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In The News

Hon'ble S&T Minister Launches Aerial Delivery of COVID-19 Vaccine through Octacopter Drones in Jammu



Image courtesy: PIB

To facilitate the provision of COVID vaccines, food, emergency medicines, etc. in the remote corners, CSIR-NAL (National Aerospace Laboratories), Bengaluru, has indigenously developed a drone-driven aerial delivery facility "Octacopter" with a 15-kg payload capacity. Dr Jitendra Singh, Union Minister of State (Independent Charge) for Science & Technology and Earth Sciences launched the

drone-driven aerial delivery facility to transport COVID-19 vaccines on 27 November 2021 in Jammu.

The drone took off on its air journey from the CSIR-Indian Institute of Integrative Medicine (IIIM), Jammu to the Government Sub-District Hospital, Marh, Jammu and delivered the vaccines within 20 minutes. CSIR-NAL has developed

a medium-class BVLOS (Beyond Visual Line of Sight) multi-copter Unmanned Aerial Vehicle (UAV) made of lightweight carbon fibre foldable structure for ease of transportation. It has special features like digital Autopilot with advanced flight instrumentation systems. The Ministry of Civil Aviation, GOI granted conditional permission

to CSIR-NAL for conducting BVLOS flight trials on 13 September 2021.

During the occasion, Dr Jitendra Singh said that the Octacopter drones developed by CSIR-NAL for medical supply delivery will help in better resource management of limited supplies and also facilitate remote and difficult areas with just-in-time delivery.

Dr Jitendra Singh Launches India's First Virtual Science Lab for Children



Image courtesy: PIB

The Hon'ble Minister also said that the new facility will immensely benefit students from Kendriya Vidyalayas, Navodaya Vidyalayas, and Government schools.

To promote scientific temperament among school students and inculcate an enthusiasm for learning through an online interactive mode, the Council of Scientific and Industrial Research (CSIR) in collaboration with IIT (Indian Institute of Technology) Bombay, is developing a Virtual Lab platform under the CSIR Jigyasa programme, India's first Virtual Science Lab.

Dr Jitendra Singh, Union Minister of State (Independent Charge) for Science & Technology and Earth Sciences launched the Virtual Science Lab for students from VI to XII standard on 22 November 2021. The programme will build a connection between students and scientists across the nation providing them with quality research exposure and innovative teaching methods.

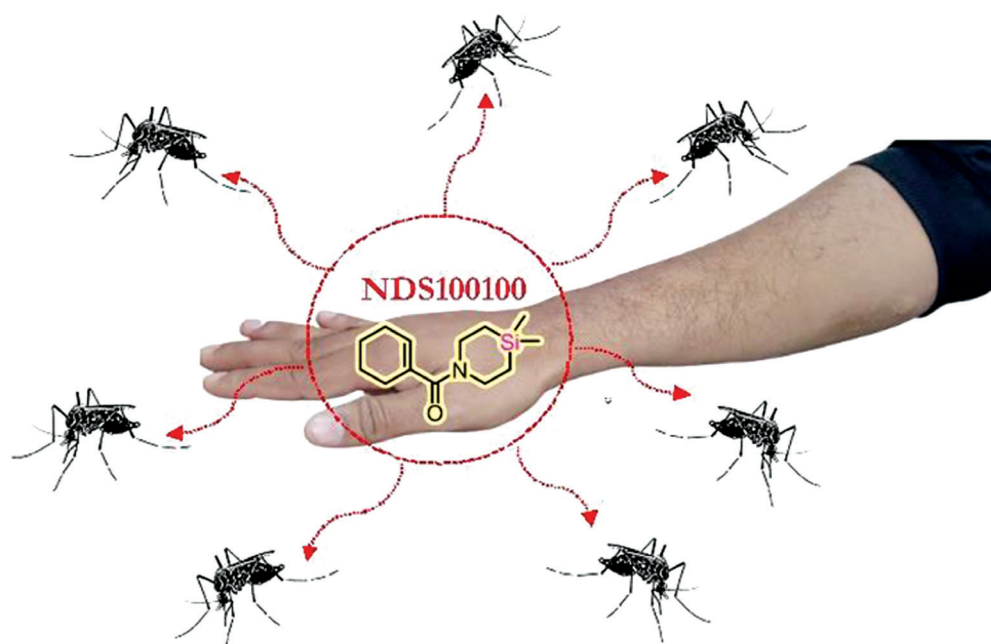
Speaking on the occasion, Dr Jitendra Singh said that the programme ties up with the National Education Policy (NEP), where students can pick any subject and the concept of streams has been disbanded. The Hon'ble Minister also said that the new

facility will immensely benefit students from Kendriya Vidyalayas, Navodaya Vidyalayas, and Government schools.

Recalling last year's CSIR Society meeting, Dr Jitendra Singh highlighted that the Hon'ble Prime Minister Shri Narendra Modi had also appreciated Jigyasa — the Scientist-Student Connect programme of CSIR. He emphasised the significance of creating virtual labs in the country. Thereafter, CSIR had partnered with IIT Bombay to launch India's first Virtual Lab platform under the CSIR Jigyasa programme, facilitating students with lab research exposure beyond classroom learning. Initially, the content will be in English language which will later be provided in other languages too.

Apart from providing curiosity-quality research exposure and facilitating digital pedagogical methods, the virtual labs would provide a virtual tour of CSIR laboratories and expose the students to research infrastructure which would have been difficult otherwise. The platform will also open opportunities for students to seek inputs from scientists.

Novel Mosquito Repelling Molecule Identified by CSIR Team



Novel Mosquito Repellent

A team of researchers from CSIR-National Chemical Laboratory (CSIR-NCL), Pune, has synthesised a potent molecule that helps repel adult females of *Aedes aegypti* mosquitoes. These mosquitoes are vectors of several debilitating and often fatal diseases such as dengue and chikungunya and are also vectors of the Zika virus. During the Coronavirus pandemic, several states in India reported an alarming increase in dengue, chikungunya, and Zika virus cases, putting an additional burden on already stretched medical facilities due to COVID-19.

A research team led by Dr D.S. Reddy (who is currently Director of CSIR-Indian Institute of Integrative Medicine, Jammu) used the “silicon switch” approach to synthesise a library of compounds based on the DEET

scaffold, which is today’s gold standard for insect repellents. Out of the 25 compounds synthesised, one of the molecules (NDS100100) offered a longer protection time than DEET (N, N-Diethyl-meta-toluamide), suggesting that incorporation of silicon improves efficacy. Results of this exciting study have been published in the journal ACS Omega (<https://doi.org/10.1021/acsomega.1c04961>).

The lead authors of the paper, Dr Sen and Dr Reddy are confident about the prospects. However, the identified molecule needs to undergo several studies, including long-term safety assessment, before it reaches the market. Discussions are on with some leading companies to take forward this insect repellent molecule for further studies towards commercialisation.

A research team used the “silicon switch” approach to synthesise a library of compounds based on the DEET scaffold, which is today’s gold standard for insect repellents.

Genetic Diversity Maintained even after Long-term Captive Breeding of Endangered Pygmy Hog



CSIR-CCMB-LaCONES and Pygmy Hog Conservation Programme collaborated to examine the reproductive and genetic fitness of these captive-bred individuals.

Pygmy hogs are one of the rare and endangered animals listed by the International Union for the Conservation of Nature (IUCN) and the Indian Wildlife Protection Act. The present population, including reintroduced animals, is estimated to be less than 300 in wild. The original population, which became restricted to a single locality, the Manas National Park in Assam, India, may number lesser than 50.

Efforts to save this species from extinction includes the protection of its only habitat and by breeding the animals in captivity. These are undertaken by the Pygmy Hog Conservation Program (PHCP), a collaborative project with Durrell Wildlife Conservation Trust, IUCN/SSC Wild Pig Specialist Group, Forest Department, Government of Assam, the Ministry of Environment

and Forests, Government of India, EcoSystems-India and Aaranyak as the key partners.

Since 1996, over 500 individuals have been bred successfully and 142 captive-born individuals have been released into the wild as part of the conservation programme. However, all these captive individuals were offspring of 7 wild-caught individuals. One of the major challenges of the long-term captive breeding programme is to maintain genetic diversity within a population, over several generations. The loss of genetic diversity could arise from inbreeding due to mating between related individuals within a population, established with very few founders.

CSIR-CCMB-LaCONES (Laboratory for Conservation of Endangered Species) and Pygmy Hog Conservation Programme collaborated to examine the reproductive and genetic fitness of these captive-bred individuals. The research group headed by Dr G. Umaphathy at CSIR-CCMB LaCONES studied genetic changes in 36 captive-bred pygmy hogs over time across eight consecutive generations. They also tested the association between genetic diversity and reproductive success to account for any fitness loss.

The study found no overall signs of genetic inbreeding between individuals across different generations. “This is possible due to strict scientific conservation breeding protocol by the programme. They had carefully selected mating pairs that share the lowest kinship between them. But the recent generations show slightly increased relatedness. So, we recommend the

introduction of a few wild individuals to the breeding pool,” said Dr Umapathy.

“We carefully selected unrelated mates and bred them in separate family lines. We are glad that this study has provided evidence that it is possible to avoid genetic inbreeding in a small captive population even if the founder population is very small if the strict protocol is followed year after year”, mentioned Dr Goutam Narayan of PHCP and EcoSystems-India.

“This is the first such study on Indian animals to understand the genetic effect of long-term captive breeding of

endangered animals. The outcomes of the study will guide the management and optimisation of the breeding protocol in PHCP and other similar conservation breeding programmes,” said Dr Vinay K Nandicoori, Director, CSIR-CCMB.

Reference

Purohit D, Manu S, Ram MS, Sharma S, Patnaik HC, Deka PJ, Narayan G, Umapathy G. 2021. Genetic effects of long-term captive breeding on the endangered pygmy hog. *PeerJ* 9:e12212 <http://doi.org/10.7717/peerj.12212>.



Scarcity of Iron, Puffing Hot Iron in the Arabian Sea and Geoengineering Climate Change

As part of the GEOTRACES-INDIA initiative, a major oceanographic programme supported by the Ministry of Earth Sciences, Govt of India relating to dissolved iron cycling in the Arabian Sea and subtropical gyre region of the Indian Ocean has been studied. The study has made several breakthroughs in the field of micronutrients and traces metal biogeochemistry in the Northern Indian Ocean, particularly in the Arabian Sea region.

Iron is an essential micronutrient for microorganisms in seawater and its scanty availability limits primary production in almost ~30% of the global ocean including part of the Arabian Sea. Iron is required by phytoplankton and plants to transfer electrons during photosynthesis, to make chlorophyll and to utilise macronutrients such as nitrogen.

Iron is so meagre in the ocean that even a bit of rust from the iron-made ships in the ocean throws measurements significantly off. To avoid any such

contaminations, scientists sampled the seawater with specially designed and installed metal-free sampling gear and processed seawater samples in metal-free clean laboratory installed onboard an ocean research vessel. The instruments used to detect iron onboard or at the shore-based laboratory are highly sensitive to minor fluctuations of the order of nano-molar in seawater.

The new study published in the *Geochimica et Cosmochimica Acta* (Chinni and Singh, 2022) journal highlights the discovery of very high dissolved iron concentrations emanating from the hydrothermal vents in the water column over the Carlsberg Ridge in the Southern Arabian Sea that can be a hotspot for other trace metals too. It is surprising to observe hydrothermal sourced iron in the shallow water depth.

Another very important finding of this study is the dominant supply of dissolved iron from the continental shelf/slope sediments in the Arabian Sea region while atmospheric soluble iron

The study has made several breakthroughs in the field of micronutrients and traces metal biogeochemistry in the Northern Indian Ocean, particularly in the Arabian Sea region.

Geoengineering such as iron seeding in the Arabian Sea will enhance biological productivity leading to an increase in fish production thereby stimulating the fishery-based economy.

dust flux plays a secondary role, which was considered the main source of iron prior to this study. Perennial oxygen-deficient intermediate waters of the Arabian Sea source a significant amount of iron.

Dissolved iron in the Arabian Sea supplied by various sources is getting removed equally by biotic and abiotic removal processes. The integrated dissolved iron in the sun-lit region is double in the Arabian Sea compared to the subtropical Indian Ocean which is responsible for the higher primary productivity in the Arabian Sea.

This study reveals that a large part of the Arabian Sea in the south and the northwest are iron deficient leading to lower productivity. The intrusion of Southern Ocean waters and upwelling of iron deficient deep water alongside the Murray Ridge both likely cause iron limitation in the Arabian Sea.

In the current alarming situation of global warming and climate change, the scientific results provide a solution to mitigate the abundance of the greenhouse gas CO_2 . The findings suggest that

seeding the iron deficit waters of the Arabian Sea with an ample amount of iron can enhance the biological pump and can increase the capacity to sequester atmospheric CO_2 through primary production (conversion of atmospheric CO_2 to organic carbon). This process will diminish the atmospheric CO_2 levels introduced into the biosphere by anthropogenic activities which will also take care of the ocean acidification problem.

If this climate change problem is left unattended, a decrease in pH of the surface oceans will lead to ocean acidification. Geoengineering such as iron seeding in the Arabian Sea will enhance biological productivity leading to an increase in fish production thereby stimulating the fishery-based economy of almost ~14 million dependent people.

Reference

Chinni Venkatesh and Singh Sunil Kumar (2022) Dissolved iron cycling in the Arabian Sea and sub-tropical gyre region of the Indian Ocean, *Geochimica et Cosmochimica Acta* 317, 325-348.

Conference/Workshop/Seminar

CSIR-NIScPR Organises Two-day National Conference on 'Indian Independence Movement & the Role of Science'

CSIR-National Institute of Science Communication & Policy Research (CSIR-NIScPR), New Delhi, in association with Vigyan Prasar (DST) and Vijnana Bharati (VIBHA), organised a two-day National Conference at CSIR-NPL (CSIR-National Physical

Laboratory) auditorium, New Delhi, on the theme 'Indian Independence Movement & the Role of Science' on 29 and 30 November 2021 in hybrid mode. It was a part of the year-long celebrations organised to mark the Azadi ka Amrit Mahotsav (75th year

Celebrating the 75th Year of Indian Independence

NATIONAL CONFERENCE OF
SCIENCE COMMUNICATORS
& SCIENCE TEACHERS

Indian Independence Movement & the Role of Science

NOVEMBER 29-30, 2021
CSIR-NIScPR, NEW DELHI



"Science and scientists have not only played a vital role in the freedom struggle but have also enabled us to sustain it for the past 75 years," said Hon'ble Dr Jitendra Singh.

of India's Independence). Dr Jitendra Singh, Union Minister of S&T was the chief guest at the National Conference.

The conference had three plenary sessions and six technical sessions. Experts, scientists, educationists, and science communicators shared their views. In various sessions, 41 presenters presented their papers which were related to the theme of particular technical sessions. These presentations were in various formats such as poetry, documentary, science cartoon, etc.

Addressing the gathering Dr Jitendra Singh said, "Science and scientists have not only played a vital role in the freedom struggle but have also enabled us to sustain it for the past 75 years. Their stand against the discriminatory attitude

of the Britishers gave a new dimension to our freedom fight. The brainstorming sessions here will certainly inculcate new patriotic and scientific values in the society."

During her welcome address, Prof. Ranjana Aggarwal, Director, CSIR-NIScPR, briefed about the objectives of the national conference in connecting the communicators and the teachers with the role of scientists and the scientific institutes during the time of India's Independence. She emphasised the need for introducing the profile of such unsung heroes in the school textbooks.

Speaking on the event, Dr Rajesh Kotecha, Secretary, Ministry of AYUSH asserted that Ayurveda was well practised



by our ancestors in India. The treatment aims at addressing the root cause of the disease, rather than controlling the ailment. Further, he added that during the colonial rule, the Western scientific fraternity tried to suppress our scientists and the Ayurvedic mode of treatment, but could not succeed. We need to change the narratives around our indigenous knowledge.

In his presidential address, Dr Shekhar C. Mande, Director-General, CSIR & Secretary, Ministry of Science & Technology said, “We as a scientific community should celebrate science and express that Indian Scientists played an important role in the freedom movement. The World tried to suppress it in the past but now they are taking note of Indian science contribution.

Some unsung heroes of science during Indian independence movement days also include Dr Sambhu Nath Dey and Dr Sankar Aabhajee”.

Dr Anil Kothari, DG, MPCST, chaired the first Plenary session wherein he emphasised upon the lack of knowledge about the contribution of science among common people in the independence movement.

Deliberating on the topic, Dr Nakul Parashar, Director, Vigyan Prasara deliberating said that the historical aspects need to be conveyed to the laymen through all means of media as common people have very little knowledge about the role of scientists in the independence movement. The background role played by scientists in coming out of colonial discrimination and setting up a scientific mindset is substantial and they have contributed majorly in science communication and shaping up of the nation post-independence.

Prof. B.N. Jagtap, Professor, Department of Physics, IIT Bombay mentioned that science was taken as an instrument for development, awakening and freedom during the independence movement. “We need to reflect on the contributions of our scientists,” added Prof. Jagtap. He said that it was a challenging job to do science during the colonial period. Our scientists have created many institutions during adverse times and they were very visionary as they could sense the future needs.

Prof. Jagadeesh Kumar, Vice-Chancellor, Jawaharlal Nehru University, delivered an insightful lecture in the valedictory session of the conference. He said that conducting a national programme on such a unique subject by the scientific institutions is highly commendable.

The programme had an outreach lecture on India International Science



Festival 2021 (IISF 2021) by Shri Jayant Sahasrabudhe, National Organising Secretary, Vijnana Bharati who said that Indian scientists had faced discrimination and they did Satyagraha during the colonial period. Despite those unfavourable and adverse circumstances, they did not stop doing scientific research and encouraging fellow scientists. And on that foundation and legacy, our modern Indian science is

flourishing. He added that the Azadi ka Amrit Mahotsav gives us an opportunity to remember those unsung heroes of Indian science.

Dr Mohammad Rais, Chief Scientist, CSIR-NIScPR, proposed the vote of thanks and said that the two-day conference was a tribute to the unsung scientists, who have been not frequently referred to or acknowledged.



OMICS-2021 Deliberates on Omics Technologies in Modern Biology

CSIR-Centre for Cellular and Molecular Biology (CCMB), Hyderabad, with Proteomics Society of India (PSI) co-organised OMICS-2021, an international meeting themed on omics redefining modern biology. The meeting was organised on the occasion of PSI's 13th annual meeting from 21-23 October 2021. The meeting discusses tools in genomics, transcriptomics, proteomics, lipidomics, metabolomics to study genomes, RNA, protein, lipid and metabolite expression profiles on a large scale.

These technologies aid life scientists to address finer details of a living cell's structure and functioning. This has promising applications in healthcare, agriculture and animal biotechnology. The meeting brought together 35 subject experts across 8 countries from academia and industry, and around 300 attendees over three days.

The international meeting was preceded by an Education Day. In a day-long exercise, experts conducted educational lecture series and demonstrated experimental setup and analyses for students and research scholars from various research institutes and universities of India. "PSI has

always prioritised education of young scientists in India to keep them updated with the fast-evolving technologies in the field of proteomics," remarked Dr Subhra Chakraborty, President, PSI. The meeting organisers also developed a series of podcasts for the general public to appreciate the power of omics technologies.

"India is well-beyond its infancy in its capabilities in various omics technologies. The number of facilities and trained human resources in the country has grown manifold in the last two decades. It is now collaborating with international projects such as Human Proteome Project. The coming years will be an exciting time to be in the field," said Dr Swasti Raychaudhuri, Convenor of OMICS-2021 and Principal Scientist, CSIR-CCMB.

"The Proteomics Society of India was formed and the first meeting had happened at CSIR-CCMB, 13 years back. It is a great pleasure for us to host the meeting and bring international experts together on one platform again this year," said Dr Vinay K Nandicoori, Director, CSIR-CCMB.

"India is well-beyond its infancy in its capabilities in various omics technologies. The number of facilities and trained human resources in the country has grown manifold in the last two decades,"

said Dr Swasti Raychaudhuri.

CSIR-CCMB Celebrates 34 years of its Foundation



Dr Vinay Nandicoori said, "In the coming years, we expect to see a lot of rigorous fundamental science coming from our scientists."

The CSIR-Centre for Cellular and Molecular Biology (CSIR-CCMB), Hyderabad, celebrated its 34th Foundation Day on 26 November 2021. This day commemorates the day its first independent campus was set up, which is called the CCMB main campus now, at Habsiguda.

CCMB celebrated the day with multiple activities for its students, staff and public. This included its research scholars presenting their work. The Foundation Day lecture, open for all, was delivered by Dr Shekhar C. Mande, Director-General, CSIR. Dr Mande is a biophysics expert, and in his talk spoke of how scientists understand structures of protein complexes and their functions — a field where a large amount of biological data is generated. The same is true for those unravelling genomes of different living organisms.

He said that the next big question lies in finding meaningful inferences from these large datasets. "Big data analytics remain largely untapped in life sciences to address fundamental questions like how genes are regulated. They define differences between different organisms. They are also extremely important for the pharma and life science industry.

Premier life science research institutes like CCMB must address them," said Dr Mande.

The day ended with a flute recital by Pandit Ronu Majumdar, an exponent from Maihar Gharana of Hindustani classical music. "Art and science stem from the common motivation of creativity. Like scientists, we create music on an empty canvas," said Pt Majumdar. The recital followed a discussion with the artists on their traditions and practices in the music community. To summarise Pt Majumdar said, "Perform for the love of the subject and not expecting returns and rewards. When one studies any subject deeply, their place is never insecure."

In the Director's address, Dr Vinay Nandicoori said, "In the coming years, we expect to see a lot of rigorous fundamental science coming from our scientists. CCMB is uniquely placed with its deep expertise in basic science as well as being in an ecosystem that facilitates the translation of our findings. We will take advantage of this position to make a stronger impact on society. Our contributions during COVID-19 have already paved the way."

Events

CSIR-NCL Celebrates Open Day



The virtual Open Day in progress

CSIR-National Chemical Laboratory (CSIR-NCL), Pune, celebrated an Open Day on 6 October 2021, to commemorate the 80th Foundation Day of CSIR. On this occasion, special talks by CSIR-NCL scientists were organised for the schools and undergraduate students under the CSIR Jigyasa Student-Scientist Connect programme.

In his welcome remarks, Dr Ashish Lele, Director, CSIR-NCL, shared anecdotes on the formation of the CSIR and its constituent laboratories and informed about the crucial role played by the legendary scientists and leaders at that time. Earlier, Dr Wafia Masih, Coordinator of the programme, welcomed the speakers and the audience. She also introduced the speakers to the participants and

moderated the programme.

In the first talk, Dr Rakesh Joshi a Scientist from the Biochemical Sciences Division, rendered a special talk on 'Insect pest: Journey from friend to foe.' He revealed the impact of global warming and climate change on turning insects into pests. He discussed reports and literature that insects are feeding more and reproducing faster because of global warming. Due to this, insects are expanding into new geographic areas, resulting in agricultural productivity loss by excessive infestation or causing plant diseases outbreak.

He discussed the negative impact of excessive use of chemical insecticides on our life and the environment and emphasized that we have to come up with effective and eco-friendly

insecticides. He discussed his ongoing research at CSIR-NCL about using biological agents or natural molecules to control insect pest growth. Dr Joshi encouraged young students to study insects as they are causing crop damages, spreading diseases, but also serve as food sources for future generations.

Dr Anuya Nisal, a Scientist from the Polymer Science and Engineering

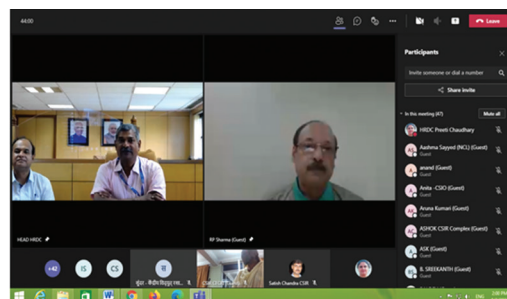
division, delivered the second talk on 'Silk: from textiles to medical applications.' She helped the students understand the term "SILK" and also correlated the chemical composition of silk to the properties of the silk material. Dr Nisal also shared some interesting work on silk that has been pursued at National Chemical Laboratory.

CSIR-HRDC Conducts Various Programmes

Programme on Noting, Drafting and Office Procedures

CSIR-HRDC (CSIR-Human Resource Development Centre), Ghaziabad, organised two (Half) days online programme on Noting, Drafting and Office Procedures during 2-3 September

2021. This programme covered the nuances of Offices Procedures related to CSIR, Noting and Drafting. The programme was attended by more than 150 participants across CSIR.



Young Scientist Awardees Conference



CSIR-HRDC organised the Young Scientist Awardees Conference on 27 September 2021 at CSIR-Science Centre, New Delhi. Seven young scientists were awarded the CSIR Young

scientists Award. Dr Divya Tej Sowpati (CSIR-CCMB) and Dr Rakesh Shamsunder Joshi (CSIR-NCL) in the field of Biological Sciences, Dr K Giribabu (CSIR-CECRI) in the field of Chemical Sciences, Dr Shilpi Kushwaha (CSIR-CSMCRI) in the field of Earth, Atmosphere, Ocean & Planetary Sciences, Dr Achu Chandran (CSIR-NIIST) and Dr Bhavya B Krishna (CSIR-IIP) in the field of Engineering Sciences.

Dr Shekhar C Mande, Secretary, DSIR and DG, CSIR, congratulated all the awardees for their achievements and gave the keynote address.



Prof. O.N. Srivastava Memorial Lecture

CSIR-HRDC organised an Online Lecture in the memory of Late Prof. Onkar Nath Srivastava on 29 September 2021. Prof. Srivastava was known as the Hydrogen Man of India, an eminent material physicist, and lifetime emeritus professor of BHU. Eminent speakers from other organisations also delivered the memorial lecture and paid tribute to Prof. O.N. Srivastava. Dr Sesha Srinivasan from Florida Polytechnic University, USA, Ms Shalini Srivastava, Prof. RS Tiwari, Dr Anant Prakash Pandey, Prof. Sterlin Hudson and Prof. R S Tiwari from BHU, Prof. Varsha Khare from Seoul National University, Prof. G D Varma, Department of Physics, IIT-Roorkee and Dr N P Lalla, Scientist H, UGC-DAE, Consortium for Scientific Research, Indore joined online and shared their memories of Prof. Srivastava. Dr Shobhna Choudhary gave the vote of thanks.



Induction Programme for Newly Recruited Scientists at CSIR-IHBT

Induction Programme for Newly Recruited Scientists was organised by CSIR-HRDC, Ghaziabad, during 23-29 October 2021. The programme was conducted at CSIR-IHBT, Palampur campus. The programme covered CSIR vision, mission, & culture of CSIR, National & global S&T and industrial scenario, Societal Application in S&T, IPR, Procurement, administrative matters, financial system of CSIR, preventive vigilance, Gender Sensitization, etc. The programme also included hands-on exercises, case studies, role plays, interactive sessions, laboratory and industry visits, etc.

Dr R K Sinha, Head CSIR-HRDC welcomed the participants and the dignitaries. Dr Sanjay Kumar, Director, CSIR-IHBT Palampur gave the opening remarks. Prof Sant Prakash Bansal,

VC, Central University of Himachal Pradesh joined online and gave the keynote address. Dr Sanjeev Khosla, Director, CSIR-IMTECH interacted with the participants. Participants got the chance to interact with Dr Anil Kumar Kruthiventi, Chief Scientific Officer of Arno Immuno Ingredients Pvt. Ltd. India. Brigadier AK Singh, Dy. GoC, Hotla Camp, Palampur, gave the sessions on Team Building and Group Dynamics.

Heads of many CSIR divisions also shared their knowledge and experiences with them and provided an overall view of the functioning of various divisions of CSIR. Dr AK Srivastava, Director, CSIR-AMPRI also interacted with participants and gave the valedictory address on Atmanirbhar Bharat-Materials Perspective.



Programme on Managerial Effectiveness for Technical Officers

CSIR-HRDC organised Three online Programmes on Managerial Effectiveness for Technical Officers during 27-29 October 2021.



Programme on Managerial Effectiveness for Technical Officers

27- 29 October, 2021
on
MS-Teams

Organized by :-
CSIR-HUMAN RESOURCE DEVELOPMENT CENTRE
GHAZIABAD

Visits

Visits of Dignitaries at CSIR-NIO

Visit of Royal Norwegian Consulate General and Delegation

The Norwegian Consul General in Mumbai Mr Arne Jan Flolo visited CSIR-NIO (CSIR-National Institute of Oceanography), Goa, along with his business delegation on 26 October 2021. The Norwegian delegation includes Dr Tone Helene Aarvik, Consul; Rahul Maheshwari, Advisor-Economic Affairs; and Ashok EATI, NB & CMC Manager, DNV, Mumbai.

Prof. Sunil Singh, Director, CSIR-NIO chaired the meeting. Dr Sanil

Kumar, Scientist G & Head, PME; Dr V.J. Loveson, Scientist G & Head, ISTAG and Dr Mangesh Gauns, Head Biological Oceanography Division attended the meeting.

The agenda for discussion included scope for Norwegian participation in mutually-interested projects, the status of existing projects/MoU with Norwegian institutions and identifying new projects for future collaboration.

Prof. Singh presented an overview

India and Norway have signed several MoUs including establishing the India Ocean Dialogue and Joint Task Force on Blue Economy.

of R&D fields of interest of CSIR-NIO. There were fruitful discussions on various aspects related to basic research and the blue economy.

Earlier, the Norwegian delegation led by Ms Ann Ollestad, former Consul General of Norway in Mumbai, visited the headquarters of CSIR-NIO in December 2017. Mr Flolo's visit was a continuation of the ongoing Indian and Norwegian dialogue on

collaborating on issues related to maritime cooperation, clean energy, and sustainable development. India and Norway have signed several MoUs including establishing the India Ocean Dialogue and Joint Task Force on Blue Economy.

The proposed meeting will, hopefully, serve as a step forward for more concrete actions in future collaboration between the two countries.



Visit of the First Secretary, Embassy of the Dominican Republic



The First Secretary and Head of cultural affairs of the Embassy of the Dominican Republic in India, Ms Ana Mercedes Ferrand Linares visited CSIR-NIO on 26 November 2021.

A discussion meeting was arranged with Prof. Sunil Singh Director, CSIR-NIO.

After narrating the expertise of CSIR-NIO in various R&D fields in oceanography, the discussion was focused on the mutual fields of research interest to both countries. Support to study coastal geomorphology and dynamics, marine ecosystem monitoring and restoration and coastal hydrological modelling were also discussed.

In continuation, a series of virtual meetings and visits are to be planned for more detailing scientific collaboration, leading to an MoU.

Visit of Dr Olivier Fudym, Attaché for Scientific and Academic Cooperation for West India at the Embassy of France/French Institute in India

India and France share common interests in the field of Marine sciences-blue economy, ocean exploration, monitoring of oceans and the sustainability of coastal ecosystems. In this connection, Dr Olivier Fudym, the Attaché for Scientific and Academic Cooperation for West India at the Embassy of France/French Institute in India, visited the CSIR-National Institute of Oceanography, India, Goa, on 6 December 2021.

Professor Sunil Singh outlined the earlier and ongoing scientific collaborations with France with CSIR-NIO. He gave an insight into the mutual research work and database modelling on hydrothermal studies in mid-oceanic ridges during the last several years.

It was agreed to move forward to strengthen the scientific collaboration in bio-geochemistry, gas hydrates and ecological conservation studies. To follow-up, several online meetings are proposed in the coming days.



Awards

CSIR-NCL wins CII Award for Best Patents Portfolio

CSIR-National Chemical Laboratory (CSIR-NCL), Pune, has been announced as the inaugural winner of the Best Patents Portfolio Award in the Research & Development institutions category at the 7th CII Industrial Intellectual Property Awards 2021 instituted by the Confederation of Indian Industries.

CII Industrial Intellectual Property Awards aim to recognise and celebrate

organisations that have embraced IP generation and protection to fuel business and economic growth. The jury for these awards included eminent professionals from industry, academia, government including experts on intellectual property and innovation promotion. The selection process involved evaluating organisations rigorously against multiple parameters



Professor Sunil Singh gave an insight into the mutual research work and database modelling on hydrothermal studies in mid-oceanic ridges during the last several years.



"NCL

has a long tradition of contributing to the development of Indian industry via knowledge exchange and innovative technology development.

NCL has also contributed to leadership on IP matters in the country, both in terms of thought leadership and trendsetting inventions," said Dr Ashish Lele.

The award was announced in a virtual programme

reflecting their inventive capacity, processes, and achievements over the last several years. This was the first time that CII decided to announce an award in the category of Research & Development Institutions. Other winners for patent portfolios in other categories include TCS, IOCL, UPL, and IIT-Kharagpur.

Speaking on the occasion, Dr Ashish Lele, Director, CSIR-NCL, congratulated the inventors and innovation managers at CSIR-NCL and said, "CSIR-National Chemical Laboratory is happy to be recognised in the CII Industrial IP Awards 2021. NCL has a long tradition of contributing to

the development of Indian industry via knowledge exchange and innovative technology development. NCL has also contributed to leadership on IP matters in the country, both in terms of thought leadership and trendsetting inventions. We look forward to continuing to build an innovation economy for the Nation and path-breaking science-based solutions for the World."

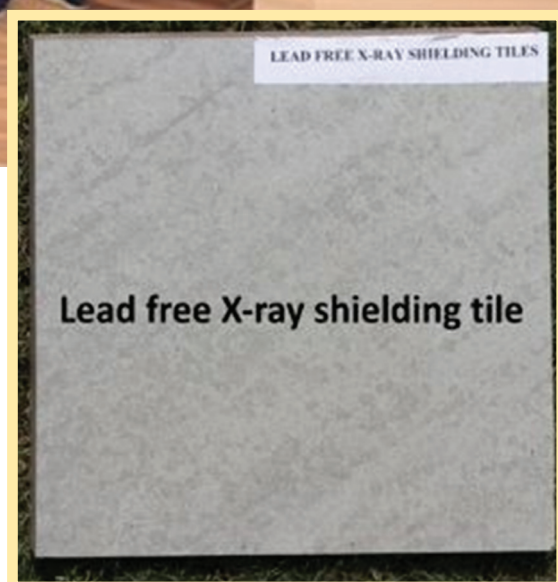
Previously in 2017, the inventive contributions of CSIR-NCL had helped Pune city secure a place in the top 100 inventive clusters of the world announced by the World IP Organisation.

National Award for CSIR-AMPRI

CSIR-Advanced Materials and Processes Research Institute (AMPRI), Bhopal, received the National Societal Innovation Award of the Year 2020 from National Research Development Corporation (an Enterprise of DSIR, Ministry of Science & Technology, Govt of India) for their

invention entitled "Lead-Free X-ray Shielding Red Mud Tiles".

Dr Avanish Kumar Srivastava, Director, CSIR-AMPRI, informed that the institute has been working on the conversion of various industrial waste into value-added products. In this



invention, CSIR-AMPRI has converted hazardous red mud, which is an alumina industrial waste, into X-ray shielding tiles as an alternative to toxic lead. The 12 mm thick tiles developed by CSIR-AMPRI can be used to replace the 2mm thick toxic lead or its equivalent, which are currently used to make X-ray shielding walls, floor, ceiling, door and windows of X-ray diagnosis room, CT scanner, Cath lab, etc., to protect public, patient, operating personals, and the environment from the radiation hazard.

The technology for the conversion of red mud into X-ray shielding tiles was transferred to M/s Prism Johnson Ltd., on 10 June 2019. CSIR-AMPRI demonstrated the use of these tiles in two

X-ray diagnoses, one CT scanner and one Cath lab of M/s Saideep Healthcare and Research Pvt Ltd, Ahmednagar, Maharashtra. These tiles are accredited by the Atomic Energy Regulatory Board, Govt of India. The developed tiles will be commercialised soon.

CSIR-AMPRI is further working to shield very high energy X-rays, gamma rays and neutrons to build medical therapy rooms, nuclear power plants, sterilization plants, industrial X-rays, etc. The conversion of red mud into X-ray shielding tiles will decrease primary mining, environmental pollution and accumulation of industrial waste. It will also reduce deforestation and displacement of tribes caused by mining.

CSIR-AMPRI has converted hazardous red mud, which is an alumina industrial waste, into X-ray shielding tiles as an alternative to toxic lead.

CSIR Young Scientist Awards-2022

Invitation for Nomination

The Council of Scientific & Industrial Research (CSIR) invites nominations for CSIR Young Scientist (YS) Awards for the year 2022. The awards are to be given for research contributions made primarily in India. The nominee should be a regular Scientist (as per CSRAP Rules) of the CSIR system and should have joined the CSIR laboratory on or prior to 26 September 2021. The age of the nominee should not be more than 35 years as on 26 September 2021.

The Young Scientist Awards are given annually in the following disciplines: 1) Biological Sciences, 2) Chemical Sciences, 3)

Earth-Atmosphere-Ocean-Planetary Sciences, 4) Engineering Sciences and 5) Physical Sciences (including instrumentation). The Award comprises a citation, a cash award of Rs 50,000 (Rupees fifty thousand only) and a plaque.

Nominations addressed to Scientist Incharge – SSB YSA Unit, CSIR HRDG New Delhi must be submitted in the prescribed format via e-mail to ssb@csirhrdg.res.in on or before 31 January 2022. No hardcopy to follow. Please visit www.csirhrdg.res.in for further details and nomination format.

Online Advance Course on FARSTCB-2022

Online Advanced Course on
Failure Analysis, Retrofitting and
Strengthening of Transmission,
Communication and
Broadcasting Towers
(FARSTCB-2022)

Duration: 24th - 25th February 2022
Timing: 10.00am to 4.00pm IST



Organized by
CSIR-Structural Engineering Research Centre
CSIR Campus, Taramani
Chennai-600113, India

Overview:
 CSIR-Structural Engineering Research Centre, Chennai, is one of the national laboratories under the Council of Scientific & Industrial Research (CSIR), India. CSIR-SERC has excellent facilities and expertise for the analysis, design and testing of structures and structural components. CSIR-SERC is conducting skill development programmes for developing skilled workforce for the industrial/societal requirements under CSIR Integrated Skill Initiative. Advanced course on Failure Analysis, Retrofitting and Strengthening of Transmission, Communication, Broadcasting Towers (FARSTCB - 2022) is one such programme.

Background:
 The economic growth of the country is directly dependent on the advancement and growth in the power industry, which will be the backbone of manufacturing, infrastructure, communication and service sectors. In India, the electric power infrastructure constitutes 3,91,041 MW of generation capacity (from all sources), 10,71,506 MVA transformation capacity and 4,50,552 ckm of (220 kV and above) Transmission Lines (TLs) network. The TL towers are made of hot rolled steel angle sections and its network is continuously growing. The economic, safe and reliable design of TL towers with high strength-to-weight and strength-to-cost ratios, becomes increasingly important. Similarly, the communication towers are also essential infrastructure for the socio-economic development of any country. Govt. of India has proposed various schemes for data connectivity in every urban and rural household. Hence it is important to have safe, stable and reliable steel-lattice towers, monopoles and structures for communication networks. The power availability and communication network is greatly affected due to the failure of the transmission and communication towers due to ageing. The retrofitting of critical steel members of existing transmission and communication towers is essential for enhanced structural performance & life extension.

Objectives:
 The primary objective of this course is to provide an opportunity for engineering professionals to familiarize themselves with the recent trends in the analysis, design, testing and retrofitting techniques of power transmission and communication towers.

Course contents:
 The course is envisaged to provide the necessary background and exposure on various aspects like codes of practice, computation of wind load, tower analysis, design and testing. Special structures like monopoles, guyed towers and emergency restoration systems, dynamic analysis of towers, effects of dust storms, fatigue on towers, failure analysis, detailing effects on the performance of tower and foundation, use of composite material alternate to steel such as GFRP, condition assessment and strengthening techniques for retrofitting of TL, broadcasting and communication towers will also be covered.

Fee:
Rs.1000/- per participant inclusive of GST for Indian delegates and US\$25/- for foreign delegates. Presentation material (pdf format) and participation certificate shall be provided to all the registered participants. The brochure and details of the registration can be downloaded from the CSIR-SERC web site <https://serc.res.in/course>

Registration:
 The course registration can be completed via online (<http://forms.serc.res.in/view.php?id=33087>). Please choose/select the intended course title in the online registration form and fill all the particulars and pay the registration fee by clicking the **SBI collect** in the registration form.

Requirements for the online mode:
 Desktop/Laptop/Smartphone with good internet speed and sufficient data pack. A web link will be sent to the registered participants for joining the course.

For further details, please contact
Dr. R. Balagopal and Dr. N. Prasad Rao
Course coordinators, (FARSTCB-2022)
 CSIR-Structural Engineering Research Centre,
 CSIR Campus, TTTI (Post), Taramani, Chennai -
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