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NEWSLETTER

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SPECIAL ISSUE

Green Architecture Action Plan

An action plan for green architectures was jointly undersigned on March 28 by SHANG Yong, Vice-Minister of Science and Technology, and CHOU Baoxing, Vice-Minister of Ministry of Construction. The action plan pledges to create 100 demonstration projects and 10 demonstration cities for green architectures. The efforts will eventually lead to the establishment of a number of key technology platforms, industries, and national laboratories for the purpose.

According to a briefing, each year China adds up 2 billion square meters of constructed areas in urban and rural environment. It is estimated that by the end of 2020, such newly added areas will reach 30 billion square meters. Calculated in the current energy consumption pattern, those new structures will consume 120 million kilowatt hours of electricity and 410 million tons of standard coal each year, or approximately 3 times the total energy consumption of the nation’s existing structures. Plus 16.7% of energy consumptions for construction materials, architectures related energy consumption will take 46.7% of the total energy consumption in the country. However, if a new architecture energy consumption standard is strictly implemented, together with phased efforts for energy efficiency uplifting, China will enjoy an annual saving of 420 million kilowatt hours and 260 million tons of standard coal from 2020, with a reduced emission of 846 million tons of greenhouse gases, including carbon dioxide.

The Chinese Ministry of Science and Technology has established a project to study key technologies for green architectures under a national key technology program. The efforts have resulted in a range of innovative S&T activities, and a line of major findings that have found extensive applications and diffusions in advancing green architectures. Under the National

Outlines for Long and Medium Term S&T Development, green architectures and the associated energy efficiency has been listed for priority support. During the 11th Five-year period (2006-2010), the Ministry of Science and Technology will, in collaboration with Ministry of Construction, State Development and Reform Commission, and other government agencies, facilitate the development of green architectures technologies, especially for energy efficiency, water efficiency, materials efficiency, land efficiency, and environmental protection. China also seeks for more international cooperation and exchanges in this area.

INTERNATIONAL COOPERATION

China-US Combating Infectious Diseases

On March 29, 2006, a China-US seminar was held to share new approaches of combating infectious diseases, especially through the socalled gene revolution. Jointly sponsored by the Chinese Ministry of Science and Technology and the National Academy of Sciences of the United States, the seminar is designed to work out more consensus between the scientists of both nations in the area, strengthening S&T cooperation and exchanges between two sides, and raising the efficiency of preventing and treating infectious diseases utilizing genomics. Some 100 renowned Chinese and US experts attended the meeting, where innovative technologies and new means of combating infectious diseases using genomics findings were shared. Participants proposed to strengthen S&T cooperation and exchanges between the two nations, and raise the worldwide level of infectious diseases control and prevention. SHANG Yong, Chinese Vice-Minister of Science and Technology, Dr. George Atkinson, Science and Technology Adviser to the United States Secretary of State, and David Sedney, Minister of American Embassy in China made their respective speeches at the meeting.

Participants had an extensive and in-depth discussion of six major topics, including diseases monitoring and testing, prediction of microbe pathogenicity and the associated attacks on humans, comparative diagnostics between China and the United States, vaccine development, and case studies. Participants agreed that genomics has become an important approach to combat major infectious diseases, including bird flu, AIDS, dengue fever, and tuberculosis. Different nations and regions have differed strength in proportion resources of new and recurrent infectious diseases, microbe genome resources, genome related basic researches and applications. In this context, it is important, both scientifically and socially, for worldwide scientists to define feasible cooperation directions for infectious diseases prevention and control, and the associated priorities and key technologies, on a scientific dialogue platform, sharing global resources and enhancing the capability of combating infectious diseases at the worldwide level. The meeting has reached the following consensus: 1) biogenomes creates a new angle and means for people to recognize, study, and prevent infectious diseases; 2) different nations and regions have their own strength in genome studies, development and utilization of biological resources, including infectious diseases cases, and in new infectious diseases prevention and control technologies and products using genomics; and 3) the two nations should strengthen cooperation and exchanges in the area, realizing resources sharing as soon as possible, in an effort to develop a global infectious diseases prevention and control pattern that complements each other.

China-Russia S&T Cooperation in Yantai

Not long ago, a China-Russia joint lab for materials was officially inaugurated. Jointly established by the Yantai Research Center for Advanced Materials and a Russian institute for macro-dynamic materials, the new lab heralds another S&T cooperation result derived from the Yantai China-Russia Cooperation and Demonstration Base for High Tech Industrialization.

Upon the approval of the Chinese Ministry of Science and Technology, the first China-Russia cooperation and demonstration base for high tech industrialization found its home in Yantai on December 1998. The base has, since its establishment, forged cooperation ties with more than 100 enterprises and research institutes in Commonwealth of Independent States. It also works hard to win the support and assistance from government agencies and universities and institutes in the locality. It has attracted the participation of major industrial enterprises. The efforts has resulted in an agreeable atmosphere collaborating with Russia that is promoted by the government, and facilitated by implementing agencies, with the involvement of both universities and enterprises. The 7-year long practice has produced a China-Russia S&T cooperation pattern featured with Chinese enterprise providing capital, Chinese universities offering technology support, and Russian enterprises and research institutes transferring original findings.

Collaborations with Commonwealth of Independent States in the past few years have created fine industrialization perspectives for some of the joint venture projects. For example, the base has introduced 80 national high tech projects from Commonwealth of Independent States, of which 6 have been put into operation, and 9 others under construction. New materials, machinery and electric equipment, biopharmaceuticals, and efficient farming, have become four major collaboration areas, which not only helps the local economy, but also raises the technical level of these sectors.

RESEARCH AND DEVELOPMENT

Key Technical Standards for New and Renewable Energy

China has recently rolled out a range of key technology standards for new and renewable energy, including proton exchange membrane fuel battery, solar energy water heating system, grid photovoltaic system, and wind power generation, in a move to ease energy shortage in the country, through tapping up new and renewable energy.

The study team for proton exchange membrane fuel battery and solar water heating system has completed 11 draft national standards and 2 test technical reports. Of them, the one for proton exchange membrane fuel battery, the first of its kind in the country, creates a standard for validating relevant findings before commercial applications. This is important for promoting the industrialization of proton exchange membrane fuel battery in the country. Revised standards for solar water heating system and grid photovoltaic system will play an important role in regulating the development of renewable energy and the associated commercial applications. While preparing a standard for the grid photovoltaic system, researchers have taken into full consideration of special low temperature conditions of China's wind power fields, and raised the temperature endurance for wind power generators, which makes a positive contribution to commercial applications of grid wind power generators.

Safety Standards for Industrial Automation

Not long ago, Chinese regulators have worked out a range of safety standards for industrial control and automation, including a safety standard for Ethernet based proprietary industrial communication protocols. The efforts also resulted in the standards for upgrading field bus communication protocols that agree with the existing industrial applications in the country. Those standards will eventually become China's national safety standards for industrial control and automation.

The research team has produced China's first proprietary international standard IEC/PAS 62409:2005 for industrial automation, and an analytical report on international standards for field bus. It also accomplished the preparation of 8 national standards for industrial communications that can be applied to Chinese enterprises, and turned 7 internationally accepted standards for function safety into corresponding national standards through adaptation.

These standards create technical basis for China's development of field bus technologies and products. They will also guide domestic enterprises to produce automation systems and instruments that accommodate market demands, and reduce unneeded production and redundant investment. The standards constitute a useful help for technical transformations and introducing new generation field bus control equipment, and for reducing application risks of new products in numerous sectors, including petroleum, chemicals, metallurgy, power generation, and traffic and transportation.

Key Technology Standards for E-Commerce

In the course of working on China's new generation standards for XML based e-commerce technologies, Chinese researchers have rolled out 14 national standards, 2 study reports, and 1 Internet based system platform, for involving technical systems, key technologies, and the sustainable development of standards. The research team produced a range of basic frameworks, including the technical system for XML based e-commerce standard, draft standards for XML based e-commerce data and operation, and the associated dynamic maintenance mechanism and modes. It also developed a dynamic maintenance management platform for standards, in addition to technical lines and approaches designed for shifting

EDIFACT to XML, and for developing XML based interoperational protocols. Researchers also worked out a technical framework for China's B2C and B2B e-commerce activities.

The efforts has created a basic framework for the standardization process of China's XML based e-commerce system, and defined a clear technical direction for e-commerce applications in government and economic sectors. This constitutes a useful condition and basis for China becoming a part of international efforts for the same goal. In addition to facilitating the healthy development of China's e-commerce, the effort itself becomes a role model for standardized e-commerce practices at large enterprises. Standardization people in special sectors or enterprises can draw up their own standards based on the framework. The efforts not only raise the overall level of China's standardization process for e-commerce, but also facilitate the development in the direction of applications.

Technology Standards for Microelectronic Materials

China's standardization process for microelectronic materials mainly focuses on newly developed microelectronic materials, including large size semiconductor crystals, gallium arsenide, and InP materials. In the meantime, researchers have worked out basic supporting standards for testing and analyzing.

Through series of efforts in collecting, analyzing, translating, and publishing a whole range of new standards for semiconductor materials, and studying relevant ASTM standards, researchers have sorted out the differences between SEMI and ASTM standards and China's own standards for semiconductor materials, through which they acquired a better understanding of international tendencies in the area. In the meantime, researchers made efforts to improve and upgrade China's standard system for microelectronic materials, in line with China's own needs for semiconductor, which is of important reference value for guiding the development of China's semiconductor industry. The efforts have resulted in 29 new or revised standards for microelectronic materials and the associated test and analyzing methods. They are not only set in line with China's current development level, but also constitute an important guide for the development of China's semiconductor industry. Experts believe that the overall level of these standards has reached an international level. Of these standards, 13 are prepared at an advanced international level, and 16 at a general international level. The ones that have been up to an internationally advanced level mainly concern raw materials and some methodology related standards, while the ones at a general international level mainly cover deep processing products and most methodology standards. The research team also established a database for microelectronic materials standards.

China AMS Lab in Operation

AMS-China Lab (AMS-C Lab), operated by the Southeast University, was put into an official run on March 23, 2006. Prof. Samuel Chao Chung Ting made a briefing about the lab at a news conference held at the University. As a part of AMS experiment presided by Prof. Samuel Chao Chung Ting, the AMS-C Lab at the Southeast University has successfully restored the probing function of AMS-01 for positive and negative high-energy particles. On the one hand, AMS-C Lab, an independent probe system, can be used to study the key technologies for space probe, and on the other hand, it can be used to probe the cosmic rays that reach the earth surface. This is important for the development of space probe technology, space environment forecasting and prediction, detecting the high-energy particles that reached the earth surface, and discovery of new particles. Up to date, AMS-C Lab has collected some signals that contain space high-energy particles, which encourages researchers.

In addition to AMS-C Lab, the Southeast University is also contracted to two studies involving AMS-AIS and AMS-SOC under AMS-02. The former is to test and diagnose possible failures of AMS-02 magnetic spectrometer aboard the International Space Station , through an AIS system at the Southeast University, while the latter is used to establish AMS data processing grids, and complete other missions, including data collection, mass storage, and distributive computation.

Comments or inquiries on editorial matters or Newsletter content should be directed to:

Mr. Mao Zhongying, Department of International Cooperation, MOST 15B, Fuxing Road Beijing 100862, PR China Tel: (8610)58881360 Fax: (8610) 58881364

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