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SPECIAL ISSUES

Information Process for Manufacturing Industry

A joint meeting was convened on August 14, 2007 in Wuhan to support the information process of manufacturing industry in the middle and southern part of the country. Officials from the Ministry of Science and Technology briefed the audiences of the general thinking lines and near-term work plan of information process for the manufacturing industry. Participants discussed the general thinking lines and near-term work plan in the context of their own regional situations, and proposed a number of suggestions, which led to the birth of an action declaration for the information process of manufacturing industry in the middle and southern part of the country.

The Declaration puts forward a range of missions to be accomplished, including establishing a joint meeting system, jointly working on pilot projects, establishing a joint implementation mechanism, jointly working on statistics, and jointly staging public awareness raising campaigns.

During the 11th Five-year plan period (2006-2010), MOST has made readjustments to the management modality of organizing the information process for the manufacturing industry. One of the readjustments is to organize application and pilot projects under the principle of regional demonstration, tiered management, and adjacent concentration. Management offices, expert panels, and consultation firms will be established when necessary, so as to shape up a management system for boosting the information process of the industry. The entire country will be managed as four regions for the purpose.

36 Ecological Watch Stations

China has established 36 ecological watch stations, said BAI Chunli, Vice-President of the Chinese Academy of Sciences, at an international seminar on long term ecology held on August 20, 2007. BAI added that China's ecological research network has kept a development abreast with the international community in the area, and has become a world leader in the study of long term ecological system.

China established its ecological research network in 1998. China is the founding member and member of the Coordination Committee of International Long-Term Ecological Research (ILTER). So far China has established an ecological research network consisting of 36 ecological stations in different types, 5 disciplinary branches, and one comprehensive research center. Covering different regions and ecosystems in the country, the 36 ecological stations observe the water, soil, air, and organism elements in China's farmlands, forests, pasturelands, deserts, marshlands, lakes, and sea gulfs on a long term basis, using a range of technical means, including indoor simulation, remote sensing, and modeling. They also watch the long term ecological processes of energy and matter flows.

INTERNATIONAL COOPERATION

China-US Students Exchange

A wind-up meeting was held on August 9, 2007 in Beijing to close a students exchange program, co-sponsored by the Chinese Ministry of Science and Technology, the Chinese Academy of Sciences, the National Natural Science Foundation, and the US National Science Foundation, and implemented by China S&T Exchange Center.

Started from 2003, the students exchange program has successfully run for four consecutive years. This year, 35 American students have worked on selected topics with their Chinese counterparts, under the guidance of Chinese tutors, in Peking University, Tsinghua University, Chinese Academy of Agricultural Sciences, and Chinese Academy of Sciences respectively. They also reached intentions for further cooperation.

It is worth mentioning that Mr. Patrick Chiang, a doctorate student of Stanford University who was part of last year's exchange program, and became an assistant professor of Oregon University after graduation, recommended his student Julie Layshock to be part of the program this year. He and his counterparts at the Institute of Computing Technology, a part of the Chinese Academy of Sciences, have been the tutors for three Chinese master's students.

The successful implementation of the exchange program allows American students to understand China's developments in the area of politics, economy, S&T, and culture. It also facilitates S&T exchanges and cooperation between students of two countries. It deepens friendship, enhances mutual understanding, and lays a foundation for the long term S&T cooperation between the two countries.

China-Australia Young Scientists Met

A closing meeting was held on August 6, 2007 to wind up an exchange program, jointly initiated by the Chinese Ministry of Science and Technology, Australian Ministry for Education, Science and Training, and Australian Academy of Technological Sciences and Engineering, to exchange young scientists between China and Australia. After the meeting, both parties inked the 4th agreement on renewing the Memorandum of Understanding between the Ministry of Science and Technology of the People's Republic of China and Australian Academy of Technological Sciences and Engineering. SHANG Yong, Chinese Vice-Minister of Science and Technology, and Jessie Borthwick from Australian Ministry for Education, Science and Training, were present at the signing ceremony.

At the meeting, six Australian young scientists discussed their visits to some 20 Chinese institutes. They told the audiences that the exchange improved their understanding of China's developments in the area of politics, economy, S&T, and culture. They have reached some ten intentions of cooperation with Chinese research institutes.

The successful implementation of the exchange program opens up a gate for Australian young scientists to understand China, and facilitates exchanges of young scientists between two countries. It deepens friendship, enhances mutual understanding, lays a foundation for the future S&T collaborations between the two countries.

RESEARCH AND DEVELOPMENT

World First Proteome Blueprint for Human Organs

The Human Liver Proteome Project (HLPP), led by Chinese scientists, will soon see breakthroughs in liver cancer diagnosis. According to a briefing, in the 3-year implementation of the project, Chinese scientists have sorted out 6,788 Chinese adults' liver proteome of high credibility. The effort has led to the birth of the world's first proteome blueprint for human organs. They discovered an interactive network map containing some 1,000 proteins, and established some 2,000 protein antibodies. These findings will eventually result in a biochip that can be connected to computers, for finding out the exact pathogenic causes of hepatitis and liver cancers through blood test. It will relieve patients' pains in diagnosing, and help work out best therapeutic solutions for them.

The project has also completed an array of other missions, including the establishment of expression spectrum for human embryonic liver proteome, and associated development and division control. It established a clinical database and specimen bank for liver cancer patients, the largest of its kind in the country. Researchers also established, imported, and improved different animal models for liver cancers and cells. They completed a comparative study of normal human liver, hepatitis, hepatocirrhosis, and liver cancer, and

associated controlled study of proteome. They discovered some 30 molecular markers that can be used to detect, diagnose, and prognose liver cancers, creating a ground for further identifying targets and key proteins.

New Mechanism for NSC Pool Maintenance

Chinese scientists published on August 7, 2007 their latest findings on nerve cell maintenance mechanisms in embryos in the journal of *Developmental Cell*. A study team, headed by JING Naihe of Shanghai Institutes for Biological Sciences, found through their long time study that negative bHLH transcription factor Hes1 can inhibit neural stem cells (NSCs) from precocious neurogenesis through repressing proneural gene expression. They also found that Ids, the dominant-negative regulators of proneural proteins, are expressed prior to proneural genes and share an overlapping expression pattern with Hes1 in the early neural tube of chick embryos.

In the course of studying the development of chicks and mice nervous system, researchers found that overexpression of Id2 in the chick hindbrain upregulates Hes1 expression and inhibits proneural gene expression and neuronal differentiation. By contrast, Hes1 expression decreases, proneural gene expression expands, and neurogenesis occurs precociously in Id1;Id3 double knockout mice and in Id1 - 3 RNAi-electroporated chick embryos. Mechanistic studies show that Id proteins interact directly with Hes1 and release the negative feedback autoregulation of Hes1 without interfering with its ability to affect other target genes.

These results explain the pathogenesis of nervous system development, and create important theoretical foundation for using stem cells to treat brain tumors and nerve damages.

Multichannel Filters

In collaboration with researchers of the University of Science and Technology of China, Dr. WANG Shaowei, Shanghai Institute of Technical Physics under the Chinese Academy of Sciences, has made new progresses in developing independently tunable multichannel filters. The finding was published in the recent issue of *Applied Physics Letters*.

Dr. WANG presents a design for the construction of one-dimensional photonic crystals with orthogonal defect states, which can be used as independently tunable multichannel filters. It overcomes the difficulty and provides an easy way for the design of multichannel filter with specific channels. For example, using two wavelengths of 1.30 μ m and 1.55 μ m, or two peaks of 777.4nm and 868.3nm. The simple fractal rule can easily work out independently tunable dual-channel, tri-channel, or even multichannel filters. The experimental results agree with theoretical ones very well. Reviewer of *Applied Physics Letters* thought highly of the finding that was also published in the *Virtual Journal of Nanoscale Science & Technology*.

NEWS BRIEFS

Recycling Industrial Wastes

China's first industrial resources recycling center celebrated its ground breaking ceremony on August 22, 2007 at the High Tech Park in Kunming.

The Center, with an investment of RMB 79 million, sits at the Kunming High Tech Park. It will operate under the principle of developing a cyclic economy, building an efficiency society, and efficient and cyclic utilization of resources, featured with "reduced quantity, recycling, and resources pro". It will make a comprehensive utilization of the wastes left from industrial activities, and work on cyclic utilization technologies. The Center will also strive to develop comprehensive technologies for low concentration desulfurization, wet recovery of sulphur dioxide, and processing dry and semi-dry desulfurization by-products, in a period of 5-10 years.

CAO Jianlin, Vice-Minister of Science and Technology, told reporters that the establishment of the Center has filled up a blank that China has no research institute for cyclic utilization of industrial resources. The new Center will help to build a "green high tech park", turning Yunnan into a province of green economy. It also plays a demonstration role of cyclic economy for the whole country as well as for Yunnan.

Nanotechnology for Cancer Treatment

An inauguration ceremony was held on August 24, 2007, to celebrate the establishment of a cancer nanotechnology center at the compound of Tianjin Medical University Tumor Hospital. Jointly established by the National Nanoscience Center, CAS Institute of High Energy Physics, and Tianjin Medical University Tumor Hospital, the Center is currently a most authoritative research institute using nanotechnology as a means to treat cancer in the country. It is also one of the earliest cancer nanotechnology research institute established in the world.

The new center will take full advantage of the technological strength of the three founding parties, and establish a number of research platforms for cancer diagnosis, treatment, and study. It will also develop new nanomedicines for diagnosing and treating cancers, and work out proprietary products and technologies, in an attempt to promote the spin-off of nanotechnology. It will build itself into a leading cancer nanotechnology entity in the world, taking advantage of the strength of research institutes, hospital, and industry.

Mapping Amery Ice Shelf

China will soon launch its 24th scientific expedition to the Antarctica, during which Chinese scientists will map up the terrains of the Amery Ice Shelf (an area of 450 square kilometers) at a scale of 1:50000, the first of its kind in the world.

According to the plan, the expedition will send 5 snow rovers to climb up to the ice shelf peak (A4093m), before dispatching a snow rover to map up an area of 30 km in east-west, and 15 km in north-south from the peak.

To study ascending and descending movement of the ice shelf, Chinese researchers will also establish an ice shelf movement control network covering an area of 6,000 square kilometers, for the purpose of observation and accuracy measuring of the ice shelf peak.

Chinese Made Telescope Sits on Antarctic Peak

Four 14.5-cm photometric telescopes, developed by the Nanjing Institute of Astronomic Optics, will be installed on the Amery Ice Shelf, the peak of Antarctica, at the end of the year. The telescopes will be a help to finding a proper site for the future observatory in the Antarctica.

CUI Xiangqun, Director of the Institute, told reporters that the Amery Ice Shelf possesses an unmatched condition for astronomic observations, compared with any other places in the world. Here scientists enjoy an extremely high tranquility of atmosphere, allowing many special celestial phenomena being observed. A photometric telescope can detect photometric variations, in the course of watching celestial phenomena. This helps scientists find a best site for the future observatory, which explains why the photometric system being selected as first telescopes to be installed in the Antarctica.

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