



# S&T Newsletter



A Quarterly of the  
Centre for Science and Technology of the Non-Aligned  
and Other Developing Countries (NAM S&T Centre)

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## From the Director'S Desk

Heartiest Greetings!!



For the first time, our member country Nigeria hosted an international event organised by the NAM S&T Centre. This highly successful conference titled 'Harnessing the Potentials of New and Advanced Materials for Developing Economies' was held in Abuja during 9-12 August 2011 jointly with the Raw Materials Research and Development Council (RMRDC) of Nigeria. The participants explored avenues for making value additions to available mineral resources; deliberated on the development and use of advanced materials in economic sectors like aerospace, transportation, IT, environmental protection, medicine and health, and also civil infrastructure; and also adopted a set of Abuja Recommendations.

The Centre announced the continuation of its Fellowship Scheme in the field of 'Food Science & Technology' for the year 2012-13. This 'Joint CSIR/CFTRI (Diamond Jubilee) - NAM S&T Fellowship' for affiliation with the Central Food Technological Research Institute (CFTRI), an Indian Centre of Excellence located at Mysore, is for six months' duration and provides attractive financial assistance to the selected researchers from the developing countries. Applications may be submitted in prescribed format before 16<sup>th</sup> December 2011.

A new book titled 'Natural Disasters: Policy Issues and Mitigation Strategies' edited by Dr. Andi Eka Sakya, Executive Secretary, Agency for Meteorology, Climatology and Geophysics (BMKG) of Indonesia having 16 scientific papers and status reports from 12 developing countries was brought out by the Centre.

I am pleased to make a mention that we have received an excellent response for attending our forthcoming International Symposium on 'Lightning Protection' being held in Kathmandu, Nepal during 12-14 October 2011.

An international workshop on 'Nanotechnology in the Edge of Convergence' to be organised by the NAM S&T Centre in Malaysia during 24-27 November 2011 jointly with the Commission on Science and Technology for Sustainable Development in the South (COMSATS), Islamabad, Pakistan and the Institute of Micro-engineering and Nano-electronics (IMEN), Universiti Kebangsaan Malaysia (UKM), Malaysia, has also been announced, for which the last date for receiving applications is 24<sup>th</sup> October 2011.

The Centre, as ever, is on the lookout for new ideas to promote South-South and North-South cooperation in science and technology.

Happy Reading!

(Arun P. Kulshreshtha)

## Centre Organised

International Conference on  
HARNESSING THE POTENTIALS OF NEW AND ADVANCED MATERIALS  
FOR DEVELOPING ECONOMICS  
Abuja, Nigeria, 09-12 August 2011

In recent times, the world of science is fast changing its emphasis to increasingly use the advanced materials and associated technologies for industrial growth by gradually replacing the traditional raw materials as inputs for manufacturing. The advanced materials are technologically developed from conventional materials, but in the process of such development, they acquire specific features with ability to perform the functions which conventional materials cannot. These characteristics include greater strength, higher strength / density ratio, greater hardness, corrosion resistance, fracture toughness, superior thermal, electrical, chemical and optical properties, etc. The novel and advanced materials have proven to have greater economic advantages, especially when these are developed from renewable resources such as natural fibre and plant materials.

The new technology has traversed almost all the sectors of the economy including aerospace, transportation, information technology, environmental protection, medicine and health as well as civil infrastructure. Hence any nation that does not develop its inherent capabilities and potentials in new and advanced materials stands the risk of technological marginalisation. Moreover, the decreasing amount of raw materials needed to manufacture a unit of industrial production globally is leading to a sharp fall in the demand for the conventional raw materials, resulting in a direct negative economic impact on developing exporter nations.

The developing countries need to explore the avenues for adding value to their mineral resources and also join the elite club of nations exploiting advanced



Inauguration: Group Photo of New and Advanced Materials Conference, Abuja, Nigeria

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(Contd. from Page 1 - Materials Conference, Abuja, Nigeria)



Conference. The overseas participants were from Egypt [Dr. Mona Hafez Hetta, Head, Pharmacognosy Department, Faculty of Pharmacy, Beni Suf University], India [Dr. G. Padmanabham, Associate Director, International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad and Dr. U.S. Tandon, Scientist 'G', Council of Scientific and Industrial Research (CSIR), New Delhi], Indonesia [Dr. Kemas Ahmad Zaini Thosin, Researcher, Sciences and Technology Park, PUSPIPTEK, Serpong], Iran [Mr. Hamid Rashidi, Sigma Aerospace Company, Tehran], Iraq [Dr. Sabeeha Abdul Jabbar Beden, Scientific Researcher, Directorate of Materials, Ceramic Centre, Ministry of Science and Technology (MOST), Baghdad], Kenya [Dr. Eric Mwangi, Deputy Director Research, Ministry of Higher Education, Sciences and Technology, Nairobi], Malaysia [Dr. TENG Wan Dung, Principal Researcher, Structural Materials Programme, Advanced Materials Research Centre (AMREC), SIRIM Berhad], Myanmar [Dr. Phyu Phyu Win, Director and Head, Nanotechnology Department

materials technology for rapid industrialisation. This therefore has called for a vigorous pursuit of a coordinated programme in the production and utilisation of new and advanced materials and the attendant technological advancements for national development.

In order to deliberate on these issues, the Centre for Science & Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre) jointly with the Raw Materials Research and Development Council (RMRDC) of the Federal Ministry of Science & Technology Abuja, Nigeria organised a 4-day International Conference on Harnessing the Potentials of New and Advanced materials for Developing Economies at Abuja, Nigeria during 9<sup>th</sup>-12<sup>th</sup> August 2011.

The Inaugural Ceremony commenced with the National Anthem and Opening Prayer. After the welcome address by Engr. Prof. A.P. Onwualu, Director General/CEO, RMRDC, Prof. Arun P. Kulshreshtha, Director, NAM S&T Centre and Chairman of the Inaugural Session gave the introductory address and background of the Conference. This was followed by a Keynote Address on 'Materials Development and Exploitation: The Determining Factor for Technological Advancement' by Engr. Prof. Daniel Oray Nnamdi Obikwelu, Head, Department of Metallurgical & Materials Engineering, University of Nigeria, Nsukka. Prof. Musa Mohammad Sada, Honourable Minister of Mines and Steel Development made a brief address, which was followed by the Inaugural Address by Prof. Ita Okon Basse Ewa, Honourable Minister of Science and Technology of Nigeria. The Session ended with the Vote of Thanks by Dr. Seb. C. Obasi, Director, Industrial Plants and Equipment Department (IPED), RMRDC, and a group photograph.

16 countries, namely, Egypt, India, Indonesia, Iran, Iraq, Kenya, Malaysia, Myanmar, Pakistan, Sudan, Syria, Tanzania, Togo, Uganda and Zambia, and the host country Nigeria participated in the

and Metallurgical Research & Development Centre, Department of Technical Promotion and Cooperation, Ministry of Science and Technology], Pakistan [Dr. Amir Habib, Assistant Professor, School of Chemical and Materials Engineering (SCME), National University of Sciences and Technology (NUST), Islamabad], Sudan [Mr. Nazar Shawgi A. Ahmed, Director, Materials and Electronics Research Institute, National Centre for Research, Khartoum], Syria [Prof. Khalil AZIMEH, Department of Design and Production Engineering, Faculty of Mechanical and Electrical Engineering, Damascus University], Tanzania [Dr. Leonard Yesaya Mwaikambo, Senior Lecturer, Textile and Materials Science, Department of Mechanical and Industrial Engineering, University of Dar-Es-Salaam], Togo [Dr. Amen Yawo NENONENE, Maître-assistant, Enseignant chercheur, Unité de Recherche sur les Agro ressources et





(Contd. from Page 2 - Materials Conference, Abuja, Nigeria)

la Santé Environnementale (URASE), Ecole Supérieure d'Agronomie, Lomé University], Uganda [Prof. Barnabas Nawangwe, Principal, College of Engineering, Makerere University, Kampala], and Zambia [Mr. Bruno Mwila, Technical Officer, National Institute for Scientific and Industrial Research, Lusaka]. From the NAM S&T Centre, Prof. Arun P. Kulshreshtha, Director & Executive Head attended the event.

Overall programme of the Conference was conducted at the premises of the RMRDC in seven technical sessions, respectively co-chaired by (1) Engr. Dr. S. O. Momoh, National Agency for Science and Engineering Infrastructure (NASENI), Abuja, Nigeria and Prof. Barnabas Nawangwe, Uganda; (2) Prof. O.S. Odusanya, Sheda Science and Technology Complex, Abuja, Nigeria and Dr. G. Padmanabham, India; (3) Dr. Babaniyi Babatope, Department of Physics, Obafemi Awolowo University, Ile-Ife, Nigeria and Mr. Nazar Shawgi A. Ahmed, Sudan; (4) Dr. D. B. Ayo, Research Director, RMRDC, Nigeria and Dr. TENG Wan Dung, Malaysia; (5) Prof. C. O. Nwajagu, Director / Chief Executive, Scientific Equipment Development Institute (SEDI), Enugu, Nigeria and Dr. U.S. Tandon, India; (6) Engr. Dr. J. Ume, Director, Materials and Energy Technology, Projects Development Institute (PRODA), Enugu, Nigeria and Dr. Eric Mwangi, Kenya; and (7) Engr. Prof. A. P. Onwualu, DG/CEO, RMRDC and Prof. Arun P. Kulshreshtha, NAM S&T Centre.

17 scientific papers presented during the Conference by the foreign participants were on 'Biologically Active Waste Product from Natural Source' by Dr. Mona Hafez Hetta of Egypt; 'Smart and Functional Materials and Structures: Design, Developments and Applications' by Dr. U.S. Tandon of India; 'Application of Lasers in Manufacturing' and 'Trends in Advanced Materials Research in India' by Dr. G. Padmanabham of India; 'The Improvement of Commercial Carbon-Steel with Ni-based Alloy Coatings' by Dr. Kemas Ahmad Zaini Thosin of Indonesia; 'Thermal Conductivity Properties of Carbon Nanocone Materials to be used in Re-Entry Vehicle by Using Molecular Dynamics Simulation' by Mr. Hamid Rashidi of Iran; 'Production of Nano Silver Water Suspension using Colloidal Silver Generator' by Dr. Sabeeha Abdul Jabbar Beden of Iraq; 'Policies and Institutional Framework for the Development and Utilisation of Raw Materials (New and Advanced) in Kenya' by Dr. Eric Mwangi of Kenya; 'Ceramic Injection Moulded Mini Crucible' by Dr. TENG Wan Dung of Malaysia; 'Synthesis of Zinc Oxide Nanoparticles by Precipitation Method and Simple Heating Method' by Dr. Phyu Phyu Win of Myanmar; 'Sol-Gel Synthesis of Nanocrystalline Anatase Titanium Dioxide (TiO<sub>2</sub>) at Different pH Values and Temperatures' by Dr. Amir Habib of Pakistan; 'Production and Characterisation of Dry-pressed Porcelain' by Mr. Nazar Shawgi A. Ahmed of Sudan; 'Alloying of Steels with Boron Using Laser Techniques' by Mr. Khalil AZIMEH of Syria; 'Plant Resourced Feedstocks for the Polymers Industry' by Dr. Leonard Yesaya Mwaikambo of Tanzania; 'Development of Kenaf Particleboards with Binders Based on Aqueous Extracts of Some Tanin Plants of the Flora of Togo' by Dr. Amen Yawo NENONENE of Togo; 'An Assessment of the Potential for Traditional and Modern Bamboo Construction Technologies in Uganda' by Prof. Barnabas Nawangwe of Uganda; and 'Current Status of Material Research in Zambia' by Mr. Bruno Mwila of Zambia.

11 Nigerian scientific papers presented during the Conference were on: 'Green Synthesis of Nanoparticles - Part A: Bacterial Mediated Synthesis of Gold Nanoparticles by *Serratia*

*Mercensens*, *Bacillus Sutilis* and *B. Megaterium*' by Ms. Stella Dozie-Nwachukwu and Prof. O.S. Odusanya of Sheda Science and Technology Complex, Abuja; 'Green Synthesis of Nanoparticles - Part B: Plant Mediated Synthesis of Gold and Silver Nanoparticles' by Dr. A.I. Aliyu of Sheda Science and Technology Complex, Abuja; 'Biosynthesis of Waste-Derived Silver Nano Particles and Their Application to Bioactive Products Development' by Dr. Jubril O. Akolade of Sheda Science and Technology Complex, Abuja; 'Challenges and Opportunities of Using Composite Materials in Automobile Industry' by Prof. S. Bolaji Hassan, Department of Metallurgical and Materials Engineering, Ahmadu Bello University, Samaru, Zaria; 'Development of Natural Fibre Filled High Temperature Engineering Thermoplastic Composites' by Prof. Umaru S. Ishiaku, Department of Textile Science & Technology, Ahmadu Bello University, Samaru, Zaria; 'Investigation of Austenitising Condition on the Tempering Characteristics of Ferritic Ductile Iron' by Mr. K. A. Bello, Ahmadu Bello University, Samaru, Zaria; 'Biotechnology for the Development of New and Advanced Materials: The Nigerian Experience' by Prof. B. O. Solomon, Director General, National Biotechnology Development Agency (NABDA), Abuja; 'Nanotechnology, Advanced Materials and Manufacturing Status in Nigeria' by Engr. Dr. S. O. Momoh of NASENI; 'Development of Polymer Ceramics with Post Consumer Poly Ethylene: Terephthalate Waste Bottles' by Dr. Olugbade Ebenezer Ajibola of Department of Chemical and Polymer Engineering, Lagos State University, Epe, Lagos State; 'Potentials of New and Advanced Materials Development in Nigeria' by Dr. T.O. Odedele of RMRDC; and 'Bagasse (Sugarcane Waste): As Low Cost Reinforcement for Advanced Metal Matrix Composites' by Dr. V. S. Aigbodion, Department of Metallurgical and Materials Engineering, Ahmadu Bello University, Samaru, Zaria.

Before the Closing Session, a special Participants' Interactive Forum, in which the discussion was highly interactive in nature and the participants made specific suggestions and comments, was also organized. This was moderated by Prof. Arun P. Kulshreshtha, who also made a presentation on 'The Role of the NAM S&T Centre for South-South Cooperation in Science & Technology'. Subsequently, there was considerable deliberation and debate on generating a set of recommendations titled 'Abuja Recommendations on Harnessing the Potentials of New and Advanced Materials for Developing Economies'.

The Closing Session was chaired by Dr. (Mrs.) Dere Awosika, Permanent Secretary of the Federal Ministry of Science & Technology of Nigeria, in which the Abuja Recommendations were adopted and the participants were given the Participation Certificates. The outcome of the Conference was summarised with a vote of thanks by Dr. M.L. Buga, Head, Advanced Materials Division of RMRDC.

The participants made brief but highly productive visits to the National Institute for Pharmaceutical Research and Development (NIPRD), IDU and National Agency for Science and Engineering Infrastructure (NASENI), Abuja. Engr. Prof. A.P. Onwualu, DG/CEO RMRDC hosted a banquet dinner with a cultural evening, which was much appreciated by the participants.

The participants thanked the organisers for the successful and fruitful organisation of the Conference and for excellent hospitality and arrangements made for the delegates, and unanimously hoped that more similar events will be held in future with a focus on South-South cooperation.



## *ABUJA RECOMMENDATIONS-2011*

On

### **Harnessing the Potentials of New and Advanced Materials for Developing Economies**

**WHILE EXPRESSING** gratitude to the Government of the Federal Republic of Nigeria, the Raw Materials Research and Development Council (RMRDC) of the Federal Ministry of Science and Technology, Nigeria and the Centre for Science and Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre) for organising the “**International Conference on Harnessing the Potentials of New and Advanced Materials for Developing Economies**” held on the **09-12 August, 2011** in **Abuja, Nigeria**;

**THE PARTICIPANTS COMPRISING** scientists, academicians, technocrats, consultants and government policy makers from Egypt, India, Indonesia, Iran, Iraq, Kenya, Malaysia, Myanmar, Pakistan, Sudan, Syria, Tanzania, Togo, Uganda, Zambia and Nigeria;

**HAVING EXTENSIVELY DELIBERATED** on issues related to harnessing the potentials of new and advanced materials for developing economies namely:

- Stimulating awareness on the development and trends in new and advanced materials and processes and their impact on the economy;
- Exploring opportunities and developing the strategies for participation of scientists in the development and utilization of new technologies in advanced materials;
- Drawing attention of the scientific community especially researchers to the possible contributions they could make in the area of New and Advanced Materials Development;
- Identifying the role of government, industry, financial, educational and research institutions and international organisations in building and strengthening capacities, capabilities and the funding of projects related to new and advanced materials production and utilization; and
- Examining opportunities available in developing countries for new and advanced materials and how best to facilitate collaboration and networking for mutual benefit.

**THE CONFERENCE PARTICIPANTS UNANIMOUSLY AGREED** that the event has been a resounding success in coming out with focused recommendations and actions as below that could help the NAM and other developing countries in formulating their action plans vis-à-vis harnessing the potentials of new and advanced materials:

- Developing countries have a good pool of scientists, engineers, researchers, technologists and entrepreneurs and they should be effectively utilized to transform their natural resource endowments into value added products. The key to national development is resource based industrialization.
- There is the need for an enabling environment in terms of infrastructure, particularly energy, which constrains the effective utilization of the skills and knowledge of scientists, engineers, researchers, technologists and entrepreneurs of developing countries from optimally contributing to resource based investments through private sector enterprises.
- In order to sustain the national systems of innovations, developing countries should address the issue of manpower development to achieve the quest for technological and industrial development, especially in the area of new and advanced materials.
- The role of micro, small and medium scale enterprises should be emphasized in the establishment of cluster based industries related to materials technology with effective involvement of suitable technology incubation mechanisms and the Triple Helix (Government, Industry and Academia partnerships).
- Developing countries should avail themselves of the opportunities for collaboration and networking in the development of new and advanced materials for sustainable economic growth. Emphasis should be given to those new and advanced materials that have strategic applications capable of uplifting social and economic standards, for example, technologies relevant for drinking water.
- Developing countries should acquire necessary extraction and characterization tools and use low cost manufacturing techniques, where possible indigenous methods should be exploited for sustainability.
- Governments are urged to put in place policies on science and technology, which promote research and development of new and advanced materials.
- The need for a platform for the promotion of exchange of relevant information and networking on research activities, research facilities, and manpower and investment opportunities was noted. In this regard, the participants welcomed the offer made by the Raw Materials Research & Development Council (RMRDC) of Nigeria to coordinate the formation of a **New and Advanced Materials Group** with **presence on the INTERNET**.
- The participants recommended that a centre may be identified for training on issues related to materials based technology transfer. In this context, the participants welcomed the in- principle offer by the International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), India to provide such training, subject to necessary approvals.
- Funding opportunities available from appropriate agencies such as European Union 7<sup>th</sup> Framework Programme on relevant themes (e.g. Nanotechnology and Lasers) may be explored. The participants welcomed the interest expressed by the Ministry of Science and Technology of Kenya to assist in the process. The member countries of the NAM S&T Centre in the African region will be invited to participate on voluntary basis.

**Thus, Resolved and Adopted in Abuja, Nigeria on this 12<sup>th</sup> Day of August 2011.**



## Centre Announces

### Joint CSIR / CFTRI (Diamond Jubilee) - NAM S&T Centre Fellowship in various fields of Food Science & Technology

In the year 2010-11 the NAM S&T Centre [www.namstct.org] and the Central Food Technological Research Institute (CFTRI; www.cftri.com), Mysore, a constituent laboratory of the Council of Scientific & Industrial Research (CSIR), India had initiated a Fellowship scheme, titled 'Joint CSIR / CFTRI (Diamond Jubilee) - NAM S&T Centre Fellowship' aimed at providing opportunities to the researchers from the developing countries to affiliate themselves with CFTRI, Mysore to undertake training, upgrade their research skills and conduct joint research in various fields of Food Science & Technology.

The NAM S&T Centre now invites applications for the 'Joint CSIR / CFTRI (Diamond Jubilee) - NAM S&T Centre Fellowship' for the year 2012-13 (April 2012 to March 2013). Four (4) Fellowships are available in the year for a maximum duration of six months each and are awarded to only one scientist each from any given developing country on a strictly competitive basis, based on the applicant's academic and professional background, proposed Plan of Work and mutual research interests of the applicant and the CFTRI. The Fellowship scheme provides attractive financial assistance, under which the CFTRI would provide free furnished single room accommodation in Mysore, India and a subsistence allowance of US\$300 (in equivalent Indian Rupees) per month to the selected scientist/researcher to cover incidentals and day to day expenses during the tenure of the Fellowship. Other financial terms, including the support for the international airfare by the NAM S&T Centre, would be communicated to the applicants separately.

Completed applications duly recommended by the parent institution of the applicant may be electronically submitted directly to the NAM S&T Centre ([namstct@gmail.com](mailto:namstct@gmail.com)). Hard copies are not required. The last date for submission of the applications for the Fellowship is **16<sup>th</sup> December 2011**.

### DISTINGUISHED VISITORS TO THE CENTRE

7 <sup>th</sup> July 2011	<b>Dr. Peter Aronson</b> , Agitator-in-Chief, housingrevolution.org
8 <sup>th</sup> July 2011	<b>Dr. S. Pal</b> , Prof. Satish Dhawan Professor and Senior Advisor, Satellite Navigation, ISRO Satellite Centre (ISAC), Bangalore, India.
18 <sup>th</sup> Aug. 2011	<b>Mr. Anthony Ridgeway</b> , Environment Science and Technology Wing, US Embassy in New Delhi, India
19 <sup>th</sup> Aug. 2011	<b>Dr. Jibanananda Mishra</b> , Project Leader, PREMAS Biotech, Gurgaon, India.
19 <sup>th</sup> Sep. 2011	<b>Engr. Muhammed Musa Gaji</b> , Energy Commission of Nigeria, Abuja, Nigeria
21 <sup>st</sup> Sep. 2011	<b>Dr. Mihaela Y. Smith</b> , Chief Executive & Joint Dialogue Convener, Commonwealth Partnership Technology Initiative (CPTM), London, U.K. and <b>Dr. Ashok Jain</b> , Vice President, EMBI Business School, New Delhi, India.
29 <sup>th</sup> Sep. 2011	<b>H.E. Mr. Mohammed SAIDI</b> , Chargé d'Affaires, Embassy of the Kingdom of Morocco

### PARTICIPATION OF CENTRE'S SCIENTISTS IN WORKSHOPS/SEMINARS/CONFERENCES

29 <sup>th</sup> Aug. 2011	<b>Prof. Arun P. Kulshreshtha</b> , Director, presided over the inaugural session of 'ISO 50001 Facilitators Workshop Series on Energy Management Systems' organized by the Society of Energy Engineers and managers (SEEM) at the Constitution Club, New Delhi.
12 <sup>th</sup> Sep 2011	<b>Ms. Bidisha Pal</b> , Research Assistant, attended a workshop on 'Women in Science' organized by the US Embassy at the Constitution Club, New Delhi.
15 <sup>th</sup> Sep 2011	<b>Dr. V. P. Kharbanda</b> , Publications Advisor, attended the Dr. K.B. Lal Memorial Lecture on 'Duty of Care and Ethical Issues in Finance' delivered by Prof. David Vines, Professor of Economics, Oxford University, UK, which was organized by the Indian Council for Research on International Economic Relations (ICRIER) at the India Habitat Centre, New Delhi.



## SCIENCE AND TECHNOLOGY NEWS IN THE DEVELOPING WORLD

### **Brazil: Transgenic Bean developed by Embrapa approved by Brazilian National Technical Commission on Biosafety**

Beans are a type of crop that is extremely important especially in Latin American and African societies and is the most important legume in the eating habits of over 500 million people. In Brazil, it is the main vegetable source of protein and iron, and when associated to rice, it results in an even more nutritional mix. The world production of beans corresponds to over 12 million tonnes. Brazil ranks second, where the plant is produced especially by small farmers, with nearly 80% of the production and cultivated area in properties smaller than 100 hectares. When the golden mosaic virus attacks the plantation at its initial phase, it can cause damage to 100% of the production, which would be enough to feed up to 5-10 million people. The National Technical Commission on Biosafety (CTNBio) has approved the genetically modified (GM) bean resistant to the golden mosaic virus, the worst enemy of this crop in Brazil and in South America. Developed by *Empresa Brasileira de Pesquisa Agropecuária Embrapa* (Brazilian Agricultural and Livestock Research Company), this bean event is the first transgenic plant that is entirely produced by public research institutions. Nearly 10 years were needed for the research in a partnership between *Embrapa Recursos Genéticos e Biotecnologia* Cenargen (Embrapa Genetic Resources and Biotechnology) and *Embrapa Arroz e Feijão* (Embrapa Rice and Beans). They used four genetic transformation strategies. In general terms, they genetically modified the plant so that it could produce small fragments of RNA, responsible for the activation of its defence mechanism against the golden mosaic virus, devastating to the crop. The natural system was mimicked so that there is no production of new protein in the plants, and consequently, there are no allergenicity and toxicity risks. Furthermore, the RNA fragments can cause resistance to several variations of the same virus. In the field trials performed, even with the massive presence of the whitefly, the insect that transmits the mosaic virus, the transgenic plant was not affected by the disease. All the biosafety analyses were carried out and the genetically modified bean is found as safe as or even safer than the conventional varieties, both for human consumption and for the environment. The transgenic bean presents economic and environmental advantages, such as reduced waste, guaranteed harvest and reduced agrochemicals applications. With the approval, the transgenic seeds will be multiplied and should reach the market in two or three years.

*Source: Crop Biotech Update, 15<sup>th</sup> September 2011*

### **Caribbean Islands: Protection against Earthquakes by Mangroves**

Engineers designing earthquake-resistant buildings often add a soft layer, usually made of rubber bearings, between the ground and a building. During an earthquake, the building then moves as a whole structure, minimising damage. It now seems that mangroves have a similar effect. According to researchers working on the French island of Guadeloupe, ancient mangrove forests such as those buried in the coastal regions of the Caribbean can protect buildings against earthquakes. Guadeloupe is an archipelago located in the Leeward Islands in the Lesser Antilles with a land area of 1,628 square kilometres and a population of 400,000. The researchers used sensors and mathematical models to analyse ground motion during more than 60 earthquakes of magnitudes 2-6.4 at a test site in Guadeloupe and found that although the region has soft, sandy soil, which is highly prone to 'liquefaction' where soil breaks up and acts as a liquid during an earthquake, the flexibility of the mangrove layer greatly reduced deformation of the soil. This could explain anecdotal evidence from a major 7.4 magnitude earthquake in Martinique in 2007, when people in buildings built over mangroves experienced only minimal effects. Building on top of buried mangroves could be preferable in regions of high seismic activity, especially where earthquake-resistant buildings are unaffordable.

The findings might also apply to other sub-tropical regions with mangroves and high seismic activity, such as coastal regions in South America. Mangroves can also protect against hurricanes and tsunamis as they have a complex structure with strong roots and trunks above and below ground that attenuate the impact of waves and wind gusts. But planting new mangrove forests would not protect against earthquakes, as the mangroves studied in this latest research were old and buried deep underground. Since tsunamis often follow earthquakes in coastal areas, wave protection may be the more important issue.

*Source: SciDev.Net, 14<sup>th</sup> Jun 2011*

### **China: Microstructures Replication of Butterfly Wings in Metals**

The dazzling colours of a butterfly wing come not from its pigments but from its microstructures. These structures have unique properties that are useful for photonic and electronic applications. The researchers Shanghai Jiao Tong University have now discovered a way of replicating these microstructures in metals. Given the number of different metals and butterfly species available, the approach could help scientists to create millions of unique metallic microstructures. There are three steps to making the metallic microstructures. The first step is to fix a fine layer of gold nanoparticles onto the surface of the butterfly wing using the polymer ethanediamine; the next step is to deposit the metal onto the butterfly wing at a moderate temperature; and the final step is to etch away the butterfly wing from the metallic microstructures using phosphoric acid. Through this approach, the researchers created cobalt, nickel, copper, palladium, silver, platinum and gold microstructures, and are now planning to extend the technique to replicate other biomaterials, such as the exoskeletons of insects and arthropods.

*Source: Nature China, 7<sup>th</sup> September 2011*

### **Cuba: Lung Cancer Vaccine**

A vaccine against lung cancer under the trademark CIMAVAX-EGF has been successfully developed in Cuba at the Centre for Molecular Immunology (CIM) in collaboration with the Centre for Genetic Engineering and Biotechnology (CIGB). It was patented in June 2008, but finally on 5<sup>th</sup> September 2011, the sale of the world's first therapeutic vaccine against lung cancer was launched after being approved by the Cuban medical authorities. The vaccine has gone through clinical studies and trials in more than 1000 patients. After having undergone seven clinical trials in Cuba, Canada and the United Kingdom, it is presently being used in three further trials, two in Cuba and one in Malaysia. The vaccine comprises a protein called epidermal growth factor (EGF) which combines with another protein that enhances the patient's immune response against EGF. When EGF binds to its specific receptor on cell membranes, it triggers the cell proliferation leading to tumors. But upon vaccination, the body produces antibodies which recognize and bind specifically to EGF, thus preventing EGF from binding to its receptor that leads to cell proliferation. This slows down the tumour growth in patients but simultaneously, to an extent, it also depends on each patient's individual response to the vaccine. The medication cannot prevent the disease but it offers the possibility of turning advanced cancer into a controllable chronic disease.

*Source: www.cubaheadlines.com, 5<sup>th</sup> September 2011*

### **Egypt: Use of 'Hair Gel' by Ancient Egyptians**

The archaeological scientists from the University of Manchester in UK studied hair samples taken from 18 mummies, the oldest being around 3,500 years old, but most excavated from a cemetery in the Dakhleh Oasis in the Western Desert and dating from Greco-Roman times around 2,300 years ago. The mummies included males and females ranging in age from 4 to 58 years old. Some were artificially mummified, whereas others were preserved naturally by the dry sand in which they were buried. Microscopy



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using light and electrons revealed that nine of the mummies had hair coated in a mysterious fat-like substance. The researchers used gas chromatography-mass spectrometry to separate out the different molecules in the samples and found that the coating contained biological long-chain fatty acids including palmitic and stearic acids. It is thought that the fatty coating is a styling product that was used to set hair in place. It was found on both natural and artificial mummies, so it is believed to be a beauty product during life as well as a key part of the mummification process. The resins and embalming materials used to prepare the artificially mummified bodies were not found in the hair samples, suggesting that the hair was protected during embalming and then styled separately. Egyptian texts and art contain no mention of hair products although ancient Egyptians are known to have used scented oils and lotions on their bodies. The best clue comes from Egyptian wigs. The hair is often coated with beeswax, which contains fatty acids such as palmitic acid. Beeswax would be difficult to wash out of hair, compared to, say, animal fat. Such wigs, which have been found in Egyptian tombs, would have been expensive and probably restricted to the nobility. The mummies' hairstyles varied both long and short, with curls particularly popular. Metal implements resembling curling tongs have been found in several tombs. Once the hair was styled, the fatty gunge would have held the individuals' curls in place.

Source: *Nature News*, 19<sup>th</sup> August 2011

#### **Ghana: Launch of Agricultural Biotechnology Open Forum**

Biotechnology is a vital tool which could contribute considerably to the country's food security. Many developed countries thrive on biotechnology products but for developing countries it is necessary to embrace the initiative to create an open forum to dialogue on the many issues that surround modern biotechnology. The Ghanaian Minister of Environment, Science and Technology (MEST) launched an Open Forum on Agricultural Biotechnology in Ghana on 18<sup>th</sup> August 2011. The Forum brings together stakeholders in biotechnology and enables interactions between scientists, journalists, civil society, law makers and policy makers on all aspects of biotechnology for arriving at recommendations on the way forward with the technology in their respective countries. The Forum launch was organized by the African Agricultural Technology Foundation (AATF) in collaboration with the Ghana Council for Scientific and Industrial Research (CSIR), and was attended by stakeholders in the region including partner institutions from Burkina Faso, Ghana and Nigeria. OFAB-Ghana is the sixth chapter to be launched after the Kenya, Uganda, Tanzania, Egypt and Nigeria initiatives. Ghana passed its Biosafety Bill into law on 21<sup>st</sup> June 2011, two weeks after Nigeria, and research on BT cowpea and nutrient enhanced potatoes is underway.

Source: *www.isaaa.org*, 26<sup>th</sup> August 2011

#### **India: 80 KW Grid Connected Solar Photovoltaic Power Plant for Indian Parliament**

India's Parliament House is the hub of policy and politics in the country. It sees Ministers from all states and constituencies who chart the future course of the country by debating and deciding on matters of public policy. The rooftop photovoltaic energy solution by LANCO Solar Energy Pvt. Ltd. with an 80 KW solar power plant in the Parliament Annexe under the SADP or Special Area Demonstration Project has been running successfully since March 2011. 400 units of electricity per day are generated by 288 numbers of 290 WP solar panels placed on the rooftop of the Annexe. They are combined with power supply from conventional sources with help of an interactive grid power conditioning unit. The solar modules are connected in 24 strings and each string consists of 12 modules. These modules rest on 48 steel structures which are specially treated with anti corrosive zinc phosphate and finished with polyurethane silver paint to ensure durability since they are exposed to extreme climatic conditions. The modules are south facing fixed at an angle of 26 degrees to best absorb the solar insulation. The energy generated by these modules is then fed to the low tension grid through the state-of-the-art high efficiency power conditioning unit installed in the control room.

Advanced systems such as the Max Power Point Tracking (MPPT) system can harvest maximum possible energy from the sun and supply it to the grid. The energy produced is measured using the Data Monitoring and Control System which measures in real time the amount of energy being produced by the solar plant. The objective of putting the project in the Indian Parliament was to demonstrate the technologies of solar power generation at a place which is visited by all state representatives. They see the installation, understand it and take the message back to the states for replication of similar models. Being a highly sensitive installation subject to strict security precautions all round the year, there was added need for strict safety procedures and the need to meet deadlines as well. As a source of clean energy to the Parliament, this prestigious rooftop project is very visible to policy makers from all over the country who can replicate this model at the state and local levels and encourage generation of solar energy on roof top. It serves as a showcase of how green energy can be generated and used for captive consumption in public and private buildings. It merges in with its ambient surroundings and the solar plant blends in with the aesthetics of the area.

Source: *EQ International*, 19<sup>th</sup> August 2011

#### **India: World's Highest Efficiency Solar Thermal Cooling System**

'Sun can cool' is the new theory given by Solar Energy Centre (SEC) of India by commissioning the world's highest efficient solar thermal cooling system on 1<sup>st</sup> July 2011 in Gurgaon in India. The new 100 kW Solar Air-Conditioning System works at 30% higher efficiency than the current available systems and has several unique features. It is based on the new triple effect absorption cooling technology. The system has indigenously built medium temperature high efficiency parabolic troughs for collection of solar energy and effective solar thermal energy storage in the form of Phase Change Materials. The present system will cater to air-conditioning needs of 13 rooms of the Solar Energy Centre. To achieve this, 288 sq meter of solar collector area has been installed which generates nearly 60 kW of 210°C pressurized hot water. This heat is used in vapour absorption machine to generate 7°C chilled water which in turn circulates through the fan coil unit installed in the thirteen rooms. The major attraction of this system is that the hottest days have the greatest need for cooling and simultaneously, offer the maximum possible solar energy gain. This clean and efficient cooling system has been developed in joint collaboration by the Solar Energy Centre with M/s Thermax Limited, Pune, India for installation in office and residential complexes.

Source: *Solar Thermal Magazine*, 5<sup>th</sup> July 2011

#### **Iran: Space Programme**

Iran has recently taken wide strides in aerospace. Omid (*Hope*) was Iran's first research satellite that was designed for gathering information and testing equipment. After completing more than 700 orbits over seven weeks, it re-entered the Earth's atmosphere on 25<sup>th</sup> April 2009. Later, Iran unveiled three new satellites called Tolou, Mesbah II and Navid, and also its latest achievements in designing and producing satellite carriers. The country sent the first biocapsule of living creatures into space in February 2011 using its home-made Kavoshgar-3 (*Explorer-3*) carrier. A new generation of home-made satellites and a new satellite carrier called Simorgh (*Phoenix*) were among the latest achievements unveiled by Iran's aerospace industries. The milk-bottle shaped rocket is equipped to carry a 60-kilogram satellite 500 kilometres into orbit. The 27-meter tall multi-stage rocket weighs 85 tons and its liquid fuel propulsion system has a thrust of up to 143 tonnes. Iran's successful launch of its second satellite Rasad (*Observation*) on 15<sup>th</sup> June 2011 yielded new images of the planet from space. Rasad weighs 15.3 kg and the installed camera onboard the satellite has a resolution of 200 meters and is capable of transmitting video and still images from the earth. The topology and structure of the earth stations of Rasad satellite too have been designed to provide the possibility for maximum access to Rasad through them. Next in the line is Fajr (*Dawn*) satellite to be followed by the launch of Tolou (Sunrise) satellite in February 2012, which would have a lifespan of 1½ years.

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and would capture images with 50 metres resolution.

Source: [www.irnawpd.com](http://www.irnawpd.com), 19<sup>th</sup> June 2011

#### **Iran: Novel Method to produce Graphene Paper**

Graphene paper is a material which is obtained from the processing, deforming, and changing in the state of its raw material, graphite. It has very specific mechanical properties and it can be used in automobile and aeroplane manufacturing industries. Graphene is six times lighter than steel but twice harder. Its tensile strength is also 10 times higher, its density is 6 times lower, and its resistance against bending is 13 times bigger than those of steel. An Iranian researcher from Kashan University milled graphite and produced thin graphene papers by creating a deformation in graphite after purification and filtration processes. Thus a very tough, hard and bendable material was produced through a synthetic method and thermal process. The synthesized material is not only tougher, lighter, harder, and more flexible than steel but it can also produce recyclable products that are biodegradable and cheaper.

Source: *INIC Reporter*, 7<sup>th</sup> July 2011

#### **Kenya: The Spirulina Hub**

Spirulina is a microscopic plant and is the most nutritious food on the planet. It is packed with protein, vitamins and minerals in an easily digestible form, is incredibly good for the body and is a food supplement that can be used by anybody at any time. Amongst other things it is very good for people infected with the HIV virus, the malnourished, anaemic, diabetic, etc. East Africa is considered to be the natural home of Spirulina since it exists naturally in many of the Rift Valley alkaline lakes, for example, Lake Nakuru, Elmentaita, Bogoria and Crater Lake. The appearance of the water in these lakes is a deep green because of the Spirulina in the water. Spirulina is one of two primary foods for the flamingos, so it is most likely to be found where there are flamingos. Spirulina was re-discovered in the early 60's by some French scientists at Lake Chad. Since then it has become one of the most researched foods of modern time. In West Africa Spirulina is being grown since the late '80s' due to its being a more francophone item. In Burkina Faso the government has funded large Spirulina farms in order to offer high quality nutrition to those living with HIV in the country. In Chad there are several projects funded by the WFP which encourages the cultivation of Spirulina against malnutrition. The US is the largest consumer of Spirulina and over there exist the two of the largest Spirulina farms, one in California and the other in Hawaii. Dunga spirulina is grown, harvested, dried, ground and packaged in an enterprise in Dunga Kisumu of Kenya, which overlooks the small bay which is part of and opens up to Lake Victoria. Thick plastic covers are placed on the ponds to avoid cross-breeding and contamination of the spirulina. Spirulina cultivation is considered one of the greenest forms of agriculture, requiring far less water and non-fertile land to produce high quality nutrition. Apart from offering this nutrition, Dunga Spirulina trains farmers on how to grow this food for their own nutrition and for income generation.

Source: [aquaticbiofuel.com](http://aquaticbiofuel.com), 8<sup>th</sup> July 2011

#### **Kiribati: Proposal for a Floating Island to fight Sea Rise**

Climate change is not just a theoretical future. It is actually happening and destabilizing areas of the world. The future for Kiribati, a Pacific nation of low-lying archipelago with a population of 103,000 threatened by rising seas, is so dire that the government is contemplating relocating the entire population to man-made islands resembling giant oil rigs. In Kiribati the highest land is no more than two meters above sea level. Beachside villages in Kiribati consisting of 33 coral atolls across two million square miles of ocean have already had to move to escape the waves. Water supplies have been contaminated by salt water, and crops destroyed. Erosion, caused partly by storms and flooding, is increasingly serious. For Kiribati it is no longer a case of adapting to a changing environment, but of survival. With the worries about climate change wiping out the Pacific island nation of Kiribati, the President of Kiribati is considering building a floating island. Though such floating island seems something from science fiction,

every idea has to be considered given the dire situation facing Kiribati. Other ideas to combat rising ocean levels include building a series of seawalls at a cost of nearly \$1 billion and relocating some residents to other Pacific nations.

Source: *Associated Press*, 7<sup>th</sup> September 2011

#### **Malaysia: Crops for the Future Research Centre (CFFRC)**

The Government of Malaysia will be hosting the University of Nottingham Malaysia Campus' Crops for the Future Research Centre (CFFRC), which will evaluate from among the 18,000 indigenous and underutilised crop species in the region for their potential uses as human food, pharmaceuticals or biomaterials in the climates of the future. The Centre, specifically designed to evaluate underutilised crops from all corners of the world, will be at the heart of an international effort to seek out which crops have the potential to be grown for human sustenance or on a commercial basis for food, pharmaceuticals or biomaterials in the climates of the future. In the face of increasing population, impending climatic change, and global reliance on three or four food staples, it is required to find and improve more plants to increase the bread basket, to complement the already existing crops and to be resilient to the changing climates. With a grant of \$40 million from the Malaysian government, a team of staff and researchers including experts in biotechnology, breeding and seed systems, ecophysiology, agronomy and post production, processing, markets and trade, will be housed at CFFRC.

Source: *Crop Biotech Update*, 8<sup>th</sup> July 2011

#### **Mali: Bollworm Infestations Reduction by Manual Cotton 'Topping'**

In sub-Saharan areas of Africa, cotton growers no longer cut the shoot tips from plants (topping), although manual topping was promoted at the start of the 20<sup>th</sup> century to improve yield and, surprisingly, to reduce pest incidence. In these areas, the bollworms *Helicoverpa armigera* Hübner, *Earias* spp., and *Diparopsis watersi* Rothschild are responsible for the majority of cotton yield losses, and the use of pyrethroids has resulted in resistance in field populations of *H. armigera*. However, the impact of manual topping cotton on pest control was studied over 6 years by the Mali researchers in cooperation with French scientists. It was found that topping occurred 10 days after first flower or at the emergence of the 15<sup>th</sup> sympodia and there was no detrimental effect of topping on cotton yield, and topping greatly reduced bollworm infestations. It has been concluded that cutting the shoot tips of the tops of cotton plants may control key pests.

Source: *VISB Bulletin*, 3<sup>rd</sup> August 2011

#### **Namibia: One of the Largest Hybrid Solar Systems in Africa**

A rural electrification project, planned and supervised by the Desert Research Foundation Namibia (DRFN), has been realised on 15<sup>th</sup> August 2011 in Northern Namibia by juwi Solar GmbH by using a hybrid solar system. With a total capacity of 200 kW peak, a battery storage of one megawatt and three integrated diesel generators it is one of Africa's largest off-grid solar power systems. The hybrid solar system was constructed in only 6 weeks by juwi in cooperation with its regional partner Alternative Energy Systems (Alensy) supplies Tsumkwe's hospital ward, water supply, street lightning, police station, a radio station and the mobile network as well as 100 households with power. The installed 918 polycrystalline modules supply Tsumkwe with 100 percent clean power during the day. Three diesel generators with a capacity of 630 KVA are integrated into the system and can be switched on in the evening or in case of a low battery. Via a transformer station the produced power goes to two 11 kV mini-grids. That way it is possible to disconnect the so called 'non-essential loads' such as street lightning in favour of the 'essential loads' like the hospital ward. The system will be operated by manpower, the local power company. To ensure proper operation of the solar power plant, local technicians have been trained by juwi and have been made familiar with the operation and maintenance of the system. The plant is monitored and steered via a specific juwi designed control system that controls both the SMA battery inverters and the regulation of the generator. Using GSM remote monitoring the solar plant can be controlled on the internet



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from Windhoek or Germany.

Source: *EQ International*, 7<sup>th</sup> Sept 2011

### **Qatar: Geo-Tagging Project**

Qatar's Civic Ministry has rolled out an ambitious project of replacing existing number plates on buildings with metal plates containing electronic chips. Set to be completed within 18 months, the electronic chips will show information like the building's location, and numbers for water, electricity and telecom connections. In case of an emergency the project is designed to help service providers such as fire-fighters and ambulance services to reach places quickly and with ease. The electronic chips will be linked to a database of buildings being created by the Geographical Information Systems Centre (GIS) of the Qatar Ministry of Municipality and Urban Planning. In turn, the GIS will link the database to more than 60 public service agencies, including utilities, Civil Defense and medical emergency units.

It may be added that Geotag is an open source programme that allows one match date/time information from photos with location information from a GPS unit or from a map. The main features are portability, as the programme is written in Java; graphical user interface; intelligent matching; fine tune location using Google Maps; fine tune locations using Google Earth; assigning location names to photos; no requirement of GPS to use Geotag; support to many file formats; open source published under the GPL (GNU General Public License); and easily translatable.

Source: *Geospatial World*, 27<sup>th</sup> July. 2011

### **Tanzania: India-Tanzania Centre of Excellence in ICT (ITCOEICT)**

An India-Tanzania Centre of Excellence in ICT (ITCOEICT) was inaugurated by the Indian Prime Minister at Dar Es Salaam, Tanzania on 27<sup>th</sup> May 2011 with a principal objective of promoting the development of Information and Communication Technology in the United Republic of Tanzania. The vision of the ITCOEICT is to create world class IT professionals to attract investment into Tanzania and generate revenue through expertise. The mission of ITCOEICT is to provide training in modular short-term proficiency courses in computer application software, training school teachers and government officials in IT proficiency and upgrading the skills of IT faculties in the Tanzanian universities through training of trainers' programmer. The Centre is equipped with a Linux based supercomputing cluster named 'Param Serengeti'. The facility includes 20 Terabytes of raw storage and 38 Terabytes of tape backup along with relevant backup software. E-learning comprises all forms of electronically supported learning and teaching. The information and communication systems, whether networked or not, serve as specific media to implement the learning process. The software used here is called e-Sikshak.

Source: *e-gov*, July 2011

### **Tunisia: African Centre for Excellence in ICT**

Tunisia has consolidated its position as Africa's leader in ICT, coming 35<sup>th</sup> globally, followed by Mauritius at 45<sup>th</sup> and South Africa at 61<sup>st</sup> position. But the majority of countries in Africa lag in the bottom half. Tunisia ranks first on the continent with regard to the quality of its educational system, mathematics and science education, capacity for innovation, availability of scientists and engineers, and local availability of specialised research and training services. At the 17<sup>th</sup> African Union Summit under the theme 'Accelerating Youth Empowerment for Sustainable Development' held in Malabo, Equatorial Guinea from 23 June-1 July 2011 a proposal was approved for Tunisia to set up the Africa Centre for Excellence in Information and Communication Technologies (CAETIC) with the support of the African Development Bank group and the African Development Fund. The Tunis-based ICT Centre will be positioned as a training centre for senior managers and decision-makers in the ICT sector and will also be a research centre for the African administrators and suppliers of specialised ICT services. It will focus on building capacity for high-level training (at the masters and PhD levels), and enhancing research and innovation in order to boost the development of the ICT sector. The

project will have additional spin-offs of helping to improve delivery of social services. The project will be implemented by Rwanda's Ministry of Education, Science, Technology and Scientific Research in cooperation with the Carnegie Mellon University based in Pittsburgh, Pennsylvania. In addition, the African Development Fund will establish the High Tech Centre of Mali, with a focus on training university students. The country's small and medium-sized enterprises, the ICT industry and the public sector all desperately need an ICT workforce. This Centre will also offer business incubation programmes, and tuition via distance learning.

In a related African ICT development, the African Education Summit held under the theme 'Agenda for Investment in Technology and Infrastructure', which took place in Rabat, Morocco in July 2011, has called for expansion of bandwidth, investment in ICT, building research networks, developing digital campuses, utilising wireless technologies, and developing centres of excellence in science and technology, as well as encouraging investment in African institutes of technology.

Source: *University World News (Africa Edition)*, 8<sup>th</sup> September 2011

### **UAE: Ahead of All Arab States in ICT Use**

The UAE ranks 24<sup>th</sup> in the world and 1<sup>st</sup> among Arab world in its use of information and communication technologies (ICT) to enhance competitiveness and development, according to The Global Information Technology Report 2010-2011, Transformations 2.0, released by the World Economic Forum. Other Arab countries are prominently featured in the ranking as well: Qatar (25), Bahrain (30), Saudi Arabia (33) and Oman (41). Sweden and Singapore continue to top the rankings of the report. While the UAE scored relatively well in both the environment and usage categories (#25 and #30, respectively), its strongest performance is in the readiness measurement, where it finished 6<sup>th</sup> out of the 138 countries measured. With a record coverage of 138 economies worldwide, the report remains the world's most comprehensive and authoritative international assessment of the impact of ICT on the development process and the competitiveness of nations. The Networked Readiness Index (NRI) featured in the report examines how prepared countries use ICT effectively on three dimensions.

Source: *egov*, 28<sup>th</sup> June 2011

### **Developing World leads Green Energy Investments**

The developing world has for the first time overtaken the richer economies in providing new investment in harvesting renewable sources of energy for sustainable development. Research and development (R&D) funding from government sources, at US\$5 billion in 2010, for the first time has overtaken corporate R&D investment, according to 'Global Trends in Renewable Energy Investment 2011', published by the UN Environment Programme (UNEP) in July, 2011. Total global investment in renewable energy grew by 32 per cent, from US\$160 billion in 2009 to US\$211 billion in 2010. The 2010 increase owed much to China, the world leader, which invested US\$48.9 billion in renewables. But the strong push in favor of renewables is noticeable in much smaller economies such as Ecuador, El Salvador and Nicaragua, according to Arnaldo Vieira de Carvalho, senior energy specialist at the Inter-American Development Bank, United States. The findings show a "very important" modification of energy policy trends in developing countries, which is helping to create a business climate for investment into renewables. The Middle East and Africa invested US\$5 billion, more than double their 2009 investment; India invested US\$3.8 billion; and Asian developing countries excluding China and India invested US\$4 billion. South and Central America made the second highest investment with US\$13.1 billion, 39 per cent more than in 2009. Latin America has emerged in the last year or two as one of the sharpest growing markets for renewable power worldwide. Excluding Brazil, Mexico took the lead in Latin America, with an almost 350 per cent increase in 2010. Argentina saw investment grow nearly seven-fold to US\$740 million; in Peru investment more than doubled to US\$480 million; and Chile and Venezuela have also seen important investment increase.

(Source: *SciDev.Net*, 22<sup>nd</sup> August 2011)



## VISITORS TO THE CENTRE



H.E. Mr. Mohammed SAIDI, Chargé d' Affaires, Embassy of the Kingdom of Morocco (C) with (L-R) Director, Ms. Apeksha Yadav, Ms. Bidisha Pal and Mr. Yasir Abbas Rizvi



With Dr. Mihaela Y. Smith, Chief Executive & Jt. Dialogue Convener, Commonwealth Partnership Tech. Initiative (CPTM), London, U.K.(3<sup>rd</sup> from R) and Dr. Ashok Jain, VP, EMBI Business School, New Delhi, India(2<sup>nd</sup> from L)



Dr. S. Pal, Prof. Satish Dhawan Professor and Senior Advisor, Satellite Navigation, ISRO Satellite Centre (ISAC), Bangalore, India with Director (R) and Mr. M. Bandyopadhyay (L)



Dr. Jibanananda Mishra, Project Leader, PREMAS Biotech, Gurgaon, India (C) with (L-R) Ms. Apeksha Yadav, Mrs. Manjari Manisha, Ms. Bidisha Pal and Ms. Hina Khan



Engr. Muhammed Musa Gaji, Energy Commission of Nigeria, Abuja, Nigeria with Dr. V. P. Kharbanda, Publication Advisor (L) and Ms. Bidisha Pal and Mr. Yasir Abbas Rizvi

## Director NAM S&T Centre Meets and Visits



Group Photo with H.E. Prof. Ita Okon Bassey Ewa, Honourable Minister of Science and Technology of Nigeria and Dr. Mrs. Dere Awosika, Permanent Secretary of the Federal Ministry of Science & Technology of Nigeria

Prof. Arun P. Kulshreshtha, Director, NAM S&T Centre visited Abuja, Nigeria during 7-14 August 2011 to organise an international conference on 'Harnessing the Potentials of New and Advanced materials for Developing Economies' in partnership with the Raw Materials Research and Development Council (RMRDC).

Prof. Kulshreshtha took this opportunity to call on H.E. Ita Okon Bassey Ewa, Honourable Minister of Science and Technology of Nigeria. Dr. (Mrs.) Dere Awosika, Permanent Secretary and several senior

officials of the Ministry were present during the meeting. The objective of the meeting was to explore the possibility of the Federal Ministry of Science and Technology of Nigeria to host the next Bureau meeting of the 12<sup>th</sup> Governing Council of the Centre and the Hon'ble Minister assured the readiness of his Ministry in this regard.

Prof. Kulshreshtha also called on Engr. Prof. A.P. Onwualu, Director General / CEO of RMRDC to discuss the issues of mutual interest. The other persons present during the meeting were Dr. Seb. C. Obasi, Director, Industrial Plants and Equipment Department (IPED) and Dr. M.L. Buga, Head, Advanced Materials Division of RMRDC.

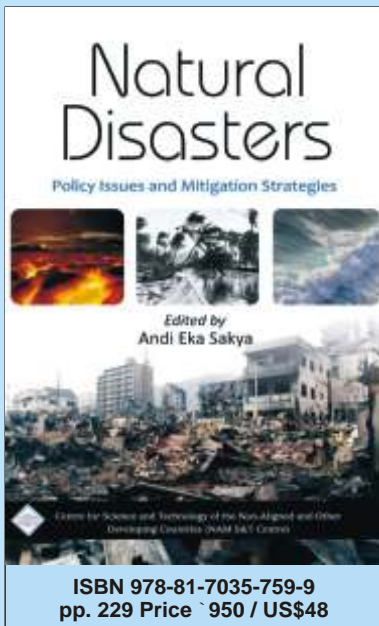


With Engr. Prof. A.P. Onwualu, DG, CEO (R), Dr. Seb. C. Obasi, Director IPED (2<sup>nd</sup> from L) and Dr. M.L. Buga, Head AMD RMRDC



## New Publication

# NATURAL DISASTERS POLICY ISSUES AND MITIGATION STRATEGIES



A disaster can be a natural or a man-made hazard that results in large scale physical destruction, human suffering and loss of life. It can be a tragic event resulting from events such as tsunami, earthquakes, floods, catastrophic accidents, fires, explosions, etc. In general, developing countries suffer the most when a disaster hits, primarily because of the lack of management and unpreparedness to meet such eventualities as compared to the developed countries. The capabilities for risk assessment, forecasting, monitoring and early warning systems, emergency management, prevention strategies, improving awareness, political will and a need to involve the professionals, scientific bodies and public-private partnerships are some of the key elements that need urgent attention particularly in the context of the developing countries. In this direction, the strategic thinking is required to unfold scenarios before they really occur so that the road map to human safety could be updated, game plan could be revised and strategic sense could be sharpened to fight natural disasters. It is essential to build joint programmes and win-win partnerships on natural disasters management among the developing countries to prevent human sufferings and the loss of life, to the maximum extent.

The present publication is a follow up of the international roundtable on 'Lessons from Natural Disasters, Policy Issues and Mitigation Strategies' organized at Vellore, India during 8-12 January 2007, by the NAM S&T Centre and the Centre for Disaster Mitigation & Management (CDMM) of the VIT University. It includes 16 research papers including country status reports from 12 developing countries of Asian, African and Latin American regions. The book presents significant insights on various kinds of natural disasters and concerned management strategies for the developing countries and is expected to be of great value for the researchers and professional engaged with the disaster management issues.

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**Preface** (*Andi Eka Sakya, Executive Secretary, Agency for Meteorology, Climatology and Geophysics of Indonesia (BMKG), Indonesia*)

**Introduction** (*Arun P. Kulshreshtha, Director, NAM S&T Centre*)

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## Centre Announces

### International Workshop on **NANOTECHNOLOGY** in the Edge of Convergence Selangor, Malaysia 24-27 November 2011



Nanotechnology, which is the study of manipulating matter on atomic and molecular scales, involves developing materials or devices possessing at least one dimension sized from 1 to 100 nanometers. This field of science has gathered enormous significance in recent years and tremendous advancements have been made with a variety of applications in a range of fields of science and technology, including materials sciences, surface science, organic chemistry, molecular biology, semiconductor physics, microfabrication, electronics, energy, medicine, etc. Nanotechnology has the potential to create many new materials and devices and it possibly holds solutions to world's problems related to water, agriculture, nutrition, health and energy. For developing countries, nanotechnology provides a new focus for research through its aim to manufacture from the 'bottom-up' approach using techniques and tools being developed today to make complete, high performance products, showing its potentiality in the form of improved water purification systems, energy systems, healthcare, food production and communications, etc. However,

nanotechnology has raised some concerns and speculation about the toxicity and environmental impact of nanomaterials, and their potential effects on global economics. These issues have led to a debate among advocacy groups and governments on the necessity of special regulation on nanotechnology.

With a view to providing a forum for the academicians, scientists and researchers active in the fields of nano-science and nano-technology to deliberate upon the aforementioned issues and to increase awareness of this field's significance, the Centre for Science & Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre), New Delhi, India in collaboration with the Commission on Science and Technology for Sustainable Development in the South (COMSATS), Islamabad, Pakistan and the Institute of Microengineering and Nanoelectronics (IMEN), Universiti Kebangsaan Malaysia (UKM), Malaysia is organizing a 4-days International Workshop on 'Nanotechnology in the Edge of Convergence' on November 24-27, 2011 at Selangor, Malaysia. The United Nations Educational, Scientific and Cultural Organization (UNESCO) is among the major sponsors of this scientific event.

For further details, please visit the website of the NAM S&T Centre <http://www.namstct.org>.

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