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Repurposed, reoriented, redirected research to address COVIDrelated issues: Dr Kalaiselvi, CSIR's DG

CSIR-CECRI, IHBT, NBRI, NEIST, CRRI

29th November, 2022

From an entry-level scientist at the Council for Scientific and Industrial Research (CSIR) to its first women Director General, Dr N Kalaiselvi has seen it all at the organisation. Now, at the helm for two years, she highlights some major trendsetting technologies that the CSIR is currently dabbling in, in an exclusive conversation with EdexLive. Excerpts from the interview:

EDEXLIVE EXCLUSIVE

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DR N KALAISELVI DG-GSIR

First woman Director General of the Council of Scientific and Industrial Research in 80 years



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1. PM Modi has asked CSIR to develop 'Vision 2042'. Can you fill us in on any plans in the making?

Former DG Dr Shekhar C Mande already initiated an exercise called Vision 2030. It was a lab-centric vision document for 2030. That was a great exercise that was done initially at the lab level, as a result of which 37 labs were set up. CSIR works under eight teams referred to as Team Directorates. We have also consolidated all eight teams' vision documents and, through this, CSIR has come up with a consolidated CSIR Vision 2030 document in line with the national vision, that is India Vision 2047. So we will start implementing all those activities one by one, starting from FY 2023.

2. How do you view the scale of government funding in research? Is enough being done by India to support its researchers? The government's support is surplus. Whichever way the government can support us, it is supporting us. But as researchers, we also stretch our wings further and we try to get industry support whenever we address industry-specific issues. We are handholding other ministries and, therefore, we get funds from other ministries too. Apart from that, to address certain



3. Every fresh generation of researchers has contemporary issues to figure out and produce solutions/explanations for. How does CSIR help these researchers get accustomed to these contemporary issues? When the government came up with the Production Linked Incentive (PLI) scheme, it was a

When the government came up with the Production Linked Incentive (PLI) scheme, it was a national-level encouragement. This is how we funded that particular project and it has taken shape. Similarly, now the government is talking about hydrogen missions, especially the green hydrogen mission. The Ministry of New and Renewable Energy (MNRE) will soon announce the Green Hydrogen Mission, but CSIR has already been working in the direction of a green hydrogen mission. This is another CSIR-funded project. CSIR is definitely making the government's special announcements on different technologies the most prioritised area of research, even in terms of funding.

4. You were the Director of the CSIR-Central Electro Chemical Research Institute (CSIR-CECRI) in Karaikudi before becoming DG. How did the research fraternity fare during the pandemic, as per your experience? I don't think that research suffered a lot due to the pandemic. This is unlike academia or within classroom education, where the physical presence of a teacher and student is important. We, the research labs, did not take any institutional closure or lab closure even during COVID — most of the CSIR labs were functioning. We repurposed, reoriented and redirected many of our research activities in such a way that we are able to address COVID-related issues in one form or the other.

Even the engineering labs, to the surprise of the other CSIR fraternity, started preparing dispensers and different types of PPEs. This is how the research was continuing even during the pandemic. Our PhD scholars perhaps did not attend labs with 100% strength, but they were all on campus and were attending labs alternatively. So COVID did not really affect the research ecosystem significantly. Research is one very beautiful area that can be resumed at any point of time after a break and, therefore, this was a very small impediment. We supported them by giving certain projects extended timelines for their completion.





5. What are some of the roadblocks in allowing students from viewing academia and research as viable career options and what does CSIR plan on doing in the near future to address those concerns?

We are already doing it. For example, once, our Prime Minister asked us a very valid question, "As scientists, to what extent will you stay connected with the student community of this country?" From then onwards, we started thinking out loud and adopted the concept of Atal Tinkering Labs, introduced by NITI Aayog. We are connecting with the Jigyasa programme (a student-scientist connect programme launched by the Central Government) which is exclusively meant for students, especially school children.

With the Atal Tinkering Labs, we are making the content of the labs available in the regional language and even for hearing-impaired children. Coming to skill development, the CSIR Skill Development programme is available for different age groups and different skill sets. We have skill training programmes for students who have cleared only Class X or who have dropped out of school.

This is how, at various levels including Class X, XII, diploma holders, degree holders, postgraduates, PhD students, professionals, companies, and at different levels of industry employees, we are customising our skill development training programmes. We make sure that at every age group there is a pathway by means of which science and technology can offer technical solutions to humans for our day-to-day requirements.

6. What are some recent examples of cutting-edge research that CSIR is currently working on? Aroma Mission — this is a major mission we have going and it is a floriculture mission. PM

Modi has stressed the second Sustainable Development Goal — zero hunger. This means that we have to increase, in fact, double the incomes of farmers. We have taken that point very seriously. A few of our Biology and Botany-related research laboratories, like CSIR-Institute of Himalayan Bioresource Technology (CSIR-IHBT) in Himachal Pradesh, CSIR – National Botanical Research Institute (NBRI) in Lucknow and CSIR-North East Institute of Science





and Technology (NEIST) in Assam, are coming up with a special variety of plants to maximise cultivation, plantation, maintenance, harvesting, post harvesting, production and the final product until it reaches the market.

Let me give you an example. The marigold plant — we don't just stop at developing a new variety of plant. We are calling this the 'Golden Revolution'. We provide farmers and their families — this includes more than 5,000 families — hands-on training on growing the new variety. More than 7,000 people have benefitted and several thousand hectares of this new variety of marigold have been planted. The same has been done for lavender, hailing it the 'Purple Revolution'. We go one step ahead after the cultivation of the crop and we have offered them steam distillation-drive oil extraction technology and have also supplied them with oil extraction units. The farmers are selling oils extracted from the marigold and lavender, and their income has also been boosted as a result.

The impact is really felt in lemongrass oil. In just the last year, India has exported 600 tons of lemongrass oil. In a way, we have made history through the Aroma Mission development. Looking ahead, we are coming up with special varieties of a virus-free root apple. The chilling time for the product has been reduced from 1,100 hours to 400 hours. In fact, we have introduced this special variety of apple, called Anna, even in the North East. Can you imagine apples in the North East?

The second important success story is the Steel Slag Road. Recently, CSIR-Central Road

Research Institute (CRRI) in Delhi came up with an alternative for natural aggregates to lay the roads. They developed technology through which steel industry waste, also known as steel slag, was used as an aggregate for the road. This was the road laid in the Mumbai-Vadodara highway. We have signed an agreement with the Border Research Organisation (BRO) and they are now extending it to Arunachal Pradesh. Just two weeks back, Honorable Minister of Science and Technology Dr Jitendra Singh flagged off the event which marked the transport of a large number of trucks carrying the steel slag aggregates from Jamshedpur to Arunachal Pradesh for road laying.





7. As a woman researcher yourself, what are some plans specifically catered to boosting women in research?

The population of women in Research and Development (R&D) is increasing consistently. In some cases, we have more women researchers than men. In CSIR's PhD programme, the Academy of Scientific and Innovative Research (AcSIR), the number of women researchers has been increasing year-on-year. CSIR also runs undergraduate programmes, including one on Chemical and Electrochemical Engineering. Initially, we used to get only two or three girls among the 40 students for this programme and we only had one girls' hostel. Now, almost half of the students are girls and so we built another girls' hostel. In the coming years, you will see a higher number of women leaders. A minimum of six to seven CSIR laboratories have women directors and that's already about 15-20% of the 37 laboratories. Even in the CSIR headquarters, most of the divisions are headed by women leaders.

earlier conducted by the CSIR, what are some of the changes that have been introduced in the conduct of the exam?

8. The NTA has been conducting the UGC NET exam for a few years now. As it was

We always take utmost care in implementing any scheme or project and we have ensured we do it flawlessly. Some sort of normalisation is required. COVID has taught us a lot of lessons. Sometimes, the number of fellowships will increase, sometimes the frequency of the exam will increase and sometimes the fellowship amount will increase. We will eventually develop some sort of normalisation for this exam as well.









CSIR-NML

27th November, 2022



जवाहरलाल नेहरू ने 26 नवंबर, ने आइआइटी पटना और आइआइटी 1950 को इसे राष्ट्र को समर्पित (आइएसएम) धनबाद के साथ किया गया था . एमओय किया.

इसमें संयुक्त अनुसंधान एवं विकास परियोजनाओं पर मिलकर काम करने का निर्णय लिया गया. इसके तहत संयुक्त सेमिनार, सम्मेलन और कार्यशालाओं का आयोजन किया जायेगा. साथ ही

बीआर निझावन पुरस्कार, सर्वश्रेष्ठ संगोष्ठी वक्ता के लिए प्रो एसपी मेहरोत्रा उद्घाटन पुरस्कार, सर्वश्रेष्ठ इन-हाउस परियोजना लिए प्रो. शीलभद्र बनर्जी पुरस्कार करते मुख्य दिया गया . सर्वश्रेष्ठ कर्मचारी के लिए प्रो पी रामचंद्र राव पुरस्कार दिया गया . अतिथि

लिमिटेड, जेएम आइपी ओएल प्रौद्योगिकियों को औद्योगिक स्तर में काम करेगा. इसके लिए स्थायी किया. कहा कि भारत के शोधार्थियों छात्रों को बेहतर अध्ययन के लिए तथा दिवा एनविटेक, मुंबई जैसी को ग्रीन ऊर्जा पर गहराई से काम टेक्नोलॉजी विकसित करने पर जोर तक विकसित करने पर सहमति अत्याधुनिक उपकरण उपलब्ध हो सकेंगे. एनएमएल ने औद्योगिक जतायी. संस्थान इस्पात संयंत्रों से दिया जायेगा. मुख्य अतिथि के रूप इकाइयां शामिल रहीं. वेदांता प्राइवेट करने की जरूरत है. छोटे-छोटे में आइआइटी पटना के निदेशक शहरों में पर्यावरण प्रदुषण की कार्बन फुटप्रिंट और ग्रीनहाउस गैस संस्थानों के साथ भी हस्ताक्षर किये. लिमिटेड और सीएसआइआर-प्रोफेसर टीएन सिंह ने संबोधित समस्या गंभीर होती जा रही है. इनमें एनटीपीसी, वेदांता प्राइवेट उत्सर्जन को कम करने की दिशा एनएमएल ने प्रयोगशाला स्तर की



Prabhat Khabar



विज्ञान को बेहतर रूप से बढ़ा सकती हैं स्थानीय भाषाएं : प्रो . कलाइ सेल्वी



वैज्ञानिक तथा औद्योगिक •मैंने आरंभिक शिक्षा मातृभाषा कहानी, ड्रामा, पाठ आदि से प्रभावी बिज्ञान एक ऐसी विधा है, जिसे कभी भी (तमिल) में प्राप्त की है। मातृभाषा रूप से जनमानस तक विज्ञान की अनुसंधान परिषद किसी भी स्तर पर शुरू किया जाता है। उपलब्धियां पहुंचाई जा सकती हैं। में शिक्षा बेहतर पढ़ाई और व्यक्तित्व महिलाएं अपने काम के प्रति गंभीर सीएसआइआर) की पहली निर्माण में सहायक होती है। यहां •सीएसआइआर के 38 संस्थानों को और संवेदनशील होती हैं इसलिए महिला महानिदेशक, तैज्ञानिक तक कि नई राष्ट्रीय शिक्षा नीति पहली बार एक महिला संवालित कर इसमें कोई शक नहीं है कि एक तथा औद्योगिक अनुसंधान विभाग में भी मातभाषा में शिक्षण को रही है। कौन से ऐसे परिवर्तन वाहती महिला विज्ञान में न केवल प्रगति हैं, जिससे संगठन को अचिक प्रभावी डीएसआइआर) को सचिव प्राथमिकता दी जा रही है। स्थानीय कर सकती है बल्कि बेहतर रूप से भाषाओं में विज्ञान जनमानस तक प्रो. एन. कलइसेली का कहना है बनाया जा सकता है? उभर कर सामने आ सकती है। वर्तमान में प्रयोगशालाएं बेहतरीन आसानी से पहुंच सकता है। व्यक्ति कि विज्ञान मुलभूत रूप से समझने महत्वपूर्ण यह है कि हमें जितने काम कर रही हैं। मुझे लगता है कि अापने आल इंडिया रेडियो, आकाशवाणी अपनी मातभाषा में जब विज्ञान को की प्रक्रिया है। जितना अधिक आप पढ़ेगा तो उसे आसानी से समझ संसाधन मिलते हैं, हम उनका किस समेत कई पहिलक स्पीकिंग मंत पर प्रयोगशालाओं को जितना अधिक इसे समझ पाएंगे, उतना वेहतर प्रकार न्यायसंगत रूप से उपयोग शिरकत की है। इस प्रकार के संवाद को बेहतर वातावरण दिया जाएगा, वे में आएगा। तरीके से विज्ञान में आगे वढ़ सकते अप्रत में शोध एवं विकास पर जीडीपी कर पाते हैं। हम भारतीय संसाधनों विज्ञान से किस तरह जोड़ती हैं? उतना अधिक बेहतर प्रदर्शन करेंगी। हैं। इसलिए स्थानीय भाषाएं विज्ञान का एक प्रतिशत से भी कम हिस्सा खर्च के सदुपयोग की कला जानते हैं ●एफएम, आल इंडिया रेडियो उनको सफलता या असफलता दोनों और यदि शोध एवं विकास के लिए और ऐसे कई माध्यम विज्ञान के में उनके साथ खड़ी रहकर उन्हें होता है। क्या यह पर्याप्त है? को वेहतर रूप से वदा सकती हैं। •यह कहना तो उचित नहीं होगा आवंटित संसाधनों का विवेकसम्मत प्रचार-प्रसार में अहम भूमिका प्रभावी बनाना चाहती हूं। प्रो. एन. कलाइसेल्वी से रामांशी कि जीहीपी का एक प्रतिशत से भी ढंग से उपयोग किया जाए तो निभा सकते हैं। गुहिणी, घर में काम मिश्रा ने वातचीत की। उसके कुछ कम हिस्सा शोध एवं विकास के यकीनन बेहतर परिणाम प्राप्त किए करने वाले, गाडी चला रहे व्यक्ति, अंश... लिए पर्याप्त है, लेकिन इससे ज्यादा जा सकते हैं। बच्चे, बुढ़े, सार्वजनिक स्थानों या

विकित्सा व इंजीनियरिंग की पढ़ाई हिंदी एक महिला के रूप में प्रयोगशालाओं के जगह रेडियो सना जाता है। ऐसे में में शुरू की गई है। क्या क्षेत्रीय भाषाओं में विज्ञान पर कोई कार्यक्रम, वैज्ञानिक संचालन और समन्वय पर क्या कहेंगी? विज्ञान भी पढाया जा सकता है?



Published in:

Lucknow Jagran





SMVDU & Microbiologists Society India (MSI) Hosts World Antimicrobial Awareness Week-2022



29th November, 2022

Researchers of Molecular Biology Lab, School of Biotechnology, SMVD University organised an awareness campaign on "World Antimicrobial Awareness Week-2022" as part of awareness initiative taken by WHO to combat antimicrobial resistance. The weeklong activities at SMVDU kicked off on Friday 18th November with an informative talk on "How to Prevent AMR" delivered by Dr. Shafaq Rasool. Other activities were planned by researchers of Molecular Biology Lab, in which Rabiya Tabbassum, Mansavi Bhardwaj and Swadha Kailoo educated people about the misuse of antibiotics. An awareness lecture was delivered by Dr. Shafaq Rasool on "Understanding and Preventing Antimicrobial Resistance" to the students and staff members of DPS-Katra on 23 November 2022. Sh. Amit Bhasin, JKPS SSP Katra, also attended this session and found this lecture quite interesting. Also, Dr. Rasool delivered a talk on the "Misuse of Antibiotics" at the Government High School-Sirah-Kakryal on 24th November, 2022.A talk by Dr. Avisek Mahapa, Senior Scientist, Infectious Diseases Division CSIR-IIIM Jammu was planned for the students of School of Biotechnology on the 24th November, 2022.



An informative talk on "Antimicrobial Resistant: Past, Present & Future" was delivered by the expert to make students understand the impact of antimicrobial resistance in treating these bacterial infections. A week-long survey was also conducted in the form of a questionnaire to understand the awareness of people regarding antibiotics. Dr. Shafaq Rasool, Coordinator, thanked Microbiologists Society India (MSI) especially Prof. Arvind Deshmukh President MSI. She also expressed her thanks to SMVDU adminstration for making this event a success. Published in:

Boldnewsonline





Hyderabad: NGRI researchers find platinum reserves in Karnataka gold mine



29th November, 2022

HYDERABAD: City-based National Geophysical Research Institute (NGRI) researchers have found platinum reserves at Hutti underground gold mines in Karnataka. Another rare mineral, Skaergaardite, was also discovered. Researchers said the reserves were yet to be quantified, and this is the first report of platinum and Skaergaardite at Hutti, India's only functional gold mine. The mines were under the Nizam's control as they lied in the erstwhile Hyderabad Deccan state between 1887 and 1947. They suggested further studies. Apart from platinum, the palladium part of Skaargaardite is more valuable than gold.

A research paper 'The Occurrence of Platinum (Pt) and Skaergaardite (Pd Cu) in the Hutti

Underground Gold Mines, Eastern Dharwar Craton, Karnataka, India' was published in the Geological Society of India journal recent edition by researchers PV Sunder Raju of NGRI and Prabhakar Sangurmath of Hutti Gold Mines. The researchers said commercial exploration could be done after more studies.

"We used powder X-ray diffraction technique facility at NGRI to report the occurrence of platinum and Skaergaardite in Hutti underground mines. We used a quartz-bearing sample from the Hutti mines. The quartz samples are found to be associated with intense chemical alterations. Both Skaergaardite and platinum occurrence were revealed in the study. Further research is planned on this mineral association with primary gold ore in Hutti mine," Sunder Raju told TOI. NASA Mars mission 2020 Perseverance utilises powder XRD to understand the chemical composition of materials. The presence of Skaergaardite was first reported in the Skaergaard intrusion of Kangerdlugssuaq area, Greenland (Denmark). "The occurrence of native platinum and Skaergaardite in quartz associated with copper sulphides is reported for the first time from Hutti mines," Sunder Raju said.

Published in:

Times Of India





Hyderabad: Two-day IICT, Royal Melbourne Institute joint workshop

commences



28th November, 2022

Hyderabad: A two day workshop 'Creating Profound Impact through Multidisciplinary Collaborations (CPIMC-2022)' commenced at CSIR-Indian Institute of Chemical Technology (IICT) on Monday

The workshop is part of the Royal Melbourne Institute of Technology (RMIT), Australia, and IICT joint collaboration programme. Speaking on the occasion, Chief Guest, Prof. Goverdhan Mehta, UoH, said the association between RMIT and IICT must venture towards multi-institutional and multinational cooperation.

Prof. Calum J Drummond, Deputy Vice-Chancellor, RMIT University, Australia, said working with industry is the core idea of RMIT, which is similar to the central theme of CSIR. "Conduct of research is essential but it must benefit beyond and bring about economic utility, he said.

Prof. Suresh K. Bhargava, Organizing Chair, Dean, RMIT University, Australia, on the occasion said the collaboration between the two institutes has been built on trust and mutual benefit. He also indicated that efforts will be made to extend this collaboration between Australia, India, Japan, and the United States.

Dr D Srinivasa Reddy, Director, CSIR-IICT and Programme Convener, said "IICT and RMIT have been cherishing well established cooperation in terms of research and academic programs as well as cultural exchange.

As a part of this program, we made a big progress with 33 Indian research scholars awarded Ph.D., more students enrolling for the sandwich programme, 150 research papers published in international journals, 50 articles in various conference proceedings, and a few patents filed





too." He said identifying new research areas and visit of post-doctoral students and faculty between the institutes can be the future step in the international collaboration.

While presenting the overview of the workshop, Dr. S. Sridhar, Chief Scientist of CSIR-IICT, said the present programme is the second workshop held at CSIR-IICT, while the first one was held in 2018.



Telangana Today

CSIR-IICT

26th November, 2022

Gudimalkapur market biogas plant ready for launch

CITY BUREAU

Hyderabad

A biogas plant of 5 tonnes per day capacity at Gudimalkapur vegetable market, developed by the Department of Agricultural Marketing in association with the city-based Indian Institute of Chemical Technology (IICT), will be commissioned in the coming days. "The aim of this plant is to treat 5 tonnes per day of market vegetable waste for the generation of biogasbased electricity and biomanure. The biogas-based electricity can be utilised as off-grid power in the market," Dr D Srinivasa Reddy, Director, IICT, said. Three plants of 500 kg/day capacThe plant will treat five tonnes/day of vegetable waste for

the farmers who sell their produce in the market, according to a press release. In its endeavour to convert waste to wealth, IICT has developed and patented a high-rate bio-methanation technology based on 'Anaerobic Gas lift Reactor, for the generation of methane-rich biogas and nutrient-rich bio manure. The Department of Biotechnology has sanctioned installation of biogas plants of various capacities (500 kg/day and 5 ton/day)in the vegetable market yards of Telangana operated by Department of Agriculture Marketing. IICT, the technology provider, and the Dept of Agri Marketing started the plant in 2020.

generation of biogas-based electricity, biomanure

ity at Erragadda, Batasingaram and Kukatpally vegetable market yards have already been installed and operated for the generation of biogas and bio manure from market vegetable waste. The biogas generated from these plants is utilized to replace LPG consumption in the departmental canteen while the bio manure is used as fertilizer by

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CSIR-CSMCRI

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be the answer to many problems if seaweed is cultivated scientifically. Currently, the potential of seaweed is highly under utilized in India that produces only 0.01 per cent seaweed of total global production. According to the scientists at Bhavnagar-based Central Salt & Marine Chemicals Research Institute (CSMCRI), the various varieties of seaweed available in Gujarat coast can be used in generating organic fertilizer, making petfood and pharmaceutical items, and cosmetic products. CSMCRI has recently set up a research and

Seaweed can be used in making organic fertilizer, manufacturing pet food and pharma products

nar village in Talaja taluka. The centre is a joint collaborative project named 'Technology assessment for edible seaweed production and seedling production' by CSMCRI and Indian Centre for Climate and Societal Imby Technology Information Forecasting and Assessment Council (TIFAC).

A presentation prepared by CSMCRI shows India's current cultivation of seaweed is around 1,500 tonne but it has potential to cultivate 5 tics, toothpaste, pet food, etc. CSMCRI director Dr Kannan Srinivasan said, "This unique facility is the firstever scientific effort to evaluate the performance of a scientifically designed, state-ofthe-art facility in the country based on tank cultivation of seaweeds."

This centre will research on various cultivation technology and will work on the process to extract sap(used in making organic fertilizer) and carrageenan (used in fo-

development centre for two pact Research (ICCSIR). The lakh tonne. In agriculture, od processing, pharma inspecies of seaweed at Man- project has been sanctioned only the seaweed could incre- dustry) from seaweed.

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