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अमर उजाला

Fri, 16 April 2021

उत्तराखंड : 'विशेष जैल' से बुझेगी जंगलों की आग, रक्षा अनुसंधान एवं विकास संगठन के वैज्ञानिकों ने किया तैयार

सार

डीआरडीओ नई दिल्ली के वैज्ञानिकों की टीम ने देहरादून में वन विभाग और अग्निशमन विभाग के अधिकारियों के साथ जंगल में कृत्रिम आग लगाकर फायर जैल का ट्रायल भी किया।

विस्तार

देहरादून: वनाधिकारियों, वनकर्मियों के साथ ही अग्निशमन कर्मियों के लिए यह खबर राहत देने वाली है। रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) के वैज्ञानिकों ने एक विशेष प्रकार का फायर जैल तैयार किया है। इसके जरिए न सिर्फ आग की घटनाओं पर तत्काल काबू पाया जा सकता है, वरन वनाग्नि की घटनाओं को भी रोका जा सकता है।

डीआरडीओ नई दिल्ली के वैज्ञानिकों की टीम ने देहरादून में वन विभाग और अग्निशमन विभाग के अधिकारियों के साथ जंगल में कृत्रिम आग लगाकर फायर जैल का ट्रायल भी किया। वन विभाग के अधिकारियों की मानें तो डीआरडीओ के वैज्ञानिकों का ट्रायल काफी हद तक सफल रहा है।

भारतीय वन सर्वेक्षण के ही आंकड़ों पर नजर डालें तो देश के तमाम राज्यों में 22622 हेक्टेयर जंगल अत्यंत अग्नि प्रवण की श्रेणी में शामिल हैं। 42495 हेक्टेयर जंगल

बहुत अधिक अग्नि प्रवण श्रेणी में, जबकि, 75792 हेक्टेयर जंगल अति अग्नि प्रवण श्रेणी में शामिल हैं। संवेदनशील इन तमाम जंगलों में हर साल बड़े पैमाने पर आग लगने की घटनाएं होती हैं।

जैल को पानी में मिलाकर तैयार की फायर लाइन

हालांकि, भारतीय वन सर्वेक्षण के वैज्ञानिक सेटलाइट के जरिए 24 घंटे जंगलों की निगरानी करते हैं और जहां पर भी आग लगने की घटना होती है, संबंधित राज्यों के आला अधिकारियों को तत्काल इसकी जानकारी दी जाती है।

लेकिन इतना सब कुछ होने के बावजूद जंगलों में आग लगने की घटनाएं साल दर साल बढ़ती जा रही हैं। ऐसे में अब डीआरडीओ के वैज्ञानिकों ने वनाग्नि पर प्रभावी अंकुश के लिए विशेष प्रकार का फायर जैल तैयार किया है।



वनाग्नि की घटनाओं को भी रोका जा सकता - फोटो : अमर उजाला फाइल फोटो

डीआरडीओ वैज्ञानिक केसी वाधवा की अगुवाई में देहरादून से सटे थानों क्षेत्र के जंगलों में विशेष फायर जैल का ट्रायल किया गया। वन विभाग के एसडीओ बीबी मर्तोलिया के मुताबिक फिलहाल ट्रायल काफी हद तक सफल रहा है।

वन विभाग के अधिकारियों ने बताया कि डीआरडीओ वैज्ञानिकों ने जैल को पानी में मिलाकर फायर लाइन बनाई। परिणामस्वरूप आग आगे नहीं फैल पाई और प्रयोग बेहद सफल रहा। एसडीओ ने बताया कि एक बार स्प्रे करने पर जैल का प्रभाव चार-पांच दिनों तक रहता है और आग आगे नहीं बढ़ पाती।

यह प्रयोग मैदानी क्षेत्रों के जंगलों में लगने वाली आग के लिए काफी कारगर है। पर्वतीय क्षेत्रों के जंगलों में आग लगने पर फायर जैल का कोई खास उपयोग नहीं होगा। इसके लिए डीआरडीओ वैज्ञानिकों को कोई और तकनीक विकसित करनी होगी।

<https://www.amarujala.com/dehradun/wildfire-in-uttarakhand-this-special-gel-forest-fires-will-be-extinguished?pageId=1>



Fri, 16 April 2021

उत्तराखंड के जंगलों की आग बुझाएगा डीआरडीओ द्वारा तैयार किया गया खास तरह का जैल, ये है फायर सप्रेसिंग की खासियत

By ओमप्रकाश

देहरादून: उत्तराखंड के जंगलों में भड़की आग को अब विशेष प्रकार के जैल से काबू किया जाएगा। दिल्ली से आई रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) की एक टीम ने वन विभाग के साथ दून में दो जगहों पर इसका ट्रायल किया है। इसके नतीजे अच्छे रहे। डीआरडीओ के सेंटर फॉर फायर, एक्सप्लोसिव एंड इन्वायरमेंट सेफ्टी (सीएफईईएस) ने ये फायर सप्रेसिंग (अग्नि शमन) जैल तैयार किया है। यह जैल दुनिया के कई देशों में आग बुझाने में इस्तेमाल होता है। सीएफईईएस के एसोसिएट डायरेक्टर डॉ. केसी वाधवा ने बताया कि अभी कुआंवाला और लाडपुर के जंगल में इसका ट्रायल किया गया।

इसमें लाडपुर में तो जंगल में एक प्लॉट बनाकर आग लगाई गई और इस जैल को पानी में मिलाकर बुझाई गई। कुआंवाला में जंगल में लगी एक भीषण आग पर भी इसका ट्रायल किया गया, जो काफी सफल रहा। डॉ. वाधवा के अनुसार, ये जैल पानी की खपत को 60 प्रतिशत तक कम करता है। साथ ही पानी को जल्द भाप बनने और बहने से रोकता है। जिस आग में ये जैल पानी में मिलाकर डाला जाता है, वहां काफी समय तक नमी बनी रहती है। रायपुर रेंजर राकेश नेगी ने बताया कि वन विभाग और डीआरडीओ की टीम ने लाडपुर में इसका ट्रायल किया, जो काफी अच्छा रहा। ये बेहद कारगर है।



सात दिन तक जंगल को बना सकता है अग्निरोधक

डॉ. वाधवा के अनुसार यह ईको फ्रेंडली पालीमर बेस्ड जैल है, जो आग पानी में घुलने वाले खास तरह के अग्निरोधी पदार्थों से बनाया गया है। इसको पानी में प्वाइंट 6 से प्वाइंट 8 प्रतिशत तक मिलाते हैं। ये पानी में मिलकर छोटे से छोटे अग्निशमन उपकरण से डाला जा सकता है। अगर संवेदनशील इलाकों में इस जैल से फायर लाइन बना दी जाए

या उस पूरे इलाके में पहले ही छिड़काव कर दें तो आग लगने की आशंका काफी कम हो जाएगी। इसका प्रभाव कम से कम सात दिन तक रहेगा। ये जमीन में नमी को बनाए रखने में भी मदद करता है। इससे आग लगने की संभावना भी काफी कम हो जाती है। इसकी एक्सपायरी का समय पांच साल तक है।

<https://www.livehindustan.com/uttarakhand/story-drdo-centre-for-fire-excellence-and-environment-safety-made-fire-suppressing-gel-to-control-forest-fire-in-uttarakhand-3977765.html>

The Tribune

Fri, 16 April 2021

Rajnath to IAF: Include new technology in readiness plan

New Delhi: Defence Minister Rajnath Singh has asked the Indian Air Force (IAF) to include all dimensions of war-like advanced technologies, asymmetric capabilities and info-dominance as part of readiness for the future.

All praise for timely response at LAC

- At the Commanders' Conference, Defence Minister Rajnath Singh congratulated the IAF on ensuring a timely and befitting response to the sudden developments in eastern Ladakh
- He advised the Commanders to draw up long-term strategies for capability enhancement to counter future threats
- Appreciating the IAF's order for 83 planes of the LCA Tejas Mark 1A version, Rajnath said it would result in a substantial boost to the domestic industry



Defence Minister Rajnath Singh with IAF Chief RKS Bhaduria.

He was addressing the IAF Commanders' Conference, where he advised the Commanders to draw up long-term plans and strategies for capability enhancement to counter future threats. The focus of the conference is to look at new technologies that can define future wars. A series of discussions include strategies and policies related to capabilities that would give the IAF a significant edge over its adversaries.

The conference assumes significance as the IAF is working towards having threat-assessment-based artificial intelligence (AI) and using the upcoming technology to train pilots to assess their activities while flying planes. The IAF is working towards a system of automated threat analyses based on the AI. This improves situational awareness for monitoring threats.

The IAF is already backing a programme for "manned-unmanned teaming", which means an unmanned fighter jet will be part of a patrol of fighter jets in future war scenarios. A prototype of design was unveiled at the Aero-India in Bengaluru in February. The US and the UK are other countries that have plans for such unmanned fighter jets. He referred to changing international geopolitics. The minister spoke about the perceptible shift of focus from Trans-Atlantic to Trans-Pacific. — TNS

<https://www.tribuneindia.com/news/nation/rajnath-to-iaf-include-new-technology-in-readiness-plan-239728>

दुनिया की सबसे तीखी मिर्च भूत झोलकिया की खेती भारत के कौन से राज्यों में होती है...जानिए इससे जुड़ी सभी बातें...

भूत झोलकिया मिर्च का इस्तेमाल खान-पान के लिए ही नहीं, बल्कि देश के सुरक्षा बल उपद्रवियों के खिलाफ भी इस्तेमाल करते हैं। सीमा सुरक्षा बल यानि बीएसएफ की ग्वालियर, टेकनपुर स्थित टियर स्मोक यूनिट इस मिर्च के इस्तेमाल से आंसू गैस के गोले बनाती है।

Edited By: अंकित त्यागी

जैसा इसका नाम है वैसा ही काम भी है। जी हां, भूत झोलकिया नाम की मिर्च दुनिया की सबसे तीखी मिर्च में आती है। इसे घोस्ट चिली के नाम से जाना जाता है। यह दुनिया की सबसे ज्वलनशील मिर्च मानी जाती है। आपको ये जानकार हैरानी होगी कि इसका इस्तेमाल खाने से लेकर हथियार जैसे हैंड ग्रेनेड में भी होता है। भारत में भूत झोलकिया मिर्च की खेती असम, नागालैंड और मणिपुर में होती है।

मिर्च का तीखापन स्कोवाइल हीट यूनिट (एसएचयू) में मापा जाता है। जिस मिर्च में एसएचयू सबसे ज्यादा होता है, उतनी ही मिर्च अधिक तीखी होती है।

सामान्य मिर्च का स्तर 2500-5000 एसएचयू होता है, वहीं भूत झोलकिया मिर्च में तीखापन 10,41,427 एसएचयू मापा गया है। इस मिर्च को भूत काली मिर्च, घोस्ट चिली, घोस्ट पेपर और नागा झोलकिया के नाम से भी जाना जाता है।



भूत झोलकिया मिर्च (फाइल फोटो)

मीडिया रिपोर्ट्स के मुताबिक, भूत झोलकिया मिर्च के पौधे की ऊंचाई आमतौर पर 40 से 120 सेंटीमीटर तक होती है। इस पौधे में लगने वाले मिर्च की चौड़ाई 1 से 1.2 इंच तक की होती है और लंबाई 3 इंच से भी ज्यादा हो सकती है। बुवाई के बाद महज 75 से 90 दिनों में मिर्च आने लगती है। मसाले के रूप में इस मिर्च की पूरी दुनिया में बहुत ज्यादा डिमांड है।

इस मिर्च और कहां-कहां इस्तेमाल होता है?

भूत झोलकिया मिर्च का इस्तेमाल खान-पान के लिए ही नहीं, बल्कि देश के सुरक्षा बल भी आतंकवादियों या फिर से भीड़ को अलग-थलग करने के लिए इसका इस्तेमाल करते हैं। इन गोलों को दागने पर आंखों में तेज जलन होती है और दम घुटने लगता है। हालांकि इससे कोई शारीरिक नुकसान नहीं होता है।

बीएसएफ की ग्वालियर, टेकनपुर स्थित टियर स्मोक यूनिट इस मिर्च के इस्तेमाल से आंसू गैस के गोले बनाती है। यह आंसू गैस के गोले आतंकवादियों को अलग-थलग करने के काम आते हैं।

रक्षा अनुसंधान और विकास संगठन (डीआरडीओ) ने भूत झोलकिया का इस्तेमाल एक सुरक्षा उपकरण में भी किया है। भूत झोलकिया मिर्च से मिर्च स्प्रे विकसित किया।

डीआरडीओ की तेजपुर यूनिट ने इस मिर्च स्प्रे को तैयार किया, जिससे महिलाएं आत्मरक्षा के लिए उपयोग कर सकती हैं, हालांकि यह मिर्च स्प्रे घातक नहीं है। इस पर परीक्षण पूरा होने के बाद डीआरडीओ आगे कदम उठाएगा।

<https://www.tv9hindi.com/agriculture/naga-chilli-bhut-jolokia-chilli-is-bhut-jolokia-pepper-is-the-hottest-chilli-in-india-which-is-the-hottest-chili-in-the-world-618233.html>

Rajnath offers DRDO's makeshift hospitals for city

By Subhash Mishra

Lucknow: In a major development, defence minister Rajnath Singh has offered services of defence officials to Chief Minister Yogi Adityanath for raising temporary hospitals in different parts of the city.

Rajnath Singh, who is MP from Lucknow, also spoke to Chief Minister Yogi Adityanath twice, requesting him to provide space to defence authorities for raising makeshift hospitals. Lucknow is witnessing a surge in Covid cases and the city's medical infrastructure is inadequate to face the medical crisis.

Talking to TOI, Diwakar Tripathi, lok sabha representative of Rajnath Singh, confirmed that the defence minister has requested the CM to provide banquet halls and open space in the Indira Gandhi Pratishthan or the BBD Academy to teams of the Defence Research and Development Organisation (DRDO) for raising the medical infrastructure on its own cost and provide beds and oxygen to patients.

Tripathi said that during the Defence Expo last year, the DRDO had signed an MOU with the UPEIDA to set up its own dedicated offices and infrastructure in Lucknow for the promotion of the state government's defence corridor. "Since the DRDO already has a chain of command and military hospitals in and around the city as well as the expert medical manpower, it can immediately intervene provided the district administration gives it space for setting up makeshift hospitals.

Rajnath Singh has been constantly in touch with doctors, BJP workers, officers and leaders of various unions, offering them the help they need. "On an average, Rajnath has been calling at least 50 people every day since the last week," Tripathi added.

<https://timesofindia.indiatimes.com/city/lucknow/rajnath-offers-drds-makeshift-hospitals-for-city/articleshow/82092850.cms>

रक्षामंत्री राजनाथ सिंह ने CM योगी से की बात, DRDO से UP के लिए चिकित्सा उपकरण देने की पेशकश

उत्तर प्रदेश में कोरोना संक्रमण की स्थिति को देखते हुए लखनऊ के सांसद और केंद्रीय रक्षा मंत्री राजनाथ सिंह ने मुख्यमंत्री योगी आदित्यनाथ से बातचीत की है। दोनों नेताओं के बीच प्रदेश में कोरोना की स्थिति पर चर्चा हुई

By कुमारी रंजना

लखनऊ: उत्तर प्रदेश में कोरोना संक्रमण (Corona Infection) की स्थिति को देखते हुए लखनऊ के सांसद और केंद्रीय रक्षा मंत्री राजनाथ सिंह (Rajnath Singh) ने मुख्यमंत्री योगी आदित्यनाथ (Yogi Adityanath) से बातचीत की है। रक्षामंत्री ने मुख्यमंत्री का हालचाल भी लिया और प्रदेश की स्थिति पर चर्चा की। केन्द्रीय रक्षा मंत्री ने मुख्यमंत्री से रक्षा मंत्रालय के DRDO संस्थान की ओर से चिकित्सा उपकरण उपलब्ध कराने की पेशकश भी की है।

गौरतलब है कि जनता को राहत दिलाने के योगी सरकार के द्वारा हरसंभव प्रयास किए जा रहे हैं। सेनेटाइजेशन व फागिंग की व्यवस्था तेज की जा रही हैं। राजधानी लखनऊ में निजी क्षेत्र के अस्पतालों में 281 बेड बढ़ा दिए गए हैं। बलरामपुर अस्पताल और किंग जॉर्ज मेडिकल यूनिवर्सिटी को डेडीकेटेड कोविड अस्पताल में परिवर्तित कर दिया गया है। अभी तक बलरामपुर अस्पताल में उपलब्ध 700 बेड में से 215 बेड कोविड के मरीजों के लिए उपलब्ध थे, पर अब सभी 700 बेड कोविड मरीजों के लिए उपलब्ध होंगे।



लखनऊ में कोरोना संक्रमण को लेकर रक्षामंत्री राजनाथ सिंह ने सीएम योगी से वार्ता की है. (File Photo)

राजधानी में KGMU में अभी तक लगभग 500 बेड ही कोरोना मरीजों के लिए उपलब्ध थे, परंतु अब वहां उपलब्ध सभी बेड कोविड के मरीजों के लिए उपलब्ध होंगे।

डॉक्टरों के रहने की व्यवस्था हॉस्टलों और होटलों में की जा रही है। इस बात को सुनिश्चित किया जा रहा है कि कहीं पर भी आक्सीजन की कमी नहीं होने पाए। रेमिडिसिवर इंजेक्शन, एम्बुलेंस की पर्याप्त मात्रा में उपलब्धता सुनिश्चित की जा रही है। आज रात से लखनऊ, प्रयागराज, वाराणसी, कानपुर नगर, गौतम बुद्ध नगर, मेरठ, गोरखपुर, झांसी, बरेली और बलिया में रात्रि 08 बजे से सुबह 07 बजे तक नाइट कर्फ्यू लगा दिया गया है। जिन जिलों में 500 से अधिक कोरोना के सक्रिय केस हैं, वहां पर जिलाधिकारी रात्रि 9 बजे से सुबह 6 बजे तक रात्रि कर्फ्यू लगाने का निर्णय ले सकते हैं। इसके साथ ही कन्टेनमेंट जोन की व्यवस्था को भी सख्ती से लागू किया जाएगा।

<https://hindi.news18.com/news/uttar-pradesh/lucknow-defense-minister-rajnath-singh-talks-to-cm-yogi-about-corona-pandemic-nodssp-3559717.html>

कोरोना संक्रमितों के लिए डीआरडीओ ने तैयार किए

250 बेड, अगले कुछ दिनों में डबल करेंगे संख्या

संक्रमित मरीजों का अस्पताल में इलाज शुरू हो सकेगा। पहले चरण में यहां पर 250 बेडों को मरीजों के लिए उपलब्ध कराया जा रहा है दूसरे चरण में यहां पर इतने ही (250) बेड और उपलब्ध करा दिए जाएंगे। कोरोना से संक्रमित होने वाले मरीजों को यहां भर्ती किया जा सकेगा।

By Vinay Kumar Tiwari

नई दिल्ली: राजधानी में कोरोना वायरस के बढ़ते मामलों को देखते हुए डीआरडीओ (रक्षा अनुसंधान एवं विकास संगठन- Defense research and development organization) की ओर से दिल्ली कैंट इलाके में कोरोना मरीजों के लिए 250 नए बेड वाले अस्पताल तैयार कर दिए गए हैं। रविवार से कोरोना से संक्रमित मरीजों का इस अस्पताल में इलाज शुरू हो सकेगा। पहले चरण में यहां पर 250 बेडों को मरीजों के लिए उपलब्ध कराया जा रहा है दूसरे चरण में यहां पर इतने ही (250) बेड और उपलब्ध करा दिए जाएंगे। कोरोना से संक्रमित होने वाले मरीजों को यहां भर्ती किया जा सकेगा।



मालूम हो कि साल 2020 में जब कोरोना संक्रमण फैला था उस समय भी डीआरडीओ की ओर से यहां पर इस तरह से अस्पताल बनाया गया था। डीआरडीओ ने यहां पर रिकॉर्ड समय में 1000 अस्पताल का बेड तैयार कर दिया था, अब स्थिति खराब होने पर

डीआरडीओ से फिर से इस तरह से अस्पताल बनाने के लिए कहा गया था जिसके बाद उनकी ओर से तैयारी शुरू की गई, अब 250 बेड तैयार कर दिए गए हैं। अगले कुछ दिनों में 250 और बेडों की संख्या बढ़ा दी जाएगी। उसके बाद भी यदि आवश्यकता होगी तो और बेड बढ़ाए जाएंगे।

साल 2020 में दिल्ली-एनसीआर में कोरोना वायरस संक्रमण के बढ़ते मामलों के बीच में रक्षा अनुसंधान एवं विकास संगठन ने पहले ही दिल्ली कैंट इलाके में 1000 बेड का अस्पताल तैयार किया था। उस समय अस्थाई कोविड-19 अस्पताल के बनने से लोगों के साथ दिल्ली सरकार और केंद्र सरकार ने भी राहत की सांस ली थी क्योंकि राजधानी दिल्ली में कोरोना वायरस मरीजों की संख्या बढ़कर 1 लाख के करीब पहुंच गई थी। ऐसे में इस अस्थाई अस्पताल की उपयोगिता काफी बढ़ गई थी।

<https://www.jagran.com/delhi/new-delhi-city-ncr-delhi-coronavirus-drdo-has-prepared-250-beds-for-corona-infected-will-double-the-number-in-the-next-few-days-21560557.html>

दिल्ली : फिर खुलेगा DRDO का सरदार वल्लभभाई पटेल कोविड हॉस्पिटल, बढ़ते कोरोना मामलों को देखकर लिया गया फैसला

राष्ट्रीय राजधानी दिल्ली (Delhi) में लगातार बढ़ रहे कोरोना (Coronavirus) के मामलों को देखते हुए सरकार काफी चिंतित है और इस भयावह स्थिति से निपटने के लिए हर तरह से ठोस कदम उठाए जा रहे हैं और ऐसी स्थिति में एक बार फिर आगे आते हुए रक्षा अनुसंधान एवं विकास संगठन (DRDO) अपने अस्थाई सरदार [...]

By विवेक शर्मा

राष्ट्रीय राजधानी दिल्ली में लगातार बढ़ रहे कोरोना के मामलों को देखते हुए सरकार काफी चिंतित है और इस भयावह स्थिति से निपटने के लिए हर तरह से ठोस कदम उठाए जा रहे हैं और ऐसी स्थिति में एक बार फिर आगे आते हुए रक्षा अनुसंधान एवं विकास संगठन (DRDO) अपने अस्थाई सरदार वल्लभभाई पटेल कोविड हॉस्पिटल (Sardar Vallabhbhai Patel Kovid Hospital) को जल्द शुरू करने जा रहा है, जिसे लेकर अस्पताल बनाने का काम जोर-शोर से चल रहा है।

बताया जा रहा है कि दिल्ली एयरपोर्ट के पास इस हॉस्पिटल को जल्द ही तैयार कर शुरू कर दिया जाएगा। जानकारी के मुताबिक, कोरोना के मामलों में आई कमी को देखते हुए इसी साल फरवरी के महीने में DRDO ने इस फैसिलिटी को बंद कर दिया था, लेकिन अब देश में कोरोना की दूसरी लहर में संक्रमण के मामले जिस तरह लगातार मामले बढ़ रहे हैं, इसे देखते हुए सूत्रों के मुताबिक, गृह मंत्रालय के आदेश पर DRDO इस अस्थाई अस्पताल को एक बार फिर से शुरू करने जा रहा है।



प्रतीकात्मक तस्वीर

ICU सुविधा के साथ होंगे 500 बेड

DRDO ने इस सेंटर को सरदार वल्लभभाई पटेल कोविड हॉस्पिटल नाम दिया है। बताया जा रहा है कि DRDO के इस कोविड हॉस्पिटल में ICU सुविधा के साथ 500 बेड होंगे। पहले चरण में 250 बेड तैयार किए जाएंगे, जिसके बाद जल्द ही इसकी संख्या 500 तक कर दी जाएगी। इस फैसिलिटी में DRDO के डॉक्टर्स और स्टाफ के अलावा अन्य सर्विसेज के डॉक्टर्स तैनात रहेंगे। 2020 के आखिर तक इस हॉस्पिटल में 3000 से भी ज्यादा कोरोना मरीजों का इलाज किया गया था। दिल्ली के अलावा डीआरडीओ ने बिहार की राजधानी पटना में भी एक अस्थाई कोविड हॉस्पिटल तैयार किया था।

दिल्ली में कोरोना की विकट स्थिति

दूसरी लहर के दौरान देश में कोरोनावायरस के मामले लगातार तेजी से बढ़ रहे हैं। दिल्ली में कोविड को लेकर स्थिति बेहद भयावह हो चुकी है। आज दिल्ली में कोरोना के 17,282 मामले सामने आए हैं। इन सब में सबसे ज्यादा खतरा बच्चों के लिए पैदा हो रहा है। दिल्ली के अस्पतालों में कोरोना पीड़ित बच्चों की संख्या में आठ गुना की बढ़ोतरी हुई है। इसी बीच, हाल ही में एक रिपोर्ट के मुताबिक, पता चला है कि यहां के कई बड़े अस्पतालों में कोरोना मरीजों के लिए बेड ही नहीं है। कोरोना के बढ़ते संकट के बीच अस्पतालों में बेड की किल्लत को दूर करने के लिए दिल्ली सरकार ने प्राइवेट अस्पतालों के साथ होटलों और बैंक्वेट हॉल को अटैच किया है।

<https://www.tv9hindi.com/india/drdo-will-reopen-temporary-sardar-vallabhbhai-patel-covid-hospital-delhi-618760.html>



**Press Information Bureau
Government of India**

Ministry of Defence

Thu, 15 April 2021 4:15PM

Air Force Commanders' Conference Apr 2021

Honourable Raksha Mantri Shri Rajnath Singh addressed the biannual IAF Commanders' Conference (AFCC-21) on 15 Apr 21 at Air Headquarters. Air Chief Marshal RKS Bhadauria PVSM AVSM VM ADC Chief of the Air Staff (CAS) welcomed the Hon'ble Raksha Mantri, Gen Bipin Rawat, Chief of Defence Staff (CDS) and other senior officials from the MoD.

During his address the Raksha Mantri expressed happiness that the conference coincides with the birth anniversary of the Marshal of the Air Force Arjan Singh, DFC. The RM congratulated IAF for ensuring a timely and befitting response to the sudden developments in Eastern Ladakh. He advised the Commanders to draw up long term plans and strategies for capability enhancement to counter future threats. He appreciated the critical focus of IAF towards reorienting for the future.

Speaking about the ongoing Covid-19 pandemic, the RM appreciated the role played by the IAF in assisting other Govt agencies in their task. Referring to changing international geopolitics, he observed that the perceptible shift of focus from Trans-Atlantic to Trans-Pacific has become more obvious in the recent past. Changing dimensions of war would now include advanced technologies, asymmetric capabilities and info-dominance, and it was very important that the IAF's preparations for the future must include these aspects.

Reiterating the Hon'ble Prime Minister's vision of 'Self Reliance', the RM stressed on the need to promote Atmanirbharta in Defence Infrastructure. He added that the IAF's order for LCA would result in a substantial boost to the domestic defence industry and will be a game changer from the indigenisation perspective. He urged the Commanders to continue their efforts for achieving even greater results in the field of indigenous defence production and aircraft maintenance. He added that national security and economic development are complementary aspects of national policy. The IAF's support for the indigenous industry would result in the development of MSMEs in this field which will simultaneously serve the cause of self-reliance and socio-economic development of the country.

He urged the Commanders to take stock and implement all directions issued by the Hon'ble PM during the Combined Commanders' Conference. He stressed on the need to continue to work proactively towards the integration process currently underway, implementation of the joint logistics plan and to enhance synergy in areas of joint planning and operations.



In his closing remarks, the RM assured the AF Commanders of the wholehearted support from the Ministry of Defence in achieving the goal of being a potent Strategic Aerospace Force. He expressed confidence that important decisions taken during the conference would enhance the combat potential of the IAF.

The Commanders' Conference will conclude on 16 Apr 21. The status of strengthening current combat capabilities and the action plan for making IAF a future-ready combat force would be examined. Issues pertaining to systems, reforms and restructuring for ensuring more efficient processes across all domains and optimised operational training will also be discussed.

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1712017>



Fri, 16 April 2021

Rajnath Singh to IAF: Make long term plans to counter future threats

Rajnath Singh congratulated the Air Force for ensuring a "timely and befitting response to the sudden developments in Eastern Ladakh"

New Delhi: Appreciating the role played by the Indian Air Force (IAF) during the standoff with China in eastern Ladakh last year, Defence Minister Rajnath Singh Thursday urged the IAF leadership to draw plans to counter future threats.

Addressing the opening day of the two-day biannual IAF Commanders' Conference, Singh congratulated the Air Force for ensuring a "timely and befitting response to the sudden developments in Eastern Ladakh" and advised the commanders to "draw up long term plans and strategies for capability enhancement to counter future threats".

"He appreciated the critical focus of IAF towards reorienting for the future," the Air Force said in a statement.

Referring to changing international geopolitics, Singh observed the perceptible shift of focus from Trans-Atlantic to Trans-Pacific has become more obvious in the recent past.

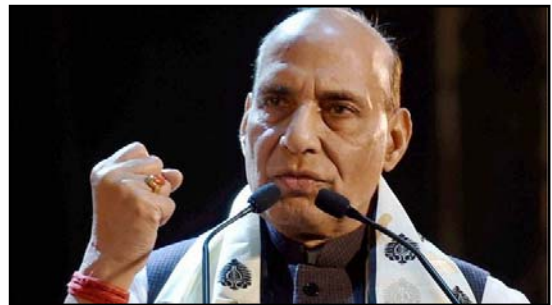
"Changing dimensions of war would now include advanced technologies, asymmetric capabilities and info-dominance, and it was very important that the IAF's preparations for the future must include these aspects," he said.

He assured the Air Force commanders of the "wholehearted support" from the Ministry of Defence in achieving the goal of being a "potent Strategic Aerospace Force".

Singh asked the commanders to "take stock and implement all directions" given by Prime Minister Narendra Modi during his address to the Combined Commanders' Conference of the three forces in early March. He also stressed the need to continue to work proactively towards the integration process currently underway, implementation of the joint logistics plan and enhance synergy in areas of joint planning and operations.

Singh reiterated the government's focus on self-reliance, and added that the Air Force's order of the Light Combat Aircraft Tejas would result in a "substantial boost to the domestic defence industry" and will be a "game changer from the indigenisation perspective".

Encouraging the Air Force leadership to continue their efforts for achieving even greater results in the field of indigenous defence production and aircraft maintenance, Singh said that national security and economic development are complementary aspects of national policy. The Air Force's



Defence Minister Rajnath Singh. (File)

support for the indigenous industry would result in the development of MSMEs in this field which will simultaneously serve the cause of self-reliance and socio-economic development of the country, he added.

He also appreciated the Air Force's role in assisting other government bodies with respect to the Covid-19 pandemic.

During the conference, the IAF said the status of strengthening current combat capabilities and the action plan for making IAF a future-ready combat force would be examined, adding that the issues pertaining to systems, reforms and restructuring for ensuring more efficient processes across all domains and optimised operational training will also be discussed.

Chief of Defence Staff General Bipin Rawat was also present on the first day, along with other senior officials of the Defence Ministry.

<https://indianexpress.com/article/india/rajnath-singh-asks-iaf-to-make-longterm-plans-to-counter-future-threats-7274994/>

ThePrint

Fri, 16 April 2021

Top IAF commanders begin 3-day conference, review India's security challenges

The bi-annual commanders' conference was inaugurated by Defence Minister Rajnath Singh at the Air Headquarters in Delhi

New Delhi: Top commanders of the Indian Air Force on Thursday began a comprehensive review of the security challenges facing India, including along the Line of Actual Control, on the opening day of a three-day conference.

The bi-annual commanders' conference was inaugurated by Defence Minister Rajnath Singh at the Air Headquarters in Delhi.

In his remarks, Singh complimented the IAF for its overall efforts to maintain combat readiness and its approach to deal with future challenges, sources said.

The commanders reviewed the overall security challenges facing the nation including the situation in eastern Ladakh, the site of a standoff between the Indian and Chinese militaries.

The Indian and Chinese armies have been engaged in negotiating disengagement from the remaining friction points in the region after completing withdrawal of troops and weapons in the north and south banks of the Pangong lake in mid-February.

In the course of the conference, the commanders will also discuss strategies and policies relating to further enhancing capabilities of the IAF in view of the future challenges facing the country.

The commanders will also deliberate on various welfare and human resource measures to improve administrative efficiency in the force.

The conference is being attended by the Air Officers Commanding-in-Chief of all commands of the IAF, all principal staff officers and all director generals posted at the Air Headquarters in Delhi.

<https://theprint.in/defence/top-iaf-commanders-begin-3-day-conference-review-indias-security-challenges/640418/>



Defence Minister Rajnath Singh with top commanders of the Indian Air Force on 15 April 2021| Twitter| Snehes Philip

Rajnath congratulates IAF for "befitting" response to sudden developments in eastern Ladakh

New Delhi: Defence Minister Rajnath Singh on Thursday complimented the Indian Air Force for ensuring a "timely and befitting" response to the "sudden" developments in eastern Ladakh, in a reference to the Sino-India border row in the mountainous region.

During an interaction with top commanders of the IAF, the defence minister also advised them to draw up long term plans and strategies to boost combat capabilities of the force to counter future threats, officials said.

Noting that changing dimensions of war would now include advanced technologies, asymmetric capabilities and information-dominance, the minister, who inaugurated the bi-annual commanders' conference, said it was very important that the IAF's preparations for the future must include these aspects.

"The defence minister congratulated IAF for ensuring a timely and befitting response to the sudden developments in eastern Ladakh," the IAF said in a statement without elaborating.

As the situation deteriorated in eastern Ladakh following a fierce clash between Indian and Chinese troops in Galwan valley in June last year, the Indian Air Force deployed almost all its frontline fighter jets like Sukhoi 30 MKI, Jaguar and Mirage 2000 aircraft in the key frontier air bases in the region.

In his address, Singh also assured the IAF of "wholehearted support" from the defence ministry in achieving its goal of becoming a potent strategic aerospace force, officials said.

Referring to changing international geopolitics, Singh said the perceptible shift of focus from trans-Atlantic to trans-Pacific has become more obvious in the recent past.

He also expressed confidence that important decisions taken during the conference would enhance the combat potential of the IAF, noting that security and economic development are complementary aspects of national policy.

The defence minister appreciated the "critical focus" of the IAF towards reorienting for the future while stressing on the need to work pro-actively towards integration among the three services.

In the three-day conference at the Air headquarters in Delhi, the commanders are deliberating on finalising strategies to boost the IAF's combat prowess besides taking stock of overall security challenges facing the nation.

"The defence minister stressed on the need to continue to work pro-actively towards the integration process currently underway, implementation of the joint logistics plan and to enhance synergy in areas of joint planning and operations," the IAF said.

It said he urged the commanders to take stock and implement all directions issued by Prime Minister Narendra Modi during the combined commanders' conference that had taken place at Kevadia in Gujarat last month.

Asserting that the IAF's order for Light Combat Aircraft Tejas would result in a substantial boost to the domestic defence industry, he said it will be a game changer from the perspective of defence indigenisation.

In February, the government sealed a Rs 48,000 crore deal to procure 83 Tejas aircraft from state-run aerospace behemoth Hindustan Aeronautics Ltd. It is the biggest ever indigenous defence procurement programme.

He urged the commanders to continue their efforts for achieving even greater results in the field of indigenous defence production and aircraft maintenance.

Issues pertaining to systems, reforms and restructuring for ensuring more efficient processes across all domains and optimised operational training are also being discussed at the conference.

The defence minister also expressed happiness that the conference coincided with the birth anniversary of the Marshal of the Air Force Arjan Singh.

On COVID-19 pandemic, the defence minister appreciated the role played by the IAF in assisting other government agencies in dealing with the situation.

(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/rajnath-congratulates-iaf-for-befitting-response-to-sudden-developments-in-eastern-ladakh/2065415>



Fri, 16 April 2021

India will not be pushed, stood firm against China, says CDS Rawat

Rawat also spoke about the exit of US and NATO forces from Afghanistan.

He said India has “concerns about Afghanistan” and would “like to see peace and tranquillity returning to that region”

By Krishn Kaushik

New Delhi: India has stood firm against China, Chief of Defence Staff General Bipin Rawat said on Thursday, adding that it will not get pushed.

“India has stood firm on the northern borders, and we have proven that we will not get pushed. In whatever we have been able to achieve in standing firm, in preventing a change of status quo, we have been able to gather world support,” CDS Rawat while speaking at the Raisina Dialogue series.

Rawat said that China feels that “they have arrived, they have a superior armed force, because of the tech advances that they have”. China, he said, has been “able to create disruptive technologies which can paralyse systems of the adversary” which is why, “they feel just by doing a little bit of shove and push, they will be able to compel nations to give in to their demands”.

“They have tried to ensure that they can change the status quo by the use of disruptive technology, without using force. As of now they have not used force. They thought that India as a nation will succumb to the pressures that they are putting on us, because of the tech advances that they have.” Rawat said.

But the “international community” has come to India’s support to say, he said, “that yes there is an international rules-based order, which every nation must follow”. That, Rawat said, “is what we have been able to achieve, and that is what we are trying to gather support from the other international nations”.

He said globally the situation is changing and “geopolitics coupled with the geo-economics is indeed seeking to reshape the rules that govern the world order”. There are some nations, he said,



Chief of Defence Staff Gen. Bipin Rawat

that follow the international order while others depend on their own law, “they make their own rules and regulations, try and change the status quo”.

“These kinds of things do lead to conflict situation, and that is what we are witnessing on our northern borders,” he said.

Changes in geopolitics are “shaped by a nation-first approach” as “today nations feel that we need to authoritatively pressurise other nations if they can, and that is what is leading to a changing security situation” Rawat stated.

He said soon adversaries “may get embroiled into conflict, with one of the other nations even being unaware, that they are actually in conflict”.

“Nations are trying to become assertive. And this is what, I think, China attempted to say that it is my way or no other way. But I think, such nature of undeclared war, will place dilemma in the minds of decision-makers, whether or not to resort to kinetic force, and thus be labelled as an aggressor.”

“While militaries around the world are seeking innovative systems to enhance their combat capabilities, disruptive tech on the other hand will compel nations to rethink their concept doctrines and techniques of warfighting,” he added.

He expressed satisfaction at international cooperation, saying that “We are very satisfied in the way the international community is coming together to coordinate their efforts to ensure that authoritarian regimes do not have their way around, and that everybody follows the rules-based international order”.

Talking about the exit of US and NATO forces from Afghanistan, Rawat said that India has “concerns about Afghanistan” and would “like to see peace and tranquillity returning to that region”.

If exit of the US and NATO forces will lead to peace, “we would be happy to see such a situation emerging”, he said. “But our concern is that the vacuum that is going to be created with the withdrawal of US and NATO, should not create space for other disruptors to step in, therefore the violence continues in Afghanistan.”

He said India will be “very happy to provide whatever support we can in the development of Afghanistan, and making sure that ultimately peace returns to that nation,” adding that “there are many nations that are willing to step into Afghanistan”.

<https://indianexpress.com/article/india/india-will-not-be-pushed-stood-firm-against-china-says-cds-rawat-7274898/>

Indian Navy Chief explains why China's rise as world's largest naval power is not surprising?

India is not surprised by the pace of development of the Chinese PLA Navy because they have the intent and the means, Chief of Naval Staff Admiral Karambir Singh has said.

He also said that India has noted consistent Chinese military presence in the Indian Ocean Region (IOR) for the past decade.

Speaking at an event on April 14, he said these developments are not surprising because “flag follows trade.” Enterprise is generally followed by state attempts to safeguard it, especially in a communist state where there is no distinction between the two.

Modernizing the PLA Navy has always been on Chinese President Xi Jinping's agenda. Massive investments in shipyards and technology followed after Xi undertook a sweeping project to turn the PLA into a world-class fighting force in 2015.

In April 2018, Xi attended China's largest naval exercise involving 48 warships and 10,000 military personnel in the South China Sea.

“The task of building a powerful navy has never been as urgent as it is today,” Xi said that day. And the communist country today boasts the largest navy in the world.

On China's development of the third aircraft carrier, Singh seemed unperturbed stating that “we are not surprised by the pace of Chinese Navy development. They have their wherewithal, they have the intent.”

Thus, the Chinese navy's steady presence should not be considered a deliberate move against India.

China “looks west for its energy, markets and resources” so it has to go through IOR to get to them, Admiral Singh said. On China's east is the Pacific, high incursions into which will trigger US military maneuvers in the region.

India, however, would not allow China to have a free run in its backyard. Combat-ready Indian warships patrol the IOR all the time, monitoring any suspicious movement of ships.

Besides, India has been building coastal radar networks and ports in collaboration with other South Asian countries. Last year, there were reports of India setting up a “sound surveillance sensors chain” in the Andaman sea with the help of the US and Japan to surveil submarine activity in the region, The Eurasian Times reported.

India is also keeping a close watch on China's aggressive moves in the disputed South China Sea and taking steps to ensure that the Chinese Navy doesn't muscle its way into the Indian Ocean.

Admiral Phil Davidson, commander of the US Indo-Pacific Command, who was also present at the event, called India a “vital partner”.

“A strong US-India strategic partnership is indispensable for peace, prosperity, and security in the Indo-Pacific” and to stand against “an emboldened Communist Party of China [that] seeks to exploit the current global pandemic with increased military aggression throughout the Indo-Pacific,” Davidson said.

<https://eurasianimes.com/india-not-surprised-by-the-rapid-development-of-chinese-navy-indian-navy-chief/>



Chinese President Xi Jinping reviewing PLA Navy's combat preparedness in the South China Sea. (File photo)

Fri, 16 April 2021

Indian Army seeks 155mm howitzers and T-90S protection

The Indian Army makes moves to select its first ever truck-mounted howitzers, plus it recognises the need to protect its T-90S tank fleet

By Gordon Arthur

Earlier this year, Larsen & Toubro (L&T) concluded production of 100 K9 Vajra-T SPHs. Now the Indian Army has manifested a desire for additional 155mm L/52 SPHs via an RfI issued on 1 April.

The RfI for a Mounted Gun System does not equivocally state that it should be tracked or wheeled platform, but a careful reading of the document indicates that a truck-mounted howitzer is being sought.

The tender document asks vendors questions such as whether the vehicle is right-hand drive, has a central tyre inflation system, anti-lock brakes and whether the ‘driver cabin and crew cabin are capable of operating in a nuclear, biological and chemical environment’.

Specifically, the RfI asks ‘whether the gun system is based on a 6x6 or 8x8 vehicle’.

Shephard reported in 2016 that the Indian Army required some 814 Mounted Gun Systems of 155mm 52-calibre. Indeed, the Defence Acquisition Council approved a budget of \$2.5 billion in November 2014, but little formal progress has occurred since then.

In its preamble, the RfI explains: ‘Regiments are to be equipped with Mounted Gun Systems to provide matching mobility for high-intensity operations with mechanised forces. The proposed 155mm/52-calibre Mounted Gun System will be employed in plains, mountains, high-altitude areas, semi-desert and desert terrain along the northern and western borders of the country for execution of artillery tasks.’

The Mobile Gun System should be capable of day/night direct and indirect firing.

The document said it hoped to identify ‘Indian vendors who can undertake the said project’. Following submissions from vendors by 9 June, the Indian MoD will issue an RfP soliciting technical and commercial offers. After that, a trial evaluation of contenders will occur in India.

It is unclear who might compete, but L&T previously told *Shephard* that it might offer a K9 turret on a wheeled chassis. Nexter will presumably seek to offer its CAESAR, and the French company has previously teamed with L&T, perhaps using an Ashok Leyland truck chassis. BAE Systems has previously highlighted its **Archer** at bygone DefExpo exhibitions, and Elbit Systems is sure to be interested as well.

Finally, the list would not be complete without one of the Indian public sector units making a pitch. The state-owned Ordnance Factory Board (OFB) showed a **155mm L/52 howitzer** mounted on a Tatra T815 8x8 chassis at DefExpo 2018 (pictured at top). Featuring a rear stabiliser, the vehicle carries 18 ammunition rounds for an auto-laying gun possessing a 39km range. An OFB representative at the show said the Indian Army was ‘showing interest’.



The Ordnance Factory Board has developed a 155mm truck-mounted howitzer. (Gordon Arthur)

A T-90S tank of the Indian Army. (Gordon Arthur)

Meanwhile, on 13 April, the Indian MoD issued an EoI for modular protection and countermeasure systems for T-90S/SK MBTs. The Indian Army seeks a 'combination of hard-kill and soft-kill measures to detect and then degrade/defeat incoming hostile projectiles to enhance its.

<https://www.shephardmedia.com/news/landwarfareintl/premium-indian-army-seeks-155mm-howitzers-and-t-90/>

Science & Technology News



Fri, 16 April 2021

India-France sign agreement for cooperation on Gaganyaan mission

ISRO has asked CNES to help prepare for Gaganyaan missions

New Delhi: Space agencies of India and France on Thursday signed an agreement for cooperation for the country's first human space mission Gaganyaan, the French space agency CNES said.

The agreement was announced during French Foreign Affairs minister Jean-Yves Le Drian visit to the Indian Space Research Organisation's (ISRO) headquarters.

ISRO has asked CNES to help prepare for Gaganyaan missions and to serve as its single European contact in this domain.

"Under the terms of the agreement, CNES will train India's flight physicians and CAPCOM mission control teams in France at the CADMOS centre for the development of microgravity applications and space operations at CNES in Toulouse and at the European Astronaut Centre (EAC) in Cologne, Germany," the CNES said.

The agreement provides for the CNES to support implementation of a scientific experiment plan on validation missions, exchange information on food packaging and the nutrition programme, and above all the use by Indian astronauts of French equipment, consumables and medical instruments.

French equipment developed by CNES, tested and still operating aboard the International Space Station (ISS) will thus be made available to Indian crews.

Thomas Pesquet, who is set to make his second flight to the International Space Station on April 22 for the Alpha mission, had previously tested these devices on his first spaceflight.

The CNES will also be supplying fireproof carry bags made in France to shield equipment from shocks and radiation, it said.

"This cooperation could be extended in the future to parabolic flights operated by Novespace to test instruments and for astronaut training, as well as technical support for construction of an astronaut training centre in Bangalore," the CNES added.

The Gaganyaan orbital spacecraft project was kicked off in August 2018. It originally intended to send astronauts from Indian soil to mark the 75th anniversary of India's independence in 2022.

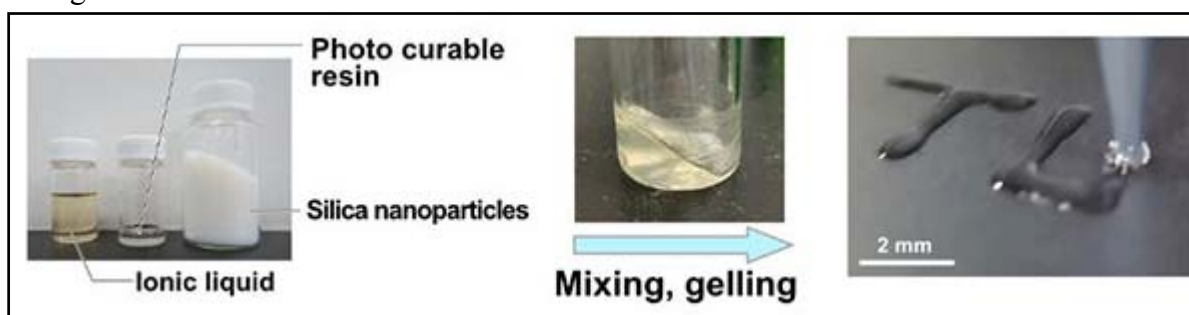
However, the mission has been delayed due to the restrictions imposed in view of the coronavirus pandemic.

<https://www.thehindu.com/news/national/india-france-sign-agreement-for-cooperation-on-gaganyaan-mission/article34325213.ece>

Fri, 16 April 2021

First 3D-printed proton-conductive membrane paves way for tailored energy storage devices

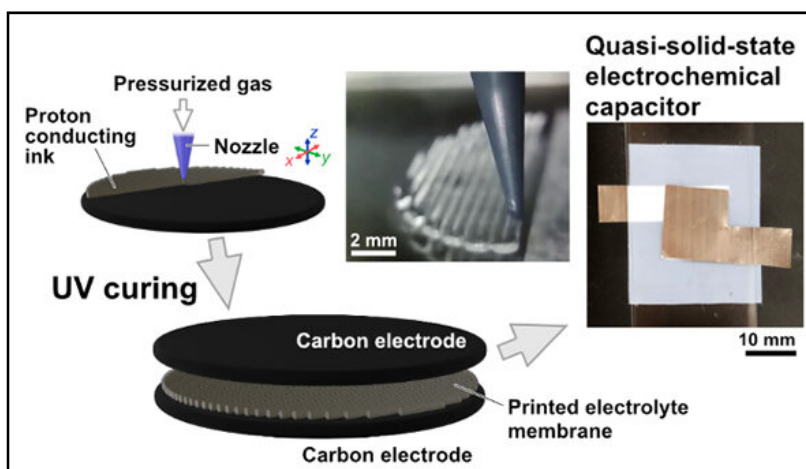
The advent and increased availability of 3D printing is leading to more customizable parts at lower costs across a spectrum of applications, from wearable smart devices to autonomous vehicles. Now, a research team based at Tohoku University has 3D printed the first proton exchange membrane, a critical component of batteries, electrochemical capacitors and fuel cells. The achievement also brings the possibility of custom solid-state energy devices closer to reality, according to the researchers.



The main components for the synthesis of functionalized nanoink including printing. Credit: Tohoku University

The results were published in *ACS Applied Energy Materials*, a journal of the American Chemical Society.

"Energy storage devices whose shapes can be tailored enable entirely new possibilities for applications related, for example, to smart wearable, electronic medical devices, and electronic appliances such as drones," said Kazuyuki Iwase, paper author and assistant professor in professor Itaru Honma's group at the Institute of



An overview of fabrication process and a photograph of quasi-solid-state electrochemical capacitor. Credit: Tohoku University

Multidisciplinary Research for Advanced Materials at Tohoku University. "3D printing is a technology that enables the realization of such on-demand structures."

Current 3D printing fabrication focuses on structural parts contributing to a final product's function, rather than imbuing parts with their own function.

"However, 3D printing of energy storage devices requires specialized, functional inks," Iwase said. "We developed a fabrication process and synthesized functionalized nano inks that enables the realization of quasi-solid-state energy storage devices based on 3D printing."

The team mixed inorganic silica nanoparticles with photo-curable resins and liquid capable of conducting protons, with rapt attention paid to the viscosity of the resulting ink. Previous studies, the researchers said, resulted in inks that could not be 3D printed. By mixing the ratios of the ingredients, the researchers developed inks that could be employed in a dispensing 3D printer and still retain their properties even after cured with ultraviolet irradiation. To test the properties, the researchers assembled a printed membrane between two carbon electron electrodes to make an operational quasi-solid-state electrochemical capacitor—a key component needed to facilitate energy storage and discharge in electronic devices.

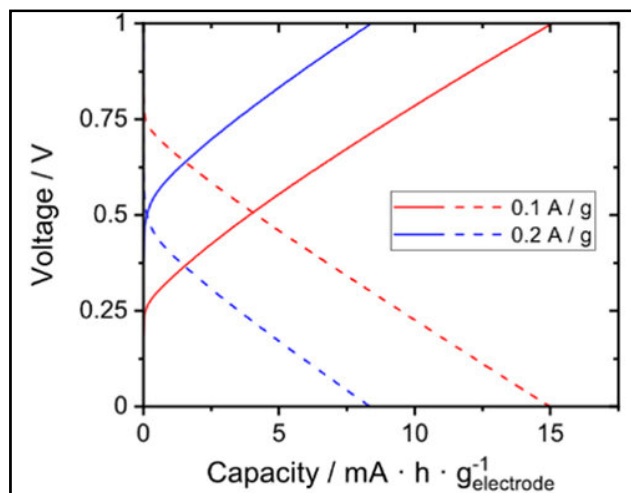
"As we can freely choose the inorganic materials or resins for curing, we hypothesize that this technique can be applied to various types of quasi-solid-state energy conversion devices," Iwase said.

"Compared to conventional fabrication techniques, the ability to 3D print such devices opens up new possibilities for proton-conducting devices, such as shapes that can be adjusted to fit to the devices they power or that can be adapted to the personal needs of a patient wearing a smart medical device," Iwase said.

The team plans to improve the ink formulas with the goal of fully 3D printing energy storage devices with more complex shapes and look for industrial partners who might be interested in applying this technique or other possibilities to commercialize it.

More information: Kazuyuki Iwase et al. Direct Printable Proton-Conducting Nanocomposite Inks for All-Quasi-Solid-State Electrochemical Capacitors, *ACS Applied Energy Materials* (2021). DOI: [10.1021/acsaem.1c00076](https://doi.org/10.1021/acsaem.1c00076)

<https://phys.org/news/2021-04-3d-printed-proton-conductive-membrane-paves-tailored.html>

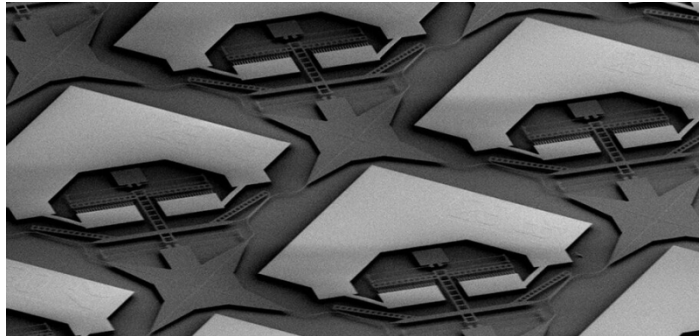


An example of charge-discharge behavior of capacitor. Credit: Tohoku University

Photonic MEMS switches going commercial

One of the technical challenges the current data revolution faces is finding an efficient way to route the data. This task is usually performed by electronic switches, while the data itself is transferred using light confined in optical waveguides. For this reason, conversion from an optical to an electronic signal and back-conversion are required, which costs energy and limits the amount of transferable information. These drawbacks are avoidable with a full optical switch operation. One of the most promising approaches is based on microelectromechanical systems (MEMS), thanks to decisive advantages such as low optical loss and energy consumption, monolithic integration, and high scalability. Indeed, the largest photonic switch ever demonstrated uses this approach.

Until now, those MEMS photonic switches have been fabricated using nonstandard and complex processes in laboratory environments, which has made their commercialization difficult. But University of California Berkeley researchers initiated a collaboration that gathered engineers from different universities worldwide to demonstrate that the difficulties could be overcome. They created a photonic MEMS switch using a commercially available complementary metal-oxide-semiconductor (CMOS) fabrication process without modification.



Partial SEM image of the switch matrix: the whole structure patterned in the top silicon layer by dry etching seems to "float" as the oxide is removed. Each matrix unit contains an electrostatic comb drive that can selectively move portions of the waveguides to establish a desired light path from one of the 32 input ports to one of the 32 output ports. Credit: Han et al.

The use of this well-known microfabrication platform represents a huge step toward industrialization because it is compatible with most current technologies, cost-effective, and suited for high-volume production.

Switch fabrication

In their research, recently published in SPIE's new *Journal of Optical Microsystems*, the photonic switch was fabricated on silicon-on-insulator (SOI) 200-mm wafers using regular photolithographic and dry-etching processes in a commercial foundry. The whole photonic integrated circuit is included in the silicon top layer, which has the advantage of limiting the number of fabrication steps: There are two different dry-etching processes, one lift-off to create metal interconnects, and the final release of the MEMS by oxide etching. The switch design includes 32 input ports and 32 output ports, representing a 32 x 32 matrix (full size is 5.9 mm x 5.9 mm) of the same replicated element. In each of the single elements, the light transfer from one channel to the other is produced by decreasing the distance between two waveguides to couple their modes, an operation achieved by an electrostatic comb drive also included in the silicon top layer.

"For the first time, large-scale and integrated MEMS photonic switches have been fabricated in a commercial foundry on 200-mm SOI wafers. In my opinion, this is a convincing demonstration that this technology is suited for commercialization and mass production. They could be incorporated in data communication systems in the near future," said Jeremy Béguelin, one of the Berkeley researchers.

Promising path

The researchers evaluated the performance of the photonic switches by measuring several important parameters: the light power loss through the entire switch of 7.7 dB, the optical

bandwidth of about 30 nm at the 1550 nm wavelength, and the speed of the switching operation of 50 μ s. These values are already excellent in comparison with other photonic switch approaches, and ways to improve them have already been identified.

By using a CMOS-compatible fabrication process and SOI wafers, the research team created a robust and efficient photonic switch based on MEMS technology. Such work opens a promising path toward the commercialization and mass production of large and integrated photonic switches, a future key component of data communication networks.

More information: Sangyoon Han et al, 32×32 silicon photonic MEMS switch with gap-adjustable directional couplers fabricated in commercial CMOS foundry, *Journal of Optical Microsystems* (2021). DOI: [10.1117/1.JOM.1.2.024003](https://doi.org/10.1117/1.JOM.1.2.024003)
<https://phys.org/news/2021-04-photonic-mems-commercial.html>

COVID-19 Research News

Business Standard

Fri, 16 April 2021

Rare blood clotting risk more for Covid-19 than for vaccines: Oxford study

The rare blood clotting is known as cerebral venous thrombosis (CVT)

New Delhi: The risk of rare blood clotting known as cerebral venous thrombosis (CVT) following COVID-19 infection is several times higher than post-vaccination, according to a study unveiled on Thursday.

The study led by researchers at the University of Oxford in the UK counted the number of CVT cases diagnosed in the two weeks following diagnosis of COVID-19, or after the first dose of a vaccine.

They compared these to calculated incidences of CVT following influenza, and the background level in the general population.

The team found that CVT is more common after COVID-19 than in any of the comparison groups, with 30 per cent of these cases occurring in the under 30s.

Compared to the current COVID-19 vaccines, this risk is between 8-10 times higher, and compared to the baseline, approximately 100 times higher, they said.

"There are concerns about possible associations between vaccines, and CVT, causing governments and regulators to restrict the use of certain vaccines," said Paul Harrison, Head of the Translational Neurobiology Group at the University of Oxford.

"Yet, one key question remained unknown: What is the risk of CVT following a diagnosis of COVID-19?" Harrison said.

The researchers noted that COVID-19 markedly increases the risk of CVT, adding to the list of blood clotting problems this infection causes.

The COVID-19 risk is higher than seen with the current vaccines, even for those under 30, they said.

This is something that should be taken into account when considering the balances between risks and benefits for vaccination, according to the researchers.



The researchers noted that it is important that this data should be interpreted cautiously.

The signals that COVID-19 is linked to CVT, as well as portal vein thrombosis -- a clotting disorder of the liver -- is clear, and one we should take note of, they said.

An important factor that requires further research is whether COVID-19 and vaccines lead to CVT by the same or different mechanisms, according to the researchers.

There may also be under-reporting or mis-coding of CVT in medical records, and therefore uncertainty as to the precision of the results, they added.

https://www.business-standard.com/article/international/rare-blood-clotting-risk-more-for-covid-19-than-for-vaccines-oxford-study-121041500890_1.html

