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In The News

'CSIR Platinum Jubilee Techno Fest' CSIR Pavilion Bags Gold Medal at India International Trade Fair (IITF)

THE CSIR Platinum Jubilee Techno Fest pavilion has been adjudged First (Gold Medal) for excellence in display in the category "Ministries & Departments" at the 36th India International Trade Fair-2016. The Gold medal was presented by the India Trade Promotion Organisation (ITPO) Chairman, Mr L.C. Goyal.



DG-CSIR with the Gold Medal



Dr. Girish Sahni, Director General, CSIR said: "Getting recognised for what CSIR is doing is indeed exciting. Everything happened because of the hard work put in by the entire CSIR family. The outcome of the last 75-year journey of the organisation was on display and people liked

it. We tried to portray our technologies in an aesthetically appealing way and we succeeded, as we stood first. This will motivate us to continue the good work in the future.”

After the Prime Minister of India and President of CSIR Shri Narendra Modi inaugurated the Platinum Jubilee celebrations of CSIR on 26 September 2016 from the Vigyan Bhawan, CSIR showcased its myriad achievements, technologies and processes as part of the ‘CSIR Platinum Jubilee Techno Fest’ at the India International Trade Fair (IITF) in New Delhi during 14-27 November 2016.

Inaugurated by Union Minister for Science, Technology and Earth Sciences, Dr. Harsh Vardhan, the CSIR Techno Fest pavilion witnessed a huge footfall

for more than a week, and on display were some of the most significant and pathbreaking technologies developed by CSIR laboratories.

Dr. Harsh Vardhan said, “This Techno Fest is an Opportunity for the young students, scientists and the common people to come under one roof and witness the knowledge base of achievements and researches by CSIR.” The S&T Minister also unveiled theme publications brought out on the thematic areas encapsulating the vast area of influence of CSIR laboratories.

The developments and achievements of the 38 CSIR laboratories situated across the country were displayed under 14 theme pavilions: Water, Aerospace & Strategic, Energy, Leather, Healthcare



Union Minister for Science & Technology and Earth Sciences, Dr. Harsh Vardhan inaugurating the CSIR Platinum Jubilee Techno-Fest 2016



Dr. Harsh Vardhan releasing the theme publications

& Generics, Ecology & Environment, Chemicals & Petrochemicals, Food & Nutrition, Agriculture & Floriculture, Engineering & Infrastructure, Metals, Minerals, Mining & Metallurgy, CSIR 800 (Societal Interventions), Human Resource Development, and IP & Entrepreneurship.

Dr. Girish Sahni, Director General, CSIR remarked that the Techno Fest was a matter of pride and satisfaction. “It is an honest attempt to make people aware about the contribution of CSIR scientists,” he said. “All 38 labs of CSIR contributed to the Techno Fest, presenting CSIR efforts to solve various

issues of the common Indian. We are looking forward to contribute more with every passing year.”

Several live exhibits were displayed at the Techno Fest. These included a Lithium-ion battery powered four-door electric car; free swimming robot ‘Maya’, an Autonomous Underwater Vehicle for coastal area surveys and mapping salinity of water in reservoirs and dams; a multi-fuel domestic cook stove, ‘Neerdhur’, for rural households, which can be fueled by cow dung cake, wood chips, wood logs and charcoal; water purification technologies; biogas generation from organic waste; carbon composites and



Union Minister for Science & Technology and Earth Sciences, Dr. Harsh Vardhan going round the CSIR Platinum Jubilee Techno-Fest 2016



simulators for civil aircraft; Helmet Mounted Display for aircraft pilots; vehicle and human detection system for Indian Army; a model depicting encasing of nuclear waste in glass, and several others.

Apart from live exhibits that evoked huge public curiosity, on each day events such as panel discussions and lectures were organised based on a pre-decided theme area. More than 150 S&T presentations were made by

CSIR professionals and its industrial partners. For the commercial launch of the latest technologies by CSIR labs, 45 MoUs were signed with industrial partners.

To spark interest among students and spread awareness about CSIR technologies and achievements, public lectures, quiz, and public speaking competitions were also organised for students daily.



View of the CSIR Platinum Jubilee Techno Fest 2016 pavilion at the India International Trade Fair held at the Pragati Maidan, New Delhi during 14-27 November 2016



CSIR-IICB Scientists open up Avenues for Drug Development to Combat Diabetes

Scientists at the CSIR-Indian Institute of Chemical Biology (CSIR-IICB), Kolkata, have zeroed in on key disease events triggering type 2 diabetes in obese people. The findings open up avenues for drug development and therapy.

According to a recent study in *Lancet*, China, India and the US are among the top three countries with a high diabetic population.

In collaboration with clinicians from ILS Hospitals, Kolkata, and Institute of Postgraduate Medical Education and Research (IPGMER), Kolkata, the CSIR-IICB scientists analysed fat tissues (visceral adipose tissue or VAT) of obese people undergoing bariatric surgery. They were able to discover a novel mechanism in the pathway that leads to type 2 diabetes in obese people. This is perhaps the

root cause of the pathway and opens up possibilities for development of new drugs based on the finding.

The study was published in August in the journal *Diabetes*.

In obese people, the fat cells in the adipose tissue accumulate fat which are infiltrated by immune cells called macrophages infiltrate fat tissue and produce chemical mediators called cytokines which lead to inflammation responsible for the eventual insulin resistance. The scientists found that the enlarged fat cells release a chemical called chemerin, which recruits specific immune cells called plasmacytoid dendritic cells (or pDCs) and these in turn drive macrophages to an activated stage and lead to inflammation. Chemerin could be used as a biomarker to pinpoint obese individuals who are more prone to diabetes.



CSIR-CFTRI Food Keeps Malnourished Anganwadi Kids Healthy

The CSIR-Central Food Technological Research Institute (CFTRI), Mysuru, has been in the forefront of cutting-edge research in food technology, food processing and food packing. Now, scientists from the Institute have developed a new line of products with advanced nutrition value to combat malnutrition among children. The food products are not only easy to use, but are also delicious.

Four months ago, the Institute began distributing seven nutritious foods to children in 13 anganwadis in Hegdalli, Ramapura and Chamalapurada Hundi villages of Nanjangud taluk. The department of women and child development had recently found that the district has about 329 severely malnourished children, of which 100 were in 13 anganwadis in the taluk.

The seven advanced nutritious products developed by CSIR-CFTRI include rice mix, high-protein rusk, energy food, nutria chikki with spirulina, nutria sprinkle, sesame paste and fortified mango bar – all containing macro and micro

nutrients. Authorities claim to have noticed a positive change in the children's health after these nutritious food items were added with the regular menu comprising different types of sprouts and milk. The malnourished children gained weight and their resistance power (immunity) also improved.

The food provided by CFTRI has also ensured good student strength in anganwadis with the dropout rates coming down.



CSIR-IMMT comes up with Green Technology to Treat Wastewater

CSIR-Institute of Minerals and Materials Technology (IMMT), Bhubaneswar, has developed a low-cost wastewater treatment technology that runs without electricity, chemicals or machineries.

Dubbed 'Constructed Wetlands for Treating Wastewater', the technology is ideal for treatment of domestic and municipal wastewater in cities. This technology involves a multi-layered process of adsorption, filtration, sedimentation, biological uptake, degradation, plant uptake, natural aeration and valorisation. During the course of treatment, the constructed wetlands produce oxygen and absorb

carbon dioxide from the atmosphere.

The CSIR-IMMT technology is suitable for mildly polluted water like sewage and holds out and has the potential of replacing costly conventional treatment plants.

The basin for a Wetland can be constructed with locally available soil and seepage of wastewater into the ground can be prevented by a barrier made of clay or polythene. Suitable aquatic vegetation can be planted to sustain the wetland. An additional advantage is that the treated water can be used for agriculture, gardening or groundwater recharge.

CSIR-IMMT has already installed constructed wetlands in the CRPF Campus. The Bhubaneswar Municipal Corporation (BMC) has also shown interest in the technology. The BMC will be making a case study on setting up such plants in areas like Salia Sahi and Jadupur on a pilot basis. The BMC will also offer support to CSIR-IMMT to set up these plants in individual households, apartments, slums and community sewage discharge locations.



R&D Highlights

CSIR-NAL Contributions to Successful Flight Testing of ISRO's Scramjet Engine Technology Demonstrator

The first experimental mission of ISRO's Scramjet Engine towards the realisation of an Air Breathing Propulsion System was successfully conducted on 28 August 2016 from the Satish Dhawan Space Centre SHAR, Sriharikota by ISRO.

With this flight, critical technologies such as ignition of air breathing engines at supersonic speed, holding the flame at supersonic speed, air intake mechanism and fuel injection systems have been successfully demonstrated. India is the

fourth country to demonstrate the flight testing of Scramjet Engine.

Some of the technological challenges handled by ISRO during the development of Scramjet engine include the design and development of Hypersonic engine air intake, the supersonic combustor, development of materials withstanding very high temperatures, computational tools to simulate hypersonic flow, ensuring performance and operability of the engine across a wide range of flight speeds, proper thermal management and ground testing of the engines.

CSIR-NAL was proud to associate with the success and has contributed immensely towards Scramjet technology demonstrated by ISRO. A brief on the technological contributions of CSIR-NAL is given below.

Validation of Experimental Aerodynamic Results:

The National Trisonic Aerodynamic Facilities of CSIR-NAL contributed towards the validation of experimental aerodynamics results in various ways, such as:

- (a) Determination of overall aerodynamic force and moments on the complete configuration as well as the sustainer alone
- (b) Measurement of roll damping on the complete configuration and sustainer alone using continuous roll technique
- (c) Measurement of unsteady pressure distributions on the configurations
- (d) Air-intake tests on 1:1 scale air-intake model of sustainer stage

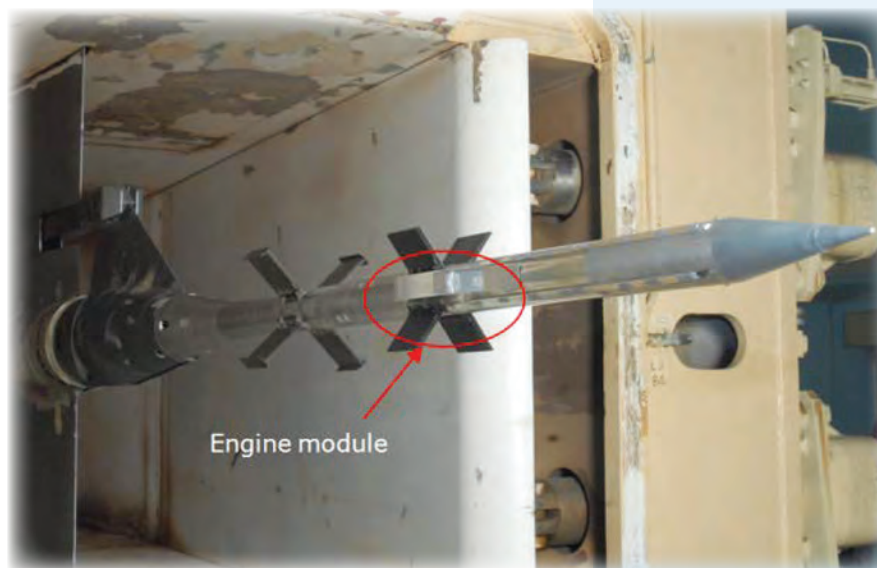
These measurements provided vital aerodynamic data on stability of the vehicle during flight, unsteady pressure loading on the vehicle, response of the vehicle to commands at various phases of flight and assessments of performance

of the air-intake under conditions of supersonic combustion.

Performance Evaluation of Scramjet Combustor:

The performance of the VSSC Scramjet combustor was evaluated in High Speed Combustor Test Facility (HSCTF), Propulsion Division, CSIR-NAL at Mach 2.2, total temperature 1675–1725 K, total pressure 8.7-9 bar and flow rate 5.9-6 kg/s. Hydrogen fuel was used (0.1 kg/s). The HSCTF, a state-of-the-art Scramjet test facility, was commissioned for providing the simulated flight conditions. The VSSC combustor was heavily instrumented at HSCTF with various measurements like wall static pressures and skin temperatures. Instrumentation and control software was developed by NAL, exclusively for this test series.

Successful ignition and sustained supersonic combustion was observed in the combustor. The objective of the test series was to study the flame holder performance for ignition, flame stabilisation and efficient combustion under various combustor inlet and fuel flow conditions. Further, the combustor wall temperature measurements were used to evaluate the combustor wall

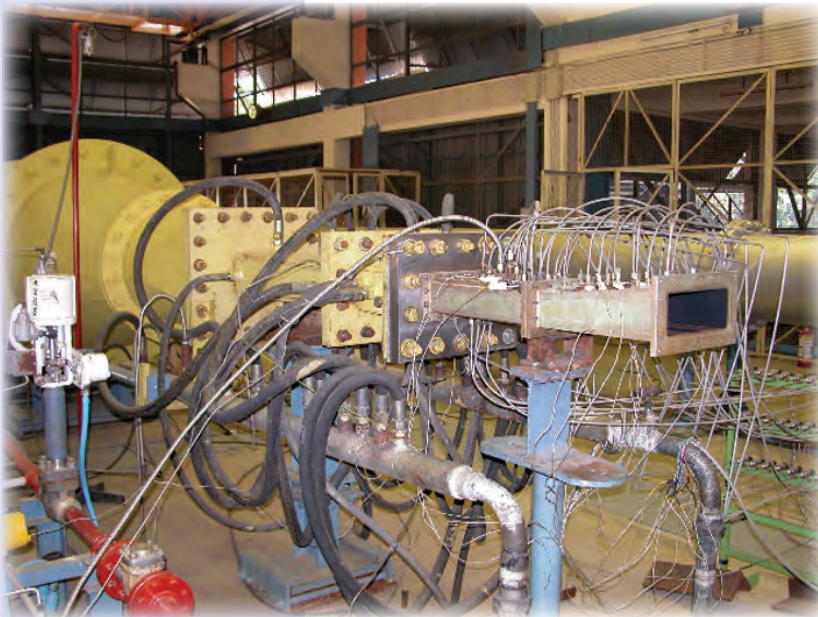


ATV model in NAL 1.2m wind tunnel

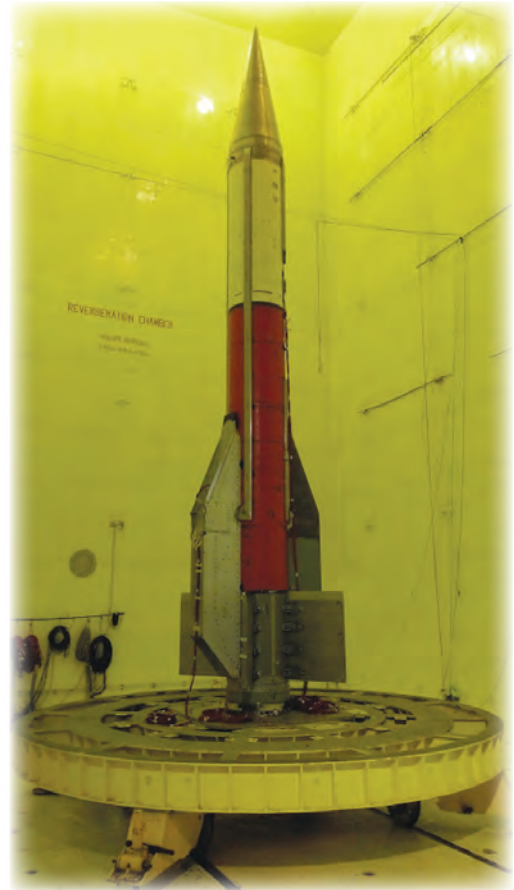
heat flux. The programme has given many technical challenges due to the elevated flow temperature with Oxygen enrichment. Moreover, handling of highly explosive Hydrogen including its logistics introduced further complexities.

Acoustic Test on the Upper Stage of ATV Carrying Scramjet Engines: Acoustic Test Facility (ATF), CSIR-NAL carried out acoustic qualification of the upper stage (second stage) of the Advanced Technology Vehicle (ATV) carrying the two scramjet engines. This

test was carried out to simulate lift-off acoustic loads as well as the acoustic loads encountered by the vehicle during flight through the atmosphere. The tests met all requirements to ensure structural integrity during lift-off and atmospheric flight.



Scramjet Combustor at CSIR-NAL Facility



ATV upper stage with Scramjet engines at ATF



ATV model for aerodynamic force and moment measurements for unsteady pressure measurements

Low Density, Free-standing, Inexpensive Fluffy Sponges as Electrocatalysts for Efficient Energy Devices

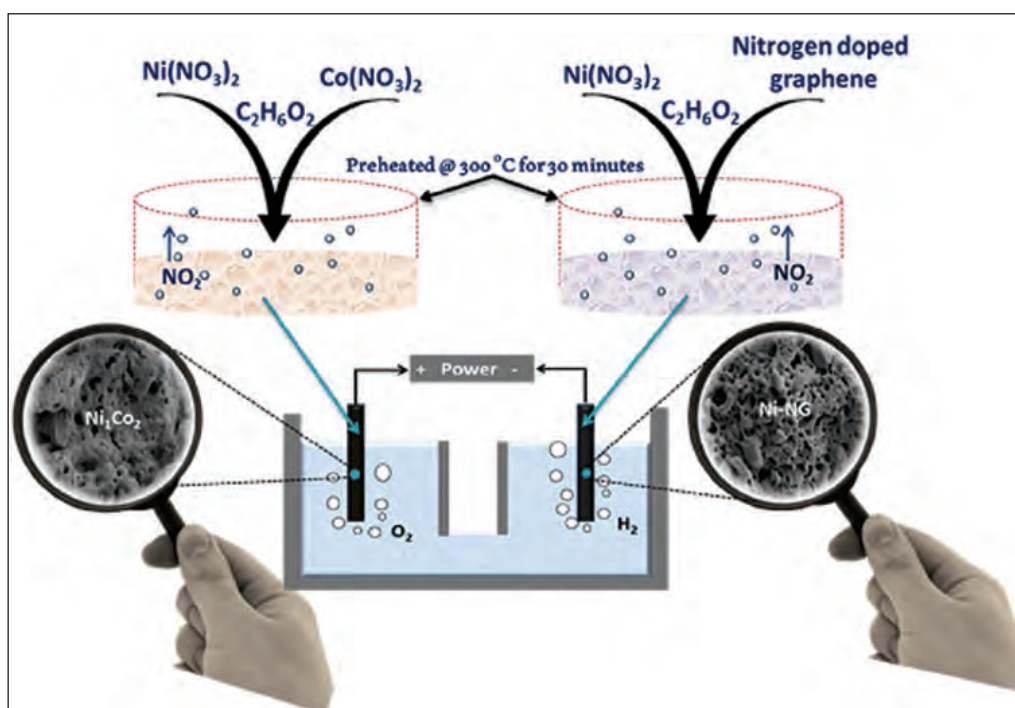
Collaborative research effort between Dr. Alwarappan's team at CSIR-CECRI and Dr. Narayanan's group at TCIS-TIFR developed and demonstrated a bulk, one step and a controllable method to synthesise a very low dense yet a high free standing "Nickel-Cobalt" (Ni-Co) and "Ni-Graphene" (Ni-NG) sponges for electrocatalytic water-splitting applications. However, of various stoichiometries, based on the experimental results researchers found that only Ni_1Co_2 was a good electrocatalyst and comparable to that of benchmarked IrO_2 towards oxygen evolution reaction. The developed Ni_1Co_2 catalyst exhibited a overpotential of 1.629 V@10 mA/cm², high stability, low tafel slope (87.3 mV/dec) and a very high Faradaic efficiency (92%). Further,

a Fluffy Nickel-Nitrogen doped graphene was also synthesised in this work and it was found to be an excellent hydrogen evolution catalyst.

Finally, the usefulness of both these materials was demonstrated by constructing a water electrolysis cell with Ni-Co as anode and Ni-NG as cathode. The cell exhibited an enormous stability (>10 hours) and performance (10 mA/cm² at 1.59 V) and thereby confirms the feasibility of these freestanding electrodes based cells for commercial energy production applications.

Reference:

T.V. Vineesh, S. Mubarak, M.G. Hahm, V. Prabu, S. Alwarappan and T.N. Narayanan, *Scientific Reports* 6, Article Number: 31202, (2016) doi:doi:10.1038/srep31202



Scheme representing the water electrolysis cell made out of "Ni-Co" and "Ni-NG" based fluffy sponges electrodes

CSIR-NIO's Research Provides Evidence for Burial of Parts of Harappan Port Town of Dholavira by Marine Sediments Possibly Transported by a Tsunami

Dholavira in Gujarat is a site of an ancient metropolitan town of the Harappan period. Dholavira was the largest port-town of the Harappans, and is the second largest Harappan site located within the present borders of India.

This well-planned urban settlement flourished for about 1500 years from about 5000 to 3450 years before present. Archaeological excavations show that the township comprised of three parts – the castle, the middle town, and the lower town.

A unique feature of Dholavira is the presence of a 14-18 metre thick wall, apparently built as a protective measure. Intriguingly, walls of such thickness are not found even in historic times when conflicts were more common. Therefore, the real purpose of the Dholavira wall has been a topic of considerable debate.

Recently, a group of scientists deputed by Dr. SWA Naqvi, Director, CSIR-National Institute of Oceanography (NIO), Goa, and led by Dr. Rajiv Nigam, has proposed that the thick wall was built to protect the town from extreme oceanic events such as storm surges and tsunamis.

CSIR-NIO has carried out additional work at this site. A team of

palaeoclimatologists, archaeologists and geophysicists from the Institute surveyed a hitherto unexcavated area using Ground Penetrating Radar (GPS) and systematically collected soil samples. The GPR records show 2.5–3.5 metre thick homogenous soil layer (without any layering) below the surface, which suggests its episodic deposition, possible due to an extreme event.

With the permission of the Archaeological Survey of India (ASI) a 2.5 m x 2.5 m trench was dug in the north-western corner of the Middle Town to a depth of 3.65 m. Fresh vertical section of homogenous soil thus exposed was sampled at regular intervals to infer the depositional history. The soil samples have been found to contain fossils of '*foraminifera*', microscopic organisms that build calcareous shells and live only in seawater. This presence of shells of marine organisms in the soil strongly suggests an episodic deposition of marine sediments in the area. This deposition could have occurred as a result of a massive tsunami.

Tsunamis are known to have hit the region during the historical period. For example, the Makran Earthquake of 28th November 1945 generated a huge tsunami, over 10 metres in height, which devastated large areas along the northern shores of the Arabian Sea. The exact timing of the sediments deposited in Dholavira is yet to be established. However, the results clearly indicate that massive tsunamis are not uncommon in the region.

The thick wall in Dholavira shows that the Harappans were not only aware



of the potential threats from tsunamis, but they were also pioneers in coastal disaster management. Most importantly, results of this study open the possibility that Dholavira, at least in part, could have been destroyed by such a tsunami.

The CSIR-NIO team comprised of Dr. V.J. Loveson, Dr. A.S. Gaur, Shri Sundaresh, Shri S.N. Bandodkar, Shri Ryan Luis, Shri Gurudas Tirodkar and Miss Rupal Dubey.



MoUs

CSIR-NCL and Embryo Technologies Sign Agreement for Collaboration for the Development of Medical Devices

CSIR-National Chemical Laboratory (CSIR-NCL), Pune, signed a research collaboration agreement with Embryo Technologies Pvt. Ltd. (Embryo), Pune, on 20 October 2016 at CSIR-NCL, Pune to develop medical devices.

This collaboration will help in free exchange of ideas and discussion between CSIR-NCL and Embryo. It will provide a framework for collaborative research and technology development. Innovative development of indigenous medical devices will be the primary focus.

The Embryo team was led by Mr Nishant Kumar, CEO and Mr Prateek Kumar, CTO Embryo Technologies Pvt. Ltd. The CSIR-NCL team was led by Dr. K. Guruswamy and Dr. B. L. V. Prasad, the scientists executing the project along with Prof. Ashwini Kumar Nangia, Director, CSIR-NCL.



Prof. Ashwini Kumar Nangia, Director, CSIR-NCL and Mr Nishant Kumar, CEO, Embryo Technologies exchanging the signed agreements

MoA between CSIR-CBRI and NRDC

A Memorandum of Agreement (MoA) was signed with National Research Development Corporation (NRDC), New Delhi, for promotion, licensing and commercial exploitation of CSIR-CBRI developed technologies, know-how and inventions on 10 August 2016.

The MoA was signed by Dr. N. Gopalakrishnan, Director, CSIR-CBRI, Roorkee, and Dr. H. Purushotham, Chairman and Managing Director, NRDC, New Delhi. Shri Yadvendra Pandey (Chief Scientist), Dr. A.K. Minocha (Chief Scientist), Group Leaders, Senior Scientists/Officers and Young Scientists from both the signees were present during the event.



Seminar/Symposia

CSIR-IICB Organises Indo-Brazil Symposium

CSIR-Indian Institute of Chemical Biology (CSIR-IICB), Kolkata, and Instituto de Biofísica Carlos Chagas' Filho, Universidade Federal do Rio de Janeiro, Brazil, had a collaborative joint research project entitled "To decipher biological processes of organisms causing diseases of clinical importance to both the countries" funded by the Department of Science and Technology, Government of India.

CSIR-IICB organised an Indo-Brazil Symposium on "Biochemistry of Kinetoplastid Parasites" during 19-20 September 2016. Dr. Chitra Dutta, Chief Scientist and Acting Director, CSIR-IICB welcomed both the Brazilian and Indian Scientists.

The main purpose of the symposium was to have an in-depth discussion on

different aspects of research being carried out in the two countries. Researches on *Leishmania* were presented by Indian scientists and *Trypanosoma* researches were presented by the Brazilian scientists. Twenty five speakers delivered lectures on the two different parasites in the two-day symposium. A poster session was also arranged during the conference.

Prof. Wanderley de Souza, Brazil, in his Keynote address presented a review on structures and organelles that may constitute targets for new compounds against pathogenic trypanosomatids.

There were six scientific sessions. Other speakers included Dr. Emile Barrias of Inmetro from Brazil, Dr. Chandrima Shaha of NII, New Delhi, Dr. Amitabha Mukhopadhyay of NII, New Delhi, Dr. Chinmoy K. Mukhopadhyay

Glimpses of the Programme



of Jawaharlal Nehru University, New Delhi, Dr. Susanta Kar and Dr. Anuradha Dube of CSIR-CDRI, Lucknow, and Dr. Syamal Roy of Panchanan Barma University. From CSIR-IICB the speakers were Dr. Chitra Mandal, Dr. Subrata Adak, Dr. S. N. Bhattacharyya, Dr. Nahid Ali, Dr. P. Jaisankar and Dr. H. K. Majumder.

During the tenure of the Indo-Brazil project (2012-2016) several visits between these two countries were made to achieve high science through the collaborative research. The symposium witnessed strong scientific interactions among the participants of both the countries.



Workshop/Training Programmes

CSIR-CBRI Organises Workshop-Training-Cum-Motivational Programme For Teachers

CSIR-Central Building Research Institute, Roorkee, organised a Workshop-Training-cum-Motivational Programme for Teachers under the CSIR Scheme, “Faculty Training, Motivation & Adoption of Schools & Colleges by CSIR Labs” on 5 October 2016. The objective was to promote interest, excitement and excellence in science education at the school and undergraduate level for science teachers to upgrade their knowledge base in new and emerging areas of science and to provide an opportunity for interaction and exchange of ideas with the scientific community.

Speaking on the occasion, Dr. A.C. Dwivedy, Programme Director, HRDG, CSIR, New Delhi, motivated the teachers and advised them to work as fountainheads as well as brand ambassadors and spread this message to all the schools. He explained the qualities of a good teacher such as empathy, positive attitude, role model, creativity, sense of humor, dress sense, body language, effective communication, efficiency, effectiveness, time management, etc. and exhorted them to motivate students to dream how to think instead of what to think. Emphasising on the importance of



Participants visiting CBRI Laboratories

motivation, goals and objectives in life, he said that we should set specific, measurable, attainable, realistic and timely goals while battling every possible challenge it poses. He also gave a detailed overview about the schemes to raise the standards and achieve excellence in science education for an innovative India.

He urged the teachers to efficiently and effectively utilise the resources and scientific knowledge pool of the Institute for the education of students and also to encourage the students to have interactive hands-on experience sessions with the scientists by organising educational programmes in their respective institutes.



The Panel at the Inaugural Session

In his inaugural address, Shri Yadvendra Pandey, Chief Scientist, CSIR-CBRI, Roorkee, informed that as a pioneer in the building sector, the Institute has developed new, organic, environment-friendly building materials and about the latest developmental schemes such as the Rural & Urban Scheme which works towards development of all sectors of people in the building area.

Shri Pandey also assured that the Institute would provide full cooperation by providing all the necessary resources to increase the students' passion towards science. He informed that CSIR-CBRI would provide laboratory facilities to students to pursue their dreams and convert them into reality.

Earlier, Dr. Atul Kumar Agarwal, Senior Principal Scientist, CSIR-CBRI, Roorkee and Programme Coordinator while welcoming the faculty members of all 8 schools and colleges at the inaugural function informed that in 1893 a monk and an industrialist, two great Indians, met for the first time on a boat, both going from Japan to Chicago. As they got talking, Vivekanand explained his mission of going for preaching in the U.S., the University of all religions, while Jamshed Ji Tata said that he was in search of an equipment and technology that would



Participants visiting Rural Park, CBRI

build the steel industry and make India a strong industrial Nation. Vivekanand blessed Jamshed Ji and said that if people of India could be taught and trained such modern science and skills, half of the problems could be solved. The spark that Saint Vivekanand lit in JRD Tata led to establishment of IISc, Bangalore, TIFR, TISS, etc.

During the programme, several scientists delivered lectures on various important areas of Science & Technology highlighting their Institute's R&D activities. Shri S.K. Negi delivered a lecture on "Rural Technologies", Dr. S. Sarkar on "Natural Disasters", Dr. B.S. Rawat on "Management of Pest Control" and Dr. L.P. Singh on "Nanotechnology & Building Materials".

Later, the participants visited the labs of CBRI, Roorkee, including Rural Park, Organic Building Materials, Efficiency of Buildings, Fire Research and Environment Science & Technology-

Clay Products, etc. and learned about the newest developments and technologies by the Institute. They also had an interactive session with the institute's scientists where they put their curiosity to rest and quenched their thirst for knowledge.

The programme was attended by 27 faculty members from 8 schools and colleges of Roorkee, including Methodist Girls PG College, KLDVA (PG) College, SSDPC Girls PG College, Greenway Modern Senior Secondary School, Children's Senior Academy, CBRI Junior High School and Mount Litera Zee School.

The programme got a positive feedback from the participants and was defined as motivating, inspiring and interesting. Certificates were also distributed to the participants and ended with a vote of thanks proposed by Dr. Abha Mittal, Senior Principal Scientist, CSIR-CBRI, Roorkee.



Participants and scientists attending the programme

CSIR-CSMCRI Reaches out to Fisherwomen

To provide alternative livelihood to economically backward fisherfolk engaged in wild seaweed collection in the Gulf of Mannar Biosphere Reserve, the Marine Algal Research Station (MARS), a unit of CSIR-CSMCRI in Mandapam distributed rafts for cultivation of seaweeds.

The rafts were distributed free of cost to the women from Chinnapalam by



Dr. Amitava Das, Director, CSIR-Central Salt and Marine Chemicals Research Institute, Bhavnagar (extreme left), taking a look at seaweed cultivated in raft near Kunthukal

Dr. Amitava Das, Director, CSIR-Central Salt and Marine Chemicals Research Institute (CSIR-CSMCRI), Bhavnagar.

In recent times there has been a huge demand for seaweed in food, pharmaceutical, chemical and fertilizer industries in the country. The Gulf of Mannar region is one of the top producers of seaweed in the country

The fisherwomen were trained to cultivate *Gracilaria edulis*, *Gracilaria debilis* and the highly remunerative *Gelideilla acerosa* using the raft method. Of the 200 women in Chinnapalam engaged in wild collection, 35 were selected for cultivation using the raft method in the first phase.

The women could harvest *Gracilaria edulis* and *Gracilaria debilis* in 45 days and the other species in 90 days assisted by scientists of CSIR-CSMCRI. As they were allowed wild collection only for 12 days a month, the women could earn additional income by cultivating seaweed using the raft method.

Waterless Chrome Tanning Technology Demonstration (WCTT)-cum-Workshop by CSIR-CLRI

The Waterless Chrome Tanning Technology (WCTT) developed by CSIR-CLRI was demonstrated successfully in two Kolkata tanneries during 24-26 October, 2016.

At the tannery of Zia Hides and Skin Agency, the demonstration was held on a batch of 1150 pieces of goat skins having a pelt weight of 900 kg, while the same trial was conducted on 90 pieces of full thickness buffalo hide in Indian Tanning Industries Pvt. Ltd. The pelt weight of

this batch was 3600 kg. It was observed that the experimental leathers were comparable with conventionally prepared leathers in respect of wet-blue colour and flatness of the grain, but in respect of fullness, the waterless chrome tanned leathers especially those made from buffalo hides were superior to the regular leathers. The actual tanning process was found to be much shorter and far simpler than the conventional process.

The practical demonstration was

followed by a workshop to share the results of the demonstration with all the stakeholders in the region. The workshop was organised on 27 October 2016 at Hotel Regenta Orko's. The wet-blue leathers (both Goat skins and Buffalo Hides) from demonstration held in Kolkata and crust and finished leathers made from batches demonstrated earlier in other tanning clusters were displayed in the workshop hall. This offered an opportunity to all those present in the workshop to see the end results.

In all, 77 persons from institutes, industry and various sections of the trade participated in the workshop. Twenty-four among them were from the tanning sector.

The workshop began at 11.00 a.m. with a welcome address by Dr. Dipankar Chaudhuri, Head, RCED (CSIR-CLRI), Kolkata. He gave an account of the demonstrations held and explained the need for the workshop.

Dr. B. Chandrasekaran, Director, CSIR-CLRI, also addressed the gathering. He traced the need for balancing economic growth and environmental protection. He also talked about the plan document submitted to DIPP by CSIR-CLRI proposing several measures including upgradation of the existing CETPs in India for all round development of the leather sector.



Dr. B. Chandrasekaran, Director, CSIR-CLRI addressing the participants

Shri Ramesh Kr. Juneja, Chairman, Eastern Region, CLE and also President, CLCTA followed Dr. B. Chandrasekaran. Incidentally, Shri Juneja also owns Indian Tanning Industries Pvt. Ltd. where the WCTT demonstration was held. He addressed the gathering and shared his views on the demonstrated process. Appreciating the potential benefits of this novel technology such as shorter process time, smaller number of process steps and chemicals required, he expressed satisfaction over the quality of the wet-blue obtained. He emphasised the



Dr. Dipankar Chaudhuri, Scientist and Head, RCED (CSIR-CLRI), Kolkata welcoming the participants to the workshop

importance of area-yield in leather trade and mentioned that he was eagerly waiting for further processing of the experimental wet-blue into various kinds of finished leather to complete to check the impact of this new technology on the area-yield. Shri Juneja observed that it would be premature to make further comment on the acceptability of this technology before checking the additional cost of chemical added during the tanning process and ascertaining the modification to the tanning vessel needed for practising this new technology.

Shri Imran Ahmed Khan, Hon'y. General Secretary, CLCTA, also spoke



on the occasion. He appreciated this new technology for demanding less process water and making the chrome-recovery process needless and complimented CSIR-CLRI for this development. Expressing optimism about this new technology, Shri Khan said that this technology would be very helpful in achieving compliance with the regulatory norms with regard to chromium and salt. He also felt that the demand for less process water for tanning by this technology would also help the CLCTA to accommodate more tanneries in CLC.

ILTA President Shri Arnab Kr. Jha was the Guest of Honour at the workshop. In his address, Shri Jha cited the management of salt and chromium as the main cause of concern for the tanning sector and appreciated the development of WCTT, which will support the tanning industry in managing both the pollutants.

The Chief Guest of the workshop was Shri A. Bandopadhyay, Director, MSME Development Institute, Kolkata. In his address, Shri Bandopadhyay highlighted the importance of development and implementation of new and innovative technology in industrial sectors. He made a mention of the three 'I' concept,

namely 'Innovation, Incubation and Implementation' and lauded the CSIR-CLRI initiative with regard to WCTT which is in line with the three 'I' concept. He also elaborated on various schemes that MSME Development Institute offers to support the micro, small and medium enterprises and emphasised few such schemes that could be very useful and supportive for practising innovative and cleaner technologies requiring additional investment in terms of purchase of new machinery and equipment.

Shri Md. Ali of Zia Hides & Skins Agency, where the WCTT was demonstrated on goat skins, shared with the participants in the workshop his experience with this new tanning technology. Shri Ali said that this technology not only saved time, water and chromium salt, it also produced wet-blue of excellent quality in terms of colour-uniformity, fullness and grain-flatness.



A view of the participants



Shri Arnab Kr. Jha, President, Indian Leather Technologists' Association and Guest of Honour at the workshop delivering his address

There were two power-point presentations from CSIR-CLRI on WCTT and its licensing. These presentations evoked several queries from the audience. The most important query was regarding the level of chromium that would be leached out of the waterless chrome tanned leather in the subsequent wet

processing. Responding to this query, Dr. P. Thanikaivelan of CSIR-CLRI stated that the leachable chromium normally remains very close to 2-3% of the total chromium taken up by the leather during tanning. He assured the house that the leachable chromium from the experimental leather would be significantly lower than that for the

conventionally processed leather.

The programme came to an end with a vote of thanks proposed by Dr. J. Raghava Rao, Chief Scientist, CSIR-CLRI. Dr. Rao highlighted the importance of protecting the environment and emphasised the need for absorbing this new technology for both the industry as well as the society.



CSIR Foundation Day Functions

CSIR-Central Building Research Institute, Roorkee

The CSIR Foundation Day was celebrated with great enthusiasm at the CSIR-Central Building Research Institute (CSIR-CBRI), Roorkee, on 29 September 2016. Mr Rajeev Goel, Chairman and Managing Director, Hindustan Prefab Limited, New Delhi, graced the occasion as Chief Guest and Mr M. Manjunath, Project Director, Mysore Nirmithi Kendra, Mysore, Karnataka was the Guest of Honour. Dr. N. Gopalakrishnan, Director, CSIR-CBRI, presided over the function.

The Chief Guest Mr Rajesh Goel, in his speech said that the development in the field of building construction has still not reached its expected growth. Since building and construction is one of the largest and growing sectors, we need to work from the bottom of the pyramid to achieve set goals. It is our responsibility to percolate the benefits of the R&D achievements up to the grass root level. Referring to the Housing for All by 2022 scheme, he said that to achieve the goal, we need to create 5 million houses each year for which we need to double the pace. Stating that CSIR-CBRI had set the highest standards in the building sector, he emphasized that the new technologies



Inaugurating the function by lighting the lamp

would be acceptable on the ground only when certified by CBRI.

Mr Goel informed that in the event of disasters such as earthquake, special attention is required towards the unorganised sector and we should endeavour that in case of a disaster, transit shelters should immediately arrive at the place of need. He appreciated the contributions made by scientists of the Institute and encouraged them.

Earlier, the Chief Guest planted trees in the CSIR-CBRI campus as a gesture of harmonious living with nature.

Addressing the gathering, the Guest of Honour Mr M. Manjunath said

that CSIR-CBRI technologies are very useful in the construction sector and there is a shortage of skilled labour in the construction sector. He expressed satisfaction with the technologies developed by CSIR-CBRI, Roorkee and informed that the technology was used to construct affordable houses in 30 square meters area in Mysore and were greatly appreciated.

Earlier, with the lighting of the lamps, Mr Yadendra Pandey, Chief Scientist in his welcome address highlighted the glorious past of CSIR and its ongoing works.

Dr. N. Gopalakrishnan, Director, CBRI, said that it is a day of introspection and self-evaluation. We need to introspect and think about every citizen of the country. He said that CBRI has a rare communion of scientists, engineers and experts that should be exploited to develop newer technologies.

On this occasion, the latest edition of the *Central Building Research Institute Annual Report* and *Nirmanika* were also released. Dr. Suvir Singh, Chief Scientist proposed the vote of thanks. A cultural programme was also organised in the evening.

Students and citizens were invited to the Institute during the Open Day and an orientation programme was organised for the visiting students from various schools and colleges. The students and their teachers visited various laboratories of the Institute and had interesting interactive sessions with the scientists.

CSIR-CBRI staff members who have completed twenty five years' service in CSIR were felicitated by the chief guest by presenting them a watch. Also, scientists/staff of CSIR-CBRI superannuated during the year were honored by presentation of a shawl and watch.

A number of activities were organised including essay competition for staff members and for students of classes 6 to 12 in several categories on various topics including 'Role of CBRI in Housing for All Scheme', 'Contribution of CBRI in Nation Building', 'Vision and Direction of CBRI', 'Rio Olympics', 'Namami Gangey' and 'Alternative Energy Sources', etc. The winners of the activities were also awarded on the occasion. Meritorious students were awarded with scholarships for getting admission in IIMs.



Chief Guest, Mr Rajiv Goel addressing the gathering



Release of the *Central Building Research Institute Annual Report*



Guests planting trees on the CBRI Campus

CSIR-Central Scientific Instruments Organisation, Chandigarh

The 74th Foundation Day of the Council of Scientific and Industrial Research (CSIR) was observed at the Central Scientific Instruments Organisation (CSIO), Chandigarh, with a lecture on “Integrated Quantum Photonics”, delivered by Prof.

K. Thyagarajan from the Indian Institute of Technology, New Delhi.



Prof. Thyagarajan highlighted the importance of research in this area that is closely associated with applications in information and communication technologies, simulation and crypto-



graphy.

Prof. R.K. Sinha, Director, CSIO, highlighted the aims and achievements of the CSIR and also talked about various incentives, awards and schemes of the CSIR for young scientists and schoolchildren. Presenting an overview of the ongoing projects and future plans of the laboratory, he said integrated quantum photonics was an upcoming area in which the CSIO was planning to develop a number of technologies for tactical use as well as for societal benefit.

A symposium on ‘Optics and Photonics-based Technologies and Instruments for Civil Society’ was organised in which delegates from different research labs, industry and academic institutions participated.

CSIR-North East Institute of Science & Technology, Jorhat

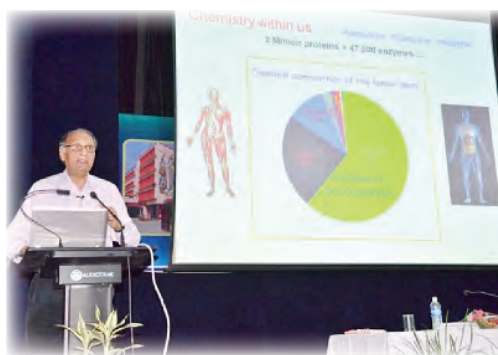
CSIR-North East Institute of Science and Technology (CSIR-NEIST), Jorhat celebrated the 74th Foundation Day of its apex body, CSIR with a three-day programme at its premises during 24-26 September 2016.

Established in 1942, the Council of Scientific & Industrial Research today has a pan-India presence with 38 constituent laboratories spread across

the country. This annual event is marked by technology awards, felicitation of employees, award of special fellowships/scholarships to science students, etc.

This year, the event carried a special significance as it marked the beginning of the yearlong Platinum Jubilee celebrations of CSIR. The event held at Vigyan Bhawan, New Delhi, was graced by Shri Narendra Modi, Hon’ble Prime Minister





Left: Padma Shri Prof. Goverdhan Mehta, FNA, FRS, President of International Union of Pure and Applied Chemistry, delivering the CSIR Foundation Day Lecture at CSIR-NEIST. Right: Prof. Goverdhan Mehta inaugurating the Experimental Animal House

of India & President, CSIR, wherein he released seven new plant varieties developed by CSIR labs and further interacted with farmers assembled in five different locations across the country. This was supported through a live telecast by Doordarshan.

At CSIR-NEIST, an ‘Open Day’ was observed on 24 September 2016 where about 150 students and the general public visited the Institute. The following day on 25 September, a special function was held at the Dr. J.N. Baruah auditorium where Padma Shri Prof. Goverdhan Mehta, FNA, FRS, President of International Union of Pure and Applied Chemistry, graced the function as the Chief Guest and delivered the Foundation Day Lecture on the topic, “Dimensionality of Chemistry: A Science for Global Sustainability in the 21st Century”.

Dr. D. Ramaiah, Director, CSIR-NEIST presided over the function attended by dignitaries, invitees, eminent personalities from in and around Jorhat district, along with CSIR-NEIST fraternity.

Prof. Goverdhan also inaugurated the Experimental Animal House and the modernized RRL Nursery School in the CSIR-NEIST campus besides interacting with the scientists during his visit.

On 26 September 2016, a ‘Kisan Mela’ was organised at the experimental farm in CSIR-NEIST where Dr. K.M. Bujarbaruah, Vice Chancellor, Assam Agricultural University, Jorhat attended as Chief Guest and handed over the saplings of Citronella and Lemon grass released by the Hon’ble PM to two progressive farmers. The farmers then interacted with the Hon’ble PM directly through Doordarshan.

Other dignitaries present in the function were Shri Swapan Saikia, AFS, Divisional Forest Officer, Jorhat and Shri Birendra Nath Sharma, District Agriculture Officer, Jorhat. About 500

farmers/beneficiaries of CSIR-NEIST participated in the fair wherein free saplings of Citronella and Lemon grass were distributed to them.



Left: Dr. K.M. Bujarbaruah, Vice Chancellor, Assam Agricultural University, Jorhat, handing over the saplings of Citronella and Lemon grass to the farmers. Right: Farmers attending the Kisan Mela, an interactive programme with the Hon’ble PM on 26 September 2016

CSIR-National Institute of Science Communication and Information Resources (CSIR-NISCAIR), New Delhi



Chief Guest Prof. K.G.Suresh delivering his inaugural address

The CSIR-National Institute of Science Communication and Information Resources celebrated the 74th anniversary of the foundation of the Council of Scientific and Industrial Research (CSIR) on 27 September 2016.

On this occasion, an Open Day was organised for school and college students. An expo on “Indian Raw Materials & Products” showcased the Herbarium, Raw materials and Museum to the students. More than one thousand children from different schools and colleges along with their teachers took the opportunity to visit and see the natural wealth of India: preserved samples of economic plants, animals and minerals from all over the country, and traditional medicines (green and dried specimens) used in homes. The students were also informed about ways of identifying medicinal plants like *Bacopa monnieri* (Brahmi), *Piper longum* (Pippali), *Centella asiatica* (Mandookparni), etc.

The students were also taken around the Science Communication through Multimedia Division where they were briefed about camera work and shown science films. They also visited the CSIR-NISCAIR Printing Press where they were given a hands-on demonstration of printing of journals and magazines. ‘Climatoons’ from the Climate Change Informatics (CCI) division were a special attraction. Reputed magazines like *Science Reporter*, *Vigyan Pragati* and *Science ki Duniya*, published by CSIR-NISCAIR were also distributed among the students.

After the open day, CSIR-NISCAIR organised the CSIR Platinum Jubilee Celebration Function at the AP Shinde Symposium Hall, NASC Complex, New



School students visiting the printing facility (left) and the Raw Materials Herbarium Museum (right) at CSIR-NISCAIR

Delhi. Prof. K.G. Suresh, Director General, Indian Institute of Mass Communication, New Delhi, was the chief guest and Dr. (Ms) G. Anupama, Joint Secretary, CSIR was the Guest of Honour on this occasion.

Dr. R.S. Beniwal, Chairperson of the 2016 CSIR Platinum Jubilee Celebration Function, in his welcome address welcomed all the guests and congratulated all the retirees and NISCAIR staff and their families on CSIR completing 74 years and touching lives in an effective manner.

The Chief Guest, Prof. K.G. Suresh in his Inaugural Address remarked that this was a special day as mass communication and science communication were sharing a common platform. He termed it unfortunate that science communication only makes 3% of the entire media coverage and that too primarily health and nutrition news. He emphasised that the gap between mass media and science needed

to be bridged. He also cautioned about the ill effects of non-scientific mindsets of sponsored news channels that deliver inaccurate information about science to the vulnerable sections of the society. He said that this issue needs a broad dialogue among all media and editorial associations.

Prof. Suresh emphasised that media should play a role in building up a scientific temperament in the society to create awareness among the common masses by giving a balanced and progressive output. The aim of science communication should be to reach the common man in his own local language. The main

objective of writing should not be to impress but to express. Scientists should be communicators as well and science should be simplified for the reader. He also encouraged scientists to strive to be good communicators.

Dr. (Ms) G. Anupama, Guest of Honour at the function, in her lecture highlighted the importance of science communication and the need for science information to reach the common man. She said, CSIR has a very significant role in building this nation into a modern country. She said that CSIR-NISCAIR is a unique institute in CSIR that disseminates developments going on in various laboratories all over the country to the people in a way that interests them and entertains them.

In his presidential speech, Dr. Manoj Kumar Patariya, Director, CSIR-NISCAIR, said that we are living in an age of uncertainties and science has an added responsibility to solve problems of people's unrest. CSIR-NISCAIR can take advantage as a science communication institute to deal with these challenges. He suggested that scientists should try to bridge the language and information gap between science and the common masses. They have to play the role of a communicator as well. He exhorted the scientific fraternity to take the responsibility of communicating not only science but true and real science that is important and useful for the public.

The function concluded with a prize distribution ceremony. Gifts and certificates were awarded to the winners and participants of various events such as Painting, Quiz and Debate competitions, Sports events and Fun games.



Dr. Manoj Kumar Patariya, Director, CSIR-NISCAIR, addressing the gathering

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