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In This Issue

169 In The News

- CSIR Ranked Ninth Among World Institutions
- CSIR-CCMB among 10 Institutions in India Selected to Host Incubation Centre
- Artificial Leaf Creates Fuel from Sunlight & Water
- ESKIN for Cosmetic Testing
- CSIR-IGIB Team Discovers Skin Bacterium with Antimicrobial Activity
- New Device to Detect Cracks in Bridges
- CSIR-CDRI Scientists Come Up With New Treatment for Osteoarthritis

175 R&D Highlights

179 Training Programmes

181 Meetings

184 Events

190 Honours & Awards

192 Forthcoming Events

In The News

CSIR Ranked Ninth Among World Institutions

INDIA's largest network of S&T laboratories moved up three places to be ranked ninth this year. The Council of Scientific and Industrial Research (CSIR) has been ranked ninth in the world based on the Scimago Institutions ranking World Report 2017.

The Scimago Institutions ranking is a composite indicator that combines research performance, innovation outputs and societal impact measured by their web visibility, to reflect scientific, economic and social characteristics of institutions. CSIR has been ranked ninth amongst a total of 1,207 government institutions. It was ranked 12th last year.

CSIR, a conglomerate of 38 scientific laboratories spread throughout the country, now stands in the company of globally renowned organisations namely Chinese Academy of Sciences; Centre National de la Recherche Scientifique, France; Helmholtz Gemeinschaft and Max Planck Gesellschaft in Germany; Consejo Superior de Investigaciones Cientificas, Spain; Russian Academy

of Sciences; Japan Science and Technology Agency; Consiglio Nazionale delle Ricerche, Italy and Leibniz Gemeinschaft, Germany.

Amongst 5250 institutions worldwide, CSIR stands at the 75th position. CSIR which designed India's first ever parallel processing computer, first all-composite aircraft and the first 14-seater trainer aircraft is the only Indian organisation that has found place amongst the Top 100 Global Institutions. Among the firsts to CSIR's credit are establishment of the first Traditional Knowledge Digital Library accessible in five international languages and the first complete genome sequencing of an Indian.

Known for its cutting edge research and development (R&D) in science and technology areas, the CSIR is celebrating this year its 75th year of establishment. CSIR laboratories cover a wide spectrum of science and technology – from radio and space physics, oceanography, geophysics, chemicals, drugs, genomics, biotechnology and nanotechnology to mining, aeronautics, instrumentation,

The natural leaf system is simulated by means of semiconductors stacked in a manner to mimic plant leaves to produce energy using water and sunlight. Production of hydrogen from natural resources such as sunlight and water could be the ultimate solution to our energy and environment problems.

environmental engineering and information technology.

But it is not just high science that CSIR has dabbled in all these 75 years.

It has had significant societal impact in areas such as environment, health, drinking water, food, housing, energy, leather, farm and non-farm sectors too.

CSIR-CCMB among 10 Institutions in India Selected to Host Incubation Centre

The CSIR-Centre for Cellular and Molecular Biology (CSIR-CCMB), Hyderabad has been chosen by the NITI-Aayog for hosting a ₹10-crore Atal Incubation Centre for identifying promising start-ups, creating facilities and guiding them to success in the field of biotechnology. It is the only institution in Telangana and Andhra Pradesh to be chosen.

CSIR-CCMB competed with around 3,800 government and private institutions vying to host the incubation centre. Having got the nod, the new facility would come up on its campus at

Uppal with promoting innovation as its stated objective.

The Atal Innovation Mission (AIM) has been set up under the NITI Aayog for promoting a culture of innovation and entrepreneurship in the country. The effort would be to help catalyse the efforts of the start-ups in biotechnology to scale up as successful entrepreneurs. Upcoming firms would also be guided and made aware of issues like intellectual property, agencies, regulators, seed funders, business developers, research institutions, etc.

Artificial Leaf Creates Fuel from Sunlight & Water

Scientists from the CSIR-National Chemical Laboratory (CSIR-NCL), Pune have developed an artificial leaf that absorbs sunlight to generate hydrogen fuel from water, promising clean energy for powering eco-friendly cars in the future. The ultra-thin wireless device mimics plant leaves to produce energy using water and sunlight.

The natural leaf system is simulated by means of semiconductors stacked in a manner to mimic plant leaves to produce energy using water and sunlight. Production of hydrogen from natural resources such as sunlight and

water could be the ultimate solution to our energy and environment problems. At present, hydrogen is produced from fossil fuels by steam reforming that emits a large amount of carbon dioxide.

Senior Principal Scientist at CSIR-NCL, Chinnakonda S. Gopinath has been working with his team for nearly a decade on splitting water to generate hydrogen.

Given that India is blessed with plenty of sunlight throughout the year, this line of research is very relevant. Sunlight could be exploited through the year to produce energy or hydrogen.

When visible light strikes the semiconductors in the device, electrons move in one direction, producing electric current. The current almost instantaneously splits water into hydrogen, which is believed to be one of the cleanest forms of fuel as its main by-product is water.

The research, published in *Scientific*

Reports, an online, open-access journal from the publishers of *Nature*, states that the device of an area of 23 square centimetres could produce 6 litres of hydrogen fuel per hour. The device has been patented and efforts are being made to look out for industrial partners to move ahead.



ESkIN for Cosmetic Testing

The CSIR-Institute of Genomics and Integrative Biology (CSIR-IGIB), New Delhi has come with eSkIN, a first-of-its-kind computational platform for skin research that can ascertain the efficacy and adverse effects of cosmetic formulations. With Governments across the globe including India banning testing of cosmetics and its ingredients on animals, the computational platform could be a boon for cosmetic and pharma firms.

eSkIN was developed by CSIR-IGIB in collaboration with Pune-based firm Persistent System. The project has been funded under the CSIR-NMITLI scheme.

Testing in animals to ascertain the

efficacy and adverse effects of so far formed an integral and significant part of the process of discovery of new pharmaceutical and cosmetic products. The skin data analysis tool eSkIN, however, is a software with a collection of the large data available in the open domain offering an intuitive solution. Without torturing any animal and with just a few clicks, it will tell what will be the likely result of that data.

eSkIN also converts large-scale high-throughput Omics data into biomedical knowledge. It is a repository of over 2600-plus skin-specific genes obtained by manual curation of biomedical literature.

CSIR-IGIB Team Discovers Skin Bacterium with Antimicrobial Activity

Scientists at the CSIR-Institute of Genomics and Integrative Biology (CSIR-IGIB), New Delhi have identified a new bacterial strain of *Staphylococcus capitis* which has a strong antibacterial activity against Gram-positive bacteria, including *Staphylococcus aureus*.

Bacteria on the skin harbour a large variety of antimicrobial agents. The CSIR-IGIB scientists isolated the

bacteria from the skin surface of a healthy human foot—specifically near the toes. The results of the study were published in the journal *Scientific Reports*.

Different bacteria are found in different niches of the skin. For instance, bacteria found in the arm pit are different from those found on the feet. The antimicrobial activity

Scientists at the CSIR-Institute of Genomics and Integrative Biology (CSIR-IGIB), New Delhi have identified a new bacterial strain of *Staphylococcus capitis* which has a strong antibacterial activity against Gram-positive bacteria, including *Staphylococcus aureus*.



(From right) Bhupesh Taneja, Rohit Kumar & Rakesh Sharma sequenced the bacterial genome, identifying seven peptides with possible antibacterial activity

helps the bacteria to secure their niche environment by preventing other bacteria, including pathogenic bacteria, from colonising.

Further, the team led by Dr. Bhupesh Taneja and Dr. Sharma also sequenced the genome of the bacteria and identified all the possible peptides that have antibacterial activity. And then, synthetic peptides with sequences identical to the natural ones isolated from the bacteria were synthesised. The synthetic peptides were found to possess antibacterial activity, opening the window to developing new antimicrobial compounds.

The researchers will next study the minimum inhibitory concentration (the lowest concentration of an antimicrobial that will inhibit the visible growth of a microorganism) required by the peptides and test it against more species of Gram-positive bacteria and specifically against drug-resistant *S. aureus*.

Besides isolating the peptides responsible for antimicrobial activity, the researchers have identified the genes responsible for other functions such as adhesion, acid stress tolerance, colonisation and survival on human skin.

New Device to Detect Cracks in Bridges

Scientists from the CSIR-Central Electrochemical Research Institute (CECRI), Karaikudi, have developed a portable device to monitor weak structures and send alerts whenever a crack is observed. The smart device alerts structural engineers about cracks on large structures and bridges before it is too late.

The device called the Triboluminescence (TL) camera uses a light emitting compound and a smart camera that allow detection of cracks – invisible to the naked eye – on structures made of concrete, metal and fibre-reinforced plastic.

This compound is coated on a surface which when rubbed, scratched, pulled or ripped emits light due to excessive pressure and the smart camera is programmed to capture it. The images can be shared through cloud storage or a mobile app, web browser or Bluetooth.

The central portion and beams of a bridge or a flyover, considered the weaker parts, can be coated with the compound. When vehicles move on the structure and these portions come under pressure, a red light is emitted wherever there are cracks. These cracks may otherwise not be visible to the

naked eye.

A record of these cracks can be kept through a smart camera that is programmed with an image sensor analysis software. The camera identifies the light emitted by the compound and

captures an image. The images can be accessed with details like date and time and width of the crack.

The technology could be a boon for the railways where there are several old bridges.

CSIR-CDRI Scientists Come Up With New Treatment for Osteoarthritis

In a new breakthrough in the area of osteoarthritis, a common chronic condition of the joints that afflicts mainly the weight-bearing joints such as hips and knees, and causes physical disabilities, CSIR-CDRI scientists have developed a standardized nano-formulation from *Spinacea oleracea*, commonly known as Palak, for treatment of osteoarthritis.

“This was a coincidental outcome of our research at CDRI when our entire focus was on postmenopausal osteoporosis and fracture healing,” said Dr. Ritu Trivedi, bone biologist and team leader. “We observed that a standardized nanoformulation of *Spinacea oleracea* commonly known as Palak not only had the ability to form bone but it also possessed an intrinsic ability to bed more of cartilage cells at the affected site. We observed that in the osteoarthritis model of rodents, *Spinacea oleracea* repaired and cured the degenerated cartilage.

The drug will soon be available in the market as it has been licensed to Pharmanza Pvt. Ltd.

Osteoarthritis is the most common form of joint disease that can strike in younger age groups too. In India ~39% people suffer from Osteoarthritis. Out of this 45% of women above 65 years experience symptoms and 70% of them show X-ray evidence of

Osteoarthritis. Postmenopausal women with osteoarthritis have a 20% increased risk of fracture.

Many factors can contribute to the development of the condition, including genetics, weight and joint injury. Wear and tear injuries can be common, and joint pain is something many, if not most, people will experience at certain points. At present there are no drugs in the market especially any orally available drug for osteoarthritis. Only symptomatic treatments are available with pain killers like ibuprofen, naproxen, etc. There are reports that these drugs on long term use show liver toxicity.

Director, CSIR-CDRI, Dr. Madhu Dikshit said that based on the results of research our drug shows no toxicity and is effective at lower doses with the nano-formulation. Four bio-markers have been identified in the extract that possibly impart efficacy in repairing the cartilage at the knee joint.

The team of researchers led by Ritu Trivedi (Bone Biologist) includes Prabhat Ranjan Mishra (formulation expert), Rakesh Maurya (medicinal chemist), Jawaharlal (Pharmacokinetics), S.K. Rath (Toxicity), and students Dharmendra Choudhary, Sulekha Adhikary, Naseer Ahmad, Priyanka Kothari, Ashish Tripathi, Naresh Mittapelly, Gitu Pandey, Sudhir Kumar, and Kapil Dev.



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CSIR-NPL and ISRO sign MoU for Time and Frequency Traceability Services



From L to R: Dr. Girish Sahni DG-CSIR, Dr. D.K. Aswal, Director, CSIR-NPL, Shri V.V. Srinivasan, Director, ISTRAC (ISRO), Dr. Harsh Vardhan, Honourable Union Minister for Science & Technology, Earth Sciences and Environment, Forest & Climate Change and Dr. Jitendra Singh, Honourable Minister of State for Development of North Eastern Region (I/C), Prime Minister's Office, Personnel, Public Grievances & Pensions, Atomic Energy and Space

On 4 August 2017, a Memorandum of Understanding (MoU) was signed between the Council of Scientific and Industrial Research (CSIR)-National Physical Laboratory (NPL), Ministry of Science and Technology and the ISRO Telemetry Tracking and Command Network (ISTRAC), Indian Space Research Organisation (ISRO), Department of Space, in New Delhi.

The MoU was signed by Shri V.V. Srinivasan, Director, ISTRAC on behalf of ISRO and Dr. D.K. Aswal, Director, CSIR-NPL, on behalf of CSIR. The Union Minister for Science & Technology, Earth Sciences and Environment, Forest & Climate Change, Dr. Harsh Vardhan and Minister of State for Development of North Eastern Region (I/C), Prime Minister's

Office, Personnel, Public Grievances & Pensions, Atomic Energy and Space, Dr. Jitendra Singh, DG-CSIR, Dr. Girish Sahni, and other senior officers from ISRO, CSIR and CSIR-NPL graced this important national event.

The scope of this MoU is the rendering by CSIR-NPL of all the necessary actions, necessary to support the following:

- Time and Frequency Traceability services from National Time Scale of CSIR-NPL to IRNWT-I and IRNWT-II of ISTRAC/ISRO through Two-way Satellite Time and Frequency Transfer (TWSTFT).
- Time and Frequency Traceability services from National Time Scale of CSIR-NPL to IRNWT-I and IRNWT-II of ISTRAC/ISRO

through GNSS CV.

- Annual audit of IRNWT-I and IRNWT-II as per ISO/IEC 17025 for ensuring correctness and accuracy of the time traceability.

India's indigenously developed global positioning system called NavIC, has been recently configured to synchronize its clocks to the time provided by the CSIR-NPL. Till recently, the satellites on the

NavIC managed by ISRO relied on the US-based GPS system. The linking with CSIR-NPL will aid in high precision satellite-based communication, precise guidance of missiles and navigation.

The MoU shall remain valid for a period of five years from the date of signing. Subsequently, the MoU will be renewed on mutual agreement between CSIR-NPL and ISTRAC/ISRO.



R&D Highlights

Laying of Trial Sections of Cement Grouted Bituminous Mix (CGBM) in Surat City by CSIR-CRRI



View of pouring of grout and squeezing on high voids bituminous mix

Cement grout bituminous mix is a semi-flexible type of pavement comprising of open graded aggregates in the bituminous mix resulting in high air void content in the mix. The voids in the bituminous mix are filled with cement

grout. Cement grouted bituminous mixes have advantages of both flexible and rigid pavements. This hybrid mixture provides good rut resistance and a surface highly resistant to fuel and oil spillage.

Till recently, the satellites on the NavIC managed by ISRO relied on the US-based GPS system. The linking with CSIR-NPL will aid in high precision satellite-based communication, precise guidance of missiles and navigation.

CSIR-CRRI laid a section of CGBM (each 100 m length in July 2017) on roads on experimental basis (two sections under the Surat Municipal Corporation).



Stakeholders of the technology (left) and Skid Resistance Measurement on CGBM section after two months of laying (right)

Development and Evaluation of ‘Soil Nailing Technique’ for stabilisation of Slope for Underpass Intersection below Road/Railway

The rapid growth in population, industries and infrastructure development in country has led to shortage of land space in the metropolitan cities and also resulted in tremendous increase in traffic volume and congestion on roads. Often, further widening of road or provision of flyovers is not feasible due to many



Completed underpass, Yamuna Bazar, Delhi

Construction of underpass intersection in progress



constraints. The underpass is the only viable solution in such situations.

Today, precast RCC segments are gaining popularity in underpass construction due to many advantages. The shallow underpasses can be constructed by pushing pre-cast boxes under live loading and traffic conditions. However, due to soil instability problems, often the idea of construction of underpass is dropped.

CSIR-CRRI has attempted to resolve this problem by inventing a Soil Nailing Technique by which underpass construction becomes simple, easy, safe, time-saving, economical and user friendly in live loading condition. A stepwise de-stabilisation and stabilisation of Soil Nailing Technique for construction of underpass below live road/rails has been patented in India and abroad.

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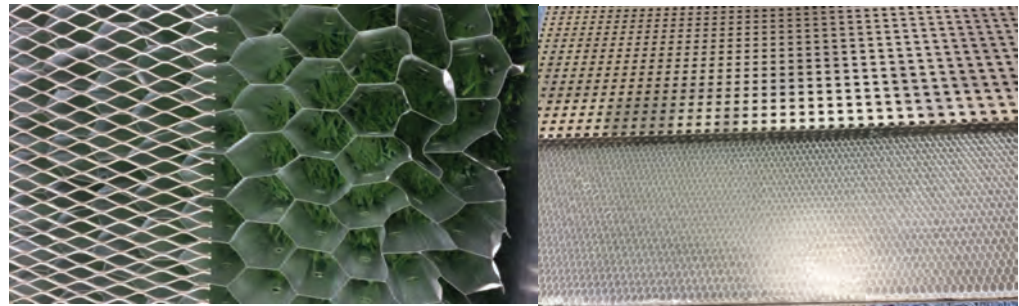
CSIR-CRRI Designs Noise Barrier Based on Different Frequencies

At the global level, noise barriers are not designed based on the disturbing frequency generated from the transport sector. In this study, noise barriers have been designed based on three types of frequency classes for maximum reduction of noise:

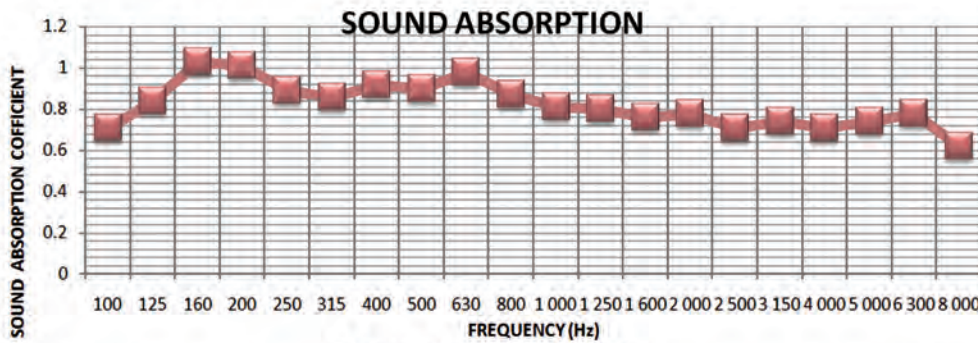
- Low frequency based Noise Barrier (<200Hz),
- Middle frequency based Noise Barrier (200-1k Hz) and

- High frequency based Noise Barrier (1k-20k Hz)





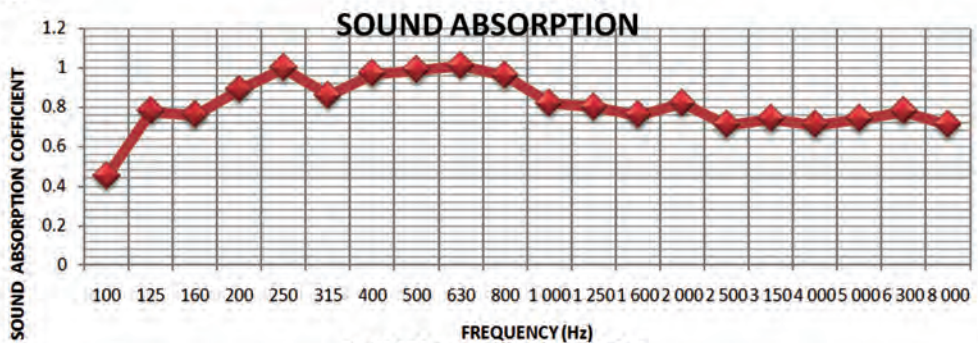
Different types materials have been used in different types of Noise Barriers



Low Frequency

NRC = 0.89 to 0.91

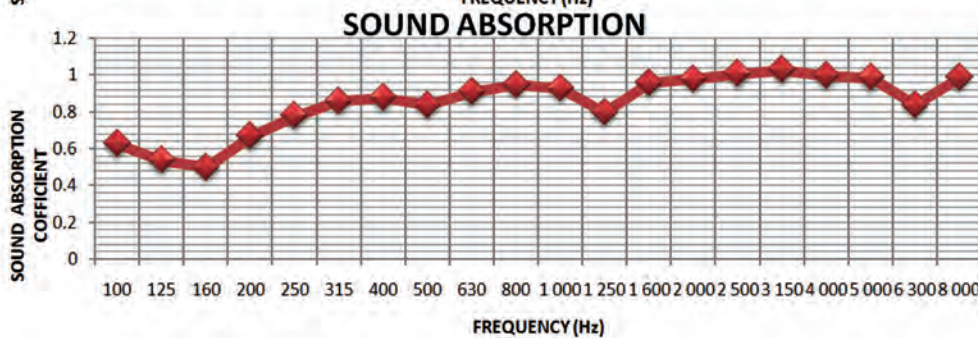
Absorption Class – A
Total reduction in decibel = 21 dB(A)



Middle Frequency

NRC = 0.94 to 0.96

Absorption Class – A
Total reduction in decibel = 28 dB(A)



High Frequency

NRC = 0.95 to 0.98

Absorption Class – A
Total reduction in decibel = 38.4 dB(A)

Results achieved by CSIR-CRRI in different types of noise barriers

Economic/Social Impact Assessment Details

Industry Impact	Problem-based solution for noise barrier manufacturers
Improvement in Quality of Life	Drastic reduction of noise level after installation of this noise barrier which will improve quality of life in surrounding areas
Environment Conservation	Noise barrier will be protective barrier for humans as well as animals in areas where trains pass through forest areas

Training Programmes

CSIR-IITR conducts CSIR Integrated Skill Development Course on “Computational Predictive Biology and Bioinformatics”



Professor Alok Dhawan, Director, CSIR-IITR, Dr. Devendra Parmar, Chief Scientist & Chairman, HR Cell, CSIR-IITR and Dr. R. Parthasarathi, Course Convenor, CSIR-IITR during CSIR Integrated Skill Development Course inauguration

CSIR-Indian Institute of Toxicology Research (CSIR-IITR), Lucknow successfully conducted a three-week Certificate course on CSIR Integrated Skill Development Programme on “Computational Predictive Biology and Bioinformatics” from July 24 to August 11, 2017.

Computational Predictive Biology and Bioinformatics is a rapidly developing field. It focuses on tackling biological discoveries made in the in silico lab and finding ways to apply in real life scenarios on the environmental and health issues. Amalgamation of expertise in Computer Science provides excellent basis on the cutting edge of machine learning, algorithms, data visualization, databases, and of Computational Biology domain offers recent technological advances on

molecular cell biology into information sciences, algorithmic, computational tool building and massive data analysis for developing predictive models.

According to NASSCOM (National Association of Software and Service Companies), Computational Biology and Bioinformatics is one of the emerging areas for biomedical research and showing excellent potential for translational research. Several pharma companies and institutes funded by the Government of India across the country are pursuing research in the field of bioinformatics.

Realizing the dearth of trained manpower in pharma and allied industries, informatics and scientific computing, and Contract Research Organisations (CROs), CSIR-IITR offered the “Certificate Course in

Realizing the dearth of trained manpower in pharma and allied industries, informatics and scientific computing, and Contract Research Organisations (CROs), CSIR-IITR offered the “Certificate Course in Computational Predictive Biology and Bioinformatics”.



A view of the training programme

Computational Predictive Biology and Bioinformatics”. Trained individuals from this course can work in R&D departments at these pharma companies and institutes. Computational Predictive Biology and Bioinformatics present a new business opportunity to the

Information Technology Industry for providing services directly to the relevant programmes and applications in this area.

The mission of the skill development course in Computational Predictive Biology and Bioinformatics is primarily integrating scientific and technical advancement of computing and information sciences to excel and lead in capability building, research, and for solving a wide range of applications on human and environmental issues.

The programme aimed to target individuals in science, industry, agriculture and medicine who wished to acquire professional skills in highly specialized inter-disciplinary areas of computational biology, genomics, bioinformatics, drug discovery, database management, high performance computing, big data and predictive



Director, CSIR-IITR giving away the certificates to participants



Group photo of the participants and resource persons of CSIR-IITR during the certificate distribution event

toxicology. Fourteen participants from various fields actively participated to sharpen their skills in the area.

Apart from lectures, hands-on tutorial and practical sessions, experts from scientific software industries like VLife Technologies, Pune, Microsoft, India, Schrödinger, India and Scube Scientific Software Solutions, New Delhi interacted with the students and presented the recent trends in the field on modeling and simulations, data mining, big data analysis and various bioinformatics tools during the course period.

Professor Alok Dhawan, Director, CSIR-IITR interacted with the students and probed about their ideas of implementation of the knowledge they obtained from this course. Students

gave very positive feedback and expressed their desire to come back for more detailed workshops & specific programmes in this field.

Finally, certificates along with the course work materials were distributed to the students.

This skill development course was effectively coordinated by Dr. Devendra Parmar, Chief Scientist & Chairman, HR Cell, CSIR-IITR and Dr. R. Parthasarathi, Course Convenor, CSIR-IITR. Professor Alok Dhawan, Director CSIR-IITR congratulated all the participants and staff of Computational Toxicology Facility, Centre for Innovation and Translational Research (CITAR), CSIR-IITR for the successful completion of the venture in the valedictory function.



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Meetings

1st Meeting for World Bank Research Project on “Megacity Logistics: Metrics, Tools and Measures for Sustainability (MEGALOG)”



Director, CSIR-CRRI chairing the MEGALOG Meeting

The World Bank Group has funded a research project on “Megacity Logistics: Metrics, Tools and Measures for Sustainability (MEGALOG)” which is to be carried out by the CSIR-Central Road Research Institute (CSIR-CRRI),

Meetings

New Delhi in association with TNO, Netherlands and TU Delft, Netherlands. As part of the project, the stakeholders need to be involved in conducting meetings so as to understand and reach the actual ground level problems and difficulties in implementing transport policies related urban freight traffic.

Accordingly, the first meeting was conducted on 9 May 2017 at the C.V. Raman Hall of CSIR-CRRI, Mathura Road, New Delhi. This meeting was attended by policy makers, development authorities, practising engineers representing national/state level and local bodies, academia, research institutes, decision makers, etc.



Dr. Errampalli Madhu (CSIR-CRRI) making presentation



Prof. Lori Tavasszy (TU-Delft, Netherlands) presenting his views



Mr. Jeroen Borst (TNO, Netherlands) giving presentation



Stakeholders who participated in the MEGALOG Meeting

CSIR-NIO & Mangrove Society of India Celebrate 25 years



“The Indian coast is characterized by varied landforms and ecosystems and the mangrove is one such ecosystem, where land, ocean, atmosphere and biota interact,” said Dr. Shailesh Nayak, President of the Mangrove Society of India (MSI) and Ex Secretary, MoES, as he inaugurated the Silver Jubilee Conference on Mangrove Ecosystem at the CSIR-National Institute of Oceanography, Dona Paula on 26 July 2017. Others present included Prof. Sunil Kumar Singh, Director, CSIR-NIO, Dr. A. G. Untawale, Executive Secretary, MSI and Dr. V. Dhargalkar and Dr. Sayeeda Wafar, EC members MSI.

Dr. Shailesh Nayak further said, “Mass and energy are continuously exchanged among these components and these interactions have created a unique ecosystem of remarkable biological productivity and diversity, which has become a centre of human activities.”

Dr. Nayak emphasized on the sustainable management of mangrove ecosystems which depends on understanding of the socio-ecological interdependence. He mentioned that we need to understand the complex interactions between social conditions, mangroves and external drivers. He concluded with an emphasis on the need to plan activities for gaining



more knowledge and to build effective management strategies.

During the programme, Dr. A.G. Untawale, briefed the gathering about the birth of the MSI. He made a special mention that MSI has successfully completed 25 years of dedicated service to the cause of conservation and management of mangroves. He announced that earlier the coastal forests were almost neglected and abused but not anymore as awareness would play a key role in tackling these issues.

Earlier Dr. Sunil Kumar Singh, Director, CSIR-NIO welcomed the

gathering and emphasised on the fact that mangroves are the connecting or buffer zone between the land and the sea. He added that “the structure of mangroves helps the land from erosion.” He was certain that this national conference would help to protect and educate citizens to safeguard our mangrove ecosystem.

During the programme a Memorandum of Understanding (MoU) was signed between CSIR-NIO and MSI, by Prof. Sunil Kumar Singh and Dr. Shailesh Nayak, respectively. The main objective of the MoU is identification and implementation of strategies/methods towards sustainable utilisation and management of mangroves, skill development towards reducing and controlling mangrove afforestation and studying the dynamics and processes in furthering the understanding of mangrove ecosystems. A volume of abstracts was released at the hands of Dr. Nayak.

Dr. Dhargalkal shared his experience in the field of mangrove plantation and conservation. The vote of thanks was proposed by Dr. Sayeeda Wafar.



Events

CSIR Techno Fest at CBRI, Roorkee

To celebrate the 75 years of service of CSIR and its 38 laboratories, CSIR is organizing capsule exhibitions across the country. As a part of these celebrations, CSIR-Central Building Research Institute, Roorkee organised a three-day CSIR Platinum Jubilee Techno Fest for students, teachers, public and user agencies at the Institute during 10-12 August 2017. The exhibition provided an opportunity for young students, scientists and the public to

come under one roof and witness the knowledgebase of achievements and researches by CSIR.

The CSIR Platinum Jubilee Techno Fest was inaugurated by Dr. S.K. Jain, Director, National Institute of Hydrology, Roorkee and Dr. N. Gopalakrishnan, Director, CSIR-Central Building Research Institute, Roorkee.

In his presidential address, Dr. N. Gopalakrishnan said that the Institute is inaugurating these celebratory capsule



exhibitions with a three-day CSIR Platinum Jubilee Techno Fest. The aim of the technical festival is to educate the people especially students about the various innovations and technologies developed by CSIR, educate them on the new and emerging areas of science and provide an opportunity for interaction and exchange of ideas with the scientific community.

An exhibition was also held that displayed the research and development works of CSIR laboratories in every field of science including aerospace and strategic sector, agriculture and floriculture, chemicals, petrochemicals and water, ecology and environment, energy, engineering and infrastructure, food and nutrition, healthcare, IP and entrepreneurship, nurturing human



resources, leather, materials, minerals and mining, etc. and the technologies developed under CSIR 800.

Various technologies including indigenous civil avionics such as “Hansa”, “Saras” and “CNM-5”, critical technologies for LCA “Tejas”, early warning system



Events



for landslides, technology for nuclear waste immobilization, sustainable ways to enhance crop yield, converting waste plastic to automotive fuel and petrochemicals, “E-nose” for sniffing out dangerous gases, water desalination techniques, “Phytorid” technology for sewage treatment, hazardous waste management, solar PV-RO systems, wood substitute building materials, gold from electronic scrap and preservation of heritage structures, etc. were explained through technical charts.

Mr. S.K. Negi, Dr. Atul Kumar Agarwal, Dr. R. Dharamraju and Mr. S.K. Singh, Senior Principal Scientists of the Institute coordinated the event.

An Industrial Meet was also organized during the event and was attended by representatives from user agencies of Roorkee and surrounding area. Dr. N. Gopalakrishnan, Director presided over the meeting. Representatives from user agencies and the scientific staff of the Institute shared their views. The representatives also visited the Techno Fest to gather latest information about technologies developed by CSIR laboratories.

The visitors also got an opportunity to clarify their queries and thoughts through discussions with the scientific community. Science films featuring CSIR and CBRI scientific innovations and success stories were also screened.

The exhibition saw huge crowds of general public, researchers, user agencies and visits from about 6000 students from different schools and colleges of Roorkee and surrounding areas, including Methodist Girls Inter College, Swan Public School Bhagwanpur, Adarsh Bal Niketan, J.P. International School Laksar, Delhi Public School, Phonics Group of Institutes, K.L. Polytechnic, Children's Senior Academy Roorkee and Manglour, Shivalik Public School, Kendriya Vidyalaya 1, Kendriya Vidyalaya 2, Shivalik Ganges Public School, Bal Vidhya Mandir, CBRI Junior High School, K.L.D.A.V. Inter College, College of Engineering Roorkee, Chandra Shekhar Public School, Arya Kanya Inter College, Scholar's Academy,

New Era Public School Bhagwanpur, Skyward Public School etc.

The exhibition was also widely covered in local dailies such as Amar Ujala, Hindustan, Uttaranchal Deep, Rashtriya Sahara, Dainik Jagran, Vaigyanik Drishtikon, Gramin Janta, etc. and electronic channels such as DD National, ETV, LIVE Today etc.



Mega Science Exhibition at CSIR-IIIM

As part of the CSIR Platinum Jubilee celebrations, a three-days mega science exhibition was organised at the CSIR-Indian Institute of Integrative Medicine (CSIR-IIIM), Jammu campus during 25-27 August 2017. Prof. Anju Bhasin, Vice Chancellor, Cluster University Jammu was the chief guest who inaugurated the exhibition.

Prof. Anju Bhasin while speaking on the occasion lauded the contribution of CSIR in the scientific and technological development of the country. While appreciating the excellence of the Council of Scientific and Industrial Research (CSIR) in many frontal areas with high societal impact, Prof. Anju



Bhasin stressed upon the need for imparting practical knowledge along with the theoretical teaching given in the schools, colleges and universities.

Earlier, after inauguration, she took a round of all the stalls/counters and discussed in detail about the technologies put on exhibits.

Organised by CSIR as a part of its Platinum Jubilee celebrations to get the masses acquainted with its contributions in various fields, the exhibition witnessed a huge rush of students, scholars, faculty members of research and educational institutions and the general public on the first day.



The scientific and technological achievements of CSIR were on exhibit in fields ranging from aerospace to oceanography, tractor to aero plane, roads to affordable housing, leather to energy, value added agriculture & floriculture to functional foods, minerals and mines to environment, portable water to generics and medicines, instrumentation to chemicals and petrochemicals, rural technologies to human resource management and intellectual property management.

The exhibition was categorized into fourteen themes viz. aerospace and strategic sector, agriculture and floriculture, chemical and petrochemical, societal technologies, ecology and environment, energy, engineering and infrastructure, food and nutrition, generics and healthcare, intellectual property, enabling leather, materials/minerals/mining, nurturing human resource and water.

The exhibition provided a great opportunity to students, youth and all sections of the society to get a glimpse of the scientific achievements of the CSIR under one roof. People turned out in large numbers on all the three days of the event and it was a great success.

CSIR-NEIST Organises Student-Scientist Interaction

CSIR-North East Institute of Science and Technology (CSIR-NEIST), Jorhat organised three-day Student-Scientist interaction programme 'JIGYASA' during 28-30 August 2017. A total of 70 students of standard IX from Kendriya Vidyalaya-NEIST, Jorhat and Kendriya Vidyalaya-Air Force Station, Jorhat attended the programme along with four teachers.

In its Platinum Jubilee celebration year, the Council of Scientific & Industrial Research (CSIR), New Delhi launched a special Student-Scientist interactive programme in July 2017 in collaboration with the Kendriya Vidyalaya Sangathans (KVS) with the sole objective of motivating students in building a scientific temperament by extending classroom learning and

focussing on a well planned research laboratory based learning. The programme is expected to connect 1151 KVs with 38 National Laboratories of CSIR and will target 100,000 students and nearly 1000 teachers annually.

The three-day programme at CSIR-NEIST commenced with a short inaugural function at the Dr. J.N. Baruah Auditorium on 28 August 2017. Mr Partha Paul, Scientist & Coordinator of the programme, talked about the programme and its objective and the various activities to be covered during the period.

Dr. D. Ramaiah, Director, CSIR-NEIST in his address to the students encouraged them to make the most of it by being actively involved in all the sessions. While talking about Jigyasa,

he added that this special programme is ultimately aimed at nurturing the younger generation, the future of our nation, by exposing them to the scientific developments taking place in various CSIR Institutes and thus motivating them to be a part of the nation's growth.

The three-day programme included notable presentations by various resource persons on topics like Astrophysics, Mathematics, Nano-science, Chemistry, Zoopharmacognosy, and Biology along with practical experiments.

The programme received enthusiastic participation of the students in all its sessions. The programme concluded with a Valedictory function held on 30 August 2017 wherein certificates were distributed to all the students and the teachers.



CSIR Capsule Exhibition Inaugurated in CSIR-NIO

As part of the CSIR Platinum Jubilee Celebrations, the Council of Scientific and Industrial Research has been

organising a Capsule Exhibition in all its laboratories across the country to take its accomplishments to the general





public. On 6 September 2017, a three-day exhibition was inaugurated at the hands of Prof. Sunil Kumar Singh, Director, CSIR-National Institute of Oceanography (CSIR-NIO), Goa.

The exhibition was open for public viewing between 6-8 September 2017.

A large number of students and entrepreneurs witnessed the displays on the achievements of CSIR. The exhibition comprised of exhibits on the achievements of CSIR in the areas of CSIR- 800 (Social Intervention), Nurturing Human Resources, Intellectual Property and Entrepreneurship, Chemicals and Petrochemicals, Water, Ecology and Environment, Leather, Materials and Minerals, Energy, Healthcare & Generics, Aerospace & Strategic Sector, Engineering and Infrastructure, Agriculture and Floriculture, and Food and Nutrition.

The exhibition was a good opportunity to provide an insight into the research and development activities of CSIR and its significant contributions to the scientific and technological achievements for the benefit of our country.

Honours & Awards

CSIR-NGRI Scientist Bags “NGRI-AHI Indian Hydrology Lecture Award-2014”



Dr. Shakeel Ahmed, Chief Scientist, CSIR-National Geophysical Research Institute, Hyderabad has been selected for the prestigious “NGRI-AHI Indian Hydrology Lecture Award-2014”.

Dr. Shakeel Ahmed, an Exploration Geophysicist, joined CSIR-NGRI, Hyderabad as Scientist B in 1982. Dr. Ahmed further enhanced his qualifications by obtaining Ph.D. from the Ecole Nationale Supérieure des Mines de Paris (Paris School of Mines: Now Mines Paris Tech) in France in 1987.

Dr. Ahmed’s efforts in Indo-French collaboration took a quantum jump in 1999 with the most important event in the history of NGRI’s Inter-

national collaboration of setting-up the “Indo-French Centre for Groundwater Research (IFCGR)”, which he is still heading.

Dr. Ahmed’s collaboration has not been limited to France. He was invited to deliver lectures in many countries viz., Australia, Iran, Egypt, Kenya, Sudan, People’s Republic of China and Pakistan as resource person sponsored by the UNESCO and CSC, etc. He led a delegation of Indian scientists to Tunisia to start and establish Indo-Tunisian collaboration in water science and technology.

Dr. Ahmed has also been the Secretary of the National Committee of the International Association of Hydroge-

ologists and also the Associate Editor of the *Hydrogeology Journal* published by Springer as well as Chairman of the South Asian Regional working group on Hard Rock Hydrogeology of IAH. He is a life Fellow of the Geological Society of India, National Environmental Science Academy, Andhra Pradesh Akademi of Sciences, and Telangana State Academy of Sciences.

Dr. Ahmed has supervised more than 30 doctoral theses and published more than 150 research papers with highest citations among working scientists of NGRI.

Dr. Ahmed was honoured at the 7th Cannes International Water Symposium where he received the trophy of the

International Prize for Water Sciences. He has also been the recipient of the Young Scientist Award in physical sciences awarded in 1999 by the MAAS. Dr. Ahmed bagged the first National Mineral Award (now National Geoscience Award) in Groundwater in 2006.

Recently, Dr. Ahmed completed an important project on aquifer mapping, AQUIM, establishing guidelines for 3D continuous geophysical mapping using heliborne geophysical investigation, an advanced technology applied for the first time in India. The project is expected to lead the National Aquifer Mapping programme as its up-scaling. At present Dr. Ahmed is the senior most Chief Scientist at the CSIR-NGRI, Hyderabad.



CSIR-NAL Staff Receive “ISAMPE Award for Outstanding Design & Development-2017”

Dr. D. Saji and Mr P. Pitchai from the Advanced Composites Division, CSIR-National Aerospace Laboratories received the “ISAMPE Award for Outstanding Design & Development-2017” for their work on “Design and Development of Tools and Fixtures for Composite Air frame Structural Repairs”. They received at the hands of Dr. M. Annadurai, Director ISRO Satellite Application Center

(I S A C) Bangalore during the 31st AGM of ISAMPE at HAL Management Academy, Old Campus Auditorium, Bangalore on 8 September 2017.



V.S. Phani Babu Receives Best Student Oral Award

Mr. V.S. Phani Babu, CSIR-SRF, working with Dr. B. Jagadeesh, Sr. Principal Scientist, NMR & Structural Chemistry Division, CSIR-Indian Institute of Chemical Technology (CSIR-IICT), Hyderabad received the Best Student Oral Award during the 7th Asia

Pacific NMR Symposium & Conference of National Magnetic Resonance Society, India held at Indian Institute of Science, Bangalore during 16-19 February 2017. The award consists of a Certificate and a cash prize of Rs. 7000.

Forthcoming Events

Symposium on “Molecular Medicines for Lifestyle Diseases: Emerging Targets and Approaches”

CSIR-Central Drug Research Institute,
Lucknow

November 20-21, 2017

In recent years, lifestyle diseases including but not limited to type 2 diabetes, heart complication, atherosclerosis, hypertension have shot up to extreme levels. This conference brings together researchers in the area of cardiovascular and lifestyle disorders to discuss translational needs and molecular pathways that will help to identify new drug targets for lifestyle diseases.

Key Sessions

- Etiology & Pathophysiology of Cardiovascular Disorders (CVD)
- Quest for Healthy Aging
- Lifestyle, a New Trigger for CVD and Cancer
- Current Strategies to Treat Cardiometabolic Disorders
- Redox status and Cardiovascular Diseases

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National Workshop on Advanced Instrumentation (NWAI-2017)

CSIR-Central Salt & Marine Chemicals
Research Institute, Bhavnagar

October 25-26, 2017

Scope:

Modern scientific instruments have revolutionized the way we look at the world and extended the range of our senses. Cutting-edge instruments not only empowered new discoveries but also facilitated us to explore phenomena with more precision and speed. State-of-the-art instrument facility enables the migration from basic to applied research. The usefulness of modern instrument spreads across the disciplines including chemistry, biology, environment and material science and nano science. This workshop is aimed at imparting basic training on the fundamentals, operation and applications of contemporary scientific instruments and techniques.

Topics to be covered in the workshop:

CSIR-CSMCRI is enriched with several sophisticated analytical instrument facility. The participants will get a chance to see all those facilities. The training will be restricted to chromatography (Gas chromatography), electron microscopy (TEM & SEM), spectroscopy (NMR, UV-Vis and FTIR) and diffraction (Powder and single crystal diffraction) techniques.

Who can attend?

Industry personnel, students and research scholars, scientists, acad-emicians, technical staffs, etc.

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