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INTERNATIONAL COOPERATION

Second China-US Innovation Conference



The Second China-US Innovation Conference and a China-US innovation and industrialization meeting, co-sponsored by the Chinese Ministry of Science and Technology, US State Department, and US Department of Commerce, opened on December 2, 2008 in Beijing. Some 200 participants from government agencies, S&T community, industry, and universities discussed the issues concerning innovative ecosystem and technology transfer. CAO Jianlin, Chinese Vice-Minister of Science and Technology, Ambassador Clark T. Randt, Jr., and Daniel S. Sullivan, Assistant Secretary, spoke at the forum. After the opening ceremony, CAO and Sullivan held a formal intergovernmental talk.

Forum for Pure Electric Auto

A China-Germany pure electric auto forum, co-sponsored by the Chinese Ministry of Science and Technology, German Federal Ministry of Transport, Building and Urban Affairs, China Auto Technology Research Center, and Shanghai Clean Energy Research and Industrial Promoting Center, opened on December 5, 2008 in Shanghai. Specialists and researchers from some 40 enterprises, research institutes, and universities attended the forum. The forum is designed to promote and strengthen the exchanges and cooperation between China and Germany in the area of pure electric autos, through keynote lectures and discussions. Ten Chinese and German specialists reported the latest findings and developments in the area. Participants discussed an array of related issues, including national electric auto development strategy, electric auto R&D, and associated infrastructures. Both sides agreed to have more cooperation in the area of key components and parts R&D, infrastructure construction, government financing, and public acceptance.

China's First Joint Metrology Lab

THOMSON REUTERS and the Institute of S&T Information of China (ISTIC) announced on December 9, 2008 that both sides have agreed to build a strategic partnership, and establish an ISTIC-THOMSON REUTERS metrology lab. The new lab was officially inaugurated on the same day. Researchers of both sides will strengthen academic exchanges and work on joint research projects in the area of metrology related basic theory, technology, and applications through the lab. Meanwhile, the lab will become a platform for academic exchanges and joint research in the area of metrology, equipped with abundant scientific literatures and analysis tools, and supported by a research fund.

RESEARCH AND DEVELOPMENT

World First Rat Embryonic Stem Cells

CAS Shanghai Institute for Biological Sciences announced on December 19, 2008 that its researchers have for the first time in the world established two rat embryonic stem cell lines, through a range of related studies. For example, they skillfully reprogrammed the adult cells in rats, making them into pluripotent stem cells. They eventually screened out 2 cell lines up to the standard of pluripotent stem cells from 22 embryonic-stem-cell-like lines. The two cell lines are able to divide inside, outside, and in the middle. The finding will be published in the January 2009 issue of journal *Cell – Stem Cell*.

Physical Separation of Carbon Nanotubes

SUN Lianfeng, a research fellow at the National Nanoscience Center, and XIE Sishen, an academician of Chinese Academy of Sciences Institute of Physics, accidentally found that a bundle of carbon nanotubes, when carrying numerous charges, would 'explode'. SUN named the brand new technique for separating carbon nanotubes 'Coulomb explosion'. The carbon nanotubes, when separated using the technique, would produce unique and amazing radiation patterns, like hair standing on end when one touches a static ball in the science museum, or 'nanotree'. The nanotree may have branches in different sizes and lengths. A branch can be a single-wall carbon nanotube with a length of 5 microns. In a paper published in the latest issue of *Nano Letters*, SUN and coworkers have proved through AFM and Raman spectrum that the explosion technique will not damage the structures of carbon nanotubes.

New Gene for AF and Sudden Cardiac Death

Zhang Xianqin, a doctoral student at Huazhong University of Science and Technology, and his tutor WANG Qing announced on December 11, 2008 that they have found a new gene that is held responsible to atrial fibrillation and sudden cardiac death. The new finding, published in

the December 12 issue of journal *Cell*, provides a new clue for understanding the trigger mechanisms of heart attack, and for developing needed new diagnosing, prevention, and treatment tools.

ZHANG and coworkers made the genetic analysis of a five-generation family having AF history, and found that a gene named NUP155, when mutated, may lead to atrial fibrillation and sudden cardiac death. The family has produced seven heart patients. Five of them died of sudden cardiac death under age of two. Researchers found mutated NUP155 in these patients, though other healthy family members enjoy a normally developed NUP155. Researchers also found that NUP155 encodes a member of the nucleoporins, the components of the nuclear pore complex. It controls the transport of mRNA from nucleolus to cytoplasm for protein production. NUP155 also controls the transport of some important proteins from nucleolus to cytoplasm. In this context, it is a gene at a higher position, regulating the expression of an array of genes and proteins, which may result in diseases such as AF, endangering the health of young and middle aged people. Researchers believe that even a tiny change in NUP155 may increase the risks of having an atrial fibrillation.

New Tumor Vessels Inhibiting Drug

A new Combretastatin product, jointly developed by Zhejiang Dade Pharmaceutical and Shanghai University to destroy small-molecule tumor vessels, will soon enter Phase II clinical trials. Researchers have filed patent applications in the United States, Japan, and the European Union for the new drug.

The joint lab developed the new drug through changing the structures of the older version of Combretastatin, enhancing the therapeutic effects, and reducing the toxicity. The pre-phase animal experiments and Phase I clinical trials on the patients having neck, esophageal, and lung cancers show that the new drug is able to noticeably reduce the blood flow of tumor vessels, causing rapid dying of cancerous tissues in the center, without harming normal blood vessels. It is an enhanced tumor vessel inhibiting drug, with improved specificity and reduced toxicity. It is a target drug in real term able to compromise adult tumor vessels and effectively prolong the life of patients in an advanced stage, compared with traditional operation, chemotherapy, radiotherapy, and other tumor vessel inhibiting drugs.

Largest New Internet Demonstration

The State Development and Reform Commission, Ministry of Science and Technology, the former Ministry of Information Industry, Ministry of Education, Chinese Academy of Engineering, Chinese Academy of Sciences, and National Natural Science Foundation jointly launched China Next Generation Internet (CNGI) in 2003. Up to date, CNGI has established 6 core networks, IPv6 demonstration networks in 22 cities, and 273 customer premises networks, exceeding the designed number. A number of findings, such as Authentic Address

Allocation and Authentication, are the world's first. Two of them have been accepted as international standards, the first instance of China being part of international core Internet standards.

JIANG Lintao, chief engineer at Institute of Telecommunication, part of the Ministry of Industry and Information Technology, told reporters that CNGI's phase II operation will focus on the standardization and commercial applications of next generation packet data network. The standardization part will produce internationally accepted telecommunication standards dominated by China, and commercial applications will include adaptation and compatibility to all the operations involved, perfecting the operational and security systems of the new network, and securing a well functioned operational and management system.

Multifunctional Road Test Van

A road test van, integrated with test, assessment, decision making, and management functions, recently made its debut at Harbin Engineering University. A study team, led by Prof. HOU Xiangshen of the University, has worked on the multifunctional van with Harbin Guochang Intelligent Traffic LLC since 2001. Researchers have developed a range of subsystems for road surface analysis, high intensity illumination, and automatic wheel track recognition. They also used a combined laser measuring and inertial navigation technology to obtain the section of two wheels in vertical direction, an effective solution to addressing the shift in a long and consecutive measuring operation. With the help of infrared laser measuring technology, the automatic wheel track recognition system is able to cover the wheel tracks in the entire lane at an interruptible interval. The high intensity illumination system makes collecting the data of damaged road surface possible, allowing automatic all weather recognition of cracks, pits, and cave-ins. The road surface analysis system is designed with a range of functions, including 3-D road surface display, real-time display of damaged road surface, IRI, and automatic track depth grading/statistical analysis.

New Approach for Sowing

A study team, led by Prof. REN Wentao of Shenyang Agriculture University, has developed a novel approach to grow crops in a more precise and compatible manner. The new growing technique splits the sowing process into two steps. Step one, one wraps up seeds, fertilizer, and herbicides in a paper tape roll at a workshop. Step two, a special tape roll sower will be used to furrow, and lay/bury the seeds tape.

The new technique enjoys an improved quality control, and reduced workloads. Paper tape making is not restricted either by season, or by soil conditions. It allows the standardized application of seeds, fertilizers, and herbicides in the right position and quantity, desirable for growing the crops on ordered specifications, and for simplified field operation. The new technique can be used to sow rice, soybean, and corn. In a sense, it is more desirable for sow

the cash crops like vegetables and flowers which have a higher precision demand for seeds, fertilizer, and pesticides application.

NEWS BRIEFS

New Remote Sensing Satellite Launched



At 1122, December 15, 2008 (Beijing time), China successfully blasted off a remote sensing satellite aboard a CZIVB launch vehicle. The new satellite will find applications in an array of areas, including land resources survey, environment monitoring and protection, urban planning, crop yield estimation, disaster prevention and preparedness, and space experiments, playing a positive role in the national economic development.

Lunar Satellite Closer to Moon

Chang'e I satellite changed its orbit at 0200, December 19, 2008, narrowed down its distance from the lunar surface to 17km. It returned to the circular polar orbit some 100 km away from the moon surface on 0800, December 20. The satellite worked smoothly in the descending experiment, allowing the ground control to work on orbit and three-direction speed measuring, in an attempt to collect needed data and experience for phase II high resolution lunar observation and soft landing. The ground control will further adjust the satellite's orbit inclination angle in due time, working on lunar gravitational field and orbit experiments. During the new experiments, the payloads will be put into operation to collect sounding data.

Color Cocoon

Southwest University announced on December 18, 2008 that its researchers have developed a genetic modification technique that is able to make silkworms to produce color cocoon. The University, in collaboration with a silkworm technology diffusion center in Guangxi, has bred out a pair of new species producing cocoons in green color, and completed the performance verification of the filature and silk derived from the cocoons. The raw silk produced from the new species presents a beautiful green color under the natural light, or a brilliant green florescence under the ultraviolet light. The development marks a breakthrough in producing the silk with natural color, and a new phase for transforming silk structures and enhancing silk color retention using GM techniques. It will expect a major impact on the future development of the silk industry.

Banana Cancer Killer

Prof. SHEN Qirong and coworkers at Nanjing Agriculture University have recently developed a bio-organic fertilizer able to prevent and kill banana panama bacteria. Researchers separated the killer bacteria from banana panama bacteria, allowing the former to be fermented in the composts prepared in different formulas, and produce a bio-organic fertilizer able to resist banana panama bacteria. Experiments over the large banana growing plantations in Hainan show that the new fertilizer is able to minimize the attack of banana panama disease to 4% or lower, with the control group at 30% or more.

Advanced Access Control System

An access control system able to automatically issue warning, developed by Beijing Yixin S&T LLC has attracted many visitors at an international public security products fair opened on December 12, 2008. In addition to the traditional functions for an access control system, the new system has added new functions, including video monitoring and automatic warning. It has an internal DVR system and a hidden camera. One can start the warning function when leaving the home, and turn off the warning when back home. Under the warning setting, anyone who enters the scene will be recorded by the system, and a warning sound will be issued one minute later. At the same time, the system will automatically alert the Management Center. The suspect, when looking for the source of warning sound, will be caught in the video.

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