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NEWSLETTER

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IN THIS ISSUE

SPECIAL ISSUES

S&T Fair Attracts Visits and Projects

Not long ago, the 5-day long 9th China Beijing International S&T Industrial Fair dropped its curtain. The event has attracted more than 230,000 visitors, and some 18, 000 audiences Attended the 10 forums

held for the occasion. A range of technology trade talks resulted in 149 deals or intentions of investment.

The current S&T Fair is arranged with nearly a hundred of events, including shows, forums, special activities, and trade talks. More than 3,000 overseas visitors from UN organizations and 35 countries and regions attended the event. People form 31 domestic provinces, autonomous regions, and major cities, and from Hong Kong, Macao, and Taiwan visited the Fair.

Proprietary high tech results constitute a major player of the show. The Fair has attracted the participation of 2,048 manufacturers from both home and abroad, with numerous Chinese made proprietary products displayed at the show. Renowned domestic vendors, including Legend, Hai'er, Changhong, and TCL, displayed newly developed high tech products that are of international competitiveness. At a show displaying diverse S&T findings derived from a dozen major national S&T projects, finding holders interacted well with audiences. The theme section "Zhongguancun Making" demonstrated China's proprietary innovation capability by displaying 66 proprietary brandname products.

Ten forums that were arranged at the Fair to discuss hot major issues concerning China's economic and social development have attracted 18,000 listeners. 323 experts and scholars from both home and abroad made talks on new thinking and concepts concerning diverse topics, including the 11th Five-year planning(2006-2010), proprietary innovations and innovation oriented country, cyclic economy, energy strategy, banking reform, and capital market.

Trade talks have exchanged some 10,000 cooperation projects involving investment, overseas investment, Olympic economy, agriculture related S&T projects, information process, and inter-provincial cooperation. More than 10,000 domestic and overseas businessmen

from several dozen countries attended trade talks, which resulted in 149 deals for trade or investment. Domestic enterprises attending the Fair have seen demographic changes from large cities to small and medium sized cities, with more than 140 cooperation accords signed by businessmen from the latter cities. Space technologies and associated applications in agriculture, and S&T policy support for agriculture, the first of their kinds held at the Fair, have become new platforms for farmers to know the latest farming technologies and associated diffusions.

Science Investment Raised 40 Times

In a period of two decades since its establishment in 1986, China National Natural Science Foundation (NNSF) has increased its research related investment by 40 times, at RMB 18 billion on a combined basis, according to a report delivered at a high-level forum held by NNSF on May 25, 2006 discussing cutting-edge research opportunities for China in the 21st century.

With the approval of the State Council, the National Natural Science Foundation was founded in February 1986, with an annual budget of RMB 80 million. NNSF has steadily increased its investment in scientific research activities. In 2006, NNSF‘s investment has reached RMB 3.4 billion. During the 11th Five-year period, NNSF will expect an increase amounting to RMB 20 billion.

INTERNATIONAL COOPERATION

China-Italy on Moon Probe Robot

Not long ago, Italian and Chinese scientists have jointly rolled out a prototype robot that would be used to explore the moon. Named “ZHONGYI Moon Rover” (China-Italy Moon Rover), the robot is the baby jointly conceived by scientists from the Space Robot Lab of the Beijing University of Aeronautics and Astronautics and the Robot Lab of Milan Polytechnic University. It is disclosed that the prototype robot, designed to collect

and analyze the moon soil, is under a control test.

According to a briefing, the project, launched in 2004, will be completed in 4 years. The efforts will lead to the birth of a prototype robot, a mainframe robot, and four minor robots. With a diameter ranging from 40cm to 80cm, robots will weigh differently from 12kg to 30kg.

The project has been listed a major S&T cooperation project agreed upon by both the Chinese and Italian governments in January 2006.

RESEARCH AND DEVELOPMENT

Live Stem-Cell Model

A paper on live stem cell model, authored by a study team led by Prof. HUANG Shuzhen of the Institute of Medical Genetics, a part of the Shanghai Jiaotong University, was published in a recent issue of the *Proceedings of the National Academy of Sciences*. The event marks China's breakthrough progresses in the area.

To avoid the repulsion of the internal immune system to externally harvested stem cells, Prof. HUANG and her co-researchers used goats as animal models, and injected human CD34+ cells derived from cord blood (CB) into the goat fetuses via in utero at 45-55 days gestation under guidance of B-scan ultrasonograph. The experiment resulted in a human-goat combination that allows extended survival of human stem cells in goats, which gives researchers an opportunity to observe and analyze biological features of the combination in different goat organs on a live basis. Researchers also analyzed the gene expression spectrum of the combination using genetic chips, and obtained precious scientific data. In the meantime, Prof. HUANG and her team established a genetically modified rat model for liver injury. They injected stem cells into a rat embryo that has been conceived for 12

days, and successfully repaired its live injury.

On May 29, 2006, the finding produced by the study team passed an approval review at the Shanghai Jiaotong University. The finding provides theoretical evidences and new technical means for treating some incurable congenital and hereditary diseases, including hemophilia and Mediterranean anemia. It also creates a new thinking line and approach for the production of human born proteins.

Enhanced Coal Gasification Technology

With the support of the National 863 Program in the 10th Five-year period(2001-2005), innovative coal gasification technology, a project jointly undertaken by the Yankuang Group and East China Polytechnic University, passed an approval on May 30, 2006.

During both the 8th and 9th Five-year periods, the Chinese Ministry of Science and Technology (MOST) has rendered consecutive support for coal gasification projects undertaken by a number of universities and research institutes, including East China Polytechnic University. In the 10th Five-year period, MOST enhanced its support for the same efforts led by the East China Polytechnic University, taking advantage of a 1.6 billion Chinese dollar project for ethylic acid based co-generation launched by the Yankuang Group, in an attempt to translate the innovative technology into practical applications. Thanks to concerted efforts of both the Yankuang Group and East China Polytechnic University, an enhanced coal gasification system with a daily capacity of 1,150 tons of coal staged a successful demonstration run on July 21, 2005. The following year was proceeded with a range of improvements and tests, which made the project up to all the designed objectives and indicators. In addition to the smooth running at the Yankuang Group, the technology has found applications in other projects.

The success of the project heralds China's full possession of proprietary technologies in the area, which laid a solid ground for the further development of coal based liquid fuels, IGCC and co-generations. It is of great importance to developing clean coal technology and efficient utilization of coal resources.

Strengthened Work Safety

The 10th Five-year period has witnessed a fast development of the technologies for work safety. The Chinese Ministry of Science and Technology, in collaboration with the Ministry of Public Security, State Administration of Work Safety, and General Administration of Quality Supervision, Inspection and Quarantine, launched a national project to develop a range of technologies concerning mining safety, urban safety planning, urban fire fighting, and urban and industrial pipeline safety. The project has gathered concerted efforts of industries, universities, and research institutes.

Researchers have been working on key technologies that can be used in urban safety planning, comprehensive safety evaluation, urban prevention and preparedness for fire and chemical related disasters, safety of urban underground pipelines and special industrial pressure facilities, mining gas explosion prevention and control, and emergency rescue. The efforts has resulted in a line of innovative technologies and methods that can be used in urban safety planning and risk evaluation, urban fire and chemical related disaster prevention and preparedness, and safety testing for urban underground pipelines and special industrial pressure facilities. In addition, the project rolled out methods for preparing urban emergency action plans, and technologies and equipment for mining gas explosion watch and control that have found demonstration applications at some coalmines in South China. The efforts also produced a range of related results,

including an updated technical guide for urban fire fighting planning, methods and technologies for urban fire risk evaluation, quantitative analysis methods and optimization technologies for fire fighting infrastructures and forces, and software for quantitative analysis of urban fire fighting forces. These efforts have provided scientific evidences for urban fire fighting legislations, and technical means for updating urban fire fighting plans and taking full advantage of the existing fire fighting and rescuing resources.

Proprietary Safe Dome for Nuke Plant

Not long ago, a Chinese made standard nuclear power plant at a million kilowatts level had its safety dome tested for anti-earthquake performance, using an engineering structure model at the Tsinghua University. According to a briefing, the reactor has completed its design analysis and associated tests. The event marks China's full proprietary capability of designing and building a nuclear power plant at the million-kilowatt level.

The safety dome, designed by Shanghai Institute of Nuclear Engineering Design, was tested by a model developed by the Institute of Architecture affiliated to the Zhongye Group. The model, in a shape of cylinder plus a half dome at a proportion of 1:10, is installed at an engineering structure lab of the University. LIN Songtao, a senior engineer of the Institute of Architecture explains that the combined design of cylinder and dome presents a steady pre-stress body that can stand up external shocking impacts in an evenly distributed manner. The safety dome is designed to resist an earthquake of a magnitude up to 8th degree, and can seal off nuke contaminants within the dome.

The Tsinghua University is contracted two key studies under the project: linear and non-linear analysis of safety dome structures and associated dynamic experiment and theoretical analysis of the safety dome structure model at a proportion of 1:10, and test and

verification of the model's shock resistance performance.

Proprietary Mobile Telecommunication in Motion

Chinese space delegation made its appearance at an aviation and space show opened on May 16, 2006 in Berlin. It also sponsored a forum for Chinese and German space businessmen on 18 of the same month.

A Chongqing satellite application company displayed a proprietary mobile telecommunication in motion system at the show. Mobile telecommunication in motion allows broadband based massive transmission of data and voice and graphic packets on a real time and consecutive basis, between moving vehicles, including auto, train, aircraft, and ship, via satellite or other air-born platforms. It is an integration of commanding, control, telecommunication, and information collection. The novel system has used a range of internationally advanced technologies, including information sample collecting, dynamic 3-D attitude information integration, information feedback, and navigation.

The new system can be used in anti-terrorism telecommunication system, 3-D safety information center, disasters prevention and control commanding system, mobile dispatch system for ship and train, and safety watch and warning system.

Novel Chinese Language Entry Module

Chinese language entry module (patent numbers: ZL031030793 and ZL2004100800643), developed by Guangzhou Dajiang Computer Co. Ltd., has landed major breakthroughs in Chinese character entry technology.

Chinese language entry module presents a newest approach for entering Chinese characters, combining both digital and common coding processes. It only takes 20 to 30 minutes for a beginner to learn its trick. Supported by a word bank of more than 20,000 Chinese characters, the new system allows users to

enter phrases using 4-6 coding, and characters 1-6 coding, applicable to both complex and simplified Chinese characters. There is no overlapping for the 2312 standard, an entry system using both phonetics and forms. The full-form entry allows 6000 simplified Chinese characters to be typed out using only four codes. The system also allows the direct entry of punctuations, symbols, and English letters. Under a generic entry mode, 1-4 coding is set for characters, and 4 coding for phrases. There is no overlapping for the 2312 standard. The multiple entry mode based system is desirable for diverse applications. The main entry mode allows 6,000 simplified Chinese characters using 3 codes, without overlapping, while the simplified mode is good for pupils.

Chinese language entry module is easy to learn, combining the merits of both digital and conventional coding system. As a standard Chinese character coding system, the new module makes a solution to address the conflicted requirements for speed, easy learning, comprehensiveness, and unity. The four-in-one solution is the innovative point in the system: 1) well defined code requirements, easy coding, no overlapping, desirable for both complex and simplified Chinese characters; 2) without phonetic restrictions, and easy to learn; 3) full-fledged applications, though under the prerequisite of the 2312 standard. Other entry systems would increase overlapping, when supporting a GB13000 standard, which affects the entry of Chinese characters under the 2312 standard; and 4) a fine solution to the discrepancy between digital and conventional entering system, and realization of a unified entry system for Chinese characters.

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