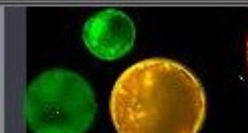




German Embassy  
New Delhi



May 2010

Indo German Science Circle

Science in India Newsletter



Science & Technology Newsletter India – May 2010

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## **S&T Policies**

### **INDIA AT No 9 SPOT IN SCIENCE AND TECHNOLOGY MAP**

India has now climbed to No 9 spot in the world's Science and Technology map this year with its output of S & T system growing at a significant 12 per cent as against the global average of just four per cent.

"We have overtaken Spain this year to stand at No. 9, one rank up from last year," Union Minister of State for Science and Technology Prithviraj Chavan has said. India was ranked 15th in S&T systems output in the year 2002.

Addressing a press conference during his visit to the Centre for Cellular and Molecular Biology here today, the Union Minister outlined the various initiatives taken by the Government of India to make India a "global major science power."

"Prime Minister Manmohan Singh is committed to science in a big way. So, he has announced that the decade from 2010 to 2020 will be the Decade of Innovation. We are looking at science to create wealth and employment for the country," Chavan, who is also a Minister of State in the Prime Minister's Office, said.

He said the Centre was currently spending one per cent of Gross Domestic Product on research and development, and added "We are committed to grow this (spending) to two per cent of GDP in five to six years, both public and private sectors together."

*(PTI Science Service)*

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### **COMMERCIAL CULTIVATION OF BT BRINJAL PUT ON HOLD**

Commercial cultivation of Bt Brinjal, a genetically-modified version of the vegetable, in India will have to wait as the government has declared a moratorium on it, giving in to stiff opposition from within and outside.

After his month-long public consultations on the issue, which often turned acrimonious, Environment Minister Jairam Ramesh said there was "lack of clear consensus", on allowing the Bt Brinjal cultivation and more independent studies were required before a decision.

NGOs, who had been opposing the move, welcomed the government announcement but biotech industry was disappointed.

"It is my duty to adopt a cautious, precautionary principle-based approach and impose a moratorium on the release of BT-Brinjal," he told a hurriedly-called press conference which was originally scheduled for tomorrow.

He said the moratorium will be in place till "independent scientific studies establish to the satisfaction of both the public and professionals, the safety of the product from the point of view of its long-term impact on human health and environment, including the rich genetic wealth existing in brinjal in our country."

Refusing to specify any time frame for the moratorium, Ramesh made it clear that it was confined to Bt-Brinjal and will not cover the larger issue of genetic engineering and biotechnology in agriculture.

The decision came in the backdrop of stiff resistance by several NGOs and scientists, who argued that Bt Brinjal would affect human health. Some states, including Congress-ruled Andhra Pradesh, were also opposed.

"There is no over-riding urgency to introduce it... When the public sentiments have been

negative, it is my duty to adopt a cautious, precautionary and principle-based approach," Ramesh said.

Terming it as a difficult decision, he said he had to balance many issues of science and society and producer and consumer.

However, he said today's decision would apply only to the version of Bt Brinjal developed by Mahyco, in which US company Monsanto has a 26 per cent stake, and not cover future of genetically-modified crops, be it lady's finger or rice.

The Tamil Nadu Agricultural University, Coimbatore, the University of Agriculture in Dharwad and two laboratories of the Indian Council of Agricultural Research are also developing GM version of brinjal.

"I believe seeds are as strategic to India as nuclear and space issues. Public sector seek industry is fundamental and should remain overwhelmingly in public sector," Ramesh said. Mahyco-Monsanto Biotech, which has been involved in genetically-modified foods, has been arguing that a normal farmer sprays pesticide at least 50 to 80 times in the entire life cycle of a brinjal crop, and these toxins are transferred to the consumers.

Bt Brinjal, on the other hand, affects only the pests and not the humans, it has been maintaining.

Gene Campaign, an NGO opposed to Bt Brinjal, has been contending that Bt gene produces poison and "when it can harm pests, where's the proof that it won't be harmful to humans?"

Bt Brinjal is a genetically-modified vegetable which is infused with Cry1Ac gene from a bacterium *Bacillus thuringiensis* to make the plant resistant to the fruit and shoot borers and certain pests.

The GEAC announced approval for large scale field trials for Bt Brinjal in September 2007 with the possibility of commercialisation by 2009.

It also cleared proposals for biosafety studies for other food crops such as lady's finger, rice and tomatoes.

In February 2008, the Supreme Court revoked its earlier ban on the approval of large scale field trials of transgenic crops.

Ramesh's decision was welcomed by a number of NGOs which had opposed to Bt Brinjal. "We are not against the use of genetically modified technology to improve crop yields. But we definitely oppose the introduction of Bt-Brinjal," said Sunita Narain, director of Centre for Science and Environment (CSE).

While welcoming the decision, Kavita Kurunganti, member of GM Free India, said Ramesh should look into other GM crops also like rice.

Noted agriculture scientist M S Swaminathan said, "I think it is a wise decision. It is appropriate to look at the problems carefully. The regulatory system has to be credible, transparent and effective."

Renowned geneticist and Supreme Court nominee on the GEAC PM Bhargava said, "I have personally never opposed Bt Brinjal but tests have to be carried out for long-term health effects."

*(PTI Science Service)*

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## **INDIA TO HAVE NANOTECHNOLOGY REGULATORY BOARD SOON**

The Nano Mission Council has said the country will soon have a Nanotechnology Regulatory Board to regulate the industrial nanotech products that are used in day-to-day life.

"We are in the process of forming a regulatory body for the nanotechnology and this will be called Nanotechnology Regulatory Board," Nano Mission Council chairman C N R Rao said on the sidelines of a three-day International conference on Nano science and Technology in Mumbai.

The Board will be formed most probably next month, Rao said.

"Indian industries are coming out with various nanotechnological products including water filters, biomedical products, several chemicals, cosmetics and paints. Therefore, we are in the process of formulating guidelines to regulate the products for the safety and benefit of the society," said Rao, who is also the chairman of Scientific Advisory Council to the prime minister.

Asked whether the guidelines have been formulated, Rao said, "Not yet, we are in the process of formulating the guidelines."

The Centre launched a Mission on nano Science and Technology (Nano Mission) in may 2007. An allocation of Rs 1,000 crore for five years has been made towards it. The Department of Science and Technology is the nodal implementing agency of the Mission, DST director Praveen Asthana said at the inauguration.

The DST had sanctioned USD 20 million from 2002 to 2007 and the steep increase in the allocation speaks volumes on the importance given by the government to nanoscience and technology, Ashana said.

AEC chairman and Bhabha Atomic Research centre director Srikumar Banerjee said in western India, TIFR, IIT, BARC and the University of Mumbai are working together on complementing aspects of research and development in nanotechnology.

Chairman of Board of Governors of IIT-Mumbai Anil Kakodkar said Nano Mission is a great opportunity for India to make affordable and appropriate solutions for different problems of society.

"For students and entrepreneurs, this is a great chance and we need to strengthen the facilities in the country," Kakodkar said.

The deliberation of the three-day conference include Functional materials, Novel Synthetic Methods, Hybrids, Fabrication and Devices, Electronics, Magnetics and Photocis, Technology of Medicine (drug delivery system), Materials fro Energy and Materials for Food and Environment, conference convener Dharendra Bahadur said

Over 615 delegates, including 70 from abroad, are participating in the conference, he said. The technical programmes of the Nano Mission are also being guided by two advisory groups, the Nano Science Advisory Group (NSAG) and the Nano Applications and Technology Advisory Group (NATAG), Asthana said.

The Mission is focusing on providing effective education and training to researchers and professionals in diversified fields so that a genuine interdisciplinary culture for nanoscale science, engineering and technology can emerge.

It has launched MSc and M Tech programmes in some of the institutions in the country as part of the human resource development.

As part of the international collaboration, the Mission encourages exploratory visits of scientists, organisation of joint workshops and conferences and joint research projects.

The Mission is also planning to facilitate access to sophisticated research facilities abroad, establish joint centres of excellence and force academia-industry partnerships at the international level wherever required and desirable, Asthana said.

## **INDIA TO CUT SATELLITE LAUNCH COST BY HALF**

India plans to cut satellite launch cost by half with the heavy-lift rocket that it is developing, a senior space department official said.

The country is also aiming at a two-to-three fold increase in the number of spacecraft launches from this year, Chairman of Indian Space Research organisation K Radhakrishnan said.

GSL V-Mk III that ISRO is developing now would bring down the satellite launch cost at least by half, at present, the launch cost is pegged at around USD 20,000 per kilogram, he said.

GSL V-MK III, which would have the capability to launch satellites of four ton class, nearly twice the mass that ISRO can currently carry to space, is expected to be operational in next two-three years.

Delivering the inaugural lecture of IIScAA (Indian Institute of Science Alumni Association) in Bangalore, he said India currently has 211 communication transponders, including 195 operational.

We need to go up 500 (transponders) by 2014, "Radhakrishnan, also Secretary in the Department of Space and Space Commission Chairman, said.

Radhakrishnan said ISRO has so far been launching two to three satellites per year, but from this year the Bangalore headquartered space agency plans to launch six to eight satellites.

"We are augmenting capacity like two-three fold increase in terms of missions (per year)," he said.

He said ISRO is also developing a heavy cryogenic engine and stage, almost three-times what it would use in GSLV (Geosynchronous Satellite Launch Vehicle) that it proposed to launch in the middle of this month.

As part of efforts to lower costs of access to space, ISRO is developing semi-cryogenic engine, replacing liquid hydrogen with purified kerosene, bringing down the launch cost price "drastically".

In 2013, ahead of India's human space flight planned for 2015-16, ISRO plans to put an unmanned crew module on board a Polar Satellite Launch Vehicle, Radhakrishnan said.

He also said ISRO is working on a mission to Mars, adding that advanced space-faring nations like US and Russia are eyeing human habitation in mars from 2030 onwards.

"For them, moon is not an end by itself, but means to reach Mars and have human habitat there. They are devising new transportation systems to reach moon and Mars," he said.

"There are various strategies for reaching Mars. It's a 250 day journey (for Mars). We are working on it. The years 2013, 2016 and 2018 offer good opportunity for ISRO to launch Mars mission," he added.

*(PTI Science Service)*

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## **Research**

### **ICMR TO SET UP APEX COMMITTEE TO REGULATE STEM CELL RESEARCH**

Indian Council of Medical Research (ICMR) has said it will soon set up a body to regulate the scientific community on the crucial health research of stem cell therapy.

"The National Apex committee for Stem cell Research and Therapy (NAC-SCRT) would monitor and review the stem cell research, technologies, techniques and clinical practices. All the required procedures and protocol are in place and it will be set up any time," ICMR assistant director general Geeta Jotwani said.

Once it is formed, all the institutions conducting stem cell research have to compulsorily register under it besides having their own Institutional committee on stem cell research and therapy (ICSCRT), she said.

NAC-SCRT will also maintain a registry for all clinical trials that are conducted in the country, along with the SC therapy clinics and patients and volunteers participating in it. Currently all the trials are supposed to be self regulated under IC-SCRT.

Admitting that the ICMR has delayed the formation of NAC which allowed several doctors and scientists to claim their findings as successful based on personal testimony duping relatives of several terminally ill patients.

*(PTI Science Service)*

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## **IBSA PLANS TO DEVELOP COLLABORATIVE NANOTECHNOLOGY PROJECTS**

With an aim to develop trilateral collaborative projects of common relevance and interest in nanotechnology, India, Brazil and South Africa have chalked out a three-year plan to work in energy systems, health and water treatment, a senior scientist has said.

India-Brazil-South Africa (IBSA) nanotechnology development was initiated as a collaborative programme between Science and Technology departments of the three participating countries, Indira Gandhi Centre for Atomic Research Director Dr. Baldev Raj, who is the national coordinator for India for the trilateral initiative, said.

"In 2009-2010 under IBSA nanotechnology initiative, with the help of scientists, senior PhD students and junior researchers from three countries will be carrying out more than 90 projects in nanotechnology over next three years in areas such as energy, water treatment and health," he said.

The purpose of these programmes was to explore the areas in each country, establish contact points among scientists, identify available expertise and infrastructure capabilities in various scientific and technological cooperation.

Global energy demand was expected to increase steeply due to the growing world population, he said adding that present capacity of global energy generation was 370 GWE (Giga Watt Electrical) and was expected to increase to over 500 GWE by 2030.

Baldev Raj, here to organise a five-day seminar on advanced materials as a part of IBSA initiative, said "the achievement of this ambitious long-term goal in the energy area relies heavily on the nanotechnology development."

*(PTI Science Service)*

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## **IGCAR DEVELOPS DEVICE TO HELP TREAT MENTALLY CHALLENGED**

The Indira Gandhi Centre for Atomic Research has developed the country's "first" Superconducting Quantum Interference Device (SQUID) that can help treat mentally challenged people and heart ailments.

SQUID's sensitivity is so high that it is possible to detect even the tiny magnetic field associated with physiological activities of the human heart and brain, IGCAR Director Baldev Raj told PTL.

This device, which was indigenously made a couple of days back at our unit, would be useful to cure mentally challenged people," he said.

The device would help identify defective nerves and also help treat heart ailments. SQUID-based measurement of bio-magnetic fields is expected to complement conventional diagnostic tools like ECG (to probe human heart) and EEG (electroencephalography - to probe human brain) which measure the electric potential on skin surface, Raj said.

The SQUID-based measurements - magnetocardiography-MCG and magnetoencephalography-MEG - offer a number of advantages such as magnetic measurement techniques which are non-contact, much less sensitive to the conductivity variation of intervening tissues and offer superior source localisation accuracies, he said.

The device would be available for public very soon, Raj said.

"Currently, we are further testing the device in various aspects. We have been able to observe the magnetic field signal from human heart and also the signals corresponding to the alpha rhythm of human brain," he said.

To investigate the rhythm, the SQUID sensor would be positioned on the brain's occipital lobe and the SQUID output measured "with the eyes open and eyes closed", he said.

MCG studies have also been carried out on about 40 subject referred by the DAE Hospital, Kalpakkam to assess the potential of this relatively new technique vis-à-vis the more conventional ECG in revealing various types of cardiac dysfunctions.

IGCAR is also working on a diagnostic tool which would detect breast cancer at very early stage, Raj said.

Infrared thermal imaging, surface mapping of temperature using infrared sensors, would be used by the device to identify the diseases like cancer or for monitoring recovery processes such as wound healing.

Studies carried out using infrared thermography indicated that the technique is effective for non-invasive diagnosis of peripheral vascular disease with good correlation of clinical findings.

On biomaterials research, Raj said "the process of wear and tear of implant materials was being studied extensively using sophisticated techniques such as bioferrography.

This research would help in developing improved materials to extend the lifetime of orthopaedic implants such as knee and hips" he added.

*(PTI Science Service)*

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## **INDIA TO HAVE SATELLITE TO MONITOR GREEN HOUSE EMISSION**

A dedicated satellite would be launched with the support of Indian Space Research Organisation (ISRO) by 2012 to monitor India's greenhouse gas emission, Union Minister for Environment and Forests Jairam Ramesh said in Mumbai.

"Currently, Japan and European countries have this satellite but by 2012 we will have a dedicated satellite that will monitor greenhouse gas emission across the country and globe," Ramesh said at IIT-Powai.

"The objective is to study the impact of climate change, fallout of greenhouse gas emissions on the environment by monitoring it through satellite technology," he said.

Another satellite for protection and development of the forest cover in India would be

ready by 2013. "As the forests are getting depleted at a rapid place elsewhere in the world, there seems to be a need for a satellite," Ramesh said.

The minister pointed out that India will be more impacted by climate change than any other country. "In many ways, we have the highest vulnerability on multiple dimensions including dependence on monsoon, less forest cover and no proper Himalayan ecosystem among others," Ramesh said.

There should be emphasis on pollution and public health, he said, adding "in Bathinda (Punjab), there are growing incidences of cancer being linked to environmental pollution. Also, in Chandrapur (Maharashtra), incidence of respiratory tract problems in children are increasing."

*(PTI Science Service)*

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## **WOMAN RESEARCHER DEVELOPS TEXT FREE USER INTERFACE**

A 31-year-old woman associate researcher of Microsoft Research India has developed a text-free user interface to expand the impact of technology and help those who cannot read.

The text-free user interface allows an illiterate person to interact with minimal or no assistance on first contact with a computer.

"Through a design process involving over 400 subjects from low-income, low-literacy communities across India, the Philippines, and South Africa, I discovered that there were a number of challenges which people experienced while interacting with traditional text-based UIs, on both mobile phones and PCs," said Indrani Mehdi.

"In addition to the general inability to read text, the other major challenge was the difficulty in navigating. I developed design recommendations for non-textual UIs for low-literate users that use combinations of voice, video, and graphics," she said.

Medhi's applications are based on a few key principles: extensive use of hand-drawn, semi-abstracted cartoons with voice annotation in the local language, aggressive mouse-over functionality, a help feature and looping full-context video dramatising the purpose and mechanism of the application.

Mehdi has applied these principles to design four applications: job-search for the informal labour market, health-information dissemination, a mobile money-transfer system and an electronic map.

"Medhi has painstakingly and methodically conducted research to understand how to design user interfaces for computing devices such that illiterate and semi-literate users can use them," says Kentaro Toyama, former assistant managing director of Microsoft Research India.

"She has spent a lot of time in slum communities understanding the needs and aspirations of the people of those communities and their daily lives," Toyama said.

She said Medhi developed a robust framework which included using images and voice feedback.

"She also realised the importance of semi-abstract cartoons rather than photographs or simplified icons, or the allowance for numeric digits in some cultures where people can read numbers even though they can't read words," Toyama said.

Indrani also discovered that illiterate subjects, because of their previous inexperience with computing, had other barriers to technology use, including intimidation by technology, fear of breaking technology, and lack of mental models on how the technology worked.

Mehdi devised the use of 'full-context videos' with content that featured not only instructional material, but a mini-story about how the technology worked in a real-life scenario, Toyama said.

During her research work, Medhi also discovered a host of nuanced issues beyond strict usability which mediate how a low-literate user interacts with computing technologies.

"Such issues include cognitive difficulties, collaboration, cultural etiquette, experience and exposure, intimidation, mediation, motivation, pricing, power relations, social standing, and others.

"These factors can have far-reaching influence on the design of UIs as well as services for low-literate populations," she said.

Medhi is now conducting research in understanding characteristics of the cognitive styles of those with little formal education and how that has implications for UI design.

*(PTI Science Service)*

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## **CSIR TO MAKE GENETIC INFO OF TB BACTERIA PUBLIC**

CSIR will soon put out a huge database of genetic information of TB bacteria on the internet to give a boost to research for developing drugs to effectively treat the disease.

"This is an important step towards drug discovery for effective treatment of Tuberculosis. Between April 9 to 11 we will be able to disclose data related to Mycobacterium tuberculosis, the bacteria that causes this disease which will be of help to scientist for effective drug discovery for the disease, " Dr. Samir Brahmachari Director General, Council of Science and Industrial Research said.

Nearly 400 researchers all across the world are collaborating through Open Source Drug Discovery (OSDD) programme of the CSIR through internet to generate data about the genetic information of the bacteria which will promise an effective treatment to the disease which affects 1.8 million people in India every year.

"This mycobacteria has 3998 genes and all these researchers have been trying to understand each and every gene, their properties, their functions, how they react to different chemicals... In a nutshell the biology of the organism," Dr Zakir Thomas, project director OSDD said.

*(PTI Science Service)*

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## **NANOTECHNOLOGY PARKS POISED TO TAKE OVER IT BOOM**

Multi-purpose and innovative nanotechnology Parks coming up in Himachal Pradesh and Gujarat are poised to take over the IT boom in India, said a top official of the Nanotechnology major Nanobiosym Inc.

"Multi-million dollar nanotechnology innovation parks are under advanced stages of negotiations and will be set up with public-private partnership, "Boston-based Nanobiosym's Chairman and CEO Dr. Anita Goel told PTI.

The state government, the Centre and the global players including Indian private stakeholders consortium would be the partners for the same, she said.

LUX Research in a recent report has predicted that the nanotechnology market will be USD 2.9 trillion by 2014 which includes the market for semi-conductors, nano medical equipment and colour pigments of the paint industry.

Nanobiosym will built an entire innovation knowledge ecosystem (mostly virtual) which will also educate and inspire a novel paradigm for holistic innovation across traditional boundaries between scientific disciplines, academic and industries and between various geopolitical borders, she said.

The test bed ecosystem scale up emerging and disruptive technologies like a patented Gene-RaDAR in an affordable manner and help penetrate emerging markets in India, Africa and other developing nations, she said.

"The Nano technology parks in Gujarat and Himachal Pradesh will also comprise a Nanobiosym R & D centre, low-cost nano-manufacturing and clinical trial facilities, collaborations with best of hospitals, social impact and educational institutions from around the world," Goel said.

Goel, a physicist and physician, said her company is commercialising the Gene-RADAR platform with an aim to revolutionise health care globally by diagnosing diseases apart from pathology lab and bring it in real time into the field, including to remote rural villages.

The Gene-RADAR platform could enable testing of large human and animal populations at farms, airports, borders and clinics enabling more effective counter-measures to early stage infections and deadly outbreaks such a SARS, Avian flu or swine flu.

"Several fortune companies have started approaching for these products for their respective niche markets like water testing, food safety testing, dialysis machines, catheters and even advanced bio-fuels development," she said.

One of her company's first customers, she said, was the US military for bio-defence applications against bio-warfare and bio terrorist agents and pandemic viruses.

Refusing to divulge details of discussions with Gujarat government and Centre, Goel said, "We are still talking to several stakeholders and we will let you know once we begin on the ground soon.

"By doing some of our large scale nano manufacturing in India, Nanobiosym hopes to make our system more affordable and available to address and meet healthcare needs of people in the developing world, with a special focus on improving health care delivery to people at the bottom of the pyramid," she said.

At the same time the Nanobiosym Knowledge Ecosystem will enable constant exchange with the global scientific, technological, and business and global development communities to bring sustainable and scalable solutions to some of the world's most pressing problems.

"We hope to build a holistic innovation ecosystem that creates scientific innovation at the intersection of conventional disciplines and incubates emerging technologies that have the potential to simultaneously impact several different industries and can cut across various socio-economic strata," Goel added.

*(PTI Science Service)*

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## **SOLAR DESALINATION SYSTEM DEVELOPED BY BARC**

A desalination system based on solar energy has been developed by the Bhabha Atomic Research Centre.

Solar energy-based small and community level Reverse Osmosis (RO) units have been

developed for producing safe drinking water, Saly T Panicker of the Desalination Division of BARC said.

In the RO unit, the feed water is passed through the membrane with the help of a DC (Direct Current) pump connected to the Photovoltaic (PV) panels without any batteries.

The units can be operated for 9 to 10 hours on a sunny day, which can cater to the drinking and cooking requirements of three to four families at an average rate of five litres per person per day, Panicker said.

"It contains a filter cartridge and a spirally wound RO membrane element, " he said, adding there was no significant variation in the rate of power production from the PV panels.

"Thus, the pump is able to maintain its pace, keeping the rate of drinking water production constant, " Panicker, who has developed the technology along with scientists K L Thalor and PK Tiwari, said.

Explaining the system, he said the RO is a pressure driven process, where pure water is continuously drawn from salty water through a semi-permeable membrane.

Highlighting the importance of solar-powered system which will be useful especially in remote areas, Panicker said integrating desalination with renewable energy sources is also important for addressing the issues related to adverse impacts of climate change.

The source of solar energy is inexhaustible and is free. Also, no harmful gases like nitrogen oxide, mercury, carbon dioxide or sulphur dioxide are emitted, he said.

About the cost, he said, "which the improvement in PV efficiencies and the subsidies available, the solar-based desalination system would become more cost effective."

*(PTI Science Service)*

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## **INDO-GERMAN MAX PLANCK CENTER FOR COMPUTER SCIENCE INAUGURATED AT IIT DELHI**

Research links are being institutionalized by establishing Max Planck Centers of excellence in pioneering research fields: In February 2010 the Indo-German Max Planck Center for Computer Science was inaugurated at IIT Delhi by the President of the Federal Republic of Germany, the Indian Minister for Science & Technology and the President of the Max Planck Society. The German Ministry for Science & Education, the Department for Science and Technology in India and the Max Planck Society are funding the Indo-German Max Planck Center with EURO 4 Mio over the next five years.

*(MPG)*

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## **COOPERATION OF THE MAX-PLANCK SOCIETY WITH INDIA**

In March 2010 a Max Planck Partner Group in material sciences was established at Hyderabad together with a a Max Planck Partner Group in microstructure physics at the Indian Institute of Science. Since 2005 , 17 outstanding Indian researchers have been awarded such support. Presently 14 Max Planck Partner Groups are working in India, as many as in no other country. Partner Groups are led by former Indian guest researchers of

Max Planck Institutes of proven scientific excellence who have returned to their institutions in India and continue their research activities in close co-operation with their former hosts. The work of each of the Partner Groups is supported for five years with up to € 100K, allowing the returnees to build up their own Research Groups in India and to remain in close research interaction with a Max Planck Institute.

The Max Planck Society with its „Max Planck India Fellowships“ has developed a new and India-specific programme, with the goal of linking young Indian top researchers to Max Planck Institutes. With the funding made available in early 2010, this programme has given 29 young Indian scientists the opportunity to spend minimum one month every year at a Max Planck Institute and to visit other research institutions in Germany and abroad.

(MPG)

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## **Academic Exchange/ Education**

### **ICTS TO HAVE ITS NEW CAMPUS IN BANGALORE**

The new campus of International Centre for Theoretical Sciences (ICTS) of Tata Institute of Fundamental Research (TIFR) will come up by 2012 in Hessaraghatta, about 20 km from the science city Bangalore.

Addressing the press after a foundation stone laying ceremony of ICTS on December 28, its Director Prof. Spenta R Wadia said the 17acre-campus will involve an expenditure of over Rs 80 crore just for infrastructure development and will be completed by 2012.

The ICTS of TIFR founded in 2007, was conceived to contribute to the growth of excellence in the basic sciences through its programme, interactions and cross-fertilisation between disciplines.

"ICTS is a multi and inter-disciplinary effort with strong human resource development component. The main goals of ICTS are to foster research, be a resource for high level education and training and reach out to larger society by being a node for scientific information and values," he said.

Prof Mustansir Barma, Director, TIFR, said it was significant that the foundation stone laying ceremony of the ICTS' new campus is being taken up during the birth centenary of Homi Bhaba, the found of TIFR.

"There is a need in the Indian Science Community to create a platform for interactions between Indian and Foreign scientists and ICTS will fulfil this need".

S Banerjee, Secretary, Department of Atomic Energy and Chairman, Atomic Energy Commission, said ICTS, besides contributing to theoretical activities in physical and mathematical sciences will focus on activities in areas overlapping these fields like biological physics.

Prof C N R R Rao, National Research Professor, Jawaharal Nehru Centre for Advanced Scientific Research, Bangalore, said Bangalore with its academic and research ecosystem was one of the best locations for a centre like ICTS.

TIFR's National Centre for Biological Sciences (NCBS) and Centre for Applicable Mathematics (CAM) were already located here, besides institutions of highest quality like ILS and JNCASR.

Pro David Gross, Director of Kavli Institute of Theoretical Physics, US said "there is a real

change in the moral spirit of science with new resources being provided by Indian government to promote basic science. A centre like this will enable India to become a leader in science which China is striving to become".

Since 2007, ICTS has held 21 programmes in which 1,119 scientists including 403 international scientists have participated, Wadia said, adding the centre by 2015" is looking at having a core faculty of 10 professors".

*(PTI Science Service)*

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## **Miscellaneous**

### **A RICE VARIETY THAT CAN BE EATEN WITHOUT COOKING**

At a time when India is pushing hard to save energy, scientists in Orissa are doing their bit by popularising a rice variety that can be eaten without being boiled.

Aghonibora, a new rice variety being developed at the Central Rice Research Institute (CRRRI), Cuttack, requires only half-an-hour soaking in water to render it fit to be eaten.

The 'komal saul' or soft rice variety, which was obtained originally from Assam's Titabar Rice Research Station, has very low amylose content - about 4.5 per cent.

Other rice varieties have up to 20-25 per cent of amylose content that is responsible for hardness of the grains, CRRRI scientists said.

"As this rice contains very less amount of amylose, it does not require any boiling. It can be eaten straightaway after just half-an-hour of soaking in water. If the water is lukewarm, it will be prepared withing 15-20 minutes," said Strigopal Sharm, Head of Division of Biochemistry, Plan Physiology and Environmental Sciences at CRRRI.

Significantly, the rice variety shows no major change in productivity or taste, he said.

"We have done extensive research on the rice variety at the CRRRI farm at Cuttack to find out whether it retains the 'soak and eat' characteristic in the hot and humid climate of Orissa," Sharma told PTI.

"The results were positive indicating that it could be promoted in parts of India where parboiled rice is consumed.

"In the preliminary testing, the rice variety took between 140 and 145 days to mature, measured 90 cm in height and yielded about four to five tonnes per hectare of land," said Sharma, who spearheaded the research at CRRRI.

The scientist said the variety was one of the major achievements in the field of rice research and added that if they could manage to promote the rice across the country, it would help save fuel and consequently the environment as well.

"Promotion of such rice would save fuel, time, and above all it would help maintain a cleaner environment. It would be very useful for the poor in general, who find it difficult to afford firewood, coal or cooking gas," he said.

According to a recent report by The Energy and Resources Institute (TERI), biomass fuels - firewood, crop residues, and animal dung - account for more than 80 per cent of domestic cooking in India.

"The smoke coming out of fuel contains carbon dioxide and carbon monoxide that is harmful for the eyes and respiratory system. Promotion of soak-and-eat type rices would be therefore be a welcome development," Sharma added.

As the trials showed, about 4.5 tonnes of the variety can be yielded in one hectare of land under normal agronomic conditions - comparable to that of other high yielding varieties of

rice with normal requirement of fertiliser.

Tapan Kumar Adhya, director of the institute, said the productivity of the variety, which is 4.5 tonnes per hectare as per field trails, is quite comparable to that of other high yielding varieties of rice with normal dose of fertiliser.

"And about the taste, we have carried out organoleptic tests, in which we feed the rice to a panel of tasters, but no major difference was found," Adhya said.

The scientists said they have now found that komal saul varieties, such as Aghonibora, retain their characteristic softness even when grown in places such as Orissa, Bengal, Bihar and coastal Andhra Pradesh.

In this respect, they are unlike rice varieties such as basmati that loses its aroma if grown outside its natural habitat.

"We are glad that our experiment has proved successful, and from our knowledge we believe it could be grown in the eastern states of India," Adhya said.

Experts have also hailed the research, saying the rice would be much beneficial for farmers and poor people in the country's eastern and southern states where rice is preferred.

"It would be a double delight for the people who not only can save cooking fuel but also their time. The government should encourage its research and promotion so that the variety can be sown in other parts of the country where the climate suits (its cultivation)," said Avilash Roul, an environmental expert who heads the ADB Forum in Philippines.

Scientists at CRRRI said they are now studying some other rices like 'Bhogalibora', Chakua' and 'Misrie' that have similar properties like 'Aghonibora' and they can be promoted for mass production with the same purpose of saving energy.

*(PTI Science Service)*

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