

# CSIR NEWS

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Team CSIR



## Dr Samir K. Brahmachari takes over as Director General, CSIR

**Dr Samir K. Brahmachari**, Director, Institute of Genomics & Integrative Biology (IGIB), Delhi, took charge as Secretary, Department of Scientific and Industrial Research (DSIR) and Director General, Council of Scientific & Industrial Research (CSIR), on 12 November 2007 from Dr T. Ramasami, Secretary, Department of Science & Technology (DST), who was holding the additional charge as Director General, CSIR and Secretary, DSIR. Prior to joining as Director, IGIB, on 11 August 1997, Dr Brahmachari, was a Professor of Molecular Biophysics and Genetic Engineering at the Indian Institute of Science (IISc), Bangalore.

A B.Sc. (Hons) in Chemistry and M.Sc. (Physical Chemistry) from the Calcutta

University and Ph.D. (Molecular Biophysics) from IISc, Dr Brahmachari has pioneered functional genomics initiative in India and successfully led the Indian Genome Variation Consortium project and is presently coordinating a national network project in '*In Silico* Biology' for drug target development. He and his coworkers have demonstrated association of two genes to Schizophrenia and Bipolar Disorder and identified several SNP's and other markers associated with various neurological disorders. He is the first to discover how human miRNA can target HIV genes and control virus replication, thus opening up a new vista of antiviral therapeutics.



Dr Samir K. Brahmachari takes over the charge as Secretary, DSIR and Director General, CSIR, from Dr T. Ramasami



## Dr Brahmachari DG, CSIR

As IGIB Director, Dr Brahmachari transformed this institute to an Institution of Knowledge Generation and Development and established alliances with industries who are expert in production, marketing and wealth generation. *Genomed* Alliance and the TCGA project are outcomes of such strategy.

Dr Brahmachari was first to conceptualize and implement *Genomed*, a first-of-its-kind alliance in India between a government institute — IGIB [formerly Centre for Biochemical Technology (CBT)] and a pharmaceutical company — Nicholas Piramal India Limited. This knowledge alliance was dedicated to the study and advancement of genomics, pharmacogenomics and bioinformatics. This model allowed knowledge generation and absorption by industry simultaneously and was distinctly different from contractual research or technology transfer. The first predictive diagnostic medicine for drug nonresponders of Asthma has been developed. The project has so far filed two international patents.

Dr Brahmachari also conceptualized the creation of TCGA, “*The Centre for Genomic Application*”. It is a collaborative R&D project between The Chatterjee Group and IGIB/CSIR/DST that is used as a shared resource for all the research centres in the country, be it public or private. TCGA is a trendsetter where a world class high throughput facility / infrastructure required to harness the knowledge coming out from



Human Genome research is established jointly by industry and the institute. This facility is allowing IGIB to lead genomics research in the country by disseminating its knowledge, and thereby helping in fulfillment of its mandate to provide support services for large-scale development of Genomics & Proteomics in the country allowing India to lead, and not merely follow, in the post genomics era.

Dr Brahmachari is a recipient of several prestigious honours and awards, which include:

- National Science Talent Search Scholarship by NCERT, 1968
- Young Scientist Medal by Indian National Science Academy, 1979
- Kani Medal by National Cancer Research Centre, Tokyo, Japan, 1981
- Elected member of Guha Research Conference (India), 1986
- Cama Memorial Award, Society of Biological Chemists (India), 1990
- Shanti Swarup Bhatnagar Prize in Biological Sciences by CSIR, 1990
- Fellowship of the Indian Academy of Sciences, 1991
- Elected Member of Human

Genome Organization (HUGO) 1991

- Fellowship of the Indian National Science Academy, 1995
- C. R. Krishnamurthy Oration Award by Society of Biological Chemists (India), 1998
- FICCI Award 1998-99 in recognition of individual initiative in Life Sciences including agriculture, 1999

• Millennium Medal by Indian Science Congress, 2000

- Fellowship of the National Academy of Sciences, Allahabad, 2001

• Ranbaxy Research Award in the field of Medical Sciences - Medical Research, 2001

• Goyal Prize in the field of Life Sciences by the Kurukshetra University, 2001

• B. K. Bachhawat Oration Lecture Award by the Jawaharlal Nehru University, 2003

• C. R. Krishnamurthy Oration Award by the Central Drug Research Institute, 2003

• Elected Council Member, HUGO by Human Genome Organization, 2004

• Prof. P.P.K. Bose Memorial Award by Indian Chemical Society, 2004

• Fellow of Biotech Research Society of India (BRSI) Biotech Research Society of India, 2005

Dr Brahmachari has also been a member of various Task Forces and Committees, Government of India; member, expert group on Human Rights and Biotechnology, United Nations; Council Member, FAOBMB, since 1997; and member Indo-European Commission S&T



Steering Committee. He has been included in the Advisory Committee of the X-Prize in Genomics which consists of leading Genomics Scientists of the world.

Dr Brahmachari has also been involved in the issues related to genomics research and human rights. As an advisor to Human Rights High Commission, he has addressed issues of unethical exploitation of genetic resources of the Third World and has championed the concept of rights of patients in benefit sharing in the development of genomic medicines. He has contributed significantly in promoting industry-academia interactions through novel programme of knowledge partnership.

Dr Brahmachari has over 130 publications in leading international journals and has five patents and 10 software copyrights to his credit.

## Dr Sukumar Devotta — A member of IPCC



The awarding of the Nobel Peace Prize - 2007 to the Intergovernmental Panel on Climate Change (IPCC), jointly with former US Vice-President Al Gore, is a remarkable testament to the dedication and commitment of the thousands of experts and participants who have produced the Panel's rigorous and comprehensive assessments reports on climate change. "This is an honour that goes to all the scientists and authors who have contributed to the work of the IPCC, which alone has resulted in enormous prestige for this organization and the remarkable effectiveness of the message that it claims," says Shri Rajendra Pachauri, Chairman of the IPCC.

"It is the most significant recognition that the IPCC has received for providing policymakers with objective and balanced information about the course and impacts of climate change and possible response measures," says Renate Christ, the Secretary of the IPCC.

Hundreds of authors from all regions of the planet have voluntarily devoted incredible amounts of time and labour to

writing and reviewing the reports. None of them has been paid for their time. The IPCC was created almost 20 years ago as a response to growing concern about the risk of climate change. The General Assembly of the United Nations asked the two UN bodies engaged in the issue, the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP), to set up this Panel to provide a balanced and objective policy advice. The IPCC assessments are based on peer-reviewed scientific and technical literature. The IPCC reports are written by teams of authors from all over the world who are recognized experts in their field. They represent relevant disciplines as well as differing scientific perspectives. This global coverage of expertise, the interdisciplinary nature of the IPCC team, and the transparency of the process, constitute the Panel's strongest assets.

**The Council of Scientific and Industrial Research (CSIR) is proud to have Dr Sukumar Devotta, Director of National Environmental Engineering**



Research Institute (NEERI), Nagpur, as a member of the IPCC. Dr Devotta had contributed to four IPCC reports entitled “Methodological and Technical Issues in Technology Transfer: A Special Report of IPCC Working Group III” (2000); “Climate Change 2001: Mitigation” (2001); “IPCC/TEAP Special Report Safeguarding the Ozone Layer and the Global Climate System: Issues related to HFCs and PFCs” (2005) and “2006 IPCC Guidelines for National Greenhouse Gas Inventories for Industrial Processes and Product Use” (2006).

An e-mail received by Dr Devotta from Dr Ogunlade Davidson and Dr Bert Metz, Co-chairs IPCC Working Group III reads as “You no doubt have heard about award of Nobel Peace Prize to the IPCC, jointly with Al Gore of USA. This makes all of you a Nobel Laureate and we, as co-chairs want to congratulate you wholeheartedly with this exceptional recognition”. For Dr Sukumar Devotta this recognition is definitely morale boosting and will add to his commitment to the IPCC. “I being a chemical engineer would continue to support the mitigation work of IPCC” - says Dr Devotta.

*See also Nobel Prize for Peace to IPCC and contribution of Dr Unnikrishnan of NIO, CSIR News 57(2007) 337.*

### Emulsifier composition for cakes and a method of making improved quality cakes thereof developed by CFTRI (US Patent No. 7172784)

**E**mulsifiers are important functional additives in modern food processing. They are used extensively to improve the product volume, tenderize crumb and to delay crumb firming.

The functionality of an emulsifier is related to its amphiphilic character and the resulting surface activity.

The use of emulsifiers is guided by their hydrophilic lipophilic balance and physical forms. Proper dispersion of emulsifier is crucial to enhance batter aeration, increased cake volume with finer and more even structure and improved storage

qualities.

The Central Food Technological Research Institute, Mysore, has developed and patented a new emulsifier composition for use in cakes with improved functional properties.

The advantages of this composition are improved crumb cell characteristics and textural characteristics, such as optimum moistness, tenderness, softness and improved cake volume. Also there is a substantial amount of cost savings, as there is no replacement of fat while the cake is prepared.

### Identifying mechanism of antifoulant for best use

**L**ife on submerged structures in marine waters begins with bacterial adhesion. Such a process of colonizing bacteria on the submerged surfaces leads to ‘biofouling’. Biofouling of the surfaces cause serious economic problems such as increase in fuel consumption by ships, impairment of heat transfer and induction and / or inhibition of metal corrosion, etc. To avoid biofouling, they are then treated with toxic chemicals. These chemicals are available in market by a common name ‘antifoulants’. Different antifoulants work on different principles. Some act on bacterial cells and inactivate essential enzymes whereas others oxidize organic constituents in the cells. Few act adversely on the

bacterial cell membranes. In general, these could therefore be referred to as agents reducing cellular metabolism and growth. But still bacterial adhesion occurs and leads to fouling of submerged surfaces. It implies that there are other factors such as cell hydrophobicity, cell surface charge, and extracellular polysaccharides (EPS) known to influence bacterial adhesion to the surfaces. Moreover, effect of antifoulant on these factors was not studied earlier. 2, 4-Dinitrophenol (DNP), an uncoupler of oxidative phosphorylation, is known to inhibit bacterial adhesion to surfaces by inhibiting EPS production. However, effect of DNP on bacterial cell surface properties was not

studied earlier. Scientists of Indian Institute of Chemical Technology (IICT), Hyderabad, have attempted to assess the effect of DNP on cell surface hydrophobicity, cell surface charge, as well as EPS production and its effect on bacterial attachment to glass and polystyrene surfaces. The experiment revealed that there is no influence of DNP treatment on bacterial cell surface charge and EPS production. However, DNP reduces the bacterial cell surface hydrophobicity to a greater extent and thereby reduces the bacterial attachment to glass and polystyrene surfaces. Thus, understanding the effect of DNP on cell surface properties and EPS production provides a better insight into the mechanism of inhibition of bacterial adhesion to surfaces that will help in the design of appropriate anti-fouling strategies.

## Improving lamb production and enhancing the viability of the Indian sheep breeding industry NCL and NARI's-CAIRD-2007 winning innovation

The CSIR Award for S&T Innovations for Rural Development for the year 2007 (CAIRD-2007) has been jointly awarded to Nimbkar Agricultural Research Institute (NARI), Phaltan and National Chemical Laboratory (NCL), Pune, for the innovation aimed at improving lamb production and enhancing the viability of the Indian sheep breeding industry. NARI and NCL share this award with the National Research Centre on Yak in Arunachal Pradesh [*CSIR News* 57(2007), 334]. Described here is the significance of this prestigious award-winning innovation:

India has a growing need for good quality meat protein, which in turn,

depends on a viable sheep breeding industry. Most Indian sheep breeds are raised for meat production rather than wool and more than 100,000 shepherd families totally depend on sheep rearing in Maharashtra alone. Shepherds' income is directly related to the number of lambs produced by each ewe. NARI and NCL effort was aimed at introducing the fecundity gene *FecB* from the only prolific Indian breed, *Garole*, into the *Deccani* breed of Maharashtra using a direct DNA test for detection of the gene. The project has demonstrated that ewes carrying the *FecB* gene produce about 5 extra lambs per 10 ewes compared to ewes that do not have the *FecB* gene.



Sheep breed 'NARI-Suwarna'



The new strain of *Deccani* sheep carrying this gene is named “NARI Suwarna”. These ewes have a higher proportion of twin lambs than the ordinary *Deccani* but retain the looks and hardiness of the *Deccani*. This improvement is genetic and permanent and translates into an extra income of Rs 400-600 per ewe to the shepherd due to increased number of lambs available for sale. A nucleus flock of 500 NARI Suwarna ewes has been established at NARI. The innovation has also been successfully demonstrated in more than 30 shepherds’ flocks in the Phaltan area through dissemination of breeding rams carrying the gene and monitoring closely the lamb production and its economics.

This work was carried out with financial support from the Australian Centre for International Agricultural Research by a team led by Mr B.V. Nimbkar and consisting of Dr Chanda Nimbkar, Dr Pradip Ghalasasi and Ms Padmaja Ghalasasi along with about 20 livestock supervisors, assistants and sheep herders at NARI and the team led by Dr Vidya Gupta consisting of Ms Varsha Pardeshi and Dr Mohini Sainani at NCL with scientific support from several collaborators from Australia, viz. Dr Steve Walkden-Brown, Prof. Julius van der Werf and Dr Jill Maddox from the University of New England and the University of Melbourne.

CAIRD award carries a cash prize of rupees 10 lakh, a citation and a plaque. The Hon’ble Prime Minister of India will present the award to the winners at a special function.



Team responsible for improved lamb production: Sitting (from left) Vidya Gupta, Mohini Sainani, Varsha Pardeshi, Padmaja Ghalasasi. Standing (from left): Vicky Poole, Jill Maddox, Steve Walkden –Brown, Herman Radsma, Chanda Nimbkar, B.V. Nimbkar, Ian, Pradip Ghalasasi

## Variable Mach Number Flexible Nozzle (VMFN)

Very high starting and stopping transient loads are the bane of blowdown wind tunnels operating at high supersonic Mach numbers all over the world. The origin of starting transient loads is the passage of the starting normal shock (also called terminal shock), which occurs when air at high pressure is suddenly released into the wind tunnel by opening the Pressure Regulating Valve (PRV). If the second throat area is appropriately set, the starting shock settles down downstream of the second throat and supersonic flow in the test section gets stabilized. The process lasts typically for 0.3 to 0.5 seconds. The origin of stopping transient loads is the break down of steady supersonic flow, which occurs when the PRV is suddenly closed during a blowdown. When the supply pressure is cut off, the terminal shock moves upstream of the second throat, becomes unstable and rapidly travels upstream towards the settling chamber. Strong pressure waves rapidly travel up and down the test section for a few seconds till viscous dissipation stabilizes the oscillatory flow and ambient conditions are reached in the test section. Stopping loads are usually more severe than starting loads because of absence of aerodynamic damping during stopping.

Various techniques have been implemented in wind tunnel facilities to minimize the starting and stopping loads. Among them is the use of a Variable Mach Number Flexible Nozzle (VMFN).

When the idea of enhancing the testing capability of National Aerospace Laboratories (NAL), Bangalore’s 0.6 m wind tunnel from transonic to supersonic Mach numbers came up as a part of NTAF augmentation programme, the VMFN was construed as the best option, considering the cost, time and technology factors. The operational philosophy of VMFN is to start the wind tunnel at a low Mach number and a low stagnation pressure and then reach the required high supersonic Mach number along with

synchronous increase in stagnation pressure. In this process, supersonic Mach number in the test section can be achieved with the minimum stagnation pressure (running pressure). After completion of tests at the required high Mach number, the VMFN can be reverted to a low Mach number condition and low stagnation pressure and then stopped.

While the concept of a VMFN appears reasonably simple, there are several engineering challenges in practically realizing such a nozzle, some of which are listed below:

- Ability to operate the nozzle using a single servo actuator, for direct control on nozzle shape
- Mechanism to convert the motion of the actuator into symmetric, simultaneous and vertical motions of top and bottom plates of the nozzle with respect to the centerline
- Determination of aerodynamic contours to achieve the best Mach number distribution along the test section, considering finite number of actuation points
- Mechanical and structural design
- Drive system design
- Physical realization of the aerodynamic contours through kinematics
- Stagnation pressure control system
- Nozzle control system
- Integration of the above control systems considering different time constants, with the other control systems of the wind tunnel.

One of the interesting problems associated with the operation of such a nozzle is the on-line matching of two different time-varying systems, viz., the stagnation pressure controlled by the PRV and the nozzle throat controlled by the drive system. An improper matching can lead to catastrophic results.

## HRDC signs MoU with FORE



Dr Naresh Kumar, Officer on Special Duty, HRDC, CSIR and Dr Seema Sanghi, Director, FSM, signing the MoU

In its quest to make available best of learning tools, exposure to renowned management experts and teachers, and help develop managerial and leadership qualities in CSIR staff, the CSIR's Human Resource Development Centre (HRDC), Ghaziabad, signed a Memorandum of Understanding (MoU) with FORE School of Management (FSM), New Delhi, on 30 July 2007. HRDC has the mandate to develop and enhance knowledge and skills base of CSIR personnel in managerial and functional skills through structured training. The Fore School of Management is one of the top 10 management schools of the country and has been established by Foundation for Organisational Research & Education (FORE), a non-profit society for promotion of excellence in management education and research.

The MoU was signed by Dr Naresh Kumar, Officer on Special Duty, HRDC, CSIR and Dr Seema Sanghi, Director, FSM, in the presence of Dr H.R. Bhojwani, Adviser to Union Minister of Science & Technology & Earth Sciences and Shri S.N. Sharma, Consultant, HRDC.

The MoU heralds a new era of collaboration between research and academia in the area of human resource development and research. The two organizations have joined hands to synergize their skills and competencies for enhancing organizational effectiveness and efficiency. The provisions of MoU include exchange and collaboration between CSIR and



FSM for research, training and consultancy in the areas of management of technology, management of R&D, material procurement and handling, administrative and financial operations, conferences, customized training programmes, research projects, case studies, etc.

## IIT, Roorkee recognition for HRDC, Ghaziabad

Human Resource Development Centre, Ghaziabad, got yet another recognition. This time from Indian Institute of Technology, Roorkee, as a Research Centre for the purpose of pursuing Ph.D. in the areas of Humanities and Social Sciences and Management Studies.

This recognition follows HRDC's agreements with FORE School of Management, New Delhi and Technology Institute of Management of TUHH, Hamburg, Germany, wherein these institutions shall co-develop courses for skill enhancement of CSIR staff.

## MoU with Academic Institutions



Exchanging of MoU documents

The Council of Scientific & Industrial Research (CSIR), represented by National Aerospace Laboratories, (NAL), Bangalore, has entered into agreements with Kumaraguru College of Technology, Coimbatore and Mysore University. Signed on 5 October 2007, the agreement with Kumaraguru College of Technology is for ushering and strengthening it to make it a better R&D institute.

The agreement with Mysore University was signed on 19 October 2007 for co-operative programme in academic training and research. Some of the areas identified for Mysore University are:

1. Computational Structural Mechanics
2. Aerodynamics/Computational Fluid Mechanics
3. Propulsion – Heat Transfer & Thermodynamics
4. Design and Analysis of Aircraft Structures
5. Material Science
6. Electronics
7. Computer Science
8. Composites and Polymer Science, etc.

## NEIST assists in setting up a quality control laboratory at Agartala

The Public Works Department (PWD), Government of Tripura, requested the North-East Institute of Science and Technology (NEIST), Jorhat, for assistance in setting up of a Quality Control Laboratory at Agartala. In this connection the Director, NEIST visited and had discussions with the Ministers and PWD officials at Agartala. Following his visit, the Applied Civil Engineering Division of NEIST-Jorhat, has become actively engaged for the job. The division has already procured various equipment from Kolkata which are going to be transhipped to Agartala. The division will also impart training to the personnel deputed by the Tripura government. Shri A. Biswas, In-Charge, Applied Civil Engg., also visited the site in Tripura and had discussions with the officials of PWD. The works are in progress and NEIST- Jorhat and PWD, Government of Tripura, are likely to sign an MoU for the purpose shortly.



## Training-cum-Production unit set up at Tripura

A training-cum-production centre for non-leather footwear has come into being at Dhajanagar, Udaipur, South Tripura, in the small scale sector, with the joint initiatives of North-East Institute of Science and Technology (NEIST), Jorhat; Central Leather Research Institute (CLRI), Chennai and Tripura State Council for Science & Technology (TCSTC), Agartala, managed by Udaipur Nagar Panchayat, an urban local body of Tripura, this centre is intended to develop need-based human resources and entrepreneurship within the state through motivation and training. The Ministry of Human Resource Development, Government of India, has been extending financial grants in the form of a project for setting up of the centre at Tripura and CLRI-Chennai acted as the coordinating laboratory for execution of the work. A tripartite MoU was also signed between NEIST-Jorhat, CLRI-Chennai and TSCST-Agartala to this effect. The unit was formally inaugurated by Shri Badal Choudhury, Minister of Science & Technology, Finance, PWD, etc. Government of Tripura, on 30 July 2007. Dr P. G. Rao, Director, NEIST-Jorhat, attended the inaugural function of the centre as a Guest of Honour. This centre is expected to fulfil a long felt need of the entrepreneurs of the state of Tripura.

## CSIR Foundation Day Celebrations at Laboratories/Institutes

All the 37 CSIR Laboratories/Institutes celebrated the 65th CSIR Foundation Day on 26 September with great enthusiasm. Basically, it is an occasion to celebrate excellence — to take stock of the performance of the past year and plan for the future. Special lectures were arranged on the occasion and the staff members who had completed 25 years of regular service and who had retired since the last Foundation Day, were honoured by presenting mementoes. Various competitions were organized and winners were awarded. The occasion was also observed as Open Day by many institutes/laboratories and a large number of people, particularly the students visited and interacted with the scientists.

The main function, held at the National Physical Laboratory, New Delhi, was covered in the 30 October issue of *CSIR News*. Highlighted here are the programmes organized on this occasion by CBRI, CECRI, IICB, IIP, NAL, NCL, NEERI, NEIST, and NISCAIR:

### Central Building Research Institute (CBRI), Roorkee



A view of CSIR Foundation Day Celebrations at CBRI. Seated on the dais (from left) are: Dr A.K. Gupta; Shri L. Mansingh, I.A.S.; Dr M.O. Garg, Director, CBRI and Shri Y. Pandey. Shri Subhash Tyagi, COA, CBRI, proposed a vote of thanks

At CBRI, Shri L. Mansingh, I.A.S. and President, Petroleum and Natural Gas Regulatory Board, Government of India, was the Chief Guest. Lauding the R&D at CBRI Shri Mansingh in his address mentioned that the institute has immensely contributed to the development of low-cost building technologies with focus on the utilization of waste materials and by developing partially prefab technologies which have found applications throughout the country. It has also provided solutions to conserve energy in the building sector and played important role in construction and rehabilitation of houses and buildings in earthquake affected areas in the state of U.P.,



## CSIR Foundation Day Celebrations

Uttarakhand, Gujarat, Maharashtra and other parts of the country.

Earlier, Shri Y. Pandey, Scientist 'F', introduced the Chief Guest to the audience. Dr A.K. Gupta, Scientist 'G', CBRI, traced the history of CBRI. Dr M.O. Garg, Director, CBRI, welcomed the Chief Guest and highlighted the institute's R&D activities.

He pointed out that the Scientist of CBRI and other CSIR labs are striving hard to keep pace with the development in different parts of the

globe and it is indeed a matter of great satisfaction that our country is now considered as one of the greatest resources of the world market as the Scientists of this country have proved their worth. CBRI is one of those labs which are directly concerned and connected with the upliftment of common man because shelter is one of the basic needs. CBRI has always played a vital role in finding appropriate solutions for providing houses and buildings to meet the aspirations of

the people of this country. Besides its natural wealth and resources, state of Uttarakhand is considered a home of disasters as it falls in severe earthquake prone area. The problem of landslide, hill storms, avalanches, etc. are a common feature and CBRI is providing its services to mitigate losses and suffering owing to these natural hazards.

Shri Subhash Tyagi, COA, CBRI, proposed a vote of thanks.

### Central Electrochemical Research Institute (CECRI), Karaikudi

At CECRI, Shri V. Subramanian, Secretary, Ministry of New and Renewable Energy, Government of India, New Delhi, delivered the key-note address. He called for a movement to popularize new and renewable energy sources to meet the national energy demand. He said that producing energy by using alternative sources such as wind power, biomass, hydel power and solar power was the need for the hour. "The country has immense potential to produce renewable energy. Industry houses, educational institutions, local bodies and even individuals can contribute to the energy demand by installing wind plants or solar energy systems on their premises", he suggested.

Shri Subramanian further said that the renewable energy was almost equal to nuclear energy. The country must go for a revolution in



Shri V. Subramanian, delivering the CSIR Foundation Day lecture at CECRI

installation and commercialization of renewable energy as was the case of the mobile phone revolution. It would not only bring down the cost of production but also benefit consumers. Shri Subramanian said the current installed capacity of renewable energy was around 10,600 MW. The Ministry had set an ambitious target of producing 14,000 MW in addition to the existing capacity. Globally, the country stood fifth in the production of new and renewable energy and fourth in the production of wind power. Tamilnadu has been the

leading producer of renewable energy recording more than 50% of wind power production in the country. It had also done well with regard to other sources such as biomass gas, hydel and solar power. Availability of technically qualified manpower and presence of high velocity wind zones such as Palakad.

Shenkottai and Aralvo Mozhi passes have been important factors. Setting up offshore windmill projects is not on the cards at the moment as the cyclone-prone coastline is not suitable for installing them, he said. He appreciated the remarkable contributions made by CECRI on fuel cells and batteries over the years.

Earlier, Prof. A.K. Shukla, Director, CECRI, welcomed the gathering. Shri C. Sri Vidya Rajagopalan, Deputy Director and Chairman, Organizing Committee, proposed the vote of thanks.

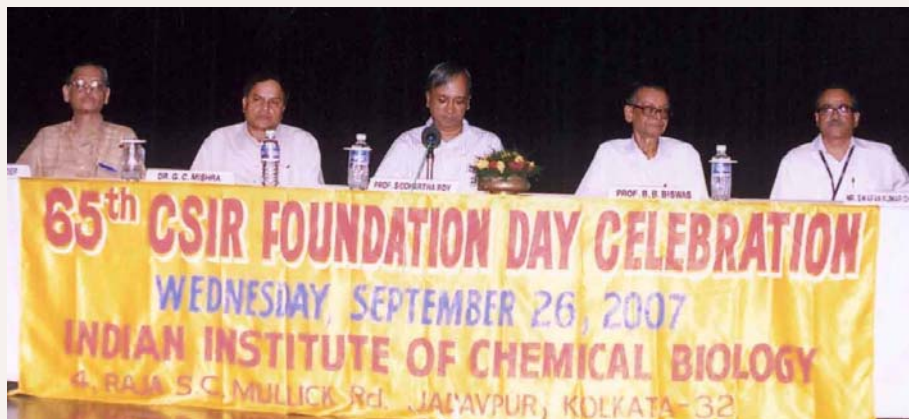


## Indian Institute of Chemical Biology (IICB), Kolkata

At IICB, Prof. B.B. Biswas, former Director, Bose Institute, Kolkata, was the Guest-in chief, and *Padmashree* Dr Gyan Chandra Mishra, Director, National Centre for Cell Sciences (NCCS), Pune, delivered the CSIR Foundation Day lecture on ‘Dancing the immunological two-step synapse! Who orchestrates the music.... the antigen or costimulation?’.

Prof. Siddhartha Roy, Director, IICB, presided over the function. Prof. Roy in his welcome address focused on what is new for us. He mentioned that India has entered into an era of rapid growth and declared that the new frontier is no more in west but in the east. Scientists are no longer bound by lack of resources. He called upon them to utilize these resources properly. He emphasized that the future programmes of CSIR and IICB should be such that these provide more benefits of science to the common people of India.

Dr H. K. Majumdar, Scientist



Seen on dais during the CSIR Foundation Day Celebration at IICB (from left) are: Dr H. K. Majumdar, Dr G. C. Mishra, Prof. S. Roy, Prof. B.B. Biswas and Shri S. Chaudhuri

G, IICB and Chairman, Foundation Day Organizing Committee, in his introductory lecture talked about scientific developments and achievements of IICB, its past contributions and future programmes for growth of the nation and to build scientific base stronger. He also pointed out that IICB maintains a continuous record of quality science and publications in highly esteemed international and national journals, and opined that

the slogan of current age should be ‘Research must flow from Lab to Land’.

Prof. Biswas in his inaugural address spoke about the establishment and growth of CSIR. He briefly described, starting from Calcutta Drug Test House to Board of Scientific and Industrial Research (BSIR) and its transformation into CSIR with the sincere effort of Prof. Shanti Swarup Bhatnagar. He also cited the contribution of Pandit Jawaharlal Nehru in the development of scientific research in India. He appreciated the effort of IICB and CSIR towards establishing a Proteomic Research Centre at Kolkata. He expressed that it is now Genomic era and explained how it works, develops and helps mankind and also highlighted the significance of artificial intelligence, robotics and systems biology in the expansion of science.

The function was graced by invited guests, distinguished scientists, present employees, former colleagues and the students.



Students interacting with scientists at IICB



## CSIR Foundation Day Celebrations

### Indian Institute of Petroleum (IIP), Dehra Dun

Shri L. Mansingh, Chairperson, Petroleum & Natural Gas Regulatory Board, Government of India, New Delhi, who was Chief Guest, delivered the CSIR Foundation Day Lecture on 'Regulatory Frame Work In Oil & Gas Sector'. Shri Mansingh said that while the indigenous production of the crude oil has been stagnant over the last six years, its demand is increasing at exponential rate. The demand of petroleum is expected to rise to 368 million tonnes per annum and that of natural gas to 125 billion cubic metre by 2025.

After dismantling of Administered Pricing Mechanism (APM) in April 2002, Government of India enacted an Act in 2006 for establishing the Petroleum and Natural Gas Regulatory Board (PNGRB). Shri Mansingh mentioned objectives of the Board, which are to oversee and regulate refining, processing, storage, transportation, distribution, marketing and sale; to protect interests of consumers and entities engaged in specified activities; to ensure uninterrupted and adequate supply and to promote competitive markets.

PNGRB registers entities to market notified petroleum, petroleum products and natural gas, to establish and operate liquefied natural gas terminals, to establish storage facilities for petroleum, petroleum products and natural gas. It also authorizes entities to lay, build, operate or expand a common carrier or contract carrier or city or



Shri L. Mansingh, Chairperson, PNGRB, delivering the CSIR Foundation Day Lecture at IIP

local natural gas distribution network. The other important function of the Board is to ensure that the petroleum products reach the consumers without adulteration, said Shri Mansingh.

Welcoming the Chief Guest, Dr M. O. Garg, Director, IIP, defined CSIR as an organization which believes in conceptualization of ideas, scientific innovation, research to develop technologies, its scale-up, follow-up with the clients and commissioning of the plants. He said that IIP right from its inception has been working on these lines and has developed a large number of technologies for refining and related industries. He also highlighted the role of IIP in human resource development of the industry.

Dr Garg also mentioned about the IIP winners of the CSIR

Technology Award for Innovation 2007 for 'Development of New Catalyst for Sweetening of Lighter and Heavier Petroleum Fraction'. The award carries a cash award of Rs 2 lakh, a plaque and a citation.

Earlier, Dr A. Datta, Scientist 'G', said that Foundation Day is an occasion when we express our gratitude to the founders of this great organization and those who had the vision. CSIR is a unique organization due to its multidisciplinary activities and strong networking within its laboratories and thus has the capability to provide complete solution to the needs of the society.

Dr V.S. Saini, Chairman, Foundation Day Celebration Committee, informed that more than 300 school students had been invited to visit the institute.



## National Aerospace Laboratories (NAL), Bangalore

Vice Admiral Raman Puri, (Retd) PVSM, AVSM, VSM, who was the Chief Guest at NAL, delivered the CSIR Foundation Day Lecture, on 'Strategy for Indigenous Capability Building in Aeronautics'. He said that innovation leads to productivity enhancement and hence to substantial increase in output levels both at the micro and macro level. In essence 'Innovation is the Catalyst for Growth'. He opined that the status of a country's aeronautical prowess was a general indication of the country's technological capabilities, and called for developing sophisticated

technology in India.

Vice Admiral Raman Puri also launched the NAL's Hindi website.

Ms Poomima Narayan, Deputy Head, ICAST, spoke about the salient features of the Hindi website and thanked her colleagues for their efforts in its creation.

Earlier, NAL Director Dr A. R. Upadhyaya, welcomed the Chief Guest Vice Admiral Raman Puri, the distinguished guests, members of the media and his colleagues. He spoke about the achievements of CSIR in the area of research and development. He also briefly mentioned the path-breaking role played by NAL in R&D in the

aviation sector.

Dr T. G. Ramesh, Head, Material Science Division, delivered the tenth CSIR Foundation Day Business Lecture on Instrumentation and Materials Technology. He spoke about DRISHTI, the state of the art indigenously developed transmissometer for measurement of runway visibility — a parameter of great importance in flying operations.

The function concluded with a vote of thanks proposed by Dr M. R. Nayak, Adv. (M&A). Dr M. N. Sathyanarayana, Jt. Head, KTMD, compered the programme.

## National Chemical Laboratory (NCL), Pune

Dr Narendra Jadhav, Vice Chancellor, University of Pune (UoP), delivered the CSIR Foundation Day Lecture at NCL. Dr Jadhav, a renowned economist, spoke on "Problems of higher education and challenges faced".

Dr S. Sivaram, Director, NCL welcomed Dr Jadhav and the audience. He described Dr Jadhav as an eminent economist having worked with Reserve Bank of India (RBI) in various capacities for the last thirty years. Dr Jadhav, a best selling author, has penned eleven books in Marathi and English. Many of his books have been translated in Indian and foreign languages. He is more recognised amongst readers through his most popular Marathi book *Amcha Baap ani Amhi*.

Dr Jadhav in his talk spoke on topics such as economic developments since liberalisation of economy in early 1990s, foreign exchange reserves, problem in higher education and the role played by UoP, and NCL's role along with UoP to produce quality manpower. He said for the first time after sixty years people of the country have become extremely confident of the future. In 1991 the country faced unprecedented macroeconomic crisis leading to financial crisis and unavailability of foreign exchange. The country then changed its economic policies and gradually accelerated the growth rate initially from three and a half percent to six percent and finally around nine percent.

Dr Jadhav compared the growth rate and per capita growth rate with that of the living standards. His statistics clearly indicated that due to the per capita growth in income, the living standards have improved substantially. The foreign exchange reserves have increased to more than 200 billion dollars, thereby, making India the sixth largest holder of foreign exchange in the world. In the last three years it has started lending money as compared to the earlier scenario where it was paying loans. Dr Jadhav said that though the rate of growth is accelerating job creation in the economy is decelerating; and the challenge lies in reducing the gap between the two. He said that 24% of the Indian population lives below poverty line.



## CSIR Foundation Day Celebrations

In terms of GDP, though, India counts as the second fastest economy in the world but in human development index, India stands at the bottom twenty, based on factors such as public health, education, etc. Out of 134 countries surveyed India occupies the 124<sup>th</sup> position.

Dr Jadhav emphasised the need to impart proper education and training to a large number of young and productive population of India. He described the young and growing population as country's greatest asset (demographic dividend). He alluded to several problems in education such as lack of adequate public investment, outdated curricula and inadequate focus on teachers training as few of the things that need immediate attention. Dr Jadhav then went on to describe some of the initiatives that UoP is addressing to. He said that today



Dr Narendra Jadhav, delivering the CSIR Foundation Day Lecture at NCL

UoP is having the largest number of students which includes largest number of foreign students, besides a number of affiliated institutes and colleges. He further informed that the university is establishing a triple connectivity comprising audio, video and sound between university and affiliated colleges, at par with the best in the world. The university has plans to develop the personalities of the students by improving their communication and other soft skills. This project will be launched at

Pune, Nagar, Nasik and Baramati centres. It is also proposed to spread the objectives of the "Samarth Bharat Abhiyan", wherein, each college adopts one nearby village and brings the benefit of knowledge to the welfare of the villages in terms of primary education, sanitation, tree plantation, environment, water management, communal harmony, GIS mapping, etc. The UoP also plans to enhance its global linkages with universities world wide.

Dr Jadhav also expressed the desire of UoP to work together with NCL in many areas of common interest, one of which would be to produce high quality PhDs in the interest of society. He pointed out that UoP, NCL and IISER can form a powerhouse of high quality education in basic sciences and together contribute to the generation of over one thousand five hundred plus PhDs.

### National Environmental Engineering Research Institute (NEERI), Nagpur

At NEERI, Minister of State (Independent Charge) of New and Renewable Energy, Shri Vilas Muttemwar, was the Chief Guest on this occasion.

Addressing the audience, Shri Muttemwar said that his ministry would provide liberal financial support to R&D projects being undertaken in the field of new and renewable energy. Quoting some of the contributions made by NEERI, Shri Muttemwar said that these

significant contributions have been instrumental in the development of Nagpur. He said that urban amenities and civic infrastructure of Nagpur have undergone tremendous transformation in a short period of time. This would not have been possible without the active participation of NEERI in various critical projects of urban improvement, improvement in drinking water quality, and monitoring of air quality and sewage

disposal. Shri Muttemwar assured that Jawaharlal Nehru Urban Renewable Mission would bring huge financial resource for improvement of Nagpur in terms of infrastructure and environment. He urged the NEERI scientists to think globally on R&D front, but act locally and involve themselves in various development challenges being faced by Nagpur.

Shri Muttemwar further said that his ministry is keen to support



fossil fuel based power. Wind energy, small hydro power and bio power have great potential to meet the energy needs in the remote rural areas for lighting and cooking. These renewable sources can be helpful even in urban, industrial and commercial application, he added. He informed that the renewable power from wind, biomass and small hydro power has crossed 10500 MW, which is 7.75% of our total installed power generation capacity from all sources. The 25% increase in the capacity as indicated in the Tenth Five Year Plan has come from renewable sources, he added. The wind power contributes 7200 MW; small hydro, 200 MW and bio power gives 1300 MW. India ranks fourth in wind power generation in the world despite low to moderate wind regimes in the country. Our wind power utilization is 16%, while in United States it is 1% and in Europe it is less than 2%. At the current rate of renewable energy capacity addition, around 10% of installed capacity would come from renewable energy sources by 2012 and would reach up to 80000 MW in 2032, Shri Muttemwar predicted.

Shri Muttemwar emphasized that there is a need to promote new and renewable energy not only for energy security but also to mitigate the impacts likely to occur due to global warming and climate change. He, therefore, urged the technologists to accept the challenge of energy security and climate change as an opportunity.

Shri Muttemwar also laid the foundation stone of Sophisticated Environmental Analytical Instrumentation Centre (SEAIC) at



Hon'ble Minister of State (Independent Charge) of New and Renewable Energy  
Shri Vilas Muttemwar unveil the cornerstone of Sophisticated Environmental Analytical  
Instrumentation Centre (SEAIC) at NEERI

NEERI. The cornerstone of the Centre was also unveiled at the hands of Shri Muttemwar. SEAIC is proposed to be established in 30,000 sq. ft. area in the NEERI premises, which will enhance the strength and capability of the institute.

Shri Vilas Muttemwar released the NEERI Annual Report 2006-07 and an audio-visual CD on NEERI. This audio-visual entitled "NEERI Towards Sustainable Development" was screened before the gathering of scientists, local academicians, school teachers and students. On this occasion, mementoes were presented to NEERI employees who had completed 25 years of service in CSIR and retired during the previous year.

Earlier, in his welcome address, Dr Sukumar Devotta, Director, NEERI, said that carbon is an

important element for Indian economy as India is the second largest consumer of coal for its energy needs. Dr Devotta remarked that this carbon dependence could be reduced with the help of renewable energy. He informed that NEERI has taken up several projects in this direction, such as generation of energy from solid waste and microbial hydrogen, to reduce carbon dependence. He also threw light on other mega projects of the institute, i.e. environmental impact assessment of Kalpasar project and collaboration with WHO, UNICEF, World Bank, etc. Dr Devotta said that there is the need to educate all the stakeholders in producing clean energy.

The programme concluded with the vote of thanks proposed by Dr T. Chakrabarti, Director Grade Scientist, NEERI.



## CSIR Foundation Day Celebrations

### North East Institute of Science & Technology (NEIST), Jorhat

The Foundation Day Celebration at NEIST was attended by a large number of invited guests, dignitaries, students, teachers, prominent citizens of the town, members of press and media besides the scientific community of the laboratory. Prof. R. Natarajan, former Chairman, AICTE and former Director of IIT, Madras, was the Chief Guest and delivered the Foundation Day Lecture. Dr P. G. Rao, Director, NEIST, delivered the welcome address. In his address, Dr Rao, briefly spoke about the contributions made by CSIR over the years for the economic and societal development of the country and mentioned that CSIR has just completed the 10th Five Year Plan and is currently preparing the 11th Plan with its mission to further develop the scientific and technological base of the country. CSIR today pervades all aspects of human life with the range of products it has developed over the

years from the nutritious 'Amul' to the vital life saving drugs and this shows the worthiness, relevance and versatility of the organization, he remarked.

Delivering the Foundation Day Lecture on 'The Significance of Innovation for Technology and Business Competitiveness, Prof. Natarajan said, "Business competitiveness provides the business advantages and innovation acts as a strong determinant for a knowledge economy and knowledge society — a society which uses knowledge as a powerful tool for societal transformations. So, innovation is the most important issue. Innovation can be defined in many different ways. But in the most simplistic form it can be regarded as a creative idea to implement solutions to the societal problems. While talent is the heart of innovation, the ingredients for innovation are primarily the industry, the community and the university; the universities can be

considered as the bedrocks of innovations, he said. Innovation does not consider individual, rather creates environment that foster inventions, the environment under which the creative skills of individual become more creative'. He mentioned that the university and the industry, which breed entrepreneurship, are having different cultures of their own. But it is very vital to bring the two together and innovation is the only way which can bring them together. Because, innovation is the art of creating new products, processes, etc. and the entrepreneurship is the art of carrying innovation to market in commercial manner, he explained.

Prof. Natarajan wished Foundation Day greetings to all and mentioned that CSIR labs are the number one in the country in terms of patent filing and R&D outputs and expressed his happiness for being associated with the historic celebration.

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

At NISCAIR, Dr S. Ahmad, Vice-Chancellor, Hamdard University, New Delhi, and former Director of Central Electronics Engineering Research Institute, Pilani, delivered the CSIR Foundation Day Lecture. Lauding

the programmes of NISCAIR, Dr Ahmad mentioned that NISCAIR and Hamdard University could collaborate in some of the activities.

Shri S.K. Rastogi, Acting Director, NISCAIR, welcomed the Chief Guest and others present and

summed up the progress made by the institute during the past one year. The coordinator of the celebration Shri Prakash Chand highlighted the activities of NISCAIR. Shri Pradip Banerjee, Scientist F, NISCAIR, proposed a vote of thanks.

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Phone: 25846301 Fax: 25847062 E-mail: bck@niscair.res.in; meenakshi@niscair.res.in; vineeta@niscair.res.in; Website: <http://www.niscair.res.in>

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