N0.540

CHINA SCIENCE AND TECHNOLOGY

NEWSLETTER

The Ministry of Science and Technology
People's Republic of China

N0.540 March 10, 2009

IN THIS ISSUE

SPECIAL ISSUES

Chinese Technology Market: 266.5 Billion Changed Hands

It is reported from MOST Torch Center that Chinese technology market have registered 226,343 technology contracts in 2008, with a transaction worth RMB 266.5 billion, enjoying a respective growth of 2.5% and 19.7% compared with the same period of 2007. Per contract sum has also risen from RMB 1.01 million in 2007 to current RMB 1.18 million. Chinese technology market has taken 0.89% as a proportion of GDP, or 0.02% more compared with 2007.

The technology transfer promotion campaign, launched a year ago, has accelerated the mobility of knowledge and technology transfer. Statistics show that of the four contract

categories, technology contracts sit in first place in transaction volumes, at RMB 107.5 billion, with a growth of 22.8%. Of them, the technologies derived from the combined efforts of industry, universities and research institutes have landed a booming growth of RMB 99 billion, or 92.1% of the total technology contracts, or 37.1% of the national total for the contracts reached. Enhanced mobility of technologies raised the sum of technology transfer contracts to RMB 53.2 billion, a top ranking growth at 26.7%. Technology consultation and service contracts have also witnessed a growth compared with the preceding year, though different in magnitude.

In 2008, computer program related electronics and information technology contracts have ranked first place in transactions, reached RMB 89.8 billion, with a growth 18.6% compared with the preceding year, followed by advanced manufacturing technology and new energy/energy-saving technology at RMB 47.5 billion and RMB 32.1 billion respectively. Unfortunately, agricultural technologies deplored a negative growth in trading, with a reduced transaction by 12%.

2008 has witnessed a noticeable growth of computer program and copyright trade at RMB 33 billion, with a 29.2% growth compared with the same period of 2007. Patented technologies have registered a trade volume worth RMB 24.4 billion, or 99.6% more against 2007, with a 4% growth at 9.2% as a proportion of the total technology trade in the country.

Capacity Building for Popular Science Resources

The Implementation Office of the Outlines for Chinese Citizens 'Scientific Literacy recently decided to enhance the capacity building in the area of popular science resources, in a move to address the shortage of popular science resources and building more popular science facilities. Five major missions have been defined for 2009. They are: encourage popular science writings, and enhance the reward to fine original popular science writings; integrate fine and digital popular science resources, and establish a sharing system for public good popular science resources; government agencies shall enhance the development of popular science products, in line with their respective obligations, and serve the public in different forms; develop popular science resources in line with major S&T events; and consolidate the resources of S&T museums and digital S&T halls, and serve the public through diversified means.

In the area of infrastructure construction, unified planning and well regulated management are advocated, including implement the popular science infrastructure development plan, and formulating relevant policies, regulations, and standards; utilize S&T museums and halls in an effective manner, and provide guidance and service for the construction of S&T museums and associated operations; and promote the development of popular science facilities, and tap up educational functionalities of popular science centers.

INTERNATIONAL COOPERATION

2nd China-New Zealand Joint S&T Meeting

2nd China-New Zealand Joint S&T Meeting opened on February 26, 2009 in Wellington. At the meeting co-chaired by CAO Jianlin, Chinese Vice-Minister of Science and Technology, and Helen Anderson, Chief Executive at New Zealand's Ministry of Research, Science and Technology, both sides briefed the other side the latest developments of S&T systems and policies in their respective countries. Both sides also reviewed the progresses made since the last session, and reached the consensus on establishing a framework for collaborative research activities and a steering panel for the purpose. CAO discussed the role played by S&T activities in dealing with financial crisis, and believed that in the current difficult times, both sides shall strengthen their innovation efforts, and develop new products and new markets, taking advantage of their respective strength, which will not only facilitate commercial applications of R&D findings, but will also create more jobs. MOST welcomes the collaboration information provided by the New Zealand, and is willing to recommend Chinese partners for such collaborations. During the session, both sides inked an accord for exchanging scientists between the two countries. According to the accord, high quality young and middle aged researchers will be selected to work at the research institutes on the other side for 4 to 6 weeks.

RESEARCH AND DEVELOPMENT

Chinese Lunar Satellite Made Its Planned Impact on Moon

Chinese lunar satellite Chang è I had been working in orbit for one year since it was launched in October 2008. It has completed all its prescribed missions, including more than 10 satellite platform and orbit changing related experiments. The satellite started to work on the experiments on November 8, 2008, lowering down the height of its orbit from 200km to 100km, before moving into an elliptical trajectory 100km away from the apolune and 15 km from the perilune. After that, it returned to the circle orbit at a height of 100km. It also made satellite system and reliability related experiments, and obtained valuable technical findings and data.

China ś moon probe project II will make a "soft landing" on the moon. To gain more knowledge and experience of moon landing control and trajectory measuring, Chang è I satellite was utilized to make an impact on the moon at the end of its life. The smashing mission was controlled by two ground control centers in China (Qingdao and Kashi). The

satellite started to slow down at 15:36 March 1, 2009. 37 minutes later (16:13:10), the satellite made its dive at a preset spot (52.36 E, 1.50 S) on the moon. The smashing process was recorded by the on-board CCD camera. The ground control has received clear pictures showing the satellite making its impact on the moon.

Rice Glutelin Regulating Genes Found

Prof. WAN Jianmin and coworkers at Nanjing Agricultural University published their findings on glutelin processing in rice in the recent issue of the *Plant Journal* under the title of *the vacuolar processing enzyme OsVPE1 is required for efficient glutelin processing in rice*. The paper unveiled the molecular mechanism of mutated rice glutelin precursor, and its role in synthesizing and accumulating glutelins. It is believed that the mutant and its genetic marker can be used as a benchmark for screening the right materials for growing rice species with low glutelins.

The study, funded by a number of national S&T programs, including the National 973 Program, the National 863 Program, and National Natural Science Foundation, analyzed the cloning and functions of an OsVPE1, a novel rice glutelin mutant Nucleotide sequence, and revealed a missense mutation that changes Cys269 to Gly. Genetic analysis also revealed that the W379 phenotype is controlled by a single recessive nuclear gene. The mutant did not see significant differences with Nipponbare and W379 in expression mode and level. Further tests showed that the mutant ś Asn-specific cleavage activity was no more than 10%, compared with Nipponbare. Hybriding with Western showed that Nipponbare is able to produce normal proteins, while OsVPE1 (C269G) existed mostly in the form of a precursor. It is apparent that OsVPE1 is incorrectly cleaved. Like the wild-type protein, the mutant protein is sorted into vacuoles. However, the enzymatic activity of the mutant OsVPE1 is almost completely eliminated.

Chinese Lab Produces Valuable Crystals

Thanks to their 18-year study, a research team, led by CHEN Chuangtian, an academician at CAS Technical Institute of Physics and Chemistry, has grown out the largest KBBF monocrystal in the world, using local spontaneous nuclei growing techniques. With the help of the patented technology they developed for coupling non-linear optical crystals, they also rolled out a KBBF crystal contact coupling component with a thickness of 2.3mm, ensuring the utility and precision of the deep ultraviolet laser. The technology has played a pivotal role in developing the full solid light source for lithography at 193 nanometers. The technology has been granted with Chinese, the United States, and Japanese patents. The journal *Nature* reported the findings under the title of *China's crystal cache* in its February

19, 2009 issue.

Novel Proton Exchange Membrane for Fuel Battery

A proprietary proton exchange membrane with high stability and an improved conductance under high temperature, developed by CAS Changchun Institute of Applied Chemistry, recently passed experts 'approval check. It has taken 3-year painstaking efforts for the researchers to develop the novel non-fluorinated proton exchange membrane applicable to fuel battery. The findings summarized the ties between proton exchange membrane structure and its performance, and laid an important theoretical foundation for developing high performance and low-cost proton exchange membrane in the future. Tests have shown that the new non-fluorinated proton exchange membrane is of a fine conductance under high temperature, desirable for developing new fuel battery.

New Sediment Formation Found

Not long ago, LUAN Xiwu, a research fellow at CAS Institute of Oceanology, has discovered a new sediment formation, through his analysis of the natural gas hydrate samples and other findings on gas hydrates. LUAN found that the new formation, or Yiqijiepi (gas favorable) formation, has a direct association with the formation of natural gas hydrates. The changed physical condition of the environment, especially the reduced pressure, has resulted in the gasification of hydrates. The escape of inflated gas has changed the original alignments of sediments, and created a new physical structure. In this context, the Yiqijiepi formation is a marker to tell the hydrates in the sediments.

NEWS BRIEFS

Super Desktops Ready for the Market

Inspur made the debut of Yitian, a super desktop model at the level of 1 trillion floating-point operations per second, on March 2, 2009. With a capacity of 4 trillion floating-point operations per second, the new desktop model works with the combined power of 40 servers, or 200 PCs, though in a size of a regular PC, and a cost that is one fifth the traditional high performance computer. Designed with a collaborative speeding mechanism, the desktop is able to raise the per unit performance by magnitude, while enjoying a greatly reduced cost. It has also found solutions to a range of technical issues, including size and power consumption. The powerful desktop will find broad applications in numerous areas, including medical imaging, molecular dynamics, gene comparison, banking modeling, flash editing, film editing, and advanced materials R&D.

Chinese Made RFID Readers into World Market

Radio Frequency Identification (RFID) technology and associated application, a major project initiated under the National 863 Program, has achieved major progresses. For example, UHF RFID reader, developed by Xianshi S&T, has obtained the market entry permits issued by the United States, Japan, and the EU. Xianshi S&T has become part of a range of application projects initiated by RFID makers in other countries, which paved the way for Chinese made UHF RFID devices into the high-end international market. The UHF RFID readers developed by Xianshi S&T have so far found applications of some 10,000 UHF RFID readers and a million electronic tags in an array of domestic projects. Xianshi S&T has become a domestic leader in terms of domestic market share and export to the European and US markets.

The Chinese made UHF RFID readers have found applications in the vehicles and Customs management systems in the United States, Mexico, the Philippines, Pakistan, and Malawi. They have also been tested in the production management systems in Panasonic and Mitsubishi Heavy Industries.

China s First Popular Science Center for Environmental Protection

On February 25, 2009, the Chinese Ministry of Environmental Protection and Ministry of Science and Technology jointly named Shanghai Dongfang Oasis, Beijing Drainage Museum, Shanghai Pudong Environment Monitoring Station, and Hangzhou Xixi Wetland Park national popular science centers for environmental protection. LIU Zhiquan, Deputy Director of Dept. of S&T Standards, part of Ministry of Environmental Protection said at the naming ceremony that the four centers represent the best environmental protection awareness raising capability in the country, especially in design, planning, functionalities, scale, exhibition, public participation, and management. They operate on their own strength, qualified for presenting demonstrations to the public. They will make environmental protection awareness raising a social obligation. The public will be taught to protect the environment. The four new centers are not built on traditional facilities. As a result, they are able to raise the public awareness of environmental protection through high tech means, allowing the education visual oriented, interesting, and practical. Additionally, they will improve their operation, service, and management along with their own development.

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