

Networking for Sustainable Development via Science and Innovation

By SONG Jianlan (Staff Reporter)

Under the theme of “Science and Sustainability”, the 12th General Conference and the 23rd General Meeting of TWAS convened in Tianjin, China, from September 18 to 21, 2012, jointly hosted by the Chinese Academy of Sciences (CAS) and the Tianjin Municipal People’s government.

Occurring every three years, the General Conference of TWAS has the membership together to review the status and discuss common issues of science in the South, and recognize the outstanding representatives of

scientists working there. The Conference also invites ministers of science and technology, presidents of science academies, and representatives of research councils as well as international organizations within or without the developing world to attend.

Chinese President HU Jintao officially opened the TWAS 12th General Conference on the afternoon of September 18, and gave a keynote speech at the opening ceremony (for detailed report of the speech please refer to page 238).

Chinese President HU Jintao officially opens the 12th General Conference of TWAS in Tianjin, China on September 18, 2012. (Photo: Xinhua)



In his speech, HU affirmed the position of science and technology as “the crown jewel of human wisdom”, noting their critical role in the rise, growth and prosperity of civilization. He further suggested that science and technology, in connection with innovation, would be important forces for developing countries to rely on in overcoming emerging challenges, including food security, energy security and climate change. He emphasized that developing countries should establish developing models suitable for their own situations via science and technology. In support of this idea he mentioned some recent S&T achievements of China, giving special attention to those in the fields of information technology, biotechnology and energy technology. He pointed out that China had determined to build an innovation-oriented nation by 2020, and emphasized that the country would rank science and technology high in its list of priorities for development.

At the opening ceremony HU announced that Chinese

government would contribute USD1.5 million to TWAS in recognition of its efforts to promote science in the South. He further affirmed China’s continued commitment to international scientific collaboration, especially between developing countries.

HU personally presented the TWAS 2011 Prizes and medals to the recipients, including the 2012 Ernesto Illy Trieste Science Prize and the first Atta-ur-Rahman Prize of Chemistry, a prize named after a Vice President of TWAS.

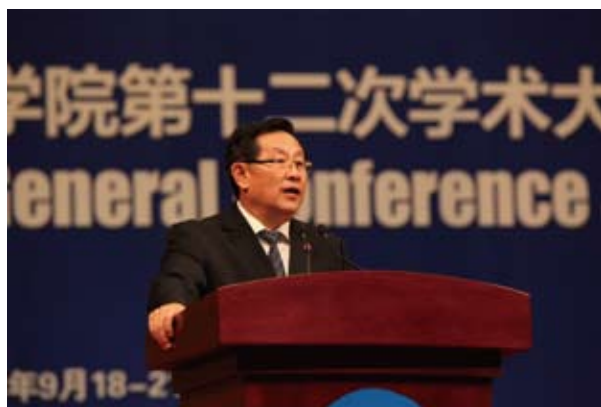
TWAS President Jacob Palis addressed the ceremony and expressed his thankfulness to President HU for the donation and kind hospitality showed by Chinese government in hosting the TWAS meeting for the third time. Representatives of international organizations and nations including UNESCO, Italy and Sweden also addressed the ceremony. CAS President BAI Chunli chaired the ceremony, which was attended also by leaders from the Central Government of China and the Municipal Government of Tianjin.

Dialogues for Innovation and Social Development

The Conference was arranged with a diverse program, featuring a ministerial session, an academy session and academic lectures in celebration of science excellence in the South. Both the ministerial and academy sessions were scheduled on the afternoon of September 18, immediately after the brief opening ceremony.

Revolving around the topic “Science, Technology and Innovation for Economic Growth and Poverty”, ministers

of science and technology or their representatives from Argentina, Brazil, China, Ecuador, India, Nigeria, Rwanda, South Africa and Zimbabwe shared their values and strategies for poverty reduction and social development via science and innovation. After the ministerial session, a total of 10 presidents of science academies, including those from Argentina, Australia, Brazil, China, Germany, India, Nigeria, Senegal, South Africa and the UK were invited to



Chinese Minister of Science and Technology WAN Gang gives a speech at the ministerial session for “Science, Technology and Innovation for Economic Growth and Poverty”. (Photo: LI Hui)



CAS President BAI Chunli gives a presentation titled “National Academy with Multiple Roles in Innovation”, introducing the structure, roles, and innovation strategies of CAS. (Photo: LI Hui)

give presentations concerning their own roles, missions, approaches and efforts to promote science advancement and innovation in their own countries.

CAS President BAI Chunli gave a presentation titled “National Academy with Multiple Roles in Innovation”, introducing the structure, roles, and innovation strategies of CAS.

Prof. S. Cory, President of the Australia Academy of Sciences at the academy session. (Photo: LI Hui)



New Members

The morning of September 18 saw the election of 49 new members, including 45 Fellows and four Associate Fellows to TWAS. Among them five are women. This increased TWAS membership to a total of 1,077, with 99 women members.

Encouragingly, two countries that are relatively under-represented in the developing world, Jamaica and Argentina, now each had one member elected. From the African Continent eight new members were elected, so were 16 from China, nine from India, seven from Brazil and three from Taiwan, China. The four Associate Fellows were respectively from Japan, the Netherlands, the USA/Taiwan and the USA/UK.

The new members elected at this meeting will be

inducted at the Academy’s 24th General Meeting, which is to be held in Argentina in 2013.

On the afternoon of September 19 a special ceremony was held to induct the 45 new members, including 42 Fellows and three Associates, elected at the 22nd General Meeting in Trieste, Italy on November 21, 2011.

Election of internationally renowned scientists into its membership is among the Academy’s efforts to promote science advancement and capacity building in the developing world. To recognize scientific excellence, it elects Fellows from scientists working in developing countries who have made contributions to their fields of science up to internationally accepted standards of excellence. Associate Fellows are elected from those who live and work in developed countries. To be elected, a candidate of Associate Fellow must have made remarkable efforts to promote science in developing countries, aside from his or her own distinguished scientific contributions. Currently 87% of the members are TWAS Fellows.

Since 2007 the five Regional Offices of TWAS each select up to five outstanding representatives from young scientists under the age of 40 to work with the Academy as Young Affiliates for a period of five years. At the induction ceremony on September 19, the newly selected Young Affiliates were also inducted.



Prof. WANG Shouyang (middle) from the Academy of Mathematics and Systems Science, CAS is inducted into the membership of TWAS. He was elected at the 22nd General Meeting in Trieste, Italy on November 21, 2011. (Photo: SONG Jianlan)

Celebrating Science Excellence

To boost science capacity building in the developing world, TWAS has set up various Prizes and Medals to acknowledge great contributions made by scientists working in these areas. At the opening ceremony 19 winners received the Prizes or Medals from Chinese President HU Jintao.

CAS Vice President LI Jinghai was awarded with a TWAS 2012 Medal. Some other CAS scientists were also awarded with TWAS Prizes and Medals, including Prof. JIANG Lei with the CAS Institute of Chemistry, who won the TWAS 2011 Prize for Chemistry together with Prof. J. Dupont from the Institute of Chemistry of Brazil; Prof. WU Fuyuan from the CAS Institute of Geology and Geophysics, who won the TWAS 2011 Prize for Earth Sciences together with Prof. S. K. Satheesh from the Indian Institute of Science; and Prof. LI Yin, a researcher from the CAS Institute of Microbiology who won the TWAS Regional Prize for “Building Scientific Institutions” together with other five scientists respectively from Brazil, Egypt, Nigeria, India and Iran.

The announcement of the winner of the prestigious Ernesto Illy Trieste Science Prize caught the eye of many participants. This prize, worth 100,000 USD, was granted to Yuk Ming Dennis Lo, director of the Li Ka Shing Institute of Health Sciences and professor of medicine at the Chinese University of Hong Kong (CUHK), for his contributions to the research and development of a non-invasive diagnosis for prenatal diseases. This technique can conveniently obtain the entire genome of a fetus by analyzing a blood sample from the pregnant mother.

TWAS's first Atta-ur-Rahman Prize of Chemistry went to a woman scientist from Bangladesh, Dr. Shamsun Nahar Khan, assistant professor of the Department of Chemistry at East West University of Bangladesh, in recognition of her work on enzyme identification and inhibition. Established only last year and named after a Vice President of TWAS, who is a world-renowned organic chemist from Pakistan, the prize was designed to encourage young researchers in scientifically lagging countries to pursue original chemical research on the interface between chemistry and other disciplines.

First ever in its history, TWAS awarded a prize in social sciences, the TWAS-Celso Furtado Prize in Social Sciences at the meeting. Ricardo Paes de Barros, Secretary of Strategic Actions at the Secretariat of Strategic Affairs of



CAS Vice President LI Jinghai gives a lecture titled “Meso-scale science: Chemical engineering perspectives”. He was awarded with a TWAS 2012 Medal on Sept 18 at the opening ceremony. (Photo: SONG Jianlan)



Yuk Ming Dennis Lo (right), winner of the prestigious Ernesto Illy Trieste Science Prize, receives the Prize. (Photo: SONG Jianlan)



The technique developed by Prof. Yuk Ming Dennis Lo's team can conveniently obtain the entire genome of a fetus by analyzing a blood sample from the pregnant mother. (Image: By courtesy of Prof. Y. M. D. Lo & TWAS)

the Presidency of the Republic of Brazil, won the prize “for his contributions to understanding the problems of poverty and inequality in Brazil and his advocacy of evaluating and refining public policies aimed at alleviating both poverty and inequality”, according to a news release from TWAS.

TWAS launched this prize one year ago in honor of Brazilian economist Celso Furtado.

On Sept 18, the winners of the TWAS 2012 Prizes were also announced. The winners will receive their prizes at the 24th General Meeting of TWAS in Argentina in 2013.

Academic Exchanges

To mark greatest scientific contributions and promote exchanges of innovative ideas, four high-level lectures were arranged before the official opening ceremony of the Conference, each given by internationally distinguished scientists. Among them was Nobel Prize laureate Prof. Samuel Ting. He gave a lecture titled “Science for Development” to emphasize the importance of fundamental scientific research driven and led by intellectual curiosity rather than economic concerns, illustrated with historical cases.

Prof. Ting was followed by Nancy Y. Ip, winner of L'OREAL-UNESCO for Women in Science Award and currently Chair Professor of the Department of Biochemistry and Director of the Molecular Neuroscience Center of Hong Kong University of Science and Technology. A leading scientist in synapse development and plasticity, she gave a presentation on relationship between synaptic plasticity and neurodegenerative diseases, reporting her latest discoveries from studies of Alzheimer’s disease.

The lecture by Prof. Atta-ur-Rahman, Vice President of

TWAS provided a good footnote for the newly established TWAS Prize for Chemistry. In his talk titled “Science, Technology and Innovation for Sustainable Socio-economic Development”, he analyzed the major players in the development of a knowledge economy, namely S&T institutions, industry and government, highlighting their roles in eradicating poverty, hunger and deprivation. He also introduced the progress made by Pakistan concerning higher education.

The awardees of TWAS Prizes and Medals gave lectures in the academic sessions of the Tianjin Meeting of TWAS during the next two days after the awarding; a specially arranged themed session on “Stem Cells and Genomics” was also included in the tight schedule. On the other hand, Young Affiliates selected in previous years also got chances to present and discuss their work on September 20 and 21. A total of 19 presentations were given by Young Affiliates during the Meeting, ranging from medicine, chemistry, earth sciences, molecular biology, astrophysics to mathematics.



In an invited lecture, Nobel Prize laureate Prof. Samuel Ting emphasizes the importance of fundamental science exploration driven and led by intellectual curiosity rather than economic concerns. (Photo: LI Hui)



TWAS Vice President Atta-ur-Rahman gives a lecture in the title of “STI for sustainable socio-econ development”. (Photo: LI Hui)

S&T Development in China Highlighted

As a routine, each TWAS conference has a session for the advancement of science in the host country. Naturally the Tianjin Meeting had a symposium session titled “Lectures on S&T Development in China”.

This session highlighted the latest achievements scored by Chinese scientists with six lectures, including the long-expected one on lunar exploration of China given by CAS Member OUYANG Ziyuan, a researcher from the National Astronomical Observatories of CAS. In his lecture Prof. OUYANG outlined the objects of different stages of the lunar exploration, including unmanned and manned explorations, and introduced in detail the tasks accomplished by the lunar orbiters Chang’E 1 and 2.

Another well-anticipated lecture was about a successful observation of a new type of neutrino oscillation, a phenomenon extremely difficult to detect. The international team led by Chinese scientists at Daya Bay of southern China not only succeeded in catching the third type of neutrino oscillation, which was so difficult to detect that some theories even doubted its existence, but also in predicting the possibility of this type of oscillation. This benchmark experiment hit the headlines at home and abroad last spring and was deemed a great milestone in physics. Prof. WANG Yifang, head of the CAS Institute of High Energy Physics gave a whole picture of the experiment and explained the structure of the detector located just 60km from Hong Kong.

Other lectures were also fascinating. Prof. FANG Xiaohong from CAS Institute of Chemistry reported her latest study on molecular interactions and dynamics in living cells, which turned true the dream of watching individual molecules at work. Prof. PAN Jianwei from the University of Science and Technology of China reviewed his long, excellent experience in scalable quantum information processing, which has earned him nice prestige in the field. Prof. Vivian Wing-Wah Yam, Director of the Institute of Molecular Functional Materials and Department of Chemistry, the University of Hong Kong presented her work on design, assembly and functions of luminescent metal-based molecular materials and Prof. WU Zhongyi (Chung-I Wu) from the Beijing Institute of Genomics under CAS gave a talk on evolution, genomics and cancer, dealing with the impact of natural selection on intra-tumor genetic diversity.

The lectures given in this session attracted close attention from the participants and some of them expressed their wishes to do cooperative projects with Chinese researchers.

Some lectures given by Chinese scientists beyond the session of “Lectures on S&T Development in China”, like the one on stem cells and regenerative medicine given by Prof. ZHOU Qi from the CAS Institute of Zoology and the one on genome sequencing by Prof. YANG Huanming from the Beijing Genomics Institute, CAS also caught the eyes of participants for their high quality.



CAS Member OUYANG Ziyuan outlines the lunar exploration of China and introduces in detail the tasks of Chang-E 1 and 2. (Photo: LI Hui)



Prof. WANG Yifang, head of the CAS Institute of High Energy Physics reports the successful observation of the new type of neutrino oscillation and explains the structure of the detector located in Daya Bay just 60km from Hong Kong. (Photo: LI Hui)

New Council, New President

Before the General Meeting officially opened on September 18 afternoon, the TWAS 23rd General Meeting convened on the morning of September 18 elected a new TWAS Council for the period from 2013 to 2015, and CAS President and TWAS Vice President BAI Chunli was elected the new TWAS President, to be inaugurated on January 1, 2013.

An outstanding expert at nanotechnology, Prof. BAI Chunli made important contributions to the research of scanning tunneling microscopy and molecular nanotechnology. He is also Member or Foreign Member of nine world-known academies of science or engineering, including Foreign Associate of the US National Academy of Sciences (NAS), Foreign Member of the Russian Academy of Sciences (RAS), Honorary Fellow of the Royal Society of Chemistry, Member of the German Academy of Science and Engineering (acatech), Honorary Fellow of the Indian Academy of Sciences (IAS), Foreign Member of the Royal Danish Academy of Sciences and Letters, and honorary director or professor of several foreign universities.

Every three years TWAS elects a new term of council.



CAS President BAI Chunli (left) is elected new President of TWAS at the 23rd General Meeting of TWAS, and will serve his office term from Jan 1, 2013. (Photo: LI Hui)

Responsible for supervising all Academy affairs, the TWAS Council encompasses a President and five Vice-Presidents, respectively for its five regions, namely Africa, Arab Region, Central and South Asia, East and Southeast Asia, and Latin America and Caribbean. The Council also includes a Secretary General, a Treasurer, an Ex-official Council Member and five Council Members.

New Name Accommodating S&T Globalization

While the world is getting smaller and “flatter” as a result from the easier access to international resources due to S&T advancement and the stronger and stronger trends of globalization, scientists from the “developing world”, which was once called “the Third World” and later reframed aiming at better political correctness, feel the necessities to get more global.

At the 23rd General Meeting of TWAS held on September 17 in Tianjin, the membership of TWAS agreed to change the name “The Academy of Sciences for the Developing World” into “The World Academy of Sciences”, with its mission remaining “the advancement of science in developing countries”.

According to a news release from TWAS, the Academy was firstly founded with a clear mission to promote science advancement in the under developed nations, where science was somewhat neglected by their governments in comparison with the more urgent calls for social improvement. The founders wished to change

the poor economic situation in their mother countries via advancement of science. It was not easy to decide between different options before eventually settling on the name “The Third World Academy of Sciences”, whose acronym is literally “TWAS”.

Global political climate changes, and the term “The Third World” was corrected to “The Developing World” to recognize the identity of these nations and to acknowledge their efforts to reduce poverty. Despite controversies within the membership, TWAS Members voted to change the name into “the Academy of Sciences for the Developing World” in 2004 to mark these change, and meanwhile retained the acronym intact.

Now in response to the trend of globalization, the TWAS Council suggested a further change to the Academy’s name. According to a release by TWAS, however, the Academy will stick to its original mission to promote advancement of science in developing countries, while embracing the global nature of science.