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Tue, 01 Sep 2020

COVID-19: Naidu holds discussions over health safety of MPs during Monsoon Session

New Delhi: Ahead of the Monsoon Session of Parliament, Rajya Sabha Chairman M Venkaiah Naidu on Monday held extensive discussions with the ICMR director general and Union secretaries of Home, Health and Defence Research on ensuring health safety of MPs.

Naidu raised several issues and sought clarifications on health safety and hassle-free travel of members of Rajya Sabha.

Regarding quarantine requirements in different states on return of members after attending the session, Home Secretary Ajay Bhalla assured the chairman that the matter will be taken up with states/UTs, officials said.

The Monsoon Session is slated to start from September 14 and is likely to continue till October 1.

After detailed discussions, Naidu noted that all members of Parliament should get tested for COVID-19 without fail in their own interest and that of fellow members as well, according to a statement.

All employees of the Secretariat, including security personnel and media persons covering the proceedings of the House, should also get tested, he said, adding that this applies to personal staff of ministers as well.

The ICMR will make necessary arrangements for testing of all, as required, the statement said.

The home secretary suggested that MPs should get tested within 72 hours of the commencement of the Session and those coming from different parts of the country wait for the results before undertaking travel.

Those getting positive results on arrival in Delhi should quarantine themselves and those testing positive during the session should not attend the House.

Responding to the query of the chairman on the consequences of members wearing masks for the full duration of the session each day, ICMR DG Balaram Bhargava said that wearing masks continuously for 12 hours is absolutely safe.

He further suggested that members of Parliament should speak while wearing masks to minimise the spread of virus.

Bhargava said though the seating arrangement in Rajya Sabha chamber and galleries has been made complying with physical distancing norm, members should speak while sitting to avoid dispersal of aerosols.

Health Secretary Rajesh Bhushan suggested that movement of MPs in the chambers of both the Houses should be made unidirectional to avoid face to face interactions, according to the statement.

He informed that the Ministry of Health will make available short video clips to all the MPs on awareness about COVID, wearing masks, etc.

The Rajya Sabha chairman directed the secretariat officials to ensure only minimum movement of people in the Parliament House premises, the statement said.

He also suggested that entry into the Central Hall of Parliament should be limited to members of Rajya Sabha and Lok Sabha and that too, only when the respective House is in session.

Secretary, Defence Research and DRDO Chairman Satish Reddy gave a detailed account of the sanitisation services. These include provision of ultraviolet boxes to sanitise various parliamentary papers to be handled by the chairman and the members.

Sanitisation of footwear and even the cars to be used by the members and those provided by the Secretariat will also be sanitised by providing mats of required dimensions soaked in Hypochlorite gel placed in troughs, the statement said.

The DRDO will also provide multi-utility COVID kits to all MPs, the statement said.

Each kit will contain disposable three-ply masks (40), N-95 masks without wall (5), 20 bottles of sanitisers of 50 ml each, face shields made of polypropylene (not for use in the chamber of the House), gloves (40), touch-free hook (to open and close doors without touching them), sea buckthorn tea bags which enhance immunity and herbal sanitation wipes (variant of tissue papers), it said.

Marshals standing on both sides of the chairman have been advised to wear both masks and face shields, the statement added. PTI SKC SNE SNE

<https://www.outlookindia.com/newscroll/covid19-naidu-holds-discussions-over-health-safety-of-mps-during-monsoon-session/1926514>

DRDO Technology News



Press Information Bureau
Government of India

Ministry of Defence

Mon, 31 Aug 2020 6:08PM

Further boost to ‘Make in India’; MoD signs contracts worth Rs 2580 Cr with Indian Companies for supply of Pinaka Regiments to Indian Army

Providing further boost to the ‘Make in India’ initiative of Government of India in the Defence Sector, Acquisition Wing of Ministry of Defence (MoD) has today signed contracts with M/s. Bharat Earth Movers Ltd. (BEML), M/s. Tata Power Company Ltd. (TPCL) and M/s. Larsen & Toubro (L&T) for supply of Six Pinaka Regiments to the Regiment of Artillery of the Indian Army at an approximate cost of Rs. 2580 Crores. These Six Pinaka Regiments comprise 114 Launchers with Automated Gun Aiming & Positioning System (AGAPS) and 45 Command Posts to be procured from M/s TPCL and M/s L&T and 330 Vehicles to be procured from M/s BEML. These Six Pinaka Regiments will be operationalised along the Northern and Eastern Borders of our country further enhancing the operation preparedness of our Armed Forces. Induction of Six Pinaka Regiments is planned to be completed by 2024.

This project under Buy (Indian) categorisation, with 70% Indigenous Content, has been approved by Raksha Mantri Shri Rajnath Singh and Finance Minister, Smt. Nirmala Sitharaman.

The Pinaka Multiple Launch Rocket System (MLRS) has been indigenously designed and developed by DRDO and productionised by the above mentioned defence industries. This is a flagship project showcasing public private partnership under the aegis of Government of India (DRDO & MoD) enabling "Aatmnirbharta" in cutting edge Defence technologies.

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1650038>



Press Information Bureau
Government of India

रक्षा मंत्रालय

Mon, 31 Aug 2020 6:08PM

‘मेक इन इंडिया’ को और प्रोत्साहन; भारतीय सेना को पिनाका रेजिमेंटों की आपूर्ति के लिए रक्षा मंत्रालय ने भारतीय कंपनियों के साथ 2580 करोड़ रुपये मूल्य के अनुबंधों पर हस्ताक्षर किये

रक्षा क्षेत्र में भारत सरकार की ‘मेक इन इंडिया’ पहल को और बढ़ावा देते हुए, रक्षा मंत्रालय (एमओडी) के अधिग्रहण विंग ने आज भारतीय सेना के आर्टिलरी रेजिमेंट को छह पिनाका रेजिमेंट की आपूर्ति के लिए मैसर्स भारत अर्थ मूवर्स लिमिटेड (बीईएमएल), मैसर्स टाटा पावर कंपनी लिमिटेड (टीपीसीएल) और मैसर्स लार्सन एंड टुब्रो (एलएंडटी) के साथ अनुबंधों पर हस्ताक्षर किए हैं। इनकी अनुमानित लागत लगभग 2580 करोड़ रुपये है। इन छह पिनाका रेजिमेंट में ऑटोमेटेड गन ऐमिंग एंड पोजिशनिंग सिस्टम (एजीएपीएस) के साथ 114 लॉन्चर और 45 कमांड पोस्ट हैं जिन्हें मैसर्स टीपीसीएल और मैसर्स एलएंडटी से खरीदा जायेगा तथा 330 वाहनों को मैसर्स बीईएमएल से खरीदा जाएगा। इन छह पिनाका रेजिमेंटों को हमारे देश की उत्तरी और पूर्वी सीमाओं पर तैनात किया जाएगा, जो हमारे सशस्त्र बलों की ऑपरेशन तैयारियों को और मजबूती प्रदान करेगा। छह पिनाका रेजिमेंट्स को 2024 तक शामिल करने की योजना है।

70 प्रतिशत स्वदेशी सामग्री के साथ खरीद (भारतीय) वर्गीकरण के तहत इस परियोजना को रक्षा मंत्री श्री राजनाथ सिंह और वित्त मंत्री श्रीमती निर्मला सीतारमण द्वारा मंजूरी दी गयी है।

पिनाका मल्टीपल लॉन्च रॉकेट सिस्टम (एमएलआरएस) को डीआरडीओ द्वारा स्वदेशी रूप से डिजाइन और विकसित किया गया है और इसका उत्पादन उपरोक्त रक्षा उद्योगों द्वारा किया जाता है। यह भारत सरकार (डीआरडीओ एवं रक्षा मंत्रालय) के तत्वावधान में सार्वजनिक निजी भागीदारी की एक प्रमुख परियोजना है, जो आधुनिक रक्षा तकनीकों को अपनाने में "आत्मनिर्भरता" को सक्षम बनाती है।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1650225>



‘మేక్ ఇన్ ఇండియా’కు రక్షణ మంత్రిత్వ శాఖ బూస్ట్

- భారత సైన్యానికి 'సిక్స్ పినాకా రెజిమెంట్ల' సరఫరాకు గాను భారతీయ

కంపెనీలతో రూ.2580 కోట్ల విలువైన ఒప్పందాలు చేసుకున్న ఎంఓడి

‘మేక్ ఇన్ ఇండియా’ చొరవకు మరింత ప్రోత్సాహాన్ని అందిస్తూ.. భారత ప్రభుత్వపు రక్షణ రంగంలో రక్షణ మంత్రిత్వ శాఖ (ఎంఓడి) సముపార్జన విభాగం ఈ రోజు పలు కీలక ఒప్పందాలను కుదుర్చుకుంది. భారత సైన్యం యొక్క ఫిరంగి దళ రెజిమెంట్లకు 'సిక్స్ పినాకా రెజిమెంట్ల' సరఫరా నిమిత్తం ఎంఓడి దాదాపుగా రూ.2580 కోట్ల ఒప్పందాల్ని కుదుర్చుకుంది. ఒప్పందం చేసుకున్న సంస్థల్లో మెస్సర్స్ భారత్ ఎర్త్ మూవర్స్ లిమిటెడ్ (బీఈఎంఎల్), మెస్సర్స్ టాటా పవర్ కంపెనీ లిమిటెడ్ (టీపీసీఎల్) మరియు మెస్సర్స్ లార్సెన్ & టాటో (ఎల్ అండ్ టీ) ఉన్నాయి. ఈ 'సిక్స్ పినాకా రెజిమెంట్ల'లో 114 ఆటోమేటెడ్ గన్ ఎయిమింగ్ & పొజిషనింగ్ సిస్టమ్ (ఎజివిపీఎస్) కలిగిన లాంచర్లు మరియు 45 కమాండ్ పోస్టులను మెస్సర్స్ టీపీసీఎల్ మరియు మెస్సర్స్ ఎల్ అండ్ టీ నుంచి మరియు దాదాపు 330 వాహనాలను మెస్సర్స్ బీఈఎంఎల్ నుంచి సమీకరించనున్నారు. ఈ 'సిక్స్ పినాకా రెజిమెంట్ల'మన దేశపు ఉత్తర మరియు తూర్పు సరిహద్దుల్లో పని చేయనున్నాయి. ఇవి మన సాయుధ దళాల యొక్క ఆపరేషన్ సంసిద్ధతను మరింత పెంచనున్నాయి. 'సిక్స్ పినాకా రెజిమెంట్ల' స్థాపనను 2024 నాటికి పూర్తి చేయాలని రక్షణ వర్గాలు భావిస్తున్నాయి. దాదాపు 70% స్వదేశీ కంటెంట్తో కొనుగోలు (భారతీయ) వర్గీకరణ కింద.. ఈ ప్రాజెక్టును రక్షణ మంత్రి శ్రీ రాజనాథ్ సింగ్, ఆర్థిక మంత్రి శ్రీమతి నిర్మలా సీతారామన్లు ఆమోదం తెలిపారు. పినాకా మల్టిపుల్ లాంచ్ రాకెట్ సిస్టమ్ను (ఎంఎల్ఆర్ఎస్) మన దేశీయంగా డీఆర్డీఓ రూపొందించి అభివృద్ధి చేసింది. దీనిని పైన పేర్కొన్న దేశీయ రక్షణ పరిశ్రమలు ఉత్పత్తి చేస్తున్నాయి. ఇది భారత ప్రభుత్వం (డీఆర్డీఓ & ఎంఓడి) ఆధ్వర్యంలో ప్రభుత్వ- ప్రైవేట్ భాగస్వామ్యాన్ని ప్రదర్శించే ఒక ప్రధానమైన రక్షణ ప్రాజెక్ట్. క్షేత్రస్థాయిలో కీలకమైన అత్యాధునిక రక్షణ సాంకేతిక పరిజ్ఞానాలలో “అత్యు నిర్భర్”కు ఇది తగిన తోడ్పాటును అందించనుంది.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1650231>

Govt signs Rs 2,580 crore contracts to supply Army regiments with Pinaka missiles

The Defence Ministry announced that the deal has been signed with Tata Power Company Limited (TPCL) and Larsen & Toubro (L&T), with Public Sector Undertaking Bharat Earth Movers Ltd (BEML) also part of the project

New Delhi: The government has signed contracts worth Rs 2,580 crore to supply six Army regiments with Pinaka missiles.

The Defence Ministry announced that the deal has been signed with Tata Power Company Limited (TPCL) and Larsen & Toubro (L&T), with Public Sector Undertaking Bharat Earth Movers Ltd (BEML) also part of the project.

“Providing further boost to the ‘Make in India’ initiative of Government of India in the Defence Sector, Acquisition Wing of Ministry of Defence (MoD) has today signed contracts with M/s. Bharat Earth Movers Ltd. (BEML), M/s. Tata Power Company Ltd. (TPCL) and M/s. Larsen & Toubro (L&T) for supply of Six Pinaka Regiments to the Regiment of Artillery of the Indian Army at an approximate cost of Rs 2580 Crores,” a statement by the ministry said.

The ministry said that it will be done under the Buy-Indian category with 70 per cent indigenous content, and the project was approved by Defence Minister Rajnath Singh and Finance Minister Nirmala Sitharaman.

The statement said that the six Pinaka regiments “comprise 114 Launchers with Automated Gun Aiming & Positioning System (AGAPS) and 45 Command Posts to be procured from M/s TPCL and M/s L&T and 330 Vehicles to be procured from M/s BEML” and will be “operationalised along the Northern and Eastern Borders of our country further enhancing the operation preparedness of our Armed Forces”.

The induction of these six regiments is planned by 2024.

The Pinaka multiple launch rocket system has been designed and developed indigenously by the Defence Research and Development Organisation (DRDO). It is a “flagship project showcasing public private partnership under the aegis of Government of India (DRDO & MoD) enabling ‘Aatmnirbharta’ [self-reliance] in cutting edge defence technologies”, the ministry stated.

The Tata Group and L&T had bagged the first order to produce the Pinaka multi-barrel rocket launcher back in 2006.

<https://indianexpress.com/article/india/govt-signs-rs-2580-crore-contracts-to-supply-army-regiments-with-pinaka-missiles-6578002/>



The Pinaka multiple launch rocket system has been designed and developed indigenously by the Defence Research and Development Organisation. (File)

Centre signs Rs 2,580 cr contract for supply of six Pinaka Regiments to Indian Army

This will also provide a further boost to the 'Make in India' initiative of the Government of India in the Defence Sector

Edited By Pushkar Tiwari

Highlights

- 1. The contract was signed with M/s Bharat Earth Movers Ltd (BEML), M/s Tata Power Company Ltd. (TPCL) and M/s Larsen & Toubro (L&T) and the induction of these six Pinaka Regiments is scheduled to be completed by 2024.**
- 2. This project under Buy (Indian) categorisation, with 70% Indigenous Content, has been approved by Defence Minister Rajnath Singh and Finance Minister, Nirmala Sitharaman.**
- 3. The Pinaka Multiple Launch Rocket System (MLRS) has been indigenously designed and developed by DRDO and productionised by the above-mentioned defence industries.**

New Delhi: The Acquisition Wing of Ministry of Defence (MoD) on Monday (August 31, 2020) signed a contract with the Indian companies for supply of six Pinaka Regiments to the Regiment of Artillery of the Indian Army at an approximate cost of Rs 2,580 crores.

The contract was signed with M/s Bharat Earth Movers Ltd (BEML), M/s Tata Power Company Ltd. (TPCL) and M/s Larsen & Toubro (L&T) and the induction of these six Pinaka Regiments is scheduled to be completed by 2024.

These six Pinaka Regiments comprise 114 launchers with Automated Gun Aiming & Positioning System (AGAPS) and 45 Command Posts to be procured from M/s TPCL and M/s L&T and 330 Vehicles to be procured from M/s BEML.

These will be operationalised along the Northern and Eastern Borders of India and will further enhance the operational preparedness of the Armed Forces.

This will also provide a further boost to the 'Make in India' initiative of the Government of India in the Defence Sector.

This project under Buy (Indian) categorisation, with 70% Indigenous Content, has been approved by Defence Minister Rajnath Singh and Finance Minister, Nirmala Sitharaman.

The Pinaka Multiple Launch Rocket System (MLRS) has been indigenously designed and developed by DRDO and productionised by the above-mentioned defence industries.

This is a flagship project showcasing public-private partnership under the aegis of Government of India (DRDO & MoD) enabling "Aatmnirbharta" in cutting edge Defence technologies.

<https://zeenews.india.com/india/centre-signs-rs-2580-cr-contract-for-supply-of-six-pinaka-regiments-to-indian-army-2306653.html>



File Photo

Defence ministry walks the ‘Atmanirbhar’ talk | India Today Insight

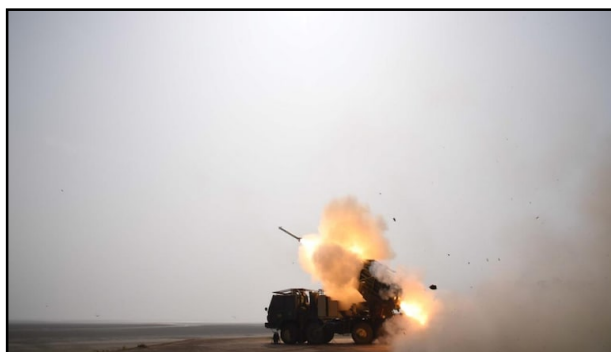
Places long-delayed Rs 2,580 crore order for six Pinaka multiple rocket regiments

By Sandeep Unnithan

New Delhi: The Ministry of Defence today signed contracts worth Rs 2,580 crore with Indian companies for supplying six regiments of Pinaka Multi Barrel Launch Rocket Launchers (MBLRS) for the Indian Army.

The contracts for the six Pinaka Regiments will include 114 Launchers with Automated Gun Aiming & Positioning System (AGAPS) and 45 Command Posts to be procured from Tata Power Company Ltd and Larsen & Toubro. The MoD will also buy 330 vehicles from defence public sector Bharat Earth Movers Ltd (BEML).

It has taken the MoD four years to formally place the orders for these six regiments. The proposal was cleared in November 2016 by the Defence Acquisition Council headed by then defence minister Manohar Parrikar. Sources say the contracts were ready for the past two years but not signed because of a funds squeeze within the MoD and bureaucratic delays. Bids were issued to the companies in early 2018 and concluded in the last quarter of 2018. It took over one and a half years after that for the contracts to be processed and approved.



The Pinaka multi-barrel rocket launcher system being test-fired. India's defence ministry ordered six more regiments of these MBRL's today.

“This is a significant order as it establishes that the army is walking the talk in accepting Indian systems to fight future wars with Indian solutions,” says Jayant D. Patil, whole-time director and senior executive vice-president for L&T’s defence business.

Orders for the six regiments will be split between L&T, which will make four regiments, and TPCL, which will make two regiments. The launchers will be integrated onto the 8x8 vehicles by BEML and delivered to the army. All deliveries will be completed by 2024. The contracts do not include the rocket ammunition, which will be procured separately.

An MoD release indicated that the Pinaka regiments were meant for the border with China. The six regiments, the release said, would be ‘operationalised along the Northern and Eastern Borders of our country further enhancing the operational preparedness of our Armed Forces’.

One Pinaka Rocket Launching unit mounts a dozen 214 mm unguided rockets on a BEML-TATRA eight-wheeled drive vehicle. Twenty such launchers in a single regiment firing a 40 km-range rocket with a 100 kg warhead can saturate a one square kilometre area of enemy troop concentrations, vehicles and fortifications. In 2017, the Defence Research and Development Organisation developed a Pinaka rocket with an extended range of 70 km featuring GPS-guided fin-stabilised rockets. These extended-range rockets can be fired from the existing launchers with minor modifications.

The Pinaka Multiple Launch Rocket System (MLRS) was indigenously designed and developed by DRDO and produced by the troika of defence agencies. The first regiment was raised in 2000, soon after the Kargil War. The system was amongst the earliest defence projects to involve a public-private sector partnership. Significantly, the project under the Buy (Indian) categorisation

features an indigenous content of 70 per cent. The army currently has seven Pinaka regiments in service with an order for two more Pinaka regiments placed last year.

The Indian Army's original plan, as announced in 2008, was to raise 22 Pinaka regiments. It was reduced to 12 regiments in 2016 to accommodate more 155/52 calibre towed artillery gun systems.

<https://www.indiatoday.in/india-today-insight/story/defence-ministry-walks-the-atmanirbhar-talk-1717203-2020-08-31>



Tue, 01 Sep 2020

Column | India waits for a swift and sure DRDO

By Anantha Krishnan M

The Defence Research and Development Organisation (DRDO) is on an introspection mode. To find solutions to make it a worthy organisation backing India's armed forces, DRDO has set up a panel.

The five-member committee has members from IIT, ISRO, IAF and DRDO, with a 45-day deadline to submit a prescription for a healthy road ahead.

DRDO's activities have been on the radar ever since the NDA government came to power in 2014. Yet, for some cosmetic changes, nothing much visible has been achieved to change the fortunes of India's largest defence R&D wing.

Its chairman Dr G Satheesh Reddy, who took charge in 2018, got a two-year extension last week. With the panel's findings, he probably will have a great opportunity now to fix issues that have been dogging DRDO for a long time.

Many insiders in DRDO say that Dr Reddy has brought in a series of transformational changes in the organisation. But, a section also feels that the changes haven't touched all clusters.

Technology overlap and HR practices definitely need a fresh look. The big question is: can the 5-member panel find quick-fix solutions for such a massive organisation spread across India with 50-plus labs, in just 45 days?

With some of the nest aerospace and defence brains in the 5-member panel, it is left to be seen whether more time is given to the team to look into issues in depth, especially under these pandemic conditions. That would probably make the exercise meaningful, making DRDO a swift and sure unit.

<https://www.onmanorama.com/news/nation/2020/09/01/plane-talk-column-india-waits-for-swift-sure-drdo.html>

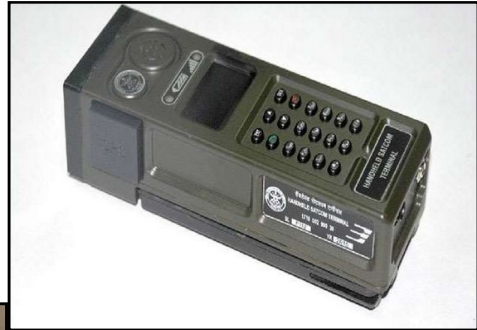
DRDO News: गलवन में सर्विलांस करने वाला सेटकॉम बना सेना की पसंद, जानिए क्या हैं इसकी खूबियां

DRDO News डील ने ऐसा सेटकॉम टर्मिनल विकसित किया है जिसका वजन महज 800 ग्राम है। लिहाजा अब सीमा पर निगरानी के लिए हमारे जांबाजों को अधिक भार भी नहीं ढोना पड़ेगा।

सुमन सेमवाल

देहरादून: डिफेंस रिसर्च एंड डेवलपमेंट ऑर्गेनाइजेशन (डीआरडीओ) की देहरादून स्थित डिफेंस इलेक्ट्रॉनिक्स एप्लिकेशंस लैबोरेटरी (डील) ने विषम भौगोलिक परिस्थितियों में भी इंटरनेट युक्त संचार माध्यम विकसित करने की दिशा में बड़ी सफलता हासिल की है। डील ने ऐसा सेटकॉम टर्मिनल विकसित किया है, जिसका वजन महज 800 ग्राम है। वहीं, डील ने पूर्व में जो सेटकॉम टर्मिनल बनाया था, उसका वजन करीब 10 किलो है। लिहाजा, अब सीमा पर निगरानी के लिए हमारे जांबाजों को अधिक भार भी नहीं ढोना पड़ेगा। आपको बता दें कि इस सेटकॉम टर्मिनल का प्रयोग गलवन और डोकलाम में चीन की सेना के साथ तनातनी के दौरान किया जा चुका है।

डीआरडीओ के ही दून स्थित यंत्र अनुसंधान और विकास संस्थान (आइआरडीई) में रविवार को आयोजित इंडस्ट्री मीट में इस उपकरण को प्रदर्शनी के लिए रखा गया था। रक्षा अनुसंधान विज्ञानियों ने बताया कि



डील ने ऐसा सेटकॉम टर्मिनल विकसित किया है जिसका वजन महज 800 ग्राम है। लिहाजा अब सीमा पर निगरानी के लिए हमारे जांबाजों को अधिक भार भी नहीं ढोना पड़ेगा।

यह एक तरह की हैंडहेल्ड (हाथ में आसानी से पकड़ी जाने वाली) डिवाइस है। सेटकॉम टर्मिनल सेटेलाइट से जुड़ा होता है और इसके माध्यम से किसी भी क्षेत्र से चित्र और वीडियो भेजे जा सकते हैं। जरूरत पड़ने पर इसमें कॉलिंग की सुविधा भी उपलब्ध है।

डील के निदेशक पीके शर्मा ने बताया कि अभी इस तरह की 100 डिवाइस तैयार की गई हैं और सेना ने इसमें खासी



दिलचस्पी दिखाई है। सेटकॉम की तकनीक को भारत इलेक्ट्रॉनिक्स लि. (बेल) को हस्तांतरित किया गया है। अब भविष्य में सेना की जरूरत के मुताबिक सेटकॉम का बड़े स्तर पर निर्माण बेल में ही किया जाएगा।

गलवन और डोकलाम में हो चुका प्रयोग

डील के विज्ञानियों ने बताया कि सेटकॉम टर्मिनल का प्रयोग गलवन और डोकलाम में चीन की सेना के साथ तनातनी के दौरान किया जा चुका है। इस रक्षा उपकरण के माध्यम से हमारे जवानों ने वहां के हालात के चित्र और लाइव वीडियो इसके जरिये भेजे थे।

आपदा के समय सरकार को सौंपा जाता रहा सेटकॉम

डील के निदेशक पीके शर्मा के मुताबिक जब भी राज्य में किसी आपदा के दौरान संचार सुविधाएं बाधित हो जाती हैं तो वहां के हालात से रूबरू होने के लिए सरकार सेटकॉम की मांग करती रही है। वर्ष 2013 की केदारनाथ में सरकार ने सेटकॉम के पुराने वर्जन (अटैचीनुमा) का प्रयोग किया था।

<https://www.jagran.com/uttarakhand/dehradun-city-drdo-news-setcom-which-used-in-galwan-became-army-choice-jagran-special-20691681.html>



Tue, 01 Sep 2020

Watermelon farming in Ladakh getting boost through DRDO's agri technology

Ladakh: Assumed to have limited vegetation because of the harsh climatic conditions, farmers of Ladakh are now exploring new ways to cultivate seasonal vegetables and fruits which are basically grown in warm weather areas. Phey village, 12 km from Leh town is known for the production of watermelons. In 2016, on a trial basis, 10 farmers from Phey tried cultivating watermelon with the help of DRDO's Defence Institute of High Altitude Research (DIHAR).

After the good yield, villagers are encouraged and are now growing watermelons. After the Union Territory status for Ladakh, farmers of Ladakh are more positive in terms of getting farming subsidy and benefits from agriculture-related schemes. Farmers of the Phey village said that the watermelons are grown in good size with an average of 5kg. The produce is sold to the army on bulks along with meeting local demand. With the help of new farming technology and research from DIHAR, farmers of Ladakh are exploring new ways to increase the yield which increases their earnings. This has also encouraged many farmers to continue agricultural practices towards sustainability.



<https://aninews.in/videos/national/watermelon-farming-in-ladakh-getting-boost-through-drdo-agri-technology/>

India-China face-off: PM Modi holds meet with high officials, Beijing deploys J-20 Fighters near LAC

On the other hand, the Chinese Air Force has deployed its J-20 fifth generation fighters close to the LAC and these fighter aircraft are carrying out extensive flying near the Indian territory

Edited By Manmath Nayak

New Delhi: Hours after India has thwarted China's provocative military movements to change the status quo at the Pangong Tso in Eastern Ladakh, media reports on Monday suggested that PM Modi is holding continuous meetings with high official to take stock of the situation. On the other side, Lieutenant Governor of Ladakh reached Delhi to brief the authorities about the latest standoff.

It was learnt that India is prepared to address any eventuality from the Chinese side. The development comes after the Chinese troops carried out provocative military movements to change the status quo on the intervening night of August 29 and 30. Both the countries have been engaged in diplomatic and military talks to resolve the disputed border issue in Eastern Ladakh.

Issuing a statement, the Indian Army said that on the night of August 29 and August 30, 2020, People's Liberation Army (PLA) troops violated the previous consensus arrived at during military and diplomatic engagements during the ongoing standoff in Eastern Ladakh and carried out provocative military movements to change the status quo.

"Indian troops pre-empted this PLA activity on the Southern Bank of Pangong Lake, and undertook measures to strengthen our positions and thwart Chinese intentions to unilaterally change facts on ground," the force said.

In the statement, the Indian Army also stated that they are committed to maintaining peace through dialogue, but are also equally determined to protect its territorial integrity.

However, China refused to move back from its present military position north of the Pangong Tso. At Pangong Tso, China has strengthened their positions between Finger-5 and 8. The PLA has refused to pull back eastwards from the 8-km stretch it occupied from Finger-4 to Finger-8 by building scores of new fortifications there since early May.

On the other hand, the Chinese Air Force has deployed its J-20 fifth generation fighters close to the LAC. According to media report, these fighter aircraft are carrying out extensive flying near the LAC. The Chinese Air Force started deploying latest aircraft at air bases near Ladakh after India operated the Rafale fighter jets which recently joined the Air Force.

<https://www.india.com/news/india/india-china-face-off-pm-modi-holds-meet-with-high-officials-beijing-deploys-j-20-fighters-near-lac-4127143/>



Representational Image

PLA aggression in Pangong resumes, Indian Special Forces launch a counter

Sources say Indian soldiers from nearby Thakung post intervened, to try and prevent PLA from building defences. Physical clashes followed, but no reports of firing or casualties on either side

By Ajai Shukla

The failure of three months of military and diplomatic dialogue in persuading Beijing to withdraw its troops from Eastern Ladakh was underlined on Sunday when hundreds of soldiers of China's People's Liberation Army (PLA) crossed into the Indian side of the Line of Actual Control (LAC) south of Pangong Tso lake, occupied a mountain called Helmet Top and began building fortifications.

Credible government sources say Indian soldiers from the nearby Thakung post intervened, to try and prevent the PLA from building defences. Physical clashes followed, though there are no reports of firing or casualties on either side.

Sources say, the PLA now occupies Helmet Top, as well as a nearby feature called Black Top, both of which are on the Indian side of the LAC. From here, Chinese soldiers can observe and track Indian movements across the Pangong lake and as far away as India's tactically vital Chushul garrison.

"On the night of 29/30 August, PLA troops violated the consensus arrived at during military and diplomatic engagements... and carried out provocative military movements to change the status quo," said the Indian army on Monday.

"Indian troops pre-empted this PLA activity on the southern bank of Pangong Tso Lake, undertook measures to strengthen our positions and thwart Chinese intentions to unilaterally change facts on ground," said the army statement.

"A brigade commander-level flag meeting is in progress in Chushul to resolve the issues," it said.

Indian officials, however, are keeping silent about a counter operation, launched on Sunday night by soldiers of a secretive Indian commando force called the Special Frontier Force (SFF). Consisting of soldiers recruited from the Tibetan refugee community in India and formed into what are termed "Vikas battalions", an SFF detachment is reported to have occupied key heights that China claims as their own.

There are differing accounts of what transpired but, according to one source, the SFF detachment clashed with Chinese troops and inflicted significant casualties on them. One Tibetan SFF officer was reportedly killed and at least two injured in the operation.

On Monday, the PLA Western Theater Command, which is responsible for the entire Sino-Indian border, accused India of "illegally crossing the line" on August 31 at two points – the south bank of Pangong Lake and near Rezang La. The statement said India had "blatantly provoked and caused tension on the border" and had "undermined the consensus reached" at the diplomatic and military talks.



The area around Thakung Post, where the latest clashes took place (Map courtesy: The Wire)

Stating that "This move by the Indian side seriously violated China's territorial sovereignty," the PLA said it, is "taking necessary countermeasures, will pay close attention to developments and resolutely safeguard China's territorial sovereignty and peace and stability in border areas."

The Pangong sector has been bitterly contested since the PLA trespassed across the LAC here in mid-May. The bulk of the Chinese force occupied the lake's northern bank, up to a point called Finger 4. Meanwhile, several hundred PLA soldiers climbed the hills that overlook Pangong lake from the north and entrenched themselves on a dominating height called Green Top, where they still remain.

Meanwhile, another 2,000 Chinese soldiers crossed the LAC into the Pangong lake's south bank and began patrolling up to a mountain called Black Top, which adjoins Helmet Top and India's important Thakung Post.

Both Black Top and Helmet Top are on India's side of the LAC. The PLA's occupation of both features has effectively shifted the LAC westwards, to China's advantage.

Sources on the ground say the PLA brought along enough building materials to Helmet Top to construct fortifications for three-four infantry companies (300-400 soldiers).

On the north bank of the Pangong lake, the PLA has shifted the LAC to its advantage by about eight kilometres, from Finger 8 to Finger 4. On the south bank, however, the strongly held Thakung post – which has a mixed garrison of army soldiers and Indo-Tibetan Border Police (ITBP) troopers – continues to dominate the Pangong lake's southern bank and observe Chinese activity on the lake and even on the north bank.

India has reinforced Eastern Ladakh strongly and there is anger amongst soldiers and young officers at what they perceive as Chinese perfidy. Many are convinced China is maintaining the pretence of dialogue and negotiations in order to create the opportunity to occupy more Indian territory.

"The Indian Army is committed to maintaining peace and tranquillity through dialogue, but is also equally determined to protect its territorial integrity," stated the army tersely on Monday.

Even as the PLA's continuing aggression in Pangong hogs the spotlight, senior Indian planners apprehend this might be a Chinese ploy to divert attention from Depsang, in Northern Ladakh, which might be China's actual target.

Depsang offers the shortest and easiest route for Indian armoured columns to reach the strategic Tibet-Xinjiang road (Highway G219), the security of which is Beijing's core sensitive in this area. PLA intrusions 15 kilometres into the Depsang sector have currently blocked Indian patrols' routes to the LAC.

The Chinese are also clinging to advantageous positions they occupied in the Hot Spring – Gogra area. Despite an agreed withdrawal plan, the PLA is refusing to withdraw from a dominating hill feature its soldiers have occupied in the vicinity of India's Gogra Post.

https://www.business-standard.com/article/defence/pla-offensive-in-pangong-resumes-chinese-take-two-hilltops-on-indian-side-120083101141_1.html

China attempting to militarise space as it seeks to modernise its military power

Synopsis

China is the country that conducted the greatest number of space launches in 2018 and 2019, and this year it has already launched 22 space vehicles out of a planned 40. What China does not admit to is that its ambitious space programme is under the control of the People's Liberation Army (PLA).

Hong Kong: In line with its ambition to have a modernised military, China is trying to dominate space, which is visible from the number of space launches that it has been carrying out over the years.

China is the country that conducted the greatest number of space launches in 2018 and 2019, and this year it has already launched 22 space vehicles out of a planned 40. What China does not admit to is that its ambitious space programme is under the control of the People's Liberation Army (PLA).

China's space programme had an estimated budget of USD8 billion last year, trailing only that of the US. This money has produced impressive achievements too. Last year, China landed its Chang'e-4 rover on the far side of the Moon, permitting the nation to be labelled a leading player in space and raising the sphere as a domain of strategic competition.

More recently, on June 23, China launched its final BeiDou satellite to complete global coverage of its dual-use (i.e. civilian and military) precision navigation and timing (PNT) system. There are currently 30 BeiDou satellites in orbit, enabling five main functions: real-time navigation, rapid positioning, precise timing, location reporting and short message communication. BeiDou certainly helps the PLA immensely as it seeks to operate in far-flung regions.

The Jamestown Foundation, a US think-tank, hosted a webinar on August 19 entitled "China's Space Ambitions: Emerging Dimensions of Competition." One presenter, Dean Cheng, Senior Research Fellow at The Heritage Foundation, noted that Beijing's space programme is linked to China's central concept of comprehensive national power. "This is basically how the Chinese think about how they rack and stack, how they compare with other countries."

China recognises that military power is important, but it is not the only factor in being a great power. Cheng drew a parallel with the former USSR, where military power alone did not ensure survival of that communist state. Other comprehensive national power factors are political unity, economic power, diplomatic strength, science and technology, and even culture. "Space touches every one of these aspects in comprehensive national power, and that is a part of why Chinese see space as so important."

Indeed, a strong space industrial complex will generate benefits that ripple through the rest of China's economy. Furthermore, he said space achievements "promote pride within China, especially for the Chinese Communist Party (CCP) ... It's symbolic of how far China has come," he said, and "it gives the CCP legitimacy".

China is pushing into space services, including satellite launches, satellite applications and Earth observation/satellite imagery for others. Satellite customers include Belarus, Laos, Pakistan and Venezuela, for example, attracting hard currency and influence. Cheng said most underestimate the impact this has, as such countries grow almost totally dependent on Chinese equipment, assets and



A Long March-4C rocket lifts off from the southwestern Xichang launch centre carrying the Queqiao ('Magpie Bridge') satellite in Xichang, China's southwestern Sichuan province on May 21, 2018

training over time. Incidentally, China could have manufactured back doors into these systems for foreigners to allow it access.

Mark Stokes, Executive Director at the US-based Project 2049 Institute think-tank, said in the same webinar that PLA requirements have always been fundamental to development of Chinese space capabilities. Potential PLA space missions in support of joint warfighting in a crisis include targeting (battlefield surveillance, electronic reconnaissance and ocean surveillance), communications, PNT services (obtaining target data, navigation information, navigation support and timing services), space jamming (encompassing space communications, radar, electro-optical and PNT) and space protection.

Stokes said the end of 2015 was "significant" for Chinese space efforts because consolidation of end-users under the PLA's Strategic Support Force (PLASSF) occurred, specifically within the Space Systems Department. In terms of developing and meeting requirements, the PLASSF is now "much more efficient," the American analyst posited.

Indeed, China created its space force in 2015, just a few months after Russia. After formally establishing its Space Force in December 2019, the US is still getting its equivalent off the ground. Cheng said both China and Russia have been pushing to militarise space, even though such a term is probably meaningless given that 95 per cent of space technology has dual applications for both military and civilian use. Certainly, outer space can no longer be viewed as a sanctuary.

Stokes said that "not much has changed really in terms of the space launch infrastructure and the launch, tracking and control of space ... but they are now integrated with end-users, and that is going to have an effect on making the whole system more efficient."

China has freedom of action in space, and the creation of the PLASSF and consolidation of space/counter-space research, development and acquisition, as well as training and operations, have benefitted from a single integrated command. The PLA's ability to interfere with American military operations in places like Taiwan will continue to grow yearly.

Cheng said, "The Chinese see future war as revolving around joint operations, which are not just land, air and sea forces." They also include the outer space and electronic warfare domains, which are necessary for information dominance." China, therefore, wishes to deny an adversary like the US the use of space, plus it needs to give the Chinese military every advantage.

China has therefore developed the ability to target hostile space-based assets (from the ground or space) and their all-important data-links. Indeed, jamming and electronic warfare complement anti-satellite weapons (which China has already tested), any of which can achieve effective mission kills against US and allied satellites. Stokes has not yet ascertained which agency is responsible for satellite kinetic kills, but it could well be the PLA Rocket Force, which is traditionally very tightly controlled by the Central Military Commission.

A detailed report entitled China's Space and Counter-space Capabilities and Activities, prepared for the US-China Economic and Security Review Commission, was published on March 30. Its authors, Mark Stokes, Gabriel Alvarado, Emily Weinstein and Ian Easton, summarised China's counter-space capabilities as follows.

"China has an operational counter-space capability that will evolve through 2020 and out to 2035. These capabilities include anti-satellite kinetic kill vehicles (KKV) and space electronic countermeasures. On the non-kinetic side, the PLA has an operational ground-based satellite electronic countermeasures capability designed to disrupt adversary use of satellite communications, navigation, search and rescue, missile early warning and other satellites through use of jamming."

China obtained its first ground-based satellite jammers from Ukraine in the late 1990s, but it has developed its own solutions since then. "The PLA is capable of carrying out electronic countermeasures to disrupt, deny, deceive or degrade space services. Jamming prevents users from receiving intended signals and can be accomplished by attacking uplinks and downlinks.

The PLA and defence industry are developing and deploying jammers capable of targeting satellite communications over a large range of frequencies, including dedicated military

communication bands. The PLASSF also has advanced cyber capabilities that could be applied in parallel with counter-space operations."

Nonetheless, the report asserted that the US still assumed a technological lead in space.

"China also is carrying out research, development and testing on potential space-based counter-space systems. The PLASSF and defense industry have carried out advanced satellite maneuvers and are likely testing orbital technologies that could be applied to counter-space operations." The PLASSF Network Systems Department probably oversees satellite jamming operations.

In a conflict, China could have the "option of augmenting existing space-based assets with microsatellites launched on solid-fueled launch vehicles". Such satellites weigh between 10 kg and 100 kg.

Asked what China might do if one of its satellites was attacked by the USA in a conflict, Cheng said that Beijing sees things differently from an American perspective. Indeed, China thinks more of using space to deter military action elsewhere - for example, it would see any hostile action in space as being tied to a geostrategic Taiwan or South China Sea issue. Cheng therefore saw it as more likely China would respond by downing an American drone or jamming GPS, since it sees space more holistically than a typical American tit-for-tat response.

This raises another question. Who is worse off if satellites were wiped from the slate? Geostrategically, China is focused on its border and maritime areas, and it is really only the US that is "playing an away game halfway round the world whether it is to help defend Taiwan or defend the Baltics," explained Cheng. That means the US must have space access, whereas it is not so pivotal for China. This underscores an asymmetry in space, with the USA the most vulnerable because of its dependency.

Stokes believes the US is ahead of China in general in terms of space technologies, but he identified two areas where China probably holds an advantage. One is in space electronic countermeasures, "with China and the PLA dedicating significant resources into this method of denying US ability to leverage its space assets". Another area is the near-space realm, stretching from approximately 20-30km to 100km above Earth.

Near-space assets provide similar capabilities to what China could get from space satellites for communications relay or surveillance/reconnaissance, and trans-atmospheric launch vehicles and hypersonic glide vehicles also utilise this space.

China is investing in different methods of producing electromagnetic pulses, including high-power microwave devices, although Stokes is uncertain if China has made a breakthrough in weaponising such systems.

Of enormous concern is China's cloak of secrecy. The aforementioned report noted, "The CCP conducts an active propaganda and deception campaign to conceal the drivers of its space programme, capabilities and operations. China's latest white paper on space activities, released in 2016, omitted any mention of the military and state security aspects of its space programme. The PRC's state media outlets routinely obscure the missions of military intelligence payloads, often reporting them as civilian satellites launched for scientific or economic purposes."

Yet, according to Chinese government sources, the national space programme is largely managed by the PLA, and Chinese space assets are probably assigned as either military or dual-use assets to be mobilised in the event of a crisis or war. China could issue a space white paper before the end of this year, but it will doubtlessly again gloss over military aspects.

More than that, China is actively seeking to steal or soak up foreign technology to boost its ambitions. The report's authors commented, "The CCP is executing a long-term strategy to exploit US technology, talent and capital to build up its military space and counter-space programmes and advance its strategic interests at the expense of the US. China's zero-sum pursuit of space superiority harms US economic competitiveness, weakens US military advantages and undermines strategic stability."

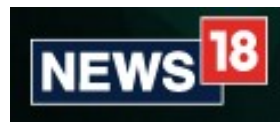
China tends to take a conservative incremental approach to its achievements in space -- "slow and steady" was how Stokes described it. Next year, China will release its 14th Five-Year Plan for 2021-25, which should list the nation's next space aspirations.

The prognosis is not good for China's adversaries. The report asserted, "As China's space capabilities improve, so too will its ability to conduct larger and more complex operations at greater distances from China. US policymakers should expect that by the early 2020s, space-based communications, navigation and intelligence assets will enhance the PLA's lethality across a range of scenarios and allow China to project power in West Africa, Central America, South America, Antarctica and the Arctic."

"Improved space architecture will enable the PLA to conduct precision strikes on targets at greater range, will guarantee Chinese forces access to PNT services provided by BeiDou instead of GPS, and could significantly expand the operational ranges of Chinese strategic forces. Secure satellite communications could support long-distance nuclear submarine patrols. They may also enable strategic bomber patrols and ground-based missile deployments overseas," the report said.

A US Navy aircraft carrier steaming to defend Taiwan, for instance, would come under greater threat as China improves its satellite spatial resolution in the Indo-Pacific region. Space-based sensors will also provide terminal guidance for ballistic and land-attack cruise missiles to even more precise degrees. The stealthy "star wars" threat from Beijing is very real.

<https://economictimes.indiatimes.com/news/defence/china-attempting-to-militarise-space-as-it-seeks-to-modernise-its-military-power/articleshow/77851406.cms>



Tue, 01 Sep 2020

India 'Strengthens Military, Weapons' at Key Points in Pangong Lake area after foiling China bid to move in

The sources said a sizeable number of Chinese troops were moving towards the southern bank of Pangong lake in an attempt to occupy the area but the Indian Army quickly made a significant deployment to foil the attempt. They said the Indian Air Force (IAF) has also been told to enhance its surveillance on increasing Chinese air activities along the LAC in eastern Ladakh

New Delhi: The Indian Army has significantly strengthened its presence on a number of "strategic heights" and enhanced deployment of troops and weapons at key points around the Pangong lake in eastern Ladakh following an unsuccessful attempt by the Chinese PLA to unilaterally change the status quo in the area, authoritative sources said on Monday. The Army has also further bolstered overall surveillance mechanisms in all areas along the Line of Actual Control (LAC) in eastern Ladakh after foiling China's fresh attempt to occupy an area on the southern bank of Pangong lake, they said.

Earlier in the day, Army Spokesperson Col Aman Anand said the Chinese military carried out "provocative military movements" to "unilaterally" change the status quo on the southern bank of Pangong lake on the intervening night of August 29 and 30 but the attempt was thwarted by the Indian



The Indian Army has increased deployment of troops and weaponry including tanks and artillery guns in various sensitive sectors along the LAC in the last few weeks. (Image for representation)

troops. Top military and security brass has already reviewed the entire situation in eastern Ladakh. Separately, Chief of Army Staff Gen MM Naravane held a meeting with top military officials over the fresh confrontation, the sources said.

"The Army has occupied strategic heights and strengthened deployment of troops and weapons in all key points on the southern bank of the Pangong lake area," said a source, adding the fresh deployment will provide India greater advantage in the region. India has also deployed troops from special operations battalions in the area, it said.

The sources said a sizeable number of Chinese troops were moving towards the southern bank of Pangong lake in an attempt to occupy the area but the Indian Army quickly made a significant deployment to foil the attempt. They said the Indian Air Force (IAF) has also been told to enhance its surveillance on increasing Chinese air activities along the LAC in eastern Ladakh. There have been reports that China has deployed J-20 long-range fighter jets and several other key assets in strategically located Hotan airbase which is around 310 kms from eastern Ladakh.

In the last three months, the IAF deployed almost all its frontline fighter jets like Sukhoi 30 MKI, Jaguar and Mirage 2000 aircraft in the key frontier air bases in eastern Ladakh and elsewhere along the LAC. The IAF carried out night time combat air patrols over the eastern Ladakh region in an apparent message to China that it was ready to deal with any eventualities in the mountainous region.

The IAF has also deployed Apache attack choppers as well as Chinook heavy-lift helicopters to transport troops to various forward locations in eastern Ladakh. The fresh attempt by China to change the status quo in the Pangong lake area is the first major incident in the area after the Galwan Valley clashes on June 15 in which 20 Indian Army personnel were killed. China also suffered casualties but is yet to make the details public. According to an American intelligence report, it was 35.

India and China have held several rounds of military and diplomatic talks in the last two-and-half months but no significant headway has been made for a resolution to the border row in eastern Ladakh. The two sides began a process of disengagement on July 6, a day after a telephonic conversation between National Security Advisor Ajit Doval and Chinese Foreign Minister Wang Yi on ways to bring down tensions in eastern Ladakh. However, the process has not moved forward since mid-July.

The PLA has pulled back from Galwan Valley and certain other friction points but the withdrawal of troops has not moved forward in Pangong Tso, Depsang and a couple of other areas. At the five rounds of Corps commander-level talks, the Indian side has been insisting on complete disengagement of Chinese troops at the earliest, and immediate restoration of status quo ante in all areas of eastern Ladakh prior to April.

The face-off began on May 5 following violent clashes between the two armies in the Pangong lake area. The incident in Pangong Tso was followed by a similar incident in North Sikkim on May 9. The India-China border dispute covers the 3,488-km-long Line of Actual Control).

Prior to the clashes, both sides have been asserting that pending the final resolution of the boundary issue, it is necessary to maintain peace and tranquility in the border areas.

(With PTI inputs)

<https://www.news18.com/news/india/india-strengthens-military-weapons-at-key-points-in-pangong-lake-area-after-foiling-chinas-bid-to-move-in-2836827.html>

Experts say fresh face-off reflects grim reality of LAC situation

A statement from the Indian Army said soldiers had pre-empted “provocative military movements” by the Chinese People’s Liberation Army (PLA) to change the status quo in the intervening night of August 29 and 30

New Delhi: India’s acknowledgement of a fresh face-off with Chinese troops along the Line of Actual Control (LAC) reflects the grim reality of the situation along the disputed border after several rounds of talks couldn’t take forward the disengagement process, experts said on Monday.

A statement from the Indian Army said soldiers had pre-empted “provocative military movements” by the Chinese People’s Liberation Army (PLA) to change the status quo in the intervening night of August 29 and 30. It added that these actions “violated the previous consensus arrived at during military and diplomatic engagements” during the standoff in eastern Ladakh that had started in early May.



An Indian Army truck near Pangong Tso lake in Ladakh region. (AP)

Over the past few weeks, after several rounds of talks between corps commanders on the ground and the Working Mechanism for Consultation and Coordination (WMCC) on border affairs, the differences between the two sides on the disengagement and de-escalation process have emerged in the open.

The Chinese side has even referred to both sides having “positively evaluated the progress” in disengagement, but the Indian side has insisted that the process is a work in progress and more needs to be done to take it forward.

At the last weekly news briefing of the ministry of external affairs (MEA), spokesperson Anurag Srivastava said “complete disengagement requires re-deployment of troops by each side towards their regular posts on their respective sides of the LAC”, which can be done only through “mutually agreed reciprocal actions” by both sides.

Former navy chief Admiral (retired) Arun Prakash said the time had come for the Indian side to do a “reality check and prepare for the worst”. He added, “It’s a grim situation.”

The Indian side, Prakash believes, has misread the situation especially since the actions of the Chinese side have often differed from it said. “They seem to have decided to restore their boundary to whatever it was according to their historical interpretation,” he said.

Significantly, the latest clash occurred on the southern bank of Pangong lake, where most of the friction in this area has been on the northern bank.

The Chinese actions also run counter to Chinese envoy to India Sun Weidong’s assertion last week that the “existing situation on the ground is under control on the whole and there is no fresh standoff between the two forces”. The envoy has even described the June 15 clash – which resulted in the death of 20 Indian soldiers and unspecified Chinese casualties – as “a brief moment from the perspective of history”.

Sameer Patil, fellow for international security studies at Gateway House, a think tank, said the latest clash reflected the “obdurate attitude of the Chinese in resolving the standoff” along the LAC.

“The incident goes against what their diplomats have been saying. The Chinese are suing the diplomatic track to create a smokescreen while the Central Military Commission headed by President Xi Jinping is pushing the case on the ground,” he said.

Patil also believes the latest Chinese action could be part of efforts to shift the domestic narrative after several photos shared widely on China’s social media platforms purported to show the graves of Chinese troops killed in the June 15 clash.

“There have been at least four such images of tombstones and maybe the Chinese want to stonewall the domestic narrative and shift it to one of protecting national interests,” he said.

Prakash said India would need to “keep its feet firmly on the ground and look for alliances and partnerships” to tackle the challenges facing it. “If things take a military or kinetic turn, escalation won’t be in our hands,” he added.

<https://www.hindustantimes.com/world-news/experts-says-fresh-clash-reflects-grim-reality-of-lac-situation/story-ss7umiCBMpgZaYvaohX4HI.html>

TIMESNOWNEWS.COM

Tue, 01 Sep 2020

'Can locate Indian Army camps across LoC in J&K': Pakistan buys China's Jilin-1 satellite data for 2020

Amid Chinese aggression at the Line of Actual Control (LAC), Pakistan has intensified ceasefire violations along the Line of Control (LoC), creating a two-front war-like situation for India

New Delhi: In a bid to gain the precise location of Indian Army camps across the Line of Control in Jammu and Kashmir, Pakistan has purchased China's Jilin-1 satellite data, comprising high definition video, optical and hyperspectral imagery, for 2020.

The news agency IANS quoted intelligence sources as saying that Pakistan has entered into a contract with China to procure Jilin-1 satellite data for 2020. Jilin is China's commercial remote sensing satellite run by the Chang Guang Satellite Technology Co. Ltd.

The Jilin constellation comprises a network of ten satellites in orbit with the capability of global coverage and it can revisit any location twice a day. "Resolution of panchromatic image provisioned by Jilin-1 is 0.72 m and the multi-spectral image is 2.88 m," a source said.

The source further stated that Pakistan had in 2019 purchased data of the advanced land observation satellite phased array type L Band synthetic aperture radar and Jilin-1.

However, Islamabad has stated that the data has been procured for land and resources surveying, monitoring of natural disasters, agriculture research, urban construction and other activities.

Amid Chinese aggression at the Line of Actual Control (LAC), Pakistan has intensified ceasefire violations along the Line of Control (LoC), creating a two-front war-like situation for India.

BSF detects tunnel along IB in Jammu

On Saturday, the Border Security Force (BSF) had detected a tunnel just beneath the India-Pakistan international border fence in Jammu. These tunnels are believed to be made by Pakistan in an attempt to infiltrate the border of India.

The force launched a major search operation in the area to look for other such hidden structures that aid infiltration even as it is analysing the spotted structure, the officials had said.

Pakistan's ceasefire violations

Earlier this month, at least six civilians were injured after Pakistani troops violated the ceasefire along the LoC in Naugam and Tangdhar sectors of Jammu and Kashmir by resorting to unprovoked firing towards Indian positions.

The Jammu and Kashmir DGP Dilbag Singh had also stressed that there has been a 60 per cent rise in the incidents of ceasefire violations (CFVs) as against the previous year. "This shows desperate attempts by Pakistan to destabilise the peace and harmony in the Union Territory," he had said.

<https://www.timesnownews.com/india/article/can-locate-indian-army-camps-across-loc-in-jk-pakistan-buys-chinas-jilin-1-satellite-data-for/645443>



Tue, 01 Sep 2020

Chinese Air Force redeployed J-20 fighters near LAC days before fresh intrusion bid

Days before the PLA troops carried out provocative movements' at Pangong Lake in Ladakh, Chinese Air Force had redeployed its J-20 fighter aircraft near the LAC

By Manjeet Singh Negi

New Delhi: The Chinese Air Force redeployed its J-20 fifth-generation fighters close to the Indian territory, days before the Chinese troops attempted to carry out fresh transgressions near the southern bank of Pangong Tso lake in Ladakh.

"The J-20 fighter jets have been operating close to the Indian territory in the last few days and the move was taken by the Chinese Air Force just a few days before their Army attempted to do incursions into newer areas in Ladakh," top government sources told India Today on Monday.



As per sources, fighter aircraft are still carrying out extensive flying near the LAC.

India released a statement on Monday saying the Army blocked Chinese attempt to carry out "provocative military movements" to "unilaterally" change the status quo on the southern bank of Pangong Tso lake.

The J-20s reportedly operated from the Hotan airbase in Xinjiang province of China where strategic bomber and other fighters' operational deployment is also on, the government sources added.

India Today TV's OSINT team was the first to report on August 25 the second deployment of J-20s at Hotan airbase. Through satellite images provided by Planet Labs, we found that China sent two of the People's Liberation Army Air Force (PLAAF) fifth-generation stealth aircraft J-20 to Hotan. The aircraft with new ammunition building having proper environmental protection and all-around revetments indicate that both are probably related developments.

The Hotan airbase is 250 km from Karakoram Pass and 380 km from the Finger 4 area of Pangong Tso in eastern Ladakh.

The aircraft have probably arrived from the Dingxin base, which now has about eight J-20 aircraft deployed.

The move by the Chinese Air Force to redeploy their latest aircraft at airbases near Ladakh comes after India started operationalising the Rafale fighter jets, five of which have joined the Air Force.

Sources said the Indian Air Force and other agencies concerned have been keeping a close eye on the Chinese Air Force activities and have taken all measures to thwart any misadventure in air.

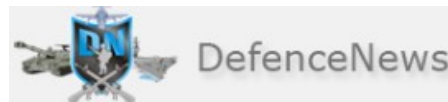
India is keeping a close watch on seven Chinese airbases along the LAC opposite Ladakh to Arunachal Pradesh.

According to top government sources, the Chinese People's Liberation Army Air Force (PLAAF) has upgraded a number of these bases in recent times, including the construction of hardened shelters, the extension of runway lengths and deployment of additional manpower.

Sources had told India Today that these military airbases under Indian watch included three opposite eastern Ladakh -- Kashgar, Hotan and Ngari Gunsu. The other bases include Shigatse, Lhasa Gongkar, Nyingchi and Chamdo Pangta, the sources added.

"Satellites and other forms of surveillance are being used to keep an eye on the seven Chinese military bases which are situated in Xinjiang and Tibet Autonomous Military Region," government sources had said.

<https://www.indiatoday.in/india/story/chinese-air-force-redeployed-j-20-fighters-close-to-lac-days-before-china-s-fresh-intrusion-bid-1717008-2020-08-31>



Tue, 01 Sep 2020

To rebalance expenditure, MoD to change appointment pattern

The Ministry of Defence has moved to change the pattern for appointing military and civilian officers on important administrative posts at the armed forces headquarters.

A high-level committee has been set up to identify which posts at the administrative level required only employees with military experience.

This is in line with the recommendations of a committee of experts to enhance combat capability and re-balance defence expenditure of the forces. The other aspect studied by the panel was utilisation of civilian employees posted at the armed forces headquarters (AFHQ).

Union Defence Minister Rajnath Singh has okayed setting up of the committee headed by Lt Gen DB Shekatkar (ret'd). Two other members on the panel are R Chandrashekhar, a former AFHQ cadre officer, and AN Das from the MoD finance wing.

The committee will conduct a study and identify such appointments in the three services that may be within the domain of the AFHQ civilian staff. It will also identify posts at the headquarters where civilian officers had been posted despite the positions requiring only those with strict military field experience.

The panel has been tasked to interact with various branches and directorates of the services' headquarters of the MoD and the inter-service organisations for undertaking the study and submit a report of its recommendations by the first week of October.

The scope of the study will be to collate data on authorised and actual strength of the AFHQ officers in the respective services.

It will also collect data on brigadier-level officers of the armed forces posted in the administration, finance, policy formulation, coordination, personnel management, training, vigilance, legal wings and land and works.

<https://www.defencenews.in/article/To-rebalance-expenditure,-MoD-to-change-appointment-pattern-942136>



Tue, 01 Sep 2020

गगनयान के अंतरिक्ष यात्रियों के लिए फ्रांस से मदद ले रही ISRO, अभी रूस में चल रही है ट्रेनिंग

भारत और फ्रांस की अंतरिक्ष एजेंसियों के बीच गगनयान के अंतरिक्ष यात्रियों को आवश्यक उपकरण मुहैया कराने के लिए अग्रिम चरण की बातचीत हो रही है।

खास बातें

1. अंतरिक्ष में साझेदारी को लेकर भारत-फ्रांस में अच्छे संबंध
2. अंतरिक्ष में अलग तरह के उपकरणों की आवश्यकता
3. अभी रूस में ट्रेनिंग ले रहे गगनयान के यात्री

नई दिल्ली: भारत और फ्रांस की अंतरिक्ष एजेंसियों के बीच गगनयान के अंतरिक्ष यात्रियों को आवश्यक उपकरण मुहैया कराने के लिए अग्रिम चरण की बातचीत हो रही है। अधिकारियों ने बताया कि अगले साल 'मिशन अल्फा' के लिए फ्रांस के अंतरिक्ष यात्री थॉमस पेसक्वेट द्वारा इसी तरह के उपकरण का इस्तेमाल होगा।

यूरोपीय अंतरिक्ष एजेंसी का हिस्सा हैं थॉमस पेसक्वेट

फ्रांस की अंतरिक्ष एजेंसी 'राष्ट्रीय अंतरिक्ष अध्ययन केंद्र' (सीएनईएस) के एक वरिष्ठ अधिकारी ने बताया कि मिशन अल्फा के लिए उपकरण पर काम चल रहा है। यूरोपीय अंतरिक्ष एजेंसी (ईएसए) का हिस्सा फ्रांस के अंतरिक्ष यात्री थॉमस पेसक्वेट अगले साल की शुरुआत में ड्रैगन अंतरिक्ष यान से अंतरराष्ट्रीय अंतरिक्ष स्टेशन (आईएसएस) वापस जाएंगे। उपकरण के बारे में विस्तार से बताए बिना सीएनईएस के अधिकारी ने बताया, 'वार्ता अंतिम चरण में हैं। जल्द ही इसकी घोषणा की जाएगी। मिशन अल्फा के लिए उपकरणों पर काम चल रहा है।'

अंतरिक्ष को लेकर भारत-फ्रांस में अच्छा तालमेल

भारत और फ्रांस के बीच अंतरिक्ष के क्षेत्र में अच्छा तालमेल है। दोनों देशों की अंतरिक्ष एजेंसियां तकरीबन 10,000 करोड़ रुपये के गगनयान मिशन पर तालमेल कर रही हैं। गगनयान मिशन के जरिए 2022 तक अंतरिक्ष में भारतीय को भेजे जाने का लक्ष्य है। पिछले साल फ्लाइट सर्जन ब्रिगिटे गोडार्ड चिकित्सकों और इंजीनियरों को प्रशिक्षण देने के लिए भारत आए थे।

पायलटों की रूस में चल रही ट्रेनिंग

भारतीय अंतरिक्ष अनुसंधान संगठन (इसरो) के एक अधिकारी ने बताया, 'कोरोना वायरस से पैदा हालात के ठीक होने पर भारतीय अंतरिक्ष सर्जन अगले साल फ्रांस जाएंगे। गगनयान के अंतरिक्ष यात्रियों को उपकरण की आपूर्ति के लिए विशेष तालमेल पर उन्होंने कोई टिप्पणी नहीं की है। गगनयान मिशन के लिए भारतीय वायु सेना के चार पायलटों और संभावित अंतरिक्ष यात्रियों का वर्तमान में रूस में प्रशिक्षण चल रहा है।

27 हजार नामों से चुना गया मिशन अल्फा नाम

सीएनईएस के साथ भागीदारी में यूरोपीय अंतरिक्ष एजेंसी द्वारा आयोजित स्पर्धा के बाद पेसक्वेट के नए मिशन के तौर पर अल्फा का नाम चुना गया। इसके लिए 27,000 से ज्यादा प्रविष्टियां आयी थी। पेसक्वेट 2016 और जून 2017 के बीच आईएसएस पर छह महीना रह चुके हैं। वर्तमान में 'मिशन अल्फा' के लिए वह प्रशिक्षण ले रहे हैं।

<https://zeenews.india.com/hindi/india/isro-on-talk-with-french-agency-on-project-gaganyaan/738627>

Researchers develop molecule to store solar energy

Researchers at Linköping University, Sweden, have developed a molecule that absorbs energy from sunlight and stores it in chemical bonds. A possible long-term use of the molecule is to capture solar energy efficiently and store it for later consumption. The current results have been published in the *Journal of the American Chemical Society (JACS)*.

The Earth receives many times more energy from the sun than we humans can use. This energy is absorbed by solar energy facilities, but one of the challenges of solar energy is to store it efficiently, such that the energy is available when the sun is not shining. This led scientists at Linköping University to investigate the possibility of capturing and storing solar energy in a new molecule.

"Our molecule can take on two different forms: a parent form that can absorb energy from sunlight, and an alternative form in which the structure of the parent form has been changed and become much more energy-rich, while remaining stable. This makes it possible to store the energy in sunlight in the molecule efficiently," says Bo Durbeej, professor of computational physics in the Department of Physics, Chemistry and Biology at Linköping University, and leader of the study.

The molecule belongs to a group known as "molecular photoswitches." These are always available in two different forms, isomers, that differ in their chemical structures. The two forms have different properties, and in the case of the molecule developed by LiU researchers, this difference is in the energy content. The chemical structures of all photoswitches are influenced by light energy. This means that the structure, and thus the properties, of a photoswitch can be changed by illuminating it. One possible area of application for photoswitches is molecular electronics, in which the two forms of the molecule have different electrical conductivities. Another area is photopharmacology, in which one form of the molecule is pharmacologically active and can bind to a specific target protein in the body, while the other form is inactive.

It's common in research that experiments are done first and theoretical work subsequently confirms the experimental results, but in this case the procedure was reversed. Bo Durbeej and his group work in theoretical chemistry, and conduct calculations and simulations of chemical reactions. This involves advanced computer simulations, which are performed on supercomputers at the National Supercomputer Centre, NSC, in Linköping. The calculations showed that the molecule the researchers had developed would undergo the chemical reaction they required, and that it would take place extremely fast, within 200 femtoseconds. Their colleagues at the Research Centre for Natural Sciences in Hungary were then able to build the molecule, and perform experiments that confirmed the theoretical prediction.

In order to store large amounts of solar energy in the molecule, the researchers have attempted to make the energy difference between the two isomers as large as possible. The parent form of their molecule is extremely stable, a property that within organic chemistry is denoted by saying that the molecule is "aromatic." The basic molecule consists of three rings, each of which is aromatic. When it absorbs light, however, the aromaticity is lost, such that the molecule becomes much more energy-rich. The LiU researchers show in their study, published in the *Journal of the American Chemical Society*, that the concept of switching between aromatic and non-aromatic states of a molecule has a major potential in the field of molecular photoswitches.



Bo Durbeej and his group use advanced computer simulations of chemical reactions, which are performed at the National Supercomputer Centre, NSC, in Linköping.

"Most chemical reactions start in a condition where a molecule has high energy and subsequently passes to one with a low energy. Here, we do the opposite—a molecule that has low energy becomes one with high energy. We would expect this to be difficult, but we have shown that it is possible for such a reaction to take place both rapidly and efficiently," says Bo Durbeej.

The researchers will now examine how the stored energy can be released from the energy-rich form of the molecule in the best way.

More information: Baswanth Oruganti et al, Photoinduced Changes in Aromaticity Facilitate Electrocyclization of Dithienylbenzene Switches, *Journal of the American Chemical Society* (2020). DOI: [10.1021/jacs.0c06327](https://doi.org/10.1021/jacs.0c06327)

Journal information: [Journal of the American Chemical Society](https://pubs.acs.org/journal/jacs)
<https://phys.org/news/2020-08-molecule-solar-energy.html>



Tue, 01 Sep 2020

Researchers develop dustbuster for the moon

By Daniel Strain

A team led by the University of Colorado Boulder is pioneering a new solution to the problem of spring cleaning on the moon: Why not zap away the grime using a beam of electrons?

The research, published recently in the journal *Acta Astronautica*, marks the latest to explore a persistent, and perhaps surprising, hiccup in humanity's dreams of colonizing the moon: dust. Astronauts walking or driving over the lunar surface kick up huge quantities of this fine material, also called regolith.

"It's really annoying," said Xu Wang, a research associate in the Laboratory for Atmospheric and Space Physics (LASP) at CU Boulder. "Lunar dust sticks to all kinds of surfaces—spacesuits, solar panels, helmets—and it can damage equipment."

So he and his colleagues developed a possible fix—one that makes use of an electron beam, a device that shoots out a concentrated (and safe) stream of negatively-charged, low-energy particles. In the new study, the team aimed such a tool at a range of dirty surfaces inside of a vacuum chamber. And, they discovered, the dust just flew away.

"It literally jumps off," said lead author Benjamin Farr, who completed the work as an undergraduate student in physics at CU Boulder.

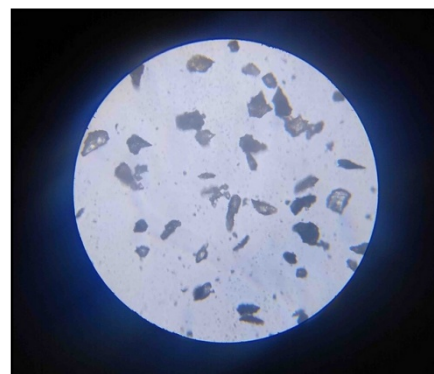
The researchers still have a long way to go before real-life astronauts will be able to use the technology to do their daily tidying up. But, Farr said, the team's early findings suggest that electron-beam dustbusters could be a fixture of moon bases in the not-too-distant future.

Spent gunpowder

The news may be music to the ears of many Apollo-era astronauts. Several of these space pioneers complained about moon dust, which often resists attempts at cleaning even after vigorous brushing. Harrison "Jack" Schmitt, who visited the moon as a member of Apollo 17 in 1972, developed an allergic reaction to the material and has said that it smelled like "spent gunpowder."



Dust sticks to the boots of Apollo 17 astronaut and geologist Harrison "Jack" Schmitt in 1972. Credit: NASA



A microscope view of lunar "simulant" designed to mimic moon dust. Credit: IMPACT lab

The problem with lunar dust, Wang explained, is that it isn't anything like the stuff that builds up on bookshelves on Earth. Moon dust is constantly bathed in radiation from the sun, a bombardment that gives the material an electric charge. That charge, in turn, makes the dust extra sticky, almost like a sock that's just come out of the drier. It also has a distinct structure.

"Lunar dust is very jagged and abrasive, like broken shards of glass," Wang said.

The question facing his group was then: How do you unstick this naturally clingy substance?

Electron beams offered a promising solution. According to a theory developed from recent scientific studies of how dust naturally lofts on the lunar surface, such a device could turn the electric charges on particles of dust into a weapon against them. If you hit a layer dust with a stream of electrons, Wang said, that dusty surface will collect additional negative charges. Pack enough charges into the spaces in between the particles, and they may begin to push each other away—much like magnets do when the wrong ends are forced together.

"The charges become so large that they repel each other, and then dust ejects off of the surface," Wang said.

Electron showers

To test the idea, he and his colleagues loaded a vacuum chamber with various materials coated in a NASA-manufactured "lunar simulant" designed to resemble moon dust.

And sure enough, after aiming an electron beam at those particles, the dust poured off, usually in just a few minutes. The trick worked on a wide range of surfaces, too, including spacesuit fabric and glass. This new technology aims at cleaning the finest dust particles, which are difficult to remove using brushes, Wang said. The method was able to clean dusty surfaces by an average of about 75-85%.

"It worked pretty well, but not well enough that we're done," Farr said.

The researchers are currently experimenting with new ways to increase the cleaning power of their electron beam.

But study coauthor Mihály Horányi, a professor in LASP and the Department of Physics at CU Boulder, said that the technology has real potential. NASA has experimented with other strategies for shedding lunar dust, such as by embedding networks of electrodes into spacesuits. An electron beam, however, might be a lot cheaper and easier to roll out.

Horányi imagines that one day, lunar astronauts could simply leave their spacesuits hanging up in a special room, or even outside their habitats, and clean them after spending a long day kicking up dust outside. The electrons would do the rest.

"You could just walk into an electron beam shower to remove fine dust," he said.

More information: B. Farr et al, Dust mitigation technology for lunar exploration utilizing an electron beam, *Acta Astronautica* (2020). DOI: [10.1016/j.actaastro.2020.08.003](https://doi.org/10.1016/j.actaastro.2020.08.003)

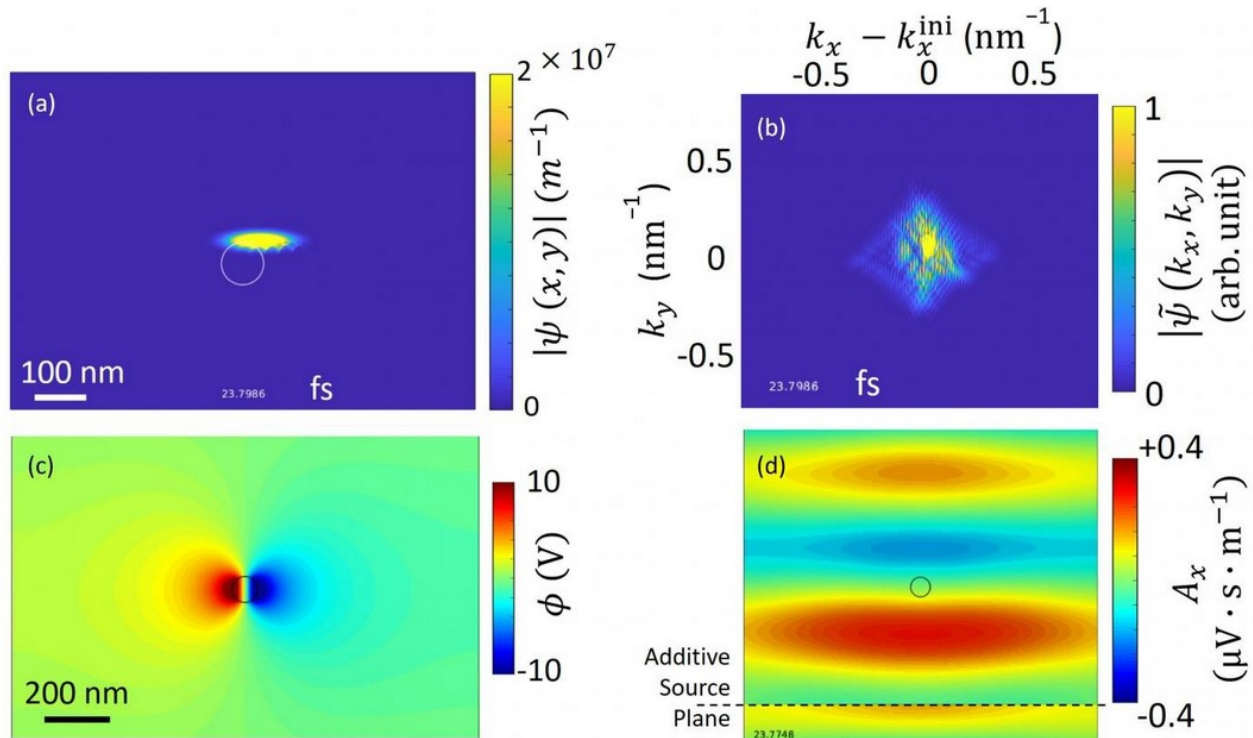
Journal information: *Acta Astronautica*
<https://phys.org/news/2020-08-dustbuster-moon.html>



Top: A microscope view of NASA-manufactured lunar "simulant" designed to resemble moon dust; bottom: A vacuum chamber on the CU Boulder campus. Credit: IMPACT lab

Demonstrating the dynamics of electron-light interaction originating from first principle

With the highest possible spatial resolution of less than a millionth of a millimeter, electron microscopes make it possible to study the properties of materials at the atomic level and thus demonstrate the realm of quantum mechanics. Quantum-physical fundamentals can be studied particularly well by the interactions between electrons and photons. Excited with laser light, for example, the energy, mass or velocity of the electrons changes.



The profile of the electron wavepacket in (a) real space and (b) reciprocal (momentum) space. (c) Scalar and (d) vector potentials of the electromagnetic field. Credit: Nahid Talebi

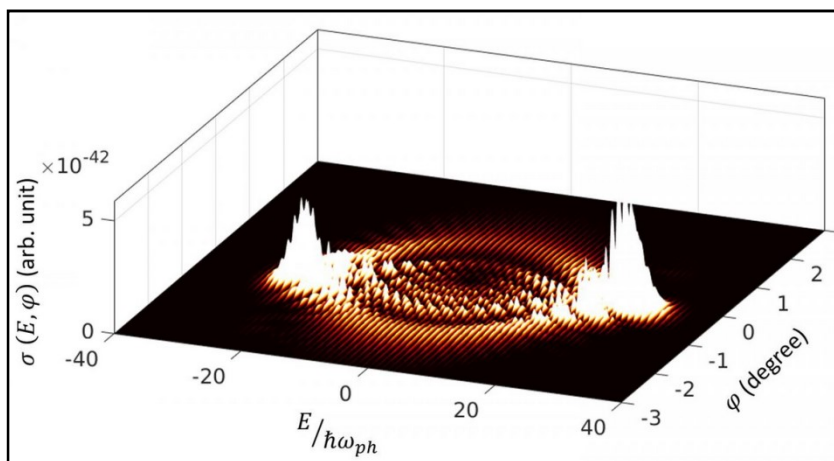
Professor Nahid Talebi from the Institute for Experimental and Applied Physics at Kiel University has invented a new toolbox to extend the theoretical description of electron-light interactions to the highest accurate level possible. She has combined Maxwell and Schrödinger equations in a time-dependent loop to fully simulate the interactions from first principles. Talebi's simulation allows it for the first time to describe ultra-fast processes precisely in theory and to map them in real-time without using adiabatic approximation. Recently, she presented her results in the renowned journal *Physical Review Letters*. In the long term, they could help to improve microscopy methods as Talebi is investigating in her ERC Starting Grant project "NanoBeam" funded by the European Research Council.

The ultrafast electron microscopy combines electron microscopy and laser technology. Having ultrafast electron pulses, the dynamics of the sample can be studied with femtosecond temporal resolutions. This also allows conclusions about the properties of the sample. Due to the further development of spectroscopy technology, it is now possible to study not only atomic and electronic structure of the samples but also their photonic excitations, such as plasmon polaritons.

For the first time the simulation depicts the process of the interactions as a film in real-time

However, the simulation of such electron-light-interactions is time-consuming and can only be carried out with high-performance computers. "Therefore, adiabatic approximations and one-dimensional electron models are often used, meaning that electron recoil and amplitude modulations have been neglected," explains Nahid Talebi, Professor of Nanooptics at the Institute of Experimental and Applied Physics (IEAP) and an expert in simulations. For the first time, her new simulation shows the process of the electron-light interactions as a film in real-time, describing the complex interactions to the highest accurate level possible.

In her toolbox, she has combined Maxwell and Schroedinger equations in a time-dependent loop to fully simulate the interactions from first principles; therefore laying down the new field of electron-light interactions beyond adiabatic approximations. Due to this combination, Talebi was able to simulate what happens when an electron approaches a nanostructure of gold that was previously excited by a laser. Her simulation shows



Energy and angle-resolved electron energy-gain map demonstrating a pronounced diffraction pattern. Credit: Nahid Talebi

how the energy, momentum, and in general the shape of the wave packet of the electron

change for each moment of the interaction (Fig.1). In this way, the full dynamics of the interaction caused by both single-photon and two-photon processes are captured. Single-photon processes are important for example to model electron energy-loss and -gain channels, whereas two-photon processes are responsible for modeling the laser-induced elastic channels such as the diffraction phenomenon.

Particularly in her simulation, Talebi observed a pronounced diffraction pattern that originates from strong interactions between electrons and photons based on the Kapitza-Dirac effect (Fig. 2). This diffraction pattern can have promising applications in time-resolved holography, to unravel charge-carrier dynamics of solid-state and molecular systems.

Further improving spectroscopy methods with ERC project "NanoBeam"

"Our toolbox can be used to benchmark the many approximations in theoretical developments, including eikonal approximations, neglecting the recoil, and neglecting two-photon processes." Talebi thinks. "Although we already have made a great step towards electron-light interactions beyond adiabatic approximations, there is still room for further developments." Together with her team, she plans to include a three-dimensional Maxwell-Dirac simulation domain to model relativistic and spin interactions. She also wants to better understand the role of exchange and correlations during electron-electron interactions.

Another aim of Talebi is to utilize the insights from her theoretical modeling to propose novel methodologies for coherent control and shaping of the sample excitations using electron beams. With her project "NanoBeam" she intends to develop a novel spectral interferometry technique with the ability to retrieve and control the spectral phase in a scanning electron microscope to overcome the challenges in meeting both nanometers spatial and attosecond time resolution. The project is funded by an ERC grant from the European Research Council with about 1.5 million euros.

More information: Nahid Talebi, Strong Interaction of Slow Electrons with Near-Field Light Visited from First Principles, *Physical Review Letters* (2020). DOI: [10.1103/PhysRevLett.125.080401](https://doi.org/10.1103/PhysRevLett.125.080401)

Journal information: *Physical Review Letters*
<https://phys.org/news/2020-08-dynamics-electron-light-interaction-principle.html>



Tue, 01 Sep 2020

New evidence for quantum fluctuations near a quantum critical point in a superconductor

Among all the curious states of matter that can coexist in a quantum material, jostling for preeminence as temperature, electron density and other factors change, some scientists think a particularly weird juxtaposition exists at a single intersection of factors, called the quantum critical point or QCP.

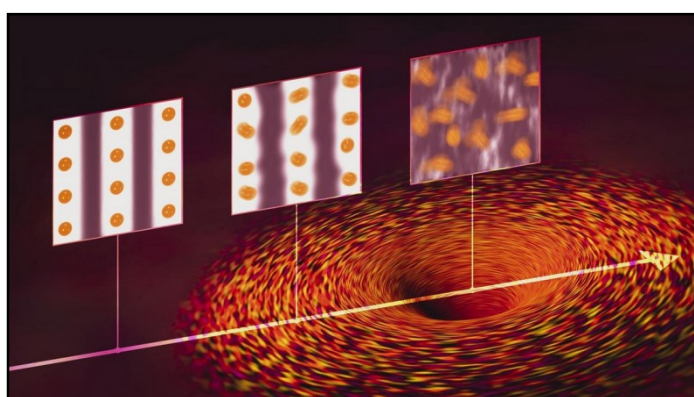
"Quantum critical points are a very hot issue and interesting for many problems," says Wei-Sheng Lee, a staff scientist at the Department of Energy's SLAC National Accelerator Laboratory and investigator with the Stanford Institute for Materials and Energy Sciences (SIMES). "Some suggest that they're even analogous to black holes in the sense that they are singularities—point-like intersections between different states of matter in a quantum material—where you can get all sorts of very strange electron behavior as you approach them."

Lee and his collaborators reported in *Nature Physics* today that they have found strong evidence that QCPs and their associated fluctuations exist. They used a technique called resonant inelastic X-ray scattering (RIXS) to probe the electronic behavior of a copper oxide material, or cuprate, that conducts electricity with perfect efficiency at relatively high temperatures.

These so-called high-temperature superconductors are a bustling field of research because they could give rise to zero-waste transmission of energy, energy-efficient transportation systems and other futuristic technologies, although no one knows the underlying microscopic mechanism behind high-temperature superconductivity yet. Whether QCPs exist in cuprates is also a hotly debated issue.

In experiments at the UK's Diamond Light Source, the team chilled the cuprate to temperatures below 90 kelvins (minus 183 degrees Celsius), where it became superconducting. They focused their attention on what's known as charge order—alternating stripes in the material where electrons and their negative charges are denser or more sparse.

The scientists excited the cuprate with X-rays and measured the X-ray light that scattered into the RIXS detector. This allowed them to map out how the excitations propagated through the material in the form of subtle vibrations, or phonons, in the material's atomic lattice, which are hard to measure and require very high-resolution tools.



Much like black holes (bottom right) are singularities in space, quantum critical points (QCPs) are point-like intersections between different states of a quantum material where all sorts of strange electron behavior are predicted to occur. A SLAC study found strong evidence for one such behavior: As a cuprate superconductor was tuned toward a QCP in the superconducting state at low temperatures, a proliferation of quantum fluctuations gradually melted charge stripes (from top left) - alternating stripes of stronger and weaker electron density - in the material. Credit: Greg Stewart/SLAC National Accelerator Laboratory

At the same time, the X-rays and the phonons can excite electrons in the charge order stripes, causing the stripes to fluctuate. Since the data obtained by RIXS reflects the coupling between the behavior of the charge stripes and the behavior of the phonons, observing the phonons allowed the researchers to measure the behavior of the charge order stripes, too.

What the scientists expected to see is that when the charge order stripes grew weaker, their excitations would also fade away. "But what we observed was very strange," Lee said. "We saw that when charge order became weaker in the superconducting state, the charge order excitations became stronger. This is a paradox because they should go hand in hand, and that's what people find in other charge order systems."

He added, "To my knowledge this is the first experiment about charge order that has shown this behavior. Some have suggested that this is what happens when a system is near a quantum critical point, where quantum fluctuations become so strong that they melt the charge order, much like heating ice increases thermal vibrations in its rigid atomic lattice and melts it into water. The difference is that quantum melting, in principle, occurs at zero temperature." In this case, Lee said, the unexpectedly strong charge order excitations seen with RIXS were manifestations of those quantum fluctuations.

Lee said the team is now studying these phenomena at a wider range of temperatures and at different levels of doping—where compounds are added to change the density of freely moving electrons in the material—to see if they can nail down exactly where the quantum critical point could be in this material.

Thomas Devereaux, a theorist at SIMES and senior author of the report, noted that many phases of matter can be intertwined in cuprates and other quantum materials.

"Superconducting and magnetic states, charge order stripes and so on are so entangled that you can be in all of them at the same time," he said. "But we're stuck in our classical way of thinking that they have to be either one way or another."

Here, he said, "We have an effect, and Wei-Sheng is trying to measure it in detail, trying to see what's going on."

More information: W. S. Lee et al. Spectroscopic fingerprint of charge order melting driven by quantum fluctuations in a cuprate, *Nature Physics* (2020). DOI: [10.1038/s41567-020-0993-7](https://doi.org/10.1038/s41567-020-0993-7)

Journal information: [Nature Physics](https://phys.org/news/2020-08-evidence-quantum-fluctuations-critical-superconductor.html)
<https://phys.org/news/2020-08-evidence-quantum-fluctuations-critical-superconductor.html>



Tue, 01 Sep 2020

True holographic movies are within grasp

Holographic movies, like the one R2D2 projected of Princess Leia in "Star Wars: A New Hope," have long been the province of science fiction, but for most of us, the extent of our experience with holograms may be the dime-sized stamps on our passports and credit cards. By using 'metasurface' materials that can manipulate light in ways that natural materials cannot, researchers reckon they have finally seen the light at the end of the tunnel for creating true holographic movies.

The findings, by a team at the Tokyo University of Agriculture and Technology (TUAT), were published on August 3rd in *Optics Express*.

Static holograms are all around us these days on our money, credit cards, and passports.

These 'surface-relief holograms,' stamped onto plastic in a similar way to how vinyl records are embossed, can be useful as a security device or to make wrapping paper twinkle, but they are known for their low image quality, still imagery, and limited viewing angle. In the third decade of the 21st Century, we don't yet have true holographic movies, despite their ubiquity in popular culture.

Even the 'holograms' of pop stars that are increasingly common spectacles at concerts aren't true holograms, but an updated version of a very old theatrical trick deceiving the eye with mirrors and light—an illusion that is easily revealed as such if the viewer moves just slightly to the side of the set-up.

But researchers at Tokyo University of Agriculture and Technology have demonstrated a genuine holographic movie, whose concept is inspired by the sequential playback of the very first cinematographic projectors of the 19th century.

The proof of concept depends on what is called a metasurface, a thin film material just nanometers thick whose microstructure is artificially crafted in a way to

deliver characteristics, such as clever manipulation of light, that are not found in naturally occurring materials. Metasurfaces involve very tiny repeating patterns at scales smaller than the wavelength of light. It is their shape and particular arrangement, rather than, as with conventional materials, their chemical composition, that allows metasurfaces to alter the path of light.

The researchers 'printed' an array of 48 rectangular frames of a metasurface made primarily of gold and which diffracts laser light shone at it in such a way as to produce a true holographic three-dimensional image appearing mid-air (just like Princess Leia), viewable from most angles in the room.

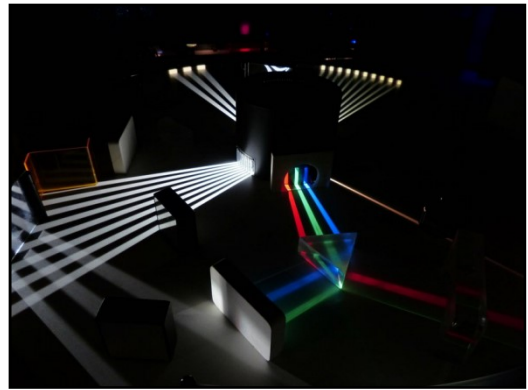
Each of the metasurface frames is slightly different—as with a reel of celluloid film—using 48 images of the Earth rotating. The holographic movie was played back by sequentially reconstructing each frame at a rate of 30 frames per second—the frame rate used in most live TV.

"We're using a helium-neon laser as the light source, which produces a reddish holographic image," said Kentaro Iwami, one of the engineers who developed the system, "so the aim is to develop this to produce full color eventually. And we want it to be viewable from any angle: a 'whole hemisphere' 3-D projection."

It also took an electron-beam lithography printer six and a half hours to draw the 48 frames—an extremely short film run on a loop. A six-minute holographic movie would take just over 800 hours to draw, the researchers reckon.

More information: Ryota Izumi et al, Metasurface holographic movie: a cinematographic approach, *Optics Express* (2020). DOI: [10.1364/OE.399369](https://doi.org/10.1364/OE.399369)

Journal information: [Optics Express](https://phys.org/news/2020-08-true-holographic-movies-grasp.html)
<https://phys.org/news/2020-08-true-holographic-movies-grasp.html>



Credit: CC0 Public Domain

Researchers develop new X-ray detection technology

By Bill Wellock

Florida State University researchers have developed a new material that could be used to make flexible X-ray detectors that are less harmful to the environment and cost less than existing technologies.

The team led by Biwu Ma, a professor in the Department of Chemistry and Biochemistry, created X-ray scintillators that use an environmentally friendly material. Their research was published in the journal *Nature Communications*.

"Developing low-cost scintillation materials that can be easily manufactured and that perform well remains a great challenge," Ma said. "This work paves the way for exploring new approaches to create these important devices."

X-ray scintillators convert the radiation of an X-ray into visible light, and they are a common type of X-ray detector. When you visit the dentist or the airport, scintillators are used to take images of your teeth or scan your luggage.

Various materials have been used to make X-ray scintillators, but they can be difficult or expensive to manufacture. Some recent developments use compounds that include lead, but the toxicity of lead could be a concern.

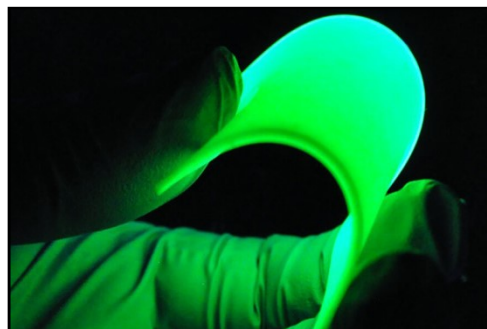
Ma's team found a different solution. They used the compound organic manganese halide to create scintillators that don't use lead or heavy metals. The compound can be used to make a powder that performs very well for imaging and can be combined with a polymer to create a flexible composite that can be used as a scintillator. That flexibility broadens the potential use of this technology.

"Researchers have made scintillators with a variety of compounds, but this technology offers something that combines low cost with high performance and environmentally friendly materials," Ma said. "When you also consider the ability to make flexible scintillators, it's a promising avenue to explore."

Ma recently received a GAP Commercialization Investment Program grant from the FSU Office of the Vice President for Research to develop this technology. The grants help faculty members turn their research into possible commercial products.

More information: Liang-Jin Xu et al, Highly efficient eco-friendly X-ray scintillators based on an organic manganese halide, *Nature Communications* (2020). DOI: [10.1038/s41467-020-18119-y](https://doi.org/10.1038/s41467-020-18119-y)

Journal information: [Nature Communications](https://phys.org/news/2020-08-x-ray-technology.html)
<https://phys.org/news/2020-08-x-ray-technology.html>



A researcher holds a flexible X-ray scintillator developed by Professor Biwu Ma and his research team. The team has developed a new material that could be used to make flexible X-ray detectors that are less harmful to the environment and cost less than existing technologies. Credit: Photo courtesy of Biwu Ma / Florida State University

Scientists develop first drug-like compounds to inhibit elusive cancer-linked enzymes

By Lan Densky

A team of scientists from the University of Michigan Rogel Cancer Center has developed the first drug-like compounds to inhibit a key family of enzymes whose malfunction is associated with several types of cancer, including an aggressive form of childhood leukemia.

The enzymes—known as the nuclear receptor-binding SET domain (NSD) family of histone methyltransferases—have long been an attractive drug target, but efforts to attack them have previously proved elusive because the shape of the binding sites in these enzymes makes it difficult for drug-like molecules to bind to it.

The research team—led by Tomasz Cierpicki, Ph.D., and Jolanta Grembecka, Ph.D.—used a variety of techniques including X-ray crystallography and nuclear magnetic resonance to develop first-in-class inhibitors of a key protein known as NSD1, according to findings published in *Nature Chemical Biology*.



Credit: CC0 Public Domain

The team's lead compound—known as BT5—showed promising activity in leukemia cells with the NUP98-NSD1 chromosomal translocation that is seen in a subset of pediatric leukemia patients.

"Our study, which was years in the making, demonstrates that targeting this key enzyme with small-molecule inhibitors is a feasible approach," says Cierpicki, an associate professor of biophysics and pathology at U-M. "These findings will facilitate the development of the next generation of potent and selective inhibitors of these enzymes, which are overexpressed, mutated or undergo translocations in several types of cancer."

More information: Huang Huang et al, Covalent inhibition of NSD1 histone methyltransferase, *Nature Chemical Biology* (2020). DOI: [10.1038/s41589-020-0626-6](https://doi.org/10.1038/s41589-020-0626-6)

Journal information: *Nature Chemical Biology*

<https://phys.org/news/2020-08-scientists-drug-like-compounds-inhibit-elusive.html>

Portable, point-of-care COVID-19 test could bypass the lab, study finds

Summary:

Researchers have demonstrated a prototype of a rapid COVID-19 molecular test and a simple-to-use, portable instrument for reading the results with a smartphone in 30 minutes, which could enable point-of-care diagnosis without needing to send samples to a lab.

As COVID-19 continues to spread, bottlenecks in supplies and laboratory personnel have led to long waiting times for results in some areas. In a new study, University of Illinois, Urbana-Champaign researchers have demonstrated a prototype of a rapid COVID-19 molecular test and a simple-to-use, portable instrument for reading the results with a smartphone in 30 minutes, which could enable point-of-care diagnosis without needing to send samples to a lab.

"If such a device and test were available, we could test for COVID-19 at public events, auditoriums, large gatherings and potentially even at home for self-testing. The results could be sent back to the appropriate public health system for coordination," said Rashid Bashir, a professor of bioengineering and the dean of the Grainger College of Engineering at Illinois. Bashir co-led the study with electrical and computer engineering professor Brian Cunningham and mechanical science and engineering professor Bill King.

Typical tests for SARS-CoV-2, the virus that causes COVID-19, take a sample from a patient with a long nasopharyngeal swab, put that swab into a substance called viral transport media, and send it to a lab for a multistep process of extracting, isolating and multiplying the telltale RNA inside the virus. This RNA multiplication process, called RT-PCR, requires several temperature fluctuation cycles, specialized equipment and trained personnel, Cunningham said.

As reported in the *Proceedings of the National Academy of Sciences*, the Illinois team used a simpler process to analyze the viral transport media, called LAMP, which bypasses the RNA extraction and purification steps.

"LAMP only needs one temperature -- 65 C -- so it is much easier to control," said graduate student Anurup Ganguli, the first author of the study. "Also, LAMP works more robustly than PCR, especially when there are contaminants in the test sample. We can just briefly heat the sample, break open the virus and detect the genetic sequence that specifically identifies SARS-CoV-2."

The researchers compared the LAMP assay with PCR, first using synthetic nasal fluid spiked with the virus and then with clinical samples. They found the results were in agreement with PCR results, and they documented the sensitivity and specificity of the LAMP test.

Then, the researchers incorporated the LAMP assay onto a small 3D-printed microfluidic cartridge that has two input slots for syringes: one for the sample-containing viral transport media, one for the LAMP chemicals. Once the two are injected, they react within the cartridge.

"We use modern, high speed additive manufacturing to make these cartridges. The entire thing can be quickly scaled up to hundreds of thousands of tests," King said. "Production scale-up is typically the biggest obstacle for commercial applications of microfluidic cartridges, and we can overcome that obstacle using this new approach. Modern additive manufacturing is elastic and scalable, and it can be ramped up very quickly compared with legacy manufacturing technologies."

The team is working with Fast Radius Inc., a Chicago-based technology company King co-founded, to manufacture the microfluidic cartridges.

The cartridge can be inserted into a hand-held portable instrument with a heating chamber, which heats the cartridge to 65 degrees Celsius for the duration of the reaction, and a smartphone cradle for reading the results. In approximately 30 minutes, a positive result will emit fluorescent light.

"The reader illuminates the liquid compartments with light from blue LEDs, while the phone's rear-facing camera records a movie of the green fluorescent light being generated," Cunningham said.

The researchers demonstrated the portable device with additional clinical samples, and found the results matched those of the standard PCR lab procedure.

The researchers are exploring whether the assay would work with saliva samples to eliminate the need for nasopharyngeal swabs, and collecting more patient data as they consider next steps for regulatory approvals, Bashir said.

The National Science Foundation, the National Institutes of Health and the Defense Advanced Research Projects Agency supported this work. Clinical samples were obtained from OSF HealthCare in collaboration with Dr. Sarah Stewart deRamirez and with support from the Jump Applied Research in Community Health through Engineering and Simulation partnership between OSF HealthCare and the U. of I.

Bashir, Cunningham and King are affiliated with the Beckman Institute for Advanced Science and Technology, the Carle Illinois College of Medicine and the Holonyak Micro and Nanotechnology Lab at Illinois. Bashir and Cunningham also are affiliated with the Cancer Center at Illinois and the Carl R. Woese Institute for Genomic Biology.

Story Source:

[Materials](#) provided by [University of Illinois at Urbana-Champaign, News Bureau](#). Original written by Liz Ahlberg Touchstone. *Note: Content may be edited for style and length.*

Journal Reference:

1. Anurup Ganguli, Ariana Mostafa, Jacob Berger, Mehmet Y. Aydin, Fu Sun, Sarah A. Stewart De Ramirez, Enrique Valera, Brian T. Cunningham, William P. King, Rashid Bashir. **Rapid isothermal amplification and portable detection system for SARS-CoV-2.** *Proceedings of the National Academy of Sciences*, Aug. 31, 2020; DOI: [10.1073/pnas.2014739117](https://doi.org/10.1073/pnas.2014739117)
<https://www.sciencedaily.com/releases/2020/08/200831165702.htm>

India's first covid vaccine: No side effects seen in trials of Covaxin so far

- *Blood samples of the volunteers will also be collected on different days for estimating the duration of protection*
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Preparations are underway at a hospital here for the commencement of the second phase of human clinical trial of 'Covaxin', India's indigenous COVID-19 vaccine, officials said.

"The Phase I of the trial is still continuing as we are planning for the start of the Phase II trial shortly," Dr E Venkata Rao, Principal Investigator of the trial at Institute of Medical Sciences and SUM Hospital, faculty of medical sciences, said.

The blood samples collected from the volunteers who received the vaccine were to ascertain how effective the vaccine was in terms of the level of antibodies developed, Dr Rao said, adding that there had been 'no side effects' in the first phase trial of the vaccine. The IMS and SUM Hospital is one of the 12 medical centres in the country chosen by the Indian Council for Medical Research (ICMR) for conducting the human trial of the vaccine developed by Hyderabad-based Bharat Biotech.

"Two doses of the vaccine were administered to each volunteer after they were selected through a screening process conducted over a period of three to seven days prior to vaccination. The first dose was administered on Day Zero while the blood sample was collected. The second dose was given on Day 14 and the blood sample was also collected," Dr Rao said.

Blood samples of the volunteers will also be collected on different days (28, 42, 104, 194 day) for estimating the duration of protection subsequently, he added. Dr Rao said there was a lot of enthusiasm among people to be part of the second phase of the human trial.

Those who wish to be part of this trial could contact the centre at <http://ptctu.soa.ac.in>, he said.

There are over seven anti-corona vaccines at various stages of development in the country with two of them having received the drug regulator's go-ahead to start the human clinical trials of their vaccines.

Meanwhile, Union Health Minister Dr Harsh Vardhan on Sunday expressed confidence that the country's COVID-19 count will be "under control" by Diwali this year.

Inaugurating the 'Nation First' webinar series, organised by the Anathkumar Foundation, he pointed out that the country was much ahead in tackling the pandemic.

"The COVID-19 will significantly come under control by the Deepavali this year. The leaders and common people effectively worked together to fight the pandemic. He inaugurated Nation first webinar series organised by Ananth Kumar Foundation," the press release said.

He further said that the health officials had held a meeting much before the first COVID-19 case was reported in India. *(With inputs from agencies)*

<https://www.livemint.com/science/health/india-s-first-covid-vaccine-no-side-effects-seen-in-trials-of-covaxin-so-far-updates-11598851185907.html>

Must assume that effective COVID-19 vaccine would not be available in near future: Experts

New Delhi: Public health experts and doctors, including those from AIIMS and ICMR's National Task Force on COVID-19 have said it must be assumed that an effective vaccine against coronavirus "would not be available in the near future" and any false sense of hope that this panacea is just around the corner must be avoided.

In a joint statement submitted to the prime minister, experts of Indian Public Health Association (IPHA), Indian Association of Preventive and Social Medicine (IAPSM) and Indian Association of Epidemiologists (IAE) have said while being optimistic, the prevention and control strategy should also prepare for the worst.

"Vaccines have no role in current ongoing pandemic control. However, whenever available, the vaccine may play a role in providing personal protection to high-risk individuals like Healthcare workers (HCWs) and elderly with comorbidities," the experts said.

"It must be assumed that an effective vaccine would not be available in near future. We must avoid false sense of hope that this panacea is just around the corner," they said.

Vaccines with proven efficacy and safety, as and when available, should be administered according to the WHO's "strategic allocation" approach or a multi-tiered risk-based approach.

Vaccines may theoretically be a useful intervention in future, if and when made available for public health use, the experts said, highlighting many countries, including Russia and China, are fast-tracking the vaccine development which might have concerns of efficacy and safety.

Highlighting that the ongoing pandemic is a public health problem that is fast worsening the existing health inequities, and not a law and order problem, the experts stressed that it should be dealt with empathy and meaningful community engagement.

The way forward needs to take into account contextual constraints and community interests and design optimal interventions that require technical competence blended with good judgment, clarity and trust, they said.

State and district level epidemiologists would have been an excellent resource to interpret the data locally, and suggest context specific response, the experts said.

"However, these posts are mostly lying vacant due to poor salary structure. There is an urgent need to declare their posts as specialist post requiring MD degree in Community Medicine or Preventive and Social Medicine and recruit qualified persons," they said.

Experts also recommended that state and national level serosurveillance surveys need to be undertaken to monitor the pandemic and modify the control strategies accordingly.

In future use of already existing sero-surveillance platform could be a cost-effective way to do the sero surveillance. All the sero surveillance must be supervised by trained public health specialists (MD Community Medicine) from local medical colleges, and public health institutions, they said.

Experts also recommended that role of front-line community health workers in COVID-19 control activities needs to be acknowledged and due recognition given to these front line COVID-19 warriors.

"This will not only boost the efforts of prevention and control of epidemic in the field but also community at a large will realize the importance of preventive measures and join hands in efforts for with government in prevention and control," they said.

The 20-member joint COVID Task Force includes Dr Shashi Kant, past president IAPSM, and Head of the Centre for Community Medicine at AIIMS, New Delhi, Dr Sanjay K Rai, national

president, IPHA and Professor, CCM, AIIMS, Dr Kapil Yadav, additional professor, CCM, AIIMS, New Delhi, Dr Sujeet Kumar Singh, Director of National Centre for Disease Control (NCDC), Dr D C S Reddy, former professor and head, Community Medicine, IMS, BHU, Varanasi and Dr. Rajesh Kumar, former Professor and Head, DCM &SPH, PGIMER, Chandigarh.

Dr Singh and Dr Kant are members of ICMR National Task Force on COVID-19 while Dr Reddy chairs the ICMR research group on epidemiology and surveillance for COVID-19.

(Disclaimer: This story has not been edited by Outlook staff and is auto-generated from news agency feeds. Source: PTI)

<https://www.outlookindia.com/newscroll/must-assume-that-effective-covid19-vaccine-would-not-be-available-in-near-future-experts/1926754>

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Obese people might be at a higher risk of COVID-19 complications, studies find

A new study led by the University of North Carolina at Chapel Hill raises concerns about the impact of obesity on the effectiveness of a future COVID-19 vaccine

Washington: A troubling connection between two health crises: coronavirus and obesity have been explored in a novel review of COVID-19 studies.

From COVID-19 risk to recovery, the odds are stacked against those with obesity, and a new study led by the University of North Carolina at Chapel Hill raises concerns about the impact of obesity on the effectiveness of a future COVID-19 vaccine.

Researchers examined the available published literature on individuals infected with the virus and found that those with obesity (BMI over 30) were at a greatly increased risk for hospitalization (113%), more likely to be admitted to the intensive care unit (74%), and had a higher risk of death (48%) from the virus.

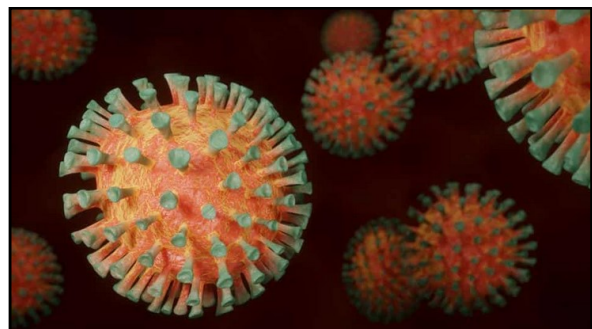
A team of researchers at UNC-Chapel Hill's Gillings School of Global Public Health, including lead author Barry Popkin, a professor in the Department of Nutrition and member of the Carolina Population Center, collaborated with senior author Meera Shekar, a World Bank health and nutrition specialist, on the paper published in Obesity Reviews.

For the paper, researchers reviewed immunological and biomedical data to provide a detailed layout of the mechanisms and pathways that link obesity with increased risk of COVID-19 as well as an increased likelihood of developing more severe complications from the virus.

Obesity is already associated with numerous underlying risk factors for COVID-19, including hypertension, heart disease type 2 diabetes, and chronic kidney and liver disease.

Metabolic changes caused by obesity - such as insulin resistance and inflammation - making it difficult for individuals with obesity to fight some infections, a trend that can be seen in other infectious diseases, such as influenza and hepatitis.

During times of infection, uncontrolled serum glucose, which is common in individuals with hyperglycemia, can impair immune cell function.



A troubling connection between two health crises: coronavirus and obesity have been explored in a novel review of COVID-19 studies.(Pixabay)

“All of these factors can influence immune cell metabolism, which determines how bodies respond to pathogens, like the SARS-CoV-2 coronavirus,” says co-author Melinda Beck, professor of nutrition at Gillings School of Global Public Health. “Individuals with obesity are also more likely to experience physical ailments that make fighting this disease harder, such as sleep apnea, which increases pulmonary hypertension, or a body mass index that increases difficulties in a hospital setting with intubation.”

Previous work by Beck and others has demonstrated that the influenza vaccine is less effective in adults with obesity. The same may be true for a future SARS-CoV-2 vaccine, says Beck.

“However, we are not saying that the vaccine will be ineffective in populations with obesity, but rather that obesity should be considered as a modifying factor to be considered for vaccine testing,” she says. “Even a less protective vaccine will still offer some level of immunity.”

Roughly 40 per cent of Americans are obese and the pandemic’s resulting lockdown has led to a number of conditions that make it harder for individuals to achieve or sustain a healthy weight.

Working from home, limiting social visits and a reduction in everyday activities - all in an effort to stop the spread of the virus - means we’re moving less than ever, says Popkin.

The ability to access healthy foods has also taken a hit. Economic hardships put those who are already food insecure at further risk, making them more vulnerable to conditions that can arise from consuming unhealthy foods.

“We’re not only at home more and experience more stress due to the pandemic, but we’re also not visiting the grocery store as often, which means the demand for highly processed junk foods and sugary beverages that are less expensive and more shelf-stable has increased,” he says. “These cheap, highly processed foods are high in sugar, sodium and saturated fat and laden with highly refined carbohydrates, which all increase the risk of not only excess weight gain but also key noncommunicable diseases.”

Popkin, who is part of the Global Food Research Program at UNC-Chapel Hill, says the findings highlight why governments must address the underlying dietary contributors to obesity and implement strong public health policies proven to reduce obesity at a population level.

Other countries, like Chile and Mexico, have adopted policies from taxing foods high in sugar to introducing warning labels on packaged foods that are high in sugar, fats and sodium and restricting the marketing of junk foods to children.

“Given the significant threat COVID-19 represents to individuals with obesity, healthy food policies can play a supportive - and especially important - role in the mitigation of COVID-19 mortality and morbidity,” he says.

(This story has been published from a wire agency feed without modifications to the text. Only the headline has been changed.)

<https://www.hindustantimes.com/health/obese-people-might-be-at-a-higher-risk-of-covid-19-complications-studies-find/story-eXWbyzmSgmRUMm1hCJDuSO.html>

