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Contributions from readers are welcome on any matter relevant to the mission of COMSATS, namely the promotion of South-South cooperation in science and technology for sustainable progress of the developing countries. The responsibility for the accuracy of any information rests with the original source. Views expressed in this publication do not necessarily reflect those of its editors, publisher or COMSATS.

Inaugural Session of the 3rd International Workshop on 'Internet Security: Enhancing Information Exchange Safeguards', December 9-13, 2013, Nabeul, Tunisia

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From the Executive Director s Desk

The Gregorian calendar year 2013 has lived up to the reputation of the numeral thirteen for its association with bad omens. The year saw financial crises throughout the world, unusually high number of natural disasters, food and energy shortages in many developing countries and bloodshed in parts of Middle East. Perhaps the greatest scar on humanity was left with the revelations that information and communication technologies are being used on a large scale to curtail privacies of individuals, business entities and governments throughout the world. It is feared that such an approach in cyberspace would replace the trust and cooperation with suspicion and conflict in real life international relations.

The First World Summit on Information Society (WSIS) held in 2003 in Geneva, anticipated the potential misuse of Internet by State authorities, and included the following in its Declaration of Principles (para 35), on behalf of the peoples of the world:

"Strengthening the trust framework, including information security and network security, authentication, privacy and consumer protection, is a prerequisite for the development of Information Society and for building confidence among users of ICTs."

The second phase of WSIS (Tunis, 2005) addressed the same aspect and included it in the Tunis Agenda for the Information Society (para 45):

"We underline the importance of the security, continuity and stability of the Internet, and the need to protect the Internet and other ICT networks from threats and vulnerabilities. We affirm the need for a common understanding of the issues of Internet security, and for further cooperation to facilitate outreach, the collection and dissemination of security-related information and exchange of good practice among all stakeholders on measures to combat security threats, at national and international levels".

In this backdrop, the organization of COMSATS international workshop on Internet Security: Enhancing Information Exchange Safeguards (page 6), in collaboration with the Islamic Educational, Scientific and Cultural Organization (ISESCO), and Inter-Islamic Network on Information Technology (INIT), was very relevant both in terms of venue and timing. The honourable Minister for Higher Education and Scientific Research, Government of Tunisia, during his inaugural speech of the 5-day workshop, recognized and appreciated the role of COMSATS for providing experts to contribute to the development of efficiency and skills of participants of this workshop . Being the third of the series of workshops on the same topic signifies the popularity of the event, which corresponds well with COMSATS core objective of technology-sharing through South-South cooperation. It also highlights COMSATS strength in delivering the scientific know-how at grassroot level and its ability of having effective partnerships with other intergovernmental organizations. The

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NEWS/ACTIVITIES/HIGHLIGHTS FROM COMSATS SECRETARIAT

COMSATS REPRESENTED AT WORLD SCIENCE FORUM

On November 25-27, 2013, the Executive Director COMSATS, Dr. I. E. Qureshi, along with the Dean, Research, Innovation and Commercialization, COMSATS Institute of Information Technology (CIIT), Dr. Raheel Qamar, participated in the sixth edition of UNESCO s World Science Forum held in Rio de Janeiro, Brazil. More than 400 scientists, educationists, policy-makers, leaders of research bodies, international organizations, industries and civil society representatives from over 100 countries were present at this biennial event that was jointly organized by the Brazilian and Hungarian Academies of Sciences.

The deliberations of the event were spread over three days and consisted of a wide spectrum of topics and discussions related to the social, economic and environmental issues being faced by nations across the globe, as well as the scientific and technical solutions to address these issues. Presentations were made by eminent scholars on a number of important topics pertaining to science and sustainability. Intensive debate by the delegates following each presentation led to a formal declaration encompassing mainly: global harmony; equality through education and promotion of science and innovation; ethics in research; improved coordination of governments with various sectors; and developing mechanisms for the funding of science.

A number of side-line meetings were held by Dr. Qureshi with distinguished delegates from different Member States and non-member States of COMSATS, as well as representatives of international organizations like TWAS and UNESCO. During his stay in Brazil, Dr. Qureshi met Prof. Glaucius Oliva, President, National Council for Scientific and Technological Development (CNPq), Ministry of Science, Technology and Innovation, Government of Brazil; Prof. Carlos A. Nobre, National Secretary, Ministry of Science, Technology and Innovation (MOSTI), Government of Brazil; Dr. Adil I. Matloob, Advisor, Ministry of Science and Technology, Government of Iraq; Prof. Chunli Bai, President of TWAS and President of Chinese Academy of Sciences; Prof. Romain Murenzi, Executive Director TWAS; Mr. Mourad Ahmia, Executive Secretary of the Group of 77; Prof. M.H.A. Hassan, Life-time Member of COMSATS Coordinating Council; and Dr. Eduardo Campello, former Director General, EMBRAPA Agrobiologia, Brazil. Matters of mutual interest were discussed with these officials, which, inter alia, included:

Sideline meeting between Executive Directror COMSATS and Executive Director TWAS

1. Brazil s membership of COMSATS and possible induction of a second Centre of Excellence from Brazil (one of the MOSTI organizations) in COMSATS Network of International S&T Centres of Excellence;
2. Appointment of the members of COMSATS panel of experts for Science, Technology and Innovation Policy Advice to Member States;
3. Prof. Oliva s membership of COMSATS Technical Advisory Committee;
4. China s participation in COMSATS scientific activities;
5. COMSATS possible role in 'Science Diplomacy' initiative of TWAS;
6. COMSATS support for TWAS programmes;
7. The revival of COSTIS and COSTIS COMSA TS future cooperation;
8. COMSATS-TWAS ongoing cooperation for publishing profiles of scientific institutions Excellence in Science.

In addition, goodwill messages were exchanged with a large number of delegates from different countries and representatives of international organizations and academies of sciences.

MEETINGS AND VISITS OF COMSATS' DELEGATION IN TUNISIA

Consultations were made between COMSATS delegation and Tunisian authorities and Heads of scientific organizations from December 9 to 12, 2013, to prepare a roadmap for closer cooperation between Tunisia and COMSATS; in particular, to explore the possibility of inducting a Tunisian scientific institution in the COMSATS Network of International S&T Centres of Excellence.

On December 11, 2013, the delegation comprising the Executive Director COMSATS and Advisor (Programmes) COMSATS, Mr. Tajammul Hussain, called upon the honourable Minister for Higher Education and Scientific Research, H.E. Dr. Moncef Ben Salem, at his office in Tunis. The Minister was apprised by the Executive Director about the past interactions of COMSATS with Tunisia and the benefits of COMSATS membership. With reference to their visit to the Water Research and Technologies Centre (CERTE) in the techno park of Borj-Cedria in Tunis on 10th December, the COMSATS delegation informed the Minister that the Director General CERTE has shown interest in

Meeting between the Minister for Higher Education and Scientific Research, Tunisia, and Executive Director COMSATS

getting COMSATS' affiliation for his Centre as a member of its Network of Centres of Excellence.

The Minister appreciated the organization of the then ongoing workshop on Internet Security (page 6) in Nabeul and a scientific workshop in the country in 2012. He expressed his willingness to give approval of the Ministry to let CERTE apply for membership of COMSATS Network. Acknowledging that COMSATS is an effective platform for delivering substantial benefits to Tunisia, the Minister agreed to record his recommendation to the relevant authorities of the Government of Tunisia for Annual Membership Contribution towards COMSATS in future.

Earlier, detailed discussions were held between COMSATS delegation and the Director General CERTE, Prof. Mohamed Ben Youssef, and his senior colleagues at the Centre in Tunis. Prof. Youssef and Dr. Qureshi made presentations on the functions and technical activities of CERTE and COMSATS, respectively. It was noted that CERTE has extensive research activities in the fields of geo-resources of water, natural water treatment and waste-water treatment. The Centre has a workforce of over 300 personnel, including 78 researchers, 52 Engineers and technicians, as well as 55 Ph.D students. During the period 2010-12, the Centre produced 248 publications, 30 Ph.Ds and 7 patents in water related technologies. A tour of the CERTE laboratories was made to further explore the strengths of this potential member of COMSATS Network. The labs were found to be well-equipped with latest instruments and teams of researchers engaged in their laboratory work. The CERTE officials were briefed about the process of affiliation with COMSATS and the benefits the membership of its Network of International S&T Centres of Excellence holds for the institution.

Also during their sojourn in Tunisia, COMSATS officials interacted extensively with the authorities of the Higher Institute of Technological Studies (ISET) at Nabeul, which was hosting the International Workshop on Internet Security. The possibility of reaching an agreement for organizing future joint activities was discussed with the Director of the Institute, Dr. Fouad Landolsi and the Director General of the Institute, Mr. Ali Gharsallah, in separate meetings, which was taken positively. It was agreed that further consultations will be made by the Advisor (Programmes) COMSATS and the Director ISET through e-mails, in order to work out the details of the MoU in this regard. A visit to various workshops, teaching laboratories and library was also organized by the administration in order to convey the strengths of training programmes of ISET in different departments of the Centre. It was agreed that COMSATS Institute of Information Technology (CIIT) and ISET will consider the possibility of cooperation in teaching and research programmes. The latter could be achieved by ISET joining COMSATS International Thematic Research Group (ITRG) on ICTs, being led by CIIT.

EXECUTIVE DIRECTOR COMSATS VISITS UNESCO

As a part of Pakistan s delegation to the 37th General Conference of UNESCO, the Executive Director COMSATS visited UNESCO Headquarters in Paris on November 17-22, 2013. The main objective of his visit was to participate in the joint meetings of UNESCO's Commissions held on November 18 and 19, 2013, and the symposium on 'Integrated Approaches to Science and Engineering for Sustainable Development'. The latter was jointly organized by the United Nations University (UNU) and the International Council for Science (ICSU) and inaugurated by the UNESCO Director General, Ms. Irina Bokova. Both of these programmes seek to engage not only experts from different disciplines of natural sciences, but also the social scientists, economists and civil society members to provide solutions for the sustainability of environmental and social ecosystems.

With an aim to strengthen UNESCO-COMSATS

contd. from page 1 ... 'From the Executive Director's Desk'

WSIS outcome will be reviewed by the United Nations General Assembly in 2015, and hopefully it will be recognized that COMSATS has played a constructive role in the WSIS follow-up process. A number of international contacts made by COMSATS officials during their visits to three continents in the last two months (pages 2-4) is also an indication of the organizations increasing international outreach.

The pages of COMSATS Newsletter are available to the readers for their comments, criticism or advice.

37th General Conference of UNESCO, Paris

partnership, Dr. Qureshi held bilateral meetings with the senior officials of UNESCO. The meeting with Ms. Lidia Brito, Director of the Division of Science Policy and Capacity-Building, was aimed at exploring the possibility of her joining the COMSATS' panel of experts on Science, Technology and Innovation (ST&I) Policies, which she considered favourably.

The meeting with Mr. Stoyan Bantchev, Chief of Participation Programme section at UNESCO, was focused on the funding status of approved project for 2012-13 submitted last year by COMSATS through Pakistan National Commission for UNESCO (PNCU). In view of the pending administrative issues with PNCU in this regard, it was learnt that the release of funds would not be possible in 2013 and it was agreed that COMSATS would resubmit its project with the same scope and beneficiary countries for funding during 2014-15. In view of the fact that the project was evaluated and approved during the biennium 2012-13, its chances for re-approval are considerably high. Mr. Bantchev appreciated the efforts being made by COMSATS in strengthening S&T capacity in its Member States and assured UNESCO's support in accordance with its programmes and priorities. He also appreciated the personal commitment of Dr. Qureshi to make the work of this organization more widely recognized.

Another bilateral meeting of considerable significance was held on November 19, 2013, between the Executive Director COMSATS and the UNESCO's Assistant Secretary General for Natural Sciences, Prof. Gretchen Kalonji. A wide spectrum of topics was discussed with a view to find a common approach for cooperation between the two organizations. Recalling the history of COMSATS creation in 1994 at the behest of the Pakistani Nobel Laureate, Prof. Abdus Salam, Dr. Qureshi recounted the successful operations of COMSATS over a period of eighteen years, in pursuit of its primary mission of South-South cooperation in different fields of S&T that are directly relevant to socio-economic development. He emphasized that, in spite of its limited budget and small membership, the organization has several unique features, such as a vibrant Network of eighteen Centres of Excellence in four continents; its own Internet service provider subsidiary; and an attached higher education institution in Pakistan, the COMSATS Institute of Information Technology (CIIT), having degree-awarding status. The impact of COMSATS' new initiative to establish multi-national research groups was highlighted, along with the highly acclaimed serial workshops on repair and maintenance of scientific equipment in the universities and R&D organizations of developing countries. Prof. Kalonji appreciated the commendable work of COMSATS, which she believed is in line with the programmes of UNESCO and its affiliated centres. It was agreed that the modalities of organizational relations between COMSATS and UNESCO would be further explored with the aim to sign a Memorandum of Understanding to this effect, if approved by relevant competent authorities of the two organizations.

COMSATS INTERNET SERVICES HOLDS 26TH MEETING OF ITS BOARD OF MANAGEMENT

Twenty-sixth meeting of Board of Management of COMSATS Internet Services (CIS) was held on December 19, 2013 in Islamabad. It was chaired by the Chairman Board of Management, Dr. Imtinan Elahi Qureshi, Executive Director COMSATS, and attended by members of the Board from Ministry of Science & Technology (MOST), Government of Pakistan; COMSATS Institute of Information Technology (CIIT); and COMSATS Internet Services (CIS).

In his opening remarks, Dr. Qureshi recounted the achievements of COMSATS during 2013 and stressed that CIS role goes beyond provision of Internet and data-related services and towards social services, such as telehealth, software development, and training. Mr. Muhammad Hassan, Coordinator Planning CIS, briefed the Board about CIS newly launched two telehealth clinics at Gokina and Swabi that have facilitated over 6,000 tele-consultations so far. Mr. Asim Shahryar Husain, CEO of CIS, considered the year 2013 a success for CIS in terms of its growth in broadband and data center; customer service; and annual revenue. It was informed that CIS conducted a live 3-day auction, using multi-point video conferencing for Capital Development Authority (CDA) of Pakistan, for bidders in Islamabad, Lahore, and Karachi, which was highly appreciated by the Chairman and Members of CDA. A prototype of a Business-to-Business e-Commerce portal has also been developed by the software team of CIS that enables Pakistani exporters to register and market their products to foreign buyers. The portal would be formally launched once the desired number of registrations is reached. CIS, it was noted, will be installing a large storage area network in its data center to offer cloud services, as well as launching at least four new telehealth clinics in rural areas of Pakistan in 2014.

SPECIAL SECTION: COMSATS COLLABORATIVE CAPACITY-BUILDING EVENTS

Capacity building events make a prominent part of COMSATS activities aimed at South-South Cooperation. In spite of its limited financial resources, the organization has been persistently organizing scientific events in areas of crucial importance to strengthen linkages; build indigenous capacities; and promote S&T as a tool for development. Since its establishment, COMSATS has organized and sponsored over 180 national and international events on various subjects. Such events have provided a useful platform to the members of the scientific community, development experts, donor and development agencies, and the decision-makers in particular from Member States, to share their views and experiences on contemporary issues of importance for S&T-led socio- economic development.

During December 2013, two international events were organized, one each on Internet Security and Nanotechnology , in Tunisia and Indonesia, respectively. These events that benefitted a number of scientists and researchers were held in collaboration with the Islamic Educational, Scientific and Cultural Organization (ISESCO) and relevant institutions of the host countries, Tunisia and Indonesia. COMSATS also observed the World Science Day for Peace and Development by holding a seminar on this year s theme Science for Water Cooperation: Sharing Data, Knowledge and Innovations , in solidarity with the world community, on November 12, 2013. A brief account of these three events is given below.

COMSATS-ISESCO International Symposium on Nanotechnology and Nano-biotechnology Innovative Applications for Sustainable Green Economy and Climate Change Mitigation (ISN-2013)

As partner organizations, COMSATS and ISESCO collaborated for the two-day International Symposium on Nanotechnology and Nano-biotechnology Innovative Applications for Sustainable Green Economy and Climate Change Mitigation (ISN-2013) , held in Serpong, Indonesia, on December 16-17, 2013. Held in conjunction with the Symposium on MOLINA for Green Energy , the event was organized in collaboration with the National Nuclear Energy Agency (BATAN) of Indonesia. The purpose of the MOLINA event was to launch and promote national electric cars (MOLINA) hybrid cars indigenously developed by Indonesian research institutions working under the Ministry of Research and Technology, Government of Indonesia.

Inaugural Ceremony of the Nanotechnology event held in Serpong, Indonesia

The international symposium was attended by a total of 55 subject specialists and officials, including 16 foreign experts. The foreign participants that were sponsored through the funds available under the framework of cooperation between COMSATS and ISESCO belonged to Bangladesh, China, Egypt, Iran, Malaysia, Morocco, Pakistan and Saudi Arabia. Besides the foreign participants, 39 local subject specialists/officials participated in the event from various public/private universities, S&T/R&D organizations, Government Departments and NGOs working in Indonesia.

Held with an aim to facilitate networking, and to promote joint research and collaboration among scientific institutions, the Nanotechnology Symposium was officially inaugurated on December 16, 2013, by Prof. Dr. Djarot S. Wisnubroto, Head of BATAN, on behalf of the Indonesian Minister for Research and Technology, Prof. Dr. Muhammad Gusti Hatta, at the Research Center for Science and Technology (PUSPIPTEK) of BATAN. The ceremony was attended by around 65 Indonesian scientists, researchers, engineers, and scholars from institutions, such as National Nuclear Energy Agency, Indonesian Institute of Sciences (LIPI), Bandung Institute of Technology (ITB), Agency for the Assessment and Application of Technology (BPPT), and University of Indonesia. They resolved to collaborate further in the scientific areas of mutual interest and expressed their intentions of holding such events more frequently. They further resolved to form linkages with industry in order to take the innovative ideas discussed during the course of the Symposium out of the laboratories and into the real world through mass production.

In his inaugural address, Dr. Wisnubroto informed the august gathering that BATAN celebrated 55 years of its establishment on December 5, 2013. He showed keen desire for the Republic of Indonesia to become a Member State of COMSATS and BATAN's inclusion in COMSATS Network of International S&T Centres of Excellence. Welcoming the participants, experts and distinguished guests of the Symposium, the Chairman of ISN-2013, Prof. Dr. Evvy Kartini, introduced the participants to the Symposium s objectives and its expected outcome. Mr. Amir Ijaz, Assistant Director (Programmes), COMSATS, read-out a message from the

Technical session of International Symposium on Nanotechnology in progress

Participants of International Symposium on Nanotechnology and Nano-biotechnology, Serpong, Indonesia

Executive Director COMSATS, which conveyed felicitations and good wishes to all organizers and participants. It was informed that as a part of such capacity building activities, COMSATS co-organized four events on various aspects of Nanotechnology during the past two years and also brought out a publication, titled Nanotechnology in the Edge of Convergence , in collaboration with the NAM S&T Centre. A message from the Director General ISESCO, Dr. Abdulaziz Othman Altwaijri, was also read out on the occasion by Dr. Ismael Abdulhamed, Expert at Science Directorate of ISESCO.

The technical proceedings of the event were spread over 6 sessions during two days; a plenary lecture session comprising talks by experts, alternated by two parallel technical sessions comprising technical presentations, each day. There were eight plenary lectures by experts from Australia, China, Egypt, Indonesia, Pakistan, and Saudi Arabia, while 22 participants from Australia, Bangladesh, China, Indonesia, Iran, Japan, Malaysia, Morocco, and Pakistan made technical presentations. The topics of these talks and presentations were related to applications of nanotechnology and nano-biotechnology in areas of energy, environment, architecture, medicine, agriculture and climate change mitigation.

The research findings shared during the technical sessions of the event underscored the potential of nanotechnology in diverse fields such as: water, agriculture, medicine energy, electronics, and optics. The experts who presented their findings believed that Nanotechnology is one of the key proponents of green economy. It was shown that nanostructured materials have a great capacity to significantly improve the performance of fuel cells. It was shown that rechargeable lithium batteries made using sulfur composites have various plus points, such as low production costs; availability of abundant raw material; and relatively stable crystalline structure, which is environmentally benign and easy to construct. Nanoparticles, it was noted, present a large surface area that leads to high reactivity with low material quantities, and is advantageous in terms of higher absorption rates for light in solar cells. Different mechanical and thermal properties of the Nanocomposites shown in various research findings were discussed, including tensile strength, flexural strength, Young s modulus, Tangent modulus, micro-hardness, and melting temperatures. Possible policy measures for incorporation of nanotechnology in development agendas were also deliberated on.

Other highlights of the event included a poster session and a roundtable discussion session, during which senior scientists deliberated on the experiences and findings shared during the event, and made recommendations to develop courses of action in adopting nanotechnology for progress.

On conclusion of the event, the local organizing committee from the host institution (BATAN) arranged a visit of the laboratory facilities available to BATAN at Serpong, Indonesia. The international participants were shown the multipurpose 30 MW nuclear research reactor (locally known as the Reaktor Serba Guna); the Central control room of the reactor; and the adjacent Neutron Scattering Laboratory.

ISESCO-COMSATS-INIT 3rd International Workshop on Internet Security: Enhancing Information Exchange Safeguards

The 3rd International Workshop on Internet Security: Enhancing Information Exchange Safeguards was held on December 9-13, 2013 in Nabeul, Tunisia. The event hosted by the Higher Institute of Technological Studies (ISET) of Nabeul, Tunisia, was jointly organized by COMSATS; ISESCO; the Inter Islamic Network on Information Technology (INIT); and the COMSATS Institute of Information Technology (CIIT), Pakistan.

Internet Security workshop, Tunisia: A technical session in progress

A technical presentation being made to the participants of the Internet Security workshop, Tunisia

COMSATS, ISESCO and INIT have organized two similar events in the past that were held in Syria (2011) and Jordan (2012). The aim of the event was to train IT professionals of common member countries of COMSATS, ISESCO and INIT, enabling them to collectively address issues and challenges related to information and Internet security.

The five-day event gathered researchers and professionals to share the latest advancements in the field of Internet security; promote the use of state-of-the-art technologies for protection of network and network accessible resources from different types of cyber-attacks; and identify effective Internet & information security solutions for general public, governmental organizations and commercial enterprises through rigorous risk analyses and security management approaches.

H.E. Dr. Moncef Ben Salem, Minister for Higher Education and Scientific Research, Government of Tunisia, inaugurated the event on December 9, 2013. Information security has become a critical concern for Internet users and developers, and there is a dire need to have a methodology to build integrated systems to provide the necessary protection of information at all levels , stated the Minister speaking on the occasion. Dr. Salem also expressed appreciation of COMSATS efforts in arranging subject experts for imparting the necessary knowledge and skills related to secure the use of information exchange over the Internet.

In his welcome address at the inaugural ceremony, Mr. Landolsi Foued, Director ISET-Nabeul, highlighted the significance of ensuring Internet & information security. While speaking on the occasion, Dr. Imtinan Elahi Qureshi, Executive Director COMSATS, thanked the honourable Minister for Higher Education and Scientific Research, Government of Tunisia, for gracing the inaugural ceremony of the event with his presence, which he considered indicative of his commitment to build capacity of Tunisians in this important field. He stated that Internet/information security is a common concern to all, which can only be addressed through enhanced international cooperation in this field. Dr. Qureshi stated that COMSATS, having a Network of 18 International S&T Centres of Excellence, has the necessary human and technical resources available to cooperate with other international organizations such as ISESCO and UNESCO in different fields of Science and Technology, including Internet security.

Speaking on behalf of the President of INIT, Mr. Muhammad Atiq-ur-Rehman, Senior Program Officer, INIT, informed that INIT is actively engaged in programmes and activities related to encouraging the use of ICTs in OIC Member States and building capacity of the relevant human resource to effectively deploy, manage and protect the network resources.

Dr. Maha Merezak, Programme Specialist (Human & Social Science), Science Directorate, ISESCO, conveyed the greetings of the Director General ISESCO. She stated that the national policies must be oriented towards better practices to ensure Internet security, as well as strong partnerships among governments, regulatory bodies and NGOs. She opined that such national policies must be enforced through well-defined regulations and penalties to discourage criminal acts, such as those cited in the Budapest Convention of 2001.

Other distinguished Tunisian guests at the inaugural ceremony included: Prof. Mohamed Ben Youssef, Director General, Water Researches and Technologies Centre of Borj-Cedria (CERTE); Mr. Ali Gharsallah, Director General ISETs; Mr. Bouras Adel, Director General, Des Etudes Technologiques; and Prof. Mohamed Ben Amor, CERTE, as well as H.E. Mr. Mushtaq Ali Shah, Ambassador of Pakistan to Tunisia.

Five resource persons conducted the workshop s technical

Senior Officials of COMSATS on a visit to CERTE at Borj-Cedria

Group Photo of Experts and Participants of Internet Security workshop, Nabeul, Tunisia

sessions. These were Dr. Malik Najmus Saqib , Assistant Professor, CIIT, Pakistan; Mr. Zafar Mir, Regional Manager, Information Security Risk, MENA-HSBC, UAE; Mr. Asad Raza, Lecturer of Information Technology (Networking & Security), Majan University College, Oman; Dr. Ayman Mohammad Bahaa Eldin, Associate Professor of Computer Engineering, Ain Shams University, Egypt; and Ms. Wala Turki, Chief Engineer Officer of the Information System Security, Center for Studies and Research in Telecommunications (RSSI), Tunisia.

The training modules pertained to various important subjects relating to Cryptography and Web Security, Organizational Security, Ethical Hacking, Cyber Security and Information Security Design Principles, as well as Offensive Security. The specific topics covered during the workshop included: Symmetric Key and Asymmetric Key Cryptography; Block Ciphers and Stream Ciphers; Hash Functions; Digital Signatures; Data Encryption; Secure Electronic Transaction; Authentication Application; Industry Standard Bodies and Industry Standards; Security Policies, Objectives and Procedures; ISO 27001 ISMS Standard and related Security Controls ; Risk Assessment and Risk Assessment Plan; Information Assets Inventories; Business Continuity Plan; Disaster Recovery Plan; Cloud Computing Security; Cloud Assurance and Governance Models for Business Organizations; Ethical Hacking; Metasploit Framework; Meterpreter; Post Exploitation and Back Dooring; Dissecting Cyber Attacks; Distributed DoS Attacks & Mitigation Techniques; Advanced Attack Techniques; Digital Spying; Hacking Wireless Networks; Passwords Hacking and Cracking; Information Gathering and Google Hacking; Vulnerability Scanning and Exploitation; and Network Security.

Participants of Internet Security workshop (Tunisia)

About 35 young researchers, practitioners, academicians, system administrators and programmers working in the field of Internet/information security and cryptography from Iran, Morocco, Pakistan, Algeria, Tunisia, Sudan and Turkey received the training. Mr. Tajammul Hussain, Advisor (Programmes), and Mr. Foued Landolsi, Director ISET, Nabeul, spoke on the concluding ceremony, on December 13, 2013. On the occasion, Mr. Hussain emphasized the importance of Internet and information security at the levels of individuals, institutions/organizations and countries. He called for a stronger collaboration among research organizations and universities of developing countries, and offered the human and technological resources available with COMSATS to address issues related to internet/information security. He also thanked ISESCO and INIT for their continuous support towards capacity-building activities of COMSATS. In his remarks, Mr. Landolsi, thanked ISESCO, COMSATS and INIT for their financial and technical contributions towards the event, and appreciated the local and foreign participation in the workshop.

Seminar on Science for Water Cooperation: Sharing Data, Knowledge and Innovations

The World Science Day for Peace and Development (2013) was commemorated by COMSATS by holding a seminar on

Inaugural Ceremony of COMSATS seminar on World Science Day 2013

Chief Guest and Executive Director COMSATS alongwith dignitaries and participants of the COMSATS' seminar

Science for Water Cooperation: Sharing Data, Knowledge and Innovations , in Islamabad, on November 12, 2013. The event was held at COMSATS Institute of Information Technology (CIIT), Islamabad, and was attended by more than 70 students, academicians, scientists, and diplomats.

The event commenced with a brief inaugural session presided over by veteran scientist and former Advisor to the Prime Minister of Pakistan on S&T, Dr. Ishfaq Ahmad. The session comprised a Welcome Note from Dr. Shahid Ahmed Khan, Campus Director, CIIT, Islamabad; an Address by the Executive Director COMSATS, Dr. Imtinan Elahi Qureshi; and a Keynote address by the Chief Guest, Executive Director Higher Education Commission of Pakistan, Dr. Mukhtar Ahmed.

In his address on the occasion, Dr. Qureshi noted that Pakistan has the distinction of being the country on whose request the United Nations decided to celebrate World Science Day every year on 10th November. Dr. Qureshi also informed that 10th November coincidently is the birthday of a renowned Pakistani scientist, Prof. Dr. Riazuddin, who had sadly passed away on 9th September 2013. Stressing the importance of the Day, Dr. Qureshi gave a broader perspective whereby science has been used both for the betterment of mankind, as well as for the purpose of war and destruction. Speaking on the occasion, Dr. Ishfaq Ahmad stressed the need to keep water-related issues on high priority by international organizations like IIASA, UN and COMSATS.

The technical session of the Science Day comprised four talks pertaining to the theme of the Day. Dr. Qamar-uz-Zaman Chaudhry, Senior Advisor, LEAD Pakistan, in his keynote speech, explicated the concept of water cooperation and highlighted its importance in the wake of Pakistan s diminishing water resources to a critical level of 1000 m^3 per person per year. He cautioned that serious steps must be taken in time to address the depleting water resources of Pakistan, which is highly vulnerable to climate change effects, lest the country face even graver issues of water, food and energy security.

Other local speakers of the seminar were: Dr. Amir Haider Malik, Professor, CIIT Abbottabad Campus; Dr. Zulfiqar Ahmad, Professor, Department of Earth Sciences, Quaid-e-Azam University; and Dr. Hassan Abbas, CIIT, Wah Campus.

The speakers advocated efficient use of technology-based solutions in the field of water resource management to enhance per capita water availability in the country. A new concept of sub-irrigation was introduced that could enable Pakistan to save water at least 4 folds, increase agriculture yields by atleast 64% and improve water-use efficiency by 6 folds. Consensus prevailed among the experts to make increased efforts to promote water cooperation among nations to ensure poverty reduction, enhance socio-economic development, and promote peace and sustainability.

Group Photo of distinguished guests, experts and participants of COMSATS' Seminar

ACTIVITIES/NEWS OF COMSATS CENTRES OF EXCELLENCE

BCSIR-BANGLADESH RECEIVES NATIONAL AWARD FOR PORTABLE FIBER GLASS BIOGAS DIGESTER

The Institute of Fuel Research & Development (IFRD) of the Bangladesh Council of Scientific and Industrial Research (BCSIR), Bangladesh, won the national award for developing the portable fiber glass biogas plant. Dr. Md. Abdur Rouf, Principal Scientific Officer (Project Leader) and Mr. Md. Saiful Islam, Senior Scientific Officer (Project Associate) of IFRD, BCSIR, jointly developed the new fiberglass biogas digester. The plant was selected for the Best Research Project Award for the year 2013 by Power Division, Ministry of Power, Energy & Mineral Resources, Bangladesh. The Award was conferred upon the Chairman BCSIR, Prof. Dr. Ahmad Ismail Mustafa, by the Prime Minister of Bangladesh, Sheikh Hasina, on November 12, 2013.

CIIT-PAKISTAN ORGANIZES FIT-2013

Focusing on the theme Big Data , the 11th International Conference on Frontiers of Information Technology (FIT) of COMSATS Institute of Information Technology (CIIT) was organized in Islamabad, Pakistan, on December 16-18, 2013. The Conference was technically supported by IEEE Islamabad Chapter, IEEE Industrial Electronics Society, and IEEE Computer Society Technical Committee on Scalable Computing. Among other sponsors of the event were the Higher Education Commission (HEC) of Pakistan, National Testing Service (NTS), and the National ICT R&D Fund of Pakistan. Renowned scholars and researchers from different countries, including Australia, Austria, China, Estonia, Kuwait, Pakistan, UK, and USA, attended the event.

The twenty-eight technical sessions of the event, comprising 53 oral presentations, were chaired by renowned academicians. Thirty-three invited talks highlighting latest trends in areas of computer science and electrical engineering were delivered during the course of the event. Moreover, three tutorials, five Ph.D symposia, and three workshops were conducted. The topics covered during the technical sessions of the Conference, inter alia, included: Artificial Intelligence, Software Engineering, Communication and Networking, Scalable Computing, Embedded systems, Smart Grids, Distributed and Grid Computing, Green Technologies, Signal Processing, Computer Graphics, Image Processing and Pattern Recognition, Robotics/Control Systems, Industrial Automation, and Industrial & Power Electronics.

Participants of 11th International Conference on Frontiers of Information Technology (FIT), 2013

During the technical talks and presentations, importance of Information Technology in the field of education was highlighted and important aspects of critical and innovative thinking was stressed. It was suggested that curricula on all levels of education should be reformed for students aspiring to take up IT professions, so that they are able to meet the needs of the local as well as global markets. Experts also deliberated upon new technologies like cloud computing and their application in academia. The need for sensitizing people on public sharing of data was also stressed.

A Panel Discussion Session at the end of the technical proceedings of the Conference had participation from distinguished panelists from industry and academia, both from Pakistan and abroad. Deliberating on the theme Revolutionizing Society with Big Data , the panelists agreed that there is a need to take small-scale initiatives and build on them gradually to have an understanding of the science of Big Data. A consensus emerged during the session that universities in Pakistan need to play their due role to enhance the students capacities for research and their employability in the competitive global markets. It was observed that students analytical skills need to be given solid foundations of mathematics, statistics, algorithm design, and machine learning.

As announced during the concluding ceremony of the Conference by the Rector CIIT, Dr. S. M. Junaid Zaidi, FIT-2014 will be held in Islamabad on December 17 to 19, 2014.

CIIT-PAKISTAN GETS 3-STAR QS RATINGS

CIIT has become the first higher education institution in Pakistan to have earned this coveted star rating by an international ranking agency, QS World University Rankings Organization. In an independent analysis of various aspects of activities of CIIT carried out by the organization, the Institute was over all awarded three stars (out of a total of five); while out of 8 categories, it earned a five-star rating, in three, Teaching, Facilities, and Engagement.

The award was announced during QS Conference held in Seoul, South Korea, on November 1, 2013.

ICCBS-PAKISTAN LAUNCHES OPEN LEARNING PROGRAMME

The Latif Ebrahim Jamal (LEJ) National Science Information Centre of the International Center for Chemical and Biological Sciences (ICCBS), Pakistan, launched an open learning programme, the LEJ Knowledge Hub , on December 6, 2013. The programme mainly comprises a website where thousands of education courses and lectures from the world s reputable institutions and teachers will be available online free-of-cost. The courses catering to the needs of school, college and university students are available both in English and Urdu.

The programme is expected to help improve education sector in the country as the website is slated to be updated with new courses every year. Equipped with a search engine to ensure easy access to relevant information available in downloadable and printable forms, the website contains courses on numerous subjects, including those related to technical and vocational training, language, nursing and teacher training, etc.

RSS-JORDAN TO HOST USAID-SPONSORED NETWORK

The United States Agency for International Development (USAID) Water Reuse and Environmental Conservation Project (WRECP) handed over responsibility for The Network for Jordanian Industrial Sustainability to RSS, Jordan. The President of RSS, HRH Princess Sumaya bint El-Hassan and the Mission Director of USAID-Jordan, Ms. Beth Paige signed a Memorandum of Understanding to formalize the handover in a ceremony held on December 10, 2013.

Speaking on the signing ceremony, Ms. Paige noted that the US government is aware of the challenges faced by Jordan s industrial sector in competing globally, contributing to national economy, and providing jobs for Jordanian citizens. The project works with the Jordanian government and industry to foster the water and energy conservation, which will reduce production costs and improve the competitiveness of the country s industrial sector. The Network functions through an interactive web-portal (www.jordannetwork.net) for sharing information about the ways Jordan s industrial sector can both conserve scarce resources and improve environmental performance.

High Officials of USAID-Jordan and RSS at the handing over ceremony of 'The Network for Jordanian Industrial Sustainability'

The event concluded with a panel discussion having representation from various sectors that started a dialogue about green finance and the opportunities it holds for Jordan. This workshop was the first to be carried out for The Network under the RSS umbrella with the support of WRECP-USAID.

RESEARCH AND CAPACITY-BUILDING ACTIVITIES AT IRCC-SUDAN

The Industrial Research and Consultancy Centre (IRCC), Sudan, has finished the collection and authentication of 32 medicinal plants in Sudan, and started the extraction of essential oils of these plants under the joint project of COMSATS International Thematic Research Groups, Drug Discovery from Nature for Neglected Diseases .

The Department of Engineering Industries Research of IRCC, Sudan, organized a training course on Classical Control Systems from December 8-18, 2013. Twenty-one engineers from the local industry, universities, and private enterprises participated in the training course that educated the participants on the classical control and Electrical Control Techniques Simulator, as well as on the applications of these techniques. Also, the Chemical Industries Department of IRCC organized a training course on production of Eucalyptus essential oil that benefitted one hundred participants.

EMBRAPA AGROBIOLOGIA, BRAZIL, HAS A NEW HEAD

Dr. Gustavo Ribeiro Xavier, assumed charge as the Director General, EMBRAPA Agrobiologia, on December 16, 2013, succeeding Dr. Eduardo Campello. The charge for the position was formally handed over to him in a ceremony held at Johanna Döbereiner auditorium at EMBRAPA Agrobiology, attended by the President of the Brazilian Agricultural Research Corporation (EMBRAPA), Mauricio Lopez, and the authorities and representatives of agribusiness.

In his letter of felicitations to Dr. Xavier, the Executive Director COMSATS has noted the good working relations with his institution and communicated his hopes for continued cooperation in future.

BIOGRAPHIES OF EMINENT SCIENTISTS FROM DEVELOPING COUNTRIES: MAX THEILER

Max Theiler was born on January 30, 1899, in Pretoria, South Africa, one of the four children of Sir Arnold and Emma Theiler. His father was a well-known veterinary scientist. He attended local schools except for one year in Basle, Switzerland (his father was of Swiss origin), then went on to Rhodes University College, Grahamstown and the University of Capetown Medical School (1916-1918). He then went to England to study at St. Thomas' Hospital and at the London School of Tropical Medicine, receiving his medical degree in 1922. In the same year, he became a Licentiate of the Royal College of Physicians and a Member of the Royal College of Surgeons.

In 1951, Max Theiler of the Rockefeller Foundation received the Nobel Prize in Physiology or Medicine for his discovery of an effective vaccine against yellow fever.

In 1922, he joined the Department of Tropical Medicine at the Harvard Medical School, Boston, Massachusetts, first as an assistant, then as an appointed instructor. In 1930, he joined the staff of the International Health Division of the Rockefeller Foundation, becoming the Director of Laboratories of the Rockefeller Foundation's Division of Medicine and Public Health, New York in 1951.

After Theiler's 1930 discovery that yellow fever virus can be propagated by passage in the mouse brain, he found that repeated passages in mice led to a progressive shortening of the incubation time and, importantly, a successive reduction of the pathogenicity of the virus in monkeys. Theiler then developed a convenient test for measuring protective antibodies in mice which also allowed a quantitative demonstration of the presence of antibodies in humans. This proved to be an important tool for mapping the epidemiology of infections and evaluating candidate vaccines. After Theiler's work on yellow fever, mice came into widespread use for studies of viruses that affect humans and animals.

During the 1930s, Theiler together with Eugen Haagen, demonstrated the growth of mouse brain adapted virus in chicken embryo cultures. The stage was now set for a full attack on the problem of establishing a stable, effective, and safe attenuated virus.

Different virus strains with various properties were carried through several hundred passages in different kinds of tissue cultures and repeatedly tested for their neurotrophic activity. The breakthrough came when the Asibi strain of virus the first ever isolated was passed repeatedly in minced chicken embryos from which the central nervous system had been removed. Fortunately, the virus variant that emerged had stable properties and its neurovirulence was not regained upon repeated passages in chicken embryo cultures containing brain material.

His early work, at Harvard, dealt with amoebic dysentery and rat bite fever. He also worked on the problem of yellow fever, a subject in which he had become interested. By 1927, he and his colleagues had proved that the cause of yellow fever was not a bacterium but a filterable virus. He also demonstrated that the disease could be readily transmitted to mice.

Previously, laboratory work on this topic had been done using monkeys as experimental animals; the use of mice enabled the cost of such research to be greatly reduced. In 1930, when he joined the Rockefeller Foundation, it was engaged in a broad attack on the problem of yellow fever. Here, Theiler and his colleagues worked on vaccines against the disease and eventually developed a safe, standardized vaccine, 17D, one advantage of which was its ready adaptability to mass production.

The mechanisms of attenuation and immunogenicity for the 17D strain are not known. However, this vaccine is very safe, with few adverse reactions having been reported and millions of doses administered, and highly effective with over 90% of vaccinees developing a measurable immune response after the first dose.

In 2013, the World Health Organization concluded, a single dose of the vaccination is sufficient to confer life-long immunity against yellow fever disease .

His other work for the Institute has been connected with the causes and immunology of certain disorders that include Weil's disease. He has also been engaged in research on dengue fever and Japanese encephalitis. The problem of poliomyelitis has been of great interest to him and he discovered an apparently identical disorder in laboratory mice that is now sometimes called Theiler's disease (encephalomyelitis).

Dr. Theiler has been a contributor to two books, Viral and Rickettsial Infections of Man (1948) and Yellow Fever (1951). He has also written numerous papers in The American Journal of Tropical Medicine and Annals of Tropical Medicine and Parasitology.

Honours awarded to him include the Chalmer's Medal of the Royal Society of Tropical Medicine and Hygiene (London, 1939); the Flattery Medal (Harvard, 1945); and the Lasker Award of the Lasker Foundation (1949).

From Nobel Lectures, Physiology or Medicine 1942-1962, Elsevier Publishing Company, Amsterdam, 1964.
This biography was written at the time of the award and first published in the book series Les Prix Nobel. It was later edited and republished in Nobel Lectures.

Max Theiler died on August 11, 1972.

ARTICLE: SCIENCE S ROLE IN GROWING DIVERSE, NUTRITIOUS FOOD

Jan Piotrowski*

The riots that swept Africa in 2007 and 2008 in response to the spiralling costs of staple crops brought the effects of food shortages into sharp focus. Images of unrest circled the globe, and the consequent instability brought to the forefront of political debate a question that had long been out of the spotlight: how can we ensure everyone has access to enough safe and nutritious food?

Food security is an issue that touches all aspects of the development agenda, from agriculture and environmental management to economics, governance and social equality. It is also a challenge with no simple solution. It is clear that if food production is to rise by 70 per cent by 2050 to feed the rising population, as the FAO predicts it must, we must do more with less. How to achieve this jump in food production sustainably is one of the big questions of our time , says Sieg Snapp, a Professor of soil and cropping systems at Michigan State University, USA. An estimated ten billion people will live on Earth by 2050. The increase in food production needed to feed them must be achieved while the resources to grow food are squeezed by urbanisation, environmental degradation and competition for land from biofuels and livestock. During the Green Revolution of the last century, Science & Technology had a transformative effect on agriculture. But in the 21st century, are they still the key to long-term food security?

Over 2.3 billion tonnes of cereals are produced every year, according to FAO. They are responsible, either directly or indirectly through animal feed, for the bulk of calories humans consume. Wheat, maize and rice alone are responsible for almost half of the calories and 40 per cent of protein consumed in the developing world, says FAO. Snapp says that though cereals may be agricultural heavyweights, there is growing recognition that they alone cannot be relied upon to feed the world. African farmers growing a mixture of nitrogen-fixing crops, such as soybean, peanut and pigeonpea one year, followed by just maize the next, achieved similar grain yields to monoculture maize but with 50 per cent more protein content, and using half the fertiliser, her research has shown. Science has a role to play in honing and disseminating these strategies, but a lack of political support can prevent them from becoming more widespread, she says.

Diversifying crops is important, but the research focus should not shift from improving the pillars of food production , says Hans-Joachim Braun, director of the Global Wheat Program at Mexico s International Maize and Wheat Improvement Centre (CIMMYT). Growing cereal crops more efficiently is paramount to freeing up land to grow other crops as well without reducing the total calories produced, he says. Science is also vital for improving the quality, not just the quantity, of cereals by increasing concentrations of micronutrients such as zinc and iron, he adds. Hidden hunger caused by a lack of micronutrients cannot be solved solely by crop improvement, Braun admits, but given that the fortification programmes of many developing nations have failed, it can go a long way.

Animals are another important source of nutrients, but as people the world over eat more meat, finding efficient ways to raise livestock that do not compete with other forms of agriculture is a priority. One innovation in this respect is genetically modified cotton, which has seeds free of a toxin that usually prevents protein-rich cotton seed waste from being used as a feed in aquaculture, and pig and poultry farming. If the method was deemed safe for human consumption, the international team behind the research believes it could satisfy the protein needs of 500 million people.

Researchers are also exploring other options, from developing techniques to raise insects on food and human waste, to growing protein tissue in labs. Achim Dobermann, Deputy Director-General for Research at the International Rice Research Institute (IRRI) in the Philippines, agrees that to date genetic improvement has largely focused on specific genes or pathways regulating traits such as pest resistance or grain size. But researchers must aim for more ambitious targets involving multiple genetic pathways, he says. Boosting levels of photosynthesis, the process by which plants turn sunlight and water into food or giving nitrogen-fixing abilities to cereals could lead to quantum leaps in yield and efficiency, he believes. But these blue-skies strategies can take decades to bear fruit, and so other technologies should be developed to fill the gap, says Dobermann. In the developing world, technology to keep food edible after harvest, such as equipment to dry grains and store crops, needs more development, he adds. According to a joint report from FAO and the World Bank, inefficiencies in grain processing and storage in Sub-Saharan Africa alone could cost the region US$ 4 billion a year, or around 15 per cent of total production. Great steps could be taken towards improving food security using existing technology and knowledge, says Dobermann. But policies, including long-term fertiliser subsidies and poor land-tenure rights, often discourage farmers to adopt alternative strategies.

In developing countries, the extension systems that bridge the gap between labs and farmers' fields are often weak, forming major obstacles to the diffusion of scientific knowledge, says Dobermann. Traditional state-led extension activities tend to focus on promoting specific seed varieties or techniques, rather than more holistic approaches to increasing yields while protecting the environment.

The explosion of digital technology offers huge potential to amplify the message and to widen the scope so that every farmer has access to the information to make informed decisions, he says. As a multi-faceted issue, there will probably never be a silver bullet to ensure food security. But finding innovative ways to spread knowledge, paired with continued support for research, seems set to ensure that science will remain a crucial weapon in the years to come.

Courtesy: SciDev.Net (November 20, 2013)

*** About the Author:** Jan Piotrowski (janpiotrowski86@gmail.com) works as a freelance science journalist with a focus on international development, science and the environment.

SCIENCE, TECHNOLOGY AND DEVELOPMENT

DNA BASED TECHNIQUE TO DETECT AND PREVENT CANCER BEFORE IT DEVELOPS

Researchers have developed a DNA clamp that can detect mutations at the DNA level with greater efficiency than methods currently in use. The development was made as part of an international research project, reported in the *Science Daily* (December 19, 2013). Their work could facilitate rapid screening of diseases that have a genetic basis, such as cancer, and provide new tools for more advanced nanotechnology.

According to one of the researchers, Professor Francesco Ricci, the advantage of this fluorescence clamp, compared to other detection methods, is that it allows distinguishing between mutant and non-mutant DNA with much greater efficiency. This information, Ricci notes, is critical because it tells patients which cancer(s) they are at risk for or have.

This work is believed to pave the way for new applications related in the area of DNA-based nanostructures and nanomachines.

GENERATING HYDROGEN FUEL FROM SUNLIGHT BY A LOW-COST, LONG-LASTING WATER SPLITTER

According to news published in the *Science Daily* on November 14, 2013, Stanford University scientists have created a silicon-based water splitter that is both low-cost and corrosion-free. The novel device a silicon semiconductor coated in an ultra-thin layer of nickel could help pave the way for large-scale production of clean hydrogen fuel from sunlight, according to the scientists.

The scientists have turned to an emerging technology called water splitting to produce clean hydrogen for fuel cells. Two semiconducting electrodes are connected and placed in water. The electrodes absorb light and use the energy to split the water into its basic components, oxygen and hydrogen. The oxygen is released into the atmosphere, and hydrogen is stored as fuel. When energy is needed, the process is reversed. The entire process is sustainable and emits no greenhouse gases.

"Silicon, which is widely used in solar cells, would be an ideal, low-cost material", said Stanford graduate student Michael J. Kenney, co-lead author of the Science study. "But silicon degrades in contact with an electrolyte solution . In 2011, another Stanford research team addressed this challenge by coating silicon electrodes with ultra-thin layers of titanium dioxide and iridium. The scientists plan to do additional work on improving the stability and durability of nickel-treated electrodes of silicon, as well as other materials.

NANOROBOT FOR TRANSPORTING DRUGS IN THE BODY

In collaboration with colleagues in Italy and the USA, researchers at Aarhus University, Denmark, have now taken a major step towards building the first nanorobot of DNA molecules that can encapsulate and release active biomolecules, says the December 2, 2013 edition of *Science Daily*.

Using DNA self-assembly, the researchers designed eight unique DNA molecules from the body's own natural molecules. When these molecules are mixed together, they spontaneously aggregate in a usable form the nanocage. The nanocage has four functional elements that transform themselves in response to changes in the surrounding temperature. Researchers trapped an active enzyme called horseradish peroxidase (HRP) in the nanocage.

The encapsulation of HRP in the nanocage is reversible, and researchers have also shown that the DNA nanocage, with its enzyme load, can be taken up by cells in culture. Looking towards the future, the concept behind this nanocage is expected to be used for drug delivery, i.e. as a means of transport for medicine that can target diseased cells in the body in order to achieve a more rapid and beneficial effect.

NEW DRUG CANDIDATES FROM A SWIFT INNOVATIVE DRUG DISCOVERY STRATEGY

Scientists at The Scripps Research Institute (TSRI) have demonstrated a drug-discovery strategy with a double payoff, it enables the rapid selection of chemical compounds that have a desired effect on cells and also highlights how the compounds work, as reported in the December 22, 2013 edition of *Science Daily*.

To illustrate the power of the innovative technique, the TSRI researchers used it to identify a compound that shows promise for treating obesity-linked diabetes a complex metabolic disorder that affects 347 million people worldwide. At the same time, they were able to identify the fat-cell enzyme that the compound inhibits.

Saez and his colleague, Benjamin F. Cravatt, Chair of TSRI's Department of Chemical Physiology, were the senior authors of the new study, which was reported on December 22, 2013, in an advance online issue of *Nature Chemical Biology*. Identifying the molecular targets of compounds selected by the older phenotypic screens is typically burdensome and time-consuming. But in their new study, Saez, Cravatt and their colleagues were able to speed up the process dramatically. Indeed, their combined phenotypic screening and target-identification approach enabled them to quickly discover, characterize and carry out preclinical tests of a potential new drug for obesity-linked diabetes.

PROFILE OF HEAD OF COMSATS S&T CENTRE OF EXCELLENCE

DR. SIRIMAL PREMAKUMARA GALBADA ARACHCHIGE, DIRECTOR/CEO ITI, SRI LANKA

Dr. Sirimal Premakumara Galbada Arachchige is a senior research scientist at COMSATS Centre of Excellence in Sri Lanka, the Industrial Technology Institute (ITI), which was formerly known as Ceylon Institute of Scientific & Industrial Research (CISIR). Dr. Premakumara was appointed as the Director and Chief Executive Officer of this premier research institute of Sri Lanka by the former Sri Lankan Minister for Technology & Research, Hon. Ms. Pavithra Wanniarachchi.

Dr. Premakumara is known nationally and internationally for his research work in biologically active natural products, molecular medicine and drug research. His extensive research has brought a lot of fame to his Institute in the recent past especially due to his breakthrough KASPER technology for Kithul sector and the research conducted on medicinal properties of Kothalahimbutu, Binkohomba, Cinnamon and indigenous rice varieties.

Dr. Premakumara received his early education from the Royal College, Colombo, and graduated from the University of Colombo. He holds a Ph.D in Chemical Biology and Post-doctoral training in Nutrition Biochemistry & Biotechnology. He received his multidisciplinary training working in various international laboratories, including International Center for Chemical & Biological Sciences (ICCBS), Pakistan, which also is a Centre of Excellence of COMSATS; Marine Science Centre of Universiti Putra Malaysia (UPM), Malaysia; National Food Research Institute, Japan; and Proctor Maple Research Institute of University, Vermont, USA.

He is a recipient of many fellowships, including the prestigious JSPS Invitation Fellowship for Research by the Japanese Government. He received the 2006 Professor Chandrasena Memorial Award from the Institute of Chemistry for his exceptional research contribution to the field of organic chemistry, Pharmacology, Biochemistry and Bioactivity studies. He is also a recipient of many awards for his academic and research excellence that include Presidential Award, National S&T Award, and Talented Scientist Award from University of Tirupathi (India). He has over 20 years of experience in managing R&D laboratories, S&T personnel and R&D projects while working for many scientific institutions.

Dr. Premakumara also has established research collaborations with various prestigious institutes around the globe including the University of Texas at Arlington and University of Arkansas in USA, National Food Research Institute and National Institute for Animal Health in Japan and HEJ Research Institute of Chemistry and Dr. Panjwani Centre for Molecular Medicine and Drug Research in Pakistan. He has over 150 research publications and several patents emanated from his research work.

As a contribution to capacity building for science & technology developments in the country, Dr. Premakumara has supervised over 20 MSc and 7 Ph.D students. He is also a member of various national & international undergraduate and postgraduate examination boards and reviewer of national and international scientific journals, books and monographs.

Dr. Premakumara is also a member of editorial board of International Journal of Herbal Medicine & Technology. He has held various positions in learned scientific bodies in the country and was the President of the Institute of Biology, Sri Lanka, in 2010.

Presently, Dr. Premakumara holds the Chair of Ethical Review Committee of the Institute of Biology. He is a member of various national committees and boards, including the National Research Council and National Committee on Women, whose appointments are directly made by the President of Sri Lanka.

Kithul (Caryota urens) also known as fish tail palm or toddy palm, is an indigenous plant, naturally grown in the wild. The Kithul industry in Sri Lanka has a history that dates back over 2000 years. Dr. Premakumara and his research group have been successful in giving a new lease of life to the traditional Kithul industry in Sri Lanka that was dying due to the deterioration of traditional technology used in tapping and various other issues that obstruct in scaling up production.

The ITI research team lead by Dr. Premakumara focused on developing a technology to overcome issues affecting the Kithul industry and making it commercially viable. Their efforts finally lead to the development of a solution called the Kithul Activation and Sap Production Enhancing Reagent (KASPER). This was a highly successful solution addressing the main issues that the industry faced. Among other achievements was the introduction of a non-chemical method to preserve Kithul sap for several days that would help in transportation of the sap and enable its further uses.

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COMSATS BRIEF AND ANNOUNCEMENTS

SELECTED FORTHCOMING SCIENTIFIC EVENTS IN COMSATS COUNTRIES

11-13 March 2014	Asia 2014 5th International Conference on Water Resources and Hydropower Development in Asia, Colombo, Sri Lanka *(www.hydropower-dams.com/pdfs/asia_2014.pdf)*
29-30 March 2014	ICFSN 2014 International Conference on Food Security and Nutrition, Shanghai, China *(www.icfsn.org)*
23-24 April 2014	4th Int l Conference of Botany and Microbiological Sciences, Biological Applications and Contemporary Environmental Challenges, Ismailia, Egypt *(http://bacec.scuegypt.edu.eg)*
3-23 August 2014	ASP 2014 3rd Biennial African School of Fundamental Physics and its Application, Dakar, Senegal *(www.africanschoolofphysics.org/asp2014)*

IYCr South Asia Summit Meeting on Vistas in Structural Chemistry 28th and 30th April, 2014, Karachi, Pakistan

Under the auspices of the International Union of Crystallography (IUCr) and UNESCO, a summit meeting on Vistas in Structural Chemistry will be held from 28 to 30 April 2014 at the International Center for Chemical and Biological Sciences (ICCBS), a Centre of Excellence of COMSATS, in Karachi, Pakistan. This summit celebrates the International Year of Crystallography 2014 and bears the theme chemical crystallography and pharmaceutical sciences. The event is being jointly organized inter-alia by the Ministry of Science and Technology (MoST), Government of Pakistan; Pakistan Academy of Sciences (PAS); Chinese Academy of Sciences (CAS); and Commission on Science and Technology for Sustainable Development in the South (COMSATS). Prominent scientists and science policymakers from China, India and Pakistan (including representation from industry) will come together to provide a platform for a general discussion on the present status and future of scientific research, with particular emphasis on structural chemistry in South and East Asia.

For further information please contact: Prof. Dr. M. Iqbal Choudhary, Director ICCBS iqbal.choudhary@iccs.edu

CALL FOR PAPERS FOR COMSATS JOURNAL SCIENCE VISION: VOL. 20

Science Vision is a biannual scientific journal of COMSATS. It primarily aims at highlighting the important scientific and technological developments that have a bearing on socio-economic conditions of the people. It invites research as well as review articles that have general scientific descriptions, with comprehensive elucidation of the impact of S&T discoveries and innovations for creating understanding of the contemporary issues and challenges.

COMSATS invites scholarly contributions for the Volume 20 Issue 1(January to June 2014) of its journal. Scientists, researchers, policy-makers and young scholars from S&T organizations and R&D institutions are encouraged to contribute articles on any scientific field of interest relevant to the focus of the journal. As per the policy of the journal, contributors are compensated for their time and efforts with a modest amount of honorarium.

For more details, please visit COMSATS official website: www.comsats.org or the journal s website: www.sciencevision.org.pk. Contributions may be sent to the Managing Editor at: comsats@comsats.org.

A BRIEF ON COMSATS

The Commission on Science and Technology for Sustainable Development in the South (COMSATS) is an inter-governmental organization, with its Secretariat located in Islamabad, Pakistan.

COMSATS, currently, has 21 countries as its members, spread across three continents, i.e. Africa, Asia and Latin America. A network, of 18 International Science and Technology Centres of Excellence, is also affiliated with COMSATS to contribute to scientific development of its Member States. For detailed information, please visit COMSATS' website: www.comsats.org.

COMSATS NETWORK OF INTERNATIONAL S&T CENTRES OF EXCELLENCE

- Bangladesh Council of Scientific and Industrial Research (BCSIR), Bangladesh
- Centro Internacional de Física (CIF), Colombia
- COMSATS Institute of Information Technology (CIIT), Pakistan
- Council for Scientific and Industrial Research (CSIR), Ghana
- Embrapa Agrobiologia, Brazil
- Higher Institute for Applied Sciences and Technology (HIAST), Syria
- Industrial Research and Consultancy Centre (IRCC), Sudan
- Industrial Technology Institute (ITI), Sri Lanka
- International Center for Chemical and Biological Sciences (ICCBS), Pakistan
- International Center for Climate & Environment Sciences (ICCES), China
- International Centre for Environmental and Nuclear Sciences (ICENS), Jamaica
- Iranian Research Organization for Science and Technology (IROST), Iran
- National Mathematical Centre (NMC), Nigeria
- National Research Centre (NRC), Egypt
- Royal Scientific Society (RSS), Jordan
- Tanzania Industrial Research and Development Organization (TIRDO), Tanzania
- TÜBİTAK Marmara Research Center (MAM), Turkey
- University Cheikh Anta Diop (UCAD), Senegal