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Mon, 22 March 2021

India has changed arm supplier preferences over the last century

By Ananya Narang

The choice of arms trade partners made by the Indian subcontinent has changed frequently over time simply because the country prefers to not depend on its old arms trade partners like Russia. India spends around 15% of its GDP (Gross Domestic Product) on the accounts of the global arms import and around 2.3 % on defence. India decided to equip the second largest armed forces in the current year for 64.4 billion dollars.

Some of the largest suppliers of arms to India in 2020 were the United States of America (USA), South Korea, Israel, France and Russia, as reported by the Stockholm International Peace Research Institute (SIPRI) which analyses the volume of international transfers of weapons using trend indicator value (TIV), a common unit for comparison. Meanwhile, the new arm exporting countries such as Brazil, South Africa and South Korea have also occupied a major share of the Indian arms segment.



The New trend in the imports of arms by India

India is trying very hard to lower down its dependence on Russia in the terms of arms. Russia's percentage of arms exports witnessed a drop of 22% due to the cut off in arms imports made by India. There was a drop of around 33% of the arms imports in India between 2011-15 and 2016-20.

On a macroeconomic scale, Russia was the most affected country by the cut off made by India even though 46% of Indian imports of US arms also fell during the same span of time. On the other hand, Indian imports from France have increased. Interestingly, only three countries account for 59% of total French arms exports, namely India, Egypt and Qatar. In the last 20 years, the highest arms exporters were the United Kingdom (UK), Israel, France, the United States of America (USA) and Russia.

Uzbekistan and South Korea were the two small countries that have been a part of India's arm procurement journey. In the last 3 years, South Korea has increased its share of arms exports in India and since 2009 Uzbekistan has been the largest exporters of arms to India for three consecutive years.

India wants to be independent when it comes to Defence

Being the second-largest importer of arms in the world, India's new aim is to become self-independent and minimize the import dependence on weapons. India has also set aims to modernize its military in the next five years with plans to spend around 130 billion dollars. The

Indian government has also allowed private companies to participate in the industry of defence to provide impetus to indigenous manufacturing.

Shripad Naik, junior Defence Minister, replied to a question asked in Lok Sabha that 28 successful tests have been carried out by DRDO (Defence Research and Development Organisation) last year. Beyond Visual Range Missile System, 10-metre Short Span Bridging System, Indian Maritime Situational Awareness System (IMSAS), Heavy Weight Torpedo (HWT) Varunastra, Border Surveillance System (BOSS), and Arjun Mk-1A are among the major weapons and other systems that DRDO has handed over to the armed forces.

According to Invest India, India is currently working on projects worth 7.3 billion dollars. All of the systems designed and built by the DRDO are manufactured by Indian businesses, both public and private. Advanced Towed Artillery Gun System (ATAGS), 10-metre Short Span Bridging System, Indian Maritime Situational Awareness System (IMSAS), Extended Range Pinaka System & Guided Pinaka Rocket System, Heavy Weight Torpedo (HWT) Varunastra, Border Surveillance System (BOSS), Arjun Mk-1A, and others are some of the systems produced by such collaboration in the last year.

The India-United States of America Joint Technology Community, the Indo-Israel Management Council, the India-Russia R&D Subgroup, the India-Singapore defence technology steering committee, the India-UK steering committee, and the India-Korea steering committee are among the DRDO's international partnerships.

Between the months of March and December of the year 2020, India exported defense equipment worth 780 million dollars and on the 3rd of February , 2021, the Defence Research and Development Organisation (DRDO) published its new list of export equipment, which included 19 aeronautical systems, 27 electronic and communication systems, 10 life protection products, 4 microelectronic devices, 41 armament and combat systems, 4 missile systems, 28 naval systems, 16 nuclear, biological, and chemical equipment NBC, and 7 other materials.

The government has developed policies to increase defense exports and meet its next five-year target of \$5 billion. It has also allowed 100 percent foreign direct investment (FDI) in the defence industry to encourage the rapid growth of defense manufacturing infrastructure in the domestic boundaries of the country.

<https://www.inventiva.co.in/stories/ananya/india-has-changed-arm-supplier-preferences-over-the-last-century/>

Visakhapatnam: Need for self-reliance in Defence stressed

Highlights

Focusing on the theme 'Contribution of DRDO towards Self-reliant India', Naval Science and Technological Laboratory (NSTL), the premier naval research laboratory of Defence Research and Development Laboratory (DRDO), launched the 16th All India Joint Hindi Seminar here on Friday.

Visakhapatnam: Focusing on the theme 'Contribution of DRDO towards Self-reliant India', Naval Science and Technological Laboratory (NSTL), the premier naval research laboratory of Defence Research and Development Laboratory (DRDO), launched the 16th All India Joint Hindi Seminar here on Friday.



Organising team of the 16th All India Joint Hindi Seminar along with the dignitaries at NSTL in Visakhapatnam on Friday

Organised jointly by Hyderabad Cluster DRDO Labs, ASL (Advanced Systems Laboratory), DMRL (Defence Materials Research Laboratory), DRDL (Defence Research and Development Laboratory), DLRL (Defence Electronics Research Laboratory), CHESS (Centre for High Energy Systems & Sciences) and Digital Signal Processing (DSP) Laboratory, the two-day seminar was inaugurated at Mohapatra Manasi Auditorium, NSTL.

Participating as chief guest, principal commissioner of customs D K Srinivas said that India is a peace-loving country. At the same time, he added, it is our responsibility to prove that India is brave and self-reliant. Director General (Naval Systems and Materials), DRDO, Samir V Kamat, who took part as distinguished guest, stressed on the importance of self-reliance and laid emphasis on India becoming an exporter rather than an importer.

Outstanding Scientist and Director of NSTL O R Nandagopan, Scientist G, Chairman of the organising committee Manu Korulla and Scientist 'E' and coordinator of the organising committee Vivek Sharma, were among those who were present during the inaugural.

<https://www.thehansindia.com/news/cities/visakhapatnam/visakhapatnam-need-for-self-reliance-in-defence-stressed-677700?infinitescroll=1>

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Sat, 20 March 2021

Indian Army to get 4,960 MILAN-2T anti-tank guided missiles from Bharat Dynamics

By Elizebeth Roche

- *These missiles can be fired from ground as well as vehicle-based launchers and can be deployed in anti-tank role for both offensive and defensive tasks*

New Delhi: The defence ministry on Friday signed a ₹1,188 crore deal with state-run Bharat Dynamics Limited (BDL) for supply of 4,960 MILAN-2T Anti-Tank Guided Missiles (ATGMs) for the Indian Army.

The move will strengthen the government's Make in India programme, a statement from the defence ministry said. Friday's order is a repeat of the one signed with BDL in March 2016.

The Milan-2T is a Tandem Warhead ATGM with the range of 1,850 metres, produced by BDL under license from MBDA Missile Systems, France. Tandem warheads comprise a forward charge and a rear charge separated by a blast shield. The forward charge fires first and disrupts the outer armor of the target. The rear charge fires after a short while and penetrates the remaining armor of the target.



The Milan-2T is a Tandem Warhead ATGM with the range of 1,850 metres, produced by BDL under license from MBDA Missile Systems, France.

These missiles can be fired from ground as well as vehicle-based launchers and can be deployed in anti-tank role for both offensive and defensive tasks, the statement said.

“Induction of these missiles will further enhance the operational preparedness of the Armed Forces. Induction is planned to be completed in three years,” it said.

“This project is a big opportunity for the defence industry to showcase its capability and will be a step in the direction of achieving the goal of ‘Atmanirbhar Bharat’ in the defence sector,” it added.

Under the Make in India and Atmanirbhar Bharat programmes, the government has been pushing the Indian private sector to manufacture more defence hardware in the country to reduce India's defence armaments imports as well as transform India into a defence manufacturing hub. The government has set up two industrial corridors one in the north and one in the south to encourage defence manufacturing.

<https://www.livemint.com/news/india/indian-army-to-get-4-960-milan-2t-anti-tank-guided-missiles-from-bharat-dynamics-11616140671479.html>



Press Information Bureau
Government of India

Ministry of Defence

Sat, 20 March 2021 1:01PM

Statement by Raksha Mantri Shri Rajnath Singh after bilateral talks with US Defence Secretary Mr Lloyd J Austin

Ladies and Gentlemen,

It is a great honour and pleasure to receive US Secretary of Defence Mr Austin in his first official visit abroad and to India. I spoke with Secretary Austin immediately after he assumed charge. We had an excellent conversation during which I invited him to visit India at his earliest convenience. His visit to India despite the COVID-19 global pandemic, shows the abiding commitment of the United States to our bilateral relationship.

I am happy to inform that we had a comprehensive and fruitful discussion with Secretary Austin and his delegation. We are keen to work together to realise the full potential of the India-US Comprehensive Global Strategic Partnership.

Our discussions today focussed on our wide ranging defence cooperation and expanding military-to-military engagement across services, information sharing, cooperation in emerging sectors of defence, and mutual logistics support.

We reviewed the wide gamut of bilateral and multilateral exercises and agreed to pursue enhanced cooperation with the US Indo-Pacific Command, Central Command and Africa Command. Acknowledging that we have in place the foundational agreements, LEMOA, COMCASA and BECA, we discussed steps to be taken to realise their full potential for mutual benefit.

I conveyed my appreciation to Secretary Austin for participation of US in Aero India 2021 along with a business delegation. I invited US industry to take advantage of India's liberalized foreign direct investment (FDI) policies in the defence sector. We both agreed that there are opportunities for collaboration in defence industry.

The recent Leaders' Summit of India, USA, Japan and Australia under the Quad framework emphasized our resolve to maintain a free, open and inclusive Indo-Pacific region. We discussed the need for enhanced capacity building to address some of the non-traditional challenges such as oil spills and environment disasters, drug trafficking, Illegal, Unreported, Unregulated (IUU) fishing, etc.

India is committed to further consolidate our robust defence partnership with the United States. I look forward to working with you closely to make the India-US relationship one of the defining partnerships of 21st century.

Thank you.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1706248>



पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Sat, 20 March 2021 1:01PM

अमेरिकी रक्षा मंत्री लॉयड जे ऑस्टिन के साथ द्विपक्षीय वार्ता के बाद रक्षा मंत्री श्री राजनाथ सिंह का वक्तव्य

देवियो और सज्जनो,

अमेरिकी रक्षा मंत्री श्री ऑस्टिन को उनकी विदेश तथा भारत में पहली आधिकारिक यात्रा पर रिसीव करना बहुत सम्मान और खुशी की बात है। मैंने उनके कार्यभार संभालने के तुरंत बाद सचिव ऑस्टिन के साथ बात की थी। हमारी बातचीत बेहतरीन रही जिसके दौरान मैंने उन्हें जल्द से जल्द भारत आने का न्योता दिया। कोविड-19 वैश्विक महामारी के बावजूद उनकी भारत यात्रा हमारे द्विपक्षीय संबंधों के प्रति अमेरिका की स्थायी प्रतिबद्धता को दर्शाती है।

मुझे यह सूचित करते हुए प्रसन्नता हो रही है कि हमने सचिव ऑस्टिन और उनके शिष्टमंडल के साथ व्यापक और उपयोगी चर्चा की। हम भारत-अमेरिका व्यापक वैश्विक रणनीतिक साझेदारी की पूरी क्षमता को साकार करने के लिए मिलकर काम करने के इच्छुक हैं।

आज हमारी बातचीत में हमारे बहुआयामी रक्षा सहयोग और सेवाओं में सैन्य-से-सैन्य संबंधों के विस्तार, सूचना साझा करने, रक्षा के उभरते क्षेत्रों में सहयोग और पारस्परिक रसद सहायता पर जोर दिया गया है।

हमने द्विपक्षीय और बहुपक्षीय युद्धाभ्यासों की व्यापक समीक्षा की और अमेरिकी हिंद-प्रशांत कमान, मध्य कमान और अफ्रीकी कमान के साथ सहयोग बढ़ाने पर सहमति व्यक्त की। यह स्वीकार करते हुए कि हमारे पास मूलभूत समझौते LEMOA, COMCASA और BECA मौजूद हैं, हमने पारस्परिक लाभ के लिए उनकी पूरी क्षमता को साकार करने के लिए उठाए जाने वाले कदमों पर बातचीत की।

मैंने एक व्यापारिक प्रतिनिधिमंडल के साथ एयरो इंडिया 2021 में अमेरिका की भागीदारी के लिए सचिव ऑस्टिन को आभार व्यक्त किया। मैंने अमेरिकी उद्योग जगत को रक्षा क्षेत्र में भारत की उदारीकृत प्रत्यक्ष विदेशी निवेश (एफडीआई) नीतियों का लाभ उठाने के लिए आमंत्रित किया था। हम दोनों इस बात पर सहमत हुए कि रक्षा उद्योग में सहयोग के अवसर मौजूद हैं।

क्वाड फ्रेमवर्क के तहत भारत, अमेरिका, जापान और ऑस्ट्रेलिया के नेताओं के हालिया शिखर सम्मेलन में एक स्वतंत्र, खुला और समावेशी हिंद-प्रशांत क्षेत्र बनाए रखने के हमारे संकल्प पर जोर दिया गया। हमने तेल रिसाव और पर्यावरण संबंधी आपदाओं, मादक पदार्थों की तस्करी, अवैध, असूचित, अनियमित (आईयू) मछली पकड़ने आदि जैसी कुछ गैर-पारंपरिक चुनौतियों से निपटने के लिए क्षमता निर्माण में वृद्धि की आवश्यकता पर बातचीत की।

भारत अमेरिका के साथ हमारी सुदृढ़ रक्षा साझेदारी को और मजबूत करने के लिए प्रतिबद्ध है। मैं भारत-अमेरिका संबंधों को 21वीं सदी की निर्णायक साझेदारियों में से एक बनाने के लिए आपके साथ मिलकर काम करने हेतु उत्सुक हूँ।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1706269>



**Press Information Bureau
Government of India**

Ministry of Defence

Fri, 19 March 2021 12:04PM

MoD signs contract with BDL to supply 4,960 Anti-Tank Guided Missiles to Indian Army

Acquisition Wing of Ministry of Defence (MoD) signed a contract with Defence Public Sector Undertaking (DPSU) Bharat Dynamics Limited (BDL) for supply of 4,960 MILAN-2T Anti-Tank Guided Missiles (ATGMs) to Indian Army at a cost of Rs 1,188 crore, in New Delhi on March 19, 2021. This will further boost the 'Make in India' initiative of the Government. It is a 'Repeat Order' of contract, which was signed with BDL on March 08, 2016.

The Milan-2T is a Tandem Warhead ATGM with the range of 1,850 metres, produced by BDL under license from MBDA Missile Systems, France. These missiles can be fired from ground as well as vehicle-based launchers and can be deployed in Anti-Tank Role for both offensive & defensive tasks. Induction of these missiles will further enhance the operational preparedness of the Armed Forces. Induction is planned to be completed in three years.

This project is a big opportunity for the defence industry to showcase its capability and will be a step in the direction of achieving the goal of 'Atmanirbhar Bharat' in the defence sector.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1705976>



**पत्र सूचना कार्यालय
भारत सरकार**

रक्षा मंत्रालय

Fri, 19 March 2021 12:04PM

रक्षा मंत्रालय ने भारतीय सेना को 4,960 एंटी-टैंक गाइडेड मिसाइलों की आपूर्ति करने के लिए बीडीएल के साथ अनुबंध पर हस्ताक्षर किए

रक्षा मंत्रालय की अधिग्रहण विंग ने 1,188 करोड़ रुपये की लागत से भारतीय सेना को 4,960 मिलान-2टी एंटी-टैंक गाइडेड मिसाइल (एटीएमएम) की आपूर्ति के लिए रक्षा क्षेत्र के सार्वजनिक उपक्रम (डीपीएसयू) - भारत डायनामिक्स लिमिटेड (बीडीएल) के साथ एक अनुबंध पर 19 मार्च, 2021 को नई दिल्ली में हस्ताक्षर किए हैं। इससे सरकार की 'मेक इन इंडिया' पहल को और बढ़ावा मिलेगा। यह अनुबंध का 'रिपीट ऑर्डर' है, जिस पर बीडीएल के साथ 08 मार्च, 2016 को हस्ताक्षर किए गए थे।

मिलान-2टी 1,850 मीटर की सीमा के साथ एक टैंडम वारहेड एटीजीएम है, जिसे बीडीएल ने एमबीडीए मिसाइल सिस्टम, फ्रांस से लाइसेंस के तहत उत्पादित किया है। इन मिसाइलों को जमीन से और साथ ही वाहन-आधारित लांचर से दागा जा सकता है और आक्रामक एवं रक्षात्मक दोनों कार्यों के लिए एंटी-टैंक रोल में तैनात किया जा सकता है। इन मिसाइलों का इंडक्शन सशस्त्र बलों की परिचालन तैयारियों को और बढ़ाएगा। इंडक्शन तीन साल में पूरा करने की योजना है।

यह परियोजना रक्षा उद्योग के लिए अपनी क्षमता दिखाने का एक बड़ा अवसर है और यह रक्षा क्षेत्र में भी 'आत्मनिर्भर भारत' के लक्ष्य को प्राप्त करने की दिशा में एक पहल होगी।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1706011>



Fri, 19 March 2021 4:50PM

Indo-Uzbekistan field training exercise 'dustlik' culminates in Ranikhet (Uttarakhand)

1. The second edition of Indo-Uzbekistan Joint Field Training Exercise, exercise dustlik-ii culminated on Friday, 19 March 2021, after 10 days of mutual learning.
2. In the joint exercise which began on 10 Mar 2021, training was focused on Counter Insurgency / Counter Terrorism operations in urban scenario as well as sharing of expertise on Skills at Arms. The exercise also provided an opportunity to troops of both Armies to foster everlasting professional and social bonding.
3. After intense military training, the joint exercise concluded with both Armies exhibiting their combat power and dominance over the terrorist groups during the Validation Exercise. The closing ceremony showcased the immense talent with unique traditional touch of both nations. The senior officials expressed their satisfaction and gratitude towards the professional conduct of the exercise.
4. The bonhomie, esprit-de-corps and goodwill generated during the exercise will go a long way in future strengthening the bonds between the armed forces of both countries.



<https://pib.gov.in/PressReleasePage.aspx?PRID=1706053>



पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Fri, 19 March 2021 4:50PM

रानीखेत (उत्तराखंड) में भारत-उज्बेकिस्तान प्रशिक्षण युद्धाभ्यास 'डस्टलिक' का समापन

1. परस्पर 10 दिन चले आपसी अभ्यास के बाद भारत-उज्बेकिस्तानसंयुक्त क्षेत्र प्रशिक्षण युद्धाभ्यास डस्टलिक के दूसरे संस्करण काशुक्रवार, 19 मार्च 2021 को समापन हुआ।
2. 10 मार्च, 2021 को शुरू हुए संयुक्त अभ्यास में ज़ोर शहरीपरिदृश्य में उग्रवाद/आतंकवाद विरोधी अभियानों पर होने के साथ-साथ हथियारोंके कौशल पर विशेषज्ञता साझा करने पर केंद्रित था। इस अभ्यास ने दोनोंसेनाओं के सैनिकों को स्थायी पेशेवर और सामाजिक संबंधों को बढ़ावा देने काअवसर भी प्रदान किया।
3. गहन सैन्य प्रशिक्षण के बाद दोनों सेनाओं के संयुक्तअभ्यास का समापन हुआ, दोनों देशों की सेना इस अभ्यास के दौरान आतंकवादीसमूहों पर अपनी युद्ध शक्ति और प्रभुत्व का प्रदर्शन कर रही थी। समापनसमारोह में दोनों देशों के अनूठे पारंपरिक संपर्क के साथ अपार प्रतिभा काप्रदर्शन किया गया। वरिष्ठ अधिकारियों ने अभ्यास के व्यावसायिक संचालन केप्रति संतोष और आभार व्यक्त किया।
4. अभ्यास के दौरान पैदा हुई मिलनसारिता, दल भावना एवंसद्भावना से भविष्य में दोनों देशों के सशस्त्र बलों के बीच संबंधों कोमजबूत करने में और बढ़ावा मिलेगा।



<https://pib.gov.in/PressReleasePage.aspx?PRID=1706139>

The Navy's 'Cobras' turns 60 | India Today Insight

A storied Indian naval air unit celebrates its diamond jubilee. Why the INAS 310 squadron has led the way in regular and irregular wars over the past 60 years

By Sandeep Unnithan

Delhi: Each day, Dornier aircraft from six of the Indian Navy's shore-based squadrons take off from the east and west coasts of peninsular India, their radars sweeping the seas to keep track of India's maritime adversaries. The Dorniers from six squadrons strung across peninsular India are the lynchpin of the navy's short-ranged shore-based surveillance and run a scorching pace. As one pilot puts it, "We have no non-flying day." The oldest among them—the Indian Naval Air Squadron (INAS) 310 'The Cobras'—celebrates its diamond jubilee on March 21, 2021. The squadron is the navy's most decorated unit, with three unit citations from the chief of naval staff and numerous other awards as best squadron. It has the incredible achievement of being the only aircraft squadron across the three services to have been deployed in all of India's wars and low intensity conflicts since 1961.

Its French-built Alize anti-submarine warfare (ASW) aircraft, which served for three decades until 1991, were used to scout for Chinese posts after the 1962 border war, overland during the 1965 and 1971 India-Pakistan wars and during Operation Cactus in 1987—foiling a coup in the Maldives where an Alize attacked a merchant ship fleeing with the coup leaders and hostages.

The celebrations this year will be muted due to the pandemic. On March 21, the INS *Hansa*, naval air station Dabolim, Goa will witness a flypast by Dornier aircraft, with marine commandos jumping with the national flag, and a 'Bara Khana' (armed forces community feast where officers and crew dine together) to recall a momentous day 60 years ago when the Cobras were raised in faraway France.

The 310 Squadron was one of two squadrons embarked on the Indian Navy's first aircraft carrier, INS *Vikrant*. The other, INAS 300 'White Tigers', had been commissioned in the UK in 1959. As the carrier, formerly Britain's HMS *Hercules*, was being refitted in Ireland, its two combat squadrons had begun training their pilots and crew—300 in Wales in southwestern UK and 310 in Hyeres on France's Mediterranean coast. The squadron was commissioned on March, 21 1961 at Heyres by India's ambassador to Paris, Nawab Ali Yavar Jung. The ambassador handed over the commissioning warrant to Lt Cdr Mihir Kumar Roy, 310's first commanding officer. *Meatball*, the naval air arm's official magazine, detailed the events of the day in a 1978 article—the Bara Khana menu, masala chicken and mutton biryani, was so spicy that everyone's eyes grew misty. Hindi films were screened, making everyone homesick. Later that day, 310's senior pilot, Lt RAJ Anderson, carried out the first Indian Alize deck landing on board the French carrier *Arromanches*. Two days later, on May 23, 1961, the newly formed 'Cobra' squadron landed on board 'mother', as INS *Vikrant* was affectionately called. Its first CO, Lt Cdr Roy (later Vice Admiral and C-in-C Eastern Naval Command), later went on to head Naval Intelligence in 1971 where he planned and executed the audacious 'Naval Commando Operations X', a series of



Commissioned at Hyères, France on 21 March 1961, the squadron holds the distinction of being the most decorated unit of the Indian Navy. (Credit: Ministry of Defence, Public Relations Unit, Mumbai)

operations designed to cripple maritime shipping in then East Pakistan. His namesake, Lt Cdr Ashok Kumar 'Aku' Roy--a ground-based 310 squadron pilot-- launched hundreds of trained limpeteer-assault swimmers from a launch pad in Tripura to attack merchant ships in Chittagong.

Among Admiral Roy's innovations was the use of Mark VII anti-ship mines from the 310 squadron Alizes mounted on Calcutta Port Trust harbour utility vessels converted into gunboats. The two gunboats were used to lay mines to block the Pussur river channel which led into the Mongla port--a vital lifeline for the East Pakistan army garrison. Alizes operating off the INS *Vikrant* plunged into the war, joining 300 squadron Sea Hawks to bomb and strafe port installations in East Pakistan with one Alize pilot, Lt Cdr S. Ramsagar, attacking a fleeing Pakistani gunboat with a depth charge (meant to target dived submarines). The squadron earned six Vir Chakras, six Nau Sena Medals and three Mention-in-Despatches for the war.

The Alizes of 310 squadron participated in Operation Pawan between 1987 and 1991 where they were used to track and destroy LTTE vessels. In 1988, a lone Alize from 310 squadron carried out a rocket strike against rebels escaping in a hijacked vessel, *MV Progress Light*. The Alizes were retired in 1991, replaced by the shore-based Dornier Do-228s as maritime reconnaissance and electronic warfare aircraft. Fitted with a belly-mounted Israeli Elta EL/M-2022A radar, the Dornier could run day and night imagery intelligence-gathering missions for surveillance and reconnaissance, reasons they swiftly turned into the eyes and ears of not just the navy but the army and air force as well.

Naval Dorniers flew overland missions during the 1999 Kargil War and during Operation Parakram in 2001 where their sensory suite was used to identify enemy radar sites across the border. Their missions continue till date and the Dornier squadrons, including the Cobras, clock the largest quantum of flying hours (not counting the bigger Boeing P8-I Poseidons). While it continues its role as the navy's surveillance workhorse, the squadron is also the primary induction pipeline for advanced airborne electronic sensors. It has inducted updated variants of the Elta M-2022 radar and, in the near future, could be equipped with an indigenous radar, based on the DRDO's Uttam AESA radar.

<https://www.indiatoday.in/india-today-insight/story/the-navy-s-cobras-turns-60-1781644-2021-03-20>



Sat, 20 March 2021

Latest version of Rafale Fighter Jets receives 'Final Operational Clearance' by France

The French Air Force and the Navy have declared the latest version of the Rafale fighter jet — the F-3R standard — as fully operational.

The two services announced the FOC (full operational capability) of the aircraft on March 8. According to Janes, this announcement will allow the French forces deployed with the carrier Charles de Gaulle and in Jordan (as part of Op Chammal) to fly the latest variant of the Rafale fighter jet.



The Rafale F3-R (Image: Dassault Aviation)

The Rafale F3-R achieved Initial Operational Capability (IOC) in December 2019, while acceptance trials were carried out in 2020. Interestingly, the first French F3-R Rafale flight had an Indian co-pilot.

India has purchased 36 Rafale fighter jets from France, of which 11 have already been delivered to the Indian Air Force.

“The Air and Space Army is contributing to the rise of the Indian Air Force on the use of the Rafale. It was therefore natural that the Indian partners could realize the possibilities offered by the Talios Pod,” a press release issued by the French Defense Ministry had said.

This first flight was conducted in September last year by the fighter and experimentation squadron of the Center of Military Air Expertise (CEAM), whose core business consists of testing future equipment.

The Rafale F3-R

The Rafale is a twin-engine tailless canard delta-wing omnirole fighter aircraft developed and manufactured by the French company Dassault Aviation. Equipped with a wide range of weapons, the Rafale is intended to perform air supremacy, interdiction, aerial reconnaissance, ground support, in-depth strike, anti-ship strike, and nuclear deterrence missions.

The latest F3-R addition brings in major avionics upgrades, including the latest TALIOS long-range airborne targeting pod, combining targeting and reconnaissance into a single “plug-and-fight” system on all existing and future fighters.

Another notable addition is the integration of Meteor beyond-visual-range air-to-air missile and the AASM Hammer precision-guided munition, giving it a major weapons upgrade over the previous standards.

<https://eurasianimes.com/the-latest-french-dassault-rafale-f3-r-fighter-jet-receives-final-operational-clearance/>



Sat, 20 March 2021

Israeli, Indian JV firm starts the delivery of SAMs to Indian Air Force, Army

By Mansij Asthana

- ***These missiles can be fired from ground as well as vehicle-based launchers and can be deployed in anti-tank role for both offensive and defensive tasks***

Kalyani Rafael Advanced Systems (KRAS), a joint venture between Israeli defense giant Rafael and India’s Kalyani Group, has begun the delivery of the first batch of the Medium Range Surface to Air Missile (MRSAM) kits to the Indian Air Force (IAF) and the Army.

Considered another sign of growing military ties between Israel and India, the rollout marked KRAS’ commitment to delivering more than 1,000 MRSAM ‘missile kits’ to the Indian armed forces.

Following the deliveries, the missile sections will then be ‘forwarded’ to Bharat Dynamics Limited (BDL) for further and future integration.

Founded in 1970 in Hyderabad, Telangana, Bharat Dynamics Limited is one of the country’s manufacturers of ammunitions and missile systems.

KRAS is India’s first private sector missile sub-systems manufacturing entity. The Hyderabad-headquartered joint venture is seen as a perfect blend of Rafael’s state-of-the-art technology and Kalyani Group’s engineering excellence.

Baba Kalyani, chairman-cum-managing director of the Kalyani Group, said, “This is beginning of a new era, filled with self-confidence, a marked step-change in technological expertise and a collective demonstration of capability to be the global manufacturing hub for defense products,

“We are confident to complete the order far ahead of the stipulated time, and support the armed forces with the best in class missile kits. Apart from the missile kits, we will extend our support in Maintenance and Repair Operations (MRO) as in-service Air Defence Missile System for the armed forces.”

Brigadier General Pinhas Yungman, head of the Air and Missile Defense Systems division of Rafael Advanced Defense System, also spoke on the occasion.

“We have been a reliable partner to the Indian armed forces for almost three decades, and these missile kits are a testimony of our commitment to ‘Make in India’ cause.”

“We are confident KRAS will not only build products for the Indian armed forces but will, at the same time, trigger and help achieve the Indian government’s vision of exports from India,” said Yungman.

<https://eurasianimes.com/made-in-india-medium-range-missile-kits-delivered-to-air-force-and-army/>



Sat, 20 March 2021

Indian Naval Landing Craft Utility L58 Commissioned at Port Blair

*The ship is capable of carrying various types of combat vehicles including
Main Battle Tanks (MBTs), Armoured Vehicles, BMPs and trucks*

By Sangeeta Nair

Indian Naval Landing Craft Utility (LCU) L58 was commissioned into the Indian Navy at Port Blair, Andaman & Nicobar Islands on March 18, 2021. This is the eighth and last ship of the Landing Craft Utility (LCU) Mark IV Class.

The ship was commissioned into service in a ceremony that had Commander-in-Chief, Andaman and Nicobar Command (CINCAN) Lieutenant General Manoj Pande as the Chief Guest.

Commander Krishan K Yadav has been named the first Commanding Officer of the ship. He read out the commissioning warrant. The crew members include five officers and 50 sailors.

Significance

The ship has been indigenously designed and built by GRSE, Kolkata. Its commissioning is a step forward in line with the nation's ‘Make in India’ and ‘Atmanirbhar Bharat’ programme in the field of warship design and construction.

Key Highlights

- The Indian Naval Landing Craft Utility is an amphibious ship that can carry upto 160 troops, in addition to its crew.
- The ship measures 63 meters in length and has a displacement of 900 tons. It is fitted with two MTA 4,000 series engines, which are capable of propelling the ship to a speed of up to 15 knots (28 kmph).
- The ship is capable of carrying various types of combat vehicles including Main Battle Tanks (MBTs), Armoured Vehicles, BMPs and trucks.
- It is also fitted with an advanced Electronic Support Measure (ESM) suite to intercept enemy radar transmissions and an advanced Integrated Bridge System (IBS).



Indian Naval Landing Craft Utility L58 Commissioned at Port Blair

- It is also fitted with a sophisticated Integrated Platform Management System (IPMS), which will allow single station monitoring of the ship's navigational and machinery equipment respectively.
- The main armament of the ship includes two indigenously manufactured 30 mm CRN 91 guns, controlled by a Stabilised Optronic Pedestal (SOP), which is an electronic day-night director sight manufactured by Bharat Electronics Limited (BEL).
- The ship is also armed with six Machine Gun Posts to neutralise air, surface and sub-conventional threats.

Other Details

The Indian Naval Landing Craft Utility would be based at Port Blair and will be deployed in a variety of roles such as Beaching, Search and Rescue, Disaster Relief, Coastal Patrol and Surveillance operations along the Andaman and Nicobar Group of Islands, Bay of Bengal and in the Indian Ocean.

It is expected to boost Indian Navy's mobility, reach and flexibility, furthering the Andaman and Nicobar Command's motto, 'Victory through Jointness'.

<https://www.jagranjosh.com/current-affairs/indian-naval-landing-craft-utility-158-commissioned-at-port-blair-1616136031-1>

Science & Technology News



Sun, 21 March 2021

India, France working on third joint space mission: ISRO Chairman

"France is the biggest partner of India in space".

Bengaluru: India and France are working on their third joint satellite mission, even as the bilateral space collaboration is entering into multiple domains, including human spaceflight programme, ISRO Chairman K. Sivan said.

Mr. Sivan, also Secretary in the Department of Space, said many French companies are keen to tap into opportunities thrown up by recent reforms injected into the space sector by the Government.

"France is the biggest partner of India in space", he said at the DST (Department of Science and Technology) Golden Jubilee Discourse on 'unlocking India's space potential - geospatial data & mapping', an event presented on virtual mode by the National Council



ISRO Chairman K. Sivan. File | Photo Credit: PTI

for Science and Technology Communication and 'Vigyan Prasar' on Friday.

According to ISRO officials, ISRO and French space agency CNES (Centre National dEtudes Spatiales) have undertaken two joint missions 'Megha-Tropiques', which was launched in 2011, and 'Saral-Altika' in 2013.

"Currently, we are working for the third one (mission)", Mr. Sivan said.

Officials said ISRO and CNES have completed the feasibility study to realise the earth observation satellite mission with thermal infrared imager, TRISHNA (Thermal infraRed Imaging

Satellite for High resolution Natural resource Assessment) and are working towards finalising an implementing arrangement for the joint development.

Mr. Sivan said India is also working with France on joint experiments and accommodation of scientific instruments in space missions.

"Indo-French space collaboration is expanding into multiple domains including space exploration and human space flight programme," he said.

ISRO officials said the two space agencies have also finalised all interface control documents for accommodating CNES's 'ARGOS' instrument in ISRO's OCEANSAT-3 satellite.

ARGOS instrument has been delivered at Bengaluru for integration with the satellite.

"Discussions on establishing 'NavIC' (an independent regional navigation satellite system developed and maintained by India) reference station in France and CNES 'Scintillation' receivers in India are also progressing well", they said.

ISRO-CNES HSP (Human Space Programme) Working Group had a number of discussions on medical aspects of human spaceflight and finalising an implementation arrangement to formalise cooperation in the field of space medicine, it was noted.

Mr. Sivan said with the recent reforms initiated by the government in the space sector, the Indo-French space cooperation is expected to grow further involving industries, academia and research institutes.

He said many French companies want to "make use of" reforms in the sector and "they are going to involve".

So, the reforms would not only strengthen space cooperation at government-to-government level but industry-to-industry interaction is going to get a "fresh relook" in the changed environment, Mr. Sivan added.

<https://www.thehindu.com/sci-tech/science/india-france-working-on-third-joint-space-mission-isro-chairman/article34115470.ece>



Sat, 20 March 2021

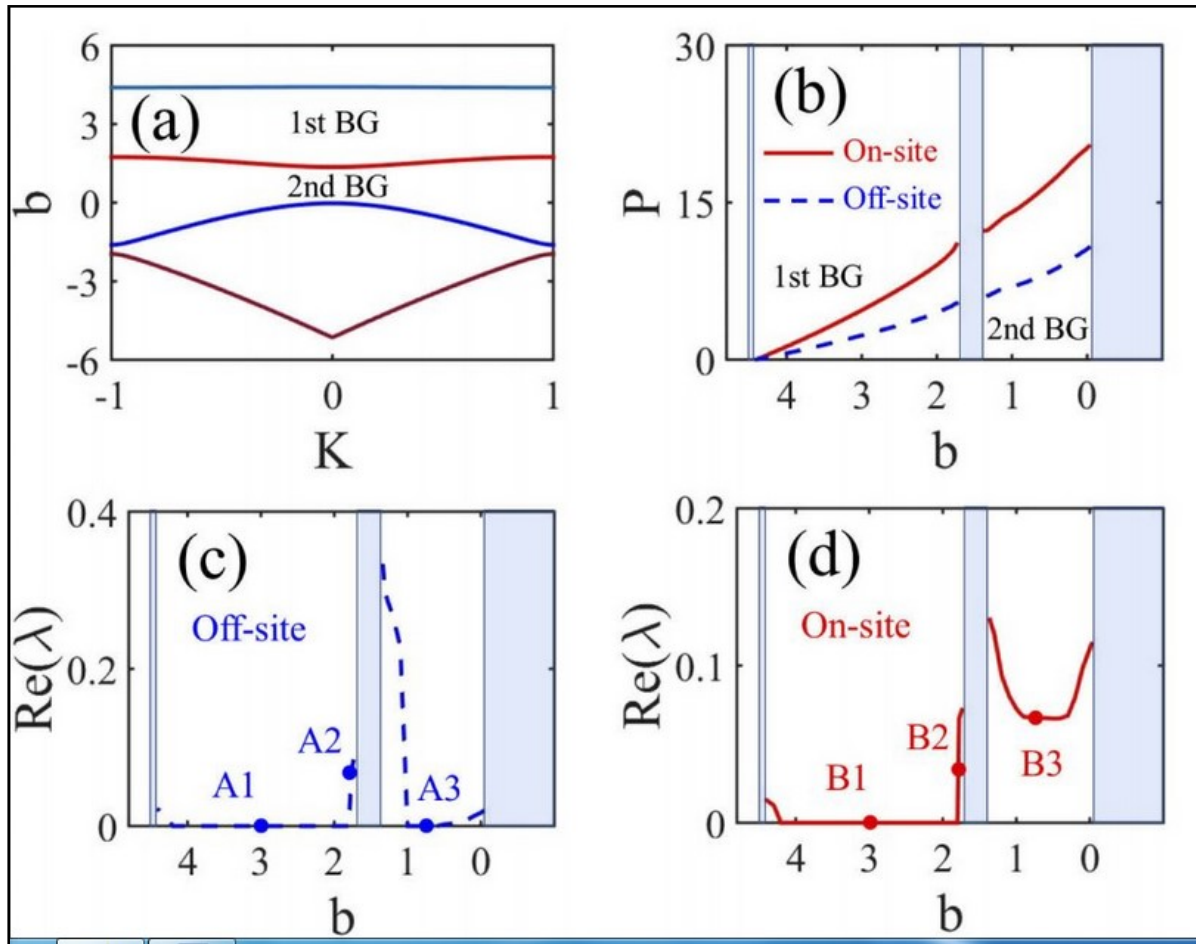
Researchers reveal missing optical localized gap modes

By Zhang Nannan

Electromagnetically induced transparency (EIT) is a typical quantum destructive interference effect, which possesses many striking properties such as elimination of optical absorption, reduction of group velocity and remarkable enhancement of Kerr nonlinearity. Due to its rich physical properties and important practical applications, the study of EIT is extremely important. Many works have demonstrated the ways for manipulating light pulses via dynamically controlled EIT-induced photonic band gap in coherently prepared atomic gases.

Although various effects including solitons have been widely studied in multilevel atomic systems with electromagnetically induced lattices formed by EIT in recent years, the gap solitons are still missing. Are there any methods to reveal this phenomenon?

A research team led by Prof. Dr. Zeng Jianhua from the Xi'an Institute of Optics and Precision Mechanics (XIOPM) of the Chinese Academy of Sciences (CAS) theoretically investigate one-dimensional (1D) localized gap modes in a coherent atomic gas. The results were published in *Optics Express*.



Band-gap structure and profiles of gap solitons. Credit: XIOPM

In this research, the new platform to generate localized gap modes is a 1D coherent atomic system consisting of a Λ -type three-level atomic gases that are excited under EIT condition and trapped by an optical lattice formed by a pair of counterpropagating far-detuned Stark laser fields.

The model supports two types of localized gap modes, fundamental gap solitons and dipole ones. Both localized gap modes can be constructed as on-site and off-site modes, with their central profiles placing respectively into the maximum and minimum values of the optical lattice.

The systematic simulations based on linear-stability analysis and the direct perturbed simulations demonstrate the (in)stability regions of both localized gap modes in the respective linear band-gap spectrum.

The proposed physical scheme and the predicted gap modes therein can enlarge the nonlinear spectrum of coherent atomic gases and open up a new avenue for implications including optical communication and information processing.

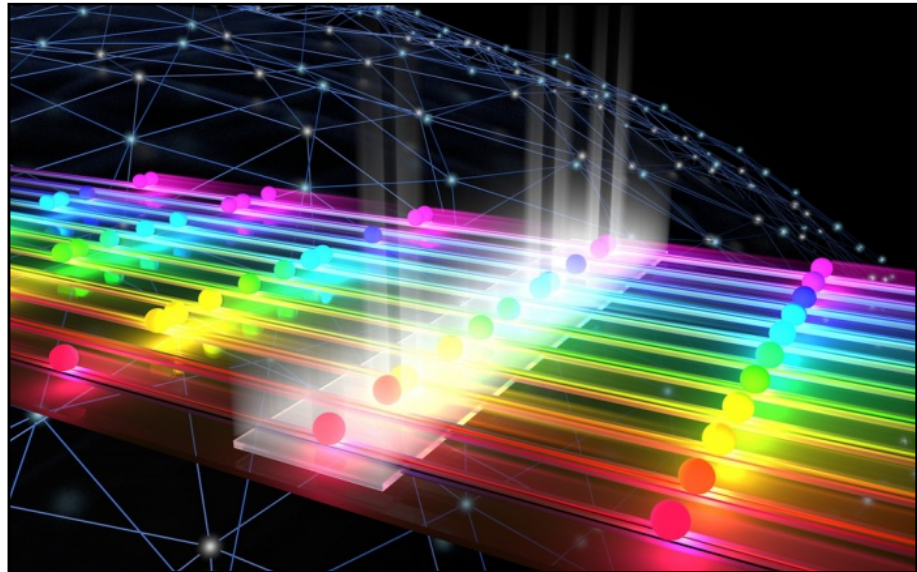
More information: Zhiming Chen et al. Localized gap modes of coherently trapped atoms in an optical lattice, *Optics Express* (2020). DOI: [10.1364/OE.412554](https://doi.org/10.1364/OE.412554)

Journal information: *Optics Express*
<https://phys.org/news/2021-03-reveal-optical-localized-gap-modes.html>

Chromatic light particle effect revealed for the development of photonic quantum networks

It's another step on the road to developing quantum information processing applications: A key experiment succeeded in going beyond the previously defined limits for photon applications. Anahita Khodadad Kashi and Prof. Dr. Michael Kues from the Institute of Photonics and the Cluster of Excellence PhoenixD at Leibniz University Hannover (Germany) have demonstrated a novel interference effect. The scientists have thus shown that new color-coded photonic networks can be tapped, and the number of photons involved can be scaled.

"This discovery could enable new benchmarks in quantum communication, computational operations of quantum computers as well as quantum measurement techniques and is feasible with existing optical telecommunication infrastructure," says



The graphic visualises quantum mechanical interference, also called the Hong-Ou-Mandel effect: A yellow and an orange photon hit a frequency mixer (white bar) from the right and emerge always together in the same color, here two yellow photons. Credit: Michael Kues/Anahita Khodadad Kashi

Kues.

The decisive experiment was

successfully performed in the newly established Quantum Photonics Laboratory (QPL) of the Institute of Photonics and the Hannover Centre for Optical Technologies at Leibniz University Hannover. Anahita Khodadad Kashi succeeded in quantum-mechanically interfering independently generated pure photons with different colors, i.e., frequencies. Khodadad Kashi detected a so-called Hong-Ou-Mandel effect.

Hong-Ou-Mandel interference is a fundamental effect of quantum optics that forms the basis for many quantum information processing applications—from quantum computing to quantum metrology. The effect describes how two photons behave when they collide on a spatial beam splitter and explains the phenomenon of quantum mechanical interference.

The researchers have now realized a frequency beamsplitter using telecommunications components and demonstrate the Hong-Ou-Mandel effect for the first time between two independently generated photons in the frequency domain. In contrast to other dimensions, such as the polarization (oscillation plane of the electric field) or the photon's position (spatial localisation), the frequency is much less susceptible to interference. "Our approach allows flexible configurability and access to high-dimensional systems, which may lead to large-scale controllable quantum systems in the future," says Kues. This two-photon interference phenomenon can serve as a foundation for a quantum internet, non-classical communication and quantum computers. In other words, the results could be used for frequency-based quantum networks. Another notable feature of the new discovery is that this increase in performance could be used with existing infrastructure, i.e. standard fiber optic connections for connecting to the internet. The use of quantum technologies at home could thus theoretically be made possible in the future.

"I was very pleased that our experiment was able to demonstrate the Hong-Ou-Mandel effect in the frequency domain," says Khodadad Kashi. The researcher moved to Hannover in 2019 after completing her master's degree in electrical engineering, focusing on photonics at Iran University of Science and Technology in Tehran. Since then, she has strengthened Prof. Kues' team of seven. Kues has been a professor at Leibniz University Hannover since spring 2019 and is researching the development of photonic quantum technologies using micro-and nanophotonics in the Cluster of Excellence PhoenixD. In the future, Kashi and Kues will continue their research on the topic of spectral Hong-Ou-Mandel interference. "I would like to extend the current experiment to exploit the demonstrated effect for quantum information processing," says Khodadad Kashi.

More information: Anahita Khodadad Kashi et al. Spectral Hong–Ou–Mandel Interference between Independently Generated Single Photons for Scalable Frequency-Domain Quantum Processing, *Laser & Photonics Reviews* (2021). DOI: [10.1002/lpor.202000464](https://doi.org/10.1002/lpor.202000464)

<https://phys.org/news/2021-03-chromatic-particle-effect-revealed-photonic.html>



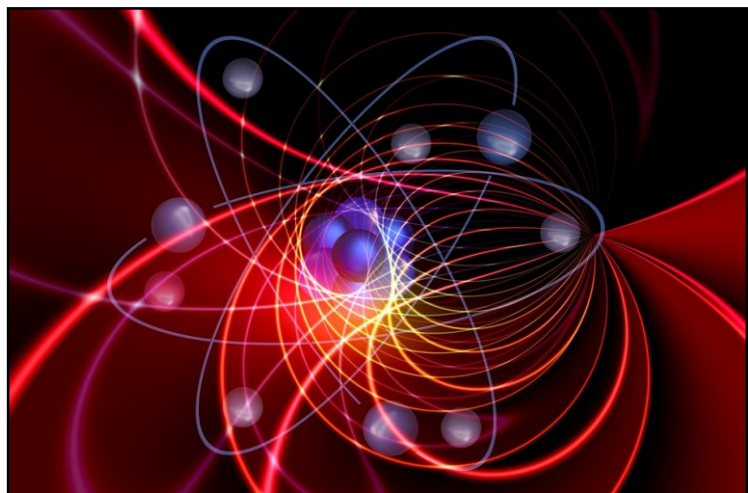
Sat, 20 March 2021

Researchers tailor the interaction of electrons in an atomically thin solid

Physicists in Regensburg and Marburg have tailored the mutual interaction of electrons in an atomically thin solid by simply covering it with a crystal featuring hand-picked lattice dynamics.

In a cubic centimeter of a solid, there are typically 10^{23} electrons. In this massive many-body system, seemingly simple pairwise electron-electron interaction can cause extremely complex correlations and exotic behavior, such as superconductivity. This quantum phenomenon turns a solid into a perfect conductor, which carries dissipationless electric currents. Usually, this behavior is a normal trait of specific solids. Yet, the discovery of atomically thin layered materials, such as graphene—a monolayer of graphite—or transition metal dichalcogenides (TMDCs), has opened a new creative lab to tailor electron-electron interactions and shape phase transitions. For example, by stacking graphene layers under specific angles, superconducting behavior can be created. Yet, theory has also predicted that coupling electrons with quantized vibrations of the crystal lattice called phonons may critically influence the way electrons interact with each other.

Physicists from Regensburg led by Rupert Huber in collaboration with Ermin Malic's group at Philipps University in Marburg have now come up with a new idea to fine tune the interaction between electrons by coupling to polar crystal lattice vibrations of a neighboring layer. This scenario can be realized by simply covering TMDC monolayers with a capping layer of gypsum, a material commonly used in plaster casts.



Credit: Pixabay/CC0 Public Domain

To measure the coupling strength between electrons and phonons, physicists first excited electrons in the semiconducting TMDC monolayer with an ultrashort laser pulse, leaving corresponding holes behind at their original sites. Electrons and holes carry opposite charges and are thus bound to each other by their Coulomb attraction—just like electrons are bound to the

nucleus in the hydrogen atom—forming so-called excitons. By observing their atom-like energy structure with subsequent ultrashort light pulse in the infrared, it's possible to calibrate the interaction between the two particles.

The surprising finding was that once the TMDC layers were covered with a thin gypsum cap, the structure of the excitons was substantially modified. "The mere spatial proximity of the gypsum layer is sufficient to strongly couple the internal structure of the excitons to polar lattice vibrations of gypsum," says Philipp Merkl, the first author of the study.

Even though this coupling mechanism connects electrons and phonons in different atomically thin layers, they interact so strongly that they essentially merge into new mixed particles. Once the researchers discovered it, they started playing with this new quantum effect: By placing an essentially inert third atomically thin layer as a spacer between the TMDC and the gypsum, they managed to adjust the spatial distance between the electrons and the phonons with atomic precision.

"This strategy allowed us to fine tune the coupling strength with even higher precision," corresponding author Dr. Chaw-Keong Yong adds. "These findings could open new pathways to tailor electronic correlations in two-dimensional materials. In the future, this could enable man-made phase transitions in artificially stacked heterostructures and novel physical quantum properties, which could find applications in prospective lossless electronics and quantum information devices."

More information: P. Merkl, et al. Proximity control of interlayer exciton-phonon hybridization in van der Waals heterostructures, *Nature Communications* (2021), DOI: [10.1038/s41467-021-21780-6](https://doi.org/10.1038/s41467-021-21780-6), www.nature.com/articles/s41467-021-21780-6

Journal information: [Nature Communications](https://www.nature.com)
<https://phys.org/news/2021-03-tailor-interaction-electrons-atomically-thin.html>

Skin swabs could be the next COVID-19 test

By Erika Watts

- *Researchers have developed a new method for testing COVID-19 that uses a skin swab.*
- *The new test is less invasive compared to current testing methods.*
- *The skin swab test analyzes sebum, which is an oily substance produced by the sebaceous glands.*
- *Researchers from the University of Surrey in the United Kingdom led the study.*

It has been just over a year since the World Health Organization (WHO) declared COVID-19 a global pandemic. In that time, more than 121 million people have contracted the virus, and 2.6 million have died.

Researchers have developed multiple vaccines over the past year, which are being administered all over the world. Recently, in some regions, the number of new COVID-19 cases has gone down.

However, testing is vital, as it allows medical professionals to know who has the virus and act quickly to quarantine others who may be at risk of exposure.

A team led by researchers from the University of Surrey in Guildford, England, developed a new method to test for COVID-19. The test utilizes skin swabbing, which is a non-invasive procedure.

COVID-19 testing

There are two types of diagnostic tests that can detect whether a person has the virus that causes COVID-19 — molecular tests and antigen tests.

Molecular tests detect genetic material from the virus, and antigen tests detect proteins from the virus. These tests diagnose active infections, and medical professionals perform these tests by collecting mucus samples from individuals.

As both types of tests generally involve using a long test swab in a person's throat or nasal passages, most people consider them invasive. Molecular tests typically involve a nasopharyngeal swab (a swab of the part of the throat behind the nose), a nasal swab, or a throat swab. Experts consider molecular tests to be highly accurate, but it can take days to get results.

Antigen tests take less time to get results, but these tests are generally less accurate. Antigen tests may have higher rates of false negatives compared with molecular tests.

Doctors also use antibody testing to find out whether someone has recently had an infection. This type of test requires a blood sample.

The current testing methods have some limitations — the molecular tests can take longer, the antigen tests can be less sensitive, and both can be invasive. However, vaccine researchers continue trying to improve COVID-19 testing.

Not only can improved testing methods encourage people to get tested, but accurate results can also reduce the spread of the virus.

Sebum testing

A team led by researchers from the University of Surrey in the United Kingdom recently published a paper that describes a new method for testing COVID-19. The paper appears in *The Lancet-EClinicalMedicine*.

Instead of using mucus or blood samples to test for the virus, their method uses skin swabs to test sebum secretions.

The test analyzes the sebum secretions present on the skin. Sebum is “an oily substance, produced in the sebaceous glands.”

Sebaceous glands are located directly beneath the skin. Sebum is made up of a mixture of lipids, including triglycerides and fatty acids.

Study lead author Matt Spick says, “COVID-19 damages many areas of metabolism. In this work, we show that the skin lipidome can be added to the list, which could have implications for the skin’s barrier function, as well as being a detectable symptom of the disease itself.”

The sebum swab test works by analyzing the possible changes the virus causes in the body.

“Sebum sampling has the potential to support both needs by looking at what the virus does to us, rather than looking for the virus itself,” the authors write.

Testing sebum secretions for a disease is not new. Previous studies have identified changes in the profiles of sebum secretions in people with Parkinson’s disease and with type 1 diabetes.

“Investigating new methods of diagnosis and surveillance in a new disease such as COVID-19 that has had such a devastating effect on the world is vital,” says study co-author Dr. George Evetts, a consultant in Anaesthesia & Intensive Care Medicine at Frimley Park Hospital in Surrey, U.K.

“Sebum sampling is a simple, non-invasive method that shows promise for both diagnostics and monitoring of the disease in both a healthcare and a non-healthcare setting.”

Skin-swab results

The team obtained samples from 67 hospitalized participants. Of the participants, 37 tested negative for COVID-19, and 30 tested positive.

Researchers collected the samples by swabbing gauze on the upper back skin of the participants.

“A sample can be collected easily and non-invasively via a gentle swab of skin areas rich in sebum (for example the face, neck or back),” the authors write.

The lipid profiles showed that the levels of certain lipids were lower in participants who had tested positive for COVID-19 than people who had tested negative. The study authors noted that triglycerides were the most consistently reduced lipid in the participants with COVID-19.

The study authors note that the sample in the research was small, and the evidence is still preliminary.

However, senior study co-author Dr. Melanie Bailey thinks healthcare professionals could use this form of testing in similar situations in the future. She adds:

“Unfortunately, the specter of future pandemics is firmly on the top of the agenda for the scientific community. Our study suggests that we may be able to use non-invasive means to test for diseases such as COVID-19 in the future — a development, which I am sure, will be welcomed by all.”

<https://www.medicalnewstoday.com/articles/skin-swabs-could-be-the-next-covid-19-test>

