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Defence Acquisition Procedure 2020 amended to promote 'Make in India' & '*Aatmanirbharta*' in Defence

All modernization requirements of the three Services & Indian Coast Guard to be indigenously sourced irrespective of nature of procurement

Requirement of Integrity Pact Bank Guarantee dispensed with to reduce financial burden on domestic industry

To further promote 'Make in India' and 'Aatmanirbharta' in defence and enable Ease of Doing Business, Defence Acquisition Procedure (DAP) 2020 has been amended based on the approvals accorded by Defence Acquisition Council (DAC) in respect of the following: Going forward all modernisation requirements of the Defence Services and Indian Coast Guard are to be indigenously sourced irrespective of the nature of procurement. Import of defence equipment/sourcing from Foreign Industry of capital acquisitions should only be an exception and undertaken with specific approval of DAC/Raksha Mantri. As advised by Ministry of Finance and to reduce financial burden on the Indian Defence Industry whilst maintaining financial safeguards, requirement of Integrity Pact Bank Guarantee (IPBG) has been dispensed with. Instead, Earnest Money Deposit (EMD) will be taken as a bid security for all acquisition cases with Acceptance of Necessity (AoN) cost more than Rs 100 crore. EMD will be valid for the selected vendor up to signing of contracts and returned to remaining vendors post declaration of selection. Post contract, Integrity Pact will be covered through the Performance Cum Warranty Bank Guarantee (PWBG). Further, as per extant Government of India policy, EMD is not required from Micro and Small Enterprises (MSEs).

To encourage wider participation and broad base indigenous defence manufacturing sector in the country, the total order quantities in acquisition cases are to be split between shortlisted vendors, wherever viable. Further, the other technically qualified bidders who have not been awarded contract will be issued a certificate by the Services indicating that the product has been successfully trial evaluated, to facilitate vendors to explore other markets.

To create an ecosystem which fosters innovation and encourages technology development in Defence by engaging R&D institutes, academia, industries, startups and individual innovators, the iDEX framework was launched by Prime Minister Shri Narendra Modi in April 2018. Existing provisions of DAP 2020 links the procedures of Staff Evaluation, CNC and award of Contract for iDEX procurement, to the procedure in 'Buy (Indian- IDDM)', which entails a long period of approximately two years before placement of the order. To enable the budding startup talent pool of the country to contribute towards the twin mantras of self-sufficiency and indigenization, the procurement process under iDEX procedure of DAP 2020 has been simplified. With this simplification, time taken from grant of AoN to signing of contract will be reduced to 22 weeks.

Make-II procedure of DAP-2020, involving indigenisation of defence equipment through industry funded projects at prototype development stage, has been simplified by incorporating Single Stage Composite Trials of prototypes and dispensing off with quantity vetting and scaling for initial procurements in the delegated cases. Post simplification, the timelines in Make-II procedure will be reduced to 101-109 weeks from an existing total time-period of 122-180 weeks.

https://pib.gov.in/PressReleasePage.aspx?PRID=1819937

Mon, 25 Apr 2022

Defence Ministry announces major changes in military acquisition procedure

The armed forces will have to source military hardware under modernisation drive from the domestic industry and their import should only be an exception, the defence ministry said on Monday, announcing major changes in India's defence acquisition procedure. The ministry also decided to dispense with the requirement of the Integrity Pact Bank Guarantee (IPBG) to reduce the financial burden on the Indian defence industry, a move aimed at promoting domestic manufacturing. It said Earnest Money Deposit (EMD) will be taken as bid security for all acquisition cases costing more than ₹ 100 crore. "Going forward all modernisation requirements of the defence services and Indian Coast Guard are to be indigenously sourced irrespective of the nature of the procurement," the ministry said in a statement.

It said import of defence equipment and sourcing them from the foreign industry under capital acquisitions should only be an exception and undertaken with specific approval of the defence acquisition council or the defence minister. "As advised by the Ministry of Finance and to reduce the financial burden on the Indian defence industry whilst maintaining financial safeguards, the requirement of Integrity Pact Bank Guarantee (IPBG) has been dispensed with," the ministry said. "Instead, Earnest Money Deposit (EMD) will be taken as a bid security for all acquisition cases with Acceptance of Necessity (AoN) cost more than ₹ 100 crore," it added. The ministry said the EMD will be valid for the selected vendor up to the signing of contracts and returned to remaining vendors post declaration of selection. "Post contract, integrity pact will be covered through the performance cum warranty bank guarantee (PWBG). Further, as per extant

government of India policy, EMD is not required from Micro and Small Enterprises (MSEs)," it said. To encourage wider participation and a broad base of indigenous defence manufacturing sector in the country, the total order quantities in acquisition cases are to be split between shortlisted vendors, wherever viable, according to the ministry.

"Further, the other technically qualified bidders who have not been awarded contract will be issued a certificate by the services indicating that the product has been successfully trial evaluated, to facilitate vendors to explore other markets," it said. The defence ministry also decided to cut waiting time for projects under the iDEX framework. The iDEX programme was launched in 2018 as an ecosystem to foster innovation and technology development in the defence and aerospace sectors by engaging innovators and entrepreneurs. "To enable the budding startup talent pool of the country to contribute towards the twin mantras of self-sufficiency and indigenisation, the procurement process under the iDEX procedure of DAP (Defence Acquisition Procedure) 2020 has been simplified."With this simplification, time taken from grant of AoN to signing of the contract will be reduced to 22 weeks," the ministry said. It said the Make-II procedure of DAP-2020, involving indigenisation of defence equipment through industry-funded projects at the prototype development stage has been simplified by incorporating single-stage composite trials of prototypes and dispensing off with quantity vetting and scaling for initial procurements. Post simplification, the timelines in the Make-II procedure will be reduced to 101-109 weeks from an existing total time period of 122-180 weeks, the ministry said. In the last few years, the government has taken a series of measures to promote domestic defence production.

India, facing tough challenges from neighbours on its northern and western frontiers, is one of the largest importers of arms globally. According to estimates, the Indian armed forces are projected to spend around USD 130 billion in capital procurement over the next five years. The government now wants to reduce dependence on imported military platforms and has decided to support domestic defence manufacturing. The defence ministry has set a goal of a turnover of USD 25 billion (Rs 1.75 lakh crore) in defence manufacturing in the next five years which includes an export target of USD 5 billion (Rs 35,000 crore) worth of military hardware.

https://www.ndtv.com/india-news/defence-ministry-announces-major-changes-in-military-acquisition-procedure-2919489

Mon, 25 Apr 2022

India's military spending 3rd highest in world: report

World military expenditure reached an all-time high of USD 2.1 trillion in 2021, the Stockholm International Peace Research Institute (SIPRI) said on Monday, adding that the top three largest spenders were the United States, China and India. "Total global military expenditure increased by 0.7 per cent in real terms in 2021, to reach USD 2113 billion. The five largest spenders in 2021 were the United States, China, India, the United Kingdom and Russia, together accounting for 62 per cent of expenditure," the Stockholm based said in a statement. "Even amid the economic fallout of the Covid-19 pandemic, world military spending hit record levels," said Dr Diego Lopes da Silva, Senior Researcher with SIPRI's Military Expenditure and Arms

Production Programme. "There was a slowdown in the rate of real-terms growth due to inflation. In nominal terms, however, military spending grew by 6.1 per cent." As a result of the economic recovery from the COVID-19 pandemic, defence spending amounted to 2.2 per cent of global GDP, while in 2020 this figure reached 2.3 per cent. US military spending reached USD 801 billion in 2021, a drop of 1.4 per cent from 2020, the statement said. In the period from 2012 to 2021, the US increased funding for military research and development by 24 per cent and reduced spending on arms purchases by 6.4 per cent, according to the statement.

Second place went to China, which spent USD 293 billion on defence, an increase of 4.7 per cent compared with 2020. India's military spending ranked third with USD 76.6 billion last year, an increase of 0.9 per cent in comparison with 2020. According to the Stockholm based institute, India's military spending of USD 76.6 billion ranked third highest in the world. This was up by 0.9 per cent from 2020 and by 33 per cent from 2012. In a push to strengthen the indigenous arms industry, 64 per cent of capital outlays in the military budget of 2021 were earmarked for acquisitions of domestically produced arms. The UK spent $ 68.4 billion on defence last year, up by three per cent from 2020, the statement read. Meanwhile, Russia took the fifth highest position in defence spending. "Russia increased its military expenditure by 2.9 per cent in 2021, to USD 65.9 billion, at a time when it was building up its forces along the Ukrainian border. This was the third consecutive year of growth and Russia's military spending reached 4.1 per cent of GDP in 2021," the statement said. In 2021, high energy prices helped Russia to increase its military spending, Lucie Beraud-Sudreau, Director of SIPRI's Military Expenditure and Arms Production Programme, said, adding that between 2016-2019 Russia experienced a decrease in the military spending due to low prices of oil and gas as well as sanctions imposed on Russia.

https://www.ndtv.com/india-news/world-military-expenditure-surpasses-usd-2tn-us-china-india-top-spenders-2916932

IDN INDIAN DEFENCE NEWS
Global Defence, Aerospace & Security

Tue, 26 Apr 2022

IAF to prepare its MI-17 helicopters for precision stand-off strike with Israeli-made spike NLOS missile

The Indian Air Force (IAF) has decided to add firepower to its Russian-origin Mi-17 helicopters by equipping them with Israeli-made Spike 'Non-Line of Sight (NLOS)' missiles. The Indian Army has a variant of the Spike anti-tank missile in its arsenal. The US has validated the Spike NLOS missile from its Boeing AH-64 Apache attack helicopter. The IAF operates 22 Apache helicopters, and the Indian Army has placed an order for six of these helicopters. Why It Matters: The missile can reach ranges up to 32 kilometres.

Given the missile's long-range, it can be used as a precision stand-off strike system, meaning the user can fire the missile at a non-line-of-sight target while remaining at a safe distance or a relatively advantageous position. The missile comes with a real-time wireless data link for ranges up to 25 kilometres. The missile uses its seeker and wireless datalink to give the user real-time video imagery and man-in-the-loop control throughout its flight. When operated in mid-course navigation mode, this feature will allow the user to control the missile in flight to "alter or abort the mission" while it is en route to the target. It is a multi-purpose missile system with three warhead configurations— fragmentation warhead for vehicles with light armour, high explosive anti-tank warhead for armour penetration, and penetrating blast fragmentation warhead for fortified targets. The Backdrop: The IAF started showing interest in the missile "almost two years ago when the Chinese Army deployed a large number of tanks and infantry combat vehicles close to the Line of Actual Control", ANI report said.

A stand-off, non-line-of-sight missile could prove useful in mountainous Ladakh, as this simple image from Lockheed Martin's Spike NLOS fact sheet shows. (Lockheed has tied up with Rafael Advanced Defence Systems to provide the missile to the US forces.) The Chinese claim that their T-15 tank, which they have deployed on the Tibetan plateau and in eastern Ladakh, can hit enemy targets "beyond the line of sight" using the Red Arrow anti-tank missile.

http://www.indiandefensenews.in/2022/04/iaf-to-prepare-its-mi-17-helicopters.html?m=1

mint

Mon, 25 Apr 2022

Boeing plans to fly 2 Super Hornet aircraft to India; All you need to know

Boeing is planning to fly two Super Hornet fighter aircraft for an operational demonstration to Goa before its potential buyer the Indian Navy this summer. According to the news agency PTI, Boeing's India Business Development Alain Garcia made a strong sales pitch for F/A-18 Super Hornet. Gracia said the Super Hornet aircraft has been specifically designed from its inception for carrier operations, can operate from the Indian Navy aircraft carriers, and will meet or exceed the STOBAR performance requirements of the Indian Navy. STOBAR (short take-off but arrested recovery or short take-off, barrier-arrested recovery) is a system used for the launch and recovery of aircraft from the deck of an aircraft carrier. Boeing is in talks with top Defence

officials in the country about F/A-18 Super Hornet, P-8I, F-15EX, KC-46 tanker for aerial refueling and ISR capabilities as India plans to boost its defence capabilities.

Boeing's F/A-18 Super Hornet; All you need to know

1. According to a senior Boeing executive, the Super Hornet is suited to protect India's maritime interests. He said the Super Hornet and P-8I will open up opportunities for greater interoperability between the two navies for a secure Indo-Pacific.

2. The Block III Super Hornet comes with advanced networking and open architecture design that allows it to work jointly with the Indian Navy's P-8I and other US-origin assets and rapidly accept new technology to stay ahead of emerging threats

3. The US Navy operates more than 800 Super Hornets and EA-18 Growlers, the electronic attack version of the F/A-18.

4. Super Hornet F/A-18E weighs 14,552 kg, with a maximum takeoff weight of 9,937 kg. It flies at Mach 1.6 speed, which means 65% faster than the speed of sound. At present, the US, Australia, and Kuwait have F/A-18 Super Hornet customers.

The Super Hornet has an affordable acquisition cost and also costs less per flight hour to operate than any other tactical aircraft in the US forces inventory, including single-engine fighters. Maria Laine, vice president of Boeing's International Business Development, said that India is one of Boeing's enduring partners where "we have made strategic investments and will continue to do so in the future". The company has 3,500 employees in India and more than 7,000 people working with its supply chain partners. "We are proud to support the many missions of the Indian armed forces that operate multiple Boeing aircraft...," she said.

“In support of Aatmanirbhar Bharat and Make in India, Boeing sources over USD 1 billion from India, and Boeing's Indian supply chain partners are exporting products made in India for the global aerospace market," the company said. Tata Boeing Aerospace Limited (TBAL), the joint venture between Boeing and Tata Advanced Systems, has been producing aero-structures for Boeing's AH-64 Apache helicopter and recently delivered its 140th AH-64 Apache fuselage from its 14,000 square metres state-of-the-art facility in Hyderabad. TBAL is also manufacturing 737 Vertical Fin structures, a complex structural part, on a new production line that will utilize cutting-edge robotics and automation, said the Boeing official.

https://www.livemint.com/news/india/boeing-plans-to-fly-2-super-hornet-aircraft-to-india-all-you-need-to-know-11650872945031.html

THE ECONOMIC TIMES

Mon, 25 Apr 2022

Now, Defence minister nod must for import of weapon systems

In further attempts to cut down on foreign arms dependency, the government has introduced a new rule under which all import of weapon systems, including those being bought under the emergency clause, will require approvals by the defence minister.

The specific approval by the Rajnath Singh-led Defence Acquisition Council is expected to bring further scrutiny into imports and encourage Indian industry to step up supplies. "Going forward all modernisation requirements of the Defence Services and Indian Coast Guard are to be indigenously sourced irrespective of the nature of procurement. Import of defence equipment from foreign industry of capital acquisitions should only be an exception and undertaken with specific approval of DAC/Raksha Mantri," an official release stated.

https://economictimes.indiatimes.com/news/defence/now-defence-minister-nod-must-for-import-of-weapon-systems/articleshow/91082172.cms

Science & Technology News

पत्र सूचना कार्यालय
भारत सरकार

विज्ञान एवं प्रौद्योगिकी मंत्रालय

Mon, 25 Apr 2022 3:59 PM

वैज्ञानिक प्रशासकों ने अनुसंधान मूल्यांकन को अधिक मजबूत बनाने के तरीकों के बारे में विचार-विमर्श किया

भारतीय वित्त पोषण एजेंसियों में अनुसंधान मूल्यांकन प्रथाओं के बारे में आयोजित कार्यशाला में विभिन्न मंत्रालयों के वैज्ञानिक प्रशासकों ने अनुसंधान मूल्यांकन तरीकों को मजबूत तथा समावेशी बनाने के तरीकों के बारे में विचार-विमर्श किया ताकि भारत के लिए प्रासंगिक नए विचारों को प्रोत्साहित किया जा सके और युवा प्रतिभाओं को अवसर उपलब्ध हो सकें। विज्ञान और प्रौद्योगिकी विभाग के सचिव डॉ एस. चंद्रशेखर ने कहा कि अनुसंधान का मूल्यांकन विश्व में एक ज्वलंत चुनौती बन गया है और दुनिया के विशेषज्ञ इससे निपटने के तरीकों को तलाशने में लगे हुए हैं। भारत को अनुसंधान परियोजनाओं, उनके निष्कर्षों और परिणामों का आकलन करने की अपनी ऐसी पद्धति विकसित करनी चाहिए जो देश के अनुकूल हों। उन्होंने स्वतंत्र मूल्यांकन के लाभों पर प्रकाश डाला- जहां समीक्षक उस व्यक्ति या संस्थान को जाने बिना ही प्रस्तावक की परियोजनाओं का मूल्यांकन करता है। डॉ. चंद्रशेखर ने समीक्षकों को संवेदनशील बनाने के लिए कार्यशालाएं आयोजित करने की आवश्यकता पर भी जोर दिया।

इस एक दिवसीय कार्यशाला का आयोजन विज्ञान और प्रौद्योगिकी विभाग (डीएसटी) द्वारा किया गया था और इसमें विभिन्न स्तरों के ऐसे वैज्ञानिक प्रशासकों ने भाग लिया था, जिन्होंने अनुसंधान मूल्यांकन की मौजूदा स्थिति का आकलन करने और उनमें सुधार करने के उपाय सुझाने में मदद करने से संबंधित

गतिविधियों में भाग लिया था। डीएसटी के वरिष्ठ सलाहकार डॉ. अखिलेश गुप्ता ने ऐसे जिम्मेदार अनुसंधान मूल्यांकन पर जोर दिया जो भूगोल, लिंग, संसाधनों तक पहुंच, संस्थागत सुविधाओं आदि के मामले में भारत की विशाल विविधता को ध्यान में रखता हो। उन्होंने समीक्षकों के एक विषयगत क्लब की स्थापना की जरूरत और समीक्षा प्रक्रिया की गुणवत्ता को बेहतर बनाने के लिए समीक्षकों को मानदेय का भुगतान करने के बारे में प्रकाश डाला।

इस कार्यशाला और पैनल चर्चा का आयोजन डीएसटी के पॉलिसी कोऑर्डिनेशन एंड प्रोग्राम मैनेजमेंट (पीसीपीएम) डिविजन द्वारा डीएसटी पॉलिसी फेलो के साथ किया था। इसका उद्देश्य भारत की वित्त पोषित एजेंसियों की मौजूदा इन्ट्राम्युरल और एक्सट्राम्युरल अनुसंधान मूल्यांकन प्रक्रियाओं उनकी ताकत और कमजोरियों को समझने के लिए अनुसंधान इकोसिस्टम हितधारकों के साथ संवाद मूलक प्रक्रियाओं और विचार-विमर्शों का उपयोग करते हुए इनमें सुधार लाने के तरीके खोजना है। विज्ञान प्रशासकों ने यह विचार-विमर्श किया था कि अनुसंधान प्राथमिकताएं और चुनौतियों में समय के साथ-साथ बदलाव आ रहा है। प्रोत्साहन या संकेतकों पर निर्मित और मुख्य रूप से पत्रिका-आधारित मैट्रिक्स पर आधारित मौजूदा प्रथाओं पर फिर से विचार किए जाने की जरूरत है, जैसा कि भारत की 5वीं एसटीआई नीति के मसौदे में सिफारिश की गई थी कि अनुसंधान विषय सूची में सुधार लाने के लिए अनुसंधान मूल्यांकन ढांचे के बारे में दोबारा काम करने की जरूरत है। उन्होंने कहा कि दुनिया में जिम्मेदार मेट्रिक्स आंदोलन, जैसे कि लीडेन मेनिफेस्टो, डीओआरओ घोषणा आदि अनुसंधान मूल्यांकन के वैकल्पिक समग्र मैट्रिक्स के बारे में जागरूकता बढ़ाने में महत्वपूर्ण हैं। एक भारत केंद्रित अनुसंधान मूल्यांकन प्रक्रिया समय की जरूरत थी। डीएसटी, जैव-प्रौद्योगिकी विभाग, पृथ्वी विज्ञान मंत्रालय, भारतीय चिकित्सा अनुसंधान परिषद, वैज्ञानिक और औद्योगिक अनुसंधान परिषद, विज्ञान और इंजीनियरिंग अनुसंधान बोर्ड, भारतीय कृषि अनुसंधान परिषद और अन्य वैज्ञानिक वित्त पोषण एजेंसियों के अधिकारियों ने इस कार्यशाला और पैनल चर्चा में भाग लिया।

https://pib.gov.in/PressReleasePage.aspx?PRID=1819902

Press Information Bureau
Government of India

Ministry of Science & Technology

Mon, 25 Apr 2022 3:59 PM

Scientific administrators discuss ways to make research assessment more robust

Scientific administrators from across ministries deliberated on ways to make research assessment methods robust and inclusive so that new ideas that are relevant for India are encouraged and

young talents get opportunities, at a workshop on Research Assessment Practices in Indian Funding Agencies."Assessment of research is a burning challenge across the globe and experts from around the world are looking for ways to tackle it. India should develop its own method of assessing research projects, their outputs and outcomes that are adaptable to the country," said DST Secretary Dr S Chandrasekhar. He highlighted the benefits of blind assessment—where the reviewer assesses projects without knowing the person or the institute which has submitted the proposal. Dr Chandrasekhar also stressed on the need to organize workshops for sensitizing reviewers.

The day long workshop was organized by the Department of Science and Technology (DST) and attended by scientific administrators of different levels who participated in activities to help assess the current status of research evaluation and suggest measures for improvement. Senior Advisor, DST, Dr Akhilesh Gupta stressed on responsible research assessment that takes into account the huge diversity of India, in terms of geography, gender, access to resources, institutional facilities, etc. He also highlighted the need for a thematic club of reviewers and paying honorarium to reviewers for improving the quality of review process. The workshop and panel discussion was organised by the Policy Coordination & Programme Management (PCPM) division of the DST along with DST Policy Fellows to understand the current intramural and extramural research assessment practices of India's funding agencies, their strengths and weaknesses, using interactive exercises and discussions with the research ecosystem stakeholders and also find ways to improve them.

The science administrators discussed that since research priorities and challenges are changing with the time, the current practices built on incentives or indicators and primarily based on journal-based matrices required a relook and as recommended by the draft 5th STI Policy of India needed a reworked research assessment framework to improve the research agenda. They added that while the responsible metrics movement around the globe, such as the Leiden Manifesto, DORA Declaration, and so on are important in raising awareness about alternative holistic metrics of research evaluation, an India centric research assessment practice was the need of the hour. Officials from DST, Department of Bio-technology, M/o Earth Sciences, Indian Council for Medical Research, Council for Scientific & Industrial Research, Science & Engineering Research Board, Indian Council of Agricultural Research and other scientific funding agencies participated in the workshop and panel discussion.

https://pib.gov.in/PressReleasePage.aspx?PRID=1819840

Press Information Bureau
Government of India

Ministry of Science & Technology

Mon, 25 Apr 2022 3:57 PM

A newly discovered episodically accreting young star could help probe this rare group in more details

Scientists have spotted a new member belonging to the extremely rare group of young stars that exhibit episodic accretion. Such rare stars have gained significant interest in the star-formation community lately and this study could help probe into this group of stars and their formation mechanism in greater detail. Episodically accreting young stars are young, low-mass stars that have not initiated hydrogen fusion in their core and are fuelled by gravitational contraction and deuterium fusion (pre-main-sequence phase of the star). These pre-main-sequence stars are surrounded by a disc from which it steadily feeds on the matter from the disc-shaped region of gas and dust surrounding the star to gain mass. This process is known as mass accretion from the circumstellar disc of the star. On occasions their feeding rate increases. This is known as the periods of enhanced mass accretion from their circumstellar disc. During such episodes, the brightness of the star increases by 4-6 magnitudes in the optical bands. So far 25 such rare groups of stars have been discovered.

Indian astronomers from the Aryabhatta Research Institute of Observational Sciences (ARIES), an autonomous institute under the Department of Science & Technology, Government of India, as part of an international team, including groups within India from the Tata Institute of Fundamental Research (TIFR) and Indian Institute of Astrophysics (IIA), have discovered Gaia 20eae, the latest member of episodically accreting young stars. On August 28, 2020, the Gaia Photometric Alert system– a sky survey which actively searches for the transient objects and publishes a daily report on the number of transients it detects, published a report stating that Gaia 20eae has brightened by 4.5 magnitudes. This indicated a likely case of enhanced episodic accretion.

A team led by Arpan Ghosh, a Ph.D. student with Dr. Saurabh Sharma from ARIES along with Dr. Joe. P. Ninan from Pennsylvania State University, USA, Dr. D. K. Ojha from TIFR, Mumbai, Dr. B.C Bhatt from IIA, Bengaluru, and other members from Princeton University, University of Oklahoma, John Hopkins University, University of California and Space Telescope Science Institute, USA, National Astronomical Research Institute of Thailand, and Macquarie University, Australia started to monitor Gaia 20eae immediately after the detection of the alert. The team of astronomers carried out simultaneous photometric and spectroscopic observations using Indian facilities like the 1.3m Devasthal Fast Optical Telescope, 3.6m Devasthal Optical Telescope, 2m Himalayan Chandra Telescope, and international facilities like 10m HET telescope and 0.5m ARC Small Aperture Telescope.

The light curve of Gaia 20eae showed a transition stage when it exhibited most of its brightness at a short timescale of 34 days with a very rapid rising rate (3 mag/month). Gaia 20eae has now started to decay. The team has detected strong signatures of outflowing winds generated due to increased accretion and the presence of turbulence around Gaia 20eae. In what has been a first-

time discovery, the team detected a signature of magnetospheric accretion (red-shifted absorption) component from the high-resolution spectra (in Ca II IR triplet lines). This was consistent with the signature of low-velocity in-fall of matter from the inner part of the surrounding disc onto the central pre-main sequence star as viewed from a hotter background. The investigation of Gaia 20eae points towards magnetospheric accretion being the phenomenon for the current outburst. This is a first-time discovery because of the location of Gaia 20eae in the sky which enabled the team to view the low-velocity red−shifted absorption signature on top of the broad Ca II IR triplet emission line.

https://pib.gov.in/PressReleasePage.aspx?PRID=1819839

Press Information Bureau
Government of India

Ministry of Science & Technology

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Gujarat Chief Minister facilitates MoU between CSIR and iCreate to harness India's tech strength

The MoU will foster rapid economic development and help create world-class start-ups

- iCreate to help establish new start-up incubators at select CSIR labs to boost commercialisation of CSIR's innovations
- CSIR to provide access to its equipment, facilities as well as scientific manpower to iCreate's start-ups
- CSIR and iCreate to jointly work on creating tech innovation-based commercial solutions to address large challenges facing the country
- CSIR will explore new ways of financially supporting innovative start-ups

The Chief Minister of Gujarat, Shri Bhupendra Patel today presided over the MoU signing between the Government of Gujarat's flagship technology incubator - iCreate (International Centre for Entrepreneurship and Technology) and the Council of Scientific and Industrial Research (CSIR), the premier research and development body of the Government of India. Dr Rajiv Kumar Gupta, IAS, Additional Chief Secretary, Industries and Mines Department and Chairman, iCreate and Dr Rahul Gupta, IAS, Industries Commissioner, Government of Gujarat were amongst the dignitaries present.

Under the MoU, CSIR and iCreate intend to establish a collaborative support system for promising tech start-ups by making combined resources available for entrepreneurs and innovators in the country. The partnership will also catalyse scientific innovation and the marketability of high-tech start-ups. Further, iCreate will help set up new incubators at identified CSIR labs. Such start-ups will access CSIR's equipment, facilities, and scientific manpower. CSIR will provide intellectual property support and explore methods of financially supporting innovative start-ups from India to boost emerging entrepreneurs.

iCreate will also leverage its deep industry connections and market linkages to identify real needs that can be addressed through scientific innovation by CSIR scientists, thus leading to faster commercialisation of the innovations coming out of CSIR.

Anupam Jalote, CEO of iCreate said, "This is a very powerful alliance that is being forged - CSIR Labs are globally recognised, and their scientific and technical mettle is world-class. iCreate is nimble and market connected - these two traits synergise very well, and I am confident that it will contribute to helping transform India into a global knowledge-driven economy. Budding entrepreneurs may also have CSIR scientists onboarded as mentors for iCreate based on their area of R&D expertise and understanding of technical knowledge". Dr. Shekhar C Mande, Director General, CSIR said, "We are proud to partner with iCreate to establish a collaborative environment where the translation of knowledge to value is accelerated. This is another step forward in CSIR's efforts to boost research and innovation across the nation while also promoting the valuable exchange of ideas, knowledge and expertise." The coming together of iCreate and CSIR is expected to open new opportunities for start-ups as a result of new synergies among multiple stakeholders. Since its founding in 2012, iCreate has helped a significant number of start-ups across sectors to grow and scale rapidly. With the CSIR collaboration, iCreate envisions to gain further momentum in supporting India's robust innovative start-up ecosystem.

About iCreate:

iCreate (International Centre for Entrepreneurship and Technology) is an autonomous centre of excellence of the Government of Gujarat and is India's largest institution for transforming start-ups based on tech innovation into successful businesses. Located in a state-of-the-art 40-acre campus at Dev Dholera in Ahmedabad, to date it has supported over 412 innovations and 30+ patents with a 'high-touch, entrepreneur first model, connecting them with mentors, markets and money. Embedded systems and IoT are a focus area for iCreate, in domains like electric vehicles, agritech, smart cities, health, tech, industrial automation, and renewable energy, among others. It is home to Cisco's largest Innovation Lab in India and has partnerships with leading institutions in the US, Israel and other countries.

About CSIR:

The Council of Scientific & Industrial Research (CSIR), known for its cutting-edge R&D and Industrial knowledge base in diverse S&T areas, is a contemporary R&D organisation. CSIR has a dynamic network of 37 national laboratories, 39 outreach centres, one Innovation Complex, and three units with a pan-India presence. Currently, CSIR's R&D expertise and experience are embodied in 3439 active scientists supported by about 4193 scientific and technical personnel. CSIR has a patent portfolio of 8366 Indian patents and 7806 foreign patents. CSIR covers a wide spectrum of science and technology – from oceanography, geophysics, chemicals, drugs, genomics, biotechnology and nanotechnology to mining, aeronautics, instrumentation, environmental engineering and information technology. It provides significant technological intervention in many areas concerning societal efforts, which include environment, health, drinking water, food, housing, energy, farm and non-farm sectors. Further, CSIR's role in S&T human resource development is noteworthy.

https://pib.gov.in/PressReleasePage.aspx?PRID=1819900

INDIA TODAY

Mon, 25 Apr 2022

Amid delay, ISRO drops first pictures of Chandrayaan-3 mission

Hit by successive delays due to the Covid-19 pandemic-induced lockdown, the first pictures of the Chndrayaan-3 mission to the Moon have finally arrived. The images were released in a documentary by the Indian Space & Research Organisation (Isro) titled "Space on Wheels" which showcases 75 satellites launched by India.

The Chandrayaan-3 mission.

The video shows what appears to be the Chandrayaan-3 lander that will touch the lunar surface. The mission is a successor of the Chandrayaan-2 mission that unfortunately crashed on the dark side of the Moon in 2019.

Isro has said that it will be trying to launch the awaited mission by August this year, however, it seems difficult since several hardware testing remains to be done. The Department of Space in a written response in February this year had said that work is underway on Chandrayaan-3 and it will be launched in August this year.

Isro has been working to launch Chandrayaan-3 by Augut this year.

The mission has been delayed due to Covid-19 as Minister of Science & Technology Dr. Jitendra Singh said that several ongoing missions were impacted and that "Reprioritisation of projects has taken place in the backdrop of space sector reforms and newly introduced demand-driven models."

https://www.indiatoday.in/science/story/amid-delay-isro-drops-first-pictures-of-chandrayaan-3-mission-1941655-2022-04-25

The Indian EXPRESS

Mon, 25 Apr 2022

Researchers develop solar energy storage and transport technology without need for solar panels

Researchers at the Chalmers University in Sweden and the Shanghai Jiao Tong University have come up with a technique to harvest, store and transport solar energy and then derive electricity from it. All of this will be possible without the use of conventional photovoltaic cells or batteries. The researchers have documented this technology in an article titled, “Storing energy with molecular photoisomers,” published in the journal Joule in December 2021. With their MOST (Molecular Solar Thermal Energy Storage Systems) technology, the researchers successfully devised a method to store solar energy as chemical energy within a special kind of molecule, for up to 18 years.

This molecule changes its chemical properties when it comes in contact with sunlight and stores some of that energy within new chemical bonds. This chemical energy can then be released in the form of thermal energy with the addition of a catalyst if and when required. The device can be used to store solar energy when sunlight is available and provide thermal energy when it is not. But the storage of energy using MOST technology initially presented another problem: this energy can then only be converted into thermal energy using a catalyst.

While thermal energy is very useful in many applications, including heating, it is nowhere near as versatile as electrical energy which can be used to power a large variety of devices and applications. Also, existing technologies that can convert thermal energy to electricity don't really have the efficiency to work at the scale of MOST systems. "The purpose of the project is to store solar energy into chemical energy inside organic molecules. And later when we want to use the stored solar energy, it is released as heat. And the next step was to convert this stored energy into electricity," Zhihang Wang, a postdoc at Chalmers University in Sweden and lead author of the paper, told indianexpress.com.

In order to solve this part of the problem, Wang and his fellow researchers developed a new ultrathin chip-based device that can convert the thermal energy released by the MOST system into electrical energy. For this, the chemical molecules with stored energy were created in a lab in Chalmers University in Sweden and shipped to researchers at the Shanghai Jiao Tong University. The chip-based device was used to convert the released thermal energy into electrical energy, albeit in the scale of nanowatts. This new technology has been documented in a separate paper titled, "Chip-scale solar thermal electrical power generation," published in the journal Cell Reports Physical Science. The researchers envision many uses for the combined system of MOST and the new chip-scale electricity generation solution.

"We can, for example, generate solar energy in places with a lot of sunlight and have it shipped to regions which do not have sunlight. Earlier, we came up with technology that could release thermal energy that could be used for different purposes, like domestic heating. But now, this technology has the potential to produce electricity from that," explained Wang. This combined system could also be useful in locations close to either the North pole or the South pole, which get continuous months of sunlight followed by months of darkness. In such situations, MOST technology could be used to store solar energy when there is sunlight, and release it during the months when there isn't. While the technology is still in its infancy, it holds a lot of promise in a variety of applications. For example, Wang didn't rule out the possibility of using the chip-scale thermal electricity harvesting device in mobile devices, where it can repurpose the heat from the device's internals and convert it back into electricity. However, such an application lies outside the research interests of the team.

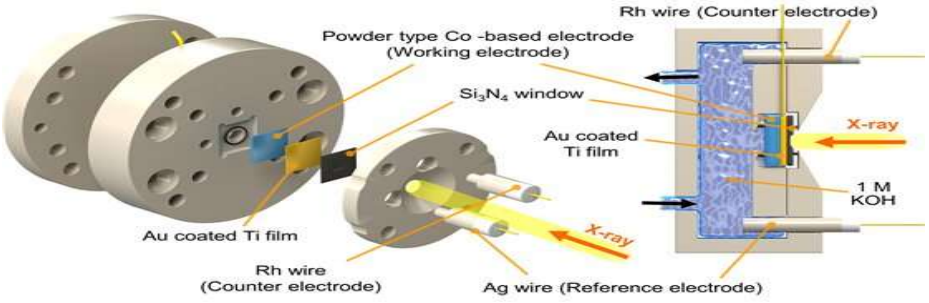
https://indianexpress.com/article/technology/science/researchers-develop-solar-energy-storage-and-transport-technology-without-need-for-solar-panels-7886600/

Mon, 25 Apr 2022

A catalyst for the development of carbon-neutral technology of the radiation accelerator

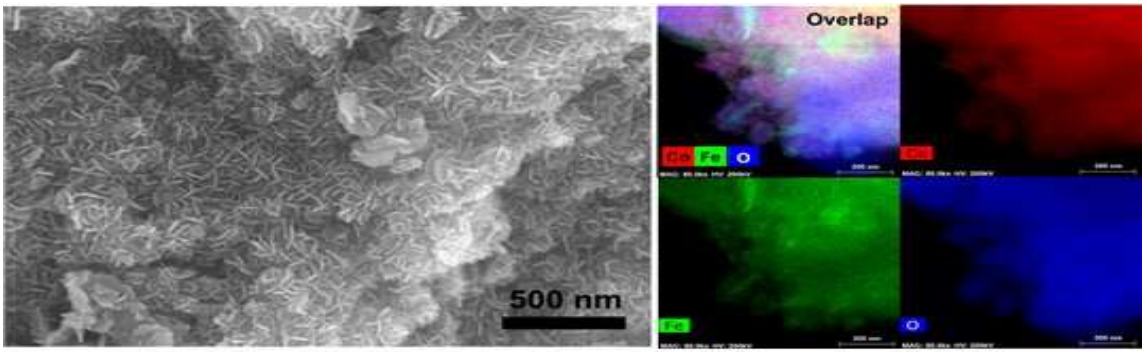
The importance of "carbon neutrality" is growing more than ever, as climate change caused by global warming threatens even the human right to live. The Republic of Korea has declared "carbon neutrality by 2050" and is exerting efforts to reduce greenhouse gas emissions. In order to realize carbon neutrality, along with green hydrogen production that reduces the generation of carbon dioxide, CCU technology that utilizes already-generated carbon dioxide is essential. In

order for these two technologies to be effective in reducing greenhouse gas emissions, the energy used must be reduced by increasing the activity of the water oxidation electrode, which induces an electrochemical reaction. For this purpose, attempts have been made to understand the electronic structure of the surface of the catalyst while the reaction continues. However, due to the difficulty in conducting an experiment in an ultra-high vacuum (UHV) condition, it was only indirectly estimated through computational calculations.



Schematic illustration of the operando soft X-ray absorption spectroscopy

At the Korea Institute of Science and Technology (KIST), Dr. Hyung-Suk Oh and Dr. Woong Hee Lee from the Clean Energy Research Center and Dr. Keun Hwa Chae from the Advanced Analysis and Data Center developed a soft X-ray based absorption spectroscopy based on a radiation accelerator (10D XAS KIST beamline) for the first time in Korea. KIST announced that this research has developed a new strategy to fabricate electrodes by observing and analyzing the surface electronic structure during the reaction of the water oxidation electrode applied to "hydrogen production and conversion of carbon dioxide." The research team found that general cobalt was reconstructed during the reaction, through measuring the electronic structure and spin states of the electrode surface by using accelerator-based soft X-ray absorption spectroscopy under the UHV condition. Thermodynamically, cobalt is prone to be in a tetravalent oxidation state under oxidation conditions, and its water oxidation activity is very low. It is necessary to maintain a trivalent oxidation state in order to maintain high water oxidation activity, that the process developed by the research team enables to obtain the 3.2 oxidation state and high activity. The developed electrode has a 1,000 times larger electrochemical surface area compared to a commercial cobalt electrode, and 10 times the hydrogen production performance when applied to an actual water electrolysis system.



TEM and SEM images of the catalyst. Credit: Korea Institute of Science and Technology (KIST)

Dr. Oh says that "by developing an operando soft X-ray absorption spectrometry based on a radiation accelerator, we have taken one step further in understanding the properties of catalyst materials and improving their performance. This is an essential technology for artificial photosynthesis, and is expected to be of great help in improving the performance of the water oxidation electrode, which is an important technology for green hydrogen production and electrochemical reconstruction."

https://phys.org/news/2022-04-catalyst-carbon-neutral-technology.html