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CSIR NEWS

Progress, Promise and Prospects

"When it comes to health, we need to have a balanced view between health as a right and health as a business"

Prof. Samir K. Brahmachari
Chief Member DSDD,
Director General, CSIR



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C O N T E N T S

Mayo Clinic and CSIR sign MoU



CSIR@80: Vision & Strategy 2022



International Conference on Science Communication for Scientific Temper Jointly Organized by NISCAIR, Vigyan Prasar & NCSTC



CBRI Organizes Conference on, Fire Science & Technology – Research and Its Implementation



Seminar on Nowcasting Wind organized jointly by NAL, KREDL and C-STEP



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SOM- A Novel Technology to Minimize Mosquito Borne Diseases

In recent years, vector-borne diseases (VBD) have emerged as a serious public health problem in countries of the South-East Asia Region, including India. Many of these diseases, particularly dengue fever, Japanese Encephalitis (JE) and malaria now occur in epidemic form almost on an annual basis causing considerable morbidity and mortality. Lymphatic Filariasis (LF) remains as a major public health problem handicapping the socio-economic development of susceptible regions. Dengue is spreading rapidly to newer areas, with outbreaks occurring more frequently and explosively. Chikungunya has re-emerged in India after a gap of more than three decades affecting many States.

Though systematic control operations are mobilized regularly, inadequate surveillance for vector-borne diseases, especially in rural areas was considered to be a major impediment, due to which good quality data on vectors/or on the disease could not be used for action at ground level. Several examples were cited of human behaviour and practice that had led to unchecked vector breeding. Fulminant breeding of mosquitoes in households, in peri-domestic areas, in water and garbage collections including in agricultural settlements, irrigation systems, other public places, irrigation systems and poor water storing facilities at home, inadequate emphasis on solid waste management were only a few examples of the enormity of the challenges faced by the rural populace in 5.94 lakhs villages (2011 census) in India.

The healthcare infrastructure in rural areas in India has been anatomized as a three tier-system viz., sub-centre, primary health centre and community health centre and is based on the population norms. The rural healthcare statistics illustrates 50,000 PHCs (including tribal zones), which remain the first contact between the village community and Medical Officer. Intensification of communicable and non-communicable disease programmes vaporizes without proper resources and guidance in such health centers.

Enforcement of control strategies in advance becomes definitive lane as the rural populace lacks the awareness to protect themselves from vector borne diseases in the absence of adequate manpower in health centres. The data mining tool discussed here was set off as a predecessor at rural spheres to catalyze them in attenuating the problems beforehand than sketching remedy in post-transmission periods.

Exploration of information technology has unfolded many avenues and data mining is one among them. By making effective use of ‘Self Organizing

Maps’ (SOM), prioritization of the disease endemic regions can be attained as per the severity of the parameters governing the disease in the respective villages. Once prioritization is done, the control operations can be launched effectively, with the knowledge gained by SOM and all the villages can be mapped in a more precise way. This will help to understand the nature of disease dynamics in the endemic regions, so that public health authorities can concentrate a specific parameter to control the disease more effectively. This sort of initiation was chartered by Prof. U. S. N. Murty, Head, Biology Division, Indian Institute of Chemical Technology (IICT) to boil down the number of cases egressing at the cost of VBDs.

Pondering multiple parameters in various places of a district or State is possible with SOM. It is unique in its way amidst decision making tools in the circumvents of vector borne diseases where the latter had fallen upon more on the concern of outbreak declared zones and the former deals with the strategies in preventing endemicity itself.

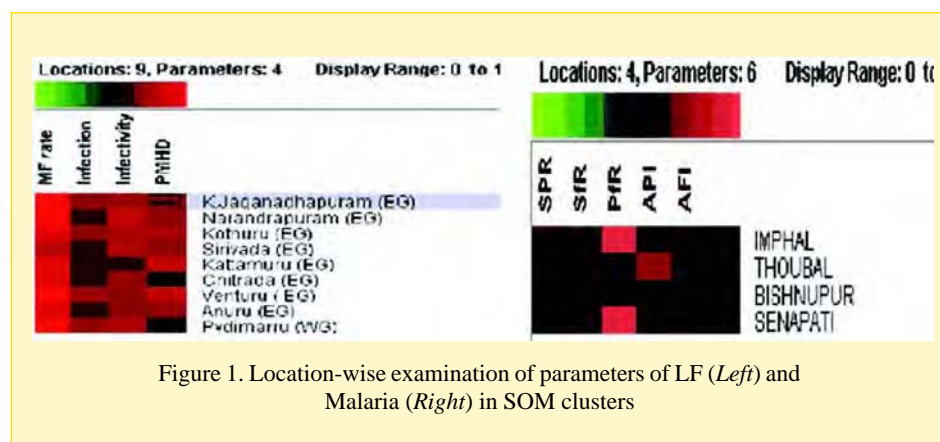


Figure 1. Location-wise examination of parameters of LF (Left) and Malaria (Right) in SOM clusters



Dr. U. S. N. Murty, Project Leader, handing over SOM-Filariasis to the District Malaria Officer, Chittoor, Andhra Pradesh



Dr. Vijay Pal, DM & HO, West Godavari district receiving the Filariasis database from the IICT team member

through the central nodal agency - National Vector Borne Disease Control Programme (NVBDCP, MoH & FW, GOI) to four States viz., Gujarat and the North Eastern States— Assam, Manipur & Arunachal Pradesh. In this way, not only the breadth of implementation of this

The success of the information technology in health sciences lies in its actuation in fields. Lymphatic Filariasis is one of the dreaded diseases plaguing the entire South East Asia, with large contribution of diseased patients from India. Andhra Pradesh is one of the States, which is bearing this burning problem. The disease is especially more prevalent in the coastal regions where the breeding places for the mosquitoes are aplenty, and the eco-climatic conditions also favor the *Culex* mosquitoes and the nematode parasite. Therefore, in these regions, there are a large number of persons harboring the parasites for transmission to healthy individuals through vectors. Self-organizing maps developed based on the endemicity of these coastal areas had been promoted in East and West Godavari districts and Karimnagar in Andhra Pradesh.

The North Eastern region of India contributes about 3.96% of the country's population. Reports on malaria are very common in these regions. Nearly 10.5% of malaria cases and 10% of

Plasmodium falciparum (PF), with 20% of deaths, have been reported annually. Out of the seven States in the North Eastern region, Manipur is known to be highly endemic for malaria which had become a major public health problem. SOM models were exemplified to prioritize the malaria endemic regions and also to explain the intensity of malaria positive cases and *Plasmodium falciparum* density in different districts of Manipur State.

The models developed by IICT had been elongated further to Changlang district of Arunachal Pradesh after affixing endemic surveys to the models. The transfer of this technology through the respective State governments were boosted by awareness programmes in conjugation with health officials in the district.

SOM could be termed as a virtual epidemic counselor escalating the requisite actions in real time. The realization of this fact is enlivened through the transfer of this technology developed by Prof. U. S. N. Murty and his group at Biology Division, IICT

technology is symbolized but also the recognition of the essentiality of such advancements in health sector is authenticated. Further, the knowledge flow across science and administration will be acknowledged through the installation of information technology apparatus in the rural endemic zones of vector borne diseases.

References:

1. Murty, N. & Arora, N. Application of Self-Organizing Maps For Prioritization of Malaria Control Operations In Changlang District, Arunachal Pradesh. *The Internet Journal of Epidemiology*. 2007 Vol. 4(2).
2. Murty, U.S.N., Rao, M.S., Misra, S. Prioritization of malaria endemic zones using self-organizing maps in the Manipur State of India. *Informatics for Health & Social Care* September; 33(3): 170-178.2008
3. Primary healthcare resources in India. WHO
4. Vector borne diseases in India. Brainstorming session. Nov 2006. WHO (http://www.censusindia.gov.in/Census_Data_2001/India_at_glance/admn.aspx)



Redefining Kilogram and its Relevance to Society

Dr. A. K. Bandyopadhyay

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The kilogram is the only one of the seven SI units which is still defined in relation to an artifact known as International Prototype of the Kilogram (IPK) rather than to fundamental physical constant or an unchanging property of nature. Historically, the kilogram was originally defined as the mass of one litre of pure water at a temperature of 4°C and standard atmospheric pressure. This definition was difficult to realize accurately, partially because the density of water depends on the pressure, temperature etc. but importantly pressure units include mass as a factor (force per unit area), introducing a circular dependency (correlated parameter) in the definition of the kilogram.

To avoid these problems, the kilogram was redefined as precisely the mass of a particular standard mass of some substance which is stable in their form and which can be fabricated and designed to approximate the original definition. Since 1889, the SI system defines the unit to be equal to the mass of the International Prototype of the Kilogram (IPK), which is made from an alloy of platinum and iridium of 39 mm height and diameter, and kept at the Bureau International des Poids et Mesures (International Bureau of Weights and Measures) known as 'Official Standard' from 1880.

Official copies of the prototype kilogram are made available as National prototypes provided that country/

economy signs "Convention of the Meter Agreement". The Republic of India signed the Convention of the Meter in 1957 and was given copy No. 57 of the International Prototype Kilogram, which serves as its Primary Standard of Mass. The National Prototype kilogram k-57 was fabricated by M/s Johnson Matthey & Co. Ltd. London in 1954, calibrated by the BIPM in June 1955 and then handed over to CSIR-National Physical Laboratory in late 1958.

Since 'BIPM Official Standard' is an artifact, by definition, the error in the repeatability of the current definition is exactly zero. However, it is found by comparing this 'Official Standard' with its 'Official Copies', which are made of roughly the same materials and kept under the same conditions, the mass of the 'Official Standard' appears to be changing relative to the mass of its copies.

The drift of the kilogram prototype together with its copies (relative to an unchanging standard) could be as large as 2×10^{-8} kg per year. The prototype and its copies appear to gain mass over time and lose mass when washed for use in comparisons. Therefore, it is difficult to state that any object in the Universe that had a mass of 1 kilogram 100 years ago, and has not changed. This perspective is counter productive and defeats the purpose of a standard unit of mass, since the standard should not change arbitrarily over time.

With reference to our National standard (k-57) since its procurement and first calibration in 1955, the National Prototype Kilogram was cleaned and recalibrated three times by BIPM. The mass values k-57 given by BIPM are: 1 kg, 0.054 mg in 1955; 1 kg, 0.022 mg in 1985; 1 kg, 0.036 mg in 1992; and 1 kg, 0.044 mg in 2002. Thus, from the first to second calibration of k-57, its mass value increased at the rate of 1 µg per year. From second to third calibration, it has decreased at the rate of 2 µg per year and from third to fourth calibration it has further decreased by 0.8 µg per year.

The observed variations 'Official Standard', 'Official Copies', and 'National standards' have intensified the search for a new definition of the kilogram which should be, as mentioned, realized independently. There is an on-going effort to introduce a new definition for the kilogram by way of fundamental or atomic constants. The proposals being worked on are:

Atom-counting approaches include the Avogadro approach and the ion accumulation approach.

- The Avogadro approach attempts at defining the kilogram by a fixed count of silicon atoms. As a practical realization, a sphere will be used where the size is measured by interferometry [Fig. 1].
- The ion accumulation approach involves accumulation of gold atoms and measuring the electrical current required to neutralize them.

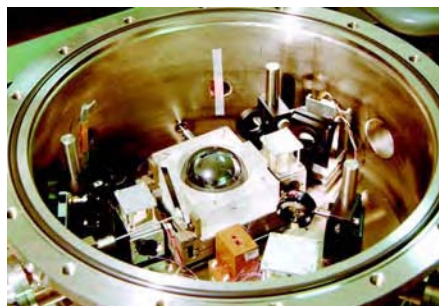


Fig. 1 – Set up for Avogadro Constant at National Metrology Institute of Japan (NMIJ) [Courtesy: Dr. Ken Fujii of NMIJ – AdMet -2005]

Fundamental-constant approaches include the Watt balance and the levitated superconductor approach.

- The Watt balance uses the current balance that formerly was used to define the ampere to relate the kilogram to a value for Planck's constant, based on the definitions of the volt and the ohm [Fig.2].
- The levitated superconductor approach relates the kilogram to electrical quantities by levitating a superconducting body in a magnetic field generated by a superconducting coil, and measuring the electrical current required in the coil.

Due to the limitations of the experimental apparatus, process and procedure of measurements, the

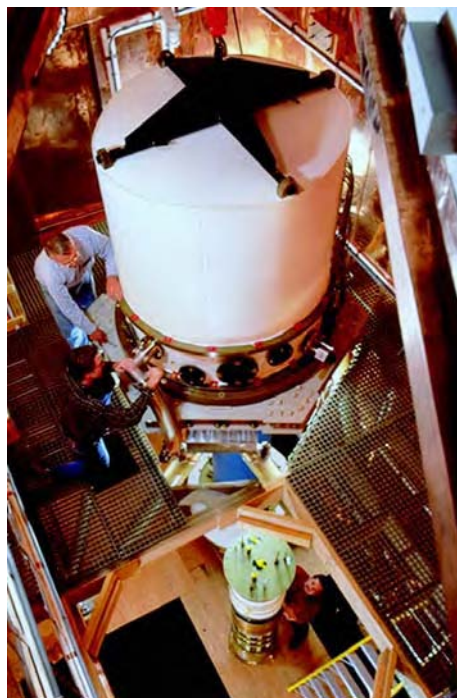


Fig. 2 – Set up for Watt balance at NIST (USA) [Courtesy: Dr. William E. Anderson of NIST – AdMet-2009].

maximum relative uncertainty achieved in Watt balance is about 5×10^{-8} , while for Avogadro constant from Si crystal, it is 5×10^{-7} . However, the levitation of a superconducting body leads to 10^{-6} . On the other hand, the change in the 'Official Standards of BIPM' is 2×10^{-8} per year. The large difference of the uncertainty in measurement of mass by different

other methods in comparison to the 100 years data of the 'Official Standards of BIPM', has indicated that we should go for better innovative measurement and improve the agreement, and till then we should not go for change for the redefinition of mass unit (one of the conclusions of the last CCM 2011, BIPM meeting held on May 8-13, 2011).

Since mass is the base quantity and it is connected with volume, density, force, pressure etc. any confusion in the definition would drastically effect the measurement science & technology, and international trade and commerce. Many examples can be cited but two are mentioned: (1) in the Pharmaceutical industries, 1mg (10^{-6} kg) is required to be measured for various drug components where the increase in the relative uncertainty from 2×10^{-8} to 5×10^{-8} may cost a substantial error in the measurement and may even result failure of drug delivery. (2) Similarly, in the Nano force measurement (10^{-9} Pa) which is very common in the atomic and subatomic level and these days, they are carried out by Atomic Force Microscopy or equivalent technique, an increase in the uncertainty in measurement may affect the overall performance of the instrument.

CLRI Signs Agreement with M/s. Gencor Pacific Organics Pvt. Ltd

CLRI signed an Agreement with M/s. Gencor Pacific Organics Pvt. Ltd., Chennai on 23 September 2011 in connection with evaluating and identifying the potentiality of two products and three formulations for hair growth





Mayo Clinic and CSIR sign MoU

Mayo Clinic and CSIR, India signed a formal Agreement to collaborate on significant areas of research. Prof. Robert Rizza, M.D., Mayo Executive Dean for Research and Prof. Samir K. Brahmachari, DG-CSIR, signed a Memorandum of Understanding recently to mutually work on topics such as drugs, devices and biomarker studies relating to heart diseases; chemical biology and applied genomics; and innovation in metabolomics.

“This is an exciting and positive step, based on our continuing discussions and initial collaborations,” said Prof. Robert Rizza, M.D., Mayo Executive Dean for Research. “We look forward to working with our colleagues in India to advance

healthcare for everyone.”

“We welcome this new relationship with Mayo Clinic, with which we share many strong interests in medical and technology research as well as healthcare delivery at affordable cost,” said Prof. Samir K. Brahmachari, DG-CSIR.

“We are engaging the best minds to help our research teams improve our fundamental understanding of disease and develop new more effective therapies for our patients,” said Eric Wieben, Ph.D., Mayo’s Associate Dean for external collaborations.



Prof. Robert Rizza M.D., Mayo Executive Dean for Research (left) and Prof. Samir K. Brahmachari, DG-CSIR, after signing the MoU

“Strategic International research collaborations, such as this with the CSIR, India will help us achieve those goals,” he added.

NIIST Signs MoU with NGO for Transfer of Know-How to Produce ‘Coir-Rubber Composite’ Pots from Coir Fibre Waste

On 23 November 2011, the National Institute for Interdisciplinary Science and Technology (NIIST), Thiruvananthapuram, joined hands with *Sevashram*, an NGO based in Angamaly, Ernakulam for setting up a manufacturing facility to produce coir-rubber composite (CRC) pots from coir fibre waste. *Sevashram* is a registered charitable society, which creates employment opportunities catering to socially and economically backward entrepreneurs.

Industries based on extraction and use of coir fibre are aplenty in Kerala. Disposing the coir fibre waste from these industries is a serious issue. Using the process know-how developed by NIIST, coir fibre waste is bonded by natural

rubber latex (NRL) and formed into ‘continuous sheets’, which could be used for the production of garden pots, rigid/flexible panels or floor tiles.

Besides eco-friendliness and biodegradability, some of the unique selling propositions of such coir pots are light weight, long term durability in service (non-breakability), weather resistance and lower cost compared to clay pots of similar capacity. These containers could also be produced in aesthetically appealing designs, shapes and colours according to customer requirements and for in-door and out-door applications. In the long run, the preformed coir sheets could also be used as ‘reinforcing plies’ for composite products such as rubber

floor tiles, laminates and rigid composites as partition boards.

Conventional garden pots are mostly clay based. Some of their demerits are high weight, low impact resistance/high breakability and comparatively higher price for similar capacity. With the present growing trend of horticulture and ‘kitchen-gardening’ both in the rural and urban areas, there will be high demand for these novel ‘coir pots’ as a substitute to clay pots. This joint venture aims at creating ‘wealth from waste’ (value addition) and alleviation of environmental problems caused by coir fiber waste to some extent. Generation of employment opportunities in rural sector also is in focus.

Nutan — A Soot-less Stove With CSIR's Stamp

Dr. P. Cheena Chawla

With myriad models of LPG based cooking range available today, dependence on sooty kerosene wick stoves that were once the only option for cooking food in most Indian homes, appears to be history long forgotten. But what we cannot forget is the trend setting impact of *Nutan* that came as an energy efficient soot-less stove in late 1970's, developed by CSIR with funding and marketing support from Indian Oil Corporation (IOC). Launched in the Indian market in 1977, this partnership product became a household name as it revolutionized smokeless cooking while saving more than 25% fuel. A popular brand in kerosene stove market in India, *Nutan* has stood the test of more than three decades as an efficient cooking appliance.

Kerosene stoves marketed in India are broadly classified as 'pressure' and the 'wick' types. The efficiency of old pressure stoves ranged from 50% to 55%, while the old wick stoves had an efficiency of 35% to 47%. The improved pressure stove developed by the Indian

Institute of Petroleum (IIP), Dehradun and IOL has an efficiency of 64%. The pressure kerosene stoves are obtainable in different sizes and qualities. They are made mainly from steel sheets and brass rods.

Normally, cooking stoves that use petroleum fuels like kerosene work on a mechanism that vaporizes the fuel and mixes it with oxygen for the fuel to burn efficiently. Once the fuel is vaporized, it is directed toward the burner where it is ignited, forming a flame suitable for cooking. In a typical kerosene pressure stove, fuel is provided under pressure, from a tank. The pressure is built up by a manual air pump.

The power of the stove is regulated with a valve in the fuel pipe or by the pressure in the fuel tank. The stove is first primed by igniting fuel in a priming pan on the stove. As the priming flame burns, it heats the fuel in the fuel line to its boiling point, and the fuel begins to vaporize. As in *Nutan* stove, the kerosene could be preheated by a kerosene soaked asbestos sponge.

Once the stove works, the kerosene is preheated by the cooking flame. Due to the preheating, emissions of some air pollutants and production of noise in the starting phase are, therefore, high. Thereafter, a valve on the fuel pipe is opened, that allows



the vaporized fuel to reach the burner through a jet, which then mixes with oxygen drawn in through the vent tubes. The fuel thus gets ignited by the priming flame to create the cooking flame. The flame is extinguished by closing the valve or by reducing the pressure on the fuel tank.

A kerosene wick stove works much like a candle. One end of a fiber wick rests in a reservoir of fuel, from where the fuel is drawn up by capillary action. As a flame is applied to the end of the saturated wick, it ignites the fuel and continues to draw more fuel into the wick for maintaining the flame. Multiple wicks provide a broader, hotter and more consistently heated cooking area.

The improved wick stove designed by IIP gives a thermal efficiency of over 60 per cent as compared to the 35 per cent of most other wick stoves in the market, and it also cooks 25 per cent faster. It has been patented and



Various parts of the *Nutan* stove



commercialized in India for domestic use. This product has been licensed to several manufacturing companies. The smaller variant of *Nutan* is the *Mini-Nutan* with an efficiency of 58%. These products have been produced since 1978. The improved efficiency of the *Nutan* stoves is due to better preheating of the in-flowing air. The outer body of the stove has a temperature of only 40°C to 50°C, and the useful heat output is 0.95 kW. For the preheating phase a time of 1.5 to 3 minutes is required.

The use of LPG is possible with different types of stoves. The thermal efficiency for most existing LPG stoves ranges from 60% to 68%. Interestingly, the LPG stove developed by IIP has thermal efficiency of 72%. It has been patented in India and its technical know-how has been transferred to about 80 licensees. This stove has an improved slot with a smaller angle step optimizing the way the flames are taken to the vessel.

Sure, an improvement in the way food is cooked is associated with phenomenal shifts, first from solid fuels, like wood and coal, to kerosene and then to gas. The convenience of gaseous fuels is linked with the ease in lighting the stove and the ease of adjusting the heat besides the lack of smoke, general cleanliness and faster cooking. Notwithstanding the advancements in developing cooking stoves, the milestones achieved over the years are unforgettable, and *Nutan* for sure, was one such milestone for which the effort of CSIR scientists is laudable.

CSIR@80: Vision & Strategy 2022



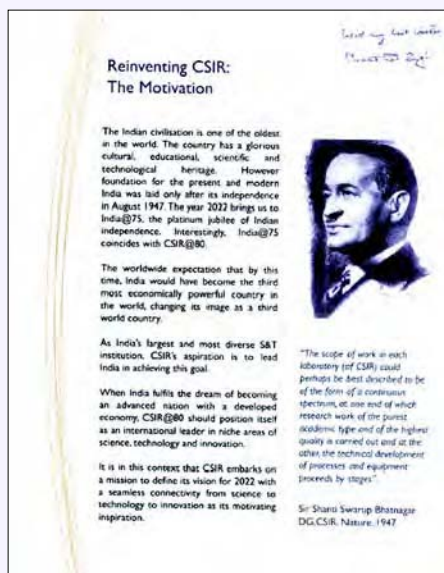
The Hon'ble Prime Minister of India and President, CSIR, Dr Manmohan Singh releasing the Document *CSIR@80: Vision & Strategy 2022* in the presence of DG-CSIR, Prof. Samir K. Brahmachari. The event took place on 24 November 2011

CSIR@80: Vision & Strategy 2022 has been developed through the involvement of stakeholders and scientists across CSIR under young leadership. The year 2022 brings us to India@75, the Platinum Jubilee of Indian independence. Interestingly, India@75 coincides with CSIR@80. When India fulfils the dream of becoming an advanced Nation with a developed economy, CSIR@80 should position itself as an International leader in niche areas of science, technology and innovation. It is in this context that CSIR has embarked on a mission to define its vision for 2022 with a seamless connectivity from science to technology to innovation as its motivating inspiration.

CSIR's renewed mission is inspired by the remarks made by the Hon'ble Prime Minister and President, CSIR to build "... the new CSIR that will fulfill the aspirations of modern

India ...". So CSIR's mission is simply – to build a new CSIR for a new India. The people and Nation-centric thrust to science, technology and societal pursuits remains the cornerstone of CSIR's mission. CSIR's vision is to pursue science, which strives for global impact; technology that enables innovation-driven industry and nurture trans-disciplinary leadership, thereby catalyzing inclusive economic development for the people of India.

This document articulates CSIR's vision for 2022. This also attempts to set the strategic shift in planning and the roadmap required to realistically achieve this vision. CSIR has played a pivotal role in partnering and strengthening Indian industry in the fields of: Aerospace, agrochemicals, petroleum and petro-chemicals, chemical intermediates, polymers, glass and ceramics, mining, minerals and metals, coal, building materials, surface



(Top right corner) A copy of the Document, *CSIR@80: Vision & Strategy 2022* signed by the Hon'ble Prime Minister of India and President, CSIR, Dr Manmohan Singh

these areas will be guided by the criteria of future leadership opportunity, relevance, risk, reasonableness and return.

Performance indices will be viewed in the context of relevance of the efforts and impact made. This will include: technologies developed & transferred; economic impact generated; royalty earned; spin off companies created; equity holding in companies; reduced environmental footprint and IP generation: Indian and foreign patents (filed, granted and licensed) and IP portfolios created. Besides, scientific Output will include SCI publications; impact of research; citations etc., and societal impact will be in the form of jobs created; human resource developed and number of people benefited. Recognitions will be the National and International awards; prestigious fellowships of academies; membership of editorial boards etc.

The Roadmap for Achieving *CSIR@80 Vision* envisages a paradigm shift from incremental to a disruptive thought leadership. From mere projects to creating end products in the market place, from a follower to a leader, from research for publication to publications from research, from supporting companies to creating companies, from physical Institutes to connected Institutes, from collaboration to co-creation, and from individual centric to team centric.

The message is clear: ***“Stand up, be bold, be strong. Take the whole responsibility on your own shoulders, and know that you are the creator of your own destiny.”***- Swami Vivekananda

engineering, food processing, aromatic plants and healthcare products. CSIR is the technology leader in the areas of: Generic drugs, industrial catalysts and leather technology.

CSIR plays a pivotal role in the Indian strategic sector in handling their challenge of technology denial by providing products: Products ranging from radiation shielding glass to microwave tube and from head-up display to advanced carbon composites based products. CSIR provides S&T based services to industry and other stakeholders like: Environmental impact assessment and mitigation; testing of structures; aerospace and defence; structural engineering related interventions; urban and rural road and housing development; power industries; and food technology.

CSIR acts as custodian for: Primary standards of measurements; bio-resources, and traditional

knowledge. CSIR is the Nation's flag bearer in: Intellectual Property generation and protection. CSIR builds the country's largest S&T human resource: This is through research grants, fellowships, awards, post graduates in niche areas and Ph.Ds in science and engineering.

The key driver for R&D focus of CSIR will be National goals. The broad areas of focus will be: Affordable healthcare; Agri-food technologies; Sustainable energy; Chemistry and environment; Smart & functional materials; Engineering Structures/ Design & Electronics; Civil aviation; Climate change & Earth System Sciences; and CSIR-800.

National mission oriented projects with quantified economic, social, environmental and other intangible benefits targeting 2022 will be enunciated and taken up. The selection and evaluation of the projects in all of



International Conference on, *Science Communication for Scientific Temper* Jointly Organized by NISCAIR, Vigyan Prasar & NCSTC



A view of the dais during the First International Conference on *Science Communication for Scientific Temper* organized jointly by premier Science Communication and Publishing Institutes namely, CSIR- National Institute of Science Communication and Information Resources (NISCAIR), Vigyan Prasar (VP) and National Council for Science and Technology Communication (NCSTC), DST, Government of India

The First International Conference on *Science Communication for Scientific Temper* organized jointly by premier Science Communication and Publishing Institutes namely, CSIR- National Institute of Science Communication and Information Resources (NISCAIR), Vigyan Prasar (VP) and National Council for Science and Technology Communication (NCSTC), DST, Government of India was held from 10-12 January 2012 at the NASC Complex, Pusa, New Delhi. Spearheading the fundamental duty of spreading of scientific temper, scientists, academicians, artists, filmmakers, dancers and musicians shared the stage during this Conference.

Dr. Subodh Mahanty, Director, Vigyan Prasar extended a warm welcome to all present at the Inaugural

Function, held on 10 January 2012. Presenting the Statement of Scientific Temper, Dr Gangan Prathap, Director, NISCAIR traced the history of scientific temper from ancient to modern period. Prof. Bernard Schiele Professor of Communications at the University of Quebec at Montreal, Canada presented the Keynote Address. Deliberating upon *Science Communication: New World, New Challenges*, he touched upon the science-society dynamics, how science was communicated in the past and what are today's challenges. He stressed the need for participation and dialogue processes in spreading scientific temper.

Mr. Mahesh Bhatt, a renowned film producer from Bollywood, known for commitment to scientific temper, felt happy to be associated with the forum which hopes to re-ignite the fires of the

scientific temper in the hearts of every Indian. He said that "Doubt", which has been looked upon by culture as a sign of weakness, requires more courage than conviction does, and needs more energy. The scientific temper that Jawaharlal Nehru crusaded for, is born from a heartbeat; and that heartbeat is doubt. A society which is not decorous enough to concede to itself that we are billions of times more ignorant than knowledgeable, is doomed. Even the scientific community needs to wake up and face the blunt truth that their uncritical faith in scientific knowledge has created many of the problems now threatening the planet; and our wholesale reliance on scientific progress is both untenable and myopic.

Further, Mr Bhatt said that knowledge and insights accumulate



fastest in the minds of those who hold an ignorance-based worldview. Saying that no two leaves/snowflakes are the same, we need to recognize this uniqueness of every moment in every individual, to realize the true wonder of life. He suggested to look into the plants life, where as the new leaves grow, the older ones wither away, and learn how we can work with our ideas, concepts, and beliefs in every sphere of our lives. The plant shows us what it means to be undogmatic. To put it simply, it shows us how to stay dynamic and adaptable. That is what the scientific temper is all about.

The Chief Guest Hon'ble Justice Markandey Katju, Chairman, Press Council of India and former Judge, Supreme Court of India in his Inaugural Address said that the purpose of doing science is to harness it for the benefit of mankind, making their lives better and happier. He believed that only science can solve problems of a country like India. Sighting poverty, unemployment, uncontrolled price rise, problems of healthcare, education, housing, children malnourishment, farmers' suicides, etc., he suggested that it should be our motto to abolish these evils and make our country prosperous. He recommended the *Four People's Principles* (following the Chinese revolutionary and President, Sun Yat Sen's Three People's Principles): *Science, Democracy, Livelihood and Unity of the People* to be the guiding principles for salvation of India's problems.

Highlighting the ancient Indians' scientific achievements, such as the decimal system in mathematics, plastic surgery in medicine and town planning (Indus Valley civilization), etc., he said



Glimpses of the Conference

that we subsequently took to unscientific path of superstitions and empty rituals, which led to disaster. Today, we are far behind the Western countries in science, and that is the real cause of our poverty and other social evils. Inculcating scientific temperament on a massive scale is the need of the hour. He stressed the need to change the entire mindset of our masses, who are presently engulfed in casteism, communalism and superstitions. He said India, as a country of great diversity in castes, languages, religions, ethnic groups, etc., adopts only secularism that gives equal respect to all communities.

Dr P M Bhargava, former VC, National Knowledge Commission in his Presidential remarks briefly explained the study that he conducted with 1000 people for superstitious belief for example, what would they do if a black cat crosses their path. He said 70% of

the people mostly the educated and financially secured, opted to change their path. This is the state of scientific temper in India. Pandit Nehru's commitment to scientific temper was obvious with the fact that he was the President of the Association of Scientific Workers of India, an Association set up by Dr. Bhargava. Possibly he was the first Prime Minister to be a President of a union. He said that understanding the basic methods of science is scientific temper. Scientific knowledge is verifiable, repeatable and falsifiable. It keeps on changing and there is no ultimate truth. There has to be a recommendation that the human problems can be solved only by scientific methods and not by invoking supernatural powers. He recollected his involvement with the 1980 scientific temper statement. He also said that even during that time many scientists were



Eminent speakers on the occasion

not willing to sign the statement. Giving the infamous example of ‘fish swallowing’ in Hyderabad for asthmatic complaints, he was critical about people including the educated going for such occult treatment. He felt the need for a dedicated Indian TV Science channel to dispel such irrational beliefs. The Inaugural Function concluded with the Vote of Thanks delivered by Mr Gauhar Raza, Senior Scientist, NISCAIR and mentor of the whole event.

The Conference had five Plenary Sessions and 15 Parallel Sessions with about 88 lectures spread over three days. All the sessions were chaired by eminent scholars and science communicators. Altogether, there were 13 invited lectures by resource persons from different walks of life. Day 1 had one Plenary Session and six Parallel Sessions. Both, the Plenary as well as Parallel Sessions were of 90 minutes duration each.

The first Plenary Session was essentially a panel discussion on, *History and notion of Scientific Temper* held under the Chairmanship of Dr P. S. Ahuja, Director, Institute of Himalayan Bioresources Technology (IHBT), Palampur and four panelists: Hak Soo Kim of Sogang University, South Korea, Dinesh Mohan, IIT-D, Dinesh Abrol, CSIR-NISTADS and Irfan Habib from NUEPA. The six Parallel Sessions on the first day were as follows: *Television and scientific temper*, *New electronic media and scientific temper*, *Radio and scientific temper*, *Hand-on science activities*, *Science communication through Indian languages*, and *Extension activities and development of scientific temper*.

Day-2 had two Plenary Sessions (panel discussion) on *History of Science Communication* and *Trends in Science Communication* chaired by Dr

P. M. Bhargava and Prof. Deepak Pentel, Former Vice Chancellor, Delhi University, respectively. The panelists were: T Jayaraman (TISS), Anil Kumar (CUSAT), Mridula Mukherjee (JNU) and T. V. Venkateswaran (VP) for Plenary Session-2 or PL-2; and Cludia Aguirre (Colombia), Carmelo Polino (Argentina), Arpana Caur and P. V. S. Kumar for Plenary Session-3 or PL-3. Post-lunch there were six parallel sessions namely, *Science fiction: A way to build ST*; *Science museums and extension centres*; *Development communication and scientific temper*; *Science movements across India*; *Science, superstitions and scientific temper*; and *Role of education in building scientific temper*.

On the concluding day, there were two Plenary sessions (PL-4 & 5), *Indicators of scientific temper* and *Global trends in science communication/PUS* chaired by Steve



Fuller, University of Warwick, UK, and Anuj Sinha, former Head, NCSTC, respectively. The panelists for PL-4 were Fabienne Crettaz von Roten, (University of Lausanne, Switzerland), HE Wei, HU Junping and XUAN Liang, (CRISP, China), and Gauhar Raza; and the panelists for PL-5 were Hester du Plessis, (HSRC, South Africa), Luisa Massarani (Brazil), Kristina Petkova (Bulgaria), ZHANG Huiliang and LI Zhaohui (CRISP, China). The last three parallel sessions were on *Policy issues and government practices, Indicators of scientific temper, and Role of education in building scientific temper.*

The Valedictory Function was presided over by dignitaries, Dr. R. Chidambaram, Principal Scientific Advisor, GOI, Prof. Samir K. Brahmachari, DG-CSIR and Secretary, DSIR, Dr Annadurai Mylswamy, Director, Chandrayan Project, ISRO and Prof. Steve Fuller, Auguste Comte Chair in Social Epistemology, University of Warwick, UK. Dr Gangan Prathap, Director, NISCAIR briefed the audience on the reactions of the delegates/ participants on the statement of scientific temper-2011, thirty years after the first statement was released in 1981. Overall, he said, the declaration that is, the statement was indeed endorsed by one and all. While Dr Subodh Mahanti, Director, Vigyan Prasar delivered the Welcome Address, and Mr Gauhar Raza, Chief

Science Communication – The Key to Mankind’s Progress

Science is as old as the Universe itself. Understanding ‘Science’ can be attributed to the ‘Sixth’ sense. However, communication of science lagged behind even after language developed. Collective progress takes a country selectively ahead. Science, until it reaches masses, is as good as no science. Scientifically aware society shuns ignorance and thereby superstition. Dissemination of scientific information in modes and means understandable by masses is the key.

Science communication has been the backbone of man’s progress since the beginning. Efficient and speedy communication of scientific information as well as its instant access have been crucial for overall development of mankind. Inculcation of scientific knowledge to the masses, in other words ‘scientific temper’, has broken many cultural, social and religious dogmas that were otherwise hindering the progress of the human civilization. Acquisition of scientific temper is must for any society to progress and those who failed to acquire lagged behind in time and space.

Scientific temper is an indigenous discourse rich with potential for cross-cultural, gender and environmental sensitivity and laden with a continuous struggle against the ill effects of technology on the one hand and extra scientific belief systems on the other. It is necessary for people to deal rationally with every mundane issues of the society. In India, the notion of scientific temper was well articulated by the first Prime Minister of India, Pandit Jawaharlal Nehru. Disseminating science is, therefore, constitutional obligation.

The first statement on scientific temper by the renowned/legendary Science Communicators Prof P N Haskar, Dr Raja Ramanna and Dr P M Bhargava was revisited in October 2011 at Palampur after three decades in the National Workshop on *Scientific Temper—Science and Nation Building: Revisiting Nehruvian Agenda*, organized by CSIR-NISCAIR and Vigyan Prasar (VP). The International Conference on *Science Communication for Scientific Temper* jointly organized by NISCAIR, Vigyan Prasar and NCSTC, held from 10-12 January 2012 at the NASC Complex, Pusa, New Delhi intended to have a conceptual clarity for developing indicators to benchmark the scientific temper. It proposed to bridge the two disciplinary domains—science communication and public understanding of science. The Conference aimed at nucleating new groups in India and in countries where science communication and public understanding of science research is in nascent stages. About 200 delegates from 20 countries attended this International Conference. The gathering provided an opportunity to share the experiences between the developing and developed world, and inspired young and trans-disciplinary researchers to bring their fresh perspective and experience from other fields of research with similar concerns.



Dignitaries on the dais during the Valedictory Function

Scientist, NISCAIR paid the vote of thanks.

Dr R Chidambaram, in his Presidential remarks on the occasion, observed that *Science Communication for Scientific Temper* will work only if the information is true and comprehensible. He said the information is very important. Even illiterates if given information in the required format will behave rationally. On the contrary, citing Kudangulam Nuclear Power Plant, he said, even though the nuclear power plant will fulfill the power demands of the State Tamil Nadu, it is facing a lot of hindrances. Communication increases knowledge, which in turn, spreads the economic well being. Hence, collaboration is important in the field of communication, collaborative innovation, precisely. He also cautioned against partial scientific literacy. He cautioned that the science communicators should be careful while communicating science. Science communicators should also note that the public at the receivers' end are not empty vessels where they can simply dump

their information.

Professor Samir K. Brahmachari in his Valedictory remarks observed that the implementation part is important. He will be happy if the entire CSIR family starts practicing scientific temper in their day-to-day life from tomorrow. He stressed the point that often scientists who are behind the success of events are not given due recognition. He said scientific temper can be spread only by making our scientists the heroes. Unfortunately, today the heroes are only players or film stars whose images are beamed into the living rooms through satellites made possible by scientists. He stressed the point that the scientists should be given due value in the society. Dr. Brahmachari also said that rationality ends where knowledge ends and the ignorance begins from there. Hence, there is a need to push the frontiers of the knowledge and this is the primary duty of science communicators. He also called upon science communicators to harness the potential of social media like *Facebook*. The future lies in new cyberspace. He congratulated

NISCAIR's effort in launching NISCAIR tube for sharing science videos.

Dr. Mayilsamy Annadurai who spoke on scientific temper said there is a need to spread the scientific temper among the youth of today. There is a dire need to generate role models. Everybody, including the parent can be a role model. He also said that the objective of scientific temper should be to create an ambience so that people can take informed decisions rather than forcing information on them. Professor Steve Fuller, on the recommendations of the conference said the people in the West need to be informed that the 'scientific temper' has been built into the fabric of the Indian constitution. He also agreed with the statement in the resolution that the science needs to be presented in local languages and that the scientific temper should be incorporated in the school curriculum at an early stage. He also read out the statement to audience who endorsed it by a thundering clapping.



CBRI Organizes Conference on, *Fire Science & Technology – Research and Its Implementation (FIRST 2011)*



Prof S.K. Bhattacharyya, Director, CBRI welcoming delegates during inauguration



Ms Diana Daems from Belgium, Chairing the Session I



Delegates and participants in the Conference

A two-day Conference entitled, *Fire Science & Technology – Research and Its Implementation (FIRST 2011)* was organized by the Central Building Research Institute (CBRI), Roorkee during 3-4 November 2011 at CBRI, Roorkee. The acronym was very apt as it was the first conference of its type which related only to the scientific aspects of fire science. The conference was attended by delegates from CBRI, Roorkee; CFEES (DRDO, New Delhi); IGCAR Kalpakkam; NPCIL; IIT-Bombay and Delhi; SVNIT- Surat; NIT-Rourkela; Gitam University, Vishakhapatnam; Jain University, Bangalore; and Kochi Airport besides industries such as Huntsman-India and Belgium, Omega Elevators-Ahmedabad, BASF-Pune, L&T-Chennai, Safety Control Devices- Lucknow, Visaka Industries-Hyderabad and ASKA Equipments, New Delhi.

The Conference was inaugurated by Prof. I. M. Mishra, Dean Saharanpur Campus of IIT, Roorkee. Prof. I. M. Mishra also graced the occasion as the Chief Guest while Prof. S. K.

Bhattacharaya, Director, CBRI, presided over the Inaugural Function. The proceedings of the Conference and Divisional Brochure of Fire Engineering, were released in the opening ceremony. Prof. Bhattacharaya welcomed the delegates and informed them about the various activities carried out by CSIR as a whole and CBRI in particular. Dr. Sunil K Sharma, convener, informed that the Conference has been organized with objectives to bring together the researchers to deliberate upon the various facets of Fire Hazards and gave an overview of the five themes of the Conference.

In his Inaugural speech, Prof. I.M. Mishra said that Fire Research Laboratory at CBRI is a unique facility of its kind in the country and appreciated the efforts of CBRI for organizing such a Conference. He emphasised the need for systematic research in this area and credited CBRI for shouldering the responsibility. Dr. Rajiv Kumar, Organizing Secretary, conducted the programme and proposed the Vote of Thanks. Later on, the Chief Guest and

delegates visited an exhibition displaying fire fighting equipment outside the conference hall.

In the Conference, 34 papers were presented spread over five sessions, each devoted to a specific theme. The First Session on *Fire Retardant Materials* was chaired by Dr. Diane Daems of Huntsman (Europe) BVBA, Belgium who had come to India especially for this Conference. In her Keynote Address she talked about the use of steel, concrete and structural insulation panels as the typical building materials besides the use of SIPs and their fire characteristics particularly with reference to European standards.

In all, eight papers were presented in the session four of which were related to polyurethane (PU) foam. This clearly indicates the emerging status of polymeric materials and composites in buildings. Though in India PU is used in a very small amount as compared to other developed Nations, steel faced sandwiched panels are finding application in Cold Storage and Ware Houses. Effects of various blowing



agents, fire retardants and other additives were discussed and it was acknowledged that their injudicious use may result in the increase of smoke or toxic combustion products. An experimental study on the effect of external heat on thickness of the coating to be applied on

steel structures was presented and supported by a numerical model.

Session on *Extinguishment Technologies* was chaired by Prof. J. C. Kapoor, Director, Amity Institute for Fire and Environmental Safety, Amity University, Noida. In his Keynote Address, he emphasized on the use of nanotechnology. He talked about cement composites and nano composites which are known to detect the presence of smoke, fire retardant nanotechnology using polymeric materials, use of graphene as coating for fire retardancy and nano foams of exfoliated vermiculite for fire suppression.

As a result of international ban on the use of Halons, water mist technology has emerged as the most acceptable fire suppression agent in recent times. Dynamics, efficacy and performance of water mist suppression system were presented by Dr. Meenakshi Gupta from CFEES (DRDO). Encouraging results have been obtained for using water mist system for fires in electronic equipments. An important and complex area touched is the use of water mist system for suppressing hydrogen air explosions. It is found that the system has the capability of reducing peak pressures of explosion only if there



Visit to Fire Exhibition



Demonstration of Fire Extinguisher

exists an optimum concentration of mist with suitable drop size. Thus, the complexity of problem requires further experimentation before this system can be fully utilized for suppression of explosions. Mr. Chimote from CBRI talked at length about design of clean agent fire extinguishing systems. It is no doubt that the water mist suppression system holds the key for future fire suppression technology being non-toxic, non-polluting and environmental friendly.

Nine research papers were presented in the Third Session chaired by Prof. A.J. Shah, SVNIT, Surat on *Fire Protection & Life Safety Technologies*. In his Keynote Address, Prof. Shah talked about the use of steel in buildings and the flame resistant steel based on molybdenum. Results of experimental studies for improving fire safety in rooms with existing expanded polystyrene roof insulation was discussed by researchers from Jain University, Bangalore. A technique for *in-situ* improvement of EPS insulation was proposed.

Toxic effects of combustion products and their effect on occupants in a compartment fire were highlighted

by Dr. Rajiv Kumar and Dr. Sunil Sharma of CBRI, Roorkee. Mr. Padmanathan *et. al*, the research team from L&T, Chennai discussed the present trends in construction technology, norms of construction fire hazards and fire safety measures and proposed a checklist for the next revision of national building code of India. Evacuation of escape chutes is a common practice in western countries while in India we are still apprehensive about its use. Advantages of its use were highlighted. Use of smoke curtains was another area of interest. The technique though not new is appreciated. Performance based fire safety designs are the need of the day and this point was brought home with emphasis. A fire dynamic simulator approach was also discussed.

The Fourth Session on *Mathematical Modeling and Predictive Methodologies* was chaired by Dr. A. K. Gupta, former Head, FRL, CBRI. Dr. Gupta laid emphasis on the use of mathematical modeling for designing safer buildings as well as planning for safe evacuation of occupants in case of a fire in his Keynote Address. He stated that while experimental validation is



of wind,” he added.

Dr Harinarayana further said, “Wind energy is perhaps the most mature industry but due to variable supply levels, it is difficult to incorporate it into our existing system of large grids, and many countries around the world are seized of the problem of integrating wind resource into the electric grid and efforts are being focused in this direction. The variable nature of wind power output clearly has implications on electric grid management. For this reason, wind forecasting has acquired enormous importance, which is relevant to wind rich states such as Karnataka”. He concluded saying that ‘VARSHA’ which is a wind prediction software developed by NAL capable of making predictions up to 24 hours in advance could be modified to achieve reasonable levels of accurate predictions meeting the industrial requirement.”

Appreciating the wind energy sector, Mr. P. Ravi Kumar, MD, KPTCL discussed how 1000MW of power from the wind energy sector was very invaluable and had kept the State grid active preventing it from plunging into a deep energy crisis in September. “The generation however dropped to 100 MW in the last week of September and we all saw the results (adverse effects of variable wind power),” he said speaking about the power crisis that the State went through at the time, which led to severe load shedding.

Karnataka Electricity Regulatory Commission Chairman Mr. M. R. Sreenivas Murthy said that there was a need for State transmission companies to balance variable power

with hydro stations so that at times of high wind energy availability the hydro stations could be shut down and could be resumed only when there was a drop in wind energy supply. He also stressed the need to focus on finding ways to manage renewable energy rather than looking at thermal generation plants, which depend on imported or scarce domestic coal.

Mr. Shyam Chetty, Director, NAL told that “VARSHA is customized for the tropical climate in India. It is also capable of making monthly forecasts. It runs on a supercomputer capable of 10 Teraflops per second. Our forecasts go to the Prime Minister’s Office.” He further highlighted NAL’s pioneering efforts in wind resource monitoring in the early 70’s and mentioned the plan envisaged for VARSHA’s customization to suit short-term wind forecasting needs. Dr U. N. Sinha’s (Distinguished Scientist, CSIR) untiring effort over a span of more than two decades towards the development of VARSHA software and the supercomputer at NAL was specially applauded.

Dr. Rahul Tongia, C-STEP said that the situation is not alarming at the moment as only six per cent of the total power came from variable sources such as wind and solar energy. However, once it crossed the threshold of ten per cent, the problem might surface and solutions must be put in place to ensure that there was no erratic supply of power to grid once the wind power is off.

The Seminar had two Technical Sessions. The First Session on *Nowcasting* was chaired by Dr. Kota Harinarayana with Dr. A. R. Upadhyaya, Dr. U. N. Sinha, Dr. J. J. Isaac, Dr. V. Y. Mudkavi, Mr. M. P.

Ramesh as panel members. The Second Session *Grid Management* was chaired by Mr. P.C. Maithani, with several experts from KPTCL, SLDC, and C-STEP as the panel members.

The Seminar also went on to include panel discussions on the technical aspects of Nowcasting and solutions to balance wind energy with National and State grids in view of its variable nature of power. The discussion included current estimation of wind trends and a session on the smart grid management and in addition highlighted the issues relating to evacuation of wind power due to lack of transmission infrastructure. The speakers included officials from various energy related departments in the State.

Mr. N. S. Prasanna Kumar, Managing Director of Karnataka Renewable Energy Development Limited said Nowcasting was relevant to wind rich states of Karnataka, Tamil Nadu, Andhra Pradesh, Maharashtra and Gujarat. He said wind resource management and effective integration with other sources of electricity generation had to be continuously tuned by government policies and regulatory norms. Further, he told that the Center and State governments were seized of the problems and efforts were being made to bring in proper regulatory mechanisms to improve the efficiency in harnessing wind resources in conjunction with other resources.

In the Concluding Session, Dr. G.N. Dayananda expressed confidence that NAL had all the required wherewithal to come out with VARSHA’s modified version to cater



to the need of 'nowcasting the wind' for the wind power generators within a year or so. In response to the need expressed by Mr. Rajesh Katiyal, Scientist, C-WET, for indigenous development of 1.5 MW class wind turbines suitable for Indian conditions, Dr. Dayananda stated that NAL, based on its past experience in the

development of a 500 kW machine, was open to joint venture with government institutions such as MNRE/C-WET as well as private industries in this effort.

Standing on the dais (from left) are: Mr. P.C. Maithani, Director, MNRE, GoI, Mr. P. Ravikumar, MD, KPTCL, Mr. Shyam Chetty, Director,

NAL, Mr. M.R. Sreenivas Murthy, Chairman, KERC, Dr. Kota Harinarayana, Dr. D.S. Kothari Chair, DRDO, Chairman RC, C-WET, Dr. A.R. Upadhyya, Former Director, NAL, Prof. P Seshu, Director, C-MMACS, Dr. Rahul Tongia, Principal Scientist, C-STEP, Mr. N.S. Prasanna Kumar, MD, KREDL

Seminar on, *Green Technology and New Trends in Waste Management* held at NEERI, Nagpur

The National Environmental Engineering Research Institute (NEERI), Nagpur in collaboration with Bureau of Indian Standards (BIS), organized a Seminar on, *Green Technology and New Trends in Waste Management* on 21-22 December 2011 at NEERI. The Seminar was inaugurated by Dr. Pushpito K Ghosh, Director, Central Salt and Marine Chemicals Research Institute (CSMCRI), Bhavnagar; Shri Ashok Panjwani, Executive Director, M/s United Phosphorous; Dr Satish R Wate, Director, NEERI; Shri N P Kawale, Scientist and Head, BIS Nagpur Branch, Shri K. K. Pal, Scientist, BIS; and Dr (Mrs) Neeta Thacker, Chief Scientist, NEERI.

In his Inaugural Address Dr Pushpito K. Ghosh, Director, CSMCRI & Chairman, Chemical Division Council, BIS emphasized on the need to develop green technologies and new strategies for waste management. New environmental standards also need to be developed, he added. Speaking on the



Dr. Pushpito K. Ghosh, Director, CSIR-Central Salt and Marine Chemicals Research Institute (CSIR-CSMCRI), Bhavnagar speaking at the Inaugural Session of the Seminar. Seated on the dais: Dr (Mrs) Neeta Thacker, Dr Satish R Wate, Shri Ashok Panjwani and Shri K K Pal

topic, *Standards with Focus on Green Technologies & Environment Monitoring*, Shri Panjwani said that we need environmental standards based on green technologies with particular reference to our economies. He highlighted some case studies on green technologies with environmental standards. He stressed on the need to develop sector-specific standards. He briefed about some success stories with regard to waste management implemented at various industries in Gujarat.

Earlier in his Welcome Address, Dr Satish R. Wate, Director, NEERI briefed about the importance of environment monitoring and the role of the related

environmental standards. He also described about conventional and modern systems of waste management. Dr. (Mrs) Neeta Thacker delivered a lecture on, *Emission Inventory of POPs-Dioxins and Furans through Waste Incineration- Indian Scenario*. Shri K. K. Paul spoke on, *Indian Standards on Chemicals and Chemical Related Technologies and Challenges for Induction of Green Chemistry in Indian Standards*. Shri N. P. Kawale proposed the Vote of Thanks.

The Seminar was attended by the representatives from various chemical industries and research organizations. Various representatives from Asian paints, Navi Mumbai; BARC, Mumbai; BEIL, Ankleshwar; Camlin, Mumbai; CSIR-CLRI, Chennai; Consumer Guidance Society of India, Mumbai; GACL, Vadodara; Narmada Clean Tech Ltd., Ankleshwar; National Test House, Kolkata; NIOH, Ahmedabad; NSC, Mumbai; RFCL Ltd; Navi Mumbai and SPIC, Thoothukudi participated in the Seminar.

Advanced Course in Bioinformatics Jointly Organized by IICT, CDAC and JNTU

The 10th batch of *Advanced Course in Bioinformatics* jointly organized by IICT, CDAC and JNTU-H commenced on 7 September 2011. The Inaugural Function was held at the Indian Institute of Chemical Technology, Hyderabad. The Course was inaugurated traditionally by lighting of lamp by the dignitaries who graced the Function.

Welcoming the gathering, Dr. U.S.N. Murty, Course Coordinator, gave a brief genesis of how the Course took shape from its initial stages to the present stage. He said that the Course initially was started with three months duration but based on the response and the feedback received from the student community and faculty, the duration was increased to six months. He also stressed that the majority of students of the earlier Course batches have gone abroad to pursue higher education and the rest have sought their career options



Dr. J. S. Yadav, Director IICT delivering his Inaugural Lecture. Sitting on the dais (from left) are: Dr U. S. N Murty, Dr. Lakshmi Narasu, Director, Biotechnology Department, JNTU, Hyderabad and Dr. D. K. Jain, Director, CDAC Hyderabad

with MNC's and Government sector. Dr. Murty in his address extolled the students to make good use of their stay in IICT, by interacting with the scientists and also with the faculty for the Course. Dr. Murty assured the parents that the Course would certainly give their wards very good knowledge and experience.

Mr. D.K. Jain, Director, CDAC, Hyderabad reiterated that the students have made a good choice as the Course has immense value in their career enhancement. He also said that the best of faculty from the three premier Institutes is drafted to impart training to the students in theory and practicals. He further added that the theory classes may not be a hit among the students

but the practical sessions would give them thrill and joy.

In her address Prof. Lakshmi Narasu, Director, Biotechnology, JNTU-H, said that the students have to make good use of joining the Course, and that they should grab the opportunity to gain more knowledge from the faculty. She also said that it is not possible for all to get an opportunity to

interact, work and mingle with world-class scientists and faculty who would be interacting with the students during the Course. She also expressed that the students have made a very good choice by opting for the Course for which their parents have to be congratulated.

Addressing the gathering Dr. J. S. Yadav, Director, IICT, Hyderabad, said that the Course is quite unique and is in great demand among the student community since its inception. The reason for this outstanding popularity of the Course is the involvement of three premier Institutes in successfully conducting the Course. He also said that based on the feedback received from students of the earlier batches, the duration was increased to six months. Dr. Yadav also shared with the students the good news that very soon 'ACSIR' would start functioning and IICT would be in a position to give doctorate degrees to students after their successful completion of Ph.D.



Students and faculty members from IICT, CDAC and JNTU during the Inaugural Function of Bioinformatics Course



While stressing the need to carry out scientific research, Dr. Yadav said that ICT enjoys the status of being 'Number One' R&D Institution in our country, in the area of chemical sciences. This, he said, was reflected in

publishing quality research papers in peer reviewed journals, and patents besides its projects in cutting edge science, rural development programmes and social commitment. He urged the students to make good use of

the opportunity provided to them and wished them success on Course completion.

The Function came to an end with the Vote of Thanks proposed by Dr. Sunil Misra, Scientist, ICT, Hyderabad.

Students Visit NML Under School-NML Interactive Programme (SNIP)

Under the recently launched School-NML Interactive Programme (SNIP), National Metallurgical Laboratory (NML) allows students to visit the Laboratory on every Friday morning. The Programme has been designed to give them an exposure on the modern laboratory working conditions and to have a feel for science as a career advancement prospect.

On 12 August 2011, 35 students of classes XI and XII from Vig English School, Govindpur, Telco, Jamshedpur accompanied by their teacher, Mr. R.K. Mohanty, visited NML. Ms. Jyoti Nair, a 12th standard student said, "We were earnestly waiting for the visit to NML." Ms. Garima Topno said, "We came to know a lot about the process technology which is used for the extraction of metals." Ms. Aaina Chauhan expressed her feelings saying, "We have learnt many new scientific approaches/ideas, which we would not have learnt otherwise. The way things were presented to us was simply awesome." "My interest in science has become more and more deep and understanding about Indian Technology has reached a new height," said Indranil Bhattacharjee, a 11th class student when asked about his opinion. Similar were

the feelings of the teacher, Mr. R. K. Mohanty, who requested for a visit for the next batch of his students.

On 2 September 2011, 28 students of class IX from Sacred Heart Convent School, Jamshedpur (East Singhbhum) accompanied by one teacher, Ms. Rupali Mukherjee, visited the National Metallurgical Laboratory (NML), Jamshedpur and interacted with NML Scientists. Another batch comprising of 18 students of classes VIII & IX visited NML, who were accompanied by two Science teachers: Shri Amod Mishra and Shri Pramod Thakur from Govt. High School, Barajamda, (Chaibasa), West Singhbhum, Jharkhand. They spent the whole day interacting with scientists. The students also brought a model prepared by them and gave a live demonstration, which accounted for their creativity and motivation by this student-NML Interactive Programme (SNIP).

Students expressed their excitement and happiness over the laboratory visit as well as interaction with the scientists. Ms. Ankita Sharma, a young student, SHC School said, "We came to know NML's contribution in our day-to-day needed household materials. I did not know that *Saheli* was a CSIR drug.

Even the *Swaraj Tractor* and *Amul Milk* were CSIR products!" Ms. Aishwarya Seshadri, an X Std. student said, "I learnt about different metals; and how they are extracted and find use."

Ms. Shazia Sahreen, another student of Convent School added, "I came to know about the preparation of tiles, deep sea mining, recycling of waste materials, manufacturing of bio-compatible products, commercial use of limestone, magnesium and many more elements." Kumari Priyanka Hembram, another student commented, "The visit taught me to look at things differently from scientific approach. I want to pursue science in a more productive way. Thanks to NML." Similar were the feelings of the teacher, Ms. Rupali Mukherjee, who pleaded for the visit of her next batch of XII class students.

The registration for SNIP is done for first-come-first-serve for every visit. Already ten schools (DAV, Bistupur, Motilal Nehru School, DBMS School, Loyola School, J.H. Tarapore School, Tagore Academy, Narbheram Hansraj English School, Vig English School Govindpur, Jamshedpur Public School, Jamshedpur, Kerala Samajam Model School, Sakchi) have participated in the Programme.



IIT-Roorkee Distinguished Alumni Award to NGRI scientist

Prof. Shyam Sundar Rai, Chief scientist at National Geophysical Research Institute, has been selected for IIT Roorkee's Distinguished Alumni Award for the year 2011 for his contribution to the area of Academics and Research.



A 1977 batch alumnus of the M.Tech (Geophysics) programme, Dr. Rai holds a J.C. Bose National Fellowship at NGRI, and is a recipient of prestigious Awards such as the S. S. Bhatnagar Prize. He is also a fellow of all the National Science Academies of the country.

International Honour for NGRI Emeritus Scientist

Dr. T.R.K. Chetty, CSIR-Emeritus scientist in CSIR-NGRI, has been elected as the first Indian President of the International Association of Gondwana Research (IAGR) for his outstanding research contributions in the area of Precambrian research of Indian continent and associated Gondwana land. He has been actively involved with the growth of IAGR since its formation.



Young Scientist Award of A.P. Academy of Sciences for the year 2011

Dr. Parijat Roy, CSIR-Research Associate, Geochemistry Group, NGRI, received the Young Scientist Award of A.P. Akademi of Sciences for the year 2011 in Earth Ocean and Atmospheric Sciences for his significant contributions in understanding the trace, REE and PGE geochemistry of diamondiferous kimberlites from Southern India.



Dr. Roy participated in the IODP Expedition in Pacific Ocean off the coast of Costa Rica in 2011 to understand the nature and geochemistry of the gabbros and basalts from middle and lower crust of fastest spreading ridge in Pacific Ocean. His contribution towards the Behavior of REE in sea water from Indian Ocean has led to the better understanding of the complex processes in deep ocean waters.

Dr. Roy has 15 publications in reputed earth science journals. In 2011, he participated in the International Summer School at Kyoto University, Japan under the JSPS "JENESYS" programme. He was also selected as an Associate Fellow of A.P. Akademi of Sciences in the year 2010.

Dr. Uma Shankar Received the Young Scientist Award 2010-11

Dr. Uma Shankar, Senior Scientist, CSIR-NGRI Hyderabad, Gas Hydrate Group received the Young Scientist Award 2010-11 of the Council of Science and Technology, Uttar Pradesh (CSTUP) in the Earth, Atmospheric, Ocean and Planetary Science discipline on 29 November 2011, at Vigyan Bhawan, Lucknow from Shri Abdul Mannan, Hon'ble Minister of Science and Technology, Uttar Pradesh.



Dr. Uma Shankar has so far published 19 research papers in the high impact journals of Earth Science contributing towards identification and quantitative assessment of gas hydrate along the continental margins of India.

Dr. Uma Shankar utilised seismic proxies and seismic attributes for detection of gas hydrates and /or free gas and established geothermal modeling for predicting the base of the gas hydrate stability zone and derived heat flow from the BSR depth. He is also actively associated with the estimation of gas hydrate saturation in the Krishna-Godavari Basin using rock physics modeling approach from the suits of well log data and constrained from multi-channel seismic data.



CDRI Scientist Received Indian Science Congress Young Scientist Award 2010-11

Dr. Smrati Bhaduria, Scientist, Toxicology Division of Central Drug Research Institute, (CDRI), Lucknow received Indian Science Congress Young Scientist Award for the year 2010-11 for her paper entitled *Monoisoamyl Dimercaptosuccinic Acid: A Novel Thiol Chelator for Treatment of Chronic Arsenic Poisoning*. The paper was selected for the Award in the Medical Sciences category after an oral presentation held at SRM University Chennai during the month of October 2010.



The Award was given away by Nobel Laureate Prof. Venkatraman Ramakrishnan during the 98th Indian Science Congress Meeting held at SRM University Chennai and it included a cash prize of Rs 25000/- and a certificate. The Award winning paper dealt with an experimental study conducted by her as a part of her PhD thesis, wherein she evaluated the therapeutic potential of Monoisoamyl Dimercaptosuccinic Acid for treatment of chronic arsenicosis.

Arsenic contamination in natural water is serious problem affecting several regions including India affecting as many as 75 million people worldwide. Existing therapeutic regimen employs administration of thiol chelators such as DMSA and DMPS orally. However poor intracellular distribution renders these agents ineffective against chronic arsenicosis thereby exacting the need to develop more efficacious antidotes.

Her studies establish superior efficacy of a newly synthesized, intracellularly distributed thiol chelator viz MiADMSA over conventional chelating agents. In her studies she also evaluated novel therapeutic strategies such as combination therapy and antioxidant supplementation which revealed superior efficacy in terms of over all arsenic decorporation and abatement of arsenic toxicity.

CDRI Scientist Received INSA Young Scientist Award



Dr. Rajender Singh, Scientist, Endocrinology Division of Central Drug Research Institute (CDRI), Lucknow received the Indian National Science Academy (INSA) Young Scientist Award for his significant contribution in understanding the disorders of gonadal dysgenesis and male infertility. His research work involves understanding of the etiological factors associated with infertility and methods to restore fertility. His research helped identify and functionally validate the genetic causes of impaired male sexual development/infertility. Apart from understanding the aetiology, he has made significant contribution towards treatment of male infertility using traditional knowledge. This has led to identification of molecular basis of male infertility/male sexual developmental abnormalities, providing counselling to the affected families and identification of methods to restore fertility using natural products.

Dr. Sukanta Roy Appointed to the ICSU and IHFC



Dr. Sukanta Roy, Scientist, NGRI, Hyderabad has been appointed as Representative to the ICSU-Regional office for Asia & the Pacific for the period 2011-15. This was informed by the Secretary General of the International Union of Geodesy and Geophysics (IUGG) at the XXV General Assembly of the IUGG held during June-July 2011 in Melbourne. Dr. Sukanta Roy has also been elected as Secretary of the International Heat Flow Commission (IHFC) of the IASPEI/IUGG for the quadrennium 2011-2015.



NBRI Scientists Conferred Upon Vigyan Ratna and Young Scientist Awards



Dr. R.D. Tripathi and Dr. A.K.S. Rawat, Scientists, were conferred upon the *Vigyan Ratna Award* and Dr. S. K. Srivastava, Scientist and Dr. M. K. Shukla, STA, were awarded with *Young Scientist Award* for the year 2009-2010. The Awards were given by Shri Abdul Mannan, Minister of Science and Technology, Government of U.P., instituted by Uttar Pradesh Council of Science & Technology, Lucknow, at a Award Ceremony Function.

Nominations Invited for

Shanti Swarup Bhatnagar Prizes for Science and Technology – 2012

The Council of Scientific and Industrial Research (CSIR) invites nominations for the Shanti Swarup Bhatnagar (SSB) Prizes in Science and Technology for the year 2012. The SSB Prizes are to be given for research contributions made primarily in India during the past five years. The age of the nominee for the 2012 SSB Prize should not be more than 45 years as on 31.12.2011.

The SSB Prizes are awarded for notable and outstanding research, applied or fundamental, in the following disciplines: (1) Biological Sciences, (2) Chemical Sciences, (3) Earth, Atmosphere, Ocean and Planetary Sciences, (4) Engineering Sciences, (5) Mathematical Sciences, (6) Medical Sciences, and (7) Physical Sciences. The SSB Prize carries with it a citation, a cash award of Rs.5,00,000/- (Rupees five lakh only) and a plaque for each scientist selected for the Award.

Nominations addressed to **Scientist Incharge - SSB YSA Unit, Human Resource Development Group, CSIR Complex, Library Avenue, Pusa, New Delhi 110012** should be sent as per the prescribed pro-forma (Original + 14 copies) along with one set of reprints of significant publications of the last 5 year's period on or before 31 March 2012.

The details of the SSB Prize and the prescribed pro-forma for nomination may be obtained from the above address or may also be downloaded from our website: <http://csirhrdg.res.in>.



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