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CSIR NEWS

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Team CSIR

# ONGC joins NGRI-NTNU Project to Enhance Oil Recovery

THE Oil and Natural Gas Corporation Ltd (ONGC), Dehra Dun, has joined hands with the National Geophysical Research Institute (NGRI), Hyderabad and Norwegian University of Science and Technology (NTNU), Trondheim, Norway, to carry out collaborative work to improve secondary recovery of oil from Indian oil fields operated by ONGC. In this connection an MoU was signed at Oslo, Norway by Dr V. P. Dimri, Director, NGRI, Shri N. K. Mitra, Director (offshore), ONGC, and Professor Jon Kleppe, Head, IPT, NTNU, in the presence of Honorable Minister of Petroleum and Natural Gas (P&NG) Shri Mani Shankar Aiyar and Norwegian Minister of P & NG Ms Thorhild Widvey.

Dr V. P. Dimri, Director, NGRI, Shri N. K. Mitra, Director (offshore), ONGC, and Professor Jon Kleppe, Head, IPT, NTNU, exchanging the MoU documents in the presence of Honorable Minister of Petroleum and Natural Gas (P&NG) Shri Mani Shankar Aiyar and Norwegian Minister of P&NG Ms. Thorhild Widvey

The average oil recovery rate in India (about 26%) is much lower as compared to Norway (more than 60%), hence an initiative was taken by NGRI to collaborate with NTNU, Norway to increase production from low producing Indian oil fields using advanced techniques. The first Indo-Norwegian collaboration agreement was signed at FICCI office, New Delhi, to carry out a set of project activities on Reservoir Modeling for Enhanced Oil Recovery using Fractals and 4-D Seismics for 30 months through Indo-Norwegian Programme of Institutional Cooperation in presence of Shri Borge Brendes, Minister of Trade and Industry, Norway.

## RRL, Bhopal signs MoU with APS University

THE Regional Research Laboratory (RRL), Bhopal, signed an MoU with APS University, Rewa, recently. The MoU was signed by Dr N. Ramakrishnan, Director, RRL, Bhopal and Dr A. D. N.Bajpai, VC, APS University, Rewa. The purpose of the agreement is to facilitate cooperation and coordination and utilization of complementary federal facilities/ capabilities. This MoU will enhance the working relationship between both the institutions and is intended to facilitate collaborative research and development, testing and evaluation, technical support, facility, technology demonstration and utilization and related activities that are mutually beneficial to the missions of both the organizations.

## NCL signs Research Alliance Agreement with DuPont

Dr S. Sivaram and Dr Thomas M. Connelly, Jr. signing the documents of MoU. Standing from left are: Dr Rajeev Vaidya and Dr Uma Chowdhry

DR S. Sivaram, Director, National Chemical Laboratory (NCL), Pune, and Dr Uma Chowdhry, Vice-President, Central Research and Development, DuPont, recently signed a Research Agreement in presence of Dr Thomas M. Connelly Jr., Chief Science & Technology Officer, DuPont at Wilmington, Delaware, USA. Under terms of the agreement, DuPont will have access to the talents and capabilities of one of India's premier research and development laboratories to grow new market-facing technologies. The first research projects NCL will develop, will be for the DuPont Titanium Technologies business. "We are pleased to announce the signing of this agreement with the NCL," said Dr Connelly. "This move is consistent with DuPont's efforts to go where the growth is and to globalize our R&D operations. It furthers DuPont's efforts to open our innovation processes by incorporating the research capabilities and intellectual talent of India's top materials scientists. In addition, it will allow us to more clearly address the market needs of the region by providing geographic access," he added further. The relationship between DuPont and NCL dates back to 1993 when DuPont became the first multinational company to partner with CSIR through NCL to advance polyester research in India.

# NGRI signs MoU with Osmania University

THE National Geophysical Research Institute (NGRI), Hyderabad, has entered a collaborative agreement with Osmania University (OU), Hyderabad, and a Memorandum of Understanding has been signed between these two organizations recently. NGRI has agreed to collaborate with Osmania University in the areas of teaching, research and training in selected and advanced thrust areas of S & T with special reference to earth sciences; intellectual property rights; consultancy work; university-NGRI joint research programmes funded from outside agencies viz. DST, DBT, DSIR etc.; technology management and technology transfer; and any other areas of mutual interest.

Dr V.P. Dimri, Director, NGRI (left) and Prof. Mohd Suleman Siddiqi, VC, Osmania University, after signing the documents of MoU

# IICT signs MoU with Byrraju Foundation, Hyderabad

THE Indian Institute of Chemical Technology (IICT), Hyderabad, and Byrraju Foundation, Hyderabad, have entered into MoU in the august presence of DGSIR Dr R. A. Mashelkar to disseminate the information on a large scale with their infrastructure. Dr J. S. Yadav, Director, IICT, briefed the genesis of the collaboration to DGSIR. Dr U. S. N. Murty, Project Leader, Head, Biology Division, IICT, has given a presentation on the salient features of the SAMADHAN software to the delegates.

IICT initiated the development of Samadhan Kendra, a Sustainable Rural Information Centre, as a pilot project in Partipadu village of Tadepalligudem Mandal, West Godavari District, A.P. with the financial support of Ministry of Information and Communication Technology, Government of India, New Delhi, with the objective to develop an integrated information system using audio and graphics for rural applications.

The software is able to provide information leading to solution of villager's problems like pest disease, health, education, seed information, fertilizer etc. CSIR Rural Action Plan, New Delhi, has sanctioned the proposal for implementation of Samadhan Kendra Information Dissemination System in 400 villages of four districts in Telangana Region of A.P. through A.P. Federation of Farmers Association, Hyderabad.

Byrraju Foundation was set up in July 2001 and dedicated to social transformation in rural areas.

# Indian R&D: More Value for Money

**A transformed India has transfixed the world. Evidence of this is apparent in the centre-spread report entitled *Spend Less, Get More* published in *Newsweek*, 28 November 2005. The report succinctly states that the one thing India does better than China is high–tech research and development.**

It is beyond doubt that Indian scientific R&D ranks with the best in the world. The last five years have seen more than a hundred companies; including General Motors, Boeing and Mobil choose India as an R&D hub. The report highlights the fact that, "despite a lack of funding and facilities—the government's entire R&D budget is a fraction of the annual research by a single multinational companies like Pfizer—India's researchers have shown the world they can innovate without breaking the bank."

Little wonder then that the world is beating a path to India's R&D research institutions and that Dr R. A. Mashelkar, Director General, CSIR says, " The world has realized that if you don't have an India address (in R&D), you are in trouble." The Council of Scientific and Industrial Research (CSIR), India is increasingly the chosen partner in research collaborations with an enviable client list spanning the globe.

Dr D. Yogeshwara Rao, Head, CSIR, Technology Networking & Business Development Division, CSIR, corroborates the global trend of an increased interest in a resurgent India by acknowledging that, " Not a week goes by without some foreign delegation visiting us to discuss research collaborations."

The *Newsweek* report also refers to a recent study by Pricewaterhouse Coopers that says that " India is rapidly moving up from relatively routine tasks like converting schematics from one computer-aided design system to another, to sophisticated and critical functions such as plant engineering and redesigning products for a better cost–performance ratio. Global automakers, which spend 3-5 per cent of their annual revenue on R&D activities are turning increasingly to India."

Interestingly, the main reason for this shift is not just the huge pool of trained manpower that Indian universities and educational institutes create each year. The edge over Chinese counterparts lies in the greater "cultural affinity with westerners" that Indians have, over and above the "English-language skills". The *Newsweek* report points out, "That affinity has also helped India gain an edge in intellectual-property protection. In a sector like chip design, for instance, large companies will outsource R&D activities only if they believe they can protect the intellectual property they are letting out the door."

India's auto market is attractive because though it is only about a third the size of China's, it is growing faster. Car sales in India last year grew at 24 per cent as compared to 14 per cent in China. India has also "demonstrated its willingness to comply with intellectual property rules and the global patent regime." This has allowed India to "build on its strength in engineering and to achieve a competitive advantage making advanced components such as exhausts manifolds and machined gears."

India's research links with multinationals pharmaceutical giants such as AstraZeneca, Novartis, GlaxoSmithkline, Bayer, Pfizer and Roche goes back to the mid-1990s and has been reinforced over time. India's move to implement international patent laws earlier this year, despite the problems caused to domestic pharmaceutical giants, has also sent a strong and positive signal to the world. Though the Chinese and the Indian pharmaceutical industries are well matched in size, it is thought that this "commitment to patent protection may help India beat China in the race up the value-chain ladder in pharmaceutical research".

In short, well-leveraged skilled Indian manpower, a pool of brilliant young talent, coupled with cultural affinities and linguistic advantages as well as compliance with the international patent regime has given Indian R&D a significant edge over potential competitors. The world has taken notice. The laurels are coming India's way.

# CIMAP develops Low-cost Aroma Distillation Unit

THE Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow, has developed a low-cost and simple-to-operate distillation unit. With development of this unit, extraction and distillation of essential oils will neither be a hard task nor a costly affair for the poor farmers.

The distillation unit has a capacity to handle 12 kilograms rose flowers or 20 kilograms herb per batch. The new distillation unit is made of pure stainless steel and has a long life. The advantage of the new unit is that it can be operated by firewood, agro-wastes, LPG and even by kerosene burners. Due to its modular construction, it can easily be assembled at the site too.

Being so simple in construction, it can easily be operated even by a layman. The chimney, which is attached to the distillation unit, helps to control pollution at the work place.

Distillation unit developed by CIMAP

The existing distillation units for preparation of rose water and extraction of essential oils were made of copper and had a very primitive design and construction, which makes it difficult to operate these for producing good quality essential oils and rose water. These units also cause pollution in the workplace. Since there is no way to control the rate of distillation in these units, the product quality is generally inferior and yields are low.

To remove these shortcomings in the existing distillation units, a need was felt to design a simple, economical but efficient unit mainly of rose water, spice oils and essential oils.

### OPERATING PARAMETERS

- BATCH SIZE: 12 kg rose flower/20 kg aromatic plants materials
- **Can be used for spices and other aromatic plants also**
- ROSE WATER OUTPUT: 10 to 15 litres/batch (depending on the quality of rose water)
- BATCH TIME: Three hours
- FIREWOOD CONSUMPTION: 15-29 kg/batch
- WATER REQUIREMENT FOR COOLING: 200litre/batch

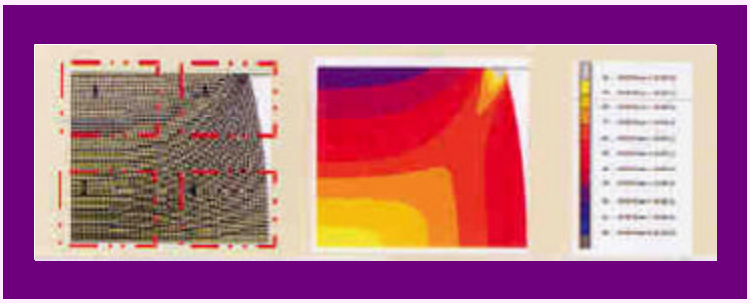
# New Projects at RRL, Bhopal

**THE new projects taken up at the Regional Research Laboratory (RRL), Bhopal, in the recent past include:**

1. **Preparation of REIA Report for Ispat Godavari Ltd, Raipur, Rs 2,00,000**
2. **Micro, Meso and Macroscopic analysis of Ductile Fracture using FEM, BRNS, Mumbai, Rs 4.01million**
3. **REIA and EMP for Lignite Mines, Panandhro, Kutch, GMDC, Rs 7,00,000**

## Simulation of Deformation and Microstructure Pediction

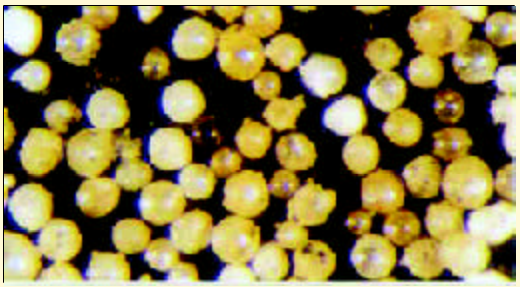
THE Regional Research Laboratory (RRL), Bhopal, has made an attempt to simulate the response in a cylindrical steel sample compressed to 40% of its height at ambient temperature through finite element analysis and substantiate the behaviour through experimentation based on the microstructural characteristics. The compression tests were carried out using a 400-tonne hydraulic press at a constant strain rate of $1.7 \times 10^{-2}$ per sec and strain of 0.5. A commercial FEM software was used for simulation. The overall pattern of deformation of finite element mesh and strain distribution in diffqrent regions along the radial and longitudinal directions in one quarter of the cross section of the specimen is shown in the figures.



FEM simulation showing (a) the deformation of grids and (b) level of straining in different regions of one quarter geometry of the cylindrical steel sample

## Cenospheres from Fly Ash

THE Regional Research Laboratory (RRL), Bhopal, has developed a process for separation of cenospheres from fly ash. Cenospheres are high value materials present at low volume in fly ash. The cenosphere thus obtained will be of invariable physical, chemical and mineralogical composition. One such processed grade contains iron rich fraction which can have application in development of materials for adsorption of radioactive metals. The other grade is suitable for use as filler material for light weight plastics, polymers, refactory/ insulating, acoustic materials.



A view of the cenospheres

## Rapid Environment Impact Assessment for Panandhro Lignite Mine

THE Regional Research Laboratory (RRL), Bhopal has undertaken a project titled 'Rapid environment impact assessment for Panandhro lignite mine' sponsored by Gujrat Mineral Development Corporation, Ahmedabad. Baseline data is collected during the field monitoring programme at site for ambient air quality, noise, water, biological and socio-economic components. The ambient air quality monitoring was carried out at eleven locations. Seven surface water, five ground water and six soil samples were collected and analyzed for physico-chemical parameters.

# National Seminar on Advent of Digital Information Environment and Contributions of Dr S. R. Ranganathan

RANGANATHAN Society For Book Culture, Library and Information Studies (RAS) in collaboration with the National Botanical Research Institute (NBRI), Lucknow and Prof. Kaula Endowment for Library and Information Science, Tenali, Andhra Pradesh, organized a National Seminar on the auspicious day of Birth Anniversary of Dr S.R. Ranganathan, father of Library Science. The programme was begun with the garlanding to the portrait of Dr S.R. Ranganathan and lighting the lamp. Dr P. Pushpangadan, Director, NBRI, Lucknow, inaugurated the National Seminar. He said in his inaugural address, "There was a time when the success of a nation was accounted in terms of its national resources but now it is done on the basis of knowledge its citizens possess." Dr H.M. Behl, Scientist, NBRI, Lucknow, said that the growth of a nation depends on how its citizens are knowledgeable and in this aspect how libraries playing its role. With the advent of internet, the importance of libraries pushed back, but 60 percent information provided on the internet is not authentic. Hence a need arises to combine the facility of libraries and latest technology by converting Traditional Libraries to Digital Libraries, to facilitate the users. Dr H.V. Mote, Library Officer and Organising Secretary, read the messages of eminent personalities, as due to pre-engagement they could not attend the seminar.

Dr T. A.V. Murthy, Director, Information Library Network (INFLIBNET) Centre on IUC of University Grant Commission, Ahmedabad, Gujrat, delivered keynote address. He said, "Libraries support economic development by redefining students mind in the right direction. They preserve our rich and diverse culture and history, which is transmitted from one generation to another." "In a country like ours with 70 percent of its population living in the villages, libraries prove to be greater source of knowledge than the Internet," he added further. Dr T. A.V. Murthy also released the Souvenir of seminar.

Padamshree Prof. P.N. Kaula, Emeritus Professor and Chairman (RAS), Lucknow, gave presidential address. He said, "Dr Ranganathan, the genius that appeared in the library and information field, had himself worked for mathematical and machine applications to several areas of work in libraries. Ranganathan's Facet and Phase analysis are now being applied in Content Analysis and Artificial Intelligence. Let us all join hands together to study his seminal ideas and works and pay tribute to this great Indian, Whom the American Library Association, the world's largest and the most powerful association with a membership of over 50,000 professionals paid tribute in 1964 by stating, "Most of us are not your disciples, but all of us are your students. You answer the challenge of the future with a challenge. We are proud to be in your debt. Let us change our approach and start reading, learning and experimenting what Dr Ranganathan has started and written for us. That will be appropriate tribute that we will pay to this greatest professional, scientist of the world."

Dr Shailendra Kumar, Head of the Department, Library & Information Science, Delhi University, stressed the need of organizing workshop on Digital Libraries to create a multimedia resources environment as technology is developing at a rapid pace. More than 100 professionals have attended the seminar. There were two sessions. One for the Digital Libraries and other for Contributions of Dr S.R. Rnaganathan. Seven papers were presented during the first Technical Session. Dr Ramesh Babu and Prof. P.N. Kaula spoke on 'Contributions of Dr S. R. Ranganathan'. Dr H.V. Mote presented a paper in Hindi on 'Dr Ranganathan Ki Hire Ki Khoj'. Dr Rochana Srivastava presented the Report on the National Seminar. Dr Ramesh Babu was the Seminar Director.

CD on 'Kitaboon Ka Masiha' was shown during the seminar. Shri M. L. Kain compered the programme. Lastly, Dr H.V. Mote, Organizing Secretary, proposed the vote of thanks.

# Interactive Meet with Seed Industry at NCL

THE National Chemical Laboratory (NCL), Pune, organized an interactive meet with seed industry at NCL. The purpose of the meeting was to understand the current R&D requirements of the seed industry and realign some of NCL's R&D efforts in the area, thus providing innovative solutions to the problems faced by industry. About thirty industries from all over India attended the meet. Dr P. S. Rao, Director, Department of Biotechnology, PES Institute of Technology, Bangalore, delivered the inaugural address.

Dr P. S. Rao, Director, Department of Biotechnology, PES Institute of Technology, Bangalore, delivering his inaugural address

Dr Rao in his talk outlined the background, opportunities available and challenges faced by the seed industry, besides emphasizing on societal responsibility of the scientists. Speaking on the current technology status, he stated that introduction of transgenic technology has made a huge impact on world agriculture and economy. Seventeen countries, including India, have adopted biotech crops. Compared to 2.3 lakh Bt cotton packets sold in 2003-04, 13 lakhs packets were sold in the year 2004-05. Government has approved many Bt cotton varieties and they are in the pipeline. The global market for genetically modified crops has increased from $75 million in 1995 to about $6.0 billion in 2005. He urged the seed industry to augment indigenous efforts since outsourcing or even sublicensing the technology on transgenic crops comes at a very high price. He also urged the seed industry to capitalize on the synergy between NCL and industry and become partners in progress.

Dr S. Sivaram, Director, NCL, in his introductory remarks said that the national laboratories had traditionally assumed the role of a 'giver' and the industries were the 'takers'. But, now with many of the industries having their internal R&D capabilities, the scenario has changed. NCL is also consciously exiting from those research areas where industries have adequate knowledge and research infrastructure. The thinking at NCL is least ten years ahead defining technologies that the industry would need in future and identifying newer frontiers of science that underlie these emerging technologies. Instead of 'giver', we now wish to become a 'partner' in industry's progress and jointly contribute to the creation of economic wealth in society.

In the technical session that followed, Dr Vidya Gupta, Dr Rajani Nadgauda, Dr S. K. Rawal, and Dr Mukund Deshpande gave presentations on glimpses of NCL's research activities with special reference to the expertise available in the areas of plant tissue culture, plant molecular biology and biopesticides.

Following this, a panel discussion and interaction between

Dr S. Sivaram, Director, NCL, delivering introductory remarks

NCL scientists and participants was organized which was chaired by Dr P. S. Rao. Problems faced by the seed industry as well as newer opportunities were discussed and a number of avenues for possible collaborative and bilateral research were identified. One of the key outcomes of the meet was the willingness on the part of the industry to adopt a consortium model of research partnership in which few industries will jointly work together with NCL on a generic problem thus sharing the research costs and outputs.

# Workshop on Road Asset Management – Needs and Imperatives


Shri L.K. Joshi, Secretary, Ministry of Shipping, Road Transport and Highways (MOSRT&H) delivering his inaugural address during the workshop on 'Road Asset Management – Needs and Imperatives'

THE Central Road Research Institute (CRRI), New Delhi, recently organised workshop on 'Road Asset Management – Needs and Imperatives'. Shri L.K. Joshi, Secretary, Ministry of Shipping, Road Transport and Highways (MOSRT&H) inaugurated the workshop. In his welcome address, Dr P. K. Nanda, Director, CRRI, highlighted the need for developing operational asset management system and mentioned various studies such as road user cost study, pavement performance study, inventorisation of national highways, and axle load studies etc. conducted by CRRI in the last 3 decades which are essential component of road asset management. It was also informed that recently, a study on pavement condition particularly the roughness measurements/ data for various road sections completed under Golden Quadrilateral (GQ) of NHDP has been completed by CRRI. Dr Nanda asserted the need and importance of creating a separate National Road Data Centre. Benefits which can be gained out of various R&D studies planned to be conducted through accelerated pavement testing facilities, being procured by CRRI, in the next 15-18 months were also highlighted by Dr Nanda.

Shri L.K. Joshi, in his inaugural address, stated that huge amount has been invested in construction of roads and that there is no scientific policy currently existing in our country for road maintenance which is primarily done based on adhoc decisions and lead to poor maintenance practices. Shri Joshi emphasized that it is the right time to develop appropriate road asset management system for the country. He was of the view that new concepts like OMT, BOOT, BOT etc. will provide better service to the road users. Shri Joshi supported the views of Dr Nanda on establishment of a separate National Road Data Centre in India and stated that all the data should be available for better planning, budgeting and management of road asset. The information/data should be stored in a manner that it will have practical use.

The workshop was attended by more than 100 delegates representing senior officers and engineers from government departments and public sectors like MOSRT&H, NHAI, NRRDA, state PWDs, urban development authorities, private sectors, consultants, equipment

manufacturers, materials suppliers, researchers and academicians, and eminent highway professionals in their individual capacity.

The workshop had two technical sessions. The theme of first technical session was 'Experiences on road asset management'. Three presentations were made by the key- note speakers: Measurable Benefits from Road Asset Management by Shri S.C. Sharma, Ex-DGRD, MOSRT&H; Road Asset Management-Ausralian Experience by Prof. (Dr) Arun Kumar, Royal Melbourne Institute of Technology, Australia; and Highway Operation and Safety Management by Dr A. N. Bansal, Sr. Transport Economist, The World Bank.

Another technical session was based on 'Technical tools and implementation modalities'. Shri Atul Kumar (CGM-IT&P, NHAI) and Shri D. P. Gupta (Ex-DGRD, MOSRT&H) were the keynote speakers who made presentations on 'Road information system' and 'Financial sustainability and valuation of road assets' respectively.

The Valedictory Session was chaired by Shri J. K. Mohapatra, Director General, NRRDA & Joint Secretary, Ministry of Rural Development (MORD). Dr V. K. Sood, Sr. Scientist, presented the summary of workshop proceedings. The workshop ended with vote of thanks by Dr T.S. Reddy, Sr. Scientist. Dr Reddy expressed his sincere thanks to all the session chairman, speakers, delegates sponsors and the organising team for their valuable contributions.

# Workshop on Ceramic Cluster Development Programme in Gujarat State - Its Initiative and Outcome

Dr K.N. Maiti, Principal Co-ordinator of ceramic cluster development programme, delivering his welcome address. Seated on the dais from right are: Shri Ramjibhai Maru, President, Panchal Ceramic Association, Thangadh; Dr H. S. Maiti, Director, CGCRI, Kolkata; Shri R. J. Shah, PCIA, Government of Gujarat; Shri Girisbhai Pethapara, President, Morbi-Dhuva Glaze Tile Association; Shri Karsanbhai Adroja, President, Sanitaryware Manufacturers Association, Morbi; Shri Sureshbhai Sompura, President, Federation of Ceramic Industries, Thangadh

THE Central Glass & Ceramic Research Institute (CGCRI), Naroda Centre, Ahmedabad, is engaged in development of ceramic clusters in Gujarat State as a nodal R&D institution from 2001. The programme has involved about 500 ceramic units producing sanitarywares, crockery and tablewares, ceramic tiles (wall, floor and porcelain granito), refractories etc. and located in Thangadh, Morbi-Wankner, Himatnagar and Ahmedabad clusters.

A review meeting-cum-workshop on ceramic cluster development programme was organized at Morbi, in the recent past. Shri R. J. Shah, Principal Chief Industrial Advisor, Government of Gujarat and Dr H. S. Maiti, Director, CGCRI, Kolkata, were the Chief Guests. Dr K. N. Maiti, Scientist (Director's Grade) & Scientist-in-Charge, CGCRI, Naroda Centre, Ahmedabad and Principal Investigator of the project; Shri Girisbhai Pethapara, President, Morbi-Dhuva Glaze Tile Association; Shri Karsanbhai Adroja, President, Sanitaryware Manufacturers Association, Morbi; Shri Ramjibhai Maru, President, Panchal Ceramic Association,

Thangadh; and Shri Sureshbhai Sompura, President, Federation of Ceramic Industries, Thangadh; also participated in the workshop and graced the occasion. About 140 representatives from different Ceramic Industries participated in the workshop.

Shri R. M. Savsani, T.O., CGCRI, Naroda Centre, Ahmedabad, introduced the dignitaries and Dr K.N. Maiti, Principal Co-ordinator of ceramic cluster development programme, delivered the welcome address followed by the presentation on the outcome of CCDP. Dr K.N. Maiti said that CGCRI, Naroda Centre, has been conducting CCDP for the last four years and a great amount of work has been done since then. The present workshop was arranged to critically analyze and review the outcome of CCDP carried out by CGCRI, Naroda Centre. He made a presentation on 'Sustainable Ceramic Cluster Development Programme in Gujarat State (CGCRI-Gujarat Model)'. Dr Maiti further elaborated that the various developments taken place are self-sustainable and SMEs are now in a good position and looking forward to grow better compared to the organized sector and improving their competitiveness at home and abroad.

On the environment protection front reduced rejection after firing and its part recycling not only affected resource conservation but also greatly reduced solid waste pollution in the clusters. Dr Maiti stressed the importance of some R&D projects viz; development of blended and beneficiated clays for each sector of ceramics; blending and beneficiation of Than fire clay; import substitution of Ukraine clay from Granito tile production; use of non-conventional RMs and development of additives to increase unfired strength and casting properties etc. He concluded that the initiative taken by Government of Gujarat and CGCRI for technology up gradation and improvement in quality in SMEs sector has turned into a model for cluster development and found ways not only to use waste but to eliminate it in the production also.

Shri Ramjibhai Maru, President, Panchal Ceramic Association, Thangadh, emphasized that with the extraordinary efforts of Dr K.N. Maiti, Scientist-in-Charge, CGCRI, Naroda Centre and Shri R. J. Shah, PCIA, Government of Gujarat, tremendous developments have taken place. He further added that within six months time, the supply of natural gas fuel through pipeline may be available in Thangadh and it will further improve the efficiency and productivity.

Shri Sureshbhai Sompura, President, Federation of Ceramic Industries, Thangadh, narrated his experiences. Shri Girisbhai Pethapara, President, Morbi-Dhuva Glazed Tile Manufacturer Association, recalled the day, the first workshop was organized at Morbi. He said that due to CCDP technical knowledge and self confidence of all the persons engaged in ceramic manufacturing have significantly improved. He also requested CGCRI to work on utilization of fired scrap produced in Granito tile production.

Dr H. S. Maiti, Director of CGCRI, Kolkata, expressed his whole-hearted happiness over the grand success of CCDP at Gujarat and appreciated the efforts of Dr K. N. Maiti. He added that the linkages between R&D institutes and industry are always very poor in our country. But he appreciated Dr K.N. Maiti who has accomplished it in a grand way and created history. His commitment and dedication is exceptional and unmatched. In conclusion, Dr H. S. Maiti said that with continuing relationship of Morbi Industry with CGCRI, the industry is poised to be the first in the world.

Shri R. J. Shah, PCIA, Government of Gujarat, shared the interesting story of events taken place in formulating and sanctioning of CCDP to CGCRI, Naroda Centre, with the participants. He also praised the efforts taken by Dr K.N. Maiti in making the programme a great success. Shri Shah also emphasized the need of strengthening and unification of industries associations and formation of a federation to steer sustainable cluster development programme. Shri Shah also explained various schemes of Government of Gujarat for welfare of industry.

In the second session, Dr K. N. Maiti presented 'Road Map for Future Development of Ceramic Industries in Gujarat State' and elaborated the proposed R&D activities of CGCRI alone and in association with UNIDO, activities of unified industries association and Government of Gujarat. He also explained the problems associated with non-standard raw materials

and narrated the current status of mining of Than Fire clay in Thangadh and surrounding areas. Dr K.N. Maiti in a very lucid manner elaborated the techniques of blending, levigation and Hydrocyclone to maintain consistency in quality. Dr Maiti presented a specific example that how a crude Than Fire Clay containing 60.89% silica and 23.30% alumina, upgraded to contain 54.90% silica and 28.54% alumina by levigation and further 49.04% silica and 33.23% alumina by levigation-cum-Hydrocyclone beneficiation technique. Simultaneously plastic and dry properties of Than clay were also improved.

Shri Girisbhai Pethapara, put forth his reaction by stating that although we have come a long way but it is just a beginning and we still have to improve a lot. Shri Girisbhai agreed to all the issues raised by Dr Maiti and requested the Government of Gujarat to keep this CCDP to continue till some of the ceramic industries in Morbi become the global players.

Shri Sureshbhai Sompura, President, Federation of Ceramic Industries, Thangadh, also expressed his views in agreement with that of Dr K. N. Maiti and requested Dr Maiti to give some information on optimum use of gaseous fuel in traditional ceramics firing as the natural gas is expected to reach Thangadh shortly.

Shri R. J. Shah, PCIA, said that along with CCDP, the State Government has sponsored waste utilization project, earlier and now the Than clay and sol gel projects etc. It shows the commitment of State Government towards the well being of the industry.

Finally, Dr H. S. Maiti, Director, CGCRI, Kolkata, asked the participants to put forward their expectations from CGCRI and assured them to fulfill their requirements. Dr H. S. Maiti opined that he fully endorse the suggestions of Dr Maiti and said "understanding ceramic science is the key to progress of ceramic technology". Any investment in ceramic science is an investment for future. Till now we have utilized the ceramic technology developed by others, now it is our turn to develop science and build technology for utilization of others. In this area sol-gel technology can be one area of research.

All the participants exchanged the views with the experts during the open discussion period.

The workshop concluded with the vote of thanks proposed by Shri R. M. Savsani, T.O., CGCRI, Naroda Centre, Ahmedabad.

# CGCRI initiates Indo-Norwegian Project

AN Indo-Norwegian bilateral project on 'Fibre optic sensor technology for real-time monitoring of parameters for capacity enhancement of existing transmission lines' has been initiated between the Central Glass & Ceramic Research Institute (CGCRI), Kolkata, and SINTEF, Norway. The programme was formally inaugurated with the organization of a one-day workshop on 'Fibre Bragg Gratings (FBG) based sensor and their applications' by CGCRI at the institute which was attended by the scientists, experts, researchers and professors from reputed organizations of the country. Scientists from other CSIR laboratories were also among the invitees. Dr G.D. Gautama, IAS, Principal Secretary, Department of Information Technology, Government of West Bengal was the Chief Guest in the inaugural session.

In the welcome address, Dr H.S. Maiti, Director, CGCRI, highlighted that the project is sponsored by INPIC (NORAD), Government of Norway, which aims at the development of a Fibre Bragg Gratings (FBG) based device for application in real-time monitoring systems to measure conductor temperature and sag-tension in the critical spans of existing power transmission lines to enhance its flow capacity in hill and coastal regions of India. The project envisages sharing of the complementary expertise of CGCRI with SINTEF, Norway, in the field of real-time sensoring and monitoring of parameters for capacity enhancement of existing power transmission lines.

FBG-based device developed will be installed on transmission line conductor while temperature and sag-tension will be measured in terms of drift in reflection frequency from FBG

for transmission to remote interrogation unit for measuring the temperature and tension present on the conductor. Long term testing of the total unit will be carried out at various sites of Power Grid Corporation of India, who will install such monitoring system on their transmission lines at remote hill and coastal areas of the country where real-time measuring device developed will enable them in observing better load management and preventive maintenance of the national power grids.

In his speech, Dr Leif Bjerkan, Senior Scientist, SINTEF, Norway, narrated the background of the present project and the R&D activities already taken up by SINTEF in the field of sensoring and monitoring high voltage transmission line with FBG. Shri P.L. Narayana, Chief, Monitoring Unit, Indo-Norwegian Programme of Institutional Corporation (INPIC), Government of India, New Delhi, described the background of the Indo-Norwegian collaboration and detailed about their projects continued with other CSIR laboratories e.g. IIP, Dehra Dun, NIO, Goa etc.

In the technical session, notable speakers Shri J.K. Roy, Chief General Manager, Eastern Telecom Projects (BSNL), Prof. B.P. Pal, IIT, Delhi, Shri A. Anand, Chief Design Engineer (Engg. TL), Power Grid Corporation of India, delivered their valuable lectures on fibre optic sensors.

The vote of thanks was proposed by Dr S.K. Bhadra, Scientist, CGCRI, Kolkata.

# Chinese Delegation visits NISTADS

Seen during the Chinese delegation's visit to NISTADS (from left) are: Prof. (Ms) Zhao Lan-xiang, Institute of Policy and Management, CAS; Prof. Fang Xin, Member, Presidium, Chinese Academy of Sciences (CAS), and member of the Standing Committee of National Peoples' Congress, People's Republic of China (leader of the delegation); Shri V.K. Gupta, Director, NISTADS, Prof. Chang Qing, Counselor, Science and Technology, Chinese Embassy, New Delhi; and Prof. Jiang Yu, Institute of Policy and Management, CAS; Dr V.P.Kharbanda, Senior Scientist, NISTADS and Ms Song Qi, Chinese Academy of Sciences

A four member Chinese delegation consisting of Prof. Fang Xin, Member, Presdium, Chinese Academy of Sciences (CAS), and member of the Standing Committee of National Peoples' Congress, People's Republic of China (leader of the delegation); Prof. (Ms) Zhao Lan-xiang, and Prof. Jiang Yu from the Institute of Policy and Management, CAS, Beijing, China; and Ms Song Qi (CAS), visited NISTADS on 18 November 2005, and had a fruitful discussion with the senior scientists of NISTADS on issues relating to the national science and technology policies in India and China. While Prof. (Ms) Zhao Lan-xiang, highlighted the research activities of the Institute of Policy and Management (IPM), CAS; Prof. Parthasarthi Banerji highlighted the research activities being carried at NISTADS. It was noticed that both these institutions i.e. IPM and NISTADS are working on more or less same issues of national and international importance in the areas of science and technology policies, technological change and innovation, technology assessment and forecasting, primarily in specific areas of biotechnology and information and communication technologies and rural development. Both sides agreed to hold an international/bilateral conference on issues of IT/BT in the near future in Delhi or in Beijing to delineate the specific programms of bilateral cooperation between NISTADS, New Delhi and IPM, Beijing.

## Prof. Julia King visits NAL

PROF. Julia Elizabeth King, Principal of the Faculty of Engineering, Imperial College, London, together with some of her colleagues, visited The National Aerospace Laboratories (NAL), Bangalore, recently. It was a busy day for the Imperial College team but they said that they enjoyed the visit.

After a brief meeting with Dr A. R. Upadhya, Director, NAL, and some of his colleagues, featuring a presentation on NAL activity, Prof. King went round NAL visiting divisions and facilities.

After lunch she delivered a lecture on Materials, MEMS and Mimicry organized by ISAMPE. In her lecture, Prof. King said that international collaboration and investment had now become essential for step-change innovation. She also talked of the compelling need for greener aircraft ('by 2050, 75% of the greenhouse effect will be due to aviation if we don't change things now'). One of the highlights of Prof. King's stylish presentation was a video film on engine testing at Rolls Royce.

## NEERI celebrates Foundation Day

THE National Environmental Engineering Research Institute (NEERI), Nagpur, recently celebrated its Foundation Day. Dr A.K. Sinha, Director, Maharashtra Remote Sensing Application Centre (MRSAC), was the Chief Guest on the occasion. While delivering a lecture on 'Role of Geo-spatial Data in Environment Management', Dr Sinha said that ample data on existing resources, their status, spatial distribution, association with other resources, socio-economic factors has been created in the state using the remote sensing technology. He said that merely creating the database is not enough. Judicious and scientific use of the available database by administrative agencies and scientific institutions such as NEERI can help in natural resource planning, environmental and socio-economic planning of resources at regional and state level. In his presentation, he further said that in the present era there was no dearth of data though duplication of data exists in various organizations. Dr Sinha said that this data can be put to best use only with its proper use. He added that MRSAC has already completed work on all the 44,000 villages in Maharashtra and has mapped all natural resources, delineated villages boundaries using remote sensing satellite with resolution of less than a metre. He suggested that this data needs to be regularly updated to keep track of the resources, soil degradation, salinity, water scarcity etc., which can help the administration in the use of existing resources. He further informed that MRSAC has already created a warehouse of this data in its premises and connected it to district administration offices for easy access and better implementation of regional planning.

Dr A.K. Sinha, delivering NEERI Foundation Day Lecture

Earlier, Dr Tapan Chakrabarti, Director-Grade Scientist, NEERI, in his Welcome Address highlighted the achievements of the institute in the last 57 years. He traced the journey of the institute from 1958 to 2005 when the institute developed from a water pollution monitoring organization to an air pollution control and hazardous waste management institution to a highly sophisticated environmental impact assessment making body to the state of the art environmental genomic and biotechnology research institute. Dr Chakrabarti narrated the steps in the development of the institute , which brought it to the level of the country's premier institution. He further informed that institute was recently awarded ISO-9001-2000 and that it is in the process of seeking NABL accreditation.

Dr S. P. Pande introduced the Chief Guest and Dr J. S. Pandey proposed the Vote of Thanks. `

# Dr Nitya Anand delivers Prof. Venkataraman Memorial Lecture

DR Nitya Anand, former Director, Central Drug Research Institute (CDRI), Lucknow, recently delivered the fourth Professor K. Venkataraman Memorial lecture at National Chemical Laboratory (NCL), Pune. Prof. Venkataraman, the first Indian Director of NCL, made seminal contributions to the area of organic synthesis and to the development of industrially important processes for dyestuff industry. The earlier lectures were delivered by distinguished scientists like Dr A. V. Rama Rao, Prof. Goverdhan Mehta and Prof. M.V. George. Dr Nitya Anand, spoke on "My life in drug research and lessons learnt". Dr Nitya Anand was a student of Prof. Venkataraman and obtained his PhD in 1948 from the University Department of Chemical Technology, Bombay.


Dr Nitya Anand, delivering Prof. Venkataraman Memorial Lecture at NCL

Dr Sivaram, Director, NCL welcomed the speaker, distinguished guests and the audience and described Prof. Venkataraman as a distinguished chemist, a pioneer in the area of colour chemistry, and a mentor for a large number of students who, in turn went on to assume positions of responsibilities and leaderships in their respective careers in academia and industry. "By organizing Prof. Venkataraman memorial lecture we pay tribute to one of the leaders of this laboratory who grew this laboratory with a great vision and laid the foundation of excellence in science and technology which have sustained in this laboratory for over five decades," he added further.

Dr Nitya Anand said that presenting the reminiscences of his life in drug research would be a better way of paying his tributes to his teacher. He further said, "It is indeed a great privilege and opportunity to pay my humble tribute to my teacher from where I started learning my chemistry and particularly research in chemistry." On returning from Cambridge University, UK, where he obtained his second doctorate degree, Dr Nitya Anand joined the newly established Central Drug Research Institute in 1951 and started working on problems like infectious and related diseases which affected the country most. Leprosy and tuberculosis were also equally important. One of the areas on which he started working on was antimicrobial agents. Dr Nitya Anand started his presentation by giving information about the understanding of crucial factors in drug design such as transport across membranes, biology of the parasite and pathology of the disease through a multidisciplinary approach. He emphasized that the development of candidate molecules into drugs should include a systematic study of their absorption, metabolism and distribution even at that early stage. Dr Nitya Anand elucidated the likely topography of the binding sites (receptors) involved in drug action and the understanding of agonist, partial agonist and antagonist activities as well as the structure-activity relationship (SAR) involved. In the light of these concepts molecular structures assume a more dynamic meaning as one can visualize molecules permeating across membranes, wandering through biological systems and interacting with receptors, with an ability to evoke response or otherwise. Each part of the molecule begins to have a different meaning and the idea of sub-structural analysis through SAR becomes very vivid. He reiterated

that the Lipinski's rule of five which provides useful guidelines on drug research like poor absorption or permeation are more likely when molecular mass is greater than 500 Da, high lipophilicity (expressed as cLogP greater than 5), more than 5 hydrogen bond donors, and more than 10 hydrogen bond acceptors. In his epilogue of drug design concepts Dr Nitya Anand gave a very important and contemporary advice "Every single compound one makes acts as a guide for further exploration; otherwise structure activity relationship has no meaning at all". He also stressed about the importance of inter disciplinary working and joint collaborative team work in drug research. At the same time he warned that collaboration is not for doing the experiments in isolation but is for bringing the brains of different fields to a common platform in a symbiotic and synchronized fashion. As it has been indicated, the most creative phase of Dr Nitya Anand's career, started in the early sixties, when he became the guiding spirit behind the synthetic drug development programme of CDRI after his exposure to recent developments in molecular biology and bacterial genetics during his stay at the Department of Bacteriology & Immunology at Harvard Medical School. The synthesis of potential drugs in his group came to be guided more and more by the concepts of drug design and consideration of the factors like drug-receptor interaction, metabolism and pharmacokinetics. Synthesis of the designed molecules required stringent planning and execution of the synthetic schemes and the pioneering contributions from his group in the context of synthesis of a wide variety of heterocycles including several new prototypes of chromenes, chromans, isochromans, diazabicyclo-octanes, etc. were presented in brief.

# NEERI receives Corporate Membership of International Association for Impact Assessment

THE International Association for Impact Assessment (IAIA) has granted corporate membership to the National Environmental Engineering Research Institute (NEERI), Nagpur, which will be valid till May, 2007.

The IAIA is a multidisciplinary International Organisation for environmental practitioners. IAIA is the leading global authority on best practice in the use of impact assessment for informed decision making regarding policies, programmes, plans and projects. The mission of IAIA is to provide an international forum for advancing innovation and communication of best practice in all forms of impact assessment to the further development of local, regional and global capacity in environmental assessment. IAIA has its International Headquarter at Fargo in North Dakota State of USA. IAIA has more than 2500 members and represent more than 100 countries. The benefits to Institutional Members include the following :

- Submission to Impact Assessment & Project Appraisal, one of the best professional journals in the world on impact assessment
- Newsletter with international news about the profession
- Direct access to website, exclusive resource networks and searchable database
- Direct access to training courses and customized training
- Free registration in annual meeting
- Opportunities to attend and practice in international and regional conferences
- Opportunities to represent IAIA at international forum
- Networking in special interest area sections
- Organizational linkages
- Eligibility for all leadership positions within IAIA

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