



# COMSATS Newsletter

4  
2011

Commission on Science and Technology for Sustainable Development in the South (COMSATS)

July - August 2011, Vol. 3, Issue 4  
Islamabad, Pakistan.

Patron  
Dr. Imtihan Elahi Qureshi, T.I.  
Executive Director

## Editors

Mr. Irfan Hayee  
Ms. Farhana Saleem



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.



*Prof. Dr. Nasro Min-Allah, Head of the COMSATS' delegation, giving Inaugural Address during the International Seminar in Syria (Page-4)*

## Inside this Issue

From the Executive Director's Desk	01
News/Activites/Highlights from COMSATS Secretariat	02
COMSATS-ISESCO International Workshop on Internet Security, Damascus, Syria	04
Activities/News of COMSATS' Centres of Excellence	07
Science, Technology and Development	10
Profile of COMSATS' International S&T Centre of Excellence - BCSIR, Bangladesh	11
COMSATS' Brief and Announcements	12

## From the Executive Director's Desk

Momentous changes are underway all over the globe. The existing economic world order is under stress because of the weaknesses of the system and human greed. It is not surprising that the leader of the free market economy could avoid default only by raising its national debt limit<sup>1)</sup>. Elsewhere, the economic downturn is forcing rich nations to adopt austerity measures. The status quo based on abundant raw materials and cheap labour in the South is becoming increasingly unsustainable. It is no longer possible for the 12% of the world's population in the West to consume 60% of the world's resources<sup>2)</sup>, as the vast majority of the deprived humanity is increasingly asserting its right to a decent and dignified life. With world population heading towards 9B mark by 2050<sup>3)</sup>, the carrying capacity of the Earth's ecosystem will be stretched to its limit. The competition for water, food and energy resources is bound to get fierce. The recent interventions in Africa and wars in Iraq and Afghanistan are symptomatic of the upcoming struggles between neo-colonialism and an equitable socio-economic world order.

The fundamental question is whether the countries of the South are well-prepared to take effective control of their human and material resources. Unfortunately, this does not seem to be the case, apart from some notable exceptions, such as China. It was 150 years ago that the merciless colonial powers of the

time were tearing apart China and waging wars for their 'right' to sell narcotics to hapless Chinese<sup>4)</sup>. The country came out of this abyss through collective struggle and determination to preserve its independence by focussing on human development programmes. Any other country of the South, which aspires to become truly independent and prosperous, must take the long and arduous route of developing its educational and scientific institutions. COMSATS calls upon all leaders of the South to devise a Master Plan to bring their countries at par with the West in the next 50 years. The object should be to create an egalitarian world where all nations are at peace with each other and able to provide their citizens the essentials of a decent life. This utopian target is the moral obligation as well as in the self-interest of all concerned, if major catastrophes for mankind are to be averted.

The pages of this Newsletter are available to the intellectuals in COMSATS' Member States, especially those in the Centres of Excellence to voice their concerns and aspirations in these volatile times. Let there be an expression of ideas emanating from the emotions and experiences of scientists, engineers as well as administrators of Science and Technology, for creating awareness about the requisite political actions leading to a better future for all humanity. Feedback from all readers of the Newsletter is most welcome.

<sup>1)</sup> www.dawn.com (3 August 2011)

<sup>2)</sup> www.worldwatch.org/node/810

<sup>3)</sup> www.ScienceDaily.com (28 July 2011)

<sup>4)</sup> China Handbook Series, "History" 1982

## NEWS/ACTIVITIES/HIGHLIGHTS FROM COMSATS SECRETARIAT

### MEETING OF COMSATS' THEMATIC RESEARCH SUB-GROUP ON 'GREEN TECHNOLOGY'

COMSATS has embarked upon an ambitious programme of undertaking collaborative basic and applied research with the participation of several scientists from different Member States in specific priority areas. The 'Thematic Research Groups' constituted under this programme are expected to address issues intimately connected with economic development. The Group on 'Climate Change and Environmental Protection' comprises of two sub-groups; one of which, entitled 'Green Technology' was inaugurated on July 20, 2011 at COMSATS Institute of Information Technology (CIIT), Abbottabad Campus. The meeting was jointly chaired by the Executive Director COMSATS, Dr. I. E. Qureshi, and the Sub-group's designated leader, Prof. Dr. Iftikhar Ahmed Raja, Head of Department of Environmental Sciences, CIIT (Abbottabad Campus). Thirty-two officials/scientists belonging to various scientific/research institutions of Bangladesh, Ireland, Norway, Pakistan, Saudi Arabia and Sri Lanka attended the meeting.

The Sub-group on 'Green Technology' has been established as a follow-up action of the deliberations of the Foundation Meeting of COMSATS' Thematic Research Group on 'Climate Change and Environmental Protection', which was held under the chairmanship of Prof. Lin Zhaohui, Director, International Center for Climate and Environment Sciences (ICCES), on November 20, 2010, in Beijing, China. The primary objective of the meeting of the sub-group was to form a network of active researchers from various scientific institutions of the developing/developed countries that are working in the area of 'Green Technology', for the initiation of joint research activities with the patronage of COMSATS.

In his opening remarks, Dr. Khan Gul Jadoon, Director of CIIT's Abbottabad Campus, stated that CIIT, under the umbrella of this Sub-group, will strive to bring substantial changes in the standard of living of the masses by carrying

out joint research in this area of utmost significance. The Executive Director COMSATS, prior to making a detailed presentation on COMSATS and its Thematic Research Groups, considered Climate and Environmental Science a crucial field of S&T as it has major influence on the lives of human beings in years to come.

Common areas of interest of the participating organizations/individuals were identified during the meeting, and a joint research project titled 'Bioenergy for Green Community' was agreed to be executed under the Sub-group. The participants of the meeting also deliberated upon the broad parameters of the selected joint research project, defined time-line and procedure for the preparation of project proposal, identified collaborating institutions/individuals for the joint research project, as well as distributed research components among themselves.

### THE FEDERAL SECRETARY MoST, GOVERNMENT OF PAKISTAN, VISITS COMSATS SECRETARIAT

On August 03, 2011, Mr. Akhlaq Ahmad Tarar, Federal Secretary, Ministry of Science and Technology (MoST), Government of Pakistan (GoP), visited COMSATS Secretariat, Islamabad. The primary objective of Federal Secretary's visit was to receive a briefing on the recently drafted Science, Technology and Innovation (ST&I) Policy of Pakistan.

Dr. I. E. Qureshi, in his capacity as the Convener of Sub-committee to review 'Draft National S&T Policy – 2009', constituted by the former Minister for Science and Technology (GoP), made a detailed presentation on the revised draft entitled 'National ST&I Policy – 2011', highlighting the new proposals and important policy elements. Each section of the draft policy was discussed in detail by the participants of the meeting, especially in comparison with the previous S&T Policies of Pakistan. Dr.



*Participants of the First Meeting of COMSATS' Thematic Research Sub-group on 'Green Technology'*



*The incumbent Federal Secretary, Ministry of Science and Technology, Government of Pakistan, during the meeting with COMSATS' officials*

Qureshi informed the Federal Secretary that one of the major considerations while formulating the draft ST&I Policy was to take on-board the representatives of all the concerned sectors, especially public sector, industry and academia. The policy envisages increase in Gross Expenditure on R&D to 1% of GDP by 2015 and 2% by 2020.

Acknowledging the inter-disciplinary character of S&T policy, the Federal Secretary MoST stressed the need of improving coordination among different Ministries and Government Departments. He also shed light on the significance of strengthening linkages among public R&D organizations, industries and academia, as well as lateral movement of scientists/officials among these sectors. Mr. Tarar appreciated the comprehensiveness of the draft National ST&I Policy - 2011 as well as the inclusive procedure adopted for its formulation.

#### **COMSATS SECRETARIAT ESTABLISHES A TELE-HEALTH CENTRE IN ZHOB-BALUCHISTAN**

As a part of COMSATS' efforts to expand its Tele-health Services aiming to enable greater access to medical specialists from the main cities/hospitals to the communities living in far-flung areas, COMSATS in collaboration with Human Development Foundation (HDF), has setup the first ever Tele-health Centre at Zhob, Balochistan, having a "Live Tele-consultation Facility." During a visit to Zhob from 15<sup>th</sup> to 19<sup>th</sup> August 2011, Mr. Nisar Ahmad, Sr. Assistant Director (Systems), COMSATS, successfully completed the establishment of the Tele-health clinic at the Community Health Centre. Apart from installing the necessary paraphernalia for tele-consultations, the locally hired human resource (Doctor, Lab Technician and Lady Health Visitors) was given technical training to use the equipment and carry out live consultation with COMSATS' Resource Centre at Islamabad. Mr. Ahmad supervised the installation and provided basic training.



*Mr. Ahmed activating the Tele-health services between Zhob and COMSATS' Tele-health Resource Centre, Islamabad*

In order to consolidate its Tele-health initiative, COMSATS has launched a web-portal: [www.ehealthcomsats.com](http://www.ehealthcomsats.com) that has the features of patient registration, patient medical history/medical reports uploading facility, patient basic examination information uploading, scheduling of appointments for patients with specialist doctors, information on diagnostic and treatments, etc. The web-portal through its four modules serves the information needs of the administrators, patients, general practitioners, and specialist doctors.

#### **SECOND MEETING OF PAK-IIASA GROUP HELD AT COMSATS SECRETARIAT**

The Pak-IIASA Collaboration Group held its second meeting at COMSATS Secretariat on July 26, 2011. IIASA (the International Institute for Applied Systems Analysis) is a research organization that conducts policy-oriented research into problems that are too large or too complex to be solved by a single country or academic discipline. Located in Austria near Vienna, IIASA is sponsored by its National Member Organizations (NMOs) in Africa, Asia, Europe, and the Americas. The Pakistan Academy of Sciences is IIASA's NMO in Pakistan, and Dr. Ishfaq Ahmad, Sr. Advisor on Climate Change and Development to the Planning Commission of Pakistan, is a member of IIASA's Council. COMSATS Secretariat is hosting IIASA's NMO office in Pakistan at its premises since 2010. The first meeting of the Collaboration Group was held at the Secretariat on 19<sup>th</sup> May 2011.

The Group took note of Dr. Ahmad's recent visit to IIASA, Austria (June 27, 2011), which was undertaken with an aim to boost IIASA's ties with scientific and technical organizations of Pakistan and for the promotion of IIASA's programmes for socio-economic development of the country. In addition, new trends and changes at IIASA, expected in the coming years, were also brought to the notice of the Group. Detailed discussions were held on the possibility of Pak-IIASA collaborative projects in the areas of water-management, climate-change, forestry, applications of applied systems analysis, capacity-building, poverty and population, flood control in Pakistan, etc. It was decided that comprehensive projects should be developed on the basis of these concept-papers for discussion and possible collaboration with IIASA.

#### **COMSATS SECRETARIAT PARTICIPATES IN ACTIVITIES OF eHAP**

A national training workshop on "Digital Library using Open Source Software" was organized by the eHealth Association of Pakistan (eHAP) at COMSATS Secretariat. The workshop was supported by COMSATS Secretariat, COMSATS Internet Services (CIS), DinetSA, and LISolutions. Librarians and I.T professionals from various government and private organizations attended the workshop.

The workshop was inaugurated on July 20, 2011, by Dr. Haroon Roedad Khan, the President eHAP. The event aimed to provide the participants with free and open source softwares for digital libraries and library management and comprised nine technical sessions that were spread over three days. Lead trainers of the workshop were Dr. Mohan Raj Pradhan from DInetSA, Nepal; and Mr. Shafiq Rana and Mr. Ata ur Rehman from LISolutions, who delivered lectures and imparted hands-on training for two important free and open source softwares, 'GSDL' and 'Koha'.

The event concluded on July 22, 2011, with the distribution of certificates among the organizers and participants. Speaking at the Concluding Ceremony, the Executive Director COMSATS felicitated the organizers and participants of the workshop on the successful holding of the event and hoped that it had been a good learning experience for the I.T and Library professionals. He also appreciated the role of eHAP in supporting quality e-health services across Pakistan and considered it an important area for collaboration between the COMSATS and eHAP, as the former is one of the pioneers in the field in Pakistan. Also speaking on the occasion, the President eHAP impressed

upon the participants the need to practically use, at their institutions, the knowledge imparted through this workshop. He believed that the libraries in the developing countries like Pakistan need to come at par with the modern technological age to effectively disseminate the most up-to-date knowledge.

On July 30, 2011, Sr. Medical Officer COMSATS Secretariat, Dr. Azeema Fareed, participated in eHAP's seminar on "Use of Information and Communication Technology in Pakistan Healthcare Setup", in her capacity of the Vice President of eHAP. Held in Lahore-Pakistan, this seminar was one of the series of seminars that would be held in different parts of Pakistan by eHAP. The objectives of this particular seminar were to: promote e-Health awareness among healthcare and IT-related institutions and organizations in the largest province of Pakistan, Punjab; promote collaboration for e-Health activities; and bring together key e-Health stakeholders in the province.

During the seminar, Dr. Azeema gave a presentation on COMSATS' eHealth initiatives, highlighting past and recent activities of COMSATS' Telehealth Programme.

## COMSATS-ISESCO INTERNATIONAL WORKSHOP ON INTERNET SECURITY HELD IN SYRIA

### Background

One of the strongest efforts made by COMSATS to achieve its mission of sustainable development is capacity-building through scientific events. Every year the organization tries to educate and train people in the priority areas of science and technology. To make the education and training more effective and inclusive, collaborative arrangements are made with other national and international donor and development agencies. During the year 2011 alone, several scientific capacity-building events have been or are planned to be organized in Bangladesh, China, Pakistan, Malaysia, Morocco, Syria and UAE. Collaborative agreements for these have been reached with international organizations like UNESCO and ISESCO, as well all ministries and scientific institutions of these countries. The account of one such activity, held recently in Syria, is given below.

### Introduction

Realizing the importance of information security in today's networked information systems, a five-day international training workshop titled "Internet Security: Enhancing Information Exchange Safeguards" was organized in Damascus, Syria, from July 23-27, 2011, by COMSATS in collaboration with the Islamic Educational, Scientific and Cultural Organization (ISESCO); the Inter-Islamic Network on Information Technology (INIT); the Syrian-COMSATS-COMSTECH IT Centre (SCC-ITC); the Higher Institute for

Applied Science and Technology (HIAST), Syria; and the Ministry of Higher Education (MoHE), Government of Syria. This event falls under COMSATS-ISESCO Cooperation Programme (2011). The event was organized on the recommendation of the former Syrian Minister for Higher Education, H.E. Dr. Ghias Barakat.

The Workshop comprised 20 technical sessions, and an Inaugural and a Closing Session. Apart from over 50 Syrian nationals, participants from Bangladesh, Indonesia, Jordan, Malaysia, Pakistan and Sudan benefited from the proceedings of the Workshop. Around 100 relevant



*Inaugural Ceremony of the Workshop on Internet Security*



*Trainers and Participants of the Workshop*



*Director SCC-ITC, Syria, addressing during the Inaugural Ceremony of the Workshop*

personnel participated in the event that included engineers, I.T professionals, researchers and students; as well as officials of government ministries and agencies, and representatives from the private sector, e.g. economists, bankers, media persons, and academia.

### **Inauguration**

Held on July 23, 2011, the Inaugural Ceremony of the Workshop comprised addresses by Dr. Bassel Al-Khatib, Director SCC-ITC, Ministry of Higher Education, Syria; Dr. Maher AGI, Director of the Scientific Cooperation-HIAST, Syria; as well as messages from the Director General ISESCO and the Executive Director COMSATS. COMSATS and INIT were represented by Dr. Nasro Min-Allah, Head of Department of Computer Science, COMSATS Institute of Information Technology (CIIT); and Mr. Attiq-ur-Rehman, Senior Programme Officer INIT, respectively.

On behalf of HIAST, Dr. Maher appreciated the efforts made by COMSATS and SCC-ITC to organize and support the workshop. He outlined the achievements of HIAST, which included its contributions towards formulating security-related policies and procedures; undertaking penetration testing and vulnerability assessment; building and operating certification-authority for GRID-computing at national level, as well as finally providing security solutions for public sector organizations.

Identifying the issues that need to be addressed at the national and global levels, Dr. Imtihan Elahi Qureshi, in his message (read out by Dr. Nasro Min-Allah), urged on taking measures to ensure the confidentiality, integrity, and availability of the large amount of critical information available on the networking infrastructures worldwide.

### **Aims and Objectives**

The Workshop aimed at promoting the state-of-the-art technologies that safeguard the computer-networks and

network-accessible resources from different types of computer-virus attacks. Furthermore, the working of a few of the network-security tools was demonstrated to acquaint the participants with the latest technologies.

The objective of the Workshop was to teach the principles of information/network security from the perspective of providing security awareness and its best practices for the real world applications. The Workshop focused on both the theoretical and practical aspects of information security.

### **Technical Sessions**

The Workshop spanned 5-days, each day accommodating one module of the workshop. The five modules of the workshop were as follows:

1. Network Vulnerabilities and Security Threats;
2. Organizational Security;
3. Cryptographic Techniques for Network Security;
4. Web Security; and
5. Biometric Security.

Each module comprised three presentation sessions and a hands-on session. The training imparted during the technical sessions was further consolidated through lectures, tutorials and practical exercises.

The following five subject-experts from Pakistan, four from COMSATS Institute of Information Technology (CIIT) and one from the National University of Science and Technology (NUST) of Pakistan, imparted training to the participants:

1. Nasro Min-Allah, Head Department of Computer Science, CIIT, Pakistan
2. Haider Abbas, Assistant Professor, Information Security Department, NUST, Pakistan
3. Malik Najmus Saqib, Assistant Professor, Department of Computer Science, CIIT, Pakistan

4. Muhammad Mustafa Khattak, Assistant Professor, Department of Computer Science, CIIT, Pakistan
5. Sheikh Ziauddin, Assistant Professor, Department of Computer Science, CIIT, Pakistan.

### Outcomes of the Workshop

- The Workshop helped build the capacity of the participants on the network protocols, models, topologies and related security threats; modern-day cryptographic algorithms and protocols; working of major web-security applications; working of contemporary biometric systems; different aspects of cyber security; setting up different web-security applications, e.g. Kerberos, IPSec and PGP; various types of anti-virus, anti-spyware and firewall tools; full disk encryption (FDE) tools, including TrueCrypt and Microsoft's BitLocker; as well as the use of packet-sniffing tools including Wireshark and TCPdump.
- Understanding was developed about Network protocols, and topologies, Information Security Management Systems (ISMS); security policies, procedures/systems and their implementation; symmetric and asymmetric cryptographic systems, key based authentication functions; Secure Electronic Transaction (SET), biometric techniques and Biometric Template security, among many others.
- The event also resulted in the networking of relevant professionals and technical personnel from the participating countries.

### Meetings with the Syrian Minister for Higher Education and Head COMSATS' Centre of Excellence in Syria

On July 23, 2011, a two-member delegation of COMSATS, comprising Dr. Nasro Min-Allah and Mr. M. Atiq-ur-Rehman, met the Director of COMSATS' Centre of Excellence in Syria, HIAST, Dr. Wael Khansa, at his office. Director of the Scientific Cooperation, Dr. Maher AGI; and Dr. Ghassan Saba (I.T Dept.) of HIAST were also present on the occasion. Initiation of CIIT-HIAST Faculty Exchange



*Participants of the Workshop on a break during the technical sessions*

Programme came under consideration and it was agreed that the matter will be discussed with faculties of the two institutes to work-out the viability of such faculty exchange.

The officials of COMSATS met the Syrian Minister for Higher Education (COMSATS' Focal Point in Syria), H.E. Dr. Abdul Razak Cheikh Issa, on July 25, 2011. Dr. Bassel Al-Khatib Director SCC-ITC and officials from HIAST also attended the meeting. The matters discussed with the Minister included: evaluation of Syrian-COMSATS-COMSTECH Information Technology Centre (SCCITC), Syria; COMSATS' joint activities with Syrian institutions; COMSATS' recent programmes in its member states; and possible joint activities for 2012 to be held in Syria.

Both the Syrian officials were appreciative of the efforts made to successfully organize the Workshop on Internet Security in Syria and showed their gratitude towards the collaborating institutions. Other common matters discussed with the Syrian officials were: participation of the Syrian Focal Point and Centre of Excellence in COMSATS' publications and COMSATS' Thematic Research Groups, as well as the offer of post-graduate scholarships to the Syrian students.



## ACTIVITIES/NEWS OF COMSATS' CENTRES OF EXCELLENCE

### MEDIUM-SCALE SEQUENCING CENTER TO BE ESTABLISHED AT TÜBİTAK MRC-TURKEY

TÜBİTAK Marmara Research Centre (MRC), Turkey, is establishing a medium-scale Sequencing Center equipped with the next generation sequencing machines. The Center is the first of its kind in Turkey and is hoped to provide the next generation sequencing services to the entire scientific community.

The services offered by the Center would include: whole genome de novo and resequencing; transcriptome sequencing; targeted sequencing (exome, chromosome segments, etc.); metagenomics and microbial biodiversity; chip sequencing; custom capture sequencing; methylation sequencing; small RNA-sequencing; development of robust molecular markers and marker-assisted selection; fluorescence-based multiple quantitative gene expression analyses; plant tissue culture technologies; gene transfer technologies in plants.

The dramatic reduction in sequencing costs with the new development in sequencing technologies will have significant effects on the research carried out in the field of plant biotechnology. COMSATS' Member States are of the origin for many important crops, and many regional issues of genetic biodiversity in these crops can be addressed by means of this Sequencing Center.

### RSS-JORDAN INAUGURATES NEW PESTICIDES RESIDUE LAB

A Pesticides Residue Laboratory has recently been inaugurated at Royal Scientific Society (RSS), Jordan. Dr. Tareq Al Hadid, Assistant to the President RSS for External Affairs and H.E. the Minister for Agriculture, Engr. Samir Al Habashneh, were among the distinguished guests attending the inauguration.



*Inauguration of the Pesticides Residue Lab. at RSS*

In her message read by Dr. Hadid, the President of RSS, HRH Princess Sumaya bint El Hassan, noted that the Jordan Institution for Standards & Metrology (JISM) and the Jordan Food and Drug Administration (JFDA), in addition to many other private and public sector institutions, consider RSS as their technical arm in testing and assessing the quality of local and imported food-items. The objective of the establishment of Pesticides Residue Laboratory is to provide the highest degree of protection to the health of citizens, safeguard the integrity of the environment and assure that pest control is legalized.

Speaking on the occasion, Engr. Al Habashneh said that RSS is considered as the first line of defense to preserve the environment of Jordan. It ensures the safety of agricultural products and helps maintain good reputation of Jordanian Agricultural exports to foreign markets.

### HYDROGEN PROJECT OF RSS

The environmental impact of Hydrogen (totally green renewable energy) and its capability to be used as energy storage medium like that of batteries is well known. The Hydrogen Research Group of RSS has been working for over five years on the utilization of this unique property of the Hydrogen molecule to store solar energy by electrolyzing sea-water obtained from the shores of Aqaba, using a special electrochemical reactor designed and fabricated at RSS. This process is followed by an additional step to separate the gaseous phase from the liquid phase. After which, purification of the produced hydrogen gas using Pd-Cu membrane is achieved in order to utilize the product (i.e. hydrogen gas with high purity) to produce energy and water in a totally green process using proton exchange membrane fuel cell. This project was sponsored by the Scientific Research Support Fund at the Jordanian Ministry of Higher Education, the SRTD programme and RSS.

During the project, RSS Hydrogen Research Group identified for the first time, three types of Algae in the Gulf of Aqaba, which showed acceptable production levels of hydrogen using a special bioreactor setup at ambient conditions. This method of production is considered a viable alternative to the electrochemical technique mentioned above.

The major outputs of this project are highlighted as follows:

- Patent registration of the electrochemical reactor working on solar energy in Jordan;
- Extraction of DNA from the green algae (*Chaetomorpha linum*);
- Production of the first Arab Fuel Cell (AFC1); and
- Development of a proton exchange membrane to be used in AFC1.

## IRCC-SUDAN PARTICIPATES IN THE SUDANESE INDUSTRIAL EXHIBITION

Industrial Research and Consultancy Centre (IRCC), Sudan, being a partner organization of the Sudanese Ministry of Industry, actively participated in the national-level Industrial Exhibition held at the premises of Khartoum International Exhibition, Burri Suburb, from 15<sup>th</sup> to 30<sup>th</sup> August 2011. The event had been organized under the slogan "Made in Sudan" and had a participation of over 100 local industry members.

The Exhibition was declared open by the President of the Republic of Sudan, H.E. Omar al-Bashir. Speaking on the occasion, the Federal Minister for Industry, Dr. A. A. Eljazz, considered that this exhibition marks the beginning of what he called "the renaissance of the Sudanese industry", which he assured will never exclude a single industrial sector in Sudan.

IRCC's major research achievements were presented on the occasion, which included: production of sulphonated oils that are used for softening leather after being subjected to leaching processes; production of lime from limestone in lime furnace, especially designed and assemble by IRCC; production of sodium bicarbonate from carbonate rich natural deposits; designing of mobile distillation units to be used for the extraction of essential oils from aromatic plants; production of pulp paper from sugarcane/ bagasse; and utilization of milk whey in some food industries. A separate pavilion displayed different leather goods developed by the Leather Technology Centre of IRCC.

## UNESCO DELEGATION VISITS ICCBS-PAKISTAN

Director UNESCO, Islamabad, Dr. Kozue Kay Nagata, along with two delegates paid a visit to International Center for Chemical and Biological Sciences (ICCBS) and held a meeting with its Director, Prof. Dr. M. Iqbal Choudhary, on August 11, 2011.

During the meeting, Dr. Choudhary made a presentation covering the historical background, present research activities and future plans of the Center. He emphasized the possibilities of collaboration between ICCBS and UNESCO in various scientific fields, such as partnership in virtual education, bioequivalence studies for capacity-building,

recognition of ICCBS as category-2 institution from Pakistan, etc. The Director ICCBS also highlighted the ongoing research and capacity-building activities undertaken at various institutes of ICCBS. Dr. Choudhary informed the visiting Director UNESCO about the international linkages of ICCBS with scientific institutions in Australia and Thailand.

Dr. Nagata appreciated the efforts made by Prof. Dr. Atta-ur-Rahman and Prof. Dr. M. Iqbal Choudhary for making ICCBS an internationally reputable research organization. She stressed the need for future linkages between UNESCO and ICCBS, and hoped that ICCBS will be included as category-2 UNESCO Centre.

## CIIT WINS FUNDING FOR A HEALTHCARE PROJECT

National ICT R&D Fund of Ministry of Information Technology, Government of Pakistan, has recently approved funding for a project of COMSATS Institute of Information Technology (CIIT), titled '3-D Graphical Imagery

Therapy for Healing Brain Tumors in Children'. The project is being carried out by Ms. Sadaf Sajjad, Assistant Professor (Department of Humanities) and Dr. Sajjad Mohsin, Dean, Faculty of Information Sciences & Technology.

The three-dimensional animated graphical representation is a tool which can be used to facilitate the diagnostic sessions using guided imagery for children with brain tumors. The guided imagery therapy has an effect on the patients' cognitive and behavioral abilities, by stirring their sense of

imagination in order for them to recover from psychological and physiological ailments and to boost their immune systems. The project's guided imagery treatment is hoped to optimize the overall health of the patients, besides targeting the brain tumor. This animated imagery is meant to be used with, but not in place of, standard treatment of brain tumor.

## SCIENTIFIC EVENTS AT CIIT

The 6<sup>th</sup> International Symposium on Quantum Optics was organized by CIIT at the Centre for Quantum Physics in the premises of Pakistan Academy of Sciences, Islamabad, on July 18-19, 2011. The Symposium was attended by distinguished researchers from Pakistan and abroad. The purpose of this Symposium was to present exciting developments in the field of quantum optics with an emphasis on the fundamental concepts and their applications.



*Participants of the 6<sup>th</sup> Symposium on Quantum Optics organized by CIIT*



Talks were delivered by speakers from local and foreign scientific institutions. The speakers covered a range of topics relating to the quantum optics that included, Raleigh limit in optical lithography and microscopy; phase dynamics in a duplicated two-level atomic system; spin polarized emission of LED; laser cooling and trapping of neutral atom; prolonging entanglement via quantum gates; Quantum Zeno effect without rotating wave approximation; quantum computing using super conducting quantum interference devices; and quantum interference in spontaneous emission.

Another event, having the theme 'Topology and its Application (ICTA 2011)', was organized by the Department of Mathematics of CIIT, Islamabad, from July 4-10, 2011. The objectives of the conference were, inter alia, to: create a research based culture in the region, and promote networking and collaborations. The Conference provided an opportunity to young Pakistani researchers in the field of Topology to interact with experts. The event was attended by 80 local and 23 international participants. More than 40 lectures were delivered. It was the first time in Pakistan that scientists in the field of Topology gathered from more than 10 countries.

#### AWARDS WON BY CIIT

Dr. Khalid Rashid, who is an Advisor at International Liaison Office (Japan Desk) at CIIT, has been honored with "Nagoya University Award for Contributions to International Exchange", in recognition of his services for international cooperation. Dr. Rashid did his Ph.D from Nagoya University in 1978 and has been associated with CIIT since 2008.

His services include promoting cordial relations among CIIT, Japan Embassy in Islamabad and the members of the Alumni of Nagoya University; and his active involvement in collecting funds for the victims of the tsunami that hit Japan in March 2011. He is also striving hard to ensure academic linkage between CIIT and various Universities in Japan, including Nagoya University. On invitation from the Nagoya University, Dr. Rashid will be visiting Japan in October 2011.

CIIT's project, "E-health Dedicated Server", won the first place in the 'Best Mobile Innovation in Pakistan' (BMIP) Award. BMIP Award is an annual event to promote innovations, encourage entrepreneurship, as well as increase implementation of wireless technologies in Pakistan and abroad. The winning project has been developed by Dr. Nasro Min-Allah and Mr. Zeeshan Mehta of CIIT, Islamabad. The Server is meant to facilitate the

medical practitioners and staff of emergency vehicles in remote areas of Pakistan.

Pakistan Council for Science and Technology, Ministry of Science and Technology, Government of Pakistan, has awarded the Research Productivity Award to Dr. Zulfiqar Habib (Head of Computer Science Department, CIIT, Lahore Campus). The award was given on the basis of research achievements for the year 2010-11.

#### NRC-EGYPT RESEARCH ESTABLISHES REMEDIAL EFFECTS OF FENUGREEK

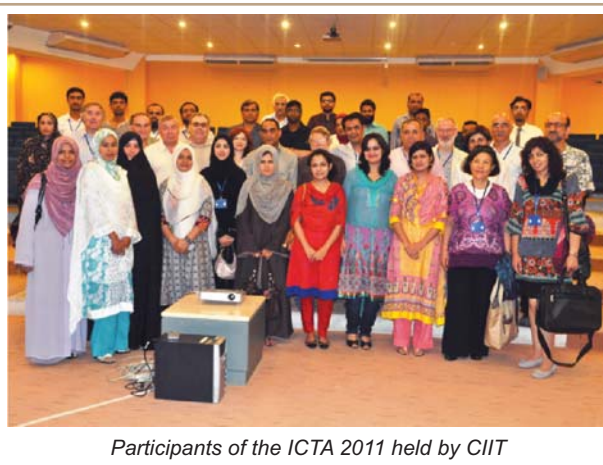
Dr. Nehad Zaki, a researcher at Chemistry of Natural Products Department of National Research Centre (NRC), Egypt, explained the Fenugreek effects on lipid and carbohydrate metabolism enzymes and decreasing the blood-glucose level in diabetic patients. Fenugreek plant has many benefits; its chemical composition analysis revealed high amounts of proteins, carbohydrates, phosphorus and calcium. It also contains Cholin, which is an essential food nutrient.

Many tests undertaken during the study revealed the effect of Fenugreek in increasing the efficiency of insulin and decreasing insulin resistance in vivo. The studies done on experimental mice showed its effect in reducing the serum cholesterol level. Fenugreek seeds contain (about 1.5% of its dry weight) Diosgenin, which is used for the commercial synthesis of cortisone, pregnenolone, progesterone, and other steroid products. Recent studies showed the Diosgenin helps in inhibiting

malignant cells in lung, colon and breast cancer, and can also act as anti-inflammatory agent.

#### EMBRAPA AGROBIOLOGIA-BRAZIL PARTICIPATES IN EXPO 2011

The Division of Technology Transfer of EMBRAPA Agrobiologia, Brazil, presented xaxim agroecological and vermicomposting processes during Expo 2011, held from June 30 to July 5, 2011, in Brazil. The technology of the tree fern was exposed through prototypes and videos. Also, two workshops were conducted by the analyst and researcher, Ernani Garden Cristhiane Amancio, namely: 'Embrapa Technological Innovations for Rural Sanitation (Septic Tank Biodigestora)' and 'Agroecology for People Who Grow'. A number of teachers, trainers, and technicians of the Department of Environment, Agriculture and Fisheries benefited from the workshops.



Participants of the ICTA 2011 held by CIIT

## SCIENCE, TECHNOLOGY AND DEVELOPMENT

### NANOTECH-BASED SAND FOR WATER FILTRATION

Clean drinking water is becoming rapidly inaccessible for the masses in the developing countries. Impact of climate change and rapidly increasing population are some of the major reasons. Rural population is the main victim of the water crisis. Enormous efforts are being made in the developing countries to improve water-management methodologies in order to circumvent the water-related issues. The major challenges include lack of simple techniques for water cleaning, which could be easily adopted by the general public. One such method has been described by researchers in a report published in *SciDev.Net* (July 7, 2011).

According to this report, ordinary sand can be used to filter dirty water to make it fit for drinking using a nanotech-based technique. Scientists from Australia and the USA have come up with a way to coat ordinary coarse sand with a nanomaterial called 'graphite oxide', which can remove impurities from water 5 times more than ordinary sand. The method for treating the sand is simple and uses low-cost materials, making the technique more viable to be used in developing countries. The technique may prove to be useful in vast majorities of areas, which are badly affected by natural disasters, such as floods, earthquakes, hurricanes, etc.

### PLASTIC INGREDIENTS LINKED TO DIABETES

Plastic materials are used abundantly all over the world. The toxic effects of some plastic ingredients are under close scrutiny of the scientists and have been made public through various awareness campaigns. As a result many people, particularly those in the developed countries, have started avoiding the use of plastic products. In the developing countries, however, the situation is still bleak due to poverty, lack of awareness and rigidity of attitudes. This, in turn, forces the developing countries to bear additional burden of healthcare costs, loss of jobs, and socio-economic setbacks.

A recent report (*ScienceNews*, July 30, 2011) indicates that women exposed to relatively high amounts of phthalates (compounds used in plastics and as solvents) are more likely to become diabetic. Although previous studies have linked phthalates with risk of obesity that itself is a risk factor for diabetes. The newly identified linkage seems to be independent of obesity. The scientists have compared the urinary excretion of breakdown products of phthalates and found its strongest links to DEHP, a chemical used in toys, food packaging and other house-hold products. This is a strong word of caution for the general public, particularly in the developing world, to take necessary steps for avoiding negative socio-economic consequences of this health hazard.

### GLOBAL TSUNAMI MONITORING

During the past few decades, tsunamis have created a havoc in many parts of the world. Loss of human lives and devastation of socio-economic set-up of countries hit by tsunami not only creates problems locally, as was the case of the Japanese Tsunami, but also jolts global economy. Such occurrences create serious problems for the developing countries as the world is increasingly becoming a crowded and inter-dependent global village.

Monitoring tsunamis and their early warning can greatly prevent human miseries. Currently, tsunamis are detected by monitoring the sea level or the pressure of water over the sea-bed. Although this method is quite efficient, it is limited to areas where adequate equipment is installed. A global monitoring system would offset this limitation. A possibility to this effect has recently been reported (*SciDev.Net*, August 18, 2011), whereby scientists and engineers will make use of new discovery – an airglow in the ionosphere caused by the occurrence of tsunamis that leaves a signature detectable by the global remote-sensing. This system does not need placement of equipment on the ground. The researchers would be able to detect tsunamis in zones deprived of geographical monitoring as well as those generated by effects other than quakes – volcanic eruptions and under water landslides. The proposed remote-sensing techniques would consist of three satellites for a worldwide tsunami forecast system. Such a system would need only about 50 kilograms of equipment on-board the future telecommunication satellites. The scientists believe that the new system will allow the detection of tsunamis well before what is possible with the current system.

### THE INVISIBILITY CLOAK AND THE ACOUSTIC CLOAK

Becoming invisible at certain times, has been a long cherished desire of many human beings. A possibility of developing invisibility cloaks has been indicated in a report of *ScienceNews* (August 27, 2011), which describes how the new invisibility cloaks are being researched upon. The cloak is made of a sheet of silicon nitride having thousands of tiny holes of different sizes etched into it. For now, the material can work for only a few frequencies of light but the efforts are on to extend its capability to all frequencies of light. The trials represent the first steps towards making the desirable invisibility cloaks.

In another report by *ScienceNews* (June 30, 2011), it has been shown that the researchers have successfully demonstrated an acoustic cloak, which hides objects from sound waves. This sound bending trick could smooth out the acoustics of concert-hall walls and, if adopted for water, could be useful for hiding submarines from sonar-dike. Like the light manipulating materials being devised for invisibility cloaks, the acoustic cloak will also be made of special materials called meta-materials.

## PROFILE OF COMSATS' INTERNATIONAL S&T CENTRE OF EXCELLENCE

### BANGLADESH COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH (BCSIR), BANGLADESH

#### Introduction

The Bangladesh Council of Scientific and Industrial Research (BCSIR) was originally established in 1955 as the multidisciplinary research unit "East Regional Laboratories" of PCSIR (presently in Pakistan). Since then, this organization has been involved in performing scientific and industrial research for achieving self-reliance in industrial development. Being the leading R&D organization of Bangladesh, BCSIR is conducting R&D work according to the national requirements of Bangladesh, contributing to accelerate the economic vibrancy for more than 55 years.

BCSIR has the patronage of Ministry of Science and ICT (MOSICT) of Bangladesh and is headed by a Chairman. The organizational structure comprises of a Board and an Advisory Council, apart from other subsidiary bodies.

#### Mission & Objectives

The mission of BCSIR is "to generate knowledge and facilitate scientific and industrial innovation to make the country self-sufficient in science and technology and to contribute towards improvement of Bangladesh's global competitiveness through research and development". The objectives of BCSIR are to:

- Conduct, promote and coordinate market driven R&D programmes to expedite the socio-economic development;
- Provide analytical services to promote and regulate export-import business;
- Expand demand-driven research fields and network to enhance employment generation;
- Establish demand-based laboratories in emerging areas of science and technology; and
- Support university students for partial fulfillment of academic degrees like M.S, Ph.D by providing laboratory facilities.

#### R&D Capacity and Facilities

BCSIR has 3 full-fledged multidisciplinary regional laboratories, namely: i) BCSIR Laboratories, Dhaka; ii) BCSIR Laboratories, Chittagong; and iii) BCSIR Laboratories, Rajshahi. The five mono-disciplinary institutes of BCSIR are: i) Institute of Fuel Research & Development (IFRD); ii) Institute of Food Science & Technology (IFST); iii) Institute of Glass and Ceramic Research & Testing (IGCRT); iv) Leather Research Institute (LRI), Savar; and v) Institute of Mining, Mineralogy and Metallurgy (IMMM), Joypurhat. BCSIR also has one centre for pilot plant studies. The Council has a strength of 1395 technical and non-technical personnel.

All the institutes of BCSIR are fully equipped with most modern equipments to facilitate research activities that can compete globally. The research being undertaken at BCSIR is in the fields related to: Biomass, Biotechnology, Food and Nutrition, Glass and Ceramics, Leather and footwear, Mining and Metallurgy,

Textile, Natural Products, Renewable energy, etc. BCSIR is the first national laboratory that got ISO accreditation. A reference laboratory of ISO/IEC 17025 Accredited Instrumentation and Calibration for chemical metrology has also been established at the Council. So far, 350 developed processes are marketed in Bangladesh. The Council offers over 45 fellowships.

#### Products and Services

BCSIR plays an important role in the field of scientific and industrial development of Bangladesh. Most of the inventions made in the country have originated from this institution. An example would be the Biogas technology, which provides clean combustible fuel. A practical device developed by BCSIR based on this concept is being used all over Bangladesh. BCSIR has also developed other environment-friendly products, such as efficient stoves that require only half the energy needed for the commonly used stoves.

BCSIR has advanced remarkably both scientifically and industrially and has also been developing technologies necessary for small enterprises. Examples of the widespread social benefits imparted by BCSIR include a Skin Research Center, and instruments to measure the level of formalin in fish, and the quality of water, each of which has been accepted to be of international standards.

#### Planning and Development Division

The Planning & Development Division is a very important organ of BCSIR, which pursues Annual Development Plans of the Government of Bangladesh and supervises special project activities and expansion programmes of the Council. The Division is headed by a full-time Director who is a scientist of BCSIR.

#### Central Library of BCSIR

The three-storey Central Library of BCSIR has built-in facilities to provide various services to scientists, technologists, researchers, teachers and students and to perform administrative and technical tasks. The library's IT Center was established in the year 2001 under a project of the Government of Bangladesh. A library software has been developed to provide different types of informational services through this software.

#### For further details, please contact:

Prof. Dr. Ahmed Ismail Mustafa  
Chairman  
Bangladesh Council of Scientific and Industrial  
Research (BCSIR)  
Dr. Qudrat-i-Khuda Road, Dhanmondi  
Dhaka-1205, Bangladesh.  
Tel: (+880-2) 620020, 8653085, Fax: (+880-2) 8613022  
URL: [www.bcsir.gov.bd](http://www.bcsir.gov.bd); E-mail: [ai\\_mustafa@yahoo.com](mailto:ai_mustafa@yahoo.com)



## COMSATS' BRIEF AND ANNOUNCEMENTS

### SELECTED FORTHCOMING SCIENTIFIC EVENTS IN COMSATS' COUNTRIES

- November 22-24, 2011 International Workshop on "Climate Change and Sustainable Management of Water Resources in the Asia-Pacific Region", Islamabad, Pakistan  
([www.climatechange-watermanagement.com](http://www.climatechange-watermanagement.com))
- December 19-21, 2011 9<sup>th</sup> International Conference on "Frontiers of Information Technology" (FIT), Islamabad, Pakistan  
([www.fit.edu.pk](http://www.fit.edu.pk))

### 3<sup>RD</sup> INTERNATIONAL CONFERENCE ON "NANOTECHNOLOGY" AND 4<sup>TH</sup> MEETING OF ISESCO EXPERT PANEL ON NANOTECHNOLOGY United Arab Emirates, November 28-30, 2011

COMSATS, in collaboration with faculty of engineering at UAE University, International Association for Sharing Knowledge and Sustainability, the Arab Academy of Sciences (AAS), the Islamic Educational, Scientific and Cultural Organization (ISESCO), and the National Science Foundation (NSF-USA) is convening the 3<sup>rd</sup> International Conference on Nanotechnology and 4<sup>th</sup> Meeting of ISESCO Expert Panel on Nanotechnology. The Conference aims at bringing together research scholars, scientists and engineers from various disciplines of nanotechnology to assess micro and nano technologies for emerging applications and its prospects in the region, as well as to provide a venue for entrepreneurs and venture capitalists to discuss collaborative research and business developments. For further details, please visit: <http://www.engg.uaeu.ac.ae/ICN11/> or send query at an e-mail: [husseint@comsats.net.pk](mailto:husseint@comsats.net.pk).

### COMSATS-ISESCO NATIONAL TRAINING WORKSHOP ON "REPAIR AND MAINTENANCE OF SCIENTIFIC ENGINEERING EQUIPMENTS IN UNIVERSITIES, RESEARCH INSTITUTIONS AND SMALL SCALE INDUSTRIES" Cairo, Egypt, November 13-17, 2011

A National Training Workshop on "Repair and Maintenance of Scientific Engineering Equipments in Universities, Research Institutions and Small Scale Industries" is being organized by COMSATS, in collaboration with Islamic Educational, Scientific and Cultural Organization (ISESCO) and COMSATS' Centre of Excellence in Egypt, the National Research Centre (NRC). The workshop will take place in Cairo, Egypt, from 13<sup>th</sup> to 17<sup>th</sup> November 2011. The event is intended to highlight the issues/problems related to the maintenance and repair of scientific engineering equipments used in universities, research institutions and small scale Industries. A number of experts would provide hands-on training to the participants of the workshop for upgrading their skills and enhancing their capacities in repairing, maintaining and trouble-shooting scientific/engineering equipments. For further details, please write to: [husseint@comsats.net.pk](mailto:husseint@comsats.net.pk).

### CALL FOR PAPERS FOR COMSATS' JOURNAL – SCIENCE VISION: VOL. 16

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 Vol. 16 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](http://www.comsats.org) or the journal's website: [www.sciencevision.org.pk](http://www.sciencevision.org.pk). Contributions may be sent to the Chief Editor at: [comsats@comsats.org.pk](mailto:comsats@comsats.org.pk).

### 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.

COMSATS, currently, has 21 countries as its members, spread across three continents, i.e., Latin America, Africa and Asia. A network, of 17 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](http://www.comsats.org).

### COMSATS NETWORK OF INTERNATIONAL S&T CENTRES OF EXCELLENCE

- Bangladesh Council of Scientific and Industrial Research (BCSIR), Bangladesh
- Centro Internacional de Fisica (CIF), Colombia
- COMSATS Institute of Information Technology (CIIT), Pakistan
- Embrapa Agrobiologia, Brazil
- Higher Institute for Applied Sciences and Technology (HIASST), Syria
- Industrial Research and Consultancy Centre (IRCC), Sudan
- 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
- International Centre for Material Science and Technology (ICMST), Ghana
- 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
- The Biosphere Reserve – Beni Biology Station (BBS), Bolivia
- TÜBİTAK Marmara Research Centre (MRC), Turkey