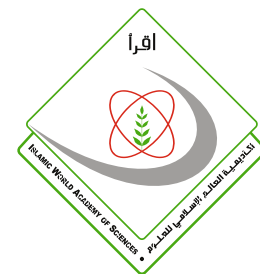


ISLAMIC WORLD ACADEMY OF SCIENCES

Newsletter



May-August 2013

Volume 27 Number 42

**Under the patronage of the Prime Minister of Bangladesh:
IAS convenes 19th Conference in Dhaka
under the title
*Achieving Socioeconomic Development in the Islamic World
through Science, Technology and Innovation***



The 19th IAS Conference, 6-9 May 2013, Dhaka, Bangladesh.

Under the patronage of Her Excellency Sheikh Hasina, the Prime Minister of Bangladesh, the Islamic World Academy of Sciences (IAS) convened its 19th international science conference in Dhaka, the capital of the People's Republic of Bangladesh, during 6-9 May 2013. The theme of the conference was 'Achieving Socioeconomic Development in the Islamic World through Science, Technology and Innovation (STI).'

Held at the Pan Pacific Sonargaon Hotel in Dhaka, the IAS Conference was an open activity in which over 200 local and international participants representing over 40 countries participated. Among the participants were Fellows of the IAS, local scientists from the various universities, young university students, expatriate Bangladeshi scientists as well as representatives of Asian, African and Western academies of sciences. Prior to the conference, the 20th Meeting of the General Assembly of the IAS as well as the 39th Meeting of the IAS Council were arranged.

The 19th IAS Conference was organised and sponsored by:

- Islamic World Academy of Sciences (IAS), Amman, Jordan;

- Prime Ministry of Bangladesh;
- Foreign Ministry of Bangladesh;
- University Grants Commission of Bangladesh; and
- Bangladesh Academy of Sciences.

It was co-sponsored by:

- OPEC Fund for International Development (OFID), Vienna, Austria;
- Islamic Development Bank (IDB), Jeddah, Saudi Arabia;
- Ministry of Science and Technology of Bangladesh;
- OIC Ministerial Committee on Scientific and Technological Co-operation (COMSTECH), Islamabad, Pakistan;
- Arab Potash Company, Amman, Jordan;
- Incepta Pharmaceuticals Ltd., Dhaka, Bangladesh; and
- Bangladesh University of Health Science (BUHS), Dhaka, Bangladesh, Bangladesh.

(Continued on page 4)



**Prof. Ekmeleddin
Ihsanoglu
OIC Secretary General
elected Honorary FIAS**

Ekmeleddin Ihsanoglu, a Turkish Academician and Diplomat, is the ninth Secretary General of the Organization of Islamic Cooperation (OIC). As the first "democratically elected" Secretary General of the OIC, Ihsanoglu took office in January 2005.

Being at the helm of the sole intergovernmental international organization representing the whole Muslim World, Secretary General Ihsanoglu took major steps to bring about significant changes in the OIC which transformed the notion of conceptual 'solidarity' into 'solidarity in action.' The initiation of the Ten Year Program of Action 2005 (TYPOA), the blue print of OIC reform, was the first among those steps taken by him. This was followed by *inter alia* the adoption of the new OIC Charter, changing the name and the logo of the organization, establishment of the Executive Committee, adoption of the criteria for membership and observer members, establishment of new departments such as humanitarian and family affairs departments, establishment of new institutions within the OIC system e.g. OIC Independent Permanent Human Rights Commission (IPHRC), Science, Technology and Innovation Organization (STIO) and Special Organ for the development of Women. Consequently, the member states of the Organization have started to experience the benefits of these steps and feel the positive impacts on their socio-economic, cultural, legal, and political environment.

Prior to taking office as Secretary General of the OIC, since 1980 Ekmeleddin Ihsanoglu had served as the founding Director General of the Research Centre for Islamic History, Culture and Arts (IRCICA) in Istanbul, a subsidiary organ of the OIC. In this capacity, he promoted and strengthened awareness about Islamic culture, art and history across the world and spearheaded the protection and promotion of the written and architectural heritage of Islamic civilization in various countries.

Secretary General Ekmeleddin Ihsanoglu was born to Turkish parents in Cairo, Egypt on 26 December 1943. He earned his Bachelor of Science degree from Ain Shams University in 1966, and Master's degree in chemistry in 1970 from Al-Azhar University. After completing his Ph.D. studies at Ankara University, Turkey in 1974, he did his post-doctoral research from 1975 to 1977 as a research fellow at University of Exeter, the United Kingdom. He was the first professor and founding Head of the Department of History of Science at Istanbul University. He is also the founding Chairman of Turkish Society for History of Science (TBTk) and ISAR Foundation. He further served as the President of International Union of History and Philosophy of Science (IUHPS) between 2001 and 2005. He is member of various international societies; scientific councils, advisory boards of numerous academies, centres and institutes, and editorial boards of many journals in a number of Islamic and western countries.

He wrote numerous books, articles and papers in Turkish, English and Arabic on science, history of science, Islamic culture, Turkish culture, relations between the Muslim world and the Western world, and Turkish-Arab relations, some of which were translated to several eastern and western languages. His seminal book, *The Islamic World in the New Century: The Organization of the Islamic Conference, 1969-2009* is considered to be the most authentic reference book on the OIC.

He is fluent in Turkish, English and Arabic languages and has a working knowledge in French and Persian. He is married and father of three.

New IAS Fellows elected

Membership of the IAS is made up of Fellows, who are eminent scientists with sizeable contributions to the development of science and technology in their countries and internationally.

The IAS organises an election every year through which Fellows nominate and then elect new members to the Academy Fellowship. Since its establishment in 1986, 95 Fellows have been elected through annual postal ballots, the results of which are ratified and then announced at the annual General Assembly of the IAS.

At its Dhaka meeting, the General Assembly of the Islamic World Academy of Sciences ratified the results of the 2012 Fellowship elections. The elections resulted in four candidates acquiring the required number of votes and as such joining the IAS as newly elected Fellows of the Islamic World Academy of Sciences.

The newly elected IAS Fellows are:

1. Prof. Allaberen **Ashyralyev** Turkmenistan.
2. Prof. M. Qasim **Jan** Pakistan.
3. Prof. Gulnar **Vagapova** Tatarstan/Russia.
4. Prof. Khalid **Yusoff** Malaysia.

With the 2012 Fellowship election over, the number of IAS Fellows stands at 107. This after the passing away of Prof. Jamal Nazrul-Islam (Bangladesh), in 2013.

The Editorial Board congratulates the new members of the IAS on their election and wishes them success in the service of the Islamic World Academy of Sciences (IAS), and the cause of 'science and technology for development' in general.



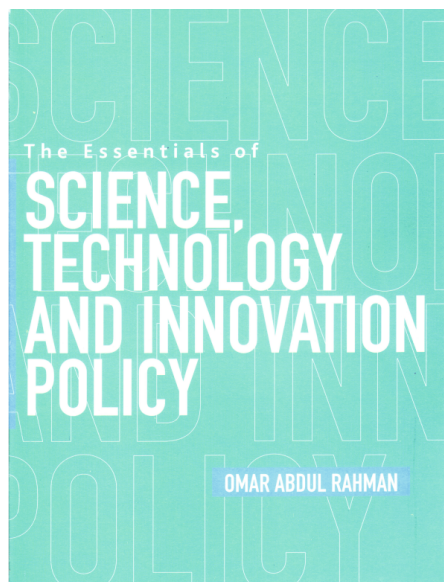
**Jamal Nazrul-Islam FIAS (Bangladesh)
passes away**

It is with a sense of sadness and sorrow that the President and the Director General of the Islamic World Academy of Sciences (IAS) in Amman, Jordan; announce the passing away of the eminent Bangladeshi scientist: Prof. Jamal Nazrul Islam Founding Fellow of the Islamic World Academy of Sciences.

Jamal Nazrul Islam was born on Jan 24, 1939 in Jhenaidah city.

He earned his BSc in Mathematics from Calcutta University, and went on to read Functional Mathematics and Theoretical Physics at Cambridge University, from where he was awarded his PhD.

Prof. Nazrul Islam will be greatly missed by his colleagues and fellow scientists in Bangladesh and the Islamic World.



Tan Sri Omar's new book

Prof. Omar Abdul Rahman FIAS (Malaysia), is a BVSc from Sydney University, Australia and a PhD from Cambridge University, United Kingdom. He is the Founding President and Senior Fellow of the Academy of Sciences Malaysia, the Founding and current Chairman of CPTM Ltd, the Founding Joint Chairman of MIGHT and the Coordinator of the STI Policy Unit of the UNESCO-Malaysia International STI Centre (ISTIC). He was Science Adviser in the Prime Minister's Department, Malaysia, from July 1984 to Jan 2001. His career began as a research officer in the VRI, Ipoh in 1960. He was appointed professor and founding Dean of the Faculty of Veterinary Medicine and Animal Science at the Universiti Pertanian Malaysia in 1972, and became Deputy Vice-Chancellor Academic Affairs in 1982. Tan Sri Omar is Emeritus Professor of UPM, a founding Fellow of the Islamic World Academy of Sciences and Fellow of the Academy of Sciences for the Developing World (TWAS).



Omar's new book 'The Essentials of Science, Technology and Innovation Policy,' is an important reference on the subject written by an outstanding scientist who has been the architect of Malaysia's STI success since the 1980s.



Dr Moneef R. Zou'bi

Editorial Letter

HOW ARE ACADEMIES OF SCIENCES FOUNDED?

Today, academies of sciences vary greatly in their histories, size, role, functions, influence or soft power, and the activities they implement. There are however characteristics common to the majority of science academies the world over. These characteristics bestow on the academy its prestige and manifest the importance it carries in science and government circles as well as with the public.

The backgrounds to the conception of academies vary. Some academies were founded by heads of state, such as the formal recognition by King Charles II of a group of learned men who used to meet to discuss scientific issues. Some academies were founded by existing academies of sciences, an example being TWAS which was conceived by the Fellows of the Pontifical Academy of Sciences led by the Pakistani/British Nobel Laureate Abdus Salam. Sometimes, an academy is launched as a result of a political decision taken by a head of state or a group of heads of state. That was the case, with the Islamic World Academy of Sciences (IAS), the establishment of which was approved by the 1984 Summit Meeting of heads of state of the OIC in Casablanca.

Often, international political events influence when and how an academy of sciences is established. In 2004, Nature magazine, reported on an attempt by Iraqi scientists and engineers to set up a new Iraqi Academy of Sciences in London during December 2004. The fact that a reputable Iraqi Academy of Sciences has been in existence in Iraq since 1940s raised questions about the motives of the founders of the new academy.

As a rule, academies have to be recognized in national legislation, and once established become institutions of tradition.

Both features are true of the Russian Academy of Sciences which was founded in Saint Petersburg by a decree of the Governing Senate in 1724 following an order of Peter the Great. The RS in London, the Paris Académie des Sciences, and subsequently the Berlin Akademie der Wissenschaften acquired their royal charters between 1660 and 1700. In 1954, the Australian Academy of Science came into being when Queen Elizabeth II presented the charter of the new academy to its founders in Canberra. The recognition of science academies by head of states and government – in terms of legislation – distinguishes them from self-organized non-governmental organisations (NGOs).

Governments might respond favourably to calls by their advisors to establish national science academies. This was the case with the Academy of Sciences Malaysia (ASM) which was founded upon a recommendation by Omar Abdul Rahman – a former Malaysian Prime Minister's Science Advisor (featured in the above article) – who with compatriot Lee Yee Cheong were behind the creation of the Academy of Sciences Malaysia (ASM) in 1996. Unlike other academies that enjoy a symbolic link to either the executive head of state or some government agency, the ASM is organically linked to the Malaysian government.

The US National Academy of Sciences on the other hand was founded by an Act of Congress in 1863, and the Academy of Sciences of South Africa (ASSAf) was established when the South African parliament unanimously passed the 'Academy of Science of South Africa Bill,' on 26 October 2001.

The conference addressed a number of key issues in the domain of science, technology and innovation (STI) for development, and represented an attempt by the IAS to engage the Bangladeshi decision-making and science communities and draw possible lessons from the Bangladesh experience that could be of benefit to the wider community of OIC-Member States.

Bangladesh, which is among the most populous of OIC countries, is a country that is regularly affected by natural disasters. Yet, it is a country that has managed to develop the capacity to mitigate and manage natural phenomena effectively, and achieve a respectable level of food security for its vast population.

As a result of some obvious strengths in certain export-oriented industrial sectors, it has also managed to maintain high economic growth. And although there is limited interaction between public and private-sector actors and little university–industry collaboration, the country's ingenuity manifests itself in light engineering where it is producing import-substitution products that are creating employment and alleviating poverty. Endogenous technologies include those related to ferries, power plants, machinery and spare parts.

Bangladesh is also developing the high-tech sector of pharmaceuticals, and is almost 97% self sufficient in pharmaceuticals. To get first-hand experience of this particular sector, the conference participants visited one of the leading pharmaceutical companies of the country; Incepta Pharmaceuticals.

The above factors rendered Bangladesh a special case-study for the IAS and the OIC science community.

The objectives of the 19th IAS Conference thus were:

- (a) To discuss the key areas of public health and higher education in Bangladesh to draw possible lessons relevant to other OIC countries, while showcasing some of the country's key S&T sectors;
- (b) To analyse how science and technology can contribute to addressing real challenges in the domains of water and energy in populous underdeveloped countries, and analyse how linkages between the private sector and the science community in general may be strengthened; and
- (c) To review cases where research in the frontier areas of biotechnology and information technology could be transformed into commercial ventures.

The conference which was inaugurated by the Prime Minister of Bangladesh on Monday 6 May 2013, was preceded on Sunday 5 May 2013, by a ceremony, which was organised on the premises of the Bangladesh University of Health Sciences (BUHS), to honour one of the Founding Fellows of the IAS from Bangladesh: Prof. Mohammad Ibrahim (1911-1989). During the ceremony, Prof. Liaquat Ali, an outstanding Bangladeshi medical researcher, was honoured as the recipient of the 2013 IAS Ibrahim Memorial Award.

The inaugural ceremony of the conference included an address by H E Mrs Sheikh Hasina, the Prime Minister of Bangladesh; a speech by H E Dr Mrs Dipu Moni, the Foreign Minister of Bangladesh; an address by H E Prof. Ekmeleddin Ihsanoglu, the Secretary General of the Organisation of Islamic Co-operation (OIC); the message of Prince El-Hassan bin Talal of Jordan, Founding Patron of the IAS, which was read by Dr Adnan Badran; the message of the President of Pakistan, IAS Patron, which was read by Dr M A Mahesar, Assistant Co-ordinator General, COMSTECH; and the opening address of Dr Abdel Salam Majali, former Prime Minister of Jordan and IAS President. The Chairman



of the Bangladesh Universities Grants Commission, Prof. A K Azad Chowdhury; and Prof. A A Azad FIAS, IAS Fellow from Bangladesh who was the main local organiser of the event; also spoke during the session which was concluded with some closing remarks by H E Yeafesh Osman, State Minister of Science and Technology, Bangladesh.

The conference was divided into a number of main sessions: Thematic Keynotes, Excellence in Higher Education, Energy for the Future, Public Health, Drugs and Vaccines for the Future, Climate Change and the Environment, Rethinking Sustainable Development, Collaborative Research Case-Studies; as well as a panel discussion which was entitled 'Way Forward and Funding Strategies for the Future.'

The first academic session of the conference included keynote presentations by Prof. Adnan Badran FIAS, Former Prime Minister of Jordan, whose presentation was entitled *Excellence in Higher Education for S&T Proficiency: A Global Perspective*; Prof. Atta-Ur-Rahman FIAS, President, Pakistan Academy of Sciences, who addressed the topic of *Higher Education S&T Nexus: Outlook for Tomorrow*; and Academician Dato Ir Lee Yee Cheong, Chairman of the Board of ISTIC in Malaysia, whose keynote was entitled *Building S&T Proficiency in Developing Countries: Ideas on the Hands on Approach*.

Prof. Badran suggested that a democratic environment of quality teaching and research based on merit, autonomous higher education institutions, appropriate funding and governance was an essential requirement for building S&T proficiency. Prof. Rahman, on the other hand, suggested that the three major players in the development of a knowledge economy were science and technology institutions (including universities), industry and the government. The development of a knowledge economy, he added, required a thorough understanding of the dynamic interplay between research, invention, innovation, and economic growth. Dato Lee's essential message was that building S&T proficiency was the *raison d'être* of the Inquiry Based Science Education programme (IBSE) of the Inter Academy Panel (IAP) as well as many science academies around the world.

The second working session of the conference included a presentation on the achievements of, and the difficulties faced by, the OIC Ministerial Committee on Scientific and Technological Co-operation (COMSTECH) by Dr M A Mahesar, Assistant Co-ordinator of COMSTECH. Also, the state of the higher education sector in Bangladesh was comprehensively described by Prof. A K Azad Chowdhury, Chairman of the UGC in Bangladesh, in his presentation.



Two world experts on renewable energy presented papers on renewable energy research in the third session of the day. The first, entitled *The Future of Renewables: Their Feasibility and Applications in Resource-Poor Countries*, was made by Prof. Saifur Rahman; Director, Virginia Tech Advanced Research Institute, USA. It focused on the future of renewable energy in “resource-poor” countries which were not endowed with significant extractable fossil-fuel energy resources. The second, by Prof. Marwan Khraisheh, Dean of Engineering, MASDAR Institute of Science and Technology, UAE, addressed the topic of *The Need for Multidisciplinary Research to Address Energy, Water and Climate Change Challenges*, and talked about the challenges of climate change, energy and water security, and how a dedicated response from the scientific and academic communities working in collaboration with industry and government, was required to develop innovative sustainable solutions to face up to such challenges.

The session on Public Health included a presentation by Prof. Abdallah Daar FIAS, Professor of Public Health Sciences and Surgery, University of Toronto on *Public Health Research, Policies and Funding Opportunities*, in which he emphasized the importance of mental health as an issue that should be addressed in many countries; a presentation by Prof. Ugur Dilmen FIAS, General Director of Health Research, Turkish Ministry of Health, and Editor of the Medical Journal of the IAS on *Public Health Research Funding and Policies in Turkey*; a presentation by Prof. Timothy Evans (Canada) of BRAC University, Bangladesh, which was entitled *Health Equity and Universal Health Coverage*; as well as a presentation by Prof. Muthana Shanshal FIAS, University of Baghdad, Iraq, on *The Public Health Food Safety Nexus: Carcinogenic Polyaromatic Hydrocarbons in Smut Wheat Infected with Tilletia Caries*.

The fifth working session of the conference represented an attempt to bridge the science and business community divide and addressed the topic of 'Drugs and Vaccines of the Future.' It included a presentation by Prof. Atta-ur-Rahman entitled *The International Centre for Chemical and Biological Sciences: An Example of the R&D Value-Chain*; a presentation by Prof. A A Azad FIAS, Incepta Visiting Professor, Bangladesh/ Australia, entitled *A Proposal for the Establishment of a Drug Discovery and Development Programme with Concomitant Capacity Development in the OIC-Member Countries*; as well as a presentation by one of Bangladesh's leading entrepreneurs, Mr Abdul Muktedir, the Founder and Chairman of Incepta Pharmaceuticals, who talked about his company which is one of the country's leading pharmaceutical manufacturers. The manufacturing facilities of Incepta were in actual fact visited by the

participants in the conference on the afternoon of Tuesday 7 May 2013.

On the morning of Wednesday 8 May 2013, the session on 'Climate Change' included a presentation by Prof. Michael Clegg, Foreign Secretary, US National Academy of Sciences, who spoke on *The Climate Change Question: The Role of Scientists and Science Academies*. Prof. Clegg highlighted the pivotal role that science academies can play in bridging the divide between the science community and decision-makers.

That was followed by two outstanding research presentations by two of Bangladesh leading women scientists: Prof. Zeba I. Seraj, University of Dhaka; who presented a paper entitled *Production of Stress Tolerant Rice for Bangladesh by Use of Biotechnological Tools*; and Prof. Haseena Khan, South Asian University, New Delhi, India; whose presentation was entitled *From Marker to Gene: The Curious Case of a Putative vps51 Gene of Jute*.

The seventh session of the conference which was under the title 'Rethinking Sustainable Development' included a thought-provoking presentation by Dr Sandro Calvani, Asian Institute of Technology, Thailand, who talked about *Rethinking Sustainable Development in Least Developed Countries: The Politics Policies Nexus*. Dr Calvani talked about the new development vision that was emerging on the international arena which comprised eleven goals for global development, justice and peace. The goals include economic growth, food and water security as well as appropriate education, health, freedom as well as gender equality. That was followed by a presentation from Malaysia entitled *Food Security Initiatives for the Social Well Being of the Farmers: How Science Helps*, in which Prof. Aini Ideris FIAS, University Putra Malaysia; Prof. Khatijah Mohd Yusoff FIAS, Ministry of Science, Technology and Innovation; and Prof. Abdul Latif Ibrahim FIAS, University of Selangor (UNISEL), Malaysia; talked about the success of their long-term research project to develop efficacious vaccines, including one for Newcastle disease -which is a serious disease affecting poultry- that has led to an expansion of the village chicken industry in Malaysia.

The session on 'Collaborative Research Case-Studies' was chaired by Mr Yeafesh Osman, State Minister of Science and Technology, Bangladesh; and included a presentation entitled *Radionuclide Research and Development Studies Under Bangladesh-German Cooperation*, by Prof. Syed M. Qaim FIAS, Research Centre Juelich; in which he highlighted the long history of cooperation between the Institute of Nuclear Chemistry of the Research Centre in Juelich, Germany, and the Bangladesh Atomic Energy Commission (BAEC).

Dr Peter Sundin, of Uppsala University, Sweden, and Ms Tatjana Kuhn, German Agency for International Cooperation, on the other hand talked about *The International Science Programme in Bangladesh: Self Interest or Empowerment?* Dr Sundin highlighted that the International Science Programme (ISP) was devoted to building capacity for scientific research and higher education in basic sciences in developing countries, since 1961, in physics, and since 1970 and 2002 in chemistry and mathematics, respectively. He added that the outcome of the ISP programme over the previous three decades was substantial and went on to cite actual examples of ISP's collaboration with scientists in Bangladesh.

That was followed by a presentation by Prof. Mohammad Abdollahi FIAS, Tehran University of Medical Sciences, Iran; who spoke on *Ethical Issues in Scientific Publications, Role of the*



Committee on Publication Ethics (COPE), and described the activities of the Committee on Publication Ethics (COPE) which was established in 1997 by a small group of medical journal editors in the UK, and yet in 2013 boasts a membership of 8500 from all academic fields.

Another example of research collaboration was presented by Dr Md. Feroz Alam Khan, Professor, Department of Physics, Bangladesh University of Engineering and Technology, who presented a paper under the title *Structural and Magnetic Properties of Core-Shell Manganese-Oxide Nanoparticles Fabricated by Inert Gas Condensation Technique*.

The last session of the conference was a very lively panel discussion chaired by Mr Yeafesh Osman, State Minister of Science and Technology of Bangladesh, and moderated by Dr Moneef R. Zou'bi, DG-IAS; in which Prof. Michael Clegg (USA), Prof. Bambang Hidayat (Indonesia), Prof. Abdallah Daar (Canada) and Prof. Khatijah Mohd Yusoff (Malaysia) took part.

The panellists discussed a number of issues including: science education, role of academies of sciences in raising awareness of scientific issues, the state of mental health in developing countries, climate change, how some countries such as Malaysia have adopted a national vision (Vision 2020), expanding the African Science Academies Development Initiative (ASADI) to include OIC countries, challenges of the 21st century including food security, climate change, funding science, young scientists and young entrepreneurs, nanotechnology for the future,...

The panel discussion was followed by the concluding session of the conference which was chaired by Prof. Mehmet Ergin FIAS, IAS Vice-President from Turkey.

At the conclusion of the 19th IAS Conference, the IAS adopted the IAS 2013 Dhaka Declaration on *Achieving Socioeconomic Development in the Islamic World through Science, Technology and Innovation*.

The declaration stressed that the quest for knowledge is one of the seminal elements in the Islamic code of belief, and that up to the turn of the seventeenth century, the Islamic civilization was a milieu *par excellence* for groundbreaking science; science which laid the foundation for the European renaissance. It also reiterated that the world economic uncertainty of the previous five years has been the source of serious difficulties for the Science, Technology and Innovation (STI) sector.

The declaration highlighted that STI was not a mere academic pursuit and that in the wake of the financial crisis, STI will make a vital contribution to sustainable and lasting recovery and to longer term growth prospects of most countries' economies. It invited the decision-makers and the science community in OIC-Member states to share the view that science transcends political borders, enhancing cooperation and acting as a catalyst for consolidating stability in the Islamic world.

The declaration noted that Bangladesh has achieved over 90% enrolment in primary education, has managed to take a number of actions to mitigate the negative effects of natural phenomena, attain a reasonable level of food security for its population, and locally produce 97% of the medicinal drugs it requires. It highlighted that Average Gross Expenditure on R&D (GERD) for OIC-Member states has quadrupled to an average of 0.8% for OIC-Member states from the 2005 average which was 0.2% (according to SESRIC's statistics), and that twenty-five OIC universities are ranked amongst the world's top 500 universities according to the QS World University Rankings 2012/2013.

The operative part of the declaration stated that it was important

that OIC countries speak with one voice on the world level, and that the decision-makers within recognize the crucial role of scientific research and higher education in their respective national policies and strategies for socio-economic development. The declaration also made a special mention of the vital area of raising public understanding and awareness of science highlighting –in the process– gender equality, social inclusion and participation.

It also called for partnerships between public and private sectors in the field of science, technology and innovation and encouraged public and private R&D organizations and universities to use public research infrastructures and utilities fully.

It is essential, the declaration reiterated that OIC countries focus on a limited number of priorities and regional smart specialization activities where some networks already successfully operate or some new ones may be developed, and consider the quality of statistical data on STI and the statistical system on research and development, as precondition leading to the development of sound and effective strategy in STI.

The declaration further called for the promotion of scientific and technological cooperation among developing and OIC countries and for the creation of links between knowledge generation and enterprise development. To further promote the development of local technology, OIC countries need to improve their incentive regimes including taxation and must try to promote technological innovation and generate markets for new products and services within their societies, the declaration suggested.

The creation of a Brain Bank by tapping into the enormous expertise possessed by expatriate scientists and technologists from the OIC-region was another recommendation proposed in the declaration. Another was the establishment of a consortium of existing and emerging centres of excellence in OIC-Member states. Such consortia could focus on areas such as Drug Discovery and Development or Energy or Information Systems; and can serve as a model for international research and information sharing among academics, professionals and policy makers.

Lastly, the declaration expressed the appreciation of the IAS to Her Excellency Sheikh Hasina, the Honourable Prime Minister of Bangladesh; and its thanks and appreciation to the People's Democratic Republic of Bangladesh and all the organizations and agencies that organised and sponsored the conference.

As part of the follow-up action to the conference, the Academy will circulate the IAS 2013 Dhaka Declaration to concerned individuals and relevant agencies throughout OIC and developing countries, so that measures are taken to put into action the ideas proposed at the conference.

The IAS also intends to work further with the two Bangladeshi champions of science it identified as a result of the conference, the medical scientist Prof. Liaquat Ali and the entrepreneur industrialist Mr Abdul Muktedir, to disseminate the fresh and exciting ideas of these two role models to young researchers and aspiring entrepreneurs throughout the Islamic and Developing world.

The IAS will also publish the complete proceedings of the conference in a quality volume that will be distributed internationally.

Through IAS Fellows, personal contact and correspondence, the IAS will promote the concepts promulgated at the conference among the decision making circles of the Islamic world, and will provide whatever help it can to get the various recommendations implemented.



***We have a rich history of which we can be proud
Our past generations have done their part well and it is now our job to build further on their achievements.***

H E Sheikh Hasina
Prime Minister of Bangladesh

Assalamu Alaikum, and a very good morning to you all.

I am privileged to be with you this morning at the 19th International Conference of the Islamic World Academy of Sciences on the theme "Achieving Socio-economic Development in the Islamic World through Science, Technology and Innovation". Allow me to warmly welcome all the participants to this congregation of scientists from all over the Muslim world.

Bangladesh is proud to be an active member of the OIC and its subsidiary, specialized and affiliated institutions. Holding of this international conference in Bangladesh in cooperation with an OIC-affiliate body reminds me of the attachment that the Father of the Nation Bangabandhu Sheikh Mujibur Rahman had with the OIC.

The historic participation of Bangabandhu Sheikh Mujibur Rahman in the Second Islamic Summit Conference in 1974 set the policy direction for Bangladesh towards widening its relationship with various institutions of the OIC.

He gave us the inspiration to work together with all other Muslim countries so that we can prosper together on the basis of noble Islamic values of unity and fraternity. It is in this spirit that, through the years, scientists of Bangladesh have been committed members of IAS in implementing various programmes that have contributed immensely to sharing of information and knowledge, replication of best practices, and creation of a network of experts.

I take this opportunity to express our gratitude to the IAS for extending cooperation and assistance in the field of science and technology in Bangladesh.

Ladies and Gentlemen,

The quest for knowledge is one of the seminal elements in the Islamic code of belief. Indeed, the golden age of the Muslims was marked by excellence in the pursuit of pure and applied sciences.

Contribution of Muslim scholars to the evolution of science and technology is immense. Astronomy, mathematics and every discipline of physical science, including medical science, have been built upon the innovations and theories propounded by our great Muslim scientists.

For instance, Algebra was invented by the great Muslim mathematician Al-Khawarizmi. The great Al-Biruni opened a new horizon in Trigonometry. He has equally contributed to Geometry and Natural History, even Geology and Mineralogy.

It is the Muslims who invented the symbol of zero. The most precise solar calendar, the Jilali, was devised under the supervision of Umar Khayyam. After the fall of Rome in 476, during the Dark Ages in Europe, it was Muslim physicians who helped medical science grow for the human civilization. Ibn Sina, Al-Razi and Al Kindi were perhaps the greatest physicians that the world had seen until the modern era.

We have a rich history of which we can be proud. Our past generations have done their part well and it is now our job to build further on their achievements.

Scientific and technological advancement and socio-economic development are intertwined. Scientific and technological advancements have been the prime movers for development of the industrialized countries.

In the contemporary world, science has been assuming increasing importance in a technology-driven world. The huge majority of member states of the OIC have to face daunting challenges in the economic and environmental areas.

Backwardness of Muslim countries in the areas of science and technology is one of the factors that aggravate our difficulties. Utilization of science and technology and innovation can help greatly in addressing challenges like food, water and energy insecurity.

Use of science and technology can also help realize the goal of growth and prosperity. Cooperation of Muslim countries in this area will be extremely useful.

In this spirit, Bangladesh has been hosting the Islamic University of Technology (IUT), a subsidiary organ of OIC that is contributing to human resource development of the member states. It is important that member states support and fully utilize its potentials.

As part of its 'Vision 2021', my government aims to establish a knowledge-based and technology-dependent Digital Bangladesh by the year 2021 when Bangladesh will celebrate the Golden Jubilee of her independence.

Information and communication technology can indeed offer unprecedented gains not only in terms of saving cost but also in achieving faster, safer and more transparent methods of management.

Experience-sharing among the Muslim countries as well as undertaking projects towards capacity building in ICT may be a useful stepping stone in the right direction.

I am also pleased to know that IAS has managed to raise the profile of science in the OIC member countries and has become a propagandist for science and technology in political circles within. I am also pleased to learn that IAS has become a house of expertise on matters related to higher education, natural resources development including water and energy as well as the environment at the level of the OIC, especially within the academia.

Ladies and Gentlemen,

I firmly believe that the meetings and interactions that participants will have during the next four days will contribute not only to further enrichment of their knowledge and expertise but also in fostering a friendly and enduring relationship of the foreign participants with Bangladesh as a country and as a people.

We hope that such an enhanced relationship will give them a stronger reason to visit Bangladesh again in the future for business or pleasure.



Prof. Abdel Salam Majali FIAS
President of
Islamic World Academy of Sciences

The bottom line is that OIC countries face an uphill challenge in terms adopting science-based development policies to raise the socioeconomic level of our countries. More importantly perhaps, we are not using science to combat our immediate health, water and energy problems.

The Honourable Prime Minister of Bangladesh
Your Excellency the Secretary General, OIC
IAS Fellows
Excellencies
Distinguished Guests
Ladies and Gentlemen

It is both a privilege and an honour to greet you all on behalf of the Islamic World Academy of Sciences, here in the city of Dhaka; where we meet at the invitation of the Honourable Prime Minister Sheikh Hasina, and the Bangladesh government. We are grateful to you Madame Prime Minister for your invitation and for your proactive stance vis-à-vis the OIC and OIC countries, in all spheres;

I am also happy to welcome a dear friend; an eminent scientist in his own right; Professor Ekmeleddin Ihsanoglu, Secretary General of the OIC. A man who done so much over the past eight years to position the OIC on the world scene;

Our assembly in this vibrant metropolis, with the scientists and the decision-makers of Bangladesh and the OIC, aims to address a number of scientific themes. The title of today's conference (Achieving Socioeconomic Development in the Islamic World through Science, Technology and Innovation) clearly states our goal: to learn about the science and technology landscape of Bangladesh and expose the Bangladesh S&T community to aspects of the S&T landscape in OIC countries;

We come here to learn. To learn how this populous OIC country has managed to develop the capacity to mitigate and manage natural disasters effectively, and achieve a respectable level of food security for its vast population; Moreover, we are keen to understand how Bangladesh has managed to maintain high economic growth despite the common problem that most OIC countries face; namely, the weak linkage between public and private actors;

One of the slogans proposed for this conference during the preparatory meetings was: 'Empowering People through Science.' I understand that in Bangladesh, there have attempts to promote S&T to bring about positive social change and balanced socioeconomic development. There are noteworthy attempts to leverage Information and Communications Technologies (ICTs) to raise the profile of the nation.

Excellencies
Ladies and Gentlemen

Science and Technology is a tool of socioeconomic advancement. For science to blossom, it needs to be nourished and supported. This is not the case in the majority of OIC countries according to the latest UNESCO Science Report published in 2010. Nor are we building the human capital which is active in science. Indeed, the

critical mass of researchers is not there in many countries. Furthermore, most OIC countries hardly export any high technology products;

The Report shows that less than 25 OIC countries have a national academy of sciences or play host to a supranational academy. This is an astounding fact, as academies of sciences, as strong advocates of science and impartial advisory bodies, have been at the vanguard of the scientific endeavour in many industrialized countries. They are also part of the S&T landscape in economically emerging economies such as Brazil, China, India, Malaysia and Mexico;

The bottom line is that OIC countries face an uphill challenge in terms adopting science-based development policies to raise the socioeconomic level of our countries. More importantly perhaps, we are not using science to combat our immediate health, water and energy problems;

Let me provide a time-line for some the difficulties that we have faced and have had to overcome in our history;

For over a millennium, the Islamic world was a dominant global player in the domain of science and technology.

The remarkable advancement made by the Islamic world in science ushered in the renaissance in Europe, yet during the 17th and 18th centuries, the Islamic world was dormant in terms of generating knowledge with emphasis -for a variety of reasons- placed on technology often imported from outside. Our patenting culture was non-existent and the decline of the use of Arabic (the language of the Qur'an) as the *lingua franca* of science contributed to our decline in science and technology;

Unlike Japan, which enjoyed the Meiji Restoration of the 19th century which spanned from 1868 to 1912 and led to the transformation of Japan into a modernized nation; most of our countries have only enjoyed periods of short-lived reform;

Suffice to say, a major factor that has contributed to the so-called 'Arab Spring' in our part of the world has manifested itself in the inability of economies to develop the appropriate value chain and create jobs required to meet the increasing number of graduates. That was further compounded by the inability of economies to achieve sustainable economic growth;

Your Excellency
Fellow Scientists
Dear Friends

Clearly, there is a problem when it comes to the relationship between scientists and technologists – on the one hand- and politicians, on the other. Few politicians appreciate the possibilities of science, present distinguished company excluded of course, as Her Excellency the Prime Minister was married to eminent scientist; the late Dr M A Wazed Mia, and thus exposed to the trials and tribulations of a scientist's career;

It is true that the majority of scientists do not understand the restrictions of political office or have a clear idea of the political processes. They do not appreciate the pressures or the time scales politicians work to. Both camps recognize the importance of each other but there is no natural dialogue between the two sides, because they come from different worlds;

Bridging the gap by creating better communications between the science and non-science worlds, between the scientific and the political communities, should be a priority;

Some scientists are good communicators (Bruce Alberts of the US National Academy of Sciences and Ahmad Zewail are good examples) and they could be considered as role models and encouraged to share their expertise with others;

Let me at this point also thank Her Excellency the Prime Minister for the support the government of Bangladesh has been providing to the Bangladesh Academy of Sciences and request her to tap further this reservoir of talent for science-based advice on issues that affect the development of Bangladesh;

**Your Excellency
Dear Friends**

The IAS is slowly but surely trying to renew the *Ummah's* its confidence back that things can change. The IAS does this on a shoe-string budget yet with dedication and confidence. We realize that we have long to go;

We realize that the activities of academies of sciences are often appreciated long after they are implemented. Only recently did we realize this when the Royal Society of London celebrated its 350th Anniversary, and only recently have we begun to realize what the Academy of *Bait ul-Hikma* of Baghdad had achieved 1200 years ago;

My late friend Abdus Salam, Nobel laureate of 1979, used to insist that *Bayt ul-Hikma* was the 'Institute of Advanced Study' of its day championing the cause of science in the court of *Al-Mamun*;



As the academy of sciences of the OIC, the IAS is keen to champion the cause of science for development, especially through capacity-building, knowledge-sharing and promotion of international and regional cooperation;

Let me conclude by again thanking Madame Prime Minister for your patronage, and you Madame Foreign Minister for your support in realising this activity. We are also grateful to all the Bangladeshi agencies and companies as well as our distinguished Fellows from Bangladesh who have helped the IAS in making this event a reality.

IAS-COMSTECH IBRAHIM MEMORIAL AWARD 2013

goes to Liaquat Ali (Bangladesh)



The IAS Ibrahim Memorial Award is the most prestigious Award of the Islamic World Academy of Sciences, instituted in honour of Prof. M Ibrahim, a great missionary and visionary from Bangladesh, who founded the Diabetic Association of Bangladesh (DAB). In 2013, it was awarded to Prof. Liaquat Ali from Bangladesh.

Prof. Liaquat Ali has a very wide academic background and he has outstanding record in clinical practice, clinical and biomedical research, capacity development, and in clinical and science administration. He would have very few equals in Bangladesh and indeed in the Developing World, in the quality of biomedical publications (over 110 peer-reviewed publications) and in the supervision of 18 PhD students and mentoring of over 80 other MPhil, MD and MS students.

Since 1990, Liaquat Ali has played the central role in numerous biomedical research activities at BIRDEM (a WHO Collaborating Centre for Research) at the regional and international levels. He also served in various advisory capacities in the Diabetic Association of Bangladesh (DAB), the parent body of BIRDEM. He played a leading role in the establishment of the 'Health Care Development Project' (HCDP) under DAB (supported by the Dutch Government and a consortium of local banks) that aims to become a self-sustained comprehensive health care and referral network for the whole country.

Liaquat was instrumental in the establishment of and was appointed as the founding Director of the Bangladesh Institute of Health Sciences (BIHS), which is an enterprise of DAB and linked to HCDP. The University of Oslo and the Rockefeller Foundation have supported the introduction of postgraduate courses at BIHS in various Public Health and Allied Health Disciplines. BIHS has students from Bangladesh and from other developing and developed countries. Based on the nucleus of BIHS, the Government has recently approved the establishment of an independent University named as the Bangladesh University of Health Sciences (BUHS), and Prof Liaquat Ali has been nominated as the Founding Vice-Chancellor of this new University.

A Foundation for the Future by

Datuk Prof. Zakri Abdul Hamid FIAS*

After all, in the words of UNESCO director-general Irina Bokova: "Science, technology and innovation are essential to address the complex economic, social and environmental challenges that all societies face today. They are also key factors for the global development agenda. Solutions in science, technology and innovation emanate increasingly from economies in the South, and the importance of South-South cooperation is rising."



In Malaysia, one effort being pioneered with great impact under UNESCO's auspices is the International Science, Technology and Innovation Centre for South-South Cooperation (ISTIC), and its innovative Science, Technology, Engineering and Mathematics (STEM) programme.

Promoting a hands-on approach known as Inquiry-Based Science Education (IBSE), workshops for developing countries educational authorities have been successfully carried out with the French's La main à la pâte Foundation (LAMAP).

Malaysia's Ministry of Education and South-East Asia Ministers of Education Organisation's Regional Centre for Education in Science and Mathematics are collaborators, fostering new awareness among policymakers and the implementation of the creative, hands-on approach to science in schools.

The success in classroom practise in the inquiry-based teaching of science and mathematics is evident so far in schools in Malaysia, the Philippines and Qatar. And ISTIC's Governing Board Chair, academician Datuk Lee Yee Cheong, would like to see this achievement mushroom throughout all participating developing countries.

A new partner is the global council of the Italy-based InterAcademy Panel Science Education Programme. And partnering in Africa is Future University of Sudan. The first training Programme for African Science Educators was held over five days in April in Khartoum with trainers from Malaysia.

The outcome included a commitment from Sudan to establish a teacher's academy for mathematics and science for their continuing professional development.

This is a great accomplishment for the Programme, one that was recently lauded by Bokova. Celebrating the fifth anniversary of ISTIC's founding, the head of UNESCO praised the centre for performing "a vital function in helping to disseminate and share new and innovative technologies."

ISTIC was a seed planted at the Second South Summit of Group 77 and China held in Doha in June 2005, with an overall goal of increasing the capacity for management of science, technology and innovation throughout developing countries.

At that Summit, UNESCO was urged to develop and implement science and technology developmental programmes for members of G77 and China targeted at facilitating the

integration of national science, technology and innovation policies, capacity building, exchange of experience and best practices, and creating a problem-solving network of centres of excellence in developing countries.

In cooperation with the Malaysian government, UNESCO launched ISTIC on 22 May, 2008, and it has now burgeoned into a dynamic young international organisation -- a classic Malaysian success story in the international arena, led by its indefatigable Lee and its executive director, Datuk Dr Samsudin Tugiman.

Beyond IBSE, the Centre's efforts involve training high-level decision makers and middle managers on science, technology and innovation policy.

It fosters the development of entrepreneurship and supports cooperation among governments, academia and industry.

It gathers and disseminates knowledge about the potential of new technologies.

It helps governments tackle specific problems and organises the International Forum on Women in Science and Technology.

The centre has become a key player in assisting science, technology and innovation policy formulation and review, by mobilising the intellectual resources and highlighting best practices from the South. All this in just five years!

The then minister of science, technology and innovation, Datuk Seri Dr Maximus Ongkili hailed ISTIC's establishment as a feather in Malaysia's cap. Ongkili also saw it as a testament to Malaysia's commitment to UNESCO and its quest to uplift economies and develop human resources in education and science for Least Developed Countries, Small Island States and in Africa.

According to Dato Lee, the ultimate aim is to demonstrate that not only is good science being carried out in many developing countries, it is relevant to their national sustainable development and can show significant returns on investments made either by governments or the private sector.

Examples of developing country innovators recognised by ISTIC in 2012:

Dr UMME Aminum Naher from Bangladesh, for her biofertiliser offering efficient crop production with less nitrogen and phosphorus;

Dr ARNALDO Soltermann from Argentina, who demonstrated that agro-industrial waste could be used to build new technology-based companies (from research to market); and,

Dr XIANZHI Dong from China, who demonstrated a new mixture that can help people reduce weight.

At the end of the day, the fundamental question to be answered is "Can science and technology innovation raise the living standards of developing countries through South-South cooperation?"

According to Lee, the answer is a resounding yes. At ISTIC, people and human capital development are at the core of the science agenda. Solving the problems of people is a main pillar for national development too, because all that is valuable in society depends upon the opportunity for development accorded to the individual, and to the country.

* Prof. Zakri is Science Advisor to the Prime Minister of Malaysia.

IAS General Assembly convenes at Dhaka, Bangladesh

Alongside the 19th IAS Conference, and under the chairmanship of Prof. Abdel Salam Majali FIAS, IAS President, the General Assembly of the Islamic World Academy of Sciences held its 20th regular meeting at the Pan Pacific Sonargaon, Dhaka, Bangladesh, on 5 May 2013. The meeting was attended by a number of IAS Fellows as well as the Director General, IAS.



The General Assembly after approving the minutes of the previous meeting took note of the very detailed report presented by the IAS Director General on the various activities implemented by the IAS from its headquarters in Amman. It went on to discuss an extensive agenda that included a review of financial statements, the status of the Medical Journal of the Academy, IAS programme, as well as a number of organizational matters related to the IAS.

The DG talked in brief about the finances of the IAS in 2012. This was followed by a detailed presentation by Prof. Adnan Badran, IAS Treasurer, that included a detailed review of the Statement of Accounts of 2011 and 2012 and a detailed run-down of the financial statements of the IAS.

The General Assembly of the IAS concluded by ratifying the results of the 2012 Fellowship Elections as presented by the IAS Council.

IAS Council holds 39th Meeting

The 39th Meeting of the IAS Council was held in Dhaka (Bangladesh) on 5 May 2013 with the participation of IAS Council Members including IAS-DG who - during the meeting - outlined the activities undertaken by the IAS during 2012.

In his report to the Council, the DG talked about the various activities that the IAS has been involved in including organising the 19th Conference and maintaining the IAS's Medical Journal.

The IAS Council undertook a thorough review of the activities of the IAS during 2012 and discussed a number of possible activities that could be implemented. It acknowledged the excellent work done by Prof. Mehmet Ergin and Prof. Ugur Dilmen, the Chief Editor of the IAS Medical Journal.

The IAS Council instructed the Director General to maintain contacts with a number of countries to secure an invitation for the IAS to convene its 20th IAS Conference, in 2014.



**University of Rajshahi awards
Prof. Syed M Qaim FIAS
Special 'Medal of Honour'**



Bangladesh Atomic Energy Commission presents Prof. Syed M Qaim FIAS 'Crest of Appreciation'

Bangladesh Atomic Energy Commission



Crest of Appreciation

presented to

Prof. Dr. Dr. h.c. mult. Syed M. Qaim
Forschungszentrum Juelich, Germany

in recognition of his long and outstanding scientific contributions to BAEC, especially the Institute of Nuclear Science and Technology (INST) of the Atomic Energy Research Establishment (AERE), Savar, in building up human resources and in interdisciplinary utilization of large research facilities.

Dhaka, 14 May 2013


**Chairman
BAEC**

ISLAMIC WORLD ACADEMY OF SCIENCES 2013 DHAKA DECLARATION

ACHIEVING SOCIOECONOMIC DEVELOPMENT IN THE ISLAMIC WORLD THROUGH SCIENCE, TECHNOLOGY AND INNOVATION

adopted at Dhaka, Bangladesh

on

28 Jumad II 1434

8 May 2013

(A) PREAMBLE

1. The quest for knowledge is one of the seminal elements in the Islamic code of belief. For over a millennium, i.e., up to the turn of the seventeenth century, the Islamic civilization was a milieu *par excellence* for groundbreaking science; science which laid the foundation for the European renaissance and the Industrial Revolution;
2. The world economic uncertainty of the previous five years has been the source of serious difficulty for the Science, Technology and Innovation (STI) sector. The sharp declines in trade, foreign investment and access to financing have also had negative impacts affecting global value chains;
3. STI is still a tool of might and affluence and a tool at the disposal of governments. Leveraging STI at the national level is essential for the socioeconomic development of countries including OIC-Member States; achieving prosperity, food, water, energy security and national self-fulfilment; as well as addressing the challenges of human health and climate change;
4. In the wake of the financial crisis, STI will make a vital contribution to sustainable and lasting recovery and to long term growth prospects of most countries' economies;
5. Investment in science and technology and education has been a critical source of economic transformation. Such investment should be part of a larger framework to build capacities in STI. Improvements in higher education need to be accompanied by growth in economic opportunities so that graduates can apply their acquired capabilities in the fields of their preference;
6. The decision-makers and the science community in OIC-Member States have to appreciate the common view that science transcends political borders, enhancing cooperation and acting as a catalyst for consolidating stability in the Islamic world. Knowledge production and diffusion play a key role in the enhancement of innovation, sustainable economic development, and social well-being. To this aim, it is vital to strengthen regional cooperation in STI,

(B) THE ISLAMIC WORLD ACADEMY OF SCIENCES (IAS), AT THE CONCLUSION OF ITS 19TH CONFERENCE HELD IN DHAKA (BANGLADESH), 6-8 MAY 2013, NOTES WITH SATISFACTION THAT AT THE LEVEL OF BANGLADESH AND THE OIC, RESPECTIVELY:

1. Bangladesh has achieved over 90% enrolment in primary

education and drop out has been reduced considerably. Higher education has been gaining momentum in Bangladesh as the country has witnessed growth in tertiary level enrolment from 1.16 million students in 2008 to 2.65 million in 2012. The number of public and private universities has also gone up from 78 to 104 in the last four years and seven more public universities are in the pipeline;

2. Bangladesh has managed to take a number of actions to mitigate the negative effects of natural phenomena, attain a reasonable level of food security for its population and locally produce 97% of the medicinal drugs it requires;
3. Gross Expenditure on R&D (GERD) for OIC-Member States has quadrupled to an average of 0.8% for OIC-Member States from the 2005 average of 0.2%, and many OIC-Member States are investing heavily in the sectors of higher education and priority-focussed R&D;
4. Twenty-five OIC universities are ranked amongst the world's top 500 universities according to the QS World University Rankings 2012/2013, and OIC-Member States are making encouraging progress in terms of research publications with the number of research publications in international journals exceeding 90,000 in 2011 compared to around 20,000 in 2000; however,

(C) TO RAPIDLY ACHIEVE SOCIOECONOMIC DEVELOPMENT THROUGH STI, THE IAS APPEALS TO THE DECISION-MAKERS IN OIC COUNTRIES TO:

1. Recognize the crucial role of STI and higher education in their respective country policies and strategies for socio-economic development and endeavour to heed the call towards increasing budgets for STI;
2. Encourage public understanding and awareness of science highlighting, in the process, gender equality, social inclusion and participation;
3. Organise programmes on leadership training for both domestic and regional research and innovation policy makers;
4. Evaluate the quality of statistical data on STI and the statistical system on research and development, as a prerequisite to developing sound and effective strategy in STI;

5. Further develop existing evaluation mechanisms for STI enterprises in order to assess progress on different levels; open national and transnational evaluation mechanisms to a diverse group of research and innovation stakeholders including civil society organizations, companies and investors;
 6. Facilitate partnerships between public and private sectors in the field of STI and encourage both public and private R&D organizations and universities to use public research infrastructures;
 7. Promote the central role of the university as an originator of scientific knowledge. To contextualize this role, universities should streamline their efforts not only to produce graduates in the various disciplines but knowledge workers. Knowledge production can be enhanced if universities segregate their research budgets from their administration budgets;
 8. Increase utilization and enhance synergies and coordination between different instruments, initiatives and programmes for facilitating capacity-building and sharing of research infrastructures. Moreover, university-based R&D has to be directed not only at increasing humanity's pool of knowledge but also for developing products and services that can contribute to creating national wealth;
 9. Create links between knowledge generation and enterprise development as this is one of the greatest challenges facing OIC and developing countries. Develop active partnerships with local and regional industries and come up with innovative ways to fund academic and industrial research and for commercialization of research outcomes;
 10. Promote bilateral and regional cooperative agreements, within the OIC and at the South-South level; provide easy access to research facilities, infrastructures and science publications;
 11. Intensify cooperation among developing countries, especially involving countries that have developed significant expertise in S&T policy development, S&T infrastructure, and the ever transformational areas of biotechnology, nanotechnology and information technology;
 12. Focus on a limited number of priorities and regional smart specialization activities where some networks already successfully operate or some new ones may be developed; strengthen such networks with the view of making them attractive partners for neighbouring regions and states; support the best national research centres to enable them to participate in pan-Islamic/regional networks;
 13. Further promote the development of local technology, partly by improving national incentive regimes including taxation, promoting the culture of technological innovation and generating markets for new products and services within their societies and internationally;
 14. Increase investments in international STI projects; and take advantage of existing OIC organizations that are active in STI for research and innovation projects and for research infrastructure funding, and introduce measures that foresee the strategic inclusion of diaspora scientists;
 15. Create a Brain Bank by tapping into the enormous expertise possessed by expatriate scientists and technologists originally from the OIC-region and develop conducive conditions to transform Brain Drain into Brain Gain and Brain circulation within the OIC-region;
 16. Strengthen advisory structures across countries noting that in many countries science academies provide political leaders with advice. The advisory processes should be able to gauge public opinion about STI. At the level of the OIC, appropriate mechanisms should be worked out by the IAS to provide advice to OIC heads of state, parliamentarians and other decision-makers;
 17. Recognize that it is important that OIC-Member States speak in one voice at the world level on specific commonly agreed issues, such as climate change. To this aim, they must commit themselves to increasingly coordinate common positions prior to international meetings and to use such meetings as platforms to further macro-regional agendas;
 18. Develop partnerships with –for example- local pharmaceutical companies and utilize developed intellectual property to help develop a research-led pharmaceutical industry in the Islamic World,
- (D) FURTHERMORE, THE ISLAMIC WORLD ACADEMY OF SCIENCES (IAS):**
- In order to achieve the goal of 'Achieving Socioeconomic Development in the Islamic World through Science Technology and Innovation,' the IAS proposes the establishment of a consortium of existing and emerging centres of excellence in OIC-Member States. Such a consortium could focus on areas such as Drug Discovery and Development or Energy or Information Systems; and can serve as a model for international research and information sharing among academics, professionals and policy makers. Potential partners in this endeavour could be the International Centre for Energy and Information Systems (www.iceis.net) being developed at Virginia Tech, USA.
- (E) LASTLY, THE ISLAMIC WORLD ACADEMY OF SCIENCES (IAS):**
- Extends its appreciation to Her Excellency Sheikh Hasina, the Honourable Prime Minister of Bangladesh; Her Excellency the Foreign Minister of Bangladesh Dr Dipu Moni; His Excellency Yeafesh Osman, State Minister of Science and Technology; to the Bangladesh Universities Grants Commission (UGC) headed by Prof. A K Azad Chowdhury; to the Bangladesh Academy of Sciences (BAS) and the eminent Fellows of the BAS; to the Bangladesh University of Health Sciences (BUHS); Incepta Pharmaceuticals; for organising and sponsoring the conference; and to the Islamic Development Bank, COMSTECH, OPEC Fund for International Development (OFID), and the Arab Potash Company for generously co-sponsoring this international scientific congregation.



**Prof. Allaberen Ashyralyev FIAS
(Turkmenistan)**

Dr Ashyralyev was born in Konekesir/Turkmenistan in 1955. He is married and has two sons and four daughters.

Dr Ashyralyev is a Turkmen scientist of Mathematics. He graduated from the Turkmen State University in 1977. He earned his PhD from the Voronezh State University in 1983, and his Doctorate of Sciences from the same University and the Institute of Mathematics of the Ukraine Academy of Sciences in 1992.

Dr Ashyralyev was a visiting scholar at the Voronezh State University, Russia, in 1979, 1985, 1991 and University of California, Santa Barbara, USA, in 1987-1988.

Dr Ashyralyev continued his career at the Turkmen State University from 1977 to 1999 as an instructor, assistant professor (1985), associate professor (1989), and professor (1995), respectively.

Since 1999, Prof. Ashyralyev has been a staff member of the Department of Mathematics, Fatih University and professor at the International Turkmen-Turk University.

He is the author of more than 290 scientific papers in international journals and conference proceedings including 120 international ISI journal publications and 12 books including two monographs published by Birkhauser-Verlag, on Operator Theory: Advances and Applications. He has successfully supervised 12 PhD students and 22 MS and 30 BS students.

Dr Ashyralyev's contribution to science and technology within Turkmenistan and Turkey has been tremendous, and could be gauged from his active participation in a number of national research and academic organizations. Furthermore, his contribution in science and technology at the international level is equally remarkable, and is evident from his current joint research with scientists in different countries including USA, Germany, Saudi Arabia, Russia, Poland, Spain, Brazil, Hungary, Uzbekistan, Azerbaijan and Kazakhstan.

Prof. Ashyralyev was elected as a Fellow of the IAS in 2012.



**Prof. M. Qasim Jan FIAS
(Pakistan)**

Prof. M. Qasim Jan holds BSc Hons (Peshawar), MS (Oregon), PhD (London) and DSc (King's College London) degrees. He became a lecturer at the University of Peshawar in 1968, professor in 1983, Director of the Centre of Excellence in Geology in 1988, and Dean of Science Faculty in 1997. He was a visiting professor at the University of Oregon, USA, in 1994-95. From 1997 to 2000, he was Vice Chancellor (VC), University of Peshawar; 2001 to 2003, the founder VC of Sarhad University, Peshawar; and October 2005 to February 2010, VC of the Quaid-i-Azam University, Islamabad. In 2004, he was given the title of Distinguished National Professor of the Higher Education Commission. Currently, he is Advisor COMSTECH, Islamabad, and Professor Emeritus of Geology at the University of Peshawar.

Jan has travelled extensively and delivered invited talks on the geology of the North Western Himalayas in Europe, USA, Australia, and Asia. He is/was a member of governing bodies of many institutions and Chairman of the Himalayan Regional Committee of the International Lithosphere Programme (1998-2004). He has received many honours and awards, including the ISESCO prize in Science; Civil awards of: Hilal-i-Imtiaz (2010), Sitara-i-Imtiaz (1999) and Tamgha-i-Imtiaz (1994); Gold medals from the Pakistan Academy of Sciences (1980, 1997); the National Book Foundation Best book-authorship prize (Natural Sciences, 1995-97 period); Earth Scientist of 1983; Scientist of the Year award (1990); and the Pakistan Academy of Sciences Distinguished Scientist of the Year (2009).

Dr Jan is a member of several learned societies, and Fellow of the Academy of Sciences for the Developing World (TWAS), Pakistan Academy of Sciences (currently Vice President), and honorary (emeritus) Fellow of the Mineralogical Society of London, and the Nepal Geological Society. He was also Secretary General of the Association of the Academies of Sciences in Asia (2008-2012).

He has carried out extensive investigations of the geology, mineralogy, petrology, and geochemistry of the north-western Himalayan region, with emphasis on crust-building and geodynamic processes. He participated actively in several national and international research projects, has published over 270 papers/abstracts, and edited/authored eleven volumes, including joint authorship of the seminal book 'Geology and Tectonics of Pakistan' in 1997.

What is the IAS?

The IAS is an independent, non-political, non-government and non-profit making learned society of distinguished scientists and technologists dedicated to the promotion of all aspects of science and technology in the Islamic world.

The establishment of the IAS (then the Islamic Academy of Sciences) was recommended by the OIC Standing Committee on Scientific and Technological Co-operation (COMSTECH), and approved subsequently at the Fourth Islamic Summit in Casablanca in 1984. The IAS' Founding Conference was held in Jordan in October 1986.

The government of Jordan hosts the IAS at Amman, from where the IAS Headquarters started its activities in 1987.

The IAS General Assembly decided to rename the IAS as the "Islamic World Academy of Sciences" in March 2005.

The main objectives of the IAS are:

- To serve as a consultative organisation of the Ummah and of institutions in the field of science and technology;
- To initiate science and technology programmes of benefit to the development of Islamic countries;
- To promote research on major problems facing Islamic countries and to identify future technologies of relevance for possible adoption and utilisation; and
- To formulate standards of scientific performance and attainment and to award prizes and honours for outstanding scientific achievement to centres of excellence in all science and technology disciplines.

IAS Newsletter

Published in English by the IAS Secretariat, Amman, Jordan.

Chief Editor: Dr Moneef R. Zou'bi, *Director General; IAS.*

Editorial Assistant: Mrs Lina Jalal, *Programme Officer, IAS.*

The IAS welcomes the submission of short articles for publication in the Newsletter (publication however is at the IAS discretion).

Postal Address:

Islamic World Academy of
Sciences
PO Box 830036 Zahran
Amman 11183 Jordan

Street Address:

17 Djibouti Street, Sixth Circle,
Amman
Jordan

Telephone: +962-6-552 2104/
5523385
Fax: +962-6-551 1803

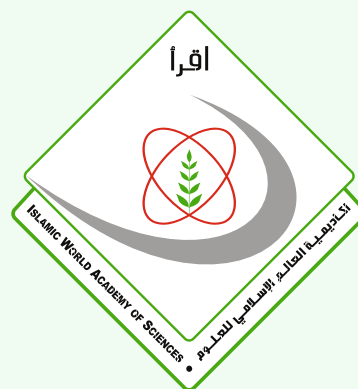
Publication sponsored by:



Arab Potash Company, Amman, Jordan.

Copyright © IAS, 2013. All rights reserved.

IAS - N42 - 13



IAS Ibrahim Memorial Award 2015

Call for Nominations

The Islamic World Academy of Sciences (IAS), Amman, Jordan, has instituted an Award in the name of one its Founding Fellows, the late Prof. Muhammad Ibrahim (1911-1988), who was an eminent medical doctor from Bangladesh. Prof. Ibrahim dedicated a great deal of time and effort to medical research that proved to be of benefit and value in his country and internationally.

The purpose of this Award is to promote scientific research in the field of medicine and medical sciences in the various countries that belong to the Organisation of Islamic Co-operation (OIC).

Faculties and Schools of Medicine at universities, academies of sciences and other learned societies as well as private sector institutions are invited to nominate young scientists and technologists working in the medical field, for this Award.

Deadline for receiving nominations has been exceptionally extended to 1 September 2014. Nominations received after this date will be considered in the subsequent round.

IAS Ibrahim Memorial Award 2014/2015

The Awardee would be invited to the subsequent conference of the IAS, where he/she would be presented with a commemorative medal and/or shield, and a compilation of IAS literature.

Travel expenses of Awardee would be covered from the Award Fund and by the IAS.

A token honorarium would be presented to the Awardee.

For more details, contact the IAS @:

PO Box 830036, Amman 11183, Jordan
Telephone: (9626) 552-2104 – Fax: (9626) 551-1803
E-mail: ias@go.com.jo



New issue of IAS Journal in print and on the web

The Medical Journal of the Islamic World Academy of Sciences is the IAS's main publication. Originally launched as a general science journal, it was re-launched as a specialised refereed medical publication.

The journal, which is edited by Prof. Sinasi Özsoylyu and Prof. Ugur Dilmen - IAS Fellows from Turkey - receives medical articles from many OIC countries as well as from scientists who are based in Europe and America.

The journal is published in both paper and electronic formats and has built up a wide readership since it was established in 1987.

The current issue of the Journal that appears on the web is Volume 21, Number 2. It carries 8 major articles: an Endocrinology article by S.M. Farid and T.G. Abulfaraj; an Immunology Allergy article by I.E. Al-Saimary, S.S. Bakr and K. E. AlHamdi; a Microbiology article by H.F.S. Akrayi and A.K. Khider; a Formulations of Medicines article by D.M. Mostafa, N.M. Ammar, A.A. El-Anssary, A. Nemat, M.G. Omar and S.A. Nasry; an Ophthalmology article by M. Al-Droos and W. Qubain; a Review Article on Medical History by S. Nikhat and M. Fazil; a Case Report General Surgery article by S. Yalçın, Ö. Parlak, A.E. Ucar, L. Öztürk, M.S. Doğan; and a Use of Error Pediatric Hematology article by S. Özsoylyu.

The Journal's web address is www.medicaljournal-ias.org.

The Journal's web page can also be viewed through a hyper-link through the Academy's web page. Journal's current e-mail is ias@go.com.jo.

MOHAMMAD BIN MUSA AL-KHAWARIZMI* (770-840)

Abu Abdullah Mohammad Ibn Musa al-Khawarizmi was born at Khawarizm (Khewa) (Uzbekistan), south of the Aral Sea. Very little is known about his early life, except for the fact that his parents had migrated to a place south of Baghdad. The exact dates of his birth and death are also not known for sure, but it is established that he flourished under Al-Mamun at Baghdad through 813-833 and probably died around 840 AD.

Khawarizmi was a mathematician, astronomer and geographer. He was perhaps one of the greatest mathematicians who ever lived, as, in fact, he was the founder of several branches and basic concepts of mathematics. In the words of Phillip Hitti, he influenced mathematical thought to a greater extent than any other mediaeval writer. His work on algebra was outstanding, as he not only initiated the subject in a systematic form but he also developed it to the extent of giving analytical solutions of linear and quadratic equations. That established him as the founder of Algebra. The very name Algebra has been derived from his famous book *Hisab Al-Jabr wa-al-Muqabilah*. His arithmetic synthesised Greek and Hindu knowledge and also contained his own contribution of fundamental importance to mathematics and science. Thus, he explained the use of zero, a numeral of fundamental importance developed by the Arabs. Similarly, he developed the decimal system so that the overall system of numerals, 'algorithm' or 'algorizm' is named after him. In addition to introducing the Indian system of numerals (now generally known as Arabic numerals), he developed at length several arithmetical procedures, including operations on fractions. It was through his work that the system of numerals was first introduced to the Arabs and later to Europe through its translations in European languages. He also perfected the geometric representation of conic sections and developed the calculus of two errors, which practically led him to the concept of differentiation. He is also reported to have collaborated in the degree measurements ordered by Al-Mamun that aimed at measuring of volume and circumference of the earth.

The development of astronomical tables by him was a significant contribution to the science of astronomy, on which he also wrote a book. The contribution of Khawarizmi to geography is also outstanding, in that not only did he revised Ptolemy's views on geography, but also corrected them in detail as well as correcting his map of the world.

Several of his books were translated into Latin in the early twelfth century. In fact, his book on arithmetic, *Kitab al-Jam'a a wal-Tafreeq bill Hisab al-Hindi*, was lost in Arabic but survived in the Latin translation. His book on algebra, *Al-Maqala fi Hisab-al Jabr wa-al Muqabilah*, was also translated into Latin in the twelfth century, and it was this translation which introduced this new science to the West "completely unknown till then." His astronomical tables were also translated into European languages and, later, into Chinese. His geography book captioned *Kitab Surat-al-Ard*, together with its maps, was also translated. In addition, he wrote a book on the Jewish calendar *Istikhraj Tarikh al-Yahud*, and two books on the astrolabe. He also wrote *Kitab al-Tarikh* and his book on sun-dials was captioned *Kitab al-Rukhmat*, but both of them have been lost.

The influence of Khawarizmi on the growth of science, in general, and mathematics, astronomy and geography in particular, is well established in history. Several of his books were readily translated into a number of other languages, and, in fact constituted the university text-books till the sixteenth century.



* Hakim Mohammad Said (Editor), 2000. *Personalities Noble, National Science Council of Pakistan. Second Revised Edition (English and Arabic). Published by the*