता है। डीआरडीओ ने यह सिस्टम पूरी तरह स्वदेशी तकनीक के जरिए विकसित किया है। इसके प्लेटफॉर्म सिस्टम का उत्पादन भारतीय कंपनी लार्सन एंड टूब्रो (L&T) द्वारा किया जा रहा है, जबकि सामान गिराने वाले पैराशूट को ऑर्डनेंस फैक्ट्री में बनाया जा रहा है।

बता दें कि डीआरडीओ काफी लंबे समय से इस सिस्टम को बनाने की तैारी कर रहा था। पिछले करीब 5 सालों से भारत में हैवी ड्रॉप सिस्टम की टेस्टिंग जारी है। इसे कानपुर की ऑर्डनेंस पैराशूट फैक्ट्री में बने पैराशूट के जरिए टेस्ट किया गया है।

#### क्या है एयर ड्रॉप सिस्टम, क्या है इसकी जरूरत?

एयर ड्रॉप सिस्टम इस वक्त दुनियाभर की सेनाओं के लिए काफी अहम माना जाता है। दरअसल, युद्ध या युद्धाभ्यास के दौरान कई बार सेना को बीच में ही सैन्य आपूर्ति की जरूरत पड़ती है। ऐसे में सैन्य सामग्रियों को सड़क के रास्ते पहुंचाने के बजाय आमतौर पर हवाई मार्ग के जरिए एयरलिफ्ट किया जाता है और युद्ध की लोकेशन पर बिना विमान उतारे ही पैराशूट के जरिए ड्रॉप कर दिया जाता है। इसके जरिए सेना अहम हथियारों के साथ युद्ध में जरूरी मानी जाने वाली चीजें भी टकराव के दौरान ही हासिल कर सकती हैं।

मौजूदा समय में एयर ड्रॉप सिस्टम के जरिए वजन को गिराने की एक सीमा है। हालांकि, डीआरडीओ के पी7 सिस्टम के जरिए यह सीमा 7 टन तक हो जाएगी। डीआरडीओ ने कुछ सालों पहले ही 16 टन तक वजन गिराने वाले एयर-ड्रॉप सिस्टम का भी टेस्ट किया था। इसके अलावा संस्थान लाइट कॉम्बैट एयरक्राफ्ट के लिए स्पिन पैराशूट तक बना रही है, जिससे मिलिट्री साजो-सामान के साथ सैनिकों को भी युद्धस्थल तक पहुंचाया जा सके।

<https://www.jansatta.com/national/drdo-develops-heavy-drop-system-that-improves-armys-para-dropping-capacity-upto-7-tons-news-and-updates/1468473/>

## DRDO ने विकसित किया पी-7 हेवी ड्रॉप सिस्टम, 7 टन के भार को विमान से गिराने में सक्षम

*पी-7 हेवी ड्रॉप सिस्टम को भारी सैन्य उपकरण को  
आईएल 76 विमान से ड्रॉप करने में उपयोग किया जाता है।*

**नई दिल्ली:** रक्षा अनुसंधान एवं विकास संगठन (DRDO) ने पी-7 हेवी ड्रॉप सिस्टम (P7 Heavy Drop System) विकसित किया है। इसके जरिए 7-टन वजन तक के सैन्य उपकरणों को आईएल 76 विमान से नीचे गिराया जा सकेगा। डीआरडीओ ने बताया कि यह प्रणाली पूरी तरह से स्वदेशी है और एलएंडटी द्वारा निर्मित की जा रही है जो ऑर्डनेंस फैक्ट्री में पैराशूट और प्लेटफॉर्म सिस्टम बनाती है।

दूसरी तरफ डीआरडीओ ने क्वारंटाइन के दौरान लोगों की निगरानी के लिए एक सॉफ्टवेयर विकसित किया है। इसके तहत क्वारंटाइन या आइसोलेशन में रह रहे लोगों की ट्रैकिंग की जाएगी। यह सॉफ्टवेयर नियमों का उल्लंघन करने पर अधिकारियों को अलर्ट भेजेगा। ऐप को मरीजों के स्मार्टफोन पर इंस्टॉल किया जाएगा, जो हर 10 मिनट में कोविड-19 सर्वर पर एक सुरक्षित संदेश भेजेगा।

<https://www.jagran.com/news/national-drdo-has-developed-p7-heavy-drop-system-20514155.html>



Thu, 16 July 2020

## Defence research body develops fully indigenous P7 Heavy Drop System

*This system is fully indigenous and being manufactured by L&T who makes  
the platform system, parachutes manufactured by Ordnance Factory, DRDO said*

Agra: DRDO has developed P7 Heavy Drop System which is capable of para dropping military stores up to 7-ton weight class from IL 76 aircraft.

This system is fully indigenous and being manufactured by L&T who makes the platform system, parachutes manufactured by Ordnance Factory, DRDO said.

This system has been made under the Make in India programme.

"As part of mandatory requirement prior to accord Bulk Production Clearance (BPC), joint team of Indian Army, IAF and ADRDE conducted validation Trials at Agra today, on two systems, which were dropped from IL76 ac from an altitude of 600 mtrs at 280 kmph speed. The store landed safely with the help of cluster of five large size parachutes (750 sqm each)," according to a release by DRDO.

The system would be a force multiplier for armed forces, while enabling the rapid delivery of combat store in the far flung inaccessible areas.

"The system has been manufactured with 100 per cent indigenous ferrous/non ferrous materials. Engineering textiles for Parachutes have been developed with the latest combination of



**This system is fully indigenous and being  
manufactured by L&T**

Fluorocarbon and Silicon treatment to provide water/oil repellency and improved abrasion resistance," read the release.

(Except for the headline, this story has not been edited by NDTV staff and is published from a syndicated feed.)

<https://www.ndtv.com/india-news/drdo-defence-research-body-develops-fully-indigenous-p7-heavy-drop-system-2263430>



Thu, 16 July 2020

## **DRDO, Rafale or Boeing – Which company will build jets for Indian Aircraft Carriers Vikramaditya & Vikrant?**

***DRDO – Defence Research and Development Organisation’s new twin-engine aircraft carrier-based fighter aircraft could replace Indian Navy’s MiG-29K. The DRDO is expected to compete against US defence giant – Boeing and French conglomerate – Rafale***

“The Navy is expected to get the Hindustan Aeronautics Ltd. (HAL)-built twin-engine carrier aircraft by 2032. It will replace the MiG-29Ks in service which are scheduled to start going out by 2034,” said a defence source to *The Hindu*.

The Indian Navy currently operates just one aircraft carrier – a former Soviet vessel – Admiral Gorshkov rechristened in India as INS Vikramaditya which embarks the Russian MiG-29K fighters.



Indian is expected to receive a second aircraft carrier soon by 2022. The first Indigenous Aircraft Carrier (IAC-I) Vikrant is in the advanced stages of construction with all four Gas Turbines, main engines having been started, Power Generation Systems comprising of eight Diesel Alternators ready and trials of ship’s major systems and auxiliary equipment in progress.

The deadline to deliver the ship was in 2018 but it is delayed to 2022. Minister of State for Defence Sripad Naik said that “Ship’s targeted delivery was affected due to delay in supply of aviation equipment from Russia”.

DRDO’s offered to develop this twin-engine deck-based fighter jet for the Indian Navy and the design specifications for it have been finalised. Officials had stated that there will not be enough aircraft to operate from both carriers i.e. INS Vikramaditya and Vikrant.

The Indian Navy currently possesses 45 Russian MiG-29K aircraft and is evaluating a response the Request For Information (RFI) from Boeing with its F-18 Super Hornet and Dassault Aviation with its Rafale jets. Both companies had assured that their jets can operate off the ski-jump of Vikramaditya and in future the Vikrant.

As reported earlier by EurAsian Times, the baseline Super Hornets have a top speed of 1190 miles per hour, armed with AIM-9 Sidewinder, AIM-7 Sparrow and AIM-120 AMRAAM missiles with an unrefueled range of 1243 miles. A twin-engine, multirole, carrier-capable aircraft, the Boeing F/A-18 Super Hornet fighter jet is the variant of the McDonnell Douglas F/A-18 Hornet.

The French Navy had earlier pointed out that Rafale jets will be suitable for the Indian Navy and can be easily integrated onboard the aircraft carrier under construction at Cochin Shipyard.

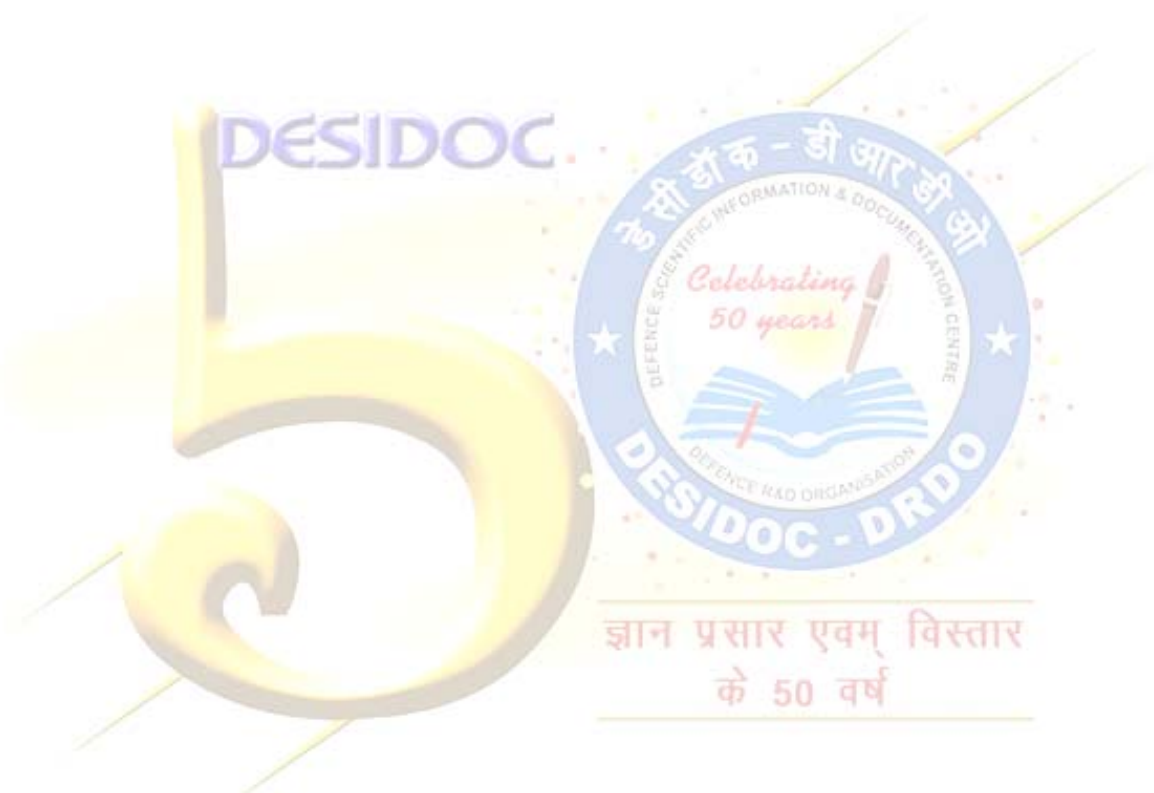
“We have used the aircraft carrier in the fight against ISIS and have used sophisticated armaments from the Rafale that demonstrates that it works very well,” said Rear Admiral Gilles Boidevezi, in charge of foreign relations for the French Navy.

“The Rafale went to the US and was deployed on American aircraft carriers,” said Boidevezi. “The Rafale was perfectly integrated with the US carriers and has shown its capability to work with non-French platforms.”

Both the F-18 and Rafale Marine fighter jets have been operating from aircraft carriers but are designed for catapult launches. However, the Indian navy uses the ski jump system, which involves a runway that curves upward. Sources have revealed that the French team have carried out extensive tests and software analysis on the Rafale to show that it can operate with a meaningful load from ski-jump carriers too.

Should India go indigenous and give the contract to DRDO or continue to export high-end jets from the West?

<https://eurasianimes.com/drdo-rafale-or-boeing-which-company-will-build-jets-for-indian-aircraft-carriers-vikramaditya-vikrant/>





## Indian Army looks at structural changes in its HQ by Independence Day

*Several major decisions, like moving the Rashtriya Rifles headquarters out of Delhi have already been implemented, but the effort to modernise the Indian army continues*

*By Srinjoy Chowdhury*

The Indian Army wants far-reaching structural changes in its Headquarters, and preferably by Independence Day. Several major decisions, like moving the Rashtriya Rifles headquarters out of Delhi have already been implemented, but the effort to modernise the Indian army continues.

Several major changes are on the anvil:

- The Human Rights or HR issues, it has been proposed, would be dealt with by the Army vice-Chief.
- There will be a third deputy chief of Army staff. There are currently two, looking after procurement of weapons and training respectively. The third deputy chief or DCOAS (Strategy) will handle the Additional Director General (Public Information), an office headed by a major general that deals with media. He will also be involved in Information Warfare, currently with Military Operations.
- The Master General of Ordnance or MGO will now be Master General (Sustenance). A large number of maintenance issues will be dealt with the MG (S).
- The WE or Weapons and Equipment section will now be called the Capability Development. All capital purchases will come under this section, headed by one of the Deputy Chiefs. It may also decide on GSQRs or General Staff Qualitative Requirements. This is roughly what the Army's requirement is, vis-a-vis a weapon system.
- A vigilance department has also been planned. This is a government requirement and has to be done. This could include representatives from the other services - the Navy and the Air Force - and also, from the police.



Meanwhile, the plan to ready Integrated Battle Groups, each one headed by a major general, has already begun. Two are on their way to being formed. They, of course, are not part of the changes in Army headquarters.

<https://www.timesnownews.com/india/article/indian-army-looks-at-structural-changes-in-its-hq-by-independence-day/621975>

Thu, 16 July 2020

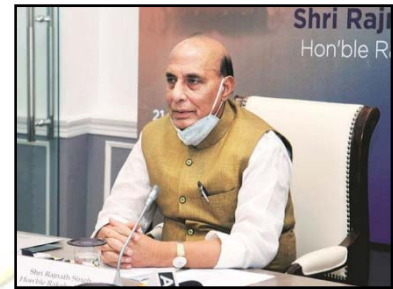
## Rajnath, CDS to attend DAC meet for speeding up procurement of weapons

*"The meeting is being held to speed up the procurement of weapons systems and ammunition for the armed forces," said a defence official*

New Delhi: Union Defence Minister Rajnath Singh, Chief of Defence Staff General Bipin Rawat and chiefs of the three services will attend a special Defence Acquisition Council meeting on Tuesday, informed Defence officials.

"The meeting is being held to speed up the procurement of weapons systems and ammunition for the armed forces," said a defence official.

Recently, Rajnath Singh visited Russia and discussed concerning the ongoing defence contracts with Deputy Prime Minister of Russia Yury Ivanovich Borisov and was assured that the projects will be executed soon.



Rajnath Singh

Government sources said the Minister discussed on the supply of equipment and spares needed for the Russian-origin fighter aircraft including the Su-30MKIs and MiG-29s of the Air Force and the MiG29Ks of the Indian Navy, the T-90 battle tanks for the Army and the Kilo-class submarines of the Navy along with other warships. The sources said the equipment was earlier supposed to be supplied to India through the sea route in ships but was stuck there for several months due to the Covid-19 situation.

[https://www.business-standard.com/article/defence/rajnath-cds-to-attend-dac-meet-for-speeding-up-procurement-of-weapons-120071500683\\_1.html](https://www.business-standard.com/article/defence/rajnath-cds-to-attend-dac-meet-for-speeding-up-procurement-of-weapons-120071500683_1.html)

hindustantimes

Thu, 16 July 2020

## Amid border row, India allows military to speed up weapon purchases worth Rs 300 crore

*The decision was taken at a special meeting of the defence acquisition council (DAC), headed by defence minister Rajnath Singh*

*By Rahul Singh*

New Delhi: Amid the border row in Ladakh and worst tensions there since the 1962 India-China war, the government on Wednesday authorised the Armed Forces to process cases for buying urgently-needed weapons and equipment worth up to Rs 300 crore to meet their critical operational requirements, a defence ministry spokesperson said.

"This will shrink the procurement timelines and ensure placement of orders within six months and commencement of deliveries within one year," the ministry said in a statement.

The decision was taken at a special meeting of the defence acquisition council (DAC), headed by defence minister Rajnath Singh. The ministry said the special meeting was convened "considering the security environment due to the prevailing situation along the northern borders and the need to strengthen the armed forces for the defence of our borders."

The DAC on July 2 Thursday approved the purchase of weapons and ammunition worth Rs 38,900 crore. The purchases include 33 new fighter jets for the Indian Air Force (IAF) that is grappling with a shortage of warplanes.

The proposals green-lighted by the DAC included buying of 21 MiG-29s from Russia, 12 new Sukhoi-30 fighters from Hindustan Aeronautics Limited (HAL), home-grown Astra BVR air-to-air missiles, locally-developed land-attack cruise missile (LACM) systems with a range of 1,000 km, indigenous rocket systems, and the upgrade of 59 MiG-29 jets.

The cost of military hardware cleared for purchase on July 2 from the domestic industry is pegged at Rs 31,130 crore and the orders are expected to give a push to Prime Minister Narendra Modi's 'Atmanirbhar Bharat Abhiyan' (Self-Reliant India Movement).

<https://www.hindustantimes.com/india-news/amid-border-row-india-allows-armed-forces-to-speed-up-weapon-purchases-worth-rs-300-crore/story-1pOpM5AiJeBz2w9PyhWncO.html>



The proposals green-lighted by the DAC included buying of 21 MiG-29s from Russia, 12 new Sukhoi-30 fighters from Hindustan Aeronautics Limited (HAL) among several other weapons and equipment. (PTI)

## ThePrint

Thu, 16 July 2020

# Rifles, missiles, ammunition, drones — armed forces on shopping spree amid LAC tensions

*Unprecedented emergency powers given to armed forces under the capital budget, for purchases of new equipment and systems, are likely to ease bottlenecks*

*By Snehash Alex Philip*

New Delhi: A special session of the Defence Acquisition Council (DAC) Wednesday empowered the armed forces to go ahead with Rs 300 crore worth of capital acquisitions to meet emergent operational requirements, even as the military has been on a shopping spree over the past few weeks.

The move, which comes amid tensions between India and China on the Line of Actual Control (LAC), gives the armed forces unprecedented emergency powers under the capital budget, which is for purchases of new equipment and systems. It is expected to ease some of the bottlenecks that mar defence acquisitions.

So far, the forces have, from time to time, been given a Rs 500-crore limit per project under the revenue head, which deals with reordering of existing systems and ammunition. This power, for example, was allowed after the 2016 Uri attack, and in June this year in light of the LAC situation.

Procurements under the capital budget are a long-drawn process that requires multiple trials and long procedures even if fast-tracked.

Announcing the new provision, Defence Minister Rajnath Singh said it will shrink procurement timelines, ensure speedy placement of orders, and start deliveries within one year.

### Several procurements on the horizon

Amid the ongoing tensions with China, the Indian military has been on a shopping spree, with a number of projects being pushed under the emergency procurement provision. These include assault rifles, anti-tank guided missiles, ammunition, high-altitude clothing, bombs, drones, etc.

Sources said the armed forces are already in the midst of pursuing different manner of procurements from the US, Russia, Israel, France and some other countries.



The new SiG 716 G2 rifles in use with the Indian Army | By special arrangement

Asked how much money is being spent in these fast-tracked emergency purchases, sources said it was easily over \$1 billion (Rs 7,513 crore).

The procurements — some of which have been inked while others are in the final stages — included armour-piercing fin-stabilised discarding sabot (APFSDS) ammunition fired by the T-72 and T-90 main battle tanks, additional Heron drones, loitering munition, Spice Bombs, and Man Portable Air Defence System (MANPADS).

The procurement of 72,000 additional SiG 716 battle rifles has also been pushed ahead keeping the situation at the LAC in mind, sources said.

Each of the three services has prepared a list of items that they are looking to procure under the emergency clause. Sources said Russia, France and Israel have already assured timely delivery of items. France had even diverted missiles meant for its own force to India to enable faster deployment of the Rafale fighters jets, which will arrive in India later this month.

*(This report has been updated to correct a typo)*

<https://theprint.in/defence/rifles-missiles-ammunition-drones-armed-forces-on-shopping-spree-amid-lac-tensions/461682/>

# ThePrint

Thu, 16 July 2020

## Indian Army could get carbines from UAE soon, deal in final stages of confirmation

*This is the first time Indian forces will use a weapon manufactured in UAE, which is one of the largest importers of defence equipment*

*By Snehash Alex Philip*

New Delhi: If all goes well, the Indian Army could finally get its hands on new close quarter battle (CQB) carbines, manufactured by a UAE firm, for immediate operational requirements. The proposal has been in the works since 2017.

The Defence Acquisition Council (DAC) could soon decide on the signing of the contract with the UAE firm, Caracal International, which finished as 'L-1' or the lowest bidder in September 2018 for a contract that was supposed to be fast tracked, defence sources said.

This is the first time that Indian forces will start using a weapon from the UAE, which itself is one of the largest importers of defence equipment.

When Caracal was shortlisted in 2018, it was seen as more of a diplomatic deal to keep UAE happy rather than a pure military decision.

The carbines will replace the outdated and ageing 9mm British Sterling 1A1 sub machine guns that are in service.

After years of attempts to replace them, the Army had in 2017 decided to opt for Fast Track Procurement (FTP) of 93,895 new carbines against an overall demand of 3.5 lakh such weapons.

The rest was supposed to be under the "Buy and Make" category. The Indian private small arms industry has already come out with carbines of its own or started manufacturing them domestically with transfer of technology from abroad.

### **Past issues with contract**

The contract for the Caracal's CAR 816 had run into rough weather over a number of issues including costs and complaints from other bidders.



Caracal's CAR 816 | Wikimedia Commons

The delay in the FTP process can be judged from the fact that the delivery of 72,400 American SiG 716 G2 battle rifles, selected as the same time as Caracal in 2018, has been completed and the Indian Army is moving ahead with order for another 72,000 such rifles to arm its frontline troops.

The CQB Carbines, with short barrel, are meant for operations in urban settings and room interventions, especially in counter terrorism operations like in Jammu and Kashmir.

The carbines are also meant for the tank crews or those operating in confined spaces.

### **History of Army's quest for new CQB carbines**

Efforts to acquire the CQB carbines since 2008 have not materialised as the carbines of state-owned DRDO and OFB had failed to meet Army requirements.

A global tender for procurement of 44,618 CQB Carbines was issued in 2011 wherein four companies — Israel's IWI, Italian Beretta and American firms Colt and Sig Sauer participated.

However, only IWI qualified as the other contenders could not meet the qualitative requirements pertaining to night vision mounting system, sources said.

But the Ministry of Defence did not procure the carbines from IWI saying it had become a single vendor case, which is not allowed as per procurement manual.

In 2017, a global Request for Information (RFI) was issued for the purchase of 2 lakh carbines while a separate process was rolled out to procure 93,895 under FTP.

It is estimated that the overall demand would be over 5 lakh if one takes into account the armed forces, the central armed police forces and the state police forces.

The request for proposal (RFP) was expected within a year of issuing RFI, which is still awaited.

<https://theprint.in/defence/indian-army-could-get-carbines-from-uae-soon-deal-in-final-stages-of-confirmation/461288/>



*Thu, 16 July 2020*

## **Mahindra develops mine-resistant vehicle for UN Peacekeeping; Anand Mahindra calls it a 'Mean Machine'**

Mahindra and Mahindra makes a plethora of vehicles in India. These include passenger vehicles, commercial vehicles, heavy vehicles, agricultural equipment, two-wheelers, and even electric vehicles. But a lot of people don't know that the Indian automobile manufacturer also produces defence vehicles under Mahindra Defence Systems arm. The company manufactures and supplies heavily armoured defence vehicles to the Indian arms forces as well as to other international forces. The latest defence vehicles to come out of Mahindra Defense System's stable is 'Mine Resistant Ambush Protected' vehicle.

The company recently took to twitter to share some details about this heavy-duty machine. This speciality vehicle will be used by United Nations Peacekeeping forces in their operations. It is a heavily armoured mine-resistant vehicle, which means it is capable of taking a hit and is suitable for conflict zones. The speciality vehicle also gets interrogation arms to lift roadside IEDs (improvised explosive device).



Mahindra Defence revealed that this vehicle has been designed, produced, and exported from India. Needless to say, this feat was due to receive appreciation from Mahindra Group's chairman,

Anand Mahindra. He, in his tweet, called it a 'Mean Machine' that it will help keep peacekeepers safe. He also joked about how it would be a perfect vehicle to use in Mumbai traffic if it were road legal.

Mahindra Defence Systems has made several armoured vehicles for defence forces, including the Mahindra Marksman, that is being used by Central Industrial Security Forces (CISF)'s Quick Reaction Team's (QRT) fleet at the Indira Gandhi International Airport in Delhi. It is an armoured capsule-based light bulletproof vehicle that can seat a total of six people. This vehicle not only offers protection against small firearms but also grenade attacks.

<https://www.defencenews.in/article/Mahindra-develops-mine-resistant-vehicle-for-UN-Peacekeeping:-Anand-Mahindra-calls-it-a-Mean-Machine-871638>



Thu, 16 July 2020

## Fourth round of Corps Commander-level talks between India, China end on July 15 after around 14 hours

*30 am at Chushul in Eastern Ladakh on Tuesday and went on for around 14 hours*

*Edited By Tanweer Azam*

The fourth Corps Commander-level talks between India and China ended at around 2 am IST (4.30 am Beijing time) on Wednesday (July 15). The meeting had started at 11:30 am at Chushul in Eastern Ladakh on Tuesday and went on for around 14 hours.

Though the details of the dialogue between the two sides are not known, it is believed that the talks mainly focused on the second phase of disengagement along the Line of Actual Control (LAC). The talks were significant because this was the first meeting between senior officials of Indian and Chinese troops after the first phase of disengagement along LAC.



On July 5, the Special Representatives of India and China on the Boundary Question – National Security Advisor Ajit Doval and Chinese State Councillor and Minister of Foreign Affairs Wang Yi - had a 'frank and in-depth exchange' during a telephone conversation during which they agreed that both sides should complete the ongoing disengagement process along the LAC expeditiously.

As part of the first phase of disengagement, Chinese troops have agreed to move back from Finger 4 to Finger 5 and Chinese troops have also moved back by around two kilometres in the other friction points including Galwan valley, Hot Springs and Patrolling Point-15.

On July 6, the Chinese People's Liberation Army (PLA) stepped back by around 1.5 kilometres from three friction sites in Galwan Valley. Rearward movement of vehicles of the PLA was seen at General area Galwan, Hot Springs-Gogra Post. They have also reduced their presence on the ridgeline of Finger 4 in the recent time as demanded by India.

<https://zeenews.india.com/india/fourth-round-of-corps-commander-level-talks-between-india-china-end-on-july-15-after-around-14-hours-2295808.html>

# India's shopping for lightweight mountain-friendly tanks post China tussles

By Manu Pubby

## Synopsis

*This will be a significant upgrade allowing the reintroduction of light tanks that can play a critical role in areas such as Ladakh, where they can be more nimble than the heavier main battle tanks, informed sources told ET. The acquisition will be made under the emergency purchase nod given after the recent Ladakh standoff to bolster defences.*

New Delhi: The government, amid border tensions with China, has given the army approval for emergency procurement of lightweight tanks that can be deployed in high-altitude conditions.

This will be a significant upgrade allowing the reintroduction of light tanks that can play a critical role in areas such as Ladakh, where they can be more nimble than the heavier main battle tanks, informed sources told ET. The acquisition will be made under the emergency purchase nod given after the recent Ladakh standoff to bolster defences.

The deployment of new Type 15 light tanks by China along the LAC in eastern Ladakh in late April has come as a wakeup call.



## Deterrence measures

The army has been given the go-ahead for urgent purchases amid signs that Beijing intends to keep the border hot.

The army is looking for air-transportable tanks that can be landed or airdropped at forward locations for lightning-quick deployments to counter aggression, sources said. Unlike China, which has an extensive road network connecting the border, India's infrastructure is still catching up and is being upgraded, though forward airfields have been developed at strategic locations.

The decision to go ahead with a new light tank is part of a series of major emergency procurements cleared by the government at a critical meeting last week. This includes new loitering munitions from Israel, more Heron unmanned aerial vehicles, additional Sig Sauer assault rifles, man-portable surface-to-air defence missiles, Spike anti-tank guided missiles and a range of ammunition.

“The satellite imagery visuals of Chinese T-15 / ZTPQ light tanks camouflaged in the depth areas of eastern Ladakh, during the recent standoff, is a wakeup call for upgrading deterrence in areas where medium-category tanks are difficult to employ,” former director general, mechanised forces, Lt Gen AB Shivane (retd), has written in a detailed study on the reintroduction of light tanks for the government-backed Centre of Joint Warfare Studies (CENJOWS).

The retired officer has suggested that light tanks would add to the credible deterrence posture and war-fighting capability on the northern front where medium-category tanks cannot reach. He has also suggested that these new tanks be made in India.

### **Limited options**

However, for emergency procurement, India will have limited options as few nations currently produce these tanks. While China is not an option, the US has embarked on a light tank under its Mobile Protected Firepower Program but it's currently at prototype stage. Russia has the air-transportable Sprut SDM1 light tank that has commonalities with the T72 and T90s operated by India.

While India has a robust tank force, all of them are heavy main battle tanks — T72s, T90s and the Arjun — considered more suitable for operations in the plains. While these tanks have been sent to the Himalayan border as well, navigating them to difficult borders has been a major issue.

India has operated light tanks in the past that came in handy during the 1947-48 Kashmir operations as well as the 1962 war but these have been slowly phased out as the world moved to heavier armour.

<https://economictimes.indiatimes.com/news/defence/india-to-buy-light-tanks-for-mountain-warfare/articleshow/76969376.cms>

## **THE TIMES OF INDIA**

*Thu, 16 July 2020*

### **Rajnath Singh to visit Ladakh, Srinagar later this week**

New Delhi: Defence minister Rajnath Singh will visit Ladakh and Srinagar later this week to take stock of the situations in both Line of Actual Control (LAC) and the Line of Control (LOC). He will be accompanied by Army Chief General MM Naravane.

While they will visit Ladakh on July 17, both will be in Srinagar on July 18. While Pakistan constantly violates ceasefire from across the LoC, China has continued to intrude into Indian territory in Ladakh region in recent past, escalating tensions between India and its eastern neighbour.

During his visit to Ladakh on July 3, PM Modi had addressed the soldiers where he had said, "From Leh, Ladakh to Siachen and Kargil and Galwan's icy waters, every mountain, every peak has seen the valour of Indian Army. The age of expansion is over. This is the age of development. History has seen that expansionist forces have either lost or were forced to turn back."

Earlier on June 15, 20 Indian soldiers were killed during combat with Chinese forces in Galwan valley, leading to tensions between both nations. Chinese soldiers subsequently started moving back following dialogues between two countries through the military level and diplomatic level.

<https://timesofindia.indiatimes.com/india/rajnath-singh-to-visit-ladakh-srinagar-later-this-week/articleshow/76980457.cms>



Thu, 16 July 2020

## India asks China to vacate Pangong lake

*Indian and Chinese corps commanders meet to discuss further disengagement at flashpoints*

*By Pawan Bali*

New Delhi: Indian and Chinese corps commanders on Tuesday held another marathon meeting to negotiate further disengagement of troops from the flashpoints in the Ladakh sector and thinning the huge build-up by both sides at the Line of Actual Control (LAC).

The meeting started at 11.30 am at Chushul in the Ladakh sector on the Indian side of the LAC and went for around 12 hours. The Indian side pressed for early withdrawal of PLA troops from Pangong Tso and the Depsang plain. India also sought withdrawal of Chinese troops along with tanks, artillery and jammers. This was the fourth round of military-level talks between India and China to resolve the stand-off at LAC.



The Pangong lake is one of the areas where Indian and Chinese troops are locked in a standoff. (File photo)

In the last meeting on June 30, 14 Corps commander Lt. Gen. Harinder Singh and South Xinjiang Military Region commander Maj. Gen. Liu Lin had agreed to mutually move back their troops at flash points by up to 2 km to bring down the chances of a confrontation.

Last week Indian and Chinese troops completed their initial phase of disengagement by mutually moving back from Galwan Valley, Hot Springs, Gogra Post and Finger 4 of Pangong Tso. India asked China that it should further disengage in these flashpoints and completely vacate Pangong Tso.

Chinese troops have moved back from Finger 4 to Finger 5 in the Pangong lake but are still occupying the ridges. Chinese troops still have to vacate the area between Finger 5 and Finger 8, which India claims as its territory.

In May, Chinese troops occupied the area and stopped Indian troops from patrolling the area.

As per the earlier agreement, a buffer zone of at least 1.5 km on both sides of the LAC has to be created in the areas of stand-off. There will be restrictions on patrolling in these buffer areas for some time and these zones will be monitored through drones and satellites.

<https://www.deccanchronicle.com/nation/current-affairs/150720/india-asks-china-to-vacate-pangong-lake.html>

## Delete Facebook account or quit Army, Choice yours: Delhi high court to officer

*Lieutenant Colonel P K Choudhary contended that once deleted all the data, contacts and friends in his Facebook account would be "irretrievably lost" and the loss would be "irreversible"*

New Delhi: The Delhi High Court on Tuesday declined to grant any interim relief to a senior army officer, who has challenged the Indian Army's recent policy banning armed forces personnel from using social networking platforms like Facebook and Instagram, saying he has to either abide by the mandate of the organisation or put in his papers.

The high court said he has a choice to make and asked him to delete his Facebook account as the policy to ban the use of social networking platforms for army personnel was taken keeping in view the security of the nation.

It said he can create a new social media account later.

A bench of Justices Rajiv Sahai Endlaw and Asha Menon said that when it has not even found a reason yet to entertain the plea, "the question of granting any interim relief does not arise. Especially when the matter has the potential of concerning the safety and security of the country," the bench said.

Lieutenant Colonel P K Choudhary contended that once deleted all the data, contacts and friends in his Facebook account would be "irretrievably lost" and the loss would be "irreversible".

"No. No. Sorry. You please delete it. You can always create a new one. It cannot work like this. You are part of an organisation. You have to abide by its mandate," the bench said.

It further said, "If you are so dear to FB, then put in your papers. See you have to make a choice, what do you want to do. You have other choices which are also irreversible."

The army officer had sought an interim relief that he be allowed to retain his Facebook (FB) account in deactivated form till the next date of hearing when the court will decide whether to entertain his petition after going through the Army's policy under challenge.

According to the new June 6 policy, all Indian Army personnel have been ordered to delete their accounts from Facebook and Instagram and 87 other applications.

The counsel for the army officer said the only choice he has is whether to face departmental action for not deleting the account.

The officer's lawyer repeatedly urged the bench to allow him to retain the account in deactivated form, saying forcing him to delete it and the data therein amounts to violation of his right to privacy.

The Centre, represented by Additional Solicitor General (ASG) Chetan Sharma, told the court that the policy decision was taken as "we found that Facebook was a bug. It was infiltrating as a cyber warfare and there were so many instances of personnel being targeted".

ASG Sharma also said the petitioner's grievance was that he needs Facebook to communicate with his family in the US, when there were other modes of communication like WhatsApp, Twitter and Skype which were available to him.

After hearing him for some time, the bench said it finds no ground to grant the interim relief. It asked the ASG to file the policy document in a sealed cover for perusal by the bench and said the reasons for taking the decision be also filed.

With the direction, the court listed the matter for hearing on July 21.



The High Court said the Army officer can create a new social media account later.

The petition has sought a direction to the Director General of Military Intelligence to withdraw its June 6 policy to the extent that it orders all the members of the Indian Army to delete their accounts from Facebook and Instagram and 87 other applications.

Lt Col P K Choudhary, who is currently posted in Jammu and Kashmir, said in the plea that he is an active user of Facebook and uses the platform to connect with his friends and family as most of them are settled abroad, including his elder daughter.

In the petition, the officer has sought a direction to the Ministry of Defence to withdraw the June 6 policy to ensure that the fundamental rights of armed forces personnel are not abrogated amended or modified by arbitrary executive action which is not backed by the mandate of law, offends the provisions of the Army Act and Rules made thereunder and is unconstitutional.

The petition has alleged that the policy which bans social media platforms is illegal, arbitrary, disproportionate, violates the fundamental rights of soldiers including but not limited to the freedom of speech and expression, the right to life and the right to privacy.

It has said the authorities have cited security concerns and risk of data breach as the basis of imposing the restrictions contained in the policy regarding usage of social media platforms but the act of banning it is a clear violation of Article 14 (Equality before law) of the Constitution.

The plea also seeks a declaration that the Director General of Military Intelligence is not empowered under the Constitution or under any other law to modify, amend or abrogate the fundamental rights of the petitioner and other members of the armed forces.

Besides, the Centre and Director General of Military Intelligence, the petition has also made Chief of the Army Staff, who is the professional head, commander and the highest-ranking military officer of the Indian Army, party to the petition.

<https://www.ndtv.com/india-news/delete-facebook-account-or-quit-army-choice-yours-delhi-high-court-to-officer-2262832>



Thu, 16 July 2020

## क्या है इजरायल की नई स्पेशल फोर्स, जिसे माना जा रहा है इंडियन एयर फोर्स का ब्लू प्रिंट

**इजरायल की वायु सेना (Israel's Air Force) की जितनी ताकतें हैं, उन सबको एक विंग में यानी एक कमांड में लाने के कदम को क्रांतिकारी Idea माना जा रहा है। क्या इजरायल का यह कदम Indian Air Force के कायाकल्प के लिए कारगर साबित हो सकता है? ये भी जानिए कि इस बारे में Aviation Experts का क्या मानना है।**

इजरायली वायु सेना की तमाम Special Forces को एक कमांड में शामिल करने वाली 7वीं एरियल स्पेशल फोर्स विंग (7th Aerial Special Force Wing) बनाई गई है। इजरायल की सुरक्षा की इस रणनीति (Defense Strategy) के बारे में विशेषज्ञ मान रहे हैं कि ऐसे कदम से भारत को भी प्रेरणा लेना होगी और इसी आइडिया के आधार पर भारतीय वायुसेना (IAF) की भविष्य की रणनीतियां तैयार हो सकती हैं।

**क्यों बनाया गया यह स्क्वाड्रन?**

आर्मी की प्रेस रिलीज़ के हवाले से **खबरों में कहा गया** है कि 7वीं एरियल स्पेशल फोर्स विंग बनाने का मकसद कई मोर्चों पर उभरकर आ रहे खतरों का जवाब देना और ऑपरेशनल ज़रूरतों को पूरा करना है। इस विंग से यूनिटों के ऑपरेशनल प्रभाव को बढ़ाया जाएगा। इजरायल की वायुसेना की विशेष



गतिविधियों, रूटीन और इमरजेंसी ऑपरेशनों के लिए यह विंग हमेशा अपने ढंग से बड़ी ताकत के रूप में सहयोग देगी।

### **कैसा है इस दस्ते का गठन?**

इस विंग में सर्च ऑपरेशन के साथ राहत कार्य करने वाली यूनिट 669 के साथ ही, शालडाग कमांडो यूनिट और दुश्मनों के खेमों में एयरफील्ड बनाने वाले दस्तों को शामिल किया गया है। फ्रंटल लैंडिंग यूनिट इसके अलावा विंग के लिए इंटेलिजेंस यूनिट और स्पेशल फोर्स स्कूल के तौर पर भी जुड़ेगी। इसे इज़रायल वायुसेना के इतिहास में ऐतिहासिक कदम बताया जा रहा है।

### **क्यों पड़ी इस तरह के दस्ते की ज़रूरत?**

इज़रायल की वायुसेना को अस्ल में, नियमित रूप से मिलिट्री ऑपरेशनों को अंजाम देना होता है क्योंकि उग्रवादी संगठन कहे जाने वाले हमला के ठिकानों को गाज़ा पट्टी पर निशाना बनाना होता है। दूसरी तरफ, इज़रायली वायुसेना को सीरिया में ईरानी गतिविधियों के खिलाफ भी एयरस्ट्राइक करना होती है।

कुल मिलाकर, संघर्षशील इलाकों में मुब्तिला इज़रायल की चिंता हमेशा यही रहती है कि ईरानी सेना अपना दबदबा बढ़ा न ले और उग्रवादी ताकतें इज़रायल के खिलाफ अपना सिर उठाने की ज़रूरत न करें। इन्हीं तमाम कारणों से वायु सेना को और मज़बूती से सक्रिय और असरदार करने के लिए नई विंग बनाई गई है।

### **कैसे भारत के लिए काम का है आइडिया**

7वीं एरियल स्पेशल फोर्स विंग ने एविएशन विशेषज्ञों के बीच काफी चर्चा हासिल की है और माना जा रहा है कि भारत के लिए यह कॉसेप्ट वायु सेना के भविष्य के स्कवाड्रनों के लिए ब्लूप्रिंट का काम कर सकता है। अस्ल में, इज़रायल की इस विंग की अहमियत इसलिए है कि यह दो तरफा संघर्षों में एक साथ कुशलता से सक्रिय रह सकती है।

चूंकि भारत के सामने दो विपरीत दिशाओं में सीमाओं पर चुनौतियों की स्थिति रहती है। चीन और पाकिस्तान के खिलाफ सीमाओं पर भारत को लगातार सतर्क रहना होता है। साथ ही जब भारतीय वायुसेना अपने 28 स्कवाड्रनों को बढ़ाकर 40 करने पर विचार कर रही है, तो विशेषज्ञ मान रहे हैं कि इज़रायल की नई विंग का आइडिया दो मोर्चों पर संघर्ष के लिए कारगर हो सकता है।

ये भी गौरतलब है कि भारत और इज़रायल के बीच खासे रक्षा समझौते और सहयोग रहे हैं। मसलन, हालिया [खबरों के मुताबिक](#) भारत ने पिछले साल इज़रायल से जो एंटी टैंक गाइडेड मिसाइलें (Spike ATGM) खरीदी थीं, भारतीय आर्मी इन्हें और खरीदने की भी योजना बना रही है।

<https://hindi.news18.com/news/knowledge/know-special-force-wing-of-israel-which-experts-believe-as-blue-print-for-indian-air-force-bhvs-3177847.html>

## Caught in 'ideological spiral,' US and China drift toward Cold War

By Steven Lee Myers & Paul Mozur

New York: One by one, the United States has hit at the core tenets of Xi Jinping's vision for a rising China ready to assume the mantle of superpower.

In a matter of weeks, the Trump administration has imposed sanctions over punitive policies in Hong Kong and China's western region of Xinjiang. It took new measures to suffocate Chinese innovation by cutting it off from American technology and pushing allies to look elsewhere. On Monday, it challenged China's claims in the South China Sea, setting the stage for sharper confrontation.

And President Donald Trump said Tuesday that he had signed into law a bill to punish Chinese officials for the new security law that curbs the rights of Hong Kong residents, along with an executive order ending preferential trade treatment for Hong Kong.

"The power gap is closing, and the ideological gap is widening," said Rush Doshi, director of the China Strategy Initiative at the Brookings Institution in Washington, adding that China and the United States had entered a downward "ideological spiral" years in the making.

"Where's the bottom?" he asked.

For years, officials and historians have dismissed the idea that a new Cold War was emerging between the United States and China. The contours of today's world, the argument went, are simply incomparable to the decades when the United States and the Soviet Union squared off in an existential struggle for supremacy. The world was said to be too interconnected to easily divide into ideological blocs.

Now, lines are being drawn and relations are in free fall, laying the foundation for a confrontation that will have many of the characteristics of the Cold War — and the dangers. As the two superpowers clash over technology, territory and clout, they face the same risk of small disputes escalating into military conflict.

The relationship is increasingly imbued with deep distrust and animosity, as well as the fraught tensions that come with two powers jockeying for primacy, especially in areas where their interests collide: in cyberspace and outer space, in the Taiwan Strait and the South China Sea, and even in the Persian Gulf.

And the coronavirus pandemic, coupled with China's recent aggressive actions on its borders — from the Pacific to the Himalayas — has turned existing fissures into chasms that could be difficult to overcome, no matter the outcome of this year's US presidential election.

From Beijing's perspective, it is the United States that has plunged relations to what China's foreign minister, Wang Yi, said last week was their lowest point since the countries re-established diplomatic relations in 1979.

"The current China policy of the United States is based on ill-informed strategic miscalculation and is fraught with emotions and whims and McCarthyist bigotry," Wang said, evoking the Cold War himself to describe the current level of tensions.

"It seems as if every Chinese investment is politically driven, every Chinese student is a spy and every cooperation initiative is a scheme with a hidden agenda," he added.

Domestic politics in both countries have hardened views and given ammunition to hawks.

"What cooperation is there between China and the United States right now?" said Zheng Yongnian, director of the East Asian Institute at the National University of Singapore. "I can't see any substantial cooperation."

The pandemic, too, has inflamed tensions, especially in the United States. Trump refers to the coronavirus with racist tropes, while Beijing accuses his administration of attacking China to detract from its failures to contain the virus.

Trump, in a statement delivered from the Rose Garden Tuesday evening that focused harshly on China and his presidential rival, Joe Biden, referred to the pandemic as "the plague pouring in from China," and said that the Chinese "could have stopped it."

Both countries are forcing other nations to take sides, even if they are disinclined to do so. The Trump administration, for example, has pressed allies — with some success in Australia and, on Tuesday, in Britain — to forswear Chinese tech giant Huawei as they develop 5G networks. China, facing condemnation over its policies in Xinjiang and Hong Kong, has rallied countries to make public demonstrations of support for them.

At the United Nations Human Rights Council in Geneva, 53 nations — from Belarus to Zimbabwe — signed a statement supporting China's new security law for Hong Kong. Only 27 nations on the council criticized it, most of them European democracies, along with Japan, Australia and New Zealand. Such blocs would not have been unfamiliar at the height of the Cold War.

China has also wielded its vast economic power as a tool of political coercion, cutting off imports of beef and barley from Australia because its government called for an international investigation into the origins of the pandemic. On Tuesday, Beijing said it would sanction American aerospace manufacturer Lockheed Martin over recent weapons sales to Taiwan.

With the world distracted by the pandemic, China has also wielded its military might, as it did by testing its disputed frontier with India in April and May. That led to the first deadly clash there since 1975. The damage to the relationship could take years to repair.

Increasingly, China seems willing to accept the risks of such actions. Only weeks later, it asserted a new territorial claim in Bhutan, the mountain kingdom that is closely allied with India.

With China menacing vessels from Vietnam, Malaysia and Indonesia in the South China Sea, the United States dispatched two aircraft carriers through the waters last month in an aggressive show of strength. Further brinkmanship appears inevitable now that the State Department has declared China's claims there illegal.

A spokesman for China's foreign ministry, Zhao Lijian, said on Tuesday that the US declaration would undermine regional peace and stability, asserting that China had controlled the islands in the sea "for thousands of years," which is not true. As he stated, the Republic of China — then controlled by the Nationalist forces of Chiang Kai-shek — only made a formal claim in 1948.

"China is committed to resolving territorial and jurisdictional disputes with directly related sovereign states through negotiations and consultations," he said.

That is not how its neighbors see things. Japan warned this week that China was attempting to "alter the status quo in the East China Sea and the South China Sea." It called China a more serious long-term threat than a nuclear-armed North Korea.

Michael A. McFaul, a former US ambassador to Russia and professor of international studies at Stanford University, said China's recent maneuvering appeared to be "overextended and overreaching," likening it to one of the most fraught moments of the Cold War.

"It does remind me of Khrushchev," he said. "He's lashing out, and suddenly he's in a Cuban missile crisis with the US"

A backlash against Beijing appears to be growing. The tensions are particularly clear in tech, where China has sought to compete with the world in cutting-edge technologies like artificial intelligence and microchips, while harshly restricting what people can read, watch or listen to inside the country.

If the Berlin Wall was the physical symbol of the first Cold War, the Great Firewall could well be the virtual symbol of the new one.

What began as a divide in cyberspace to insulate Chinese citizens from views not authorized by the Communist Party has now proved to be a prescient indicator of the deeper fissures between China and much of the Western world.

Wang, in his speech, said China had never sought to impose its way on other countries. But it has done exactly that by getting Zoom to censor talks that were being held in the United States and by launching cyberattacks on Uighurs across the globe.

Its controls have been hugely successful at home in stifling dissent and helping to seed domestic internet giants, but they have won China little influence abroad. India's move to block 59 Chinese apps threatens to hobble China's biggest overseas internet success to date, the meme-laden short-video app TikTok.

Last week, TikTok also shut down in Hong Kong because of China's new national security law there. American tech giants Facebook, Google and Twitter said they would stop reviewing data requests from the Hong Kong authorities as they assessed the law's restrictions.

"China is big, it will be successful, it will develop its own tech, but there are limits to what it can do," said James A Lewis, a former US official who writes on cybersecurity and espionage for the Center for Strategic Studies in Washington.

Even in places where China has succeeded in selling its technology, the tide appears to be turning.

Beijing's recent truculence has now led the United Kingdom to block new Huawei equipment from going into its networks, and the Trump administration is determined to cut the company off from microchips and other components it needs. To counter, Beijing has redoubled efforts to build homegrown options.

Calls for a total decoupling of China's supply chain from American tech companies are unrealistic in the short term, and would prove massively expensive in the longer term. Still, the United States has moved to pull Taiwan's microchip manufacturing — crucial to the supply chains of Huawei and other Chinese tech companies — closer to its backyard, with plans to support a new Taiwan Semiconductor Manufacturing plant in Arizona.

Wang, the foreign minister, urged the United States to step back and seek areas where the two countries can work together. Pessimism about the relationship is nonetheless widespread, though most Chinese officials and analysts blame the Trump administration for trying to deflect attention from its failure to control the pandemic.

"It is not difficult to see that under the impact of the coronavirus in this US election year various powers in the US are focused on China," Zhao Kejin, a professor of international relations at Tsinghua University, wrote in a recent paper. "The China-US relationship faces the most serious moment since the establishment of diplomatic relations."

While he eschewed the idea of a new Cold War, his alternative phrasing was no more reassuring: "The new reality is China-US relations are not entering 'a new Cold War' but sliding into a 'soft war.'"

<https://timesofindia.indiatimes.com/world/us/caught-in-ideological-spiral-us-and-china-drift-toward-cold-war/articleshow/76974771.cms>



Thu, 16 July 2020

## Higher-order topology found in 2D crystal

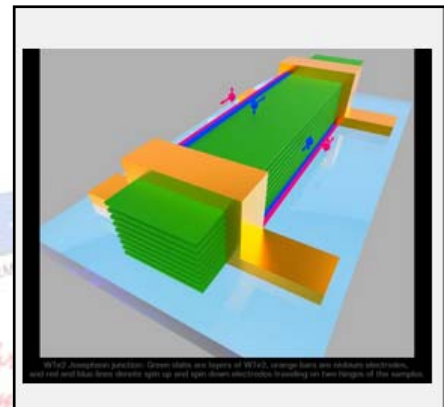
Over the last decade, the field of condensed matter physics has experienced a golden age with the discovery of new materials and properties, and related technologies being developed at breakneck speed thanks to the arrival of topological physics. Topological physics took off in 2008 with the discovery of topological insulator, a type of material that is electrically insulating in the bulk but metallic on the surface.

Since then, scientists have found more exotic topological phases including Dirac semimetals, Weyl semimetals and Axionic insulators. But most recently, materials that are insulating in the bulk, on surfaces and edges but are metallic only on the hinges or at the corners have been theoretically predicted. These bizarre new materials called higher-order topological insulators are extremely rare and only the element bismuth has been experimentally proven to possibly belong to this category so far.

What is a hinge state anyway? Imagine a box - longer and wider than tall - with flaps on top and bottom that you can open to put things inside. The space inside the box would be called the bulk. Most materials which conduct electricity do so in the bulk. However, in topological insulators, the bulk of the box is electrically insulating but the top and bottom - the flaps - are metallic and maintain surface states. For some materials, the bulk, the top and bottom of the box are insulating but the sides (edges) are metallic. These have edge states which have been demonstrated in magnetic topological insulators. Finally, in higher-order topological insulators, the bulk, top, bottom and sides of the box are all insulating but the hinges and corners of the box are metallic and have disparate hinge or corner states. These hinge states have also been predicted to exist in topological semimetals like bismuth. The hinge states in particular are expected to be promising for the study of spintronics because the direction of their propagation is tied to their spin as well as for Majorana fermions which are actively being investigated for their applications to fault-tolerant quantum computing.

Now an international team of scientists from the United States, Hong Kong, Germany, and South Korea have identified a new higher-order topological insulator. It is a layered two-dimensional transition metal dichalcogenide (TMDC) called WTe<sub>2</sub>. This is a famous material in condensed matter physics that displays a variety of exotic properties from titanic magnetoresistance to quantized spin hall effect. It was the first example of a Type-II Weyl semimetal that can be made into devices that are only one layer in thickness and is exfoliatable like graphene. WTe<sub>2</sub> has also shown to superconduct under pressure which means electrons form pairs and a supercurrent travels through it without any resistance.

Adding to this carnival of properties, theoretical physicists in 2019 envisioned WTe<sub>2</sub> and its sister material MoTe<sub>2</sub> to be higher-order topological insulators with metallic hinge states. Many research teams around the world have since searched for evidence of these exotic states in WTe<sub>2</sub> and MoTe<sub>2</sub> and some recent results have shown that there are extra conductive states at their



**IMAGE: WTe<sub>2</sub> Josephson junction:** Green slabs are layers of WTe<sub>2</sub>, orange bars are niobium electrodes, and red and blue lines denote spin up and spin down electrodes traveling on two hinges... [view more](#)



edges. But the researchers were unable to identify if these were truly edge states or the highly sought-after hinge states.

In a study published in *Nature Materials* on July 6, 2020, the team led by Kin Chung Fong (Raytheon BBN Technologies), Mazhar N. Ali (Max Plank Institute of Microstructure Physics and also Material Mind Inc.), Kam Tuen Law (Hong Kong University of Science and Technology) and Gil-Ho Lee (Pohang University of Science and Technology, and the Asia Pacific Center for Theoretical Physics) took a new approach by using the Josephson junctions to spatially resolve the supercurrent flow and to show that WTe<sub>2</sub> does indeed appear to have hinge states and be a higher-order topological insulator (Link to paper).

Josephson junctions are an incredibly important device and tool in physics. They are used in a variety of technological applications including magnetic resonance imaging (MRI) machines as well as in qubits, which are building blocks of quantum computers. These junctions are formed when two superconducting electrodes like niobium (Nb) are connected by a non-superconducting bridge like a high-quality WTe<sub>2</sub> in a thin film device. When the temperature is lowered enough, the supercurrent that is injected from one Nb electrode can travel across the bridge without resistance to the other Nb electrode. Therefore the overall device shows zero resistance and is said to be superconducting.

However, no infinite amount of supercurrent can be sent across the bridge while retaining superconductivity. When the injected current exceeds a critical current, the junction turns into a normal state and exhibits finite resistance. The Josephson effect states that as a function of the applied magnetic field, the critical current will oscillate in a Fraunhofer pattern between high and low values due to the changing phase of the superconducting wave-function across the sample.

The team realized that hidden in this oscillation is location information of the supercurrent while it travels in the sample. By taking an inverse Fourier transform of the Fraunhofer pattern, the researchers were able to visualize the supercurrent flow in the sample and found that it indeed travels on the sides of the WTe<sub>2</sub> device. However, this was not enough to distinguish the edge states from the hinge states.

As shown in the figure below, due to a quirk in the symmetry-based origin of the hinge states, not all hinges are identical on the WTe<sub>2</sub> sample. For example, there are metallic hinge states on top left and bottom right hinges on the sample but not on the top right or bottom left. This is different from an edge state, which would simply be existing on the entirety of the left and right sides of the sample. Regarding this, Kin Chung Fong of Raytheon BBN Technologies explains, "We used this difference to our advantage. By connecting superconducting electrodes on just the top half of the sample and not the bottom half, we realized we would see a different Fraunhofer pattern if hinge states existed and not edge states." He further commented, "In this configuration, electrodes would connect to only one of the hinge states (i.e. top left and not bottom right), which would show a distinct Fraunhofer pattern. If there were edge states, this configuration wouldn't be any different than connecting to both the bottom and top halves of the sample and the Fraunhofer would look the same." When they carried out this challenging experiment, they observed the hallmark of the hinge state, not the edge state.

"But that's not all. WTe<sub>2</sub> is a fairly low-symmetry orthorhombic material with high crystalline anisotropy. The different directions in the crystal are not equivalent and we also theorized and confirmed that the hinge states existing in WTe<sub>2</sub> aren't all equivalent either. In some directions, they mix into the bulk while in other directions they don't," explained Kam Tuen Law at Hong Kong University of Science and Technology.

"There is a variety of exciting physics to be explored in these compounds in the near future now that hinge states have been found in WTe<sub>2</sub>," remarked Gil Ho Lee of Pohang University of Science and Technology. He added, "The possibility for dissipationless interconnections, true 1D superconducting nano-wires and spintronics devices, topological superconductivity, Majorana fermions and correspondingly topological quantum computers are all on the horizon."

Mazhar N. Ali at the Max Plank Institute of Microstructure Physics explained, "WTe2 may be the second material shown to host hinge states, but it is very different from the other candidate, bismuth. Being 2D, WTe2 is easily fabricable into nano-devices with controlled surfaces, and can be layered on top of other 2D materials in heterostructures and even on top of itself when slightly twisted to form a Moire superlattice." He added, "Its sister material MoTe2 is expected to exhibit the same hinge states but it is an intrinsic superconductor at low temperatures." He questioned excitedly, "How can these hinge states be modified, controlled, and used? There are a lot of exciting research opportunities ahead."

[https://www.eurekalert.org/pub\\_releases/2020-07/puos-htf071520.php](https://www.eurekalert.org/pub_releases/2020-07/puos-htf071520.php)



Thu, 16 July 2020

## KIST develops "dielectrophoretic tweezer" technology for toxic nanoparticles

*Technology developments for 'nanogap electrodes' to purify various ultra-fine floating particles in the air and water. Single particle? Scalable massive methodology control makes application in the environmental and medical sciences possible*

A Korean research team has developed a technology that enables the effective control of fine particulate matter and nanoplastics, which are major causes of human toxicity and ecosystem disturbances. This technology, which allows for real-time sorting, purification, and concentration of nanoparticles invisible to the human eye, has great potential application, not only for the removal of toxic particles from the natural environment, but also for removing viruses and detecting dementia-related proteins and cancer diagnostic markers. Due to its vast range of applicability, this technology is attracting much attention in scientific and academic circles.

The research team, led by Dr. Yong-sang Ryu of the Sensor System Research Center in the National Agenda Research Division at the Korea Institute of Science and Technology (KIST), working with a team led by Dr. Sin-Doo Lee of the Department of Electrical and Computer Engineering at Seoul National University (SNU, President Se-Jung Oh), announced its successful development of a '\*nanogap electrode' able to effectively capture ultra-fine floating particles as small as 20 nanometers (nm, 1/1000 the thickness of a human hair). The research team used the newly developed electrode in successful selective concentration and positioning experiments for \*\*extracellular vesicles (exosomes), which have recently been gaining much attention in the new drug development field and as new diagnostic markers for cancer as well as dementia-related proteins (\*\*Amyloid-beta).

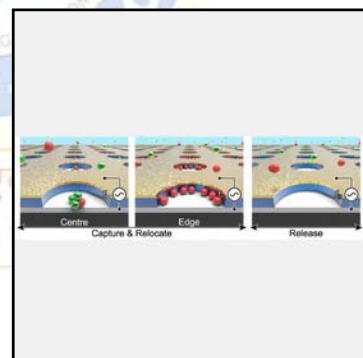


IMAGE: Model diagram of the nanogap electrodes allowing the dielectrophoretic tweezer technology. [view more](#)

\*Nanogap electrode: Electrode with a nanometer-scale gap between two electrodes.

\*\*Extracellular vesicle: Also called an exosome. A single-membraneparticle released from a cell, in the shape of a flattened pocket.

\*\*\*Amyloid-beta: A representative dementia-causing protein, usually found in the brain cells of dementia patients.

Researchers around the world have shown a keen interest in developing techniques to manipulate nano-size particles without damaging them. The optical tweezers technology, which received the Nobel Prize in Physics in 2018, is representative of such technologies. However, it has proven difficult to go beyond individual particle-level manipulation/measurement and to realize

commercialization on a massive scale. Researchers have repeatedly run into technical limitations in scaling mechanisms for collecting, sorting, purifying, and concentrating particles that are 100 nm or less in size; however, such mechanisms are needed to work in large-scale atmospheric and water environments.

The joint KIST-SNU research team, through centimeter (cm) scale device production for particle concentration and purification experiments, was able to overcome these limitations and successfully scaled up the nanogap electrodes by sandwiching nanoscaled insulator film between two electrodes in a vertical alignment, allowing the 'dielectrophoretic tweezer' technology to be applied to large areas. Dielectrophoresis is a technology wherein wavelengths vibrating several hundred to several thousand times per second are applied to two electrodes to form a non-uniform electrical field distribution around the electrodes. These electrodes are then used to attract or repel particles in the vicinity of the nanogaps.

The joint research team conducted experiments to find technologies that could use universally available semiconductor processes, rather than expensive equipment used only by select companies. During the experiment process, the team found that the dielectrophoretic force produced by electrodes in an asymmetric electrode-arranged vertical array was over 10 times greater than that of a conventional horizontally-aligned nanogap array. This discovery simultaneously solved the problems of scaling up and reduced the costs associated with the nanogap technology. Using the conventional horizontal electrode array production method, it costs a minimum of several hundreds of thousands of won to produce enough nanogap electrodes to cover the area of a fingernail. Using the new dielectrophoresis technology, it takes only KRW 5,000 to produce enough nanogap electrodes to cover the area of an LP disc.

The vertical nanogap technology developed by the KIST research team makes it possible to scale up the nanogap electrode technology, produce nanogap electrodes in numerous shapes and sizes, and radically reduces unit production costs. As such, the technology has a broad range of potential applications. According to the research team, when used in air or water filters, the nanogap electrodes can function under low voltage (such as that of an ordinary AA cell) to detect and remove, in real time, various microscopic floating particles such as fine dust, nanoplastics, viruses, germs, and bacteria.

Dr. Eui-Sang Yu, the principle author of the study, commented, "The achievement has future application for the sorting and purifying of nano-sized particles, regardless of type of particle or the environment." Dr. Yong-Sang Ryu of the KIST, the corresponding author of the study, added, "We hope that the study can make broad contributions to solving various social problems and enhance the general quality of human life."

[https://www.eurekalert.org/pub\\_releases/2020-07/nrco-kd071420.php](https://www.eurekalert.org/pub_releases/2020-07/nrco-kd071420.php)

## New tech puts lithium batteries back in the energy storage race

By Tsvetana Paraskova

Researchers are in a race to find the ultimate energy storage solution, considering the rise of renewable energy generation and electric vehicle (EV) sales around the world. Some scientists are trying to improve the lithium-based battery chemistry with alternative and innovative solutions, while others are hoping that they will come up with a way to use different --i.e., cheaper and more readily available--chemical elements in batteries.

Aluminum, sodium, and potassium are some of those chemical elements that are much more abundant than lithium. In theory, these could be used in batteries for energy storage.

However, research has shown that aluminum, sodium, and potassium are challenging to work within batteries because they lack the suitable materials for the battery electrodes.

That is, until now.

New research led by Professor Guoxiu Wang from the University of Technology Sydney proposes a novel method to strain engineer a 2D graphene nanomaterial for making a new type of cathode. Strain engineering refers to the process of changing the properties of a material by changing its mechanical or structural characteristics.

The new research, which was published in Nature Communications, says that the new approach could be extended to beyond-lithium-ion chemistry in high energy storage applications, according to its authors.

The strain engineering of 2D nanomaterials could help developers of batteries other than those based on the lithium-ion chemistry by making aluminum, potassium, or sodium the main element in batteries.

“The strategy of strain engineering could be extended to many other nanomaterials for rational design of electrode materials towards high energy storage applications beyond lithium-ion chemistry,” the scientists said in their research.

According to Professor Wang, who is also Director of the UTS Centre for Clean Energy Technology:

“Beyond-lithium-ion batteries are promising candidates for high-energy-density, low-cost and large-scale energy storage applications. However, the main challenge lies in the development of suitable electrode materials.”

If the strain-engineered nanomaterials can be successfully applied in electrodes, the field of battery and energy storage research will further expand to various potential storage solutions beyond lithium.

Cheaper alternatives to lithium could mean cheaper energy storage solutions.

Analysts predict that the price of lithium is set for a rally in the coming years, despite the current overall commodity price and demand slump because of the coronavirus crisis. The sales of EVs are only set to grow as many countries, especially in Europe, place the green recovery at the center of their stimulus packages.

For energy storage as a whole, the rise of renewables will also mean that research into cheaper and better storage solutions could not come soon enough.



Recently, researchers at Australia's Queensland University of Technology (QUT) proposed a design based on the mechanical properties of nanostructures containing diamonds that could potentially be used in mechanical energy storage devices, including batteries, biomedical sensing systems, wearables, and small robotics and electronics.

Mechanical energy storage systems are one of the many recent research projects and innovations in energy storage. Heat, gravity, or geothermal energy could be used to store and release energy, scientists and companies have set to prove.

While lithium-ion batteries are currently the most popular and widely used energy storage solution, the future may lie in nanostructures using mechanical rather than chemical energy forces.

In lithium batteries, researchers from the Korea Advanced Institute of Science and Technology (KAIST) have recently developed a new strategy to address the limitations of the lithium-oxygen battery. According to the scientists, "This new strategy ensures high performance for lithium-oxygen batteries, acclaimed as a next-generation energy storage technology."

The EV boom and the renewable energy rise need continuously improving and commercially viable energy storage solutions, regardless of the types of battery and their electrochemical or mechanical structure.

<https://oilprice.com/Energy/Energy-General/New-Tech-Puts-Lithium-Batteries-Back-In-The-Energy-Storage-Race.html>

DESIDOC

sciencealert

Thu, 16 July 2020

## The Moon is millions of years younger than we thought, scientists suggest

By David Nield

Looking back through several billion years of history isn't easy, and new discoveries continually prompt us to rethink just how the Moon came to be. Now, a new study suggests Earth's satellite is much younger than we tend to think – about 85 million years younger, in fact.

Researchers say that lunar rock samples collected on the Apollo missions aren't old enough to verify the normally accepted 4.51 billion-year figure for the Moon's age – but that it can be calculated by looking back to the very first moments of our nearest celestial neighbour.



According to the commonly accepted hypothesis, the Moon was formed from the debris of a collision between Earth and a smaller planet called Theia, spewing out molten rock that eventually solidified into one whole body that began orbiting Earth.

That means the rock that makes up the Moon came from Earth, and can be used to date it, with some sophisticated modelling. The new study suggests the Moon was created when Earth was almost fully formed.

"The results of our latest modelling suggest that the young Earth was hit by a protoplanet some 140 million years after the birth of the Solar System 4.567 billion years ago," says geophysicist Maxime Maurice from the German Aerospace Centre.

"According to our calculations, this happened 4.425 billion years ago – with an uncertainty of 25 million years – and the Moon was born."

The models run by Maurice and her colleagues looked at two timescales: how old the Earth was when Theia hit it, and how long the Moon's massive magma ocean took to cool after it had begun to solidify.

That second process took around 200 million years from start to finish, the scientists' models show. Simulations based on how the Moon's silicate minerals may have evolved over time led the researchers to their final Moon age of 4.425 billion years.

The new analysis goes into serious levels of detail and shows just how many factors need to be taken into account – how holes punctured in the lunar surface may have affected the speed at which the Moon cooled down, for example, and how deep the original ocean of magma may have been.

"By comparing the measured composition of the Moon's rocks with the predicted composition of the magma ocean from our model, we were able to trace the evolution of the ocean back to its starting point, the time at which the Moon was formed," says geophysicist Sabrina Schwinger from the German Aerospace Centre.

Dating the Moon takes a lot of smart guesswork, and that means we're probably going to be hearing much more about the age of the Moon in the years ahead. Future crewed missions to the Moon will be able to collect more lunar rock samples, and could hopefully plug some of the remaining gaps in our knowledge.

This isn't the only recent study exploring these mysterious unknowns. It was only three years ago that the age of the Moon was pushed back some 140 million years, while more recent research suggests the Moon is older still.

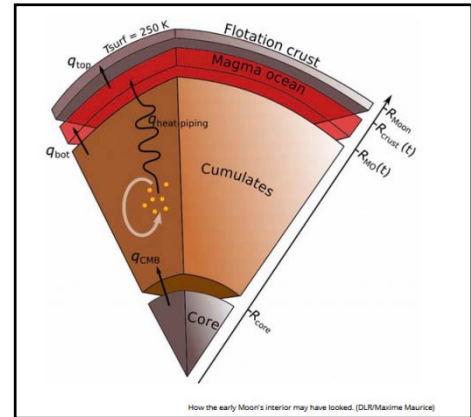
These corrections seem huge compared to the time we spend alive, but the adjustments are much smaller in the grand scheme of Solar System history, and we should expect more to come as our understanding evolves.

However, the new estimate matches up rather neatly with the period when it's thought that Earth's metallic core formed, late in the geological development of our own planet. It also fits in with the timeline of previous research into damage to asteroids – damage that may have been caused by the Earth-Theia collision.

"The convergence of these independent estimates not only provides a robust and precise age for the Moon-forming impact but also consistently links this event to the differentiation of Earth and the dynamical evolution of the inner Solar System," the researchers write.

The research has been published in [Science Advances](#).

<https://www.sciencealert.com/researchers-calculate-that-the-moon-might-be-younger-than-we-thought>



How the early Moon's interior may have looked. (DLR/Maxime Maurice)

Thu, 16 July 2020

## Engineering researchers develop new camera system to see around corners

*Breakthrough could lead to technologies that help cars avoid hidden obstacles and doctors see better detail*

AUCLA engineering professor and two colleagues in Japan have developed a new camera that can see around corners. The camera takes advantage of the same phenomenon one observes when looking through polarized sunglasses. The research paper was presented at the 2020 edition of the Conference on Computer Vision and Pattern Recognition (CVPR), the top international venue for the field.

“Seeing around corners has been a superpower that is recently becoming possible,” said Achuta Kadambi, an assistant professor of electrical and computer engineering and an author of the study. “If the technology can be successfully applied to cameras enabling them to see around corners, it could help autonomous cars avoid accidents at blind spots, or allow biomedical engineers to create endoscopes that can help doctors see around organs.”

The paper’s other co-authors are Kenichiro Tanaka and Yasuhiro Mukaigawa, both professors at the Nara Institute of Science in Technology, Japan.

To see around corners, one needs to somehow make an ordinary wall into what is effectively a mirror — that is, a surface which reflects its surroundings. Every surface — the walls around a room, the tiles on a floor — can reflect the light of its environment. Humans cannot see all that detail with our unaided eye. But the data, in reflected light, is there and Kadambi and his colleagues used the natural polarization of light to unveil the scene..

“We know from high school physics that light is a wave, so imagine if we tied a jump rope to a wall and held the free end,” Kadambi said. “If we wiggle our hand up and down, the wave oscillates in a vertical orientation. If we wiggle our hand left and right, the wave oscillates in a horizontal orientation. The orientation of the oscillation is the polarization state.”

A polarizer, used in polarized sunglasses for example, only lets certain oscillation states through the lens.

The researchers harnessed this effect, using a polarizer in front of the camera’s lens that only lets certain oscillation states into the system. They created a novel algorithm that rearranges the polarization of light reflected off the wall into a picture that reveals everyday objects hidden around a corner.

Their experiments tested letters, black-and-white patterns, colorful national flags and children’s book covers.

In contrast to similar technologies, the researchers’ breakthrough does not require specialized hardware or additional modifications to prepare the scene. Their camera can simply leverage nature to process the hidden scene and produce an image with enough clarity and resolution to give a good idea what is around a corner.

Since polarization is a natural property of light, the researchers suggest that using it to turn walls into “mirrors” could lead to new technologies that allow someone to passively see around corners.



Setup of the experiment, new camera with polarizer on the left, hidden image, in this case a black-and-white pinwheel image, on the right.

Tanaka and Mukaigawa's work on the project was supported by the Japan Society for the Promotion of Science. Kadambi's research is supported by the National Science Foundation, a Sony Imaging Young Faculty Award, and a Google Faculty Award.

<https://samueli.ucla.edu/engineering-researchers-develop-new-camera-system-to-see-around-corners/>

## Researchers found a link between genes and preeclampsia

### Summary:

**Researchers have showed that HLA-G gene regulates male-to-female ratio at birth. The study strengthens earlier findings of the vulnerability of male fetuses to preeclampsia.**

Preeclampsia is globally a leading cause of illness and deaths among mothers and their babies. This severe pregnancy disorder occurs in up to five percent of all pregnancies.

Preeclampsia is characterized by the elevated blood pressure of the mother, and the baby is often delivered preterm and smaller than usual.

Although preeclampsia is cured by the delivery of the placenta, the mechanism of the disease has still remained unclear.

"It is necessary for a successful pregnancy that the mother's immune system does not react too strongly and reject the fetus, even though half of its genes are from the father and thus foreign," says professor Juha Kere from Karolinska Institutet, Sweden.

Kere coordinated the research to uncover the role of the HLA-G gene in preeclampsia. This gene protects the placenta against mother's immune attack.

The results of the study have now been published in *EBiomedicine*, a journal published by The Lancet.

"The study reveals mechanisms of preeclampsia. In addition, we showed for the first time in any species that there is a gene directly influencing the balance of boys and girls born," says Dr. Satu Wedenoja, the lead author of the study, from University of Helsinki and Helsinki University Hospital.

### Fewer boys are born from preeclamptic pregnancies

The researchers studied 1.79 million births from the Finnish Birth Registry, a national preeclampsia cohort, and a group of stillborn babies. They found that fewer boys than girls were born from preeclamptic pregnancies, especially among babies delivered preterm and smaller than usual for the duration of pregnancy.

According to the results, certain alternative forms of the HLA-G gene are connected to the male-to-female ratio at birth, the survival of the fetuses, and preeclampsia.

The researchers pointed out that natural selection works even today on the HLA-G gene. The oldest forms of the HLA-G gene increase the risk of fetal death and preeclampsia, but might protect the fetus from infections during pregnancy, such as malaria. In placental samples collected from pre-eclamptic pregnancies, the gene expression of HLA-G was low, but in contrast, the expression was highly elevated for interferon-alpha-1, a gene involved in autoimmune disorders and tissue rejection.

"The results show that natural selection works through the fetal HLA-G gene influencing the pregnancy outcome and its complications. The results further strengthen earlier findings of the vulnerability of boys to mother's inflammation, late miscarriages, and preeclampsia," says Wedenoja.



Based on the results, the researchers propose that a well-known drug for autoimmune disorders might be tested to prevent or treat preeclampsia.

"The mother's immune system affects the survival of the fetus. This generally safe drug can also be used during pregnancy and it modulates immune reactivity, thus potentially preventing preeclampsia," says Wedenoja.

**Story Source:**

**Materials** provided by [University of Helsinki](#). Note: Content may be edited for style and length.

**Journal Reference:**

1. Satu Wedenoja, Masahito Yoshihara, Hindrek Teder, Hannu Sariola, Mika Gissler, Shintaro Katayama, Juho Wedenoja, Inka M. Häkkinen, Sini Ezer, Nina Linder, Johan Lundin, Tiina Skoog, Ellika Sahlin, Erik Iwarsson, Karin Pettersson, Eero Kajantie, Mikael Morkonen, Seppo Heinonen, Hannele Laivuori, Kaarel Krjutškov, Juha Kere. **Fetal HLA-G mediated immune tolerance and interferon response in preeclampsia.** *EBioMedicine*, 2020; 102872 DOI: [10.1016/j.ebiom.2020.102872](https://doi.org/10.1016/j.ebiom.2020.102872)  
<https://www.sciencedaily.com/releases/2020/07/200714101246.htm>

## COVID-19 Research News

DESIDOC  
live**mint**

Thu, 16 July 2020

# 2 Indian covid-19 vaccine candidates to enter clinical trials soon

By Neetu Chandra Sharma

- **More than 1,000 volunteers will be enrolled for the process on a fast-track basis, says ICMR**
- **Two Indian vaccine candidates have been through toxicity studies in rats, mice & rabbits**

New Delhi: As covid-19 cases in India ballooned to 933,522, two indigenous vaccine candidates will enter human trials this month with more than 1,000 volunteers to be enrolled for the process on a fast-track basis, the Indian Council of Medical Research (ICMR) said on Tuesday.

"Two indigenous Indian vaccine candidates have undergone successful toxicity studies in rats, mice, and rabbits and the toxicity data has been shared with Drugs Controller General of India (DCGI). They have got clearance to start human trials early this month," said Dr Balram Bhargava, director general, ICMR.



**Dr Balram Bhargava, Director General, ICMR (ANI)**

The companies are Bharat Biotech and Serum Institute of India.

"Approximately 1,000 human volunteers are participating in clinical trials for each of the two vaccine candidates and pre-clinical experiments for these as well as other vaccines are also being done at the National Institute of Virology, Pune," Bhargava said.

The government said that 60% of the vaccines supplied in the world are of Indian origin and India is perceived and is an important player in the vaccine supply for the world.

"Any covid-19 vaccine produced or developed in any part of the world will ultimately have to be scaled up either by India or China. Every country which is developing a vaccine is in communication with India since they are aware India is a major producer," Bhargava said.

The government said that Russia and China have fast-tracked the vaccine development process, while the US and UK are also trying to fast-track the development programme.

“Efforts are being taken to ensure that not a single day is wasted for regulatory or approval purpose, without compromising on the science, quality, and ethics part of it,” Bhargava said.

The Union health ministry said it has started a consultative exercise to gather information from treating doctors on complications being faced by patients who have recovered from covid-19, based on which some guidelines may also be issued in the future.

The number of people in India who have recovered from covid-19 is around 1.8 times the number of active cases. In many states, the number of daily discharges from hospitals is more than that of daily admissions.

Covid-19 cases are unequal in distribution in India. “As much as 86% of total active covid-19 cases are confined to just 10 states, while 50% of active cases are in two states, which shows that the spread of covid-19 is not happening uniformly across the country,” said Rajesh Bhushan, officer on special duty (OSD), in the health ministry.

As testing is critical in containing the spread, the World Health Organization (WHO) has come out with a document underlining the need for comprehensive surveillance and testing of suspect covid-19 cases, stating that testing 140 people per day per 1 million population would be comprehensive.

“As many as 22 states are doing more than 140 covid-19 tests per day per million. Centre is asking states and Union territories to increase testing so that we proceed towards the guidelines given by the WHO. There were 101 covid-19 RT-PCR testing labs in mid-March, while today there are 1,206 RT-PCR testing labs and 280 rapid antigen testing centres,” Bhushan said.

The government has also conducted a sero survey to find the presence of coronavirus among people in containment zones. The ICMR said that at present stratification of data collected for the sero survey in Delhi and its analysis is being done. As many as 22,800 blood samples were collected for this particular sero survey till 5 July.

The health ministry said that the national covid-19 fatality rate is 2.6% and it is coming down.

“Deaths per 1 million population in India too is among the lowest in the world, while in some countries it is 35 times higher. Despite being the second most populous country of the world, the daily growth rate of new covid-19 cases in India has been coming down continuously,” Bhushan said.

“For the last two weeks, AIIMS doctors have been engaging two days every week with intensive care unit (ICU) doctors of treating hospitals to resolve problems faced in saving critically ill covid-19 patients,” he added.

<https://www.livemint.com/news/india/two-indian-covid-19-vaccine-candidates-to-start-clinical-trials-this-month-on-fast-track-basis-icmr-11594737206126.html>

## Moderna Phase 1 results show Covid-19 vaccine safe, induces immune response

*No study volunteers experienced a serious side effect, but more than half reported mild or moderate reactions such as fatigue, headache, chills, muscle aches or pain at the injection site. These were more likely to occur after the second dose and in people who got the highest dose*

Chicago: Moderna Inc's experimental vaccine for Covid-19 showed it was safe and provoked immune responses in all 45 healthy volunteers in an ongoing early-stage study, US researchers reported on Tuesday.

Volunteers who got two doses of the vaccine had high levels of virus-killing antibodies that exceeded the average levels seen in people who had recovered from Covid-19, the team reported in the New England Journal of Medicine.

No study volunteers experienced a serious side effect, but more than half reported mild or moderate reactions such as fatigue, headache, chills, muscle aches or pain at the injection site. These were more likely to occur after the second dose and in people who got the highest dose.

Experts say a vaccine is needed to put an end to the coronavirus pandemic that has sickened millions and caused nearly 575,000 deaths worldwide.

Moderna was the first to start human testing of a vaccine for the novel coronavirus on March 16, 66 days after the genetic sequence of the virus was released.

Dr. Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases, whose researchers developed Moderna's vaccine candidate, called the results "good news," noting that the study found no serious adverse events and the vaccine produced "reasonably high" levels of virus-killing or neutralizing antibodies.

"If your vaccine can induce a response comparable with natural infection, that's a winner," Fauci said in a telephone interview. "That's why we're very pleased by the results."

Moderna shares jumped more than 15% in after-hours trading on Tuesday.

The US government is supporting Moderna's vaccine with nearly half a billion dollars and has chosen it as one of the first to enter large-scale human trials. A successful vaccine could be a turning point for Cambridge, Massachusetts-based Moderna, which has never had a licensed product.

Moderna's shot, mRNA-1273, uses ribonucleic acid (RNA) - a chemical messenger that contains instructions for making proteins. When injected into people, the vaccine instructs cells to make proteins that mimic the outer surface of the coronavirus, which the body recognises as a foreign invader, and mounts an immune response against.

The results released Tuesday involved three doses of the vaccine, tested in groups of 15 volunteers aged 18-55 who got two shots, 28 days apart. The groups tested 25, 100 or 250 micrograms of the vaccine.

Adverse events after the second dose occurred in seven of the 13 volunteers who got the 25-microgram dose, all 15 participants who received the 100 microgram dose and all 14 who got the 250 microgram dose. In the highest-dose group, three patients had severe reactions such as fever, chills, headache or nausea. One of these had a fever of 103.28 Fahrenheit (39.6 C).



Volunteers who got two doses of the vaccine had high levels of virus-killing antibodies that exceeded the average levels seen in people who had recovered from Covid-19, researchers said.(AP)

“We didn’t see any events that are characterized as serious adverse events,” said lead author Dr Lisa Jackson of Kaiser Permanente Washington Health Research Institute in Seattle, referring to reactions that require hospitalization or result in death.

In June, Moderna said it selected the 100-microgram dose for its late-stage study to minimize adverse reactions.

At that dose, Moderna said the company is on track to deliver about 500 million doses per year, and possibly up to 1 billion doses per year, starting in 2021, from the company’s internal US manufacturing site and strategic collaboration with Swiss drugmaker Lonza <LONN.S>.

“It’s a good first step,” said Dr William Schaffner, a vaccine expert at Vanderbilt University Medical Center who was not involved in the study.

“There’s nothing here that would inhibit one from going ahead to the Phase 2/Phase 3 trials,” he said.

In April, Moderna expanded the Phase 1 trial to include adults over 55, who are more at risk of serious disease, with the aim of enrolling 120 volunteers. Moderna said it will follow study volunteers for a year to look for side effects and check how long immunity lasts.

Moderna started its phase 2 trial in May and expects to start a phase 3 trial on July 27.

Phase 1 trials aim to ensure a treatment is safe and help determine an effective dose. Phase 2 trials test a treatment in a larger group and get an early read on effectiveness. Phase 3 trials are conducted in a large group of individuals to confirm efficacy and identify rare side effects. Moderna’s Phase 3 trial will be conducted in 30,000 volunteers.

<https://www.hindustantimes.com/world-news/moderna-phase-1-results-show-covid-19-vaccine-safe-induces-immune-response/story-vEMNOUskkkCfSeX0yBRViI.html>



Thu, 16 July 2020

## **Russia says coronavirus vaccine is safe; clinical trials to be completed by July-end**

*The Russian defense ministry on Wednesday said it had developed a "safe" coronavirus vaccine. According to the ministry, 18 people had participated in the research and were discharged without "serious adverse events, health complaints, complications or side effects."*

New Delhi: The Russian defense ministry on Wednesday said it had developed a "safe" coronavirus vaccine. According to the ministry, 18 people had participated in the research and were discharged without "serious adverse events, health complaints, complications or side effects." In a statement, the ministry said the results of the trials "allow us to speak with confidence about the safety and good tolerability of the vaccine."

"Their immunity is working well, antibodies are being created, they are protected against the coronavirus," researcher Svetlana Volchikhina said in a video released by the defence ministry. The ministry further said that it expects the clinical trials to be fully completed by July-end.

Earlier in May, Defence Minister Sergei Shoigu had told President Vladimir Putin that military researchers were developing a vaccine with scientists at the Gamaleya Institute in Moscow. The volunteers were isolated in the Burdenko military hospital in Moscow on June 18 when the trial vaccine was administered and underwent daily check-ups. For 28 days after



vaccination, the vital signs of the volunteers remained within normal limits, the Russian defence ministry said. Another group of participants who were vaccinated on June 23 are presently in isolation in hospital under medical supervision.

<https://www.indiatvnews.com/news/world/russia-coronavirus-vaccine-safe-clinical-trials-july-end-634456>

**TIMESNOWNEWS.COM**

Thu, 16 July 2020

## **COVID-19 vaccine: Otago scientists identify potential drug targets in coronavirus genome**

*Scientists from the Otago University claimed to have discovered potential target points on the genome of the novel coronavirus, which may help develop new treatments such as vaccines for COVID-19*

*By Salome Phelamie*

### **Key Highlights**

- **The study examined previously unrecognised ‘weak points’ on the SARS-CoV-2’s genome**
- **The researchers believe their work will contribute to the development of new treatments, including vaccines, for the virus**
- **The coronavirus pandemic has so far killed at least 574,278 people in the world**

Melbourne: Scientists from the Otago University claimed to have discovered potential target points on the genome of the novel coronavirus or SARS-CoV-2, which may help develop new treatments for the dreaded virus. Worldwide, at least 574,278 people have now lost their lives to COVID-19, the illness caused by the coronavirus, whereas as many as 13,178,180 cases have been confirmed in 196 countries and territories.

Scientists all over the world are studying the SARS-CoV-2 virus in an attempt to find a cure for the disease it caused. For the current study, the researchers, including Ali Hosseini and Alex McLellan from the University of Otago in New Zealand, worked from their homes to tackle a new field within the pathogenesis of COVID-19 while their laboratory was locked down during the Level 4 period, said a [release](#) by the university.

Using their skills in microRNA (mRNA) which they gained from their usual topic of study of anti-cancer CAR T cells, they examined previously unrecognised ‘weak points’ on the SARS-CoV-2’s genome -- its RNA -- that could be used to destroy the virus, or help create new vaccines. These ‘weak points’ on the virus are target sites recognised by host miRNA -- a nucleic acid-based ‘immune system’ operating in all of our body’s cells.

Lead author of the study Hosseini said he hopes their work will contribute to a better understanding of the virus, including how it escapes the host immune response, and could be instrumental in the development of attenuated viral vaccines.

According to the researchers, these miRNAs are essential for controlling gene expression within the cell, and are also important players in the recognition and destruction of viruses. The researchers said one target site on SARS-CoV-2 matches an abundant miRNA (miR197) present at very high levels in patients with cardiovascular complications or with respiratory viral infections.

The miR197 binding site on SARS-CoV-2 had been independently mutated nearly 40 times since March this year with this mutation present currently in more than 75 per cent of SARS-CoV-2 global isolates, said the study.



**COVID-19 vaccine: Otago scientists identify potential drug targets in coronavirus genome | Photo Credit: iStock Images**

“Patients with cardiovascular complications have been shown to be at risk from COVID-19,” McLellan said, adding their suggests that a normal defence pathway in these patients may have been blocked through this mutation in the virus.

The researchers, however, said that it is too early to say if such mutations will help the virus, or are simply neutral hitchhikers that confer no advantage to the virus.

“We need direct experimental approaches using live virus, as well the further study of the transmission of such mutants around the world,” they said.

“Our study just says: let’s keep an eye on these sites and see what happens to these in future,” McLellan added.

Hosseini said as many miRNA are different between species, the newly emerged SARS-CoV-2 may face signature human miRNA attack, not those the virus previously experienced in its suspected species of origin, bats.

The researchers believe their work also opens up the possibility to engineer in artificial miRNA sites, which may be useful for weakening the virus for vaccine research and had been successfully performed experimentally for other respiratory viruses. The scientists added that such strategies for the SARS-CoV-2 virus could contribute to worldwide vaccine efforts.

The findings have been recently been peer-reviewed and published this week in [\*The International Journal of Molecular Sciences\*](#).

<https://www.timesnownews.com/health/article/covid-19-vaccine-otago-scientists-identify-potential-drug-targets-in-coronavirus-genome/621878>

The Indian EXPRESS

Thu, 16 July 2020

## Explained: A common molecular feature in antibodies that fight coronavirus

New Delhi: Scientists have reported the discovery of a common molecular feature found in many of the human antibodies that neutralise the novel coronavirus SARS-CoV-2.

Led by scientists at Scripps Research, the team has reported its scientists in the journal Science.

They reviewed data on nearly 300 anti-SARS-CoV-2 antibodies that their labs and others have found in convalescent Covid-19 patients over the past few months.

They noted that a subset of these antibodies is particularly powerful at neutralising the virus—and these potent antibodies are all encoded, in part, by the same antibody gene, IGHV3-53.

The scientists used X-ray crystallography to image two of these antibodies attached to their target site on SARS-CoV-2.

They said the resulting atomic-structure details of this interaction should be useful to vaccine designers and scientists hoping to develop antiviral drugs that target the same site on SARS-CoV-2.

<https://indianexpress.com/article/explained/a-common-molecular-feature-in-antibodies-that-fight-coronavirus-6506181/>



