

ISSN 0409-7467



CSIR NEWS

Progress, Promise and Prospects

VOL 60 NO 23 & 24 DECEMBER 2010

C O N T E N T S

CSIR Technofest 2010



CSIR- Technofest Won
the Gold Medal in IITF- 2010



'CIMAP- Patra' A New Mint Variety



CSIR Foundation Day 2010



Dr. Chandra Shekhar Nautiyal
Takes Over as Director, NBRI



Dr. Sourav Pal Takes Over as
Director, NCL



website: <http://www.csir.res.in>



CSIR Technofest 2010

CSIR Technofest 2010 was the first of its kind event organized by CSIR to showcase its contributions in driving forward the competitive industrial growth coupled with sustainable inclusive growth towards improving the quality of living of the common masses. As this fair highlighted the potpourri of the industrial competence and cultural diversity of India, it attracted a large number of people including the important stakeholders of CSIR.

The exhibition showcased CSIR's expertise in the field of science and technology through 15 theme pavilions. This mega event envisaged to strengthen CSIR linkage with existing and potential industry partners and to effectively disseminate the benefits of knowledgebase to the masses. It also showcased CSIR's R&D competence, the technologies & products successfully commercialized by the industry in addition to many achievements of CSIR.

The fest aimed to create awareness about the latest developments in the field of science and technology. The added attractions of the mega event were special talks, business-to-business meetings and interactive sessions with captains of the industry, leading technopreneurs and academicians. Concurrent to the exhibition, technical sessions were conducted on these themes. A large number of trade visitors and scientists from India and scientific delegations from abroad also visited the CSIR pavilion. Quiz competitions were also organized on all public days of IITF-2010 as a part of CSIR Technofest 2010. A four-page Newsletter highlighting the current events at CSIR Technofest 2010 was brought out in collaboration with FICCI, on every alternate day. Seven issues of the Newsletter were brought out during the entire event.

The credit for the successful culmination of CSIR Technofest 2010, on 27 November 2010, for sure goes to the untiring efforts of the members of CSIR family who worked as a dedicated team to effectively showcase the multifaceted contributions of CSIR.



CSIR Technofest 2010 being inaugurated by the Hon'ble Union Minister for Human Resource Development, Science & Technology and Earth Sciences, Shri Kapil Sibal in presence of DG CSIR, Prof. Samir K. Brahmachari and other dignitaries

Shri Kapil Sibal, Hon'ble Union Minister for Human Resource Development, Science & Technology and Earth Sciences inaugurated the CSIR Technofest 2010 on 14 November 2010, the 14-day exhibition organized by CSIR in Hall No: 11 of Pragati Maidan, as a part of the India International Trade Fair-2010. A large number of invitees, senior officials of CSIR were present on the occasion.

Addressing the gathering, the Hon'ble Minister said,

“The partnership of CSIR and Industry has brought accessibility and affordability of technology to the society. Several nutritious products, healthcare services, petrochemicals and agricultural products and machines are now easily available at low price in India which are very costly if imported.”

Shri. Prithviraj Chavan, Hon'ble Chief Minister of Maharashtra also visited the theme pavilions in CSIR Technofest 2010. He appreciated the efforts made by CSIR in creating awareness about science & technology among the common people.



The Hon'ble Union Minister, Shri Kapil Sibal addressing at the inauguration of CSIR Technofest 2010 – Showcasing Industry-CSIR linkages,



Director General's Message

CSIR Technofest 2010 is an outcome of a large number of years of effort in bringing CSIR's contribution to the forefront. Such an exhibition is being held for the first time on a scale never done before, to showcase CSIR's valuable inputs that have helped in providing competitive industrial growth on one hand, and sustainable inclusive growth on the other, improving the quality of the lives of the common masses.

The CSIR Technofest 2010 is being held as a part of the India International Trade Fair. This has three roles to play; First, to expose the Industries and the partners of CSIR who have matured CSIR knowledge and technology processes and products. Secondly, this is an opportunity for young students to see what they can do in CSIR labs to build their careers. Finally, this is also an opportunity for young innovators and entrepreneurs to seek CSIR technologies for creating national asset. In addition, this is a good destination for those seeking funds for entrepreneurial opportunities. CSIR Technofest 2010 is



The Director General, CSIR, Prof. S.K. Brahmachari briefing the press about the CSIR Technofest 2010

an excellent platform for meeting and having interactive sessions with the captains of the industry, scientists and techno-entrepreneurs and for holding business-to-business discussions.

There is a special pavilion on CSIR 800, which is showcasing agriculture and floriculture. This is a special attraction as it shows how S&T can make a difference in the economies of the poorest of the poor. The participation of strategic sector with CSIR is an ample demonstration of how CSIR is contributing in strengthening India's strategic sector.

CSIR Technofest 2010 is particularly

relevant for the budding young generation for exploring the opportunities they will have under the CSIR Academy of Scientific and Innovative Research (AcSIR): a world-class academy of national importance imparting technology-based education in frontier areas of S&T, which are not ordinarily covered by traditional institutes of higher learning.

The uniqueness of this exhibition lies not so much in the exhibition itself but the spirit in which it was conceived. It is an

exhibition that will also present CSIR through the eyes of Industries that have benefited from CSIR's knowledgebase. It is not just CSIR that is putting up the exhibition; rather it is the Industry putting up the exhibition on behalf of CSIR. This is what separates CSIR Technofest 2010 from the conventional exhibitions.

The CSIR Technofest 2010 is an acknowledgement of all that CSIR has contributed to the national cause in addition to being an opportunity to showcase additional CSIR technologies that are now available for commercialization.



A view of the audience



DNA Sample as a Souvenir, Thanks to IGIB

In a unique attempt, the Institute of Genomics & Integrative Biology (IGIB), engaged in research of national importance in the areas of genomics, molecular medicine, bioinformatics, proteomics and environmental biotechnology, put forward a wonderful opportunity for the general masses to gain awareness about their DNA. With their new age technology, IGIB demonstrated how DNA is actually derived from saliva in just 15-minutes. The DNA strands were then stored in an ethanol solution and given to the individual as a souvenir to carry home.

Miracle Wood from CBRI Technology

Under the theme pavilion: *Mining, Minerals & Materials*, 10 laboratories of CSIR and their industry partners participated. Shivaye Namah Manufacturing Co. Pvt. Ltd., an industry partner of CSIR, displayed their products, aptly titled, *Wood Without Trees* as they are manufactured from natural fiber derived from agricultural waste and recycled plastics, without using wood in any form. The manufacturing process was adopted by them was an advanced indigenous technology having back-up support from Central Building Research Institute (CBRI), Roorkee. The products are suitable substitute for wood with equivalent strength and quality, and are much better as the moisture content is low when compared to wood.

NAL Pushes the Limits of Aerospace Technology

The Strategic Sector including Aerospace was one of the theme pavilions in CSIR Technofest 2010. In its impressive and informative pavilion in the exhibition, National Aerospace Laboratories (NAL) highlighted its successful partnership with Industry.

Dr A R Upadhyaya, Director, NAL, Bangalore said, "I am happy to say that CSIR Technofest 2010 is a good platform to inform the general public and the scientific community about the achievements of CSIR in the field of strategic sector like aerospace."

He said that CSIR-NAL is an advanced technology

solution provider to the aerospace programme of the country and mentioned that NAL is proud to be associated with the CSIR 70-90 seat passenger national civil aircraft programme.

Dr Upadhyaya further mentioned that NAL is associated with the SARAS programme for designing, developing and manufacturing 15 aircraft for the Air Force. NAL is also associated with Mahindra Group to produce the 5-seater NM-5 aircraft, which is the country's first venture under the public-private partnership scheme. The aircraft is all set to be launched by next year. He added that the Carbon Fiber Technology developed by NAL, used in aerospace and defense sectors, has been transferred to Kemrock Industries in Baroda which is setting up a plant to produce 400 tonnes of carbon fibre annually.



Dr A.R. Upadhyaya, Director, NAL at CSIR Technofest 2010



CSIR Applauded

The CSIR Technofest 2010 attracted a host of VIPs. They were all dazzled by the pioneering work being done by CSIR and its laboratories in an endeavour to take science and technology to the common man.

Dr. R. Chidambaram, the Principal Scientific Advisor to the Government of India and Chairman of the Scientific Advisory Committee to the Cabinet, visited CSIR Technofest on 15 November 2010. After visiting various theme pavilions he said, “CSIR has a very important role in India’s development as it has been promoting industry-oriented technologies. The Technofest is showcasing many areas like mechanical engineering, chemistry, environment, leather and so many other areas.” He added that CSIR has been greatly associated with many technological developments. When asked to comment about the most important product and technology displayed among the pavilions. Dr Chidambaram said, “CSIR has many faces and I don’t think that one technology and product can be singled out, as there are dozens of technologies and products which demonstrates the various aspects of CSIR”. He was delighted by the efforts of CSIR towards pushing forward the country’s name in the field of science and technology.

Dr. T. Ramasami, Secretary, Department of Science & Technology, Government of India, visited the 11FT CSIR Technofest 2010, on the

15 November 2010. Expressing great happiness in attending this mega event, he said, “What is presented in the pavilion is the synthesis of all laboratories under CSIR and its partnership with various industries. The exhibition has given an opportunity to CSIR to take technology and its products to the common people.” He further elaborated that technology as such does not appeal much to the masses but only the products steer interest. Dr Ramasami added that through various pavilions, CSIR and its industry partners have tried to showcase these very products.

Dr. A. P. J. Abdul Kalam, former President of India visited CSIR Technofest 2010 on 24 November 2010. In his address to the gathering, he stressed on the fact that Indian industries have to taste the results of indigenous research and development. He said that he was happy to know that CSIR is contributing in multiple dimensions of technology. He said, “I realize the technology growth and applications are continuously progressing in high trajectory.”

In his interaction with the children attending the fest, Dr Kalam emphasized on how the youth has gone from asking, “What can I give to the nation?,” towards the answer “I can do it,” “we can do it” and the “Nation will do it.” He also mentioned that he was happy to see the 540 million youth of the nation, ready to participate in the

development process. He added that relationship between the economic development, technology and creative leadership is essential for economic development. The higher the proportion of creative leaders in a nation, the higher the potential of success of visions like “developed India”.

Dr Kalam also mentioned that to achieve the distinctive profile of India, we have the mission of transforming India into a developed nation. Addressing the youth he said, “The challenge, my young friends, is that you have to fight the hardest battle, which any human being can ever imagine to fight; and never stop fighting until you arrive at your destined place, that is, a UNIQUE YOU!”

Shri Digambar Kamat, Chief Minister of Goa said that CSIR Technofest 2010 was a celebration, scientifically outstanding and practically meaningful. He said, “Anyone who visits CSIR Technofest 2010 would feel very proud about Indian scientific research and technology.” He further elaborated that it is a melting pot for getting the best of science to solve the nation’s problems.

Shri Kasturirangan, Member of the Planning Commission of India said that the CSIR Technofest 2010 was a unique platform for scientists, industrialists and the common folk to gain a better understanding of the innovations and advancements in the field of science & technology.



Dr. R. A. Mashelkar, former Director General of CSIR said that the show throws light upon the power of CSIR and the impact of the Team CSIR. He said, “You see not just the posters, there are products actually displayed in the pavilion. The fair meets its objective by making technology so simple to understand.” He added that the fest has been organized at par with world-class quality and is presented in a way to make it user-friendly. He mentioned his delight in being able to feel, touch and get ideas on how science leads to advancements in technology and cultures.

Dr. Srikumar Banerjee, Secretary, Department of Atomic Energy, Government of India, termed the CSIR Technofest 2010 as a commendable show. He said, “I am very happy to see the kind of innovative technologies the scientists are working on. Such fest would provide better platforms to exhibit new ideas and techniques.”

Dr. M. S. Swaminathan, an eminent scientist and the Father of Green Revolution spoke with DG CSIR and said, “It was a privilege visiting CSIR Technofest. You have demonstrated very efficiently the power of Indian Science and the key role played by it in science and technology for public good. You are a role model for all of us. I wish you and CSIR continued success in the very important work in which you partake.”

Dr. Sandip Basu, Prof. of Eminence, National Institute of

Immunology, New Delhi visited CSIR Technofest on 14 November 2010. He said that stepping into Hall No: 11 was a relief after the glittering extravaganza in the neighboring pavilions, thronged by the ilk of Samsung, LG, and Sony etc. In contrast, he added that browsing the CSIR Technofest 2010, the large hall tastefully decked with premier indigenous technologies developed in CSIR laboratories generated a warmer and more intimate feeling of possession. “For me as an ex-CSIR person, the spectacle mobilized an avalanche of nostalgia, about the people behind the commercial products of today I knew from yore.”

Dr Basu expressed happiness at seeing the CSIR flagship project on thrombolytic agents, showcased by ENEM Nostrum as the Klotbuster exhibit on streptokinase. “It sure would be a blockbuster given the rapid rise in cardiovascular diseases in India and the developing world. One cannot but be moved by the thought how these CSIR contributions touch the lives of the common,” he added.

European Delegates from Project *New INDIGO* shared their views on CSIR Technofest 2010. Project New INDIGO is a consortium of European and Indian S&T organizations involved in promoting research cooperation between Europe and India. It is intended to strengthen the international dimensions of the European Research Area (ERA) by providing a networking platform for Indian and European S&T

organizations. Ms. Aurelie Pachkoff, Managing Coordinator of New INDIGO said, “CSIR is the co-coordinator for their Project in India and it is a very good opportunity to be here in CSIR pavilion to learn the recent S&T developments in Indian context and tell them about our projects.” She also mentioned that they are creating a new programme between India and Europe, which will enhance Euro-India relationship in the field of science and technology. According to the delegation, visiting CSIR Technofest 2010 gave them immense opportunity to interact with CSIR counterparts and know much about its varied activities.

Prof. Daniel Ostrowsky was very much impressed by the diversity with which CSIR and its constituent laboratories were working for developing science and technology. Mr. Alexander Degelsegge, another representative of ENRS, a French equivalent of CSIR talked about how the CSIR Technofest 2010 had created a platform for developing better understanding to promote more cooperation in the field of science and technology between European countries and India. He mentioned that 30 representatives from various European countries like Portugal, Austria, Spain, Netherland, etc. were here to see the advancement made by CSIR during the last so many years. In all they were left baffled by CSIR’s efforts in carrying forward the spirit of Innovation in the field of science and technology.



Dr. Martin Goller and Dr. Dorte Merk, Federal Ministry of Education & Research in Germany, mentioned that they had a wonderful experience at CSIR Technofest. They were quite happy to see the interesting products. Dr. Martin said, “Combination of science & technology which is affordable to poor people is here. Very innovative projects in healthcare sector greatly interest me. I am impressed by the diversity that CSIR has showcased. It is an excellent show by CSIR.”

In addition to the VIPs a large number of visitors hoarded the innovations and models displayed in the pavilions. Mr. Ajay Chaudhry of HCL

said, “We are looking at creating technologies for people who can’t afford. We have to create technologies for the 500 million.” Other esteemed guests included DCP Mr. A.V. Gupta who showed keen interest in the DNA apparatus and claimed that it would help in fight crime in India. Mr. Subhash Chandra, from Zee Group, was left impressed by CSIR’s dedication towards building a better Nation.

The industrialists and entrepreneurial aspirants thronged to CSIR Technofest to experience the innovative technologies and understand their commercial applicability. Scientists and students from world over flocked

here, excited by the streams of research explored by CSIR institutions across India. CSIR has evidently taken long strides of development in the fields of healthcare, leather, aeronautics, water management, nutrition and ecology. Students, teachers, children and parents all showed keen interest in the products displays and the information presented.

All in all the visitors were left overwhelmed with the technologies developed and showcased at CSIR Technofest 2010. Kudos to scientists and representatives of CSIR, who left one and all amazed by their innovative advancements in science and technology.

Quiz Competitions at CSIR Technofest 2010

CSIR Technofest 2010 started its rounds of quiz competitions from 19 November 2010. There were three rounds of competitions conducted at 11 am, 12 pm and 1 pm. The preliminary round had 15 questions and a lucky draw was conducted among the participants who had maximum correct answers. Six top ranked participants, on both days, were short-listed for the final round that was conducted on 26 November 2010. The first and second day saw over 300 participants. It was interesting to note that among the participants there were people who were not from a formal science background but still made it to the next round. The participants were from different realms of life: from school students to professors, children to adults, all seemed to be very excited about the competition. Even the audience had a chance of winning prizes for answering questions that were passed on to them. The winner of each day’s competition was given a choice between taking home an MP3 player and a year long subscription of a popular magazine, *Science Reporter* published by NISCAIR.

CSIR Technofest 2010 concluded its quiz competitions for the general public with a mega-quizzing event, on 26 November 2010. The participants who held the top six positions on each day of the quiz were called to participate in this main quiz. Over 2500 people had participated in these quizzes since their commencement on 19 November 2010. The competition was also a rage among school and college students. Hansraj College, Amity University, Rashtrashakti Vidyalaya, DAV School, Jamia Millia Islamia, Dayal Singh College, PC Ghaziabad, JCD Haryana, Ramjas, etc were a few colleges from which there were a large number of participants. The winners of the grand finale took home a number of exciting prizes.



Highlights of Technical Sessions

Aerospace and Related Technologies

National Civil Aircraft Development (NCAD) has established a design bureau that provides the seedling for civil aircraft design in the country and is in the process of developing a 100 seater aircraft. Such an aircraft will be useful for connecting cities in rural and semi rural areas. It is estimated that the country may be requiring 1000 to 4000 such aircrafts in the coming years. The aircraft will be made based on high-end technology. CSIR is strongly supporting the technological initiatives required by NCAD. This project is looking for more joint ventures and also for public-private partnerships, suppliers, vendors, original equipment manufacturers and risk sharing partners for financial help.

Mr. Prasad of Mahindra Aerospace Pvt. Ltd. in his presentation said that they are associated with CSIR-NAL to produce the 5-seater NM-5 aircraft, which is the country's first venture under the public-private partnership scheme. The aircraft is all set to be launched by next year. Describing the salient features of the aircraft, Mr. Prasad said that this is a unique programme and the aircraft is best suited for connecting remote areas in shortest time. The aircraft is designed to carry people alone and not goods, while the other feature is a flat cabin with removable seats, which can also carry cargo. It is a low cost aircraft and will be highly affordable. The session explored the tremendous possibilities in the field of aviation with respect to fighting terrorists, disaster management.

maintenance, search missions etc, by employing micro air vehicles or other unmanned air vehicles. These would lessen the risk factor for the operators and would minimize the civilian casualty.

Mining, Minerals and Materials

A Technical Session on *Mining, Minerals and Materials* was organized on 17 November 2010 as a part of CSIR Technofest-2010. Representatives from industries like - Coal India Ltd, BHEL., EATON, NAICO, VEDANTA, General Motors, etc participated In the Technical Session. Speaking at the session Prof Samir K. Brahmachari, Director General of CSIR said, "We are ready for any cooperation with Industry keeping in mind the concept of interest of India and Indian People."

An interesting feature of the theme pavilion 'Mining, Minerals and Matenals' was a product *Wood Without Tree*, based on the technology developed by CBRI, Roorkee. This technology was developed using natural fiber derived from agricultural waste like husk and straws in combination with recycled plastics. NIIST, Thiruvananthapuram of CSIR has also developed a wood like product, which uses coir and resin to manufacture artificial wood and furniture. The project is yet to get clearance for commercialization. This product uses 80-90 percent of coir as raw material.

Advanced Materials and Process Research Institute (AMPRI), Bhopal, another Institute under CSIR in

association with automotive Industries is working for use of lightweight materials for automotive Industry. Dr Anil K. Gupta, Director of AMPRI, Bhopal elaborated that they are working with automotive giants like Ashok Leyland, Eaton, and TATA Motors on the use of advanced light-weight material such as Aluminium, Magnesium, Foam, and so on.

Ecology, Environment & Water

The CSIR Technofest at IITF 2010 exuded a new energy when the session on the above theme was taking place. It was attended by 29 partners covering both Ecology & Environment and Water theme. Dr. B.D. Kulkarni, Scientist, CSIR chaired the session, while Dr. Pushpito Ghosh, Director, CSMCRI, Bhavnagar co-chaired the session. This session was attended by 22 representatives from various industries/organizations. Showcasing the technologies on environment and ecology, 17 industries gave a detailed account of their association with CSIR and the benefits gained through CSIR.

Speaking on the occasion, Mr. R. V. Assari, Principal Conservator of Forest, Gujarat explained about the environment-friendly nature of *Jatropha Bio-diesel*. He informed that 100 buses are being run in Gir forest using *Jatropha Bio-diesel* developed by CSMCRI. Mr. R. John George, Hindustan Unilever Ltd., described about the benefits they achieved from CSIR technology in remediating soil contaminated with



mercury, which was used in thermometer manufacturing. He informed that the up scaling of the plant was done in association with CSIR and the actual remediation is in progress under the supervision of CSIR. He expressed pride in being associated with CSIR. The following points emerged for policy decision from the discussions:

- CSIR needs to become more open in supporting industry with policies, which are simple and will facilitate easy transfer of technologies and sustainable association with industry.
- CSIR should facilitate rapid propagation of technologies and easy availability of the technologies/products in the market through some nodal agencies.
- Government should provide subsidy on CSIR technologies for wide application in rural areas.

Leather

A panel discussion on *Leather* Theme was held on 22 November 2010 at CSIR Technofest. The focus of the discussion was CSIR Empowering Leather Sector. Eleven industry partners participated in the discussion. The session was chaired by Prof. V. S. Ramamurthy, Chairman, RAB, CSIR. At the outset, Prof. Dr. A. B. Mandai, Director, CLRI formally welcomed the industry partners for an interactive discussion and invited them to share their views.

The discussion started with the address of Shri Abhay Kumar, M/s SPIC, Chennai, who recalled that the association of SPIC with CSIR-CLRI dated back to 1996-97 in connection with

providing ecobeneign technological options for leather processing. Other prominent speakers were Shri. C.S. Gnanasekaran, Managing Partner, Kalyanam & Co, Chennai; Shri Abhijit Seth, M/s Ankur Footwear; Shri Mahesh Reddy, Country Manager, ADIDAS; Mr. Bruno Valanzuolo, Chief Technical Advisor, UNIDO; Shri S.S. Lahiri, General Manager, M/s Liberty Shoes; Mr. Vipan Kumar Seth, M/s Versatile Enterprise Pvt. Ltd. and Vice President, IFCOMA; Shri Tapan Sarkar, Manager (Marketing), M/s Balmer Lawrie & Co. Ltd; Ms. S. Sunanda, CLE, Chennai; and Shri Sudarshan Chakraborty, M/s Classic Enterprises.

Research activities and programmes/expertise of CSIR-CLRI on Leather processing, Leather Chemicals, Leather Products (Footwear & Garments), Biotechnology, Bio-material, Bio-products, Human Resource Development, Economic Programmes, Environment and Engineering were exhibited in different theme pavilions such as Leather, Ecology & Environment, Water, Nurturing of Human Resource, Engineering, Healthcare, Energy, Chemical & Petro-chemicals.

Some of the industry partners who were the licensees of CSIR-CLRI technologies took active part in the Technofest by way of participating in the theme pavilions. Some of the artisans who were the beneficiaries of CSIR-CLRI contribution also participated in theme pavilions.

Food and Nutrition

The Technical Session on *Food & Nutrition* generated lot of interest

among the participants. Initiating the discussion, Dr. V. Prakash, Director, CSIR-Central Food Technological Research Institute, Mysore gave his opening remarks and introduced the panel members to the audience. Speaking on the occasion, Ms. Shikha Jain, Proprietor, Flora-O-Foods, Jaipur highlighted the energy food formulation of CSIR and how it has helped in fighting the malnutrition prevailing in children by consuming energy food.

Shri R. Nagarajan, G.M.R&D, Open Innovation and Technical Services, Glaxo Smithkline Consumer Healthcare Ltd, Research & Development Centre, Gurgaon shared his experience with CSIR for the work carried out on the development of specialty foods and stressed on CSIR's intervention on capacity building for development of entrepreneurs and their training. Dr. D.B.A. Narayan of Hindustan Uniliver Research, Bangalore praised the work of CSIR in the development of innovative food products and stressed on the need of using traditional knowledge contained in the Vedas and Ayurveda for development of health/innovative food products for different target groups of society.

Shri Naresh Kataria of Neoconcept Enterprises, New Delhi who is a successful entrepreneur by adopting CSIR's process know-how of chapatti making plant, expressed his gratitude to CSIR. Dr. A.G. Appu Rao, Head, Protein Chemistry Technology Department of CSIR-CFTRI, Mysore spoke about the various ongoing and future R&D themes being pursued by CSIR in the area of Food and Nutrition.



CSIR Showcases Technology, Innovation & Much More

Dr. Vivek V. Ranade, Chairman, Organizing Committee CSIR Technofest 2010

CSIR Technofest 2010 is a unique event in which technologies and competencies of CSIR laboratories spreading across India (from Trivandrum to Palampur and from Bhavnagar to Jorhat) are showcased under one roof. This event was conceived by the DG CSIR. The CSIR Technofest team drawn from the 37 laboratories and the CSIR Head office at New Delhi was working to realize this vision. The visitors have expressed their satisfaction. The team, however, needs to stay focused and continue to build on this foundation to consolidate the benefits.

CSIR has worked with over 5000 industries and have helped them create new processes and new products. This

has facilitated establishing and maintaining a competitive edge of Indian industry. It has also protected and created several thousands of jobs and helped our economy to sustain and grow. It is virtually impossible to showcase these contributions to the industry in one exhibition. In CSIR Technofest, more than 100 industry beneficiaries of CSIR's technologies are participating for highlighting their partnership with CSIR. Many other Industry partners could not be accommodated because of the logistics and scheduling reasons.

Besides the technologies and products, which are already transferred to and practiced by industry, CSIR scientists are continuously working on

building new competencies & expertise and translating these into products and processes. The CSIR Technofest also includes showcasing of many ready to be transferred technologies along with the highlights of ongoing research. Visiting industry participants will get an opportunity to get the first-hand understanding of these competencies and may lead to identification of several new business opportunities. Besides industry, the CSIR Technofest also offers glimpse of exciting science and technology landscape to visitors spanning a wide range of subjects encountered in our daily life, from drinking water to aircrafts; agriculture to nutrition and health, and so on.

Nostrum Pharmaceuticals Inc., USA Obtained Worldwide Licensing Rights from CSIR for Clinical Development of New-Generation Thrombolytic Molecules

At a function held at CSIR Technofest 2010 at IITF, in the presence of Shri Kapil Sibal, Hon'ble Union Minister of Science and Technology and Earth Sciences, Dr. Nirmal Mulye, President and founder of Nostrum Pharmaceuticals Inc. and Dr. Girish Sahni, Director, Institute of Microbial Technology (IMTECH) signed the licensing agreement between CSIR-IMTECH and Nostrum Pharmaceuticals Inc., USA, based in Edison, New Jersey to clinically develop and commercialize new (Third and Fourth) generation thrombolytic molecules. This New

Generation Clot-buster(s) comprise clinically beneficial thrombolytic molecules with enhanced half-lives as well as target (fibrin/clot) specificity. The value of the Licensing Agreement is approximately to the tune of 150 million US dollars, which would be through various milestone payments and royalties.

The Hon'ble Minister acknowledged that this Agreement is of great significance as CSIR-IMTECH has been able to license for clinical development of new molecules for therapeutic purposes. Dr. Girish Sahni,

Director, IMTECH said, "Licensing of these molecules to Nostrum is a proud achievement for IMTECH, especially since these are the third- and fourth-Generation molecules that IMTECH has licensed out to Nostrum, and should fill an acute need in the world, especially the developing countries where effective but affordable treatments for circulatory disorders such as heart attacks and stroke are a crying need, and where the more expensive option of surgical intervention via Cath Labs is not an easy option."



CSIR-800 – Empowering the Masses

CSIR-800 focuses to cater to the needs of the majority of Indian population through S&T interventions. In this context, CSIR contributions have been in terms of the utilization of abundantly available sisal fibres into useful products like handicrafts and roofing sheets; industrial wastes like flyash for agricultural soil reclamation; polymeric red mud and flyash composites as wood substitute in building applications, red mud radiation shielding material, formulation of a model for the

dissemination of technologies to the rural masses, collection of plants and their extract for assessing medicinal values, bell metal technology, and hydro fracturing of dogged bore wells.

CSIR-800 pavilion showcased CSIR's technologies and capabilities that would benefit 800 million people of our nation, earning Rs. 100 per day or below. Considering the needs of the country, CSIR-800 focuses on enhancing income through technologies for Value added Agriculture, Waste to Wealth and

Energy Efficiency. While technologies for improving the quality of life include those for Low Cost Housing, Affordable Health, Potable water and Sustainable Energy. For example, *Soleckshaw*, an eco-friendly, solar-powered rickshaw, that would revolutionize urban transport, is one of the latest achievements of CSIR-800. The dual-powered *Soleckshaw* is the CSIR's solution for the dual problem of decent employment generation for the masses and mitigation of global warming.

Text of Appreciation Letter from Dr. R.A. Mashelkar, Bhatnagar Fellow & President, Global Research Alliance, NCL

I went around CSIR Technofest 2010 at Pragati Maidan, New Delhi for about three hours and believe me these were the best three hours of my life. I felt proud to have belonged to the CSIR family. The exhibition is world class in terms of its design, content, emphasis and overall excellence. It shows how CSIR has touched the lives of Indians from the bottom of the pyramid to the top of the pyramid. When I was there, the Chief Minister of Goa was there, Prof. M.S. Swaminathan was there, Ajai Chaudhari, the CEO of HCL was there and each one of them were short of words in terms of their praise. Samir is proving every day what I had said, "he will be the DG, who will be 10 times better than me."

The team of hundreds of scientists led by Samir, Vivek and others have done us truly proud. In fact, I believe that if 18,000 members of CSIR family were to be able to see this exhibition, they will be filled with pride and CSIR will rise to unparalleled heights.

Special Honours to Theme Pavilions

CSIR awarded the different theme pavilions, based on the manner in which they presented their innovative technology. The Healthcare and Aerospace pavilions got the *Platinum Award*, the Ecology & Environment, Water and Mining, Minerals & Materials pavilions got the *Gold Award* and the Food & Nutrition and Leather pavilions got the *Silver Award*. The other pavilions were given the *Bronze Award*.

CSIR Awarded Thomson Reuters Innovation Award, 2010

Thomson Reuters have awarded the India's most Innovative High Tech Organization (Academic) 2010 Award to CSIR. Prof Samir K Brahmachari, Secretary, DSIR and Director General Council of Scientific and Industrial Research received the Award from Mr. Sam Pitroda, Advisor to the Prime Minister of India on Public Information Infrastructure & Innovations.

CSIR- Technofest Won the Gold Medal in IITF- 2010

CSIR Technofest-2010 won the Gold Medal for the best pavilion in the category of *Public Sector Undertakings, EPCS, and Community Boards & Banks* of India International Trade Fair (IITF)-2010. Chief Minister, Delhi, Smt Sheila Dikshit conferred the Gold Medal and Certificate to Dr Daljit S. Bedi, Head, Unit for Science Dissemination, CSIR in a ceremony held in Shankuntalam Theatre, Pragati Maidan on Saturday, 27 November 2010. Dr Subas Pani, Chairman and Managing Director (CMD) of IITF and several other dignitaries were present in the Award Ceremony.

“A great deal of effort was made in not only the get up of the pavilion but also to provide the best content and to ensure the availability of the people. A large number of technical events were organized and extensive efforts were carried out to mobilize



The Hon'ble Chief Minister of Delhi, Smt Sheila Dikshit confers Gold Medal for CSIR Technofest- 2010 to Dr D S Bedi, Head, Unit for Science Dissemination (CSIR)

people from scientific fraternity, industry and general public. The Award is recognition of all these efforts by ITPO to achieve this objective,” said Dr. D. S. Bedi after receiving the Award. Almost all the research laboratories of CSIR were adjusted

under 15 theme pavilions in 5,000 sqm of space in Hall No 11, IITF, Pragati Maidan.

The CSIR Technofest-2010 was conceptualized, executed and managed by Federation of Indian Chambers of Commerce & Industry (FICCI) along with CSIR. “We are very much excited about it and we look forward for such partnership with CSIR for future endeavor. This was a mammoth exercise, which included mobilizing scientist, academia, industrialists, youngsters and general public. The Award is a recognition and acknowledgement of all these efforts by IITF- 2010,” said Mr Sumeet Gupta, Head, Science and Technology/ Innovation of FICCI.



The gold medal won by CSIR Technofest-2010 for being the best pavilion of India International Trade Fair (IITF)-2010 in the category of Public Sector Undertakings, EPCS, Community Boards & Banks.

'CIMAP-Patra' A New Mint Variety

A high menthofuran containing genotype of menthofuran mint has been developed by CIMAP for commercial utilization. The variety was released on the occasion of CSIR Foundation Day, on 26 September 2010.

Menthofuran mint oil is used in cosmetic, flavouring and pharmaceutical industries. Though regarded as the undesirable monoterpenoid component of peppermint oil that is derived from alpha, beta-unsaturated ketones, currently both Indian and foreign traders are showing their keen interests especially with menthofuran-rich peppermint genotype for reconstitution of different aromas.

Menthofuran, an expensive compound of limited availability, naturally occurs in the oil obtained from peppermint plant and not produced by any other mint species for commercial use. The present variety, upon extensive cultivation, is likely to meet the industry's demand (stated to be approx. 150-200 tonnes per annum) for menthofuran.

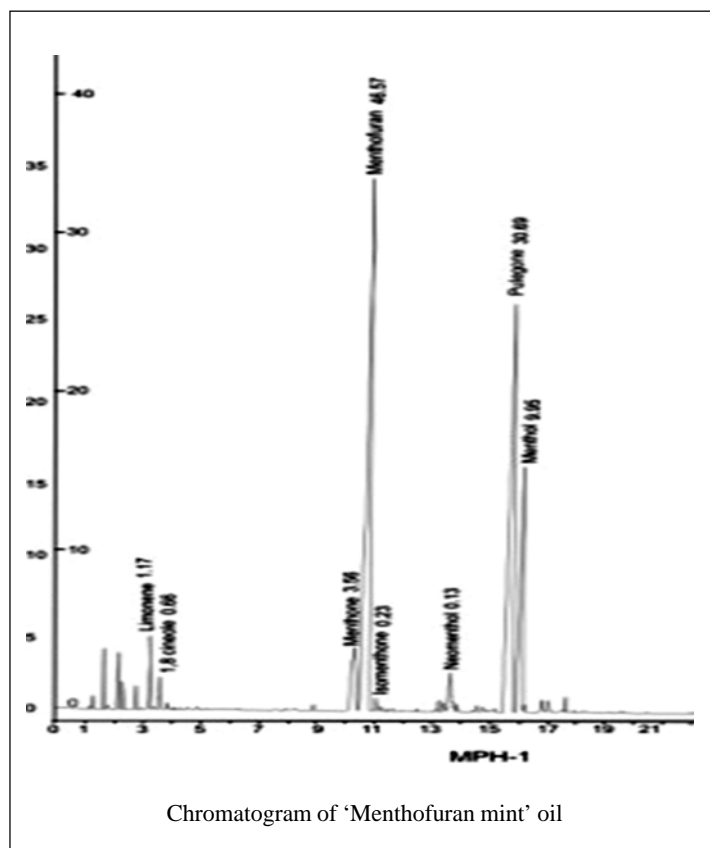


Professor Ram Rajasekharan, Director, CIMAP (in centre) releasing Menthofuran Mint var. 'CIMAP-Patra' on the occasion of CSIR Foundation Day. Standing with him are Prof. D. N. Rao of IISc, Bangalore (right) and Dr Birender Kumar, Scientist, CIMAP



Plants of Menthofuran mint in the field

Plant Character	<i>CIMAP-Patra</i>
Growth habit	Erect
Plant height (cm)	50-65
Leaf length (cm)	4.86 – 5.93
Leaf width (cm)	2.93 – 3.53
Propagule formation	Sucker
Flowering	Non-Flowering
Leaf: Stem ratio	0.87 – 1.22
Oil content (%)	0.25 – 0.35
Menthofuran content (%) in the oil	35.0 – 46.0
Oil Yield (kg/ha)	60-65





NAL develops Wear Resistant Ni-SiC Composite Coatings

The National Mission Project towards the indigenization of rotary Wankel engine for Unmanned Aerial Vehicle (UAV) was initiated in January 2004. The consortia involving ADE, NAL and VRDE, Ahmadnagar planned to develop 55 hp, single rotor, liquid cooled engine with ADE as the end user for the NISHANT UAV. DRDO entrusted the Project on design and development of the 55 hp core engine to Propulsion Division, NAL.

Al-Si alloy castings are used for functional requirements of the trochoid (rotor housing). This alloy possesses

poor wear resistance. Surface Engineering Division (SED) had taken up the activity of developing wear resistant NALNISIC coating by simple and cost-effective method of electrodeposition. The challenges involved in this activity were: obtaining an adherent coating on Al-Si alloy which is a difficult-to-plate material uniform distribution of SiC particles on the bore of the trochoid, besides the micro-hardness of the coating above 450 Hv.

All the challenges have been now successfully met. The coated trochoid housing has been fitted in the indigenous

prototype rotary engine. Ground level evaluation tests were carried out by Propulsion Division and ADE, Bangalore. Finally, the provisional flight clearance was given by the certifying agency RCMA.

An abandoned World War II runway at a village near Kolar was used for the first ever flight of an indigenous rotary engine that powered the NISHANT UAV. The flight took off and climbed to an altitude of 1.8 km before cruising for a duration of 35 minutes. It was recovered safely at the desired location.



NALNISIC coated on the bore of the Trochoid of NAL's Wankel engine



NISHANT fitted with the coated Trochoid in NAL's indigenous Wankel engine

Seasonal Variations and Trophic Ecology of Microzooplankton in the Southeastern Arabian Sea

The seasonal ecological response of microzooplankton in the southeastern Arabian Sea was studied by NIO scientists. During the spring intermonsoon period, stratification and depletion of nitrate in the surface waters cause low integrated chlorophyll a (av. 19 plus of minus 11.3 mg m sup(-2)) and primary production. On the other hand, nutrient enrichment associated with coastal upwelling and

river influx during the onset and peak summer monsoon resulted in high integrated chlorophyll a and primary production. During all three periods, diazotropic cyanobacterium, *Trichodesmium erythraeum* dominates in the nutrient depleted surface waters. A general increase in abundance of larger diatoms was evident in the surface waters of the in-shore region during monsoon

periods. The microzooplankton abundance was found to be significantly higher during the spring inter monsoon as compared to onset of summer monsoon and peak summer monsoon.

Microzooplankton community during the spring intermonsoon was numerically dominated by ciliates while heterotrophic dinoflagellate was the dominant ones during the monsoon



periods. The high abundance of ciliates during the spring intermonsoon could be attributed to the stratified environmental condition, which favors high abundance of smaller phytoplankton and cyanobacteria, the most preferred food of ciliates. On the other hand, the dominance of heterotrophic dinoflagellates during the monsoon periods could be linked to their ability

to graze larger diatoms which were abundant during the monsoon periods.

The overall results show low abundance of microzooplankton in the eastern Arabian Sea during the monsoon periods mainly due to a decline in ciliates abundance. This decline during the monsoon periods could be the result of low abundance of smaller phytoplankton and high stock

of mesozooplankton predators.

Authors: AshaDevi, C. R.; Jyothibabu, R.; Sabu, P.; Jacob, J.; Habeebrehman, H.; Prabhakaran, M. P.; Jayalakshmi, K. J.; Achuthankutty, C. T.; **Citation:** *Continental Shelf Research, Vol.30(9); 1070-1084;* **Copyright:** An edited version of this paper was published by Elsevier. URI:<http://hdl.handle.net/2264/3600>.

Ballast Water Management Extended to Eight Major Indian Ports of India

Over 90% of the world cargo is mobilized trans-oceanically and nearly 10 billion tonnes of ballast water is filled at one part of the ocean and discharged at the other. In doing so, it introduces a wide range of living organisms, including pathogens, into alien regions, usually along the coasts of the continents. These organisms can establish and invade an environment, if found suitable and pose economic and human health hazards.

Many cases of marine bioinvasion have been reported and their harmful effects on the ecosystem and human health have been documented. Therefore, marine bioinvasion has been considered as one of the greatest threats that are challenging the health of the oceans.

Realizing the importance of this issue, the International Maritime Organization (IMO) had formulated the International Convention for Control and Management of Ship's Ballast Water and Sediments in 2004. The convention includes various guidelines and standards that are required to be followed by all the maritime countries.

As per the convention, various

ballast water management options can be utilized. These options are mid-oceanic exchange, ballast water risk assessment and ballast water treatment technologies. In addition, the studies pertaining to establishment of databases through port biological surveys and locating appropriate site(s) for ballast water discharge in emergency situation would also help in managing ballast water.

The National Institute of Oceanography (NIO), has been identified by the Ministry of Shipping, Govt. of India as a lead R&D agency for helping the Ministry in addressing the ballast water management issues and preparing comprehensive port specific management plans for the country.

In this regard, initially the Institute completed work related to port, biological baseline

surveys, ballast water risk assessment and identification of ballast water discharge sites for the ports of Mumbai, Jawaharlal Nehru, Mormugao and Visakhapatnam under "Globallast" and "Government of India Initiative" Programs.

Through this Program, NIO also developed a user-friendly and self-validating e-form for reporting ships' ballast water history, which is an essential requirement for conducting ballast water risk analysis. It is now envisaged to extend these efforts to the remaining eight major ports (Mangalore,



Cochin, Chennai, Haldia, Kandla, Tuticorin, Paradeep and Kolkata) of the country, through a Memorandum of Understanding (MoU) between NIO and the Directorate General of Shipping (DGS). This will enable NIO to prepare a comprehensive port specific ballast water management plan for these ports to fulfill the following objectives during 2010 to 2016.

- To carry out port biological baseline surveys
- To conduct Ballast water risk assessment.
- To develop geographical information system on ballast water management
- To identify suitable site for each port, through modeling studies, for discharge of ballast water in emergencies situation.
- To conduct on-voyage Ballast Water Sampling.
- Implementation of electronic ballast water reporting form.

Necessary support in terms of funding and logistics is provided by the Ministry of Shipping through Directorate General of Shipping, Mumbai. This program will be executed by NIO at various ports with the participation of Universities and R&D institutions with relevant experience.

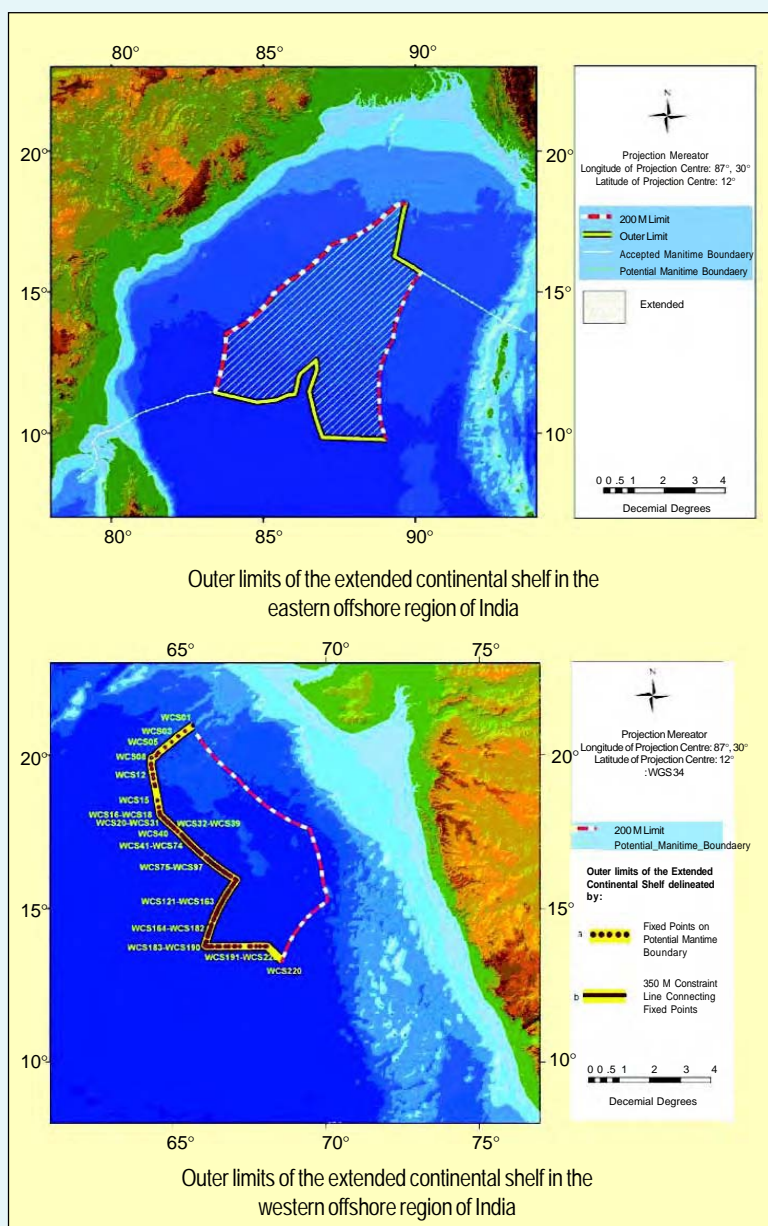
NIO provides scientific back-up for the India's claims to extend its EEZ

The National Institute of Oceanography (NIO), Goa and National Geophysical Research Institute (NGRI), Hyderabad have been working to identify the country's limits of the continental shelf under the Ministry of Earth-Sciences (MoES), Government of India initiated program for delineation of the outer limits of India's continental shelf.

This important work has helped India in providing the science behind India's claim to extend its present limit of the Exclusive Economic Zone (EEZ), the marine area over which India enjoys special rights for exploration and exploitation (our present area is ~2 million sq. km.).

India made a formal presentation in this regard to the Commission on the Limits of the Continental Shelf at the United Nations, New York. Among the delegation, Dr. A. K. Chaubey, a senior geophysicist from NIO presented

before the Commission the science behind the country's claim to extend its EEZ. There are in all 53 countries that have made submissions to provide them extended areas beyond their EEZs through the Secretary-General of the United Nations, to the





Commission on the Limits of the Continental Shelf. Several countries have already made presentations.

Among the eight member delegation from India, Dr. Shailesh Nayak, Secretary, Ministry of Earth Sciences (MoES) made introductory

and concluding remarks during the presentation; Dr. A.K. Chaubey, Scientist, NIO and Mr. Narinder Singh, Joint Secretary (Legal and Treaties Division), Ministry of External Affairs made presentations on their areas of expertise. Other members of

delegation were Manjeev Puri, Deputy Permanent Representative to the UN; Dr. M.P. Wakdikar, Scientist, MoEF; Dr. B. Ashalatha, Scientist, NGRI; Dr. D.K. Pandey, Scientist, NCAOR and Mr. Pradip Chaudhury, Legal Counselor, Permanent Mission of India to the UN.

UCE to Market Autoclaves Developed by CSIR-NAL



Signing of MoU between NAL & *Unique Chemoplants*, Mumbai (left) and Signing of MoU between NAL & *DATASOL*, Bangalore (right)

Unique Chemoplant Equipments (UCE), Mumbai, will market autoclaves developed the National Aerospace Laboratories (NAL). When autoclaves were in embargo list of exporting countries, CSIR-NAL has started development of indigenous autoclaves for aerospace applications, i.e. for manufacture of advanced polymer composite structural components of aircraft such as LCA.

Over the years, it has developed several autoclaves meeting different requirements. While Mark-IV is the latest and largest indigenous autoclave ever built in the country with a working

space as big as 4.4 m (D) × 9m (L), the Mark-III is specially built for ever-growing R&D needs for high temperature composites.

The technology has matured and the autoclaves developed have been highly reliable, demonstrated by the fact that one of the autoclaves as large as 4m (D) × 8m (L), supplied by CSIR-NAL, has been functioning very effectively as work-horse at one of the premier PSUs, over the last decade.

In line with the character of CSIR, NAL has established long-term collaborative tie-ups with private

industry. While, *M/s Unique Chemoplants* will manufacture all mechanical hardware, in addition to marketing; *M/s DATASOL*, Bangalore, would fabricate all electrical & electronics hardware. These will operate as back to back arrangements, so as to deliver the autoclaves without any loss of time, avoiding the usual sub-contracting procedures.

The main impetus of this exercise is not only to mitigate imports, but to foster private-public participation on a firm basis. Prospective buyers can see the functioning of these autoclaves at CSIR-NAL.



Mushroom Production Unit Installed Under CSIR-800

Under the CSIR- 800 rural development programme, a Mushroom Production Centre was installed on 28 June 2010 at *Baba Saheb Dr. Ambedkar Smriti Jana Kalyan Sanstha* at Gandhigram in Agartala (Tripura). Dr. P. R. Bhattacharyya, Scientist F, NEIST and Dr A. K. Bordoloi, TO, NEIST were present on the occasion. A Training Programme was also conducted by Dr. Bordoloi on setting up of Spawn Production Centre and Mushroom cultivation, which was attended by 38 trainees.

NEIST personnel conducting the training on mushroom cultivation at Gandhigram



NIO Signed MoU with Fisheries Survey of India

In 2009, NIO participated in a National Programme “Isotope Fingerprinting of Waters of India (IWIN)”. The specific objectives of this Programme included: (i) identifying dominant sources of water vapour supply (Arabian Sea, Bay of Bengal, local and long distant continental sources) at different locations within the country during different seasons; (ii) quantifying the partitioning of vapours into rain and re-partitioning of rain into various components as evapo-transpiration, soil moisture, stream flow and groundwater; (iii) quantification of the extent and rates of interactions between these components, and (iv) the controls that geographical and climatic factors exercise over the entire hydrological cycle both temporally and spatially.

In addition to estimate moisture trapped over the designated land segments over the Indian Peninsular, NIO was also identified to organize ships of opportunities to collect surface water samples from Arabian Sea to cover all the four seasons. In this context,

Fisheries Survey of India (FSI) has come forward to participate in this National Programme by offering to collect water samples from Arabian Sea using the fleet of ships under their command. Further discussions between the Director General, FSI and Director, NIO culminated in formulating a Memorandum of Understanding which was signed by the two parties on 4 October 2010 in a formal function organized at NIO.

Dr. P. M. Muraleedharan, Project Leader at NIO and Dr. M. E. John, zonal director of Fisheries Survey of India, Goa were also present. FSI has three field stations at the west coast with six vessels in their command. Continuous surface water sample collection using all the six vessels over a period of time will provide evenly distributed samples in space and time to cover all the seasons. Isotope



Signing of the MoU in progress

fractionation data derived from these samples are extremely useful to understand the fate of escaped moisture from this part of the ocean and its role on the ensuing hydrological cycle.

NIO is also engaged in research activities to understand the hydrological budget of the Indian peninsular. The information gathered from IWIN will be useful to support the activities at NIO. FSI is looking forward to use this collaboration for a better interaction with the scientists of NIO to understand the ocean-atmosphere processes.



Pondicherry University Signed MoU with C-MMACS, Bangalore

The Pondicherry University has signed a Memorandum of Understanding (MoU) with the Center for Mathematical Modeling and Computer Simulation (C-MMACS) for setting up a carbon dioxide monitoring station at the University campus. The monitoring station at the University is being funded by the Department of Science and Technology, New Delhi.

The CO₂ monitoring station will be a national facility for studying the impact

of greenhouse gases on global climate particularly related to India. The station will collect the air flowing from the land and also from the sea in different seasons depending on the direction of the wind blowing in the area. The data generated will be utilized by both the University and



Dr. A. R. Upadhyya, Sc-Incharge, CMMACS (left), with Mr J.A.K Tareen, Vice-Chancellor of Pondicherry University at the signing of the MoU

C-MMACS for research and analysis. The facility will be part of a global network of similar monitoring stations. The University will provide all infrastructural support for the facility.

Vice Chancellor of Pondicherry University Mr. J. A. K. Tareen said that

the MoU signals the “University’s entry into a new era of advanced research in both basic and social science.” He said that the University cannot grow in isolation and such interaction with premier institutions such as C-MMACS will help achieve its vision. He also said that the University in its 25th year has now become the fastest growing central University in the country and has recruited more than 175 teaching staff in the last two years. Dr A. R.

Upadhyya, Scientist-Incharge of C-MMACS, made a presentation about the organization and its contribution to civilian airspace technology in the country. Dr. N. K. Indira, Scientist, CMMACS and project coordinator was also present.

IMMT Signs MoU with Korea Institute of Geoscience and Mineral Resources (KIGAM)

A Memorandum of Understanding was signed between the Institute of Minerals and Materials Technology (IMMT), Bhubaneswar, and the Korea Institute of Geoscience and Mineral Resources (KIGAM), on 14 October 2010 at KIGAM, South Korea. The MoU was signed by Prof. B. K. Mishra, Director, IMMT and Dr. Ho Wan Chang, President KIGAM to collaborate in research areas of national importance in the field of mineral processing and extractive metallurgy.



Prof. B.K.Mishra, Director, IMMT and Dr Ho Wan Chang, President, KIGAM after signing the MoU



International Symposium on '*Organic Synthesis and Human Well Being: Emerging Opportunities and Challenges*'

Indian Institute of Chemical Technology, (IICT), Hyderabad recently organized a symposium on '*Organic Synthesis and Human Well Being: Emerging Opportunities and Challenges*' on the occasion of 60th Birthday celebrations of Dr. J. S. Yadav, Director, IICT, a leading light in the field of natural and synthetic organic chemistry and one amongst the top contemporary organic chemists in the world.

The prime focus of the Symposium was to highlight the novel developments taking place in the frontiers of organic synthesis with relevance to healthcare. The major goal of the Symposium was to bring the knowledge of the industry and academia together, providing a platform that enables the academicians, scientists and researchers from Pharma industry for useful interactions and fruitful collaborations in organic and medicinal chemistry.

During the inauguration, Prof. Goverdhan Mehta, former Director of Indian Institute of Science, (IISc), Bangalore and now associated with University of Hyderabad said that there were plenty of job opportunities for researchers in Chemistry and other basic sciences, as the expansion of university network has brought in many teaching vacancies. He however, added that in spite of making some mark globally in chemical research, Indian scientists had a long way to go. The contribution of Indian scientists in the international journals is a mere 3% of global output and we need to advance more.



Glimpses of the Symposium

Prof. Oliver Reiser, one of the leading scientists from Germany participating in the Symposium, said that the recent policies of the Govt. were helping to lead the pharmaceutical industry towards exploring newer avenues of drug development. This brings more capital into the country. Taking into consideration the human health scene in India and other developing countries, he stressed the need for Indian scientists in the area of Pharmaceutical Sciences and drug manufacturing to strive for discovery of new medicines for the benefit of the common man.

Welcoming the participants Dr. J. S. Yadav, Director, IICT said that the four-day Symposium would provide a good forum for discussion on the recent developments in Chemical Sciences. Prof. L.F. Tietze from Germany was the Chief Guest of the Inaugural Function.

During the Symposium, 20th Sidhu Science Lecture was also organized on 3 August 2010 wherein Dr. T. Ramasami, Secretary, Govt. of India, Dept. of Science & Technology spoke on the topic, '*Some Excitements at the Cross*

Borders of Science'. Prof. C. N. R. Rao, National Research Professor, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore delivered a popular lecture on '*Nanotubes and Graphene*' where he highlighted the extraordinary qualities of carbon and its isotopes and said that nanocarbons could be ideal for making super capacitors, batteries and transistors in future.

Other speakers of the Symposium included Prof. Paul R. Hanson, University of Kansas, USA; Prof. Hidehiro Sakurai, Institute of Molecular Science, Okazaki, Japan; Prof. Rene Gree, CNRS, France; Dr. Ram Vishwakarma, Director, IIIM, Jammu; Dr. N. E. Nifantiev, Russian Academy of Sciences, Moscow, Russia; Dr. Mukund S. Chorghade, THINQ PHARMA, Natick, USA; Dr. Dong 500-Shin, Changwon National University, South Korea; Dr. Ganesh Pandy, National Chemical Laboratory, Pune; and Dr. Vinod K. Singh, IIT, Kanpur. About 400 scientists from India and abroad participated in the Symposium.



5th International Symposium on *Biological and Environmental Chemistry of DMS(P) and Related Compounds* held at NIO, Goa

The National Institute of Oceanography (NIO), Dona Paula, Goa, hosted the 5th International Symposium on Biological and Environmental Chemistry of dimethyl sulfonio propionate DMS (P) and Related Compounds during 19- 22 October 2010.

The objectives of this Symposium were: a) facilitate world 'DMS(P) and related compounds' community interactions and promote related research; b) review the recent advances on DMS(P) and related compounds biological and environmental research; c) document the advanced understanding in a special issue of a reputed journal; and d) identify new areas for DMS(P) research with particular focus on relating biology to climate.

The inauguration was presided by Director, NIO, Dr. Satish Shetye. In his Welcome Address, Dr. Shetye

welcomed the distinguished gathering. Dr. Gill Malin from the University of East Anglia, Norwich, UK and Convener of the 4th International DMS(P) Symposium gave an overview on the previous symposia. She dwelt on the need for a link between the sea and the atmosphere. Dr. Dileep Kumar, Senior Scientist, NIO, Goa, and Chairman of the LOC of the present Symposium thanked the international DMS(P) community for choosing NIO as the venue for the 5th Meeting, and stressed on the need to understand DMS dynamics from molecular biology to climate processes.

Dr. Damodar Shenoy, Scientist NIO and Convener of the LOC proposed the Vote of Thanks. The Symposium was structured into 42 oral presentations which included 11 invited talks and 14 poster presentations under

the five theme topics. The invited speakers included recent doctoral degree awardees to well known experts in their respective fields. The 5th International DMS(P) Symposium on Biological and Environmental Chemistry of DMS(P) and Related Compounds was attended by more than 60 delegates from 12 countries.

The Valedictory Function was held on 22 October during in which the conveners of each topical session gave a summary report. The conveners were Dr. Rafel Simo, Dr Maurice Levasseur, Dr Gill Malin, Dr Jacqueline Stefels and Dr Sauveur Belviso. Dr. RG Prabhu Desai, Senior Scientist, NIO thanked the community for choosing NIO, Goa as the venue and wished the DMS(P) community well in their future endeavour in understanding the science of DMS.



The delegates of the 5th International Symposium on *Biological and Environmental Chemistry of dimethyl sulfonio propionate DMS (P) and Related Compounds*

Workshop at NGRI, Hyderabad

Second Indo-Australian Geothermal Capacity Building

The second Indo-Australian Geothermal Energy Capacity Building Workshop was held on 3 September 2010 at National Geophysical Research Institute, Hyderabad. After successful organization of the first Indo-Australian Workshop during 8-9 February 2010, it was felt that more concerted efforts needed to be made to assess the geothermal potential of a region in India.

Accordingly, a field visit was organized during 31 August 2010 to 3 September 2010 for the visiting four Australian scientists from Geoscience Australia, Government of Australia along with Indian scientists to Tattapani geothermal area, Surguja district, Chhattisgarh State. During the field visit, water samples and rock samples were collected in addition to visiting the existing boreholes in and around the Tattapani geothermal field.

The Workshop at NGRI was deliberated on the field visit and decided to initiate the 3D modeling by compiling all the available geological, geochemical and geophysical data of the Tattapani



The inauguration of 2nd Indo-Australian Geothermal capacity building Workshop held at NGRI, Hyderabad on 3 September 2010. Sitting (Right to Left): Dr. Anthony Budd, Geoscience Australia; Dr. Y. J. Bhaskar Rao, Acting Director, NGRI, Dr. R. N. Sawant, Director, MNRE, Dr. T. Harinarayana, Scientist G, NGRI.

area. Thus the development of a 3D model under Indo-Australian cooperation will be helpful in identification of a deep borehole target for exploitation of geothermal energy for electrical power generation.

The Workshop was inaugurated by Dr. R. N. Sawant, Director, Ministry of New and Renewable Energy, Government of India and presided over by Dr. Y. J. Bhaskara Rao, the Acting Director, NGRI, Hyderabad and coordinated by Dr. T. Harinarayana, Scientist G, Head, Magnetotelluric Group. Dr. Anthony Budd from Geoscience Australia, the Head of the Australian team and other three Australian colleagues: Mr. Edward

Gerner, Mr. Tony Meixner and Ms. Alison Kirkby made detailed presentations on geothermal modeling, power generation etc. Dr. O. P. Pandey, Dr. Sukanta Roy, Dr. A. M. Dayal, Sri D.N. Murthy, Dr. B. P. K. Patro, Dr. K. K. Abdul Azeez and other NGRI scientists and students participated in the discussions. Dr. K. Veeraswamy concluded the Workshop by proposing the Vote of Thanks.

At the Workshop, it was agreed that the Third Phase of the collaboration would be for four scientists from NGRI and MNRE to attend the Australian Geothermal Energy Conference, Adelaide from 15-19 November 2010. This would be an opportunity to make contacts with international geothermal researchers and industrialists. In the following week, the Indian delegation would visit Geoscience Australia, Canberra, to progress the Tattapani 3D map and thermal model, and to discuss geothermal policy issues with officials at the Australia Government Department of Resources, Energy and Tourism.



Workshop on *Metrological Advancements at CSIO, Chandigarh*

CSIO conducted a one-day Workshop on 28 July 2010 on *Metrological Advancements* as a part of the Golden Jubilee Celebrations. Shri Suresh N., General Manager, Bharat Electronics Ltd (BEL) Panchkula and Member, Research Council, CSIO was the Chief Guest on this occasion. He said that in BEL, Metrology is applied to the RF and crypto applications, besides all the instruments used are properly calibrated in-house. He emphasized that when dealing with defence equipment, the metrology aspect has to be taken very seriously to ensure the state-of-the-art performance.

Mr Anil Jain, Managing Director, Vaisheshika Electron Devices based at Ambala delivered the Keynote Address. He said that business understands only one thing and that is money. To earn

money one has to be competitive and focus on improving quality. Metrology plays a significant role in value addition through quality assurance. He said that CSIO had Midas touch and if it helps scientific instruments industry in Ambala in improving the quality through metrology, it will be able to survive in the global competition.

Dr. Pawan Kapur, Director CSIO while welcoming the Chief Guest said that every product manufacturing stage calls for precision measurement and conforming to certain standards. This is where the journey of metrology begins and propagates right from the raw material to the finished product and even afterwards through maintenance and calibration for prolonged trouble-free use. At any stage, the issue of meeting the specifications arises, which needs to

be settled for product acceptance and its marketability. This involves benchmarking and certification conforming to certain well-defined standards, which change every time a new technology is adopted for either product refinement or new product development or even for the matter related to new product-planning.

Mr V.P.S. Kalsi, Convener, introduced the theme of the Workshop and emphasized that we make measurement to progress while it is obvious that wrong measurements can be disastrous. He stressed on the importance of metrology and ended with the note that, "Knowing is not enough we must apply it and willingness is not enough, we must do it." Shri H. K. Pir, Scientist, CSIO, formally presented the Vote of Thanks on the occasion.

HRDC Conducts *Refreshers Training Programme for Finance & Account Personnel of CSIR*

India being a welfare state, its constant endeavour is to provide for its citizens including employees the best governance practices. Such measures require enactment of enabling and facile administrative practices, transparent financial and accounting systems, people friendly legislative reforms etc. This requires its functionaries at all levels and of all cadres to be most up-to-date and sensitive to these ongoing changes/reforms.

Therefore, with a view to keep Finance & Accounts personnel of the CSIR acquainted with these ever going reforms and important changes in the financial procedures/mechanisms, new accounting system, service tax / income tax etc, HRDC launched a series of refresher programmes in July, 2009 in association with Institute of Cost & Works Accountants of India (ICWAI) New Delhi, an autonomous professional institute set up by the Govt. of India.

Three such programmes were organized earlier, and the fourth one was organized from August 16 to 21, 2010 for Section Officers in Finance & Accounts sections of various CSIR laboratories. The programme was attended by a total of 22 participants. Apart from general subjects like Pay fixation, Budgeting, Audit, Accounting Formats, GFR, LTC/TA bills, GPF & Pension rules; the participants were exposed to new areas like Service Tax,



TRAINING PROGRAMMES/CSIR FOUNDATION DAY CELEBRATIONS



Human Resource Development Centre (CSIR), Ghaziabad Refresher Training programme for section officers (F&A) 16-21 August, 2010



Sitting Row: (left to right) Bhaskar Kumar Ravi, Arvind Khanna, Sonu Roy, M.V. Bhargavan, S. Vaidyanthan, Ishwar Das, Vinay Kumar, Naresh Kumar, Fuad Mahommod, Girish Chand, Ajay Kumar, Dinesh Kumar, Sunil Kumar

Standing Row: Ankeshwar Mishra, N.Rana Murthy, D.C. Bandyopadhyay, Asheem Kumar, Bhuyan, S.S. Singh, Asim K Jha, Dheeraj Singh, Babu Ram, Maharaj Singh, Ganeswar Malik, Ranjit Kumar Das, Kolla Ramesh

IFRS & Contract Management etc. One day of the programme was strategically dedicated to the soft skills training.

The programme was well received

by the participants with most of them suggesting organization of such skill enhancement programmes at regular intervals. The faculty for these

programmes comprised eminent experts from ICWAI, CSIR and other Govt. organizations.

CSIR FOUNDATION DAY 2010

Central Electrochemical Research Institute (CECRI), Karaikudi, Tamil Nadu

CSIR Foundation Day was celebrated at CECRI on 26 September 2010 at Science Auditorium, CECRI, Karaikudi, Tamil Nadu. Dr. N. Palaniswamy, Scientist 'G' welcomed the gathering. Dr V. Yegnaraman, Director, CECRI delivered the Presidential Address and later, issued cash awards to the meritorious wards of the staff.

Dr Yegnaraman also gave away Prizes for the wards of staff members who had won the Essay and Drawing Competitions conducted in connection with CSIR Foundation Day. The staff members who had retired on attaining the age of superannuation during the last one year were also honoured with shawls and mementos. The Function ended with

the Vote of Thanks by Shri Manuel Thomas, Controller of Administration, CECRI.

Shri P. Venugopalan, Director Defence Research & Development Laboratory (DRDL), Hyderabad delivered the CSIR Foundation Day Lecture on 30 September 2010. With an introduction about the DRDL missile



CSIR Foundation Day Function at CECRI, Karaikudi

Complex that contains DRDL, RCL, ITR and ASL, he began his lecture with the details of the Russian surface-to-air missiles such as *Prithvi*, *Agni*, *Akash*, *Trishul* and *NAG* that includes both strategic and tactical categories. He discussed the capabilities of different versions of *Prithvi* (*I*, *II* and *III*), launcher for ship application, long-range strategic systems such as *Agni 1*, *2*, *3* and *A2* & *A5* of futuristic version along with the details of anti-tank guided *NAG* missile and the extended version of the same, viz. *Helina*. *AKASH*, *ASTRA*, *BRAHMOS* and anti-ballistic missiles of

AD-1, *AD-2* along with ship based and ground based systems were also elaborated by him.

Challenges with special relevance to material that can withstand a temperature of 1900°C (after combustion that escalates to 2700°C) for about 20 sec were highlighted by Shri Venugopalan. He mentioned the collaborative efforts of DRDL with DMRL and other agencies. Material challenges that exist in terms of increased mechanical strength reduced weight, fracture toughness to facilitate adequate ductility, dimensional stability,

surface finish, strength at elevated temperature especially in the absence of coolant and damage tolerance were pointed out along with the environmental requirements that warrant moisture free absorption, corrosion free products etc. were discussed.

He also highlighted the contribution made by CECRI in solving corrosion related problems faced in missile components and also the developmental work related to protective coatings for various missile components. The meeting ended with the Vote of Thanks by Dr N. Palaniswamy, Scientist 'G', CECRI

Central Drug Research Institute (CDRI), Lucknow

CSIR Foundation Day Functions were held in CDRI on 26 September 2010. The Institute was kept open for the general public during the day to give a direct glimpse of the activities and achievements of CDRI to the masses. An exhibition depicting pictorial history of CDRI and its current drug developmental activities and facilities was put up to have an on-the-spot feel of the research work being carried out in the campus. A large number of students from local schools and science

enthusiasts of the city visited the campus.

The scientific session of the day started with the morning session consisting of Foundation Day lecture and CDRI Awards Oration. The Foundation Day lecture on “*Modulation of Host Adaptive Immunity of HIV*” was delivered by Dr. Shahid Jameel, the Chief Guest of the Foundation Day and an eminent virologist and senior scientist of International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi. CDRI Awards

2010 were also awarded during the function to Dr. Dulal Panda of IIT, Mumbai for Life Sciences and to Dr. G. Mugesh of IISc, Bangalore for Chemical Sciences. Dr. V.P. Kamboj, former Director of CDRI, presided over the Function and Dr. T. K. Chakraborty, Director, CDRI welcomed the guests.

Dr. Jameel also highlighted the role of CSIR and its contribution towards scientific and technological research in the country and the role played by CDRI in India's contribution to drug research



CSIR FOUNDATION DAY CELEBRATIONS

and for providing cheap and affordable technologies for drug production.

The CDRI staff who had completed 25 years of their service in CSIR and the staff members who superannuated during the period September 2009 to August 2010 were honoured. To commemorate this day many competitions among local school children and wards of CDRI staff members had been arranged during the fortnight. Awards were also presented to the winners of these competitions by Dr. (Mrs.) Susmita Chakraborty. Dr C. Nath, Chairman of the Organizing Committee welcomed the guests and Dr Neeraj Sinha, Co-chairman of the Organizing Committee, presented the Vote of Thanks.



CSIR Foundation Day Function at CDRI, Lucknow

Institute of Himalayan Bioresource Technology (IHBT), Palampur

The CSIR Foundation Day was celebrated on 26 September, 2010 by the Institute of Himalayan Bioresource Technology (IHBT), Palampur with great enthusiasm.

The Hon'ble Chief Minister of Himachal Pradesh Prof. Prem Kumar Dhumal was the Chief Guest of the Function. Prof. K.K. Butani, Director, National Institute of Pharmaceutical Education and Research (NIPER), Mohali delivered the Foundation Day Lecture on 'Drug Discovery & Development and Necessity in Indian Context'. Prof. V. L. Chopra, former

Member of Planning Commission, presided over the Function.

On this occasion, the Hon'ble Chief Minister, Prof. Dhumal, inaugurated the state-of-the-art "Regulatory Research Centre" at IHBT. Addressing the audience, Prof. Dhumal congratulated CSIR for its achievements. He assured Dr. P. S. Ahuja, Director IHBT for full cooperation from the State Government for setting up of the proposed "High Altitude Biology Centre" of CSIR in Lahaul and Spiti. Expressing his concern about the climate change particularly after the Leh cloud burst, Prof. Dhumal

felt that research needs to be carried out to assess the impact of vegetation in the cold desert area, thereby increasing the precipitation.

The Hon'ble Minister expressed happiness that both IHBT and CSK Himachal Pradesh Krishni Vishwavidyalaya are working in unison for the benefit of the region. He released the "Herbarium Catalogue" of IHBT and a technical bulletin on "Rose Cultivation." Further, on this occasion floriculturist; Mr Ranjit was awarded the IHBT Technology Adoption Award for successfully growing ornamentals and



Glimpses of the CSIR Foundation Day celebrations at IHBT, Palampur



encouraging others to take up floriculture as a trade. “*Sammaan Patra*” were also awarded to two superannuated CSIR employees.

The Irrigation Minister, Shri

Ravinder Ravi; Social Justice Minister, Smt Sarveen Chaudhary; Chief parliamentary Secretary; Shri Virender Kumar; Chairman of Wool Federation; Shri Trilok Kapoor; Vice Chancellor of

the CSK HP Agricultural University; Prof. S.K. Sharma; local MLAs, Shri Capt Atma Ram and Shri Praveen Kumar also attended the Function.

National Aerospace Laboratories (NAL), and CSIR Centre for Mathematical Modelling & Computer Cumulation (CMMACS), Bangalore

The 68th CSIR Foundation Day celebration was a well-attended event at NAL, which was celebrated on the 26 September 2010. The two special features of this year’s celebration was that it was jointly organized with the sister organization CSIR-CMMACS, and, secondly, NAL technology exhibition was organized which was open to both the students and general public.

The exhibition organized at new SARAS hangar, Belur campus, showcased products, achievements, and technologies developed both by NAL and CMMACS. The exhibition attracted both students and general public in large numbers. It was successful in raising the curiosity and interest in the laboratories’ achievements in aerospace science and technology.

The trump event, though, was the flight demonstration of autonomous Micro Air Vehicles by NAL MAV team as well as aerobatic flying of the mini UAV by Mr. P. Eshwar from E.N.R. Models, Bangalore. There were 13 flight demonstrations displayed to the curious and enthusiastic students and public, more than 3000 in number who were not only from schools and colleges in and around Bangalore, but also those who had travelled from neighboring States as well. The event surely motivated some young, fascinated spectators to be future pilots and Air Force fighters of the country.

The Function, to mark the Foundation Day occasion, was organized at the S. R. Valluri auditorium including the traditional technology and the business lectures. It was presided by the Director and graced by the Chief Guest, Mr. Ravi Chauhan, Managing Director, India & SAARC, Juniper Networks India Pvt. Ltd., Bangalore, who delivered the Technology Lecture “*New Generation Networks and Cloud Computing*”. Mr. Chauhan’s lecture was lucid and highly informative. He elaborated the developments of the fastest single-hop network switch by M/s Juniper, an Indian Company, capable of handling up to 5,00,000 computers.

Dr. P. Goswami, Scientist, CMMACS delivered the 13th NAL-

CMMACS Business Lecture: *Business of Weather Informatics*, ushering the era of *Equity of Knowledge*, the pioneering venture of CSIR. It was interesting to learn the formation of a joint corporate by CSIR with the private industry where knowledge as the Equity Capital from CSIR-CMMACS.

Mr. Ravi Chauhan presented the CSIR Foundation Day Awards and IPR Certificates to NAL employees and to the children of NAL employees for their outstanding academic and sport performance. The Function was compeered bilingually in Hindi and English by Mrs. Gomathy Shankaran, Scientist, KTMD while Dr. Ranjan Moodithaya, Head, KTMD, delivered the Vote of Thanks.





Dr. Mashelkar Delivered CSIR Foundation Day Lecture at NCL

Dr. R. A. Mashelkar, FRS, CSIR Bhatnagar Fellow, President, Global Research Alliance, former Director General CSIR and Director NCL delivered a lecture on “*Reinventing CSIR as a Timeless Innovation Enterprise*” at National Chemical Laboratory (CSIR-NCL), Pune on the occasion of the 68th CSIR Foundation Day celebration on 27 September 2010.

Dr. Mashelkar in his inspiring and inimitable style delivered a lecture that traced his experiences and journey as former DG-CSIR and Director NCL. He stated that great institutions have both an ambition and ambience. True leaders are those who enable both. He reminisced that his career in CSIR spanned 15 years pre-economic urban and 15 years post-economic liberalization era. Thus, the nation’s landscape and outlook has changed substantially during his 30 year career in CSIR.

Dr. Mashelkar, drew lessons from his life journey and, defined the future challenges for CSIR. He elaborated the terms reinventing CSIR by comparing the CSIR of the past and the present. He said that the present day scientists are lucky in the sense that they do not have to struggle with basic infrastructure. There were times, when a book would get outdated by the time it reached India, and when buying half a crore a rupee worth equipment was a huge task.

Dr. Mashelkar explained in great detail every word that appeared in the title of his talk. He defined innovation

as the successful exploitation of an invention or a new idea. He pointed out that mere inventions or exploration is not enough.

CSIR mandate is to create innovations through exploitation. Such exploitation must be new to India or to the world. “Innovations are not mere demonstrations, and India is not short of ideas,” he said. The pity is that Indian science creates many new ideas, but technologies are created elsewhere. He said that this has to change. CSIR must become the engine of India’s Innovation agenda, continuously creating value to society, industry or the country. When CSIR stops innovating, it ceases to exist.

CSIR’s contribution is generally not recognized or prominently visible to the society at large. It lacks a powerful public identity. However, CSIR is inextricably linked to many processes and products that consumers use; yet are unaware of CSIR’s contribution.

In this context, Dr. Mashelkar quoted the statement of DG-CSIR in his speech delivered on 26 September 2010, which said “the Indian public has not completely understood CSIR’s role in raising the technology capabilities of the country. This is primarily because CSIR does not generally produce a



Dr. Mashelkar delivering the CSIR Foundation Day Lecture

product which can be seen in the same way as launch vehicles, satellites, missiles or nuclear weapons. CSIR does not have any large government funded technology development missions such as light compact aircraft either. It has hundreds of smaller projects which have raised the capabilities of the Indian industry while augmenting the national technology missions mentioned above, it’s not always easy to trace CSIR’s contribution in each instance, except to say that the Indian industry makes products worth US\$ 1.3 billion in using technologies developed by CSIR.”

Dr. Mashelkar pleaded for an effort to make brand CSIR more visible. Just like Intel, “CSIR Inside” must be widely recognized by our society. CSIR creates public, private, societal and strategic goods. As Dr. Kelkar’s Committee deliberations showed, value to cost of CSIR is very high. This must be continuously emphasized and effectively communicated.



Tracing his journey, at NCL, Dr. Mashelkar recollected how in the early nineties, NCL reinvented itself to face the challenges of economic liberalization. Similarly, he elaborated on the challenges faced by him in the mid nineties when he assumed charge as DG-CSIR. The challenge was to create a Team-CSIR, a mindset in which 37 laboratories thought as one, collaborating and cooperating with each other, not competing. The other challenge was to inculcate the thinking that there is no dichotomy between basic science and its industrial applications and creation of wealth out of science a perfectly desirable and respectable goal.

Dr. Mashelkar emphasized the role of IP in the process of creating wealth and enterprise out of scientific research. He said that wealth cannot be created without due protection, especially in

high technology industries. He extolled the virtues of interdisciplinary science and called for greater integration of scientific disciplines and cross functional partnerships.

At the end, Dr. Mashelkar touched upon the qualities of good leadership, relevant to CSIR. First and foremost is trust. A true leader must be highly trustworthy. He must be innovative, passionate and compassionate. He must be capable of sacrificing his narrow self interest to the greater good of the institution, must have a sense of ethics, possesses an open mind and must be a good listener.

Dr. S. Sivaram, the then Director, NCL welcomed Dr. Mashelkar. He described Dr. Mashelkar as legendary and iconic who has mastered the depths of science as well as possesses an incredible breadth of knowledge. He has the unique distinction of publishing

a paper in PNAS and HBR in the same month, a feat unlikely to be equalled by anyone. Dr. Sivaram referred to the speech that Dr. Mashelkar delivered when he took over as Director NCL in June 1989, and said many of the thoughts and ideas addressed by him is what NCL has been executing over the years. Dr. Sivaram acknowledged Dr. Mashelkar's tenure as DG-CSIR as transformational with many changes and policy initiatives. CSIR has been reaping the rewards of these initiatives in terms of more freedom and greater anatomy to the laboratories.

The Function was followed by an Award Ceremony where the past employees were honoured upon completion of 25 years of service to CSIR, employees who have superannuated from the Council and scholarship and Awards to meritorious children of NCL wards.

CSIO Holds 45th Convocation of its Indo-Swiss Training Centre

“Merely getting a degree or diploma is not enough, it is the sincerity and hard work that helps chalk out the path of success”, said Prof. A.S. Brar, Vice Chancellor, Guru Nanak Dev University, Amritsar and Chief Guest on the occasion of 45th Convocation of Indo-Swiss Training Centre (ISTC) of CSIO, Chandigarh held on 30 July 2010. Having vision and ideas and courage to convert those ideas into reality is the only recipe that can help achieve accolades in life. ISTC was established in the year 1963 in collaboration with the Swiss Foundation for

Technical Assistance, Switzerland.

Earlier, Dr Pawan Kapur, Director, CSIO highlighted the activities of ISTC and welcomed the Chief Guest. While chalking out the history of the success of ISTC, he described it an Institute of Excellence for imparting technical skilled training of high quality. He advised the students to do hard and quality work to achieve greater heights.

Shri R.C. Arora, Principal, ISTC while presenting the Annual Report of the Training Centre, informed the gathering with pride that this year most of the 61 passing out graduates had

already been picked up for employment by various industries of repute. He further informed that the Centre had produced so far 3026 graduates in various streams. Later, graduating students were awarded diplomas and advanced diplomas by Dr Pawan Kapur, while the Chief Guest Prof. A.S. Brar gave away the prizes and medals to the students who had excelled in various fields.

The programme concluded with the formal Vote of Thanks proposed by Sh R.C. Agnihotri, Sr Faculty, ISTC.



Dr. Chandra Shekhar Nautiyal Takes Over as Director, NBRI

Dr. Chandra Shekhar Nautiyal, a well known plant-microbial biotechnologist of the country, has taken over as Director of the CSIR-National Botanical Research Institute (CSIR-NBRI) with effect from 26 November 2010. Prior to the present assignment, he had been heading the Plant Microbial Interaction area of NBRI.

Born on May 25, 1956, Dr. Nautiyal did his B.Sc. from Kumaon University in 1975; M.Sc. from Lucknow University, Lucknow in 1977 and Ph.D. from the M.S. University of Baroda in 1982. After spending about 10 years in Canada and USA working on various positions ranging from Post Doctoral Fellow to Production Manager in a Biotechnology Company in USA, he moved to NBRI in February 1994 as Scientist-EI in the Plant Microbiology Division in February 3, 1984 and became Scientist-G in February 2009. His research interests include area of fundamental and applied aspects of Plant-Microbe Interactions and relate to elucidation of relationships between microbial populations and environmental stresses.

In his distinguished career, he has carried out extensive research on exploitation of India's rich microbial diversity for agricultural applications, microbial diversity of India; development and popularization of biopesticides and biofertilizers, plant growth promoting bioinoculants application package for sustainable



agriculture; development of rhizosphere competent bioinoculant application package for enhancing production of pulses; genetic manipulation of competitive rhizospheric bacteria for low input biotechnologies for soil restoration in degraded ecosystem; mechanism of high tolerance in *Rhizobium*; bio-fungicides from bacteria for controlling plant diseases; development of biotic and abiotic-stress tolerant crops using microbial invention.

His contributions lead to working out the intricacies of relationship between microbes and plants. The knowledge base thus developed was utilized for enhancing the yield of plants through transfer of commercially exploitable technologies for its further dissemination among farmers and for the development of sustainable management of soil fertility and crop production that so desperately need to be protected. Major spin-off of his contributions has been several patents, numerous research papers in reputed national and international journals, technologies and utilization of these

technologies by several national and international biotechnology companies and farmers.

Dr. Nautiyal has about 47 research papers and 12 review papers in high peer reviewed journals. He has 20 US, PCT and Indian patents to his credit and has filed 27 international and 10 Indian patents. He has been recipient of several awards and honours. These are: *Vigyan Bharati Rashtriya Puraskar* (2001), *All India Biotech Association Award* (2000-01); *DBT Biotech Product and Process Development and Commercialization Award* (2004); *Industrial Medal Award of the Biotech Research Society of India* (2007), *Gopal Gaurav Puruskar, Karnataka* (2007) and recently the prestigious *TATA Innovation Fellowship* (2009) for his outstanding research contributions. Dr. Nautiyal has been elected as Fellow of the *National Academy of Sciences* and *National Academy of Agricultural Science* and member of several learned professional bodies.

Dr. Nautiyal's future vision is to provide best-of-scientific solutions for our country's need based oriented research in the area of agriculture biotechnology, by adopting an appropriate mix that suits its needs and resources to improve plant stress tolerance and yield, to accomplish CSIR's mission of providing scientific R&D that maximizes the economic, environmental and societal benefits to the people of India.



Dr. Sourav Pal Takes Over as Director, NCL

Dr. Sourav Pal, Head Physical and Materials Chemistry Division at the National Chemical Laboratory (CSIR-NCL) Pune took over as the ninth Director of NCL. The Institute has staff strength of over 1400 with about 300 scientific & technical professionals and 450 research students.

Dr. Pal is a distinguished theoretical chemist. He has contributed to diverse areas of theoretical chemistry which span the intellectually demanding and challenging aspects of methodological and conceptual developments. His contribution in the response theory formulation for closed and open shell systems is well recognized in India and abroad.

Dr. Pal brings with him, apart from his extra-ordinary scholarship and contributions to science, a deep understanding of NCL and has had privilege of working with four previous Directors of NCL namely Dr. L.K. Doraiswamy (1978-1989), Dr. R. A. Mashelkar (1989-1995), Dr Paul Ratnasamy (1995-2002) and Dr. S. Sivaram (2002-2010).

Dr Sourav Pal obtained his integrated Masters Degree in Chemistry from Indian Institute of Technology (IIT), Kanpur in

1977. He received his Ph.D. degree from Calcutta University and joined NCL in 1982. He was a post-doctoral fellow at the University of Florida, Gainesville, USA (1986-87) and has been Alexander von Humboldt Fellow at the University of Heidelberg, Germany (1987). He was a visiting Professor at the University of Arizona, Tucson, USA (1995) and the Institute for Molecular Sciences, Okazaki, Japan (1997). He is currently also an adjunct Professor at Indian Institute of Science Education and Research (IISER) Pune.

Dr. Pal has been recognized by several awards and honours for his contribution to science and technology including the prestigious *Shanti Swarup*



Bhatnagar Award in Chemical Sciences in 2000. He is a recipient of *the Prof. R. P. Mitra Memorial Lecture Award*, Delhi University, 2010, *INSA Dr Jagdish Shankar Memorial lecture Award*, 2006, *Chemical Research Society of India (CRSI) Silver Medal*, 2009, *Bimla Churn Law Memorial Lecture Award* of IACS, Kolkata, 2005, *P. B. Gupta Memorial Award* of IACS; 1993 as well as INSA and CSIR *Young Scientist Awards* in 1987 and 1989, respectively. He is a Fellow of all three National Academies of Science in India, J.C. Bose National Fellow of Department of Science and Technology and Dai-ichi Karkaria Endowment fellow of ICT, Mumbai, 2004-05.

Dr. Pal serves on the editorial boards of several international and national journals in Chemistry and has guided over 20 Ph.D. theses. He has published about 170 papers in International peer reviewed journals. He has authored a book titled *Mathematics in Chemistry* and contributed to chapters in several books.

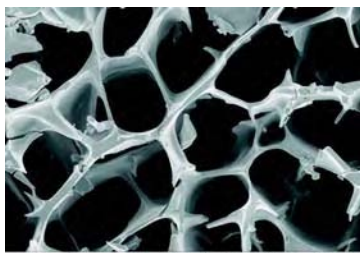
CGCRI Scientist Wins CCMR Image Contest in USA

Dr. Kausik Dana, Scientist, Advanced Clay & Traditional Ceramics Division of Central Glass & Ceramic Research Institute, (CGCRI), Kolkata while on deputation as BOYSCAST Fellow to Cornell University, USA won the Seventh Microscopy Image Contest jointly with his group member, Dr. Luis Estevez, for the best Scanning Electron

Microscope picture. Both were working in Prof. E. P. Giannelis research group, at Materials Science & Engineering Department, Cornell University. The picture showed *Nafion polymer* that has been engineered into a



(Left to right) Dr. Kausik Dana and Dr. Luis Estevez receiving the Award from Prof. Melissa Hines, Director of CCMR at Cornell University



macroporous structure using the crystallization of water to provide a removable template.

The CCMR maintains eight state-of-the-art facilities, which comprise an integrated system for materials' synthesis and preparation, analysis, testing and characterization, and advanced research computing. CCMR is funded by the National Science Foundation, Cornell, and numerous State and Federal agencies. CCMR funds a large number of graduate students and coordinates research among approximately 100 Cornell faculties across 12 departments.

The CCMR image contest is held annually to select best pictures taken by electron/light microscopes at Cornell University. These include SEM, FIB, TEM, STEM, AFM, Light microscopes, FIB and Raman probe. The Award includes a citation.

COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH

(HUMAN RESOURCE DEVELOPMENT GROUP)

CSIR COMPLEX, Library Avenue, Pusa, New Delhi 110 012

NOMINATIONS INVITED

CSIR Young Scientist Awards for 2011

The Council of Scientific & Industrial Research (CSIR) invites nominations for the CSIR Young Scientist (YS) Awards for the year 2011. The Awards are to be given for research contributions made primarily in India. The nominee should be a regular employee of CSIR system holding a position of a Scientist in Group IV and he/she should have joined before 26th September 2010. The age of the nominee should not be more than 35 years as on 26th September 2010.

The YS Awards are given annually in the following disciplines: (1) Biological Sciences, (2) Chemical Sciences, (3) Earth, Atmosphere, Ocean and Planetary Sciences, (4) Engineering Sciences, and (5) Physical Sciences (including instrumentation). The YS Award comprises a citation, a cash award of Rs.50,000 (Rupees fifty thousand only), and a plaque.

Nominations should be addressed to Head, Human Resource Development (HRD) Group, CSIR Complex, Library Avenue, Pusa, New Delhi 110 012, and should be sent as per the prescribed proforma (original + nine copies) along with one set of research papers published during the last 5-year period, by 31st January 2011. The details of the YS Award and the prescribed proforma for nomination can be obtained from above address or may be downloaded from website: <http://csirhrdg.res.in>



Printed and Published by

Deeksha Bist on behalf of National Institute of Science Communication And Information Resources (NISCAIR), (CSIR), Dr K.S. Krishnan Marg, New Delhi -110 012 and printed at NISCAIR Press, Dr K.S. Krishnan Marg, New Delhi -110 012

Editor: Dr. P. Cheena Chawla; **Editorial Assistant:** Neelima Handoo

Design: Neeru Sharma; Sarla Dutta; **Production:** Kaushal Kishore; **Editorial help:** Dr Sukanya Datta

Phone: 25846301; **Fax:** 25847062; **E-mail:** pchawla@niscair.res.in; pcheena@gmail.com; **Website:** <http://www.niscair.res.in>

For subscription: The Sales & Distribution Officer, NISCAIR; E-mail: sales@niscair.res.in;

Annual Subscription: Rs 300; Single Copy: Rs 30.00

Subscription Complaint No: 25843359