Apr
2021

समाचार पत्रों से चयित अंश
Newspapers Clippings

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खंड : 46 अंक : 67 02-05 अप्रैल 2021

Vol.: 46 Issue : 67 02-05 April 2021

रक्षा विज्ञान पुस्तकालय
Defence Science Library
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CONTENTS

DRDO News

DRDO Technology News

Press Information Bureau
Government of India

Ministry of Defence

Thu, 01 April 2021 4:45PM

DRDO lab develops light weight Bullet Proof Jacket

Defence Research and Development Organisation (DRDO) lab Defence Materials and Stores Research and Development Establishment (DMSRDE), Kanpur has developed light weight Bullet Proof Jacket (BPJ) weighing 9.0 kilogrammes, meeting the qualitative requirements of Indian Army.

The Front Hard Armour Panel (FHAP) jacket was tested at Terminal Ballistics Research Laboratory (TBRL), Chandigarh and met relevant BIS standards. The importance of this vital development lies in the fact that each gram of BPJ weight reduction is crucial in enhancing soldier comfort while ensuring the survivability.

This technology reduces the weight of the medium sized BPJ from 10.4 to 9.0 kilogrammes. Very specific materials and processing technologies have been developed in the laboratories for the purpose.

Raksha Mantri Shri Rajnath Singh congratulated the DRDO scientists and Industry for developing the light weight BPJ to make the soldiers more comfortable. Secretary Department of Defence R&D and Chairman Defence Research & Development Organisation (DRDO) Dr G Satheesh Reddy congratulated the DMSRDE team for the development.

https://pib.gov.in/PressReleasePage.aspx?PRID=1709001

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Thu, 01 April 2021 4:45PM

डीआरडीओ प्रयोगशाला ने हल्की बुलेट प्रूफ जैकेट निर्मित की

रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) लैब डिफेंस मैटेरियल्स एंड स्टोर्स रिसर्च एंड डेवलपमेंट एस्टेब्लिशमेंट (डीएमएसआरडीई), कानपुर ने भारतीय सेना की गुणात्मक आवश्यकताओं को पूरा करते हुए 9.0 किलोग्राम वजनी हल्के वजन वाली बुलेट प्रूफ जैकेट (बीपीजे) विकसित की है।

फ्रंट हार्ड आर्मस पैनल (एफएचएपी) जैकेट का परीक्षण टर्मिनल बैलिस्टिक अनुसंधान प्रयोगशाला (टीबीआरएल), चंडीगढ़ में किया गया और इस परीक्षण ने प्रासंगिक बीआईएस मानकों को पूरा किया। इस महत्वपूर्ण विकास का महत्व इस तथ्य में निहित है कि बीपीजे के वजन में कमी का प्रत्येक ग्राम युद्धक्षेत्र में बने रहने के लिहाज से सैनिक का आराम बढ़ाने में महत्वपूर्ण है। इस तकनीक से मध्यम आकार के बीपीजे का वजन 10.4 से 9.0 किलोग्राम तक कम हो जाता है। इस उद्देश्य के लिए प्रयोगशालाओं में बहुत विशिष्ट सामग्री और प्रक्रमण प्रौद्योगिकियों का विकास किया गया है ।

रक्षा मंत्री श्री राजनाथ सिंह ने डीआरडीओ के वैज्ञानिकों और उद्योग को हल्के वजन वाली बीपीजे विकसित करने के लिए बधाई दी जिससे सैनिक और अधिक आराम महसूस कर पाएंगे। रक्षा अनुसंधान एवं विकास विभाग के सचिव और रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) के अध्यक्ष डॉ जी सतीश रेड्डी ने डीएमएसआरडीई टीम को इस निर्माण के लिए बधाई दी।

https://www.pib.gov.in/PressReleasePage.aspx?PRID=1709134

THE FREE PRESS JOURNAL SINCE 1928

Sat, 03 April 2021

UP: Union Defence Minister Rajnath Singh announces to set up DRDO centre in Lucknow

By Srawan Shukla

Lucknow: Union Defence Minister Rajanth Singh on Friday announced that a centre of Defence Research and Development Organization (DRDO) will be set up in Lucknow, his parliamentary constituency.

Inaugurating the Tedhi Pulia flyover in Lucknow, the Defence Minister said that the land acquisition process to set up the centre in 26 acres will begin shortly. Constructed with a cost of Rs 86 crore, Tedhi Pulia Flyover is the first flyover in the state capital with four lanes.

The Union Transport Minister Nitin Gadkari, UP Chief Minister Yogi Adityanath and deputy CMs Keshav Prasad Maurya and Dr Dinesh Sharma were also present during the inauguration of flyover in Rajnath's parliamentary constituency Lucknow.

UP: Union Defence Minister Rajnath Singh announces to set up DRDO centre in LucknowTwitter/@rajnathsingh

Speaking on the occasion, Rajnath Singh declared that Lucknow will be among three top cities in the country in next few years. He announced that the work on the Lucknow-Kanpur Expressway will be completed before the end of 2021.

He lauded the role played by Nitin Gadkari and Yogi Adityanath in speeding up infrastructure development work in his parliamentary constituency. "I am being able to discharge my duties as MP of Lucknow thanks to major contributions made by Nitin Gadkari ji and Yogi Adityanath ji," he said.

On the occasion, he also laid foundation stone for another flyover from Khurram Chowk to Indiranagar with a cost of Rs 180 crore. "These flyovers will ease out traffic congestion and save a lot of petrol, diesel and time of Lucknowites," he pointed out.

https://www.freepressjournal.in/india/up-union-defence-minister-rajnath-singh-announces-to-set-up-drdo-centre-in-lucknow

THE TIMES OF INDIA

Sat, 03 April 2021

DRDO research centre to come up in Lucknow, says Rajnath Singh

By Pranchal Srivastava

Lucknow: The city will soon get a research centre of Defence Research and Development Organization (DRDO) and a manufacturing unit for electric vehicles.

This was announced by Lucknow MP and defence minister Rajnath Singh on Friday after he inaugurated the Tedhipulia flyover. Along with the flyover that cost Rs 96 crore, Rajnath also laid the foundation stone of the Rs 184-crore Khurramnagar flyover at a function held at mini-stadium in Vikasnagar.

"The DRDO lab costing Rs 78 crore will come up on a 36-acre land in the city. The process of land identification and acquisition is under way," Rajnath Singh said.

'City to get electric vehicle mfg unit too'

Further, an electric vehicle manufacturing unit costing about Rs 700 crore will be set up in the state capital. A memorandum for it has been signed by a Lucknow-based company with a South Korean electrical vehicle manufacturing company," the Lucknow MP announced, addressing a huge gathering.

"The DRDO research centre will not only provide numerous job opportunities for youngsters, but also aid our vision to achieve self-reliance in defence technologies and systems, besides equipping our armed forces with state-of-the-art weapon systems and equipment," the minister added.

Chief minister Yogi Adityanath, Union road transport and MSME minister Nitin Gadkari, deputy chief ministers Dinesh Sharma and Keshav Prasad Maurya, mayor Sanyukta Bhatia and cabinet ministers Ashutosh Tandon, Siddharth Nath Singh and Mahendra Singh were also present on the occasion. Gadkari said about 21 road projects measuring 680km and costing Rs 7,250 crore will soon be initiated in UP. These projects include ring roads in Ayodhya, Gorakhpur, Kanpur and Bareilly and major roads in Pilibhit, Meerut, Shamli and Katra.

Gadkari added that his ministry is working on a plan to produce vehicle engines that run on ethanol instead of petrol and diesel, saving money on fossil fuel. He asked UP government to be a part of the initiative which will save up to Rs 2 lakh crore of UP's economy. The CM said the government is constructing a green corridor along both sides of the Gomti and assured full support of UP government in the initiatives taken by the Centre to provide world-class infrastructure in the state.

https://timesofindia.indiatimes.com/city/lucknow/drdo-research-centre-to-come-up-in-lucknow-says-rajnath-singh/articleshow/81880857.cms

Hindustan Times

Sat, 03 April 2021

How India aims to boost its indigenous defence capabilities in two years

The weapon systems that will be delivered to the military between 2021 and 2023 include beyond visual range missiles, India's first anti-radiation missile, anti-tank weapons, anti-drone systems, guided bombs and anti-airfield weapons

By Rahul Singh

In what will provide a fillip to the government's self reliance campaign and the domestic defence ecosystem, and boost Indian fighting capabilities, the Defence Research and Development Organisation (DRDO) is gearing up to provide the Indian military with a dozen new indigenous weapons and systems over the next two years, DRDO Chief G Satheesh Reddy said on Friday.

The weapon systems that will be delivered to the military between 2021 and 2023 to strengthen its capabilities include beyond visual range (BVR) missiles, India's first anti-radiation missile, anti-tank weapons, anti-drone systems, guided bombs and anti-airfield weapons, the government told Parliament in March.

An Arjun Main Battle Tank Mk-1. (Bloomberg File)

Several of these systems were tested last year when India demonstrated its indigenous weapon-development capability to the world at a time when the border row with China in eastern Ladakh was at its peak. India has set aside ₹70,221 crore—63% of the military's capital budget for 2021-22—for buying locally-produced weapons and systems to boost defence indigenisation. Last year, the defence ministry spent over ₹51,000 crore, or 58% of the capital budget, on domestic purchases.

Boosting indigenisation

"These systems that have been developed and others that are under development will significantly boost indigenous capabilities in development and production of weapons. We are moving towards achieving the goal of Aatmanirbharta (self-reliance) in the defence sector. And all this is happening at a time when we are progressively banning the import of military hardware through the positive indigenisation list (earlier called negative import list)," Reddy said.

Last year, the government notified a negative import list that sought to ban the import of 101 types of weapons, systems and ammunition over the next five years to promote self-reliance. This year, the government is set to notify a second list of weapons, systems and ammunition that cannot be imported. The list of weapons banned for import will be reviewed every year and more items will be added to it, officials familiar with the matter said.

In February, Prime Minister Narendra Modi said it may be described as a negative list, but it is a positive list in the language of self-reliance. "It is a positive list on the strength of which our own manufacturing capacity is going to increase. This is a positive list that will create jobs in India… This is a positive list as it guarantees that products made in India will be sold in India," Modi said.

That statement by PM led the negative import list to be rechristened the positive indigenisation list. According to official data, DRDO has undertaken 79 projects worth ₹8,201 crore during the last three years. These include different types of missiles, gun systems, ammunitions, radars and electronic warfare systems.

Nailing delivery timelines

DRDO, which has acquired the reputation of long delays in delivery, is hoping to nail its delivery timelines so that the armed forces are not kept waiting for the new weapons and systems. The defence ministry specified the delivery timelines for different systems in Parliament on March 22.

The Astra BVR missile and the anti-drone system will be made available to the armed forces this year. The systems that the military can expect next year include the quick reaction surface to air missile system (QRSAM) to protect armoured columns from aerial attacks, the Nag and Helina anti-tank missiles with an effective range of five km, and the air defence fire control radar (ADFCR) that form a key part of a ground-based air defence system in conjunction with anti-aircraft guns.

While the Nag missile is launched from a modified infantry combat vehicle (called the Nag missile carrier or Namica), the Helina or helicopter-based Nag is for mounting on the Dhruv advanced light helicopter.

India's first anti-radiation missile, Rudram, will be ready for induction into service by 2023 and boost the Indian Air Force's capabilities to knock out enemy radars and surveillance systems. The smart anti-airfield weapon (SAAW) will also be ready in two years. SAAW is a precision strike weapon that can be used to target enemy airfield assets such as radars, bunkers, taxi tracks and runways. Indigenously developed by the DRDO's research centre Imarat, the weapon has a range of 100km. It has been test-fired from the IAF's Jaguar fighter planes and the upgraded Hawk Mk-132 trainer aircraft.

It is good that timelines have been set and DRDO is working towards achieving them, said Air Vice Marshal Manmohan Bahadur (retd), additional director general, Centre for Air Power Studies.

"The scientists have their work cut out so that capability gaps that have crept in—for instance, in the BVR space—are quickly made up and the IAF gains the upper hand again. The same applies to ground and naval systems. Our adversaries, especially China, are committing huge funds into defence R&D—we can lag behind only at our peril," said Bahadur.

The weapons systems of the future

DRDO is working on a raft of other weapons and systems that will be inducted into service in the coming years, Reddy said. It is developing a new air-launched missile capable of knocking out enemy tanks from a stand-off distance of more than 10km.

The indigenous missile, named stand-off anti-tank missile (SANT), is expected to be mated to the IAF's Russian-origin Mi-35 attack helicopters to arm them with the capability to destroy enemy armour from an improved stand-off range. The existing Russian-origin Shturm missile on the Mi-35 can target tanks at a range of 5km.

Key tests conducted by India last year included the supersonic missile-assisted release of torpedo (SMART) to target submarines at long ranges and a new version of the nuclear-capable hypersonic Shaurya missile with a range of 750km.

India is also developing a new class of ultra-modern weapons that can travel six times faster than the speed of sound (Mach 6) and penetrate any missile defence. In early September 2020, DRDO also carried out a successful flight test of the hypersonic technology demonstrator vehicle (HSTDV) for the first time.

Only the United States, Russia and China have developed technologies to field fast-manoeuvring hypersonic missiles that fly at lower altitudes and are extremely hard to track and intercept.

The road ahead

Imports have traditionally accounted for 60-65% of the country's military requirements, with India signing contracts worth billions of dollars over the last 10 years for fighter jets, air defence missile systems, submarine hunter planes, attack helicopters, heavy-lift choppers and lightweight howitzers.

But India's arms imports fell 33% between 2011-15 and 2016-20, said a report released by the Stockholm International Peace Research Institute (SIPRI) on March 15.

The report on international arms transfers attributed the drop in India's arms imports mainly to an attempt to reduce its dependence on Russian arms and complex procurement processes. India's top three arms suppliers during 2016-20 were Russia (accounting for 49% of India's imports), France (18%) and Israel (13%), the report said.

According to Sipri, India accounted for 0.2% of the share of global arms exports during 2016-20, making the country the world's 24th largest exporter of major arms. This represents a jump of 228% over India's export share during the previous five-year period - 2011-15. Myanmar, Sri Lanka and Mauritius were the top recipients of Indian military hardware.

Sipri, however, said India's military imports were likely to grow over the next five years. "As India perceives increasing threats from Pakistan and China and as its ambitious plans to produce its own major arms have been significantly delayed, it is planning large-scale programmes for arms imports. Based on its outstanding deliveries of combat aircraft, air defence systems, ships and submarines, India's arms imports are expected to increase over the coming five years," the report said.

https://www.hindustantimes.com/india-news/how-india-aims-to-boost-its-indigenous-defence-capabilities-in-two-years-101617358023279-amp.html

THE NEW INDIAN EXPRESS

Fri, 02 April 2021

DRDO develops lightweight bullet-proof jacket for armed forces

The jacket weighing around 9 kg meets the qualitative requirements of the Indian Army

Bhubaneswar: The Defence Research and Development Organisation (DRDO) has developed a lightweight Bullet-Proof Jacket (BPJ) with the help of new technology. The jacket weighing around 9 kg meets the qualitative requirements of the Indian Army.

Defence sources said the Front Hard Armour Panel (FHAP) of the jacket was tested at Terminal Ballistics Research Laboratory (TBRL), Chandigarh, and metrelevant BIS standards.

The jacket has been developed by Kanpur-based Defence Materials and Stores Research and Development Establishment (DMSRDE), a DRDO laboratory. The technology that reduces the weight of the jacket assumes significance as it would enhance the comfort of soldiers while ensuring survivability.

Lightweight bullet-proof jacket (Photo | DRDO India Twitter)

"Each gram of weight reduction of the bulletproof jacket is crucial. The indigenous technology reduces the weight of the medium-sized BPJ from 10.4 kg to 9 kg. Very specific materials and processing technologies have been developed for the purpose," said a defence official.

Congratulating the DMSRDE team for the development, Secretary of Department of Defence (R&D) and Chairman of DRDO Dr. G Satheesh Reddy said the lightweight bulletproof jacket will boost the Atmanirbhar Bharat initiative and it will be beneficial for the safety and security of armed forces personnel.

Defence Minister Rajnath Singh congratulated the DRDO scientists and Industry for developing the lightweight BPJ to make the soldiers more comfortable. India needs more such innovative product design and development to realise the dream of Atmanirbhar Bharat, he said.

India exports bulletproof jackets to 18 countries. Industrial licenses have been issued to 15 companies for manufacturing bulletproof jackets having production capacity in the country of over 10 lakh per annum to meet the domestic and export requirement.

https://www.newindianexpress.com/nation/2021/apr/01/drdo-develops-lightweight-bullet-proof-jacket-for-armed-forces-2284527.html

The EurAsian Times

Fri, 02 April 2021

To counter armor-piercing bullets used in Kashmir, DRDO develops new bulletproof jacket for the Indian Army

By Younis Dar

India's Defence Research Development Organisation (DRDO) has developed a new lightweight bulletproof jacket (BPJ) for the Indian Army which reportedly offers 360-degree protection from enemy fire to the soldiers deployed in combat. Developed by the Defence Materials and Stores Research and Development Establishment (DMSRDE) lab of DRDO in Kanpur, the Front Hard Armour Panel (FHAP) jacket weighing 9 kg was tested at Terminal Ballistics Research Laboratory (TBRL), Chandigarh and met relevant BIS standards, DRDO said in a press release.

"The importance of this vital development lies in the fact that each gram of BPJ weight reduction is crucial in enhancing soldier comfort while ensuring survivability. This technology reduces the weight of the medium-sized BPJ from 10.4 to 9.0 kg. Very specific materials and processing technologies have been developed in the laboratories for the purpose," the statement added.

DRDO was commended by Defense Minister Rajnath Singh for developing the lightweight BPJ, designed to make the soldiers more comfortable. Dr. G Satheesh Reddy, Secretary, Department of Defence R&D and Chairman, DRDO also congratulated the DMSRDE team for the development.

The Indian armed forces have faced a critical shortage of such BPJs, especially in counter-terror operations in J&K and anti-Naxal operations in many states of India.

The latest challenge the army faced was in Kashmir where the militants have lately been using the armor-piercing steel core bullets. The DRDO-developed BPJ reportedly offers 360-degree protection from enemy fire to the soldiers deployed in combat.

A contract worth Rs 639 crore was signed in April 2018 for the procurement of 1,86,138 BPJs with SMPP Pvt Ltd, out of which around one lakh have been delivered to the forces. More efforts are on to replace the old and bulky armor jackets currently with the army, which provide less protection and impede the agility of the soldiers in battle.

Multiple Indian companies, both government and private, export bulletproof jackets to over 100 countries, including those in Europe. India is the fourth country to have its own national standard on bulletproof jackets after the US, the UK, and Germany.

https://eurasiantimes.com/indian-army-drdos-new-bulletproof-jacket-offers-360-degree-protection-from-enemy-fire/

नवभारत टाइम्स

Fri, 02 April 2021

DRDO ने जवानों के बनाए हल्के बुलेटप्रूफ जैकेट, सिर्फ 9 किलोग्राम है वजन, बाल भी बांका नहीं कर पाएंगी दुश्मन की गोलियां

डीआरडीओ ने सिर्फ 9 किलोग्राम वजन वाले बुलेटप्रूफ जैकेट को बनाने में सफलता हासिल की है। यह जैकेट टीबीआरएल चंडीगढ़ लैब में टेस्ट में खरा उतरा है। भारतीय सेना के लिए यह

हाइलाइट्स:

- ***डीआरडीओ ने भारतीय सेना के लिए बनाया कम वजन का बुलेटप्रूफ जैकेट, सिर्फ 9 किलोग्राम है वजन***
- ***एक सामान्य मीडियम बुलेटप्रूफ जैकेट 10.4 किलोग्राम होता है, डीआरडीओ का नया जैकेट 1400 ग्राम हल्का***
- ***इस जैकेट को डिफेंस मैटेरियल्स ऐंड स्टोर्स रिसर्च ऐंड डिवेलपमेंट इस्टेब्लिशमेंट कानपुर में बनाया गया है***
- ***यह जैकेट चंडीगढ़ स्थित टर्मिनल बैलिस्टिक्स रिसर्च लैब के टेस्ट में पास हो चुका है***

नई दिल्ली: डिफेंस रिसर्च ऐंड डिवेलपमेंट ऑर्गनाइजेशन **(DRDO)** ने आत्मनिर्भर भारत अभियान के तहत महज **9** किलोग्राम वजन के बुलेटप्रूफ जैकेट तैयार किए हैं। यह मीडियम साइज के बुलेटप्रूफ जैकेटों के मुकाबले करीब **1.4** किलोग्राम हल्के हैं। **DRDO** की यह कामयाबी कितनी बड़ी है इसका अंदाजा इसी से लगा सकते हैं कि बुलेटप्रूफ जैकेट के वजन में कुछ ग्राम की कमी भी बहुत बड़ी बात होती है लेकिन इसके बनाए जैकेट **1400** ग्राम तक हल्के हैं। भारत बुलेटप्रूफ जैकेटों के लिए आयात पर निर्भर है लिहाजा इससे देश न सिर्फ इसके मामले में आत्मनिर्भरता की तरफ बढ़ेगा बल्कि क्वॉलिटी भी बेहतरीन होगी।

डीआरडीओ ने गुरुवार को ट्वीट कर इसके बारे में जानकारी दी। इस लाइट वेट बुलेटप्रूफ जैकेट को डीआरडीओ की कानपुर स्थित **DMSRDE** (डिफेंस मैटेरियल्स ऐंड स्टोर्स रिसर्च ऐंड डिवेलपमेंट इस्टेब्लिशमेंट) लैब में तैयार किया गया है। इस जैकेट का **TBRL** (टर्मिनल बैलिस्टिक्स रिसर्च लैब) में टेस्ट सफल रहा है और यह **BIS** स्टैंडर्ड पर पूरी तरह खरा उतरा है। डीआरडीओ ने अपने ट्वीट में बताया है कि **9** किलोग्राम वजन के ये बुलेटप्रूफ जैकेट भारतीय सेना की क्वॉलिटी संबंधी जरूरतों को पूरा करेंगे।

डीआरडीओ ने अपने ट्वीट में यह भी बताया कि क्यों यह देसी बुलेटप्रूफ जैकेट इतना महत्वपूर्ण है। दरअसल किसी बुलेटप्रूफ जैकेट का थोड़ा सा भी वजन कम होना बहुत बड़ी बात होती है। हल्के वजन के जैकेटों की मांग सबसे ज्यादा होती है। कम वजनी बुलेटप्रूफ जैकेट से सैनिक की क्षमता भी बढ़ती है। जैकेट का वजन जितना ज्यादा होगा, सैनिक के लिए उसे पहनकर काम करना उतना ही चुनौती वाला होगा। सैनिक जिन हथियारों से लैस होते हैं उनका वजन और साथ में पहने गए बुलेटप्रूफ जैकेट का वजन बोझ बढ़ाते हैं। ऐसे में अगर जैकेट कम वजन के होंगे तो यह सैनिकों के लिए सुविधाजनक होंगे। जैकेट जितने कम वजन के होते हैं, उन्हें उतनी ही उच्च क्वॉलिटी का माना जाता है।

आम तौर पर बुलेटप्रूफ जैकेट का वजन **17** किलोग्राम तक होता है। मीडियम साइज के बुलेटप्रूफ जैकेट **10.4** किलोग्राम के होते हैं। डीआरडीओ ने जिस जैकेट को बनाया है उसका वजन सिर्फ **9** किलोग्राम है यानी यह आम मीडियम बुलेटप्रूफ जैकेट की तुलना में **1400** ग्राम हल्का है। इससे भारतीय सैनिकों को बहुत फायदा मिलेगा। परीक्षणों में पास होने के बाद डीआरडीओ जल्द ही इस जैकेट का निर्माण शुरू कर सकता है।

https://navbharattimes.indiatimes.com/india/drdo-develops-light-weight-bullet-proof-jacket-weighing-only-9-kg-for-indian-army/articleshow/81837043.cms

अमर उजाला

Fri, 02 April 2021

सुरक्षा: डीआरडीओ ने तैयार की पहले से हल्की बुलेटप्रुफ जैकेट, मानकों पर उतरी खरी

सार

- ***डीआरडीओ की कानपुर स्थित प्रयोगशाला ने तैयार की जैकेट***
- ***चंडीगण की लैब में हुआ परीक्षण, सभी मानकों पर खरी उतरी***
- ***सैनिकों को मिलेगी राहत, भारी जैकेट से मिल सकेगा छुटकारा***

विस्तार

नई दिल्ली: रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) ने भारतीय सेना के लिए एक नई और हल्की बुलेटप्रुफ जैकेट विकसित की है, जिसका वजन केवल नौ किलोग्राम है। डीआरडीओ ने गुरुवार को यह जानकारी देते हुए बताया कि यह जैकेट कानपुर स्थित उसकी प्रयोगशाला रक्षा सामग्री एवं भंडार अनुसंधान एवं विकास प्रतिष्ठान (डीएमएसआरडीई) ने विकसित की है।

डीआरडीओ द्वारा तैयार की गई हल्की बुलेटप्रुफ जैकेट - फोटो : एएनआई

संगठन ने बताया कि इस फ्रंट हार्ड आर्मर पैनल (एफएचएपी) जैकेट का चंडीगढ़ स्थित टर्मिनल बैलिस्टिक्स रिसर्च लैब में परीक्षण किया गया, जहां यह संबंधित बीआईएस मानकों पर खरी उतरी है। डीआरडीओ ने बताया कि इस हल्की जैकेट को तैयार करने में जो तकनीक इस्तेमाल की गई है उसने जैकेट का वजन **10.4** किलोग्राम से घटाकर नौ किलोग्राम कर दिया है।

रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) ने कहा कि यह जैकेट भारतीय सेना की गुणवतता संबंधी जरूरतें पूरी करने में मदद करेगी। डीआरडीओ ने एक बयान में कहा कि 'फ्रंट हार्ड आर्मर पैनल' (एफएचएपी) जैकेट का चंडीगढ़ स्थित टर्मिनल बैलिस्टिक अनुसंधान प्रयोगशाला में (टीबीआरएल) में परीक्षण किया गया और भारतीय मानक ब्यूरो संबंधी मानक प्राप्त कर लिए गए।

डीआरडीओ के अनुसार इस महत्वपूर्ण विकास की अहमियत इस तथ्य में है कि जैकेट के वजन में प्रत्येक ग्राम की कमी सैनिकों की सुरक्षा सुनिश्चित करते हुए उन्हें वजन से राहत प्रदान करती है। प्रौद्योगिकी के जरिए मध्यम आकार की बुलेटप्रूफ जैकेट का वजन **10.4** किलोग्राम से नौ किलोग्राम कर दिया गया है।

इस उद्देश्य के लिए प्रयोगशाला में विशिष्ट सामग्री और प्रौद्योगिकियों का इस्तेमाल किया गया। रक्षा मंत्री राजनाथ सिंह ने सैनिकों को राहत प्रदान करने के लिए कम वजन की बुलेटप्रूफ जैकेट का विकास किए जाने पर डीआरडीओ के वैज्ञानिकों और संबंधित उद्योग को बधाई दी। डीआरडीओ के अध्यक्ष डॉ. जी सतीश रेड्डी ने भी इस बुलेटप्रूफ जैकेट के विकास पर डीएमएसआरडीई की टीम को बधाई दी।

https://www.amarujala.com/india-news/drdo-kanpur-lab-developed-light-weight-bullet-proof-jacket-for-indian-army

THE HINDU BusinessLine

Fri, 02 April 2021

Bharat Dynamics flags off Akash Missiles for delivery to Indian Army

Gears up for exports

By V Rishi Kumar

Hyderabad: Bharat Dynamics Ltd (BDL) manufactured Akash Missiles were flagged off today by Lt Gen A P Singh, AVSM, Director General and Senior Colonel Commandant, Army Air Defence for delivery to the Indian Army.

BDL manufactures Akash Missiles both for the Indian Army and Indian Air Force. The Akash Weapon System, designed and developed by DRDO (Defence Research and Development Organisation) with 96% indigenous content, is being manufactured by BDL at its Hyderabad Unit with a large number of supply chain partners which include DPSUs, MSMEs and private industry.

Akash, a surface to air missile

Akash Missile has the capability to engage aerial threats up to the maximum range of 25 km and up to an altitude of 20 km, operating at a speed range of 1.8 to 2.5 Mach. The Missile has been successfully test fired on several occasions and is one of the best missiles in this category.

With the announcement from the Union Cabinet regarding clearance of Akash Weapon System for export, BDL is geared up to take up export order. BDL has been receiving several leads for export of Akash from various countries which is expected to be converted into firm orders in due course. BDL has a full- fledged facility to meet both domestic and international demands simultaneously.

The focus of BDL has been on 'Make in India' with maximum indigenous content and create a Atmanirbhar Bharat in Defence sector. Akash Weapon System is one such product among BDL's product portfolio in this pursuit for self reliance in Defence.

During the later part of the day, DGAAD also inaugurated an auditorium, according to a BDL statement.

https://www.thehindubusinessline.com/companies/bharat-dynamics-flags-off-akash-missiles-for-delivery-to-indian-army/article34217703.ece

THE ECONOMIC TIMES

Sat, 03 April 2021

Military Exports: Malaysian team to visit soon for LCA trial

By Manu Pubby

Synopsis

A Malaysian Air Force team is expected to visit India soon to assess the suitability of the light combat aircraft (LCA), a locally developed system that has recently been ordered in large numbers by the Indian Air Force (IAF), as the force looks to acquire aline of new fighter jets.

A Malaysian Air Force team is expected to visit India soon to assess the suitability of the light combat aircraft (LCA), a locally developed system that has recently been ordered in large numbers by the Indian Air Force (IAF), as the force looks to acquire aline of new fighter jets. The Malaysian team is likely to visit Bengaluru within two months, depending on travel restrictions, and will be given a full tour of the LCA production facilities, test infrastructure as well as a demonstration of its combat potential, said people aware of the matter.

They said the Indian LCA has emerged as a top contender for the Malaysian Air Force since it is being offered at cheaper rates than the Swedish Saab Gripen and is more modern and capable than the China-Pakistan origin JF 17. India is offering the LCA Mk1A version, with a modern AESA radar, new avionics and the capability to integrate a variety of weapons, for the potential export order and is confident that the aircraft will be an ideal fit for the Malaysian requirement. The initial requirement is for 12 jets, with options for 24 more in the future, said the people.

Besides full support in training both ground and air personnel, India has offered to create a full maintenance, repair and overhaul facility for the LCA fleet in Malaysia to ensure a high rate of availability. India has been in talks with Malaysia on the potential order for more than three years now. In 2019, India had dispatched two of its LCA fighters for the LIMA show at Langkawi as part of its efforts to pitch the jets for the export order. India and Malaysia have also been engaging in multi-level joint exercises and training programmes as part of plans to upgrade defence cooperation.

The Indian aircraft is priced at just over $42 million per unit, a price made possible given economies of scale after the IAF placed an order for 83 fighter jets. This will make it the most lucrative aircraft on offer to Malaysia in the global scenario, said the people. Besides the Gripen and the JF 17, the South Korean T 50 is also a contender for the contract. Though Pakistan has also been pitching hard for its JF 17 fighter, its Chinese origins are likely to be an important consideration given that Malaysia has ongoing sea boundary disputes with Beijing.

https://economictimes.indiatimes.com/news/defence/military-exports-malaysian-team-to-visit-soon-for-lca-trial/articleshow/81881074.cms

DRDO on Twitter

Rajnath Singh
@rajnathsingh

Congratulations to @DRDO_India and DMSRDE Kanpur for developing this BP jacket. India needs more such innovative product design and development to realise the dream of #AtmaNirbharBharat

ANI @ANI · 1 अप्रैल 2021

Defence Materials and Stores Research and Development Establishment (DMSRDE), Kanpur a DRDO laboratory has developed Light Weight Bullet Proof Jacket (BPJ) weighing 9 kg meeting the qualitative requirements of the Indian Army: DRDO

ANI
@ANI

Front Hard Armour Panel (FHAP) jacket was tested at Terminal Ballistics Research Laboratory, Chandigarh & met relevant BIS standards. This technology reduces the weight of the medium-sized BPJ from 10.4 kg to 9 kg: DRDO

3:28 अपराह्न · 1 अप्रैल 2021

Defence Strategic: National/International

Press Information Bureau
Government of India

Ministry of Defence

Thu, 01 April 2021 4:40PM

CDS General Bipin Rawat operationalises Joint Logistics Node in Mumbai

All future wars will be conducted by Tri-Service in an integrated manner. To enable our Armed Forces to conduct successful operations, it is essential that they be provided with sound logistics support during all stages of the war. Keeping these in mind, Chief of Defence Staff General Bipin Rawat operationalised and dedicated to the Services 3rd Joint Logistics Node (JLN) in Mumbai through video conferencing from New Delhi on April 01, 2021.

These JLNs will provide integrated logistics cover to the Armed Forces for their small arms ammunition, rations, fuel, general stores, civil hired transport, aviation clothing, spares and also engineering support in an effort to synergise their operational efforts. Speaking on the occasion, General Bipin Rawat said, “Establishment and operationalisation of JLNs is a very important first step in the direction of logistics integration of our three Services. Acceptance of each other's limitations and learning from each other's strengths and best practices is essential to help improve the functioning and efficacy of these nodes.”

This initiative would accrue advantages in terms of saving of manpower, economise utilisation of resources, besides financial savings. The CDS also complimented the 'Tri-Yodhas' on this occasion who put in their heart and soul to make this node operational and said, “I call upon everyone to continue to strive for excellence in our endeavour to become a fully integrated, modern and self-sufficient future-ready force.” Successful functioning of these three JLNs would prove to be important stepping stones for opening of more JLNs in different parts of the country.

The JLN would enhance joint inter-operability between the Services and go a long way in improving the logistics processes of the Armed Forces in accordance with Prime Minister Shri Narendra Modi’s directions to enhance the jointness among the three Services. This important milestone is a harbinger of further strengthening of integrated logistics in the Armed Forces and will enable them to operate in all areas and across all spectrum of warfare seamlessly.

The CDS also emphasised on the need to work towards greater logistics integration with national logistics, which has been provided renewed impetus in the recent past by saying it would help the Armed Forces to take benefit from the infrastructural and logistics improvements taking place at the national level. “Through this, we will bring to bear the actual 'Whole of the Nation' effort on our adversaries, he added. He also urged the Services to put-in concerted efforts to achieve cost cutting as well as modernisation.

The Joint Operations Division (JOD) under the aegis of Headquarters Integrated Defence Staff (Hq IDS) actively pursued and enabled establishment of the JLNs as the first concrete step towards logistics integration of the Tri-Service. Government Sanction Letter for establishment of JLNs in Mumbai, Guwahati and Port Blair was signed on October 12, 2020. The JLNs in Guwahati and Tri-Services, Andaman and Nicobar Command, Port Blair were operationalised on January 01, 2021.

Presence of senior officers from the three Services during the inauguration of JLN which was conducted virtually reflected the true essence of Tri-Service integration. The Standing Operating Procedure of the JLN was also e-released by General Bipin Rawat on the occasion.

https://pib.gov.in/PressReleasePage.aspx?PRID=1708998

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Thu, 01 April 2021 4:40PM

चीफ ऑफ डिफेंस स्टाफ जनरल बिपिन रावत ने मुंबई में संयुक्त लॉजिस्टिक्स नोड की शुरुआत की

भविष्य में होने वाले सभी युद्धों को एकीकृत रूप से तीनों सेनाओं द्वारा लड़ा जाएगा। हमारे सशस्त्र बलों द्वारा इस प्रकार के अभियान के सफलतापूर्वक संचालन के लिए, आवश्यक है कि उन्हें युद्ध के सभी स्तरों पर साउंड लॉजिस्टिक सपोर्ट प्रदान किया जाए। इस बात को ध्यान में रखते हुए, चीफ ऑफ डिफेंस स्टाफ जनरल बिपिन रावत ने 1 अप्रैल 2021 को नई दिल्ली से वीडियो कॉन्फ्रेंसिंग के माध्यम से मुंबई में तीसरे संयुक्त लॉजिस्टिक्स नोड (जेएलएन) की शुरुआत की और सेवाओं को समर्पित किया।

यह जेएलएन सशस्त्र बलों को उनके छोटे हथियारों-गोला बारुद, राशन, ईंधन, जनरल स्टोर के सामान, असैन्य लोगों का परिवहन, विमानन लिबास और अन्य सामानों के लिए एकीकृत लॉजिस्टिक्स कवर प्रदान करेगा और उनके अभियानों के प्रयासों के बीच तालमेल के लिए इंजीनियरिंग सहयोग भी प्रदान करेगा। इस अवसर पर जनरल बिपिन रावत ने कहा, “जेएलएन की स्थापना और परिचालनके रूप में हमारी तीनों सेनाओं के लॉजिस्टिक्स के एकीकरण की दिशा में यह पहला कदम बहुत ही महत्वपूर्ण था। इन नोड्स के कामकाज और प्रभाव को बेहतर बनाने में मदद करने के लिए एक-दूसरे की सीमाओं को स्वीकार करना और एक-दूसरे की मजबूती व सर्वश्रेष्ठ तरीकों से सीखना बहुत आवश्यक है।”

यह पहल वित्तीय बचत के अलावा, मानवशक्ति की बचत और संसाधनों का किफायती उपयोग करने में भी लाभ पहुंचाएगी। सीडीएस ने इस अवसर पर उन त्रि-योद्धाओं की भी प्रशंसा की जिन्होंने इस नोड के लिए अपने दिल और आत्मा से काम किया और कहा, "मैं सभी से आग्रह करता हूं कि वे हमारे इस उद्यम में उत्कृष्टता के लिए प्रयासरत रहें ताकि हम पूरी तरह से एकीकृत, आधुनिक और भविष्य के लिए तैयार आत्म-निर्भर सेना बन सकें।" इन तीन जेएलएन का सफल संचालन, देश के भिन्न हिस्सों में और जेएलएन को शुरू करने के लिए महत्वपूर्ण कदम साबित होगा।

जेएलएन सेनाओं के बीच संयुक्त अंतर-संचालन को बढ़ावा देगा और तीनों सेनाओं के बीच संयुक्तता बढ़ाने के प्रधानमंत्री नरेंद्र मोदी के निर्देशों के अनुसार, सशस्त्र बलों की लॉजिस्टिक्स प्रक्रिया में सुधार का लंबा रास्ता तय करेगा। यह महत्वपूर्ण कदम सशस्त्र बलों में एकीकृत लॉजिस्टिक्स को सुदृढ़ करने का संकेत है और उन्हें युद्ध के सभी क्षेत्रों व अन्य सभी क्षेत्रों में निर्बाध रूप से काम करने में सक्षम बनाएगा।

सीडीएस ने इस मौके पर राष्ट्रीय लॉजिस्टिक्स के साथ एकीकरण करने के लिए काम करने की आवश्यकता पर भी जोर दिया, जिसे पिछले कुछ समय में यह कहकर नए रूप में प्रोत्साहित किया गया कि यहराष्ट्रीय स्तर पर बुनियादी ढांचे और लॉजिस्टिक्स में हो रहे सुधार से सशस्त्र बलों को लाभ पहुंचाएगा। उन्होंने आगे कहा, "इसके माध्यम से हम विपरीत परिस्थितियों में 'पूरे राष्ट्र' के प्रयासों का वास्तविक भार उठा सकेंगे।" उन्होंने सेनाओं से लागत में कटौती के साथ-साथ आधुनिकीकरण के लिए ठोस प्रयास करने का आग्रह भी किया।

इंटीग्रेटेड डिफेंस स्टाफ मुख्यालय (हैडक्वार्टर आईडीएस) के तत्वाधान में जॉइंट ऑपरेशन डिवीजन (जेओडी) ने सक्रिय रूप से जेएलएन की स्थापना कर तीनों सेनाओं के लॉजिस्टिक्स एकीकरण की दिशा में पहला ठोस कदम उठाया। सरकार ने 12 अक्टूबर 2020 को मुंबई, गुवाहाटी और पोर्ट ब्लेयर में जेएलएन की स्थापना की स्वीकृति दी थी। गुवाहाटी और त्रि-सेना, अंडमान और निकोबार कमांड, पोर्ट ब्लेयर पर 1 जनवरी 2021 से जेएलएन शुरू हो चुके हैं।

वर्चुअली आयोजित जेएलएन के उद्घाटन के अवसर पर तीनों सेनाओं के वरिष्ठ अधिकारी मौजूद थे जो कि तीनों सेनाओं के एकीकरण को वास्तविक रूप देता है। इस अवसर पर जनरल बिपिन रावत ने जेएलएन की स्थायी संचालन प्रक्रिया दोबारा जारी की।

https://www.pib.gov.in/PressReleasePage.aspx?PRID=1709081

Press Information Bureau
Government of India

Ministry of Defence

Thu, 01 April 2021 6:48PM

Admiral Karambir Singh, Chief of the Naval Staff visits Defence Services Staff College, Wellington

Admiral Karambir Singh, Chief of the Naval Staff (CNS) visited Defence Services Staff College (DSSC), Wellington from 31 Mar – 01 Apr 21. The CNS delivered a lecture on 'Maritime Security in the Indo-Pacific' to the officers undergoing the 76th Staff Course at DSSC. Highlighting the increasing geo-strategic focus on Indo-Pacific, CNS emphasised India's approach to inclusive littoral engagements.

The Admiral was given an update on the ongoing training activities and incorporation of new trends with specific reference to jointmanship amongst the three services. Later he visited the College area and was briefed on the changes being undertaken in training curriculum and infrastructural development as a step towards enhancing the role of DSSC as a Centre of Excellence for Professional Military Education.

https://www.pib.gov.in/PressReleasePage.aspx?PRID=1709073

Business Standard

Mon, 05 April 2021

Chief of Defence Staff on two-day visit to Southern Naval Command

General Bipin Rawat arrived at the Southern Naval Command for a two-day visit during which he will review the progress of the Indigenous Aircraft Carrier being constructed at the Cochin Shipyard

Kochi: Chief of Defence Staff General Bipin Rawat has arrived at the Southern Naval Command here for a two-day visit during which he will review the progress of the Indigenous Aircraft Carrier being constructed at the Cochin Shipyard, a Defence spokesman said on Sunday.

This is his first visit to this southern port city after taking over as Chief of Defence Staff, he said.

General Bipin Rawat

General Rawat, who arrived on Saturday evening, would visit various professional training schools and witness the Damage Control Training Facility at the naval base before returning on Monday evening, he said.

"He is scheduled to review the training infrastructure at Southern Naval Command, which is the Training Command of the Indian Navy. The General is scheduled to visit the Indigenous Aircraft Carrier, under construction at Cochin Shipyard Limited, Kochi and review its progress," the spokesman said in a release.

He would also be apprised of the environmental initiatives undertaken by the Command, it said.

(Only the headline and picture of this report may have been reworked by the Business Standard staff; the rest of the content is auto-generated from a syndicated feed.)

https://www.business-standard.com/article/current-affairs/chief-of-defence-staff-on-two-day-visit-to-southern-naval-command-121040400458_1.html

INDIA TODAY

Sun, 04 April 2021

Army commanders to discuss China, ceasefire with Pakistan at security meeting later this month

Top Indian Army officials will meet at the Army Commanders' Conference to discuss all security concerns, including the ongoing border conflict with China and the ongoing ceasefire with Pakistan along the Line of Control (LoC)

By Mabjeet Singh Negi

New Delhi: After resolving the conflict along the Line of Actual Control (LAC) with China to a large extent, top Indian Army officials will be discussing security challenges along the LAC with China and address the remaining issues with Pakistan.

The Army Commanders' Conference is scheduled to be held from April 26 to 30 (Picture Credits: AFP)

At the Army Commanders' Conference scheduled to be held from April 26 to 30, the issue of ongoing ceasefire with Pakistan along the Line of Control (LoC) and the overall internal security situation in the Kashmir valley will also be discussed.

"The Army commanders' conference, which will be attended by all top Commanders will cover all security issues, including the ongoing border dispute with China," top government sources told India Today TV.

The meeting is also expected to cover the future course of action along the LAC as well as the resolution of the remaining points of contention in eastern Ladakh.

In the eastern Ladakh sector, the two sides have already disengaged from the most important Pangong lake sector but are still maintaining high level of forces at forward permanent locations as de-escalation is yet to happen.

The Indian side is also hoping for an early disengagement at the remaining friction points in the Gogra heights, Hot Springs and CNC Junction area.

The Indian Army has also now started rebalancing its troops' deployment towards the China border and turning its focus towards China from the Pakistan front.

The border standoff between the Indian and Chinese armies erupted on May 5 last following a violent clash in the Pangong lake areas and both sides gradually enhanced their deployment by rushing in tens of thousands of soldiers as well as heavy weaponry.

As a result of a series of military and diplomatic talks, the two sides completed withdrawal of troops and weapons from the North and South banks of Pangong lake in line with an agreement on disengagement last month.

https://www.indiatoday.in/india/story/army-commanders-to-discuss-china-ceasefire-with-pakistan-at-security-meeting-later-this-month-1786896-2021-04-04

THE HINDU

Mon, 05 April 2021

Another batch of Rafale jets to fly in by mid-May

8-9 new arrivals will complete first IAF squadron of the fighters

By Dinakar Peri

India will receive another 8 to 9 Rafale jets from France by mid-May, with some expected later this month, completing the first squadron of the fighters in the Indian Air Force (IAF), according to a defence official.

"The number of jets that will arrive in India by month end is being finalised. In all around 8-9 jets are expected by mid-May," the official said.

With the inductions this month set to complete the first squadron, which currently has 14 jets, the IAF is all set to operationalise the second Rafale squadron at Hasimara in West Bengal later this month.

A Rafale jet taking off, at the inauguration of Aero India 2021. File | Photo Credit: MURALI KUMAR K

Steady additions

Last September, the IAF inducted the batch of five Rafales of 36 jets contracted from France under a €7.87 billion Inter-Governmental Agreement signed in September 2016 with 13 India Specific Enhancements (ISE).

The first batch of five Rafale jets, three single seat and two twin seater trainers, were formally inducted into No.17 'Golden Arrows' squadron of the IAF last September at Ambala Air Force station. They arrived in India in July 2020 with a stopover at Al Dhafra airbase in United Arab Emirates (UAE).

During the first leg of the flight from Merignac airbase at Bordeaux in France to the UAE, the jets were accompanied by French Air Force mid-air refuellers. For the journey from UAE to India they were accompanied by IAF midair refuellers.

The second batch of three Rafales arrived in India last November, also flying non-stop from France with three in-flight refuellings supported by French Air Force mid-air refuelling aircraft. The third batch of three Rafales arrived in India in January. The fourth batch of three jets arrived on March 31 and were refueled in-flight by UAE Air Force tankers.

Last December, IAF Chief Air Chief Marshal R.K.S. Bhadauria said the Force would get 3 to 4 Rafales every two to three months till all 36 jets are delivered and added that the first squadron would be fully ready by end 2021 and the second squadron by 2023.

https://www.thehindu.com/news/national/another-batch-of-rafale-jets-to-fly-in-by-mid-may/article34237712.ece

Business Standard

Fri, 02 April 2021

Changing a monolith

The plans currently afoot to restructure the military raise several questions about the command structure and accretion of power

By Ajai Shukla

New Delhi: The most far-reaching structural change to the military that the Ministry of Defence (MoD) is currently evaluating relates to restructuring the army, navy and Indian Air Force (IAF) into integrated theatre commands.

This involves merging 17 single-service commands into a smaller number of joint-service commands, in which the combat capabilities of all three services are synergised to create greater battlefield effect. To plan, oversee and implement this essential reorganisation, the government created the post of a tri-service Chief of Defence Staff (CDS) and, on January 1, 2020, elevated the army chief at that time, General Bipin Rawat, to be the first CDS. In the 15 months since then much work has been done, but crucial questions remain: Who will the theatre commanders report to in wartime? Will their boss be the CDS, who will directly control combat operations? Or will they report to a Defence Council – an unwieldy committee, headed by the defence minister.

The government is inclined to have the CDS as a single-point operational commander. With future conflicts expected to be localised and sectoral, combat platforms and equipment would have to be shared and transferred when required from dormant areas to active ones. Leaving such decisions to the long-winded procedures of a Defence Council would be unwise. It would be better if the CDS exercised operational control, with the Integrated Defence Staff (IDS) as his secretariat.

This shift in operational responsibility would require the army's Directorate General of Military Operations (DGMO) and its naval and air force counterparts to shift to the IDS. This would require a tri-service operations room, with each service vertical functioning under a three-star general. Meanwhile, the role of the three service chiefs would be circumscribed to recruiting, training and equipping their respective services. This would be the greatest reduction in powers of the three service chiefs and the single biggest enhancement of the powers of the CDS.

On the ground, the hazy outlines of the first two integrated commands are already visible. The first of these is the National Air Defence Command that will be led by an air force officer. The second, which should be cleared shortly, is the Maritime Theatre Command (MTC), which will be commanded by a navy admiral. Neither of these have been greeted with unalloyed joy: The air force says it was already responsible for defending all of India's airspace; while naval officers are grumbling about how the proposed MTC should actually comprise of two commands – one each for the eastern and western seaboards. This is hardly warranted, since both oceanic spaces are in close proximity; and the total naval force is barely 150 ships. But it is a reminder of the sensitivity within the services, especially the smaller navy and air force, about getting left behind in the race to command and control the new theatres.

The MTC, as currently conceived, carves out an expansive role for the navy. It will subsume into itself all the navy's current forces and infrastructure, including what is under the tri-service Andaman and Nicobar Command. The MTC will also include the air force bases at Sulur, Jamnagar and Thanjavur, and the amphibious warfare brigade – 108 Infantry Brigade – based in Port Blair. The navy is also pitching for the Thiruvananthapuram-based 91 Infantry Brigade but is running into army opposition. Along with the army's static establishments and training schools in peninsular India, the 83,000-strong navy of today will expand into a 300,000-strong integrated theatre command. Even so, there is apprehension amongst the admirals.

From preliminary signals emerging from South Block, the government intends to have six-to-seven integrated commands, organised on either a functional, or a geographical, basis. In the former category will fall the Strategic Forces Command (SFC), which operates India's nuclear

forces; the National Air Defence Command to protect Indian airspace, and a Special Forces Command to oversee commando units and clandestine operations. In the geographical category will fall the MTC, with its headquarters in Karwar, Karnataka; the Western Theatre Command (WTC) that will be responsible for the Indo-Pakistan border from Gujarat to Siachen; and the Northern Theatre Command (NTC) that will look after the Sino-Indian border from the Karakoram Pass in Ladakh to Kibithu in Eastern Arunachal Pradesh.

With the navy heading the MTC and the army heading the NTC, leadership of the WTC, which faces the Pakistan frontier, would fall to the air marshals. This is an enormous force accretion for the air force, by any measure. Currently, four army commands – South, South-West, Western and Northern Commands – defend the border with Pakistan. There are also two air force commands focused on this sector – Western Air Command and South Western Air Command. Setting up the WTC would involve subsuming three army commands.

This delineation of responsibility would also have to deal with legacy problems in sectors such as Ladakh, where the army's 14 Corps has one of its two divisions facing Pakistan and the other deployed against China. These legacy problems can be sorted out after the apex management structures are in place. A solution could involve placing the Pakistan-facing division in Kargil under the Srinagar-headquartered 15 Corps, while 14 Corps' area of responsibility could be extended southeast-wards, incorporating areas along the Himachal and Uttarakhand borders with Tibet. The new NTC will not have to worry unduly about the deployment in Sikkim and Arunachal Pradesh, since three army corps deployed there ensure troop levels are adequate.

Getting the apex command structures right is an essential pre-requisite for sorting out other minor issues, such as allocating an armoured brigade here or an artillery brigade there. The creation of a CDS has got the head right. Issues that were not talked about for years are now being discussed: What will be the structure for the military's interaction with the defence minister? How will the National Security Advisor (NSA) fit into these structures? Should the NSA, given how much power he holds, be given a constitutional role or should he remain an advisor to the prime minister who is barely answerable to Parliament.

Amidst the intellectual churn within the services around questions of "theatre-isation", two more lines of thought have been occupying the generals. The first of these is around the creation and employment of Integrated Battle Groups (IBGs), which Rawat began as army chief. While this is purely a tactical concept that involves swift grouping and regrouping of units to deal with changing battlefield scenarios, Rawat extended this to making permanent organisational changes, including the creation of many more vacancies in major general's rank. This has drawn MoD opposition and the initiative is stumbling. The second change, triggered by last year's Chinese intrusions, is the rebalancing of the army's posture, from its traditional Pakistan-focus to a larger deployment against China. This has already been executed over the preceding year by the army chief, General MM Naravane. The army's pivot to the North, as it has been referred to, is a smooth fait accompli.

https://www.business-standard.com/article/opinion/changing-a-monolith-121040101762_1.html

The EurAsian Times

Sun, 04 April 2021

Unsuccessful for 20 years, Indian army again hunts for Mounted Gun System for artillery units

The Indian Army has issued a fresh request for information (RFI) to acquire the Mounted Gun System (MGS) for its artillery units, which would supplement and improvise their shoot-and-scoot and rapid-fire capabilities.

The Army has been trying to procure a 155mm/52-caliber MGS for about 20 years, with the first request for proposals (RFP) floated in February 2002. While this did not yield any results, the government withdrew the previous RFP and re-issued it more than a decade later, in June 2013.

This time again, it hit obstacles and the service sought a fresh acceptance-of-necessity (AoN) from the Defense Acquisition Council (DAC) headed by then-Defense Minister Nirmala Sitharaman in 2018.

The latest RFI, which has been reviewed by The Eurasian Times, calls for vendors to supply 155/52 caliber artillery guns. These are howitzers mounted on a truck for easy transportation. They provide for 'shoot and scoot' capability, where the guns fire at the enemy from one location and then relocate to another to avoid counter-battery fire and detection from enemy surveillance teams.

They also provide for a very effective boost in the firepower for the infantry columns in different environments. According to the document, the MGS will be "employed in plains, mountains, semi-desert and desert terrain for the execution of Artillery tasks".

It also requires for the system to be able to fire all types of in-service ammunition, and should have an inertial navigation system (INS)-based sight system with the capability to orient and fixing the location of the gun system.

The fire control system (FCS) should be able to provide day-and-night direct and indirect firing. The FCS has to be compatible with Project SHAKTI, a computerized combat command, and control system to integrate the artillery weapon operations. The vendor would also have to take a 5 percent offset in the deal and the system should have a minimum of 50 percent indigenous content.

The Indian Army's artillery modernization process had virtually stalled since the acquisition of the Haubitus FH-77 Bofors guns in the 1980s until the government took up the work seriously in the past few years. Private players entered the field and were given more freedom to develop joint production facilities under the 'Make in India' initiative.

However, the Army is still stuck with testing these systems, seldom hampered by faulty ammunition leading to barrel burst incidents. The Bofors guns had proved good during the 1999 Kargil war and subsequently, the Army drafted a Field Artillery Rationalisation Plan to acquire around 3,000 pieces of 155 mm weaponry, including tracked self-propelled guns, truck-mounted gun systems, towed artillery pieces, and wheeled self-propelled guns over next two decades.

https://eurasiantimes.com/after-repeated-failures-indian-army-floats-fresh-rfi-for-155-52-caliber-artillery-guns/

THE NATIONAL INTEREST

Sun, 04 April 2021

India wants more nuclear submarines and less aircraft carriers

India's nuclear-powered attack submarines could change the balance of power in the Indian Ocean, offsetting China's rising power in the region

By Sebastien Roblin

In March 2021, the *Times of India* reported that the Indian Navy had announced its intent to prioritize the development and construction of a force of six nuclear-powered attack submarines, or SSNs, ahead of building a third, larger aircraft carrier. The initial order of three submarines could begin entering service in 2032.

The SSN program, estimated optimistically to cost $12 billion ($2 billion per submarine), could affect the balance of power in the Indian Ocean as India seeks to offset the growing presence and capability of China's rapidly expanding navy.

Indian Submarine Strategy and China

In the last two decades, the PLA Navy has secured access to bases in the Indian Ocean to the west and east of India, and periodically dispatches warships and submarines to patrol those waters. Long-running tensions between China and India meanwhile have mounted, culminating in June 2020 in a deadly clash on the Himalayan border in which dozens of soldiers were killed.

New Delhi's decision to focus on submarines concludes a year-long debate between senior leaders of the Indian Navy and Chief of Defense Staff Bipin Rawat. Both projects have been on the Navy's slate for decades, but progress has been slow.

Rawat favored submarines over carriers because the latter make for large and indiscrete targets, and China has developed a wide variety of long-range air, sea- and land-based missiles to attack carriers.

Attack submarines, by contrast, are ideal for navies facing numerically superior adversaries because underwater stealth allows them to (mostly) pick their battles, pouncing upon vulnerable merchant convoys or unsuspecting warships.

Furthermore, even a relatively small submarine force can compel an adversary to devote enormous resources to systematically escorting merchant convoys and valuable warships, lest they sustain insupportable losses.

Those costs were so high that in World War I and II, the United Kingdom and U.S. Navy both initially thought it was better to let convoys go unescorted, only for shipping losses to German U-Boats to rise so catastrophically high that they were forced to backtrack—even if that meant throttling down the pace of shipping overall.

Nuclear Power under the Indian Ocean

India is on its second lease of a nuclear-powered *Akula*-class attack submarine from Russia, and in 2019 signed a $3 billion deal for a third lease to begin in 2025.

Russian assistance also played a major role in India's development of an indigenous nuclear-powered ballistic missile submarine (SSBN), the *Arihant*, giving India an underwater sea-based nuclear deterrence capability. Three progressively improved submarines based on the Arihant are in the pipeline, with one—the *Arighat*—due for commissioning this year. These will be followed by a new, larger class of four SSBNs dubbed the S5.

Nuclear propulsion allows submarines to remain underwater essentially indefinitely and traverse long distances without having to expose themselves by surfacing or snorkeling to sip air needed to recharge their batteries.

That allows an SSBN to creep slowly underwater with maximum stealth on patrols that may last two or three months, ready at any moment to respond to orders transmitted by high-frequency radio to unleash a barrage of nuclear-tipped ballistic missiles.

An attack submarine, however, is principally designed for hunting down ships and other submarines. For that role, agility is essential for intercepting vulnerable enemy ships, out-maneuvering underwater foes, and diving deep to evade anti-submarine forces. Here, nuclear propulsion can enable much higher sustained underwater speeds of 20 to 30 knots.

Indeed, India has reportedly been researching higher-strength hull materials that will allow its future SSNs to dive deeper and travel at higher speeds. However, the greatest technical challenge may stem from the submarine's reactor.

Reportedly, there has been some debate over whether to use the 83-megawatt compact light water reactor developed for the *Arihant*, as some officers argue that the speed and acceleration needed for an SSN requires a more powerful 190 MW reactor like that used on the *Akula*-class.

While an SSN's ability to remain underwater indefinitely is intrinsically stealthy, some nuclear submarines—like Chinese and early Soviet designs—are notably noisier than the *Akula* or the U.S. Virginia-class. That makes them easier to detect and destroy, and harder for their crew to detect other submarines with their hydrophones.

Thus, the level of acoustic stealth India achieves with its SSN will determine how well they match qualitatively with China's current submarine fleet.

India's Nuclear Submarine Strategy

Realistically, many of the Indian Navy's submarine needs in the Arabian Sea and Bay of Bengal can be fulfilled by shorter-range AIP- or lithium-ion battery-powered submarines built at a fraction of the price.

However, an Indian SSN fleet would remain uniquely qualified for several offensive and defensive missions.

One classic SSN mission is escorting SSBNs deploying to station, as opposing submarines often attempt to trail behind them while leaving port. An SSN can "keep up" with the SSBNs during that vulnerable phase, and is better suited to dueling with hostile submarines. India is expected to pursue a Soviet-style bastion strategy, in which the SSBNs lurk in nearby waters well screened by friendly aerial, surface, and underwater anti-submarine platforms.

Nuclear-powered submarines would also make good escorts for India's two aircraft carriers due to having the speed to keep up!

The Indian Navy may also seek to leverage the greater range and endurance of SSNs by deploying them to interdict the few choke points by which Chinese warships can efficiently access the Indian Ocean, notably the Straits of Malacca (at the intersection of Malaysia, Sumatra and Singapore) and the Sunda Strait (between Sumatra and Java.) Admittedly, AIP submarines have the range for this mission, though SSNs could remain on station longer with less exposure.

However, India could also dispatch SSNs *through* the straits into the Pacific, just as Chinese submarines are patrolling the Indian Ocean. In wartime, just one or two submarines in the Pacific could force the PLA Navy to devote expensive assets to protecting their "backfield," instead of treating the Pacific as a safe area where shipping can safely go unescorted.

Indeed, an earlier article by the authors looks at a report by the Center for Strategic and Budgetary Assessment suggesting using SSNs in this manner.

Meanwhile, in peacetime, the Indian Navy could use submarines for intelligence-gathering missions in the Pacific.

Finally, SSNs could be used as long-range platforms for delivery of naval special forces and conventional (ie. non-nuclear) land-attack missiles, using say an underwater-launch variant of the

930-mile range *Nirbhay*-cruise missile. An attack submarine can only deliver a small-scale missile barrage, but such strikes can sometimes have an outsized political/psychological impact.

The French Connection

The *Times* also notes that New Delhi prefers to partner with France on the new SSNs. Indeed, discussions of a nuclear submarine partnership date back several years.

While Russia has traditionally assisted India's nuclear-powered submarine programs, currently arms sales from Russia could potentially be subject to sanctions from the United States. Meanwhile, purchases from the United States are subject to difficult ITAR regulatory burdens. A French partnership thus bypasses these potential pitfalls.

Moreover, India is currently completing the last of six *Kalvari*-class AIP submarines derived from the French *Scorpene-class* submarine offered by Naval Group. That means India could build on an existing partnership with a company that is also building France's hi-tech Suffren-class SSN.

Finally, while India's growing military relationship with the U.S. Navy in the Indian Ocean is well known, France also has a substantial presence in the Indian Ocean based on the islands of Reunion and Mayotte, making it an attractive strategic partner.

(Sébastien Roblin writes on the technical, historical and political aspects of international security and conflict for publications including The National Interest, NBC News, Forbes.com and War is Boring. He holds a Master's degree from Georgetown University and served with the Peace Corps in China. You can follow his articles on Twitter.)

https://nationalinterest.org/blog/buzz/india-wants-more-nuclear-submarines-and-less-aircraft-carriers-181904

The Indian EXPRESS

Sun, 04 April 2021

Army initiates change in uniforms, officers' summer mess dress first to get a new look

As per the letter, officers in the rank of Brigadiers and above (Major General, Lt General and General) will no longer wear regimental pattern badges of rank on the summer mess dress

By Man Aman Singh Chhina

Chandigarh: The Army has initiated a review of the pattern of uniforms worn by its personnel with the first change being effected to the Dress 6 (b), wherein a uniformity of pattern has been introduced to the summer mess dress of officers of the rank of Brigadiers and above.

In a letter dated February 26, the Army Headquarters has informed the various units and formations about the change being effected from April 1. While at present only the Dress 6 (b) has been changed, a comprehensive review of all uniforms is in progress and gradually they too will be changed in a phased manner.

Chief of Army Staff Gen MM Naravane (right) in the new Dress 6 (b) at the Army War College in Mhow, Thursday. (ADGPI)

As per the letter, officers in the rank of Brigadiers and above (Major General, Lt General and General) will no longer wear regimental pattern badges of rank on the summer mess dress. These badges of rank till now have had regimental colour backings, black badges of rank in case of rifle regiments, and brass coloured ones for other regiments and Corps.

Henceforth, all such officers will wear

only brass badges of rank on the Dress 6 (b) without any backing. The letter states that regimental/corps side titles will not be worn.

A common black coloured side cap will be worn by these officers while a black turban will be worn by Sikh officers. A black cummerbund with Army crest will be worn by officers in the rank of Brigadier and above. Earlier, the cummerbund used to be on the pattern of regimental colours.

The buttons on the shirt of Dress 6 (b) will only be mother of pearl or synthetic.

There will not be any change in the pattern of dress worn by officers upto the rank of Colonels and they can continue to wear the regimental affiliations on their mess dress.

While the orders have come into effect from April 1, but a transition period upto June 30 has been allowed for these changes to come into effect. However, from July 1, 2021 the Dress 6 (b) will be worn as per the new regulations.

Reacting to the development, Lt Gen HS Panag (retd), former General Officer Commanding in Chief of Northern and Central Commands said that these were welcome changes, which ensure a uniformity of appearance in flag ranks.

"There had always been a difference in the uniforms worn by the officers of the rank of Colonel and above in the years gone by. The Colonels at the time used to serve on staff and regimental affiliations were not on display on the uniform. The Colonels used to wear the Ashoka emblem on their caps and even their berets used to be a Khaki kind of colour," said Lt Gen Panag.

The former Army Commander, however, pointed out that the all changes in uniform must be in consonance with the weather in the country and that of ease of maintaining the uniform. "The cloth which is currently used for our uniforms is not at all friendly for the tropical weather. Also, there is a need to do away with the brass in the badges of rank and cap badges, leather belts etc as these require a lot of maintenance," he said.

Lt Gen Panag said that the biggest need of the hour was to design shoes, which are of the best quality for soldiers. "The present shoes worn by the average jawan is not comfortable at all. You can gauge its quality by the ridiculously low price for which it is available in open market. This basic piece of equipment for the foot soldier is not being given the importance that is needed,' he said.

https://indianexpress.com/article/cities/chandigarh/army-initiates-change-in-uniforms-officers-summer-mess-dress-first-to-get-a-new-look-7256812/

THE HINDU BusinessLine

Mon, 05 April 2021

TASL, TML to work closely for smooth transition after slump sale

TML has partnered the Indian defence establishment in various strategic programmes such as MRSAM, Aakash, Agni, BrahMos, etc

By V Rishi Kumar

Tata Advanced Systems Limited (TASL) and Tata Motors Limited (TML) will work together over the next several months to ensure smooth transfer of defence business to the former.

TML has completed the transfer of its defence business with effect from April 1, 2021 to TASL for a consideration of Rs 227.7 crore, which is subject to closing the balance sheet adjustments.

The transfer has been completed through a slump sale as per Scheme of Arrangement approved by National Company Law Tribunal (NCLT) at Mumbai and Hyderabad.

TASL, a wholly owned subsidiary of Tata Sons Pvt, is focused on providing integrated solutions for aerospace, defense and homeland security. The sale of its defence business to TASL is in line with Tata Group's strategy of consolidating the defense businesses under a single entity to bring scale and synergy. TML will continue to play a significant role in the value chain by supplying chassis and aggregates to TASL for developing specialized defense applications, while continuing to supply pure civilian PVs and CVs to defense forces directly.

TASL will invest in enhancing design & development capabilities for expanding the global footprint and providing specialist, high value-added, futuristic solutions to defense customers in and outside India. The consolidation will yield benefits in the form of operational and financial synergies helping deliver better value for both the entities.

Tata Motors has been in the defence sector for several decades and currently has a wide portfolio of logistics, combat support and armoured vehicles for the defense, paramilitary and state police forces. In recent years, TML has also focused on developing modern armoured carriers and platforms such as Wheeled Amphibious Armoured Fighting Vehicles, Mine Protected and Light Armoured Multi-Role Vehicles.

TML has partnered the Indian defence establishment in various strategic programmes such as MRSAM, Aakash, Agni, BrahMos, etc. TML also exports its range of defence vehicles to SAARC, ASEAN, and African nations.

TASL is engaged in the strategic aerospace and defence sector. It has some key strategic engagements with some of the leading aerospace companies such as Boeing. With facilities near the Hyderabad International airport, it has engagements in missile, radar systems, aerospace and aero-structures, Unmanned Aerial Systems, and will now further expand its production capabilities.

https://www.thehindubusinessline.com/companies/tata-advanced-systems-tata-motors-to-work-closely-for-smooth-transition-after-slump-sale/article34236784.ece

Business Standard

Fri, 02 April 2021

Tata Motors completes transfer of defence biz to TASL for Rs 227.7 cr

Tata Motors on Thursday said it has completed the transfer of its defence business with effect from April 1 to Tata Advanced Systems Ltd (TASL) for an upfront consideration of Rs 227.7 crore

New Delhi: Tata Motors on Thursday said it has completed the transfer of its defence business with effect from April 1 to Tata Advanced Systems Ltd (TASL) for an upfront consideration of Rs 227.7 crore.

The transfer has been completed through a slump sale as per Scheme of Arrangement approved by National Company Law Tribunal at Mumbai and Hyderabad, the auto major said in a regulatory filing.

Tata Motors has been in the defence sector for several decades, and currently has a wide portfolio of logistics, combat support and armoured vehicles for the defence, paramilitary and state police forces.

In recent years, the company has also focussed on developing armoured carriers and platforms such as wheeled amphibious armoured fighting vehicles, mine protected and light armoured multi-role vehicles.

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The company also exports defence vehicles to SAARC, ASEAN, and African nations.

TASL, a wholly owned subsidiary of Tata Sons, is focused on providing integrated solutions for aerospace, defence and homeland security.

"The sale of defence business to TASL is in line with Tata Group's strategy of consolidating the defence businesses under a single entity to bring scale and synergy," the company noted.

Tata Motors on its part will continue to play a significant role in the value chain by supplying chassis and aggregates to TASL for developing specialised defence applications, while continuing to supply pure civilian PVs (Passenger Vehicles) and the CVs (Commercial Vehicles) to defence forces directly, it added.

TASL will invest in enhancing design and development capabilities for expanding the global footprint and providing specialist, high value-added, futuristic solutions to defence customers in and outside India, it said.

The consolidation will yield benefits in the form of operational and financial synergies helping deliver better value for both the entities, the filing said.

Over the next several months, Tata Motors and TASL will work closely to ensure smooth transition of the defence business, it added.

https://www.business-standard.com/article/companies/tata-motors-completes-transfer-of-defence-biz-to-tasl-for-rs-227-7-cr-121040101568_1.html

IDN INDIAN DEFENCE NEWS
Global Defence, Aerospace & Security

Fri, 02 April 2021

MSME Zeus Numerix is working to make Indian Warships invisible to Radar

Zeus Numerix started from IIT Bombay in 2004 with a vision of developing simulation software and innovative engineering products. Zeus has completed more than 400 projects, with many of them being the first of its kind in India. Zeus has been awarded the first DST-FICCI-Lockheed Martin India Innovation Growth Medal, is a DSIR certified R&D company and Center of MILitary Airworthiness and Certification (CEMILAC, Govt of India) certified Design Approval company.

Prestigious Project 17A Nilgiri-Class Stealth Frigate of the Indian Navy

Stealth Assessment of Full Scale Airborne and Naval System

Stealth has become a strict design criterion for most of the airborne and naval systems that are being developed at our client organizations. In pursuit of a stealthy design, first level activity is basic shape optimization to minimize mono-static RCS for critical viewing angles. In terms of electric size, these configurations lie in optical region and therefore, methods based on PO and GO for RCS evaluation are best suited. However, results are sensitive to model preparation and choice of various options available to these methods. Being a critical design consideration, our customers desired an engagement by which all nuances of RCS prediction are accounted in a transparent manner.

Zeus Numerix has developed a high frequency solver for RCS prediction of full scale configurations based on Physical Optics. Unlike GO method, no geometrical simplification is needed. By incorporating PTD and SBR modules, edge diffraction and multiple bounces are also accounted for. Large surface mesh sizes (~10 million), typical of full scale configuration, are easily handled as solver is optimized for exploiting parallel computing infrastructure. Feasibility has been established on airborne / naval systems that are under development.

The software has been validated against experimental results. The software is now properly packaged and licensed to users.

Design for Hydrodynamics and RADAR Cross Section of Naval Vessel

As part of the design improvement plan of the ship structure, Indian Navy wishes to optimize the hull for reduction in drag. As per the requirements of the user, the RCS of the ship is to be reduced to acceptable levels. Contribution of hull and superstructure on the ship must be studied where the problem in hull is coupled with hydrodynamics. Constraints of space and ship stability during the design changes are given by the customer.

Naval Vessel: Ship Hydrodynamics And Radar Cross Section Prediction

Multiple techniques were used for the simulation of hydrodynamics of the ship. Time Domain Boundary Element Method was used to predict the hydrodynamic characteristics like drag, trim and sinkage of sea vessel. Sea keeping simulations were done to estimate the dynamics of ship in motion. Simulations were done for even sea state five (rough sea). This was followed by RANS CFD simulations on the ship. Multiple simulations were carried out at different surge speeds to

calculate Resistance. Design changes were mutually discussed and simulated. After the hull was redesigned, RCS calculations were done using PO-PTD-SBR method. The code also simulated the effect of waves on the RCS of the ship.

To simulate the customer vehicle validations were carried out for Wigley's case. Excellent matching was found between the experiment and simulations. Simulations were done for Zig-Zag manoeuvre, turning circle, pull-out manoeuvre etc. Hull design was changed as per the obtained results. For each design change RCS was also estimated. Superstructure had large scattering and the same was also modified. Project culminated in 70percentage reduction in RCS after three design changes.

http://www.indiandefensenews.in/2021/04/msme-zeus-numerix-is-working-to-make.html

The EurAsian Times

Fri, 02 April 2021

How Indian Navy is going 'All-Out' to confront growing Chinese challenge in the Indian Ocean Region?

By Younis Dar

China's growing presence in the Indian Ocean is forcing the Indian Navy to increase its maritime security activities in the region and partner with its allies.

The Indian Navy is ramping up exercises with the powerful navies of the US, France, and other countries to thwart any Chinese misadventure in IOR.

Maritime forces from the US, Japan, Australia and India during Malabar exercise in the Arabian Sea

On March 28, India and the US conducted a two-day 'PASSEX' naval exercise in the eastern Indian Ocean region, signaling the growing congruence in their defense and security partnership.

While the Indian Navy was represented by its warship Shivalik and long-range maritime patrol aircraft P8I, the US Navy deployed the USS Theodore Roosevelt carrier strike group.

"In a first, enhancing jointmanship, Indian Air Force fighters were also included in the exercise affording the IAF an opportunity to practice air interception and air defense with the U.S. Navy," the Indian Navy said.

The exercises were held a week after US Defense Secretary Lloyd Austin visited India, affirming President Biden's strong commitment to its relations with its close allies and partners in the Indo-Pacific region.

The visit saw the two nations committing to consolidate their robust defense cooperation through deeper military-to-military engagement with Austin saying elevating the Indo-US friendship was the top priority for the Biden administration.

According to the Indian Navy, the exercise was aimed at "consolidating the synergy and interoperability achieved during the Malabar exercise that took place in November last".

On March 30, a French naval delegation led by Rear Admiral Jacques Fayard, the French Joint Forces Commander in the Indian Ocean, met Vice-Admiral Hari Kumar, the Flag Officer Commanding-in-Chief, Western Naval Command.

The interaction involved the talk on "growing cooperation between both the navies on maritime issues and enhanced inter-operability for focused maritime security in the Indian Ocean region were discussed," the Navy said in a statement.

India and France are about to embark on the annual bilateral exercise 'Varuna' between the Indian Navy and French Navy's Carrier Strike Group in April.

The French Navy will for the first time be conducting a joint drill with all four members of the Quad – India, Australia, Japan, and the US – in the Bay of Bengal in the first week of April.

In January and February this year, the Indian Navy also conducted its largest combat exercise 'Tropex' which reviewed the operational readiness and capability of the Navy in the Indian Ocean. The month-long exercises witnessed joint drills by ships and aircraft and other assets of the Indian Air Force, Army, and the Indian Coast Guard in the Indian Ocean.

The Indian Navy increased the pace of its exercises with the foreign navies since January last year in a show of deterrence in the Indian Ocean.

The series of exercises started with the two ships from the Royal Navy of Oman arriving in Goa for 'Naseem-Al-Bahr' in which multiple assets of the Indian Navy were deployed. The COVID-19 pandemic halted all the war games in the IOR, until September 2020 when they were again resumed.

The Indian Navy has since been busy with bilateral and multi-lateral exercises involving powerful navies, most significant of which were the QUAD nations. As China kept increasing its assets in the IOR over the past decade, and it was during 2008-09 when the country's Navy entered the region for the first time on an anti-piracy mission. Since then, it never left.

While the exercises are useful for interoperability for forces aiming for a common war, they may not be the ultimate solution, the experts say. Exercises are meant to enhance the mutual understanding of each other's operational methods and best practices, channeling them into forming cohesive joint operations against a common enemy.

China is signing major partnerships with countries in Africa, and the latest with Iran, which signifies greater PLA Navy presence in the waters of the IOR in the coming years. The country is aiming to emerge as a key player in the Indian Ocean region, experts say, and not just confront India's strategic role in the region.

The PLA Navy is growing in strength and the number of assets and will be a formidable force in the future.

Among many concerns about the Chinese incursion in the Indian Ocean, its fishing boats and research vessels are often spotted in India's Exclusive Economic Zone (EEZ). China's Yuan Wang class research vessel was spotted in the Indian Ocean during August 2020, in the backdrop of tensions in Ladakh where both the countries were engaged in a stand-off.

According to the Indian Navy, there were "four to six Chinese research vessels known to be presently operating in the IOR5." These vessels were reportedly used to survey the ocean floor for the subsequent operation of the submarines.

China supplies naval assets to India's neighbors, including Bangladesh, Sri Lanka, and Pakistan, and is becoming a major defense partner of most of India's neighbors.

These concerns have brought the QUAD nations together while forging unprecedented military partnerships to challenge China, which is violating the territorial integrity of a number of nations in the IOR. The US-led QUAD has even made its anti-China ambitions public, pledging to get more countries into the fold.

However, experts say that the Indian Navy needs more budget to expand its reach in the IOR and bring in more assets to enable surveillance over a major part of the Indian Ocean. The force will have to work to match its capabilities with China's PLA Navy if it aims to contain the threat in the future.

https://eurasiantimes.com/indian-navy-gears-up-to-confront-growing-chinese-challenge-in-the-indian-ocean-region/

INDIA TODAY

Fri, 02 April 2021

Nuclear escalation between India and China unthinkable: Swedish defence think tank's report

Nuclear escalation between India and China was not only unlikely but also unthinkable, a Stockholm International Peace Research Institute (SIPRI) report on 'South Asia's Nuclear Challenges', released on Thursday, said

By Abhishek Bhalla

A nuclear escalation between India and China is not only unlikely but also unthinkable, said a report of the Stockholm International Peace Research Institute (SIPRI) on 'South Asia's Nuclear Challenges' based on interviews with 119 experts from India, China, the US, Russia and Pakistan.

"Among Chinese and Indian experts, there was a prevailing view that they shared the same stance on no first use, and that nuclear escalation between the two countries was not only unlikely but also unthinkable," the Swedish think tank said in its report.

The interviews of 119 political, military, nuclear and regional experts were conducted between May and August 2020. Many of those interviewed were serving military officials.

India and China have been involved in military tensions in Eastern Ladakh since early May last year. Even though a disengagement has taken place in Pangong Lake -- the biggest flashpoint, de-escalation and de-induction is yet to take place across the region.

Several experts commented that the lack of a routine China–India nuclear dialogue is detrimental to enhanced mutual understanding between the two nations. (File photo)

Greater India-China dialogue needed

However, the SIPRI report states that India only has a superficial understanding of China's motives. "On China, experts argued that India only superficially understands its opponent. Several nuclear and political experts lamented the lack of a routine ChinaIndia nuclear dialogue as detrimental to enhanced mutual understanding," the report mentioned.

Even with recent progress -- as with the February 2021 IndiaPakistan joint statement on the ceasefire at the border and withdrawal of Chinese and Indian forces from the Pangong Tso Lake area in the aftermath of the Galwan River Valley skirmishes -- systemic problems remain that suggest the need for more flexible and sustainable dialogue mechanisms, the report added.

The report highlights that both countries were on the same page when it came to nuclear posture, with the 'no first use' doctrine as just one example.

"While stabilizing in the context of recent tensions at the ChinaIndia border, the assumption that both parties are operating from the same starting point merits greater attention, in relation not just to no first use but also a range of nuclear postures from de-mating to targeting," the report stated.

US-India vs Pakistan-China?

On the two-front threat to India from China and Pakistan, the report says that greater consideration of how deterrence operates among these three countries is needed, even if it requires more countries at the table.

Among Indian and American experts, there was a shared concern that Chinese entanglement of conventional and nuclear platforms and command and control could filter into Pakistan's posture and planning.

Among Chinese and US experts, there was a strong tendency for each to see the other country as playing a larger and more destabilizing role in South Asia.

While citing past US weapon sales to the region and the 2005 IndiaUS nuclear deal for their role in strengthening India and freeing up its nuclear material for military aims, Chinese experts also focused on forward-looking initiatives such as the US Indo-Pacific Strategy and the Quadrilateral Security Dialogue, which have a focus on China as well as India.

Among US experts, China's outreach to Pakistan in terms of conventional and nuclear assistance, military training and more recently the China Pakistan Economic Corridor under the Belt and Road Initiative (BRI) demonstrate China's far-reaching aspirations in the region, the report said.

Tensions generated by China's arms sales to South Asia and economic engagement under the BRI, combined with the most recent incidents along the ChinaIndia border, were seen as an opportunity for greater US collaboration with India.

"For this very reason, however, some US experts expressed concern that the region could break into two camps, with the USA and India on one side and China and Pakistan on the other," the report stated.

The report points out that some Indian experts expressed scepticism about the US approach to South Asian dynamics, which is built on US scenario-building and tabletop exercises.

A number of experts stated that they did not recognize South Asia within these US assessments, suggesting that there was an inherent artificiality in the US approach. There was a tendency to view US assessments as projections that did not reflect India's reality, as with US discussions of India's potential shift towards counterforce doctrine.

https://www.indiatoday.in/india/story/nuclear-escalation-between-india-and-china-unthinkable-swedish-defence-think-tank-s-report-1786210-2021-04-01

FINANCIAL EXPRESS
Read to Lead

Mon, 05 April 2021

National Maritime Day: 58th edition to highlight India's growth in the maritime domain; Know more

The Indian Navy Day is celebrated on December 4; the World Maritime Day is observed on the last week of September on Thursday annually and in India the National Maritime Day is celebrated on April 5. Each year there are different themes for the civilian shipping sector

By Huma Siddiqui

Every year on April 5, the National Maritime Day is celebrated, in an effort to create awareness in supporting safe and environmentally sound intercontinental commerce and the global economy. This day focuses on defending and preserving the maritime zone of the country.

When did it all start?

The Indian Navy Day is celebrated on December 4; the World Maritime Day is observed on the last week of September on Thursday annually and in India the National Maritime Day is celebrated on April 5. Each year there are different themes for the civilian shipping sector.

India's Maritime History

According to reports maritime history begins millennia ago — in the 3rd millennium BC, the people of the Indus Valley had started their maritime trade with Mesopotamia. And when Egypt was annexed by the Roman Empire, the trade started with the Romans too.

What was being sent?

Boats laden with the Indian spices, incense and textiles sailed towards the Western world.

And for the purpose of navigation, the maps, charts were based on the Pole star and Constellation.

Boats laden with the Indian spices, incense and textiles sailed towards the Western world.

To provide protection to the trading ships, the Indian rulers had also started organizing the navy for this purpose. These navy boats were accompanying the trade vessels on their journeys.

However, according to history, it was very late in the Middle Ages that the need to maintain a navy was felt urgently, when the European vessels started entering India from Portugal and the Netherlands.

After the British Raj the Indian shipbuilders had continued to build for the Royal Navy which included ships like the HMS Hindostan, HMS Ceylon, HMS Asia, HMS Cornwallis, and HMS Minden.

And, based on the information available in the public domain, between 1736 and 1821, around 159 ships of over 100 tons, including 15 ships of over 1,000 tons were produced by the Bombay Dockyard.

The first time the National Maritime Day was celebrated was on April 5, 1964. The history of India's shipping actually started on April 5, 1919, it was for the first time that the SS Loyalty, which was the first ship of The Scindia Steam Navigation Company Ltd which was the biggest first large scale shipping company owned totally by the local Indian businessmen had travelled from Bombay (Now Mumbai) to the United Kingdom (London).

The 58th edition of the National Maritime Day and for creating more awareness the National Maritime Day Celebrations (Central) Committee has instituted the highest award to recognize and honour persons for their sustained and outstanding contribution to the Maritime Domain. The Varuna award ceremony is conducted in Mumbai and any person who fulfils the criteria receives a statue of Lord Varuna.

The Ministry of Shipping regulates India's maritime transport and shipping and policies and programmes. Also it has jurisdiction over national waterways, inland water transport, ports, and shipyards.

As of December 2018, the Directorate General of Shipping has stated that there are 43 shipping companies who own 1,401 ships with a combined 12.69 million gross tonnage.

The National Maritime Day is different from the World Maritime Day. This day is celebrated in the last week of September globally.

In 1959, India became an associate of International Maritime Organisation which is for maritime protection and to prevent pollution from ships.

The World Maritime Theme for 2021 is devoted to seafarers, highlighting their central role which is very important for the way forward for the shipping sector.

https://www.financialexpress.com/defence/national-maritime-day-58th-edition-to-highlight-indias-growth-in-the-maritime-domain-know-more/2226532/

FINANCIAL EXPRESS
Read to Lead

Sat, 04 April 2021

French Naval Exercise La Perouse: India Joins to Make it Full QUAD

The Naval diplomacy being displayed by India is an indicator of this shaping dynamics in the Indo-Pacific

By Milind Kulshreshtha

French multinational Naval exercise La Perouse (named after the eighteenth century French Naval explorer) is scheduled from 05th to 07thApril 2021 in the Bay of Bengal. Post conduct of La Perouse, the Indo-French Naval exercise "Varuna" is scheduled in the Western Indian Ocean, wherein UAE too shall be participating.

Indian Navy has always maintained a tactical advantage over the IOR to ensure compliance to the internationally established Rules of the Road (ROR) for the seas. (REPRESENTATIONAL IMAGES -- Ex VARUNA 2019)

It is for the first time that Indian warships shall be participating in La Perouse exercise, and this now completes the QUAD force representation in the French led naval exercise. Previously in 2019, La Perouse exercise saw the participation of the US, Japanese and Australia to showcase their common goal of maritime security in the Indian Ocean and Asia-Pacific region. During the exercise, the US, Japan and Australia had deployed Destroyers, Frigates and submarines as part of the French Aircraft Carrier Task Group.

The role of the QUAD navies in the IOR (Indian Ocean Region) has been well illustrated by the effective cooperative engagement capabilities of the multi-national Naval powers through naval exercises like formation sailing, live fire drills, Search and Rescue (SAR) operations etc. Last year's MALABAR-2020 had a full QUAD naval task force representation with the Australian warships too participating. It was an elaborate naval exercise which was conducted in two phases on India's Eastern and Western seaboards. The highlight of the exercise was the deployment of the Aircraft Carrier Task forces jointly by US and India, well signifying the Naval might which can be put in the IOR. With the Indo-US LEMOA (Logistics Exchange Memorandum of Agreement) in place, the US warships (including aircraft carriers) can get berths for refueling and repairs within the Indian ports. Interoperability amongst the QUAD Task Force too shall be possible whenCOMCASA (Communications Compatibility and Security Agreement) and BECA (Basic Exchange and Cooperation Agreement)are implemented in total.

Naval Significance of Indo-Pacific

The Naval diplomacy being displayed by India is an indicator of this shaping dynamics in the Indo-Pacific.

Indian Navy has always maintained a tactical advantage over the IOR to ensure compliance to the internationally established Rules of the Road (ROR) for the seas. This has been respected by the world (like declaration of warships transiting IOR etc.), but Indian Navy has observed and reported multiple sightings of undeclared Chinese ships and submarines suspiciously lurking within the IOR.

The Indo-Pacific is slowly but surely turning into a serious Naval Theatre for multi-national activities with a vision to establish a free, open, inclusive anda rule-based ordering of the Indo-Pacific to support the freedom of navigation and peaceful cooperative use of the seas. The goal is to respect and adhere to the international laws like the United Nations Convention on the Law of the Sea (UNCLOS) and peaceful resolution of territorial sea disputes instead of coercive actions to

subdue a lesser developed nation. On the other hand, China endeavours to establish a defensive perimeter around its seas (Yellow Sea, East China Sea and part of South China Sea) by following a sea denial policy in these regions. Other stakeholders in the region have opposed this and already hot disputes have occurred over the avowed claims (like over Spratly Islands and Paracel Islands).Similarly, Taiwan too forms a part of China's sea denial strategy for controlling the North East Asian regions (especially Japan and Republic of Korea) in the future.

QUAD+ France Pacific Ocean Concerns

The region of Pacific Islands stretches from Hawaii in the north to Tonga in the south, and Easter Island in the east to New Caledonia in the west. In this region too, China is emerging as an important economic influencer in the small and remote Pacific Island nations. The pandemic has not really helped the situation for these countries and external support in terms of financial or other aid is difficult to refute by these smaller nations. China's growing influence in the Pacific is also seen as a strategic threat to US security.

US interest in the Indo-Pacific region has always been well illustrated with the fact that US Indo-Pacific Command established after World War II is the largest unified command. It was re-designated as U.S. Indo-Pacific Command in 2018 mainly to focus on the connectivity between the Indian Ocean and the Pacific waters. A fleet travelling from Andaman Sea may take less than two days to reach the South China sea.The positioning of a large armada in the Indian Ocean shall be a force to reckon with, especially when it moves toward the contested South China Sea to test the waters for "freedom of navigation". The Andaman Sea is considered as a choke point by China as it's major seaborne supplies pass through this route before entering the narrow Malacca Strait. China has been working on a strategy to create alternative sea and land based supply paths as a safeguard and has established presence in Sri Lanka, Pakistan and Bangladesh.

France has a direct strategic and economic stake in New Caledonia, French Polynesia, and Wallis and Futuna. France is a member of the Pacific Community and the Secretariat of the Pacific Regional Environment Programme (SPREP). Since 2018, France and Australia have a military Mutual Logistics Support Agreement in place. The two nations regularly hold combined Armed force training exercises in the Pacific and Southern Oceans.France is constructing twelve Attack Class submarines in Australia as part of a joint programme worth approx. USD 50 billion (with first delivery of HMAS Attack scheduled in early 2030's).

Japan although has trade ties with China but has always been suspicious of China's growth as a military power. China's assertiveness closer to Japanese waters and airspace have been a testing time for Japan. The Chinese activities have been in the garb of training drills or fishing activities and multiple skirmishes with Japanese forces have occurred in the past. Such security challenges (from China) hastilted Japan towards participation in the new security relationships with key partners like India and Australia.

Conclusion

With France and QUAD navies coming together, other countries which have stakes in the Indo-Pacific (like the UK) may also be inclined to join the initiative. But for ASEAN countries to step forward in the QUAD Security dialogue, QUAD may require more economic muscle. Australia was in a position to sustain its commerce despite souring trade partnership with China. However, not many in the Indo-Pacific may have such a depth, especially during these pandemic times. Sino-India commerce too entails major interests for India. India needs to create a win-win situation for itself (especially when dealing with US and Russian military supplies) and diplomacy has a tight rope here. Dichotomy is that Russia shall be an important contributor to the modernization of the Indian Navy so that it can participate as a potent arm within the QUAD Naval operations.

(The author is a Strategic Analyst and C4I expert. Email: milind@aikairos.com Views expressed are personal and do not reflect the official position or policy of Financial Express Online.)

https://www.financialexpress.com/defence/french-naval-exercise-la-perouse-india-joins-to-make-it-full-quad/2226137/

The EurAsian Times

Mon, 05 April 2021

‘What Lies Beneath’ The Indo-Pacific that France is joining India & other QUAD nations to control the region?

By Ayush Jain

India is all set to join a multilateral naval exercise ‘La Perouse’ led by France, involving Australia, Japan, and the United States navies, making it a full QUAD stack-up in the Bay of Bengal.

This would be the latest conglomeration of QUAD navies after the Malabar-2020 exercises held last year.

The ‘La Perouse’ exercises would be conducted from 5th to 7th April 2021, and the Indian and French navies would then follow on with their own maritime exercise ‘Varuna’ in the western Indian Ocean, which shall also be joined by the United Arab Emirates.

India-France

In the first edition of La Perouse held in 2019, India was not invited, and only the US, Japanese, and Australian navies were called for the common goal to support maritime security in the Indian Ocean.

The recent standoff with China and the tensions at the South China Sea have moved New Delhi closer to like-interested nations, with the speculations of a “Quad-plus” framework amid rising interest from extra-regional players like France.

However, this engagement of the French navy is seen as rather “incomparably unique” by the experts at the New Delhi-based think tank Observer Research Foundation.

Why is France interested in Indo-Pacific?

Currently, the country’s more than 93 percent of the exclusive economic zone lies with its overseas territories in the Indian Ocean. The southern part of the Indian Ocean is home to French territories of Mayotte and La Réunion, the Scattered Islands, and the French Southern and Antarctic Territories.

Moreover, France is the only European country that possesses overseas territories in both—the Indian and Pacific oceans. France also boasts of the world’s second-largest Exclusive Economic Zone (EEZ) on account of nearly 9 million square kilometers of French EEZs in the Indo-Pacific.

The French overseas territories in the region are home to 1.6 million French citizens and another 200,000 French nationals live in the Indo-Pacific states.

In November last year, Paris also appointed the first-ever ambassador for the Indo-Pacific, underscoring its prioritization of the region.

The researchers at ORF also mentioned the French military’s outposts in the region, organized into multiple joint commands—Command of the French Armed Forces in the South of the Indian Ocean (COMSUP FAZSOI), Command of the French Armed Forces in New Caledonia (COMSUP FANC), Command of the French Armed Forces in French Polynesia and Command of the Pacific Ocean maritime zone (COMSUP FAPF/ALPACI), Command of the French Armed Forces in the United Arab Emirates and Command of the Indian Ocean maritime zone (COMFOR FFEAU/ALINDIEN), and Command of the French Armed Forces in Djibouti (COMFOR FFDJ).

Notably, across these commands, the major share of France’s 7,000 personnel presence is in the Indian Ocean, with 4,100 personnel in the subregion and 2,900 in the Pacific.

France has also stated India as its "foremost strategic partner in the region. This is also strengthened by the increased cooperation in defense manufacturing, most notably its support for the Indian Navy's new Scorpene-class (Kalvari-Class) submarines and the famous Rafale fighter jets for the Indian Air Force.

New Delhi and Paris's common interest in the Indian Ocean have aligned the two nations. In regards to the American cooperation with India, the ORF experts noted that despite the significance of the US' political, military and capacity-building support for India's efforts in the Indian Ocean region, the primary purpose behind Washington cultivating India's rise as the region's security provider is its intent to fully focus its resources in the Pacific subregion of the Indo-Pacific.

Under Biden, this focus on the Pacific is expected to persist, with his administration continuing the Trump approach of "strategically predictable, but operationally unpredictable" US naval operations in the South China Sea and the Taiwan Strait.

Meanwhile, French interests are termed as having the "skin in the game", with its overseas territories rendering the region to be a matter of sovereignty—much like New Delhi's outlook.

Hence, under its policy of honing multiple "strategic alignments" in the Indo-Pacific, India chose to conduct Joint Patrols in the Indian Ocean with France and turned down offers from "several senior US military officers" to conduct patrols with the US Navy.

https://eurasiantimes.com/what-lies-beneath-the-indo-pacific-that-france-is-joining-india-other-quad-nations-to-control-the-region/

THE TIMES OF INDIA

Mon, 05 April 2021

Indian Army delegation in Bangladesh for multinational military exercise 'Shantir Ogroshena 2021'

New Delhi: A Indian Army delegation has arrived in Dhaka to participate in a multinational military exercise named 'Shantir Ogroshena 2021' (Front Runner of the Peace). The Multinational Military Exercise is being held from April 4-12 to mark the birth centenary of the Bangabandhu Sheikh Mujibur Rahman and the golden jubilee of the liberation of Bangladesh.

The contingent comprising of 30 personnel of the Indian Army, including Officers, Junior Commissioned Officers (JCOs) and jawans of a Battalion from the Dogra Regiment, was received and formally welcomed by the Bangladesh Army on its arrival in Dhaka on Saturday, the Indian Army official said.

The Indian Army personnel underwent a Covid-19 RT-PCR test thereafter, they added.

Apart from the Indian Army, contingents from Royal Bhutan Army, Sri Lankan Army and Bangladesh Army are also participating in the event. The theme of the exercise is Robust Peacekeeping Operations.

Military observers from the USA, UK, Turkey, Kingdom of Saudi Arabia, Kuwait and Singapore will also be in attendance throughout the exercise, said the press release issued by the Indian army.

https://timesofindia.indiatimes.com/india/indian-army-delegation-in-bangladesh-for-multinational-military-exercise-shantir-ogroshena-2021/articleshow/81895939.cms

INDIA TV

Sun, 04 April 2021

Back in India, 4 astronauts to stay on busy training schedule

The four Indian astronauts returned to India last month after completing their training in Russia and will undergo different kinds of training in Chennai, Indian Space Research Organisation (ISRO) Chief K. Sivan said.

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Indian Space Research Organisation (ISRO) chief K. Sivan

"They had landed in India on March 28. The four astronauts will undergo space mission-specific training in India," Sivan told IANS.

The four Indian astronauts were training since February 2020 at the Gagarin Cosmonaut Training Centre (GCTC) belonging to Glavkosmos which is a subsidiary of Russian space corporation Roscosmos.

According to Sivan, the four astronauts will continue to train till they board the Indian space module.

The Rs 10,000 crore Indian human space flight mission is called Gaganyaan.

Queried about the training regime here, Sivan said: "The astronauts will have their physical fitness training that includes swimming, jogging. They will also have academic/theoretical classes as they have to understand the rocket, and the human space module."

"They will also be trained on simulators. The Gaganyaan module navigation terminals will be simulated. The astronauts will be trained on various parameters that will be displayed on the terminals," he added.

The astronauts will later work on the Gaganyaan module as if they are flying.

"These apart, the astronauts will be trained on survival techniques so that they can survive in the sea as their landing module will land on the sea waters," Sivan said.

While the astronauts will be trained in Bengaluru and the survival techniques in Cochin, ISRO will carry out the engineering work related to Gaganyaaan.

Glavkosmos had earlier said the four Indian astronauts were trained in abnormal descent module landing - in wooded and marshy areas in winter; on water surface, and in the steppe in summer.

"In June 2020, all Indian astronauts-elect passed training in short-term weightlessness mode aboard the IL-76MDK special laboratory aircraft, and in July, they were trained to lift aboard a helicopter while evacuating from the descent module landing point," Glavkosmos had said.

The Indian fighter pilots were also trained in a centrifuge and in a hyperbaric chamber to prepare their organisms for sustaining spaceflight factors, such as G-force, hypoxia and pressure drops.

The regular courses comprise medical and physical training, learning Russian (as one of the main international languages of communication in space), and studying the configuration, structure and systems of the Soyuz crewed spacecraft, Glavkosmos had said.

Sivan said the Indian space agency is targeting the first unmanned space flight in December 2021.

https://www.indiatvnews.com/science/gaganyaan-mission-4-isro-astronauts-training-schedule-chennai-returned-from-russia-695144

FEMINA

Sat, 03 April 2021

5 Indian Women making waves in the field of science and technology

By Kushali Thakur

Be it NASA or ISRO, Silicon Valley or start-up owners, heading the biggest biotech companies or being involved in the process of significant inventions, women are now leaving their mark in all fields. Science and technology has seen a boom, particularly post the COVID-19 pandemic hit us, and it is a proud moment for our nation to acknowledge women in this field and their many contributions! So read on and get your daily dose of inspiration from these women.

1. Nita Patel

At the age of four, Nita Patel's family faced poverty when her father nearly died from tuberculosis (TB), and he wasn't able to work again. Hailing from Sojitra, a farming village in Gujarat, India, she went on to get two Master's degrees, in Applied Microbiology and Biotechnology, from India and the US, through various scholarships. Today, she is the Senior Director of Vaccine Development and Antibody Discovery Programme at Novavax, an American vaccine development company headquartered in Gaithersberg, Maryland. And she heads an all-women team which is completely dedicated towards the development of an efficient vaccine since the outbreak of COVID-19! The vaccine developed by her and her team has successfully reached final analyses. Moreover, it will seek Food and Drug Administration (FDA) and other international approvals in coming weeks. Her struggles in childhood fuelled her passion for hard work and success!

Image: Twitter

Image: Bharat Biotech

At the age of four, Nita Patel's family faced poverty when her father nearly died from tuberculosis (TB), and he wasn't able to work again. Hailing from Sojitra, a farming village in Gujarat, India, she went on to get two Master's degrees, in Applied Microbiology and Biotechnology, from India and the US, through various scholarships. Today, she is the Senior Director of Vaccine Development and Antibody Discovery Programme at Novavax, an American vaccine development company headquartered in Gaithersberg, Maryland. And she heads an all-women team which is completely dedicated towards the development of an efficient vaccine since the outbreak of COVID-19! The vaccine developed by her and her team has successfully reached final analyses. Moreover, it will seek Food and Drug Administration (FDA) and other international approvals in coming weeks. Her struggles in childhood fuelled her passion for hard work and success!

2. Dr K. Sumathy

Dr K. Sumathy obtained her PhD in Life Sciences from JNU, Delhi and completed her Commonwealth Fellowship in London and Bangalore. Currently, she heads the Research and Development wing of Bharat Biotech, Hyderabad, India, one of the pioneering Indian biotech companies. Being a member of the core team of scientists, she is responsible for developing the first Indian made vaccine for COVID-19, Covaxin. To add to this, she has also been a notable contributor in development of other successful vaccines against diseases like chikungunya and zika. She has the blessings of several people for developing these significant cures!

3. Tessy Thomas

Image: Twitter

Also known as the Missile Woman of India, Tessy Thomas was the Project Director for the Agni IV and V missiles, becoming India's first woman to lead missile teams. Currently, she is the Director General of Aeronautical Systems at the Defence Research and Development Organisation (DRDO). Thomas has designed the guidance scheme for long-range missile systems, which is used in all Agni missiles. Growing up near Thumba Rocket Launching Station, Kerala, stimulated her fascination for rockets and missiles since her childhood. Other than this, her natural flair for mathematics and physics since her school days gave her the spirit to follow her passion for aeronautics. With an MTech in Guided Missile, MBA in Operations Management, and PhD in Guidance Missile, all with the help of scholarships and student loans, she is an inspiration to one and all. She has received many prestigious awards for her work, like the Lal Bahadur Shastri National Award for excellence in public administration in 2012, DRDO Performance Excellence Award for 2011 and 2012, etc.

Image: Twitter

4. Kamakshi Sivaramakrishnan

Image: Twitter

Kamakshi Sivaramakrishnan grew up in Sion, Mumbai and went on to study Master's in Information Theory at Stanford. She always aspired to be a high-impact individual, and with her technology onboard NASA's most high-profile space shuttle New Horizon mission, which is probing Pluto, she has proved that determination and hard work can turn dreams to reality! Kamakshi has built the algorithm and the chip that is responsible for bringing information from Pluto, whose existence was once in question. This chip collects signals and sends them back to the space station which is three billion miles away. With a dearth of women role models in the world of technology, she found herself to be a misfit in this field, but she desired to be more than just a spoke in the wheel. At her first job, she was the leading scientist in AdMob and she explored the idea of machine learning stack. Currently, she is the Founder of Drawbridge, one of the fastest-growing, Indian women-led techie companies in America. She has been building a complex algorithm to be more intuitive about how users interact with ads online as well as across different interfaces like mobiles, tablets, laptops, etc.

5. Ashwini Asokan

Armed with a creative degree in Visual Communications from India and a Master's in Interaction Design from the US, Ashwini Asokan is the co-founder of Mad Street Den, an Artificial Intelligence (AI) company. She and her husband, Anand Chandrasekaran, launched Mad Street Den in 2013 with the aim of adding a human component in AI and finding meaningful applications of AI that can change both the industry as well as consumer lifestyle in a positive way. In 2016, 'Vue.ai' was launched by the company for enabling intelligent retail automation. Today, the company has almost 50 per cent of the women workforce in Mad Street Den who can call themselves 'retail disruptors' for helping retailers disrupt the physical shopping experience. Before starting her own company, Ashwini worked with Intel at Silicon Valley, USA for seven years. She

was drawn to the world of AI and after giving more than a decade of her life to this field, she developed a firm belief in the potential of technology to change people's lives, paving the path for her success. She has been labelled as an Agent of Change in STEM too!

https://www.femina.in/trending/achievers/5-indian-women-making-waves-in-the-field-of-science-and-technology-190674-6.html

PHYS.ORG

Sat, 03 April 2021

New mechanism enables the electrical control of the magnetization in magnetic nanodevices

By Riken

A new study indicates holes the solution to operational speed/coherence trade-off, potential scaling up of qubits to a mini-quantum computer. Quantum computers are predicted to be much more powerful and functional than today's 'classical' computers.

The development of innovative magnetic nanodevices is one step closer to reality thanks to the observation by RIKEN physicists of a type of rotation that can be realized in materials consisting of light elements.

The ability to use electric currents to turn revolving mechanical parts led to the development of electric motors and caused an explosion in electrical devices. Now, physicists are trying to do the same thing but on a nanoscale. However, the development of innovative magnetic nanodevices requires the efficient electrical generation of rotation, or torque.

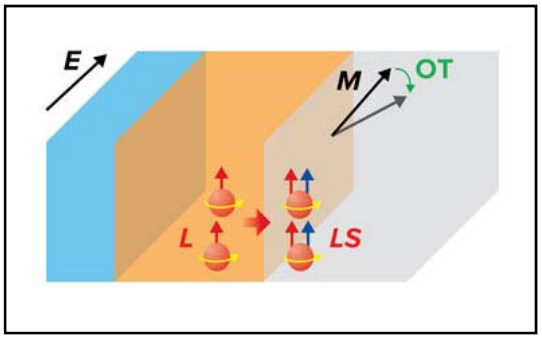


Figure 1: RIKEN physicists have demonstrated a new method to electrically control (indicated by E) the magnetization (M) of a ferromagnetic layer (gray band). It involves injecting orbital angular momentum (L, red arrows) from a non-magnetic layer (orange band) into the ferromagnetic layer, which generates orbital torque (OT), which in turn rotates the magnetization. Credit: Figure adapted, with permission, from Ref. 1. Copyrighted by the American Physical Society

Usually, torque is generated in magnetic systems by converting electric charge to spin by using the strong spin–orbit interaction of a heavy-metal layer. The resulting spin current is then injected into adjacent ferromagnetic layers. But heavy-element materials are often incompatible with scalable production processes, and their high resistance makes them unsuitable for some applications.

A recent theoretical proposal suggested that torque could be produced by injecting orbital angular momentum into ferromagnetic layers. The orbital angular momentum can be generated by passing an electric current through light-element materials. It can then be converted to spin by the spin–orbit interaction of a ferromagnetic layer. This type of torque is called orbital torque, and it can be similar in magnitude to the torque induced by spin injection.

Now, Junyeon Kim, YoshiChika Otani and co-workers at the RIKEN Center for Emergent Matter Science, together with international collaborators, have realized such an efficient torque generation in three-layer systems composed of a ferromagnetic layer, a copper layer and an alumina (Al_2O_3) layer.

In this system, the orbital angular momentum is generated at the copper–alumina interface and then transported by the copper layer to the ferromagnetic layer, where it is converted into spin.

While the torque-generation efficiency of this system rivaled that in materials containing heavy elements, the underlying physics is fundamentally different. The team found that the torque-generation efficiency varied by two orders of magnitude when different ferromagnetic layers were

used. This is very different from the behavior of spin-injection systems, confirming that a new type of torque is at work.

A CoFe/Cu/Al_2O_3 trilayer system—the one that gave the best results—exhibited an effective spin Hall conductivity, which is proportional to the torque generation efficiency, ten times larger than that observed in heavy-element materials. This exceptional spin conductivity will translate to energy-efficient device operation and high cyclability thanks to lower production of waste heat. These results widen the material choices for magnetic nanodevices, promising remarkable efficiencies and the possibility of mass production.

More information: Junyeon Kim et al. Nontrivial torque generation by orbital angular momentum injection in ferromagnetic-metal/ Cu/Al2O3 trilayers, *Physical Review B* (2021). DOI: 10.1103/PhysRevB.103.L020407

Journal information: *Physical Review B*

https://phys.org/news/2021-04-mechanism-enables-electrical-magnetization-magnetic.html

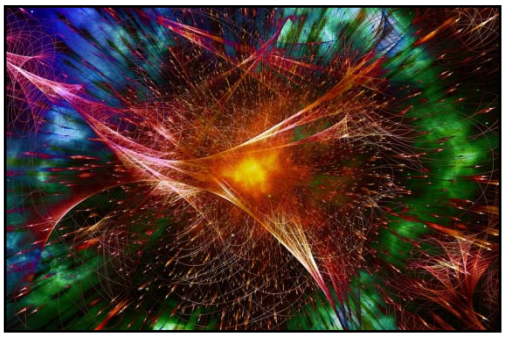
PHYS.ORG

Sat, 03 April 2021

Qubits composed of holes could be the trick to build faster, larger quantum computers

A new study indicates holes the solution to operational speed/coherence trade-off, potential scaling up of qubits to a mini-quantum computer. Quantum computers are predicted to be much more powerful and functional than today's 'classical' computers.

One way to make a quantum bit is to use the 'spin' of an electron, which can point either up or down. To make quantum computers as fast and power-efficient as possible we would like to operate them using only electric fields, which are applied using ordinary electrodes.



Credit: Pixabay/CC0 Public Domain

Although spin does not ordinarily 'talk' to electric fields, in some materials spins can interact with electric fields indirectly, and these are some of the hottest materials currently studied in quantum computing.

The interaction that enables spins to talk to electric fields is called the spin-orbit interaction, and is traced all the way back to Einstein's theory of relativity. The fear of quantum-computing researchers has been that when this interaction is strong, any gain in operation speed would be offset by a loss in coherence (essentially, how long we can preserve quantum information).

"If electrons start to talk to the electric fields we apply in the lab, this means they are also exposed to unwanted, fluctuating electric fields that exist in any material (generically called `noise') and those electrons' fragile quantum information would be destroyed," says A/Prof Dimi Culcer (UNSW/FLEET), who led the theoretical roadmap study. "But our study has shown this fear is not justified." "Our theoretical studies show that a solution is reached by using holes, which can be thought of as the absence of an electron, behaving like positively-charged electrons."

In this way, a quantum bit can be made robust against charge fluctuations stemming from the solid background. Moreover, the 'sweet spot' at which the qubit is least sensitive to such noise is also the point at which it can be operated the fastest.

"Our study predicts such a point exists in every quantum bit made of holes and provides a set of guidelines for experimentalists to reach these points in their labs," says Dimi.

Reaching these points will facilitate experimental efforts to preserve quantum information for as long as possible. This will also provide strategies for 'scaling up' quantum bits—ie, building an 'array' of bits that would work as a mini-quantum computer.

"This theoretical prediction is of key importance for scaling up quantum processors and first experiments have already been carried out," says Prof Sven Rogge of the Centre for Quantum Computing and Communication Technology (CQC2T)."

"Our recent experiments on hole qubits using acceptors in silicon already demonstrated longer coherence times than we expected," says A/Prof Joe Salfi of the University of British Columbia. "It is encouraging to see that these observations rest on a firm theoretical footing. The prospects for hole qubits are bright indeed."

The paper, "Optimal operation points for ultrafast, highly coherent Ge hole spin-orbit qubits," was published in Nature partner journal *npj Quantum Information* in April 2021.

More information: Zhanning Wang et al. Optimal operation points for ultrafast, highly coherent Ge hole spin-orbit qubits, *npj Quantum Information* (2021). DOI: 10.1038/s41534-021-00386-2

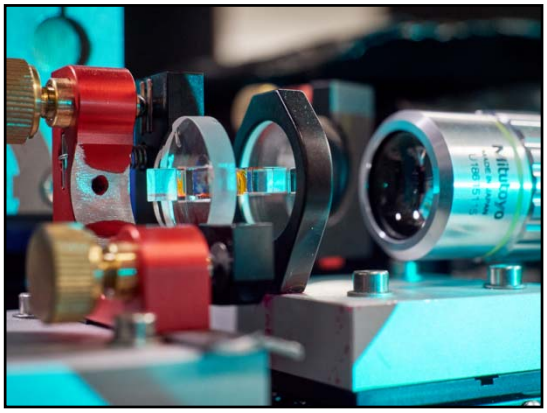
https://phys.org/news/2021-04-qubits-holes-faster-larger-quantum.html

Fri, 02 April 2021

Physicists observe new phase in Bose-Einstein condensate of light particles

About 10 years ago, researchers at the University of Bonn produced an extreme aggregate photon state, a single "super-photon" made up of many thousands of individual light particles, and presented a completely new light source. The state is called an optical Bose-Einstein condensate and has captivated many physicists ever since, because this exotic world of light particles is home to its very own physical phenomena. Researchers led by Prof. Dr. Martin Weitz, who discovered the super photon, and theoretical physicist Prof. Dr. Johann Kroha now report a new observation: a so-called overdamped phase, a previously unknown phase transition within the optical Bose-Einstein condensate. The study has been published in the journal *Science*.

The Bose-Einstein condensate is an extreme physical state that usually only occurs at very low temperatures. The particles in this system are no longer distinguishable and are predominantly in the same quantum mechanical state; in other words, they behave like a single giant "superparticle." The state can therefore be described by a single wave function.



On the right is a microscope objective used to observe and analyze the light emerging from the resonator. Credit: © Gregor Hübl/Uni Bonn

In 2010, researchers led by Martin Weitz succeeded for the first time in creating a Bose-Einstein condensate from light particles (photons). Their special system is still in use today: Physicists trap light particles in a resonator made of two curved mirrors spaced just over a micrometer apart that reflect a rapidly reciprocating beam of light. The space is filled with a liquid dye solution, which serves to cool down the photons. The dye molecules "swallow" the photons and then spit them out again, which brings the light particles to the temperature of the dye solution—equivalent to room temperature. The system makes it possible to cool light particles because their natural characteristic is to dissolve when cooled.

Clear separation of two phases

A phase transition is what physicists call the transition between water and ice during freezing. But how does the particular phase transition occur within the system of trapped light particles? The scientists explain it this way: The somewhat translucent mirrors cause photons to be lost and replaced, creating a non-equilibrium that results in the system not assuming a definite temperature and being set into oscillation. This creates a transition between this oscillating phase and a damped phase. Damped means that the amplitude of the vibration decreases.

"The overdamped phase we observed corresponds to a new state of the light field, so to speak," says lead author Fahri Emre Öztürk, a doctoral student at the Institute for Applied Physics at the University of Bonn. The special characteristic is that the effect of the laser is usually not separated from that of Bose-Einstein condensate by a phase transition, and there is no sharply defined boundary between the two states. This means that physicists can continually move back and forth between effects. "However, in our experiment, the overdamped state of the optical Bose-Einstein condensate is separated by a phase transition from both the oscillating state and a standard laser," says study leader Prof. Dr. Martin Weitz. "This shows that there is a Bose-Einstein condensate, which is really a different state than the standard laser. "In other words, we are dealing with two separate phases of the optical Bose-Einstein condensate," he says.

The researchers plan to use their findings as a basis for further studies to search for new states of the light field in multiple coupled light condensates, which can also occur in the system. "If suitable quantum mechanically entangled states occur in coupled light condensates, this may be interesting for transmitting quantum-encrypted messages between multiple participants," says Fahri Emre Öztürk.

More information: "Observation of a non-Hermitian phase transition in an optical quantum gas" *Science* (2021). science.sciencemag.org/cgi/doi … 1126/science.abe9869

Journal information: *Science*

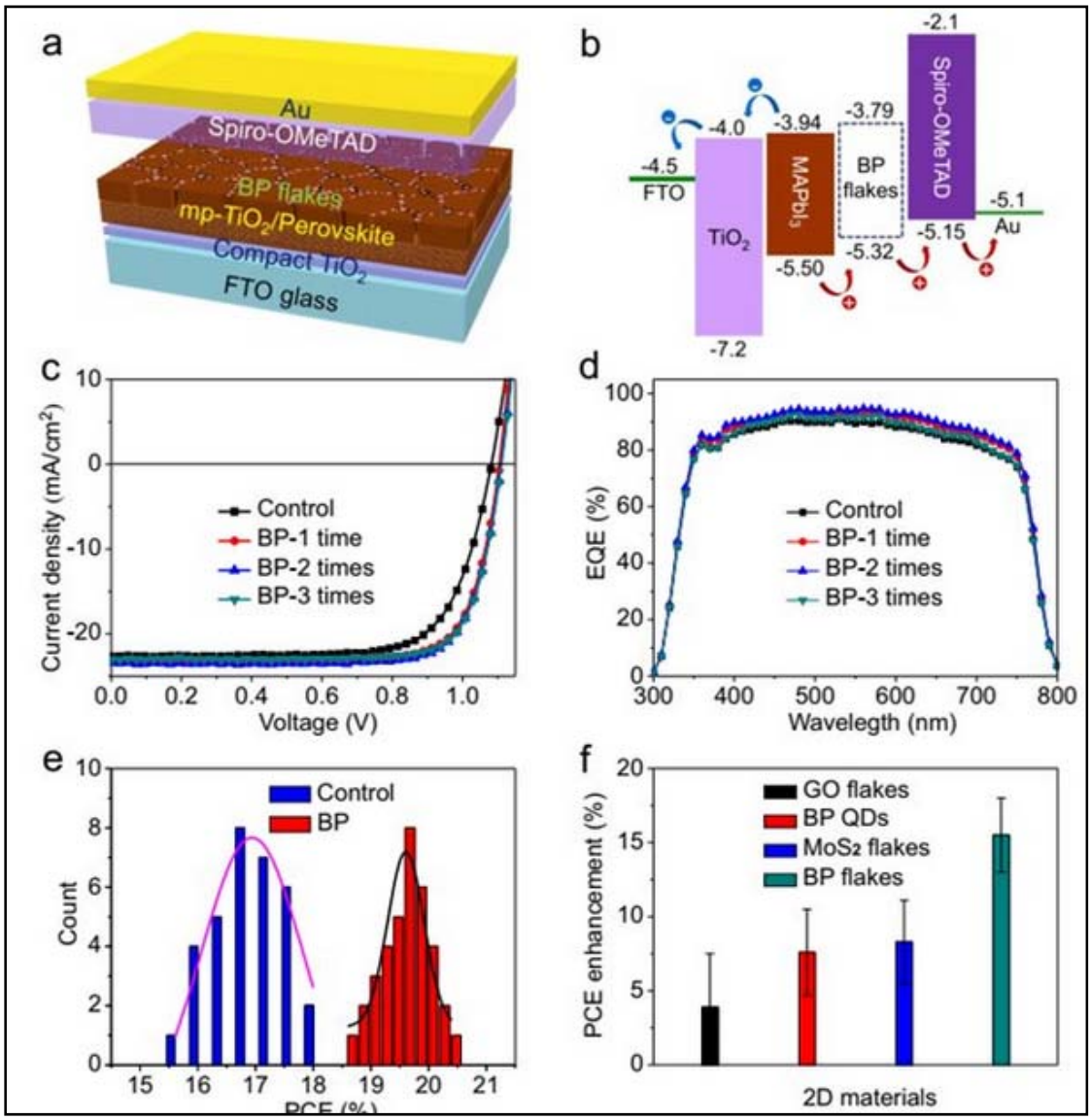
https://phys.org/news/2021-04-physicists-phase-bose-einstein-condensate-particles.html

PHYS.ORG

Fri, 02 April 2021

2D materials for conducting hole currents from grain boundaries in perovskite solar cells

Grain boundaries (GBs) in PSCs have been found to be detrimental to the photovoltaic performance of the devices. Numerous papers reported that the defects in perovskite GBs should be passivated by suitable materials, such as quaternary ammonium halide, fullerene derivatives and CH_3NH_3I, to alleviate carrier recombination and consequently improve the device performance.



a,b The structural schematic diagram and energy-level band diagram of a BP-modified PSC with a normal structure. c,d Current density-voltage (J-V) curves (reverse scan) and external quantum efficiency (EQE) spectra of PSCs without (control) and with BP deposition (1~3 times) on perovskite film surface. e Histogram of power conversion efficiencies (PCEs) of PSCs without (control) and with BP modification (BP coating for 2 times). The PCEs are derived from the reverse scans of the J-V curves. f The average PCE enhancement after the modification of perovskite films with different 2-D materials. Credit: Peng You, Guanqi Tang, Jiupeng Cao, Dong Shen, Tsz-Wai Ng, Zafer Hawash, Naixiang Wang, Chun-Ki Liu, Wei Lu, Qidong Tai, Yabing Qi, Chun-Sing Lee, Feng Yan

In a new paper published in *Light: Science & Applications,* a team of scientists, led by Professor Feng Yan from Department of Applied Physics, The Hong Kong Polytechnic University, Hung

Hom, Kowloon, Hong Kong, and co-workers have developed a novel method to overcome the drawback of perovskite GBs without defect passivation on them. Several 2D materials, including black phosphorus (BP), MoS_2 and graphene oxide (GO), are specifically modified on the edge of perovskite GBs by a solution process.

The 2D materials have high carrier mobilities, ultrathin thicknesses and smooth surfaces without dangling bonds. The PCEs of the devices are substantially enhanced by the 2D flakes, in which BP flakes can induce the highest relative enhancement of about 15%. More interestingly, they find that, under certain conditions, GBs modified with the 2D materials are favorable for the device performance. Therefore, a synergistic effect between the 2D flakes and perovskite GBs is observed for the first time.

Although the nanotechnology of using 2D materials in PSCs has been reported in some papers, the synergistic effect between the 2D flakes and perovskite GBs has not been reported until now. To better understand the underlying mechanism of the above effect, device simulation was conducted by using commercial software. The hole conduction processes from GBs to 2D flakes in PSCs are clearly demonstrated, showing that the GBs and 2D flakes all act as hole channels in the devices.

The simulation results confirm that the performance enhancement induced by BP is higher than that by other 2D materials because of the highest hole mobility of BP. In addition, the modification of the 2D flakes on the perovskite grains away from GBs has little effect on the device performance, indicating that the synergistic effect of 2D flakes and perovskite GBs is essential to the performance enhancement in our devices.

Although the coverage of the 2D flakes on the perovskite films is only several percent, most of the flakes are located on perovskite GBs. Due to the high carrier mobilities of the 2D materials especially BP, hole transfer from GBs is dramatically enhanced in the PSCs, resulting in substantial improvements of the efficiency as well as the stability of the devices. These results also indicate that GBs in PSCs are not detrimental to the device performance if the accumulated holes in the GBs can be conducted out efficiently.

Under certain conditions, GBs even can be favorable for the photovoltaic performance of PSCs due to the built-in electric fields around them, which can facilitate photocarrier separation and transfer in the devices. Therefore, perovskite GBs are electrically benign, which is consistent with some theoretical calculations reported before. More importantly, they observed the synergic effect of the 2D flakes on the GBs in PSCs for the first time. Both the carrier mobility and the location of the 2D flakes on the perovskite surface are essential to the performance enhancement.

This work provides a guideline of modifying perovskite layers with novel high-mobility 2D materials to improve the photovoltaic performance as well as the stability of PSCs.

More information: Peng You et al, 2D materials for conducting holes from grain boundaries in perovskite solar cells, *Light: Science & Applications* (2021). DOI: 10.1038/s41377-021-00515-8

Journal information: *Light: Science & Applications*

https://phys.org/news/2021-04-2d-materials-hole-currents-grain.html

mint

Fri, 02 April 2021

Study finds new risk factors linked to increased risk of Covid-19 infection

Certain baseline cardiometabolic factors appear to either protect a person from Covid-19 infection while others make a person more vulnerable to infection, say author of the study

As Covid-19 runs rampant across the world, a team of researchers have found associations between certain lifestyle factors and a person's risk of getting infected.

While it has already been established that those with Type II diabetes and a high body mass index (BMI) are at greater risk of experiencing hospitalisations and other severe complications related to Covid-19, they are also at greater risk of getting the symptomatic infection in the first place. This is the finding of a recent study conducted by researchers at the University of Maryland School of Medicine that was published today in the journal PLoS ONE.

Using data from the UK Biobank of 500,000 British volunteers over age 40, the researchers examined health factors in those who tested positive for COVID-19 and compared them to those who tested negative. They found that those who had positive COVID-19 test results were more likely to be obese or have Type II diabetes. Those who tested negative were more likely to have high levels of "good" HDL cholesterol and be at a healthy weight with a normal body mass index (BMI). "Certain baseline cardiometabolic factors appear to either protect a person from Covid-19 infection while others make a person more vulnerable to infection," said study author Charles Hong, MD, PhD, professor of medicine and director of cardiology research at the University of Medicine School of Medicine.

Dr Hong added, "But this study wasn't designed to determine what factors actually cause Covid-19 infections. These are statistical associations that point to the importance of a healthy functioning immune system for protecting against Covid-19 infection."

He and his colleagues controlled potential confounding factors like socioeconomic status, age, gender, and ethnicity. "Our findings point to some healthy measures people can take to help potentially lower their risk of Covid-19 infection," Dr Hong said.

Dr Hong noted, "Controlling body weight is very important during this time, and measures to increase HDL levels like regular exercise and a diet rich in monounsaturated fats like extra virgin olive oil and avocados might be helpful too."

https://www.livemint.com/science/health/study-finds-new-risk-factors-linked-to-increased-risk-of-covid-19-infection-11617332561815.html

THE HINDU

Mon, 05 April 2021

COVID-19 patients can be categorised into three groups, say Scientists

Phenotypes I and II were associated with 7.30-fold and 2.57-fold increases in hazard of death relative to phenotype III

Washington: Scientists have identified three different types of COVID-19 disease traits in patients, depending on their comorbidities, complications, and clinical outcomes, an advance that may help target future interventions to the most risk-prone individuals.

The new study, published in the journal *PLOS ONE*, analysed the electronic health records (EHRs) from 14 hospitals in the midwestern U.S. and from 60 primary care clinics in the state of Minnesota.

According to the researchers, including those from the University of Minnesota in the U.S., the study included 7,538 patients with confirmed COVID-19 between March 7 and August 25, 2020, of which 1,022 patients required hospitalisation.

A staff member works in the COVID Care Unit at the private Polyclinique Saint Jean in Cagnes-Sur-Mer, France, March 23, 2021. | Photo Credit: REUTERS

Close to 60% of the patients included in the research presented with what the researchers called "phenotype II." They said about 23% of the patients presented with "phenotype I," or the "adverse phenotype," which was associated with the worst clinical outcomes. The researchers said these patients had the highest level of comorbidies related to heart and kidney dysfunction.

According to the study, 173 patients, or 16.9 % presented with "phenotype III," or the "favorable phenotype," which the scientists said was associated with the best clinical outcomes. While this group had the lowest complication rate and mortality, the scientists said these patients had the highest rate of respiratory comorbidities as well as a 10% greater risk of hospital readmission compared to the other phenotypes.

Overall, they said phenotypes I and II were associated with 7.30-fold and 2.57-fold increases in hazard of death relative to phenotype III.

Based on the results, the scientists said such phenotype-specific medical care could improve COVID-19 outcomes. However, they believe further studies are needed to determine the utility of these findings in clinical practice.

"Patients do not suffer from COVID-19 in a uniform matter. By identifying similarly affected groups, we not only improve our understanding of the disease process, but this enables us to precisely target future interventions to the highest risk patients," the scientists added.

https://www.thehindu.com/sci-tech/science/covid-19-patients-can-be-categorised-into-three-groups-say-scientists/article34237023.ece