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Team CSIR

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NGRI synthesizes Gas-hydrates in Laboratory

Dr V P Dimri, Director, NGRI, igniting the gas hydrate sample and a view of the burning ice

GAS hydrates, ice like non-stiochiometric solids and alternative sources of energy, are formed in the ocean's bottom sediments under some favorable pressure and temperature conditions.

The National Geophysical Research Institute (NGRI), Hydrabad, is actively involved with the scientific aspects of formation and genesis of gas hydrates. Geophysical data would be processed/interpreted to work out possible models and resources estimate. In the laboratory synthesis and characterization programme on this is being pursued as a part of ongoing Department of Ocean Development (DOD) project. NGRI successfully synthesized Tetrahydrofuran hydrate, which forms structure II and was characterized by overtone spectroscopy near infrared (NIR). A definite downward shift of some 2nd order modes near 4200 cm^{-1} around 275 k was noticed and this property was also demonstrated by burning the ice for the first time in the Indian Laboratory.

Dr Harsh K. Gupta, Secretary, DOD, witnessed the demonstration during his visit to NGRI and appreciated the efforts of NGRI scientists.

NIO signs MoU with Chowgule College, Margao

NATIONAL Institute of Oceanography (NIO), Goa, recently signed a Memorandum of Understanding (MoU) with S.P. Chowgule College, Margao. This is NIO's maiden attempt at formal collaboration with an affiliated non-engineering college in Goa and an endorsement of NIO's commitment to partnering with teaching institutions, both big and small, in pursuit of excellence in teaching and research. The agreement is for five years at present and covers various academic and research disciplines of particular relevance to the college and of interest to NIO.

Established in 1962, Chowgule College has both postgraduate and undergraduate departments in pure and applied sciences. The agreement will encourage interaction between students and faculty of the college with scientists at NIO. Dr S.R. Shetye, Director, NIO and Dr A.S. Kanade, Principal, Chowgule College signed the MOU at the Chowgule College. ❐

NIO signs MoU with Myko Tech

Shri A. Muthukrishnan, Controller of Administration, NIO and Dr S. Raghukumar, Managing Director, MTPL exchanging the documents of MoU after signing

THE National Institute of Oceanography (NIO), Goa, on behalf of its parent body, the Council of Scientific & Industrial Research recently signed a Memorandum of Understanding (MoU) with M/s Myko Tech Pvt. Ltd (MTPL), Goa. According to this agreement principal subjects of research cooperation to be pursued are identified by both the parties. These include the isolation of marine fungi and bactera, screening them for commercial enzymes and compounds, scaling up growth of promising fungi and bacteria, purification and extraction of useful compounds.

Shri A. Muthukrishnan, Controller of Administration, NIO, and Dr S. Raghukumar, Managing Director, MTPL jointly signed the MoU. The MoU will remain in force for three years with scope for renewal. ❐

Patents granted to IHBT

THE Patents granted to the Institute of Himalayan Bioresource Technology (IHBT), Palampur, in the recent past include:

No.	Patent Title	Inventor	Patent No.	Advantages
1.	A continuous type multipurpose shoot sorter	Srigurupuram Desikacharya Ravindranath, Krishna Kumar Singh	13020 SRI LANKA	Useful for sorting leaves, flowers and roots of different aromatic and medicinal plants
2.	A convenient and versatile, compact portable light weight, low power consuming sterile laminar air flow system	Rajesh Thakur, Anil Sood and Paramvir Singh Ahuja	6623538 USA	Light weight, small sized laminar flow ideal for field work, demonstration and teaching purposes.

No.	Patent Title	Inventor	Patent No.	Advantages
3.	A novel isozyme of autoclavable superoxide dismutage (SOD)- a process for the identification and extraction of the SOD and use of the SOD in cosmetic, food and pharmaceutical compositions	Sanjay Kumar, Rashmita Sahoo and Paramvir Singh Ahuja	6485950 USA	Enzyme can be auto-claved. It retains activity even at subzero tempera-ture, enables removal of superoxide radicals in the presence of deter-gents such as SDS in tested ranges. Have wide scale applications in pharmaceutical, food and cosmetic industry.
4.	A process for production of herbal wine (Palam Belle) from ripe fruits of *Pyrus pashia*	Harsh Pratap Singh, Brajinder Singh and Varinder Singh Dhadwal	517600 NEW ZEALAND	A herbal wine with unique taste and flavour.
5.	A process for the preparation of pharmacologically active alpha-asarone from toxic beta-asarone rich *Acorus calamus* oil via intermediated 2,4,5-trimethoxy phenyl propene	Arun Kumar Sinha, Ruchi Acharya, Bhupendra Prasad Joshi	6590127 USA	Conversion of value added molecule from toxic beta-asarone.
6.	An efficient method for micropropagation of tea (*Camellia sinensis*) plants using leaf explants	Indra Sandal, Amita Bhattacharya, Madhu Sharma and Paramvir Singh Ahuja	6599743 USA	A method suitable for direct organogenesis for transformation studies.
7.	An efficient new method for protoplast culture	Pratap Kumar Pati, Madhu Sharma and Paramvir Singh Ahuja	6569680 USA	Cost effective method for protoplast culture. Suitable for somatic hybridisation and tracking.
8.	An efficient one step method for micro-production of tea leaves	Indra Sandal, Amita Bhattacharya, Madhu Sharma and Paramvir Singh Ahuja	6548300 USA	Efficient regeneration system from tea leaves.
9.	An improved method of tea propagation	Om Prakash, Anil Sood, Madhu Sharma and Paramvir Singh Ahuja	11355 SRI LANKA	Provides simultaneous grafting and hardening of tea shoots on root stocks.
10.	Anurag, Brick Beauty, Cute Munni, Grace, Palampur Delight, Palampur Pride,Palampur Princess, Palampur Queen, Tushar Mauli	Debashish Mukherjee, Devendra Dhyani and Jai Chand Rana	PP13353, PP13417, PP13591, PP14979, PP15080, PP14980,	New variety of gladiolus having attractive colour and foliage.

No.	Patent Title	Inventor	Patent No.	Advantages
			PP14435, PP13418, PP13710	
11.	Identification of anti-viral activity of *Tagetes minuta* oil and its components	Bikram Singh, Virendra Prasad Joshi, Raja Ram, Anupama Sharma and A.A. Zaidi	6444458 USA	Good source for developing products having anti-viral property.
12.	Method for producing chiral dihydrotagetone and its conversion to chiral 5-isobutyl -3-methyl-4,5-dihydro-2(3H)-furanone	Arun Kumar Sinha, Bhupendra Prasad Joshi and Ruchi Dogra	6833475 USA	Flavouring agent
13.	Microwave assisted rapid and economic process for the preparation of substituted phenylaldehydes from trans and cis-phenylpropenes: A commercial utilisation of toxic cis-isomer	Arun Kumar Sinha, Ruchi Dogra and Bhupendra Prasad Joshi	6544390 USA	Conversion of toxic cis-isomer into commercially useful products.
14.	One step process for preparation of substituted trans-cinnamaldehyde, a natural yellow dye from phenylpropane derivatives	Arun Kumar Sinha, Ruchi Dogra and Bhupendra Prasad Joshi	1003654 BANGLADESH	Process for preparation of natural yellow dye that can be used for a variety of purposes.
15.	Process for preparation 5-isobutyl-3-methyl-4,5-dihydro -2(3H)-furanone from dihydrotagetone and its use as a flavouring agent.	Arun Kumar Sinha, Bhupendra Prasad Joshi and Ruchi Dogra	6793957 USA	A new flvaouring molecule.
16.	Species specific DNA sequences and their utilization in identification of *Viola* species and authentication by PCR reaction.	Mahipal Singh, Chandan Sharma and Brij Lal	6465637 USA	Species specific marker for accurate, sensitive and efficient identification of *Viola odorata*
17.	Species specific genomic DNA sequence for identification of *Anacardium occidantale* and the method for its utilization in detection of cashew husk in made tea samples.	Mahipal Singh and Bandana Dhiman	6541624 USA	Enables detection of cashew husk as adultrants in tea.
18.	Use of tea leaf extract for field inhibiting microbial transformant	Indra Sandal, Amita Bhattacharya, Ashu Gulati, Srigurupuram Desikacharya Ravindranath, Paramvir Singh Ahuja	13019 SRI LANKA	Inhibits over growth of A*grobacterium* during transformation process.

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SAIL retains NEERI for EIA Study of Mining Project

THE Steel Authority of India Ltd (SAIL) proposes to increase the hot metal production at Bhilai Steel Plant (BSP) to about 7 Million Tonnes Per Annum (MTPA) by 2011-12 to meet the increasing demand of steel. The existing supply of Iron-ore from Dalli-Rajhara mines to BSP is limited and supply can last only for five years. To sustain increase in production, iron ore mines are required to be developed in and around Bhilai Steel Plant to reduce the cost of transportation. Rowghat mine in Bastar district, which can sustain 14 MTPA of ore production is proposed to be developed for mining. About 511 Million Tonnes iron ore reserve with an average of 62% Fe content is available in this mine which is spread over 1700 ha. The infrastructural facilities such as crushing plants, conveying system, beneficiation plant, loading yard, loading infrastructure, housing colony, tailing pond, water reservoir are required to be created to support mining activity. Development of mine and creation of related facilities would cause environmental and ecological impacts.

SAIL has retained the National Environmental Engineering Research Institute (NEERI), Nagpur, to carry out Environmental Impact Assessment (EIA) studies for development of 14 MTPA mechanized mine and related infrastructural facilities. The study would involve assessment of existing baseline environmental quality covering three seasons during 2005-06 for air, noise, water, land, biodiversity, terrestrial ecology, forest, flora and fauna, social aspects using the latest monitoring techniques. The field surveys, satellite remote sensing data, survey of India, toposheets, primary census data would be used for establishing baseline environmental quality status in the region. The environmental hotspots due to mining and allied activities would be identified using cause-condition effect relationship and potential impacts predicted using mathematical models involving latest software for each component of environment. Dam break analysis for the water storage tank and the environmental risk associated with such storages would also be studied.

The report will discuss pragmatic environmental and ecological planning in the proposed mining area. The cost effective environmental management plan (EMP) outlining preventive and control measures to be adopted for mitigation of potential adverse impacts due to mining activities, ore beneficiation plant and other infrastructure facilities would be developed using NEERI's experiences at other mines and R&D studies that have been carried out at NEERI.

The recommendations will include the scientific and sustainable mining plans to maximization of product. Mechanism for monitoring and review of mitigation measures will be developed so that environmental damages during the process of construction and operation could be minimized. Post project monitoring plan will be delineated to assess environmental quality during the operation phase. The EMP would remain in practice till the mines are scientifically closed and returned to pre-mining status through practice of bioremediation, which has been developed by this Institute.

The studies will begin in October 2005 covering post-monsoon season. ❐

Seminar on Awareness of Recent Advances in Science & Technology

THE Regional Research Laboratory (RRL), Jorhat, recently organized a two-day national level seminar on the theme, 'Awareness of recent advances in science and technology' with a view to focussing on the recent advances in Science and Technology and exchange of views amongst scientists, engineers, academicians from diverse fields and institutions,. Prof P.C. Kesavan, Member RC and DAE-Homi Bhabha Chair & Distinguished Fellow of M.S. Swaminathan Research Foundation, Chennai, presided over the seminar. Dr G. Thyagarajan, Chairman, Research Council and former Director, RRL-Jorhat, formally inaugurated the seminar. Dr A.R. Balakrishnan,

Member, Research Council, RRL-Jorhat and Professor of IIT, Madras, Chennai, spoke about the background of the seminar and its importance.

Earlier, Shri D.K. Dutta, Scientist and Area Coordinator of the Engineering Science welcomed the audience. In his inaugural speech Dr Thyagarajan underlined the fact that during the last three decades, the world has seen a great explosion of knowledge. There have been rapid advances in Science & Technology, particularly in the areas of Biotechnology, Communication and the Engineering sciences. The technologies involved in these areas are called critical technologies and innovation is the only *Mantra* now. Such is the speed with which these are evolving that it has become almost impossible to keep up even with the latest computers available. There has also been sudden development and ramification of nano-technologies. Seminars such as the one organized are therefore necessary to keep abreast with latest knowledge. This was a small effort but one with far reaching ambition behind it, he informed.

The seminar covered the two broad areas of Engineering sciences and Biological sciences. A good number of participants from all over India participated. Noteworthy among those who attended were Dr G. Thyagarajan, Chairman, Research Council; Prof P.C. Kesavan, Member, Research Council; Dr A.R. Balakrishnan, Member, Research Council; Prof G.D. Sharma, Vice Chancellor, Nagaland University; Prof O. N. Mohanty, IIT Kharagpur; Prof G.D. Yadav, Dr D.S. De, IIT Guwahati; Prof. G.K. Suraishkumar, IIT Madras, Chennai; Prof Rajat K. Chaudhuri, Calcutta University, Dr S.N. Dube, Director, Defence Research Laboratory, Tezpur; Dr G.N. Hariharan, Principal Scientist, Lichen Ecology & Bioprospecting Laboratory, M S Swaminathan Research Foundation, Bangalore; Dr S.S. Malik, National Bureau of Plant Genetic Resources (NBPGR), New Delhi and Dr P.S.V.V. Khan, IBSD Imphal. Eminent experts delivered a total of nine lectures in the relevant fields. There were four lectures in Engineering Science section, viz. (I) Steel for New Millennium Auto Body by Prof. O. N Mohanty , (ii) Exciting opportunities for Chemical Engineering in the 21st Century by Prof G. D. Yadav, (iii) Combustion Generated Air Toxics-their Monitoring and Abatement by Prof. D.S. De, (iv) The Culture in Bio-reactor by Prof G.K. Suraishkumar and five lectures in Biological science viz. (I) Unraveling of Human Genome : How it was done and its implication by Dr Amit Ghosh, former-Director, IMTECH, Chandigarh, (ii) Plant Molecular Biology Revisited—30 years of development by Prof Rajat K. Chaudhuri (iii) Chemical Warfare by Dr S. N. Dube (iv) Bioprospecting Ecological and Economic Potentials of Lichens by Dr G. N. Hariharan and (v) Biodiversity Management of Sustainable Agriculture by Dr S. S. Malik.

In the panel discussion for Engineering Sciences section, tremendous concern was expressed about the growing use of thermosetting plastics in the automobiles as these might turn out to be a major source of pollution. Similarly the extensive use of cell phones has the potential to lead to pollution due to exhausted batteries. Likewise, excessive water used by the textile industries, which is the largest foreign currency earner, is a source of major pollutants in terms of toxic and hazardous chemicals. There was concern for the Brahmaputra with municipality drainage through the Bharalu stream in Guwahati. Suggestions for the use of plants as filters for the removal of organic pollutants were received. Emphasis on green chemistry for reducing pollution at source was also stressed together with the use of membrane adsorption and catalytic chemistry. It is indeed a formidable engineering and technological challenge to develop techniques deliverable and acceptable to the people.

In the panel discussion for Biological sciences it was opined that since the North East India is one of the major biodiversity hotspots of the world there is need to convert this biodiversity into economic ventures. In the process there would be the scope of emerging new sciences also. It was suggested that Genome Literacy Clubs need to be organized to protect the biodiversity of the region and its flora and fauna should be properly documented. It was felt that the research infrastructure in the existing universities and R&D institutions of the region are inadequate and thus not able to take care of the rich but threatened bio-resources of the region. There are rules for protection of biodiversity, but these are not strictly implemented.

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Workshop on CSIR e-Journals Consortium – User Interface

THE National Institute of Science Communication and Information Resources (NISCAIR), New Delhi, hosted a three day Workshop on CSIR e-Journals Consortium – User Interface from 28–30 July 2005. Thirty seven participants from 19 CSIR laboratories/institutes/units participated in the workshop. The participants comprised the Nodal Officers of CSIR e-Journals Consortium from each of the laboratories and also other library professionals.

The CSIR e-Journals Consortium is one of the three Network Projects being implemented by NISCAIR under the 10th Five Year Plan. The project envisages providing access to 4500+ full text electronic journals to all the scientific and technical staff members of all the CSIR laboratories. The Consortium has already entered into agreements with 10 major S&T publishers viz., Elsevier Science, Springer, American Institute of Physics, American Society of Mechanical Engineers, John Wiley, Cambridge University Press, Blackwell, American Society of Civil Engineers, Oxford University Press and Royal Society of Chemistry. Access to 3000+ journals is available to all the CSIR labs/ institutes.

The Workshop was inaugurated by Dr R. A. Mashelkar, Director General, CSIR who also delivered the keynote address.

Keynote Address of Dr R. A. Mashelkar, Director General, CSIR

Very Dear Members of my NISCAIR family, Distinguished Invitees, Ladies and Gentlemen,

Dr R. A. Mashelkar, Director General, CSIR delivering the Keynote Address

I am absolutely delighted to be here at NISCAIR, Satsang Vihar Marg campus after a very long time. And it is a wonderful occasion to be here at this Workshop on CSIR e-Journals Consortium - User Interface. I would like to begin by congratulating, Mr V.K. Gupta, Director, NISCAIR and the entire team for not only successfully implementing the CSIR e-Journals Consortium but also for organising this very important Workshop.

I went through the Quick Search Reference Guide that NISCAIR has so beautifully prepared as a CSIR News Supplement and I understand that 15,000 copies of these will be circulated among the CSIR users across India. In the few minutes I have, I would like to share with you my own perceptions about what we are doing in CSIR and where we need to go and what critical role this CSIR e-Journals Consortium will play in taking us there.

I don't have to tell this audience the importance of the era that we are moving into. As it is rightly said, this is the century of knowledge and many even say this is the century of mind. Knowledge plays a very critical role and therefore those societies and those nations that are capable of producing cutting edge knowledge, disseminating it and valorizing it to create wealth and social goods will lead the world. And that is where one has this hope in India's great

Dr R. A. Mashelkar, Director General, CSIR, releasing the Quick Search Reference Guide of the CSIR e-Journals Consortium. Seen on his right is Shri V.K. Gupta Director, NISCAIR and on his left is Dr Gian Singh, Head, ETTG, NISCAIR

promise in its talent that will give our country a unique position as we move along. In that context, access to knowledge becomes extra ordinarily important.

During my NCL days, I was closely associated with the library. In fact I was the Chairman of the Library Committee for almost 10 years. Even at that point in time, the 1980's, our problem was that cost of journals kept on increasing and our budget was more or less static. We just could not keep pace with the budget and there was always a battle on which journal should be cut. We have come a long way from that.

Today when we say that CSIR scientists have access to 3,300 journals, I think it augurs very well. Because there are approximately 12,000 e-journals and if we are getting a quarter of them, I think we are doing pretty well. Of course, we should enhance this share and I have no doubt we will do so over a period of time.

I was stuck by the fact to learn that CSIR and its laboratories al together in 1993 were subscribing to 8,384 print journals, whereas this figure has drastically come down to 2,717 print journals in 2005. And the unique titles came down from 5,126 print journals to 1,732 print journals for the same years. That tells you about this huge price increases and cost wars and the challenges posed before us. So in that particular context, I believe what we are doing today under the CSIR e-Journals Consortium is very important.

In 2002 after we signed the agreement with Elsevier, very frankly I was disappointed after we started because I found that the use of the facility was not what it should have been. I remember Mr V. K. Gupta alerting all of you and putting a system in place. Therefore, the data that I now have with me which shows that from 10,000 downloads per month to 100,000 downloads per month in 12 months time reflects that the usage has increased pretty well. But we need to do better and increase usage further.

CSIR is moving ahead as a knowledge based organization, generating competitive knowledge and in many respects we have turned a corner. As you know, India itself is changing and CSIR is changing in line with what has been happening to India. Fifty years ago, it was British Morris Oxford which was sold as Indian Ambassador on Indian roads. Today it is Indian Indica which is being sold as City Rover on London roads. So, the wheel has turned the full circle. The auto industry has gone into the gear of innovation in creating new products which will globally be competitive. Our drugs and pharma industry, for example, was based on reverse engineering. That is how we grew. But on 1/1/2005, we have put a new patent regime in place. We can't copy anymore and we have product patents regime now and therefore you will find that companies have moved from imitation to innovation. Investments in R&D have gone up by a factor of five in the last five years.

The new R&D centres that are coming up in India are world class and they are looking for 100s of PhDs - structural biologists, system biologists, medicinal chemists and so on. Why I am mentioning this is that there is this new wave of

innovation that is engulfing India. And therefore from the reverse engineering mode, we are moving in a forward engineering mode and this is pretty much true for CSIR. What it therefore means is access to knowledge is going to be critical and how to use that knowledge in order to create new products, new processes and new services competitively is going to be critical.

In 1976 when I came back to India, I remember that professionally it was a very difficult life. At that time we used to talk about 32 K, 64 K and today we talk about Gigabytes and Terabytes without any difficulty. I remember our journals used to come by sea mail. They used to arrive after 3-4 months. So even before we began our research, we were out of date, because we saw the journals so late. Today, the difference is such, I remember publishing a paper in Science on 4th of March and on 5th of March, my mailbox was full with emails from National Institute of Health, Bethesda to Seoul in Korea within 24 hours and that included many young people from India. So, today the speed with which things happen has changed remarkably and therefore providing access is going to be extraordinarily critical.

Libraries have changed and so has the role of the librarian. The conventional role doesn't apply anymore and I think we need to realize that library and information science also plays a critical role in the Indian R&D. Today, libraries and librarians can by their interventions direct the speed and direction with which our scientists can move. And therefore our library professionals in CSIR have to learn new areas like International Patent Classification System and other Intellectual Property Systems. They have to be not only information providers but they have to become a catalyst for development.

I am assuming a completely new role for the CSIR library professionals and I believe this is something we need to take seriously. At the highest level people are concerned about libraries. I remember our Prime Minister mentioning about libraries in the CSIR Society Meeting on 25th May 2005 and I will quote him

> "I also wish to revitalize public institutions in the knowledge sector like our libraries. Our libraries are in a terrible state of neglect in many parts of the country. We cannot build a knowledge society without active and growing libraries."

There is one more issue that I want to emphasize and this has to do with CSIR being uniquely positioned. CSIR is not a university. CSIR is an organization that not only generates new knowledge but uses it to create wealth and social goods. That means the application of that knowledge to create innovative knowledge, processes and services is the key. Therefore, the speed with which we do it is going to be very, very important.

I am very happy that you are giving access to scientific knowledge. But let us not forget that 80% of the knowledge that never gets published in scientific journals is in patents. And patents are a very valuable information source. It is something which we have not recognized nor are we using it.

NISCAIR has done an outstanding job as usual. I keep on demanding because NISCAIR delivers. Therefore NISCAIR will be challenged by me to do more and more. The Traditional Knowledge Digital Library has changed the world and is expanding and creating new paradigms. In the same way, I believe that NISCAIR should take this knowledge and information services in the broadest context. It should include not only scientific journals but all other knowledge bases in the Consortium.

I welcome you all to this Workshop, in particular our distinguished publishers. Eventually we should become partners with all major knowledge providers. I can assure you that money is not going to be a constraint. It is what you have and how you make use of it that will be important. I am very happy that you have been able to get ten major publishers together and I am really looking forward to your brain storming sessions. I hope just as I am challenging you, at the end of the brain storming session you will create a challenging agenda for me.

Thank you very much.

During the Workshop hands on training was imparted to the participants. A brain-storming session was also held in which the participants discussed various issues related to the consortium. The Web-based Monitoring System designed and developed by NISCAIR for all the stakeholders of the Consortium, viz., the end user, publisher, nodal officers and administrator was also presented and demonstrated at the workshop.

The workshop held at NISCAIR, Delhi was the first in the series of six workshops planned to be organized during the month of August 2005. The dates of the other workshops to be held are: CDRI, Lucknow (2–4 August 2005), IICT, Hyderabad (8–10 August 2005), SERC, Chennai (16–18 August 2005), IICB, Kolkata (23–25 August 2005) and NCL, Pune (29–31 August 2005). ❐

CDRI celebrates Foundation Day

THE Central Drug Research Institute (CDRI), Lucknow, celebrated its fifty-fourth Foundation day recently. The function commenced with a tribute to Sir Edward Mellanby the first Director of the Institute. This 30th Mellanby Memorial Oration was delivered by Dr Sandeep K. Basu, Director, National Institute of Immunology. His talk was entitled 'Chasing Ehrlich's dream: Receptor-mediated manipulations of macrophage metabolism'. Dr Basu highlighted the concept of receptor-mediated targeting as a new therapeutic approach against macrophage-associated infections and cancers that affect millions of people in poor countries. He said that the scavenger receptor-mediated delivery of various agents to macrophages not only provided a general principle for chemotherapy of the whole spectrum of macrophage–associated disorders including viral, bacterial, protozoal, metabolic and neoplastic diseases but also a generalized tool for manipulating the metabolic activity of macrophages for a variety of purposes. This implies that introduction of target-oriented medicines will reduce the intake of quantity of medicine and hence minimize their side effects – a message for the Indian pharma for development of targeted drug delivery systems. It needs to be mentioned that Dr Basu was part of the team that worked on a project that later received the Nobel Prize in Medicine in 1985. Dr M. S. Brown and Dr J. L. Goldstein from USA received the prize for this outstanding work in medicine.

Earlier, Dr C. M. Gupta, Director, CDRI, extended a warm welcome to all the distinguished members of the scientific and medical fraternity present on this occasion. With a special welcome to the Chief Guest Prof. M. K. Bhan, Secretary, Department of Biotechnology (DBT) he acknowledged the long association and support of DBT to the Institute's R&D programmes and wished for further strengthening of this relationship.

Presenting the annual progress of various R&D activities of the Institute, Dr Gupta informed about the successful licensing of three new products to the pharma industry for further development and commercialization. These include a new herbal medicament for treatment of cerebral stroke licensed to M/s Themis Medicare, a new antimalarial compound 97/78, a synthetic substitute for artemisinine derivatives, licensed to M/s IPCA Laboratories and a lipid lowering synthetic compound 80/574 licensed to M/s Cadila Pharmaceuticals Ltd The post-marketing surveillance studies initiated on the spermicidal contraceptive cream, Consap marketed by Hindustan Latex Ltd is expected to cover a target of 1000 women users during this year. Further clinical trials on the antimalarial αβ-arteether for pediatric use were initiated at four medical colleges and 47 cases have already completed the trial. The reports received from Seth G. S. Medical College, Mumbai, indicate that the anti-relapse antimalarial compound 80/53 exhibited strong gametocytocidal effect and this study has been expanded to cover more human subjects. Clinical trials with Picroliv, a hepatoprotective agent, and two antihyperglycemic agents CT-1 and CDR-134 D123 have progressed satisfactorily. Pre-clinical studies including toxicity studies in rodents on antiosteoporosis compound 99/373, antidiabetic-cum-lipid lowering herbal preparation CDR-267-F018, four promising synthetic antimalarials, two lipid lowering-cum-anti-hyperglycemic

compounds and one anti-ulcer compound are expected to be completed this year.

Dr Gupta mentioned the several new initiatives taken by the Institute during this period. These include monthly monitoring of the thrust areas viz. Malaria, Tuberculosis, Osteoporosis, Breast cancer, Cerebral stroke and Diabetes, and Dyslipidemia. A number of cell-based screens and transgenic animal models for screening antihyperglycemic, dyslipidemic, antihypertensive and antiosteo-porosis activity have been adapted and it is planned to acquire more cell lines as well as transgenic animals to update the screening programme. To make the new drug discovery programme inter-nationally acceptable, it has been resolved to update practices in execution and monitoring of clinical trials according to international standards and also undertake pharmacogenomic studies to define responders and non-responders in early stages of the trial. In addition, implementation of Good Laboratory Practices in R&D Labs involved in regulatory studies, namely Pharmacology, Toxicology, Pharmaceutics, Pharmacokinetics & Metabolism and Laboratory Animal Facility has been made mandatory by 31 October 2005. The new unit of Computational Biology and Informatics has been set up to strengthen rational drug design and predictive tools and a 600 MHz NMR facility has been established for support to the Structural Biology Programme. Basic studies in the area of Molecular & Structural Biology of infectious organisms especially *Mycobacterium tuberculosis, Plasmodium falciparum* and *Leishmania donovani* made good progress and are likely to yield novel drug targets against which new drugs may be developed for management of diseases caused by these organisms.

The other indicators of performance of the Institute were also quite impressive. There has been substantial increase in the number of research publications—165 this year with an average Impact Factor of 2.1. Twenty Indian and 21 foreign patents were filed and 21 Indian and eight foreign patents have been granted. Twenty-one students were awarded Ph.D. degree from various Indian Universities and eleven of these were registered under the CDRI-JNU programme. The Institute at present has a strong force of 237 research fellows working for the award of Ph.D. degree. Of these 173 are CSIR/UGC-NET qualified fellows. To regulate quality inflow of research fellows, it has now become mandatory that only CSIR/ICMR/ UGC–JRF/SRF would be permitted to join the Ph.D. programme.

Many CDRI scientists received honours and awards for their R&D contributions. Dr C. M. Gupta was elected President, Society of Biological Chemists (India). Dr A. K. Saxena received the honorary medal (2004) from the Scientific Partnership Foundation, Russia. Dr Pratima Srivastava received the Prof. B. K. Bachawat Memorial Young Scientist award from the National Academy of Sciences and Dr Ashim Ghatak was selected for the J. R. Vakil Oration. Dr Sudhir Srivastava co-authored a WHO publication entitled 'Hand-book of non-clinical testing', Dr Ram Raghubir won the first prize in the Molecular Neuroscience group for the best paper and Shri Rit Vatsyayan received the Young Scientist award of the Indian Society of Parasitology.

An important milestone achieved during this period was, the in-principle approval of the Planning Commission for Creation of a World-class Drug Research Institute at Sitapur Road, Lucknow. The final approval of the proposal by the Cabinet Committee is awaited and the construction work would be initiated very soon. The new Institute would serve as an effective public–private interface with policies to maintain competitiveness and sustained interests at the work place.

While delivering the Keynote Address, Prof. Bhan urged the scientists to be more creative and explore ways to make the life of the common man more healthy and disease free. He emphasized the change required in school curriculum especially in science subjects to bring out leaders to propel drug research, as this was vital in the wake of Trade-related Intellectual Property Rights. He praised CDRI for its contributions and released the Annual Report 2004-05 and a Compendium of major facilities and capabilities at the Institute. He inaugurated the Bioinformatics and the 600 MHz NMR facilities. This facility costing about Rs 5 crores is the third of its kind in the country and would help in solving the structure of soluble proteins, which in turn would help in rational use of some of these proteins in drug design. Prof. Mahendra Bhandari, an outstanding urologist and currently Vice Chancellor, King George

Medical University, Lucknow, in his Presidential Address reiterated the need for personalized drugs tailored according to the genotype of an individual. He declared that for science to flourish a greater autonomy to scientific institutions was important.

The function concluded with a vote of thanks by the Organizing Secretary, Dr D.K. Dikshit. ❐

Dr Ashok Juwarkar Memorial Lecture

DR Ashok Juwarkar Memorial Lecture was recently organized at the National Environmental Engineering Research Institute (NEERI), Nagpur. Dr B. M. Khadi, Director, Central Institute for Cotton Research (CICR) was the Chief Guest on this occasion. While delivering a lecture on "Agriculture and Environment", Dr Khadi emphasized on proper use and transfer of available technologies in agriculture to increase the food production without harming the environment. He pointed out that cultivated area in the country has remained the same since 1950 but food production has increased to meet the demand of the ever-growing population. This has led to more use of fertilizers, mostly nitrogenous, followed by those based on phosphorus and potash, Dr Khadi further added that though the nation has become self-sufficient in rice and wheat production, their high yielding fertilizer-responsive dwarf varieties have adversely affected the environment by increasing salinity, alkalinity and water logging in soil. Illustrating the consequences of excessive use of fertilizers and pesticides, he informed that, in one of the experiments, soil erosion in tilled barren land was as high as one unit whereas in virgin forest, besides the use of naphtha, soil erosion was found up to 0.001-0.0001 unit. Dr Khadi highlighted the fact that the percentage of oxygen has reduced

Dr B. M. Khadi, Director, Central Institute for Cotton Research, delivering Dr Ashok Juwarkar Memorial Lecture

from air while that of carbon dioxide, carbon monoxide and sulphur dioxide has gone up, which may be attributed to use of chemicals in agriculture.

Dr Khadi opined that the issues of air pollution, water pollution and threat to biodiversity are also linked to agriculture. To achieve reclamation of polluted soil, he informed that, agriculture scientists are advising farmers to use the methods of bacterial seed inoculation, liquid inoculation and to grow drought and salinity tolerant crops like *Acacia* and *Eucalyptus* in their fields. Dr Khadi laid stress on the importance of integrated pest management programme and also advocated promotion of eco-friendly varieties like naturally coloured cotton. He said that normally the cotton is dyed leading to water pollution due to discharge by textile industry. The dyeing also causes skin allergies, rashes and psychosomatic disorders among users, but naturally coloured cotton has no adverse impact, he added. At the concluding part of his presentation, Dr Khadi alarmed that agriculture contributes to 14 percent in global warming. He further added that the rate of carbon dioxide emission is likely to increase from present 1.29 units to 5.47 units in 2025 in developing countries. Every year 20,000 deaths were reported worldwide due to pesticide poisoning and 50 percent of them were from developing countries, he said. Dr Khadi expressed concern over excessive use of fertilizers in India which result in emission of ammonia and green house gases in to the atmosphere. He suggested that use of alternative fertilizers, organic farming, biotechnology and genetic engineering could solve the problems related to environmental degradation due to agriculture. Earlier, Dr Apurba Gupta, Scientist & Head, Environmental Systems Design & Modelling Division, NEERI, in his welcome address appreciated the valuable contributions of Late Dr A. S. Juwarkar in the field of environmental science & engineering. ❐

Dr Baban Ingole included in International Tsunami Epicenter Research Expedition

DR Baban Ingole, a senior scientist of the Biological Oceanography Division of the National Institute of Oceanography(NIO), Goa, was invited to participate in Sumatra Earthquake and Tsunami Offshore Survey (SEATOS), an international expedition to the epicenter of the tsunami earthquake that occurred on 26 December 2004 in the Indian Ocean off the coast of Indonesia. The expedition consisted of 27 scientists from six nations and a wide range of scientific fields, including tsunami modelers, marine biologists, seismologists, geologists, and scientific visualization experts. The team spent 17 days on station at the epicentre. The expedition has provided scientists with unique images showing ruptures that led to the devastating waves. Analysis of the new data collected will help in better understanding of tsunamis and may prevent the loss of the life and property in the future.

Dr Baban Ingole holding two push core samples collected by remotely operated vehicle

Earlier, an international team of geologists studied, since February 2005, the site off the coast of Sumatra in Indonesia onboard British Navy's survey vessel, HMS Scott in order to help predict the pattern of future tsunamis. The team used a deep submersible vehicle, remotely operated from onboard ship and successfully took photographs of the seabed 4.4 km down and retrieved samples from the vicinity of the epicenter of the earthquake that caused the tsunami. Dr Kate Moran, Geotechnical Engineer, University of Rhode Island and Dr David Tappin, Geotechnical Engineer, University of Rhode Island and British Geological Survey, who had returned from the HMS *Scott* expedition were the Co-chief Scientists leading SEATOS expedition. Using geophysical survey tools and a unique deep-water remotely operated vehicle,

Push core and box core samples being processed in the ship's laboratory. Clockwise: Drs. Baban Ingole (NIO, wearing white T-shirt), Paul Tyler & John Copley (Census of Marine Life, National Oceanography Centre, Southampton) and Tim Masterklark (Science Applications International Corporation).

with the SEATOS team's mission, for the first time marine scientists have been able to find and film such critical ruptures at such an incredible depth in the Indian Ocean. The faults, which were found on the outer edge of the continental shelf, provide important evidence for reconstructing the events of December 26. The observed seafloor fault surface is referred to by geologists as striated because it is smoothed by rocks moving against each other as the seafloor is ripped open. No evidence of deep-sea animals at the site, during a 14 hour dive with the ROV submersible was found, which is an indication of freshly formed seafloor. The expedition was coordinated by Prof. Sara Hickox, Director, Office of Marine Programs, University of Rhode Island Graduate School of Oceanography. Darlow Smithson Productions, in collaboration with Blue Water Recoveries and funding from BBC-TV, Discovery USA and Discovery Channel Canada, conducted this expedition. Unlike traditional academic expeditions, this one was organized, crewed, and executed such that high-quality factual science programmes (targeted for broadcasting in the Fall 2005, on BBC1, the Canadian Discovery Channel, and Discovery USA Channel) are produced. Broadcast-quality video and advanced computer graphics and dramatic reconstructions are accurately captured. The University of Rhode Island spearheaded assembling of the science team for this expedition. ❐

'CIM-*Utsava*': From Kisan Mela to 'Knowledge Mission'

FARMERS, entrepreneurs and people from all walks of life converged at the 'CIM-*Utsava*' with *'Kisan-Mela'* organized recently by the Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow. Lectures and live demonstrations on medicinal and aromatic plants, interaction, exhibitions and plant health and knowledge competitions were the major attractions of the *mela*. Welcoming the participants Dr S. P. S. Khanuja, Director CIMAP said that this year the 'CIM-*Utsava* ' was organized as *'Gyan-Utsava* (knowledge festival). Dr Khanuja further said that 'CIM-*Utsava* ' was initiated to give shape to the institute's capability transfer mechanism among the growers of medicinal and aromatic plants and entrepreneurs. He announced that a specially prepared souvenir, '*Gyanya* ' was being made available to each participant this year. Dr Khanuja said that world over the consumers are ready to pay any price for health promoting products made from plants and this concept could directly benefit the farmers and entrepreneurs. Such *'Gyan-Utsava'* could ensure transformation of green technology into reality. The biovillage mission of CIMAP launched in UP, Uttaranchal and Karnataka is promoting industrial cultivation. These efforts are helping CIMAP to disseminate its technologies among rural people for income generation, economic upliftment and improvement in life, he added.

Farmers participating in plant health competition in CIM-Utsav

The Chief Guest Dr S. C. Rai, Mayor, Lucknow, praised the efforts of CIMAP and said that technology

transfer in rural areas would result in increase in production of medicinal plants besides generation of additional job opportunities. CIMAP is progressing well on its mission of Green path to better health and life. He also released three newly developed varieties: 'CIM-Megha' of *Andrographis paniculate,* 'CIM-Liv' of *Silybum marianum* and 'CIM-Chandni' of *Salvia sclorea.* The Guests of Honour Dr Navneet Sehgal, Secretary, Science & Technology, UP, Shri S. P. Singh, Municipal Commissioner, Lucknow, and Shri Anil Vidyarthi, Chief General Manager, SIDBI, also addressed the gathering. Oriental Bank of Commerce, Bank of India, Sri Ram Fertilizers, Naryana Agrotech, Biotech Park, Lucknow, PCTI Limited, Premier Irrigation and CIMAP put up stalls for the benefit of the visitors. A concurrent workshop on production technologies of economically important medicinal and aromatic plants was also held for a group of progressive farmers. Sponsored by the Council of Science & Technology, Government of UP the workshop was attended by about 70 progressive farmers of UP. Shri P. L. Loi, Principal Secretary, S&T, UP Government, inaugurated the workshop. ❐

Dr R.A. Mashelkar honoured

DR R.A. Mashelkar Director General, CSIR, has been ranked amongst 'top most 50 influential people in the world' in respect of intellectual property rights created by the international magazine 'Managing Intellectual Property' for the year 2005. Others so honoured include Pascal Lamy, WTO Director General (elect); Wu Yi, Chinese Vice-Premier and Alain Pomindou, President of European Patent Office. The citation says : Dr Mashelkar is India's foremost IP specialist, whose influence spans the local, the national and the international. ❐

Dr A. Sinha takes over as Acting Director, CMRI

DR Amalendu Sinha (born 5 July 1955), Scientist 'G', has taken over as Acting Director of the Central Mining Research Institute (CMRI), Dhanbad. He took over charge upon the superannuation of Dr C. Banduopadhyay. Dr Sinha did M.Sc. in applied geology in 1976 and M. Sc. (Tech) in mineral exploration in 1977. He received his Ph.D. in Applied Geology in 1988 from Indian School of Mines, Dhanbad. Dr Sinha joined CMRI in 1977 as Scientist 'B' and has been engaged in R&D work in the areas of geo-mechanics and mining technology. His areas of research cover development & application of geo-mechanical classification system for support design in coal mine roadways; evaluation of *in-situ* stress field for stability analysis; *in situ* stress measurement in underground coal mines and its applications to stability analysis and assessment of ground behaviour and stability for planning and design of non-coal mines. He has coordinated and guided a number of R&D projects, industry sponsored projects, grants-in-aid projects in the field of mining technology, geo-environment, coal-bed methane, and blasting and explosive. In addition, he also completed successfully a good number of consultancy projects. He also visited various countries like USA, Germany, Czech Republic and Iran on deputation/assignment. Dr Sinha has to his credit a large number of research papers published in Indian and foreign journals of repute. He also edited a few proceedings. He has filed some patents also. He is a member of Academic Council of Indian School of Mines, Dhanbad, and National Expert Committees on roof support in coal mines constituted by Directorate General of Mines Safety. He also represents CMRI as a member in a number of committees constituted by different government organizations and academic institutions and industries in the country. Dr Sinha is member/associate member of the pioneer professional bodies like Mining Geological & Metallurgical Institute of India (MGMI), Indian Geo-technical Society (IGS), International Society of Rock Mechanics & Tunneling Techno-logy, (ISRMTT) etc. He is presently the Vice-President of the National Institute of Small Mines (NISM). ❐

National Symposium on Plant Biotechnology: New Frontiers (NSPB 2005)

THE Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow, on the occasion of 27th Annual Meeting of the Plant Tissue Culture Association of India, will be holding a three day National Symposium on Plant Biotechnology; New Frontiers (NSPB 2005), at CIMAP during 18-20 November 2005. The symposium is designed to bring together biotechnology research from advanced laboratories, institutes, universities, and private sector laboratories working with the biotechnological applications for crop improvement and human welfare. The national symposium is intended to review the progress made in these areas and to formulate new strategies and priority areas for biotechnological interventions in important crops, legumes, fruits, vegetables, plantation crops, spices, medicinal and aromatic plants.

The symposium includes following sub-themes:

- Tissue culture research: new perspectives
  Clonal propagation, regeneration, haploid culture, somaclonal variation somatic, hybridization, in-vitro secondary metabolite production, in-vitro conservation, hairy root, bioreactor technology, industrial applications
- Plant metabolomics
  Modulating metabolic pathways in plants for designer genotypes producing secondary metabolites as pharmaphytoceuticals.
- Gene mobilization and genetic modification for crop improvement
  Direct gene transfer, vector mediated gene transfer, chloroplast transformation, cloning of genes, encoding for salinity, drought, insects and pathogen resistance
- Molecular markers and genomics
  Genetic fingerprinting, DNA marker technology, clonal fidelity, biodiversity informatics, marker assisted selection and gene tagging. Functional genomics approaches to link functions with genetic expression and regulation
- Transgenics in agriculture

Status and technological advances, transgenic crops, bio-safety concerns and regulatory aspects of transgenics, commercialization and ethical issues.

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