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INTERNATIONAL COOPERATION

China-Russia S&T Sub-committee Meeting



The 12th session of S&T sub-committee meeting, part of the regular meeting mechanism established between the Chinese and Russian Premiers, was held on September 24, 2008 in Suzhou. CAO Jianlin, Chinese Vice-Minister of Science and Technology, Mazurenko Sergej Nikolaevich, Director of Federal Agency for Science and Innovation, part of the Ministry of Education and Science of the Russian Federation, and their parties attended the meeting. Both sides exchanged views, and reached consensus on deepening S&T cooperation between the two countries. At the meeting, 48 intergovernmental S&T cooperation projects have been reviewed and established. Both sides have agreed upon

the priority areas for collaboration and associated implementing methods and management modality, making the R&D of nanotechnology and associated commercial applications a key area for an enhanced support. During the meeting, CAO Jianlin and Mazurenko Sergej Nikolaevich inked, on behalf of each side, a summary report of the meeting.

China-Singapore Joint S&T Committee Meeting

The 9th session of China-Singapore Joint S&T Committee Meeting was held on September 26, 2008 in Beijing. CAO Jianlin, Chinese Vice-Minister of Science and Technology and LIM Chuan Poh, Chairman of Singapore Agency for Science, Technology and Research were present at the meeting, and undersigned the summary report of the meeting. Both parties reviewed the progresses achieved in the field of S&T cooperation between the two countries since the last session, and discussed the existing problems. Both parties agreed to restart the joint research program, and defined the projects to be implemented under the program. Meanwhile, participants exchanged candid views on deepening the collaborations between the two countries, and agreed to expand cooperation fields under the joint research program, and to define and support cooperation projects on an annual basis.

China Calls on Space Co-Op

A space program asks for huge resources and a long development cycle. To share the burden, China intends to establish a space co-op, allowing interesting countries to work on space programs together under the principle of equality, mutual benefit, and common development, said SUN Laiyan, Administrator of China National Space Agency at the 59th International Astronautical Congress held on September 30, 2008 in Glasgow. SUN disclosed that an Asia-Pacific space cooperation organization will be established in Beijing at the end of the year. Up to date, nine countries have registered their participation, with more countries wishing to be part of it. The new organization will work on satellite applications and associated training.

SUN told audiences that China has established weather satellite cooperation ties with Brazil and the International Meteorological Satellite Organization, in addition to its collaboration with the European Space Agency, France, and Russia in the field of space sciences. China is seeking collaborating partners to work on Moon and Mars probes. China is willing to share with scientists in other countries the data derived from the Chang'e I moon probe satellite, under the guidance of data policy. China will focus on satellite applications in the future development, allowing satellites to play a bigger role in China's economic and social development.

Referring to application satellites, SUN said China is currently working on two major

projects: a large high resolution terrestrial observing system, consisting of satellites, stratosphere airship, aircraft, and ground receiving system, and a compass navigation positioning system that will expand from a region system to a global system.

SUN listed a range of space probe programs that China will work on in the coming years: China will roll out a new generation launch vehicle around 2013; continue to work on space docking technologies; establish its own space lab around 2011, and land a moon rover on the moon surface around 2013.

As for the moon probe program, China will follow a three-step scheme: circling the moon, soft landing on the moon, and moon rover landing on the moon and returning to the earth with samples. China will blast a moon circling satellite, before launching a Moon Rover in 2013. Comparing the importance of the moon probe and Mars probe, SUN said China will focus its efforts on the moon probe, though China has been part of international efforts of Mars probe, such as the Phobos-Grunt program. The Chinese made probe will travel together with the Russian made probe to investigate Mars. China's probe will shoot the pictures of Mars, and investigate the environment and magnetic fields of Mars.

China-Sweden Tree Ring Center Established

A Sino—Swedish Center for Tree Ring Research (SISTR), jointly established by the tree ring lab under the Chinese Academy of Sciences Institute of Earth Environment and the tree ring lab affiliated to the University of Gutenberg Earth Sciences Center, was inaugurated on October 6, 2008 in Xi'an. The new center will work on the climate and environment variations in both Asia and Europe in the past 2000 years and associated mechanisms, in an attempt to understand the response of Asia and Europe to climate change, and predict the future climate change using tree ring data. Meanwhile, it will produce high quality scientific papers, raise the international visibility of both countries in tree ring study, and make a contribution to understanding the past climate change, by taking advantage of the strength of paleoclimatology and climate modeling at the center.

RESEARCH AND DEVELOPMENT

Four Space Missions Completed

ZHOU Jianping, Chief Designer of China Manned Space Program told reporters that the Shenzhou 7 capsule has successfully completed four scientific missions, including spacewalk, and made four first records in China's space history. The parasitic satellite circling the Shenzhou orbiter for nearly 6 days sent back on October 3, 2008 many precious pictures to the earth. The parasitic satellite has realized China's first flight of a spacecraft

around another spacecraft. In addition, spacewalk, space material study, and relay satellite experiment registered their first breakthroughs in China's space history.

GAO Ming, Chief Commander of China Manned Space Application said that scientists have examined the solid lubricants and solar cells returned from the space, which will help people to sustain the long work life of these materials in space.

ZHANG Jianqi, Deputy Chief Commander of China Manned Space Program believed that the application of relay satellite has beefed up the coverage of Shenzhou 7 capsule from 14% to 50%, a greatly enhanced space measuring and control capability. He explained that a relay satellite is able to cover one third of the earth. It will help Chinese resources satellite to send data, especially the information on disasters, to the ground receiving system in a real-time manner.

Parasitic Satellite Sent Back Clear Pictures

Head of China Manned Space Application System announced on October 5, 2008 that the parasitic satellite released from the Shenzhou 7 capsule has completed its pre-phase space observation as planned, and sent back to the earth some 1000 clear and well defined pictures of the Chinese orbiter in different angles. The parasitic satellite was released at 19:24, September 27, 2008 at the instruction given by the onboard astronauts. A releasing mechanism pushed the satellite into the pre-set orbit for phase one observation.

The wide-field camera aboard the parasitic satellite captured a static picture of the orbiter every three seconds, and saved the pictures in a compressed folder. The onboard camera shifted to a narrow-field module, when the satellite distanced away from the orbiter, continuing to capture the images of orbiters from different angles. The satellite has been changed from the orbiter oriented to the earth oriented, and sent pictures to the ground receiving system, upon the completion of observation missions.

Of the pictures displayed to the public, there is the first picture captured by the wide-field camera aboard the parasitic satellite, 6 minutes after the releasing, when the satellite is several meters away from the orbiter. The picture is China's first image showing its orbiter in space. Of the pictures released to the public, there are a number of shots made three minutes after the release. The parasitic satellite is currently working on other scientific missions in orbit.

Ornamental Fish Bred In Space

Experts working at the Fujian Institute of Aquatics disclosed on October 6, 2008 that the *Gambusia patuelis* eggs aboard the Shenzhou 7 capsule have given birth to nine fries, making the space based ornamental fish breeding experiment a success. The spacecraft

has carried 30 *Gambusia patuelis* eggs in a breeding tank equipped with breeding, water refreshing, and oxygen supply systems. Experts opened the aquatic tank in the morning of October 2, 2008, and found nine fries there. Experts said the fish were apparently born in the space, as the space temperature (21 °C) was desirable for the mutated breeding. After the re-entry capsule returned to the earth, the aquatic tank's temperature was automatically kept at 12 °C, which makes breeding impossible. The birth place of the fries, therefore, is space.

NEWS BRIEFS

China Produce Petaflop Computer in 2010

LI Jun, President of Dawning, recently said that Dawning will make the debut of its petaflop computer equipped with Godson IV chip, or Dawning 6000, in 2010. The home made high performance computer will see two major breakthroughs: 1) Chinese made CPU will become a mainstream, an epoch making event for the application of Godson chips; and 2) China's high performance computer will reach the petaflop level. In addition to the super computation capacity, Dawning 6000 enjoys a range of merits, including super high density, extremely competitive cost/effect ratio, a drastically reduced power consumption, and much wider applications.

LI also disclosed that during the 11th Five-year Plan period (2006-2010), the Institute of Computing Technology, a part of the Chinese Academy of Sciences, will develop multi-core/multi thread high performance CPU, which will not only be used by the Dawning 6000, a petaflop computer, but will also be used to build low-cost high performance servers, allowing more people to access to high performance computers.

China's First OLED Line

China's first proprietary OLED production line was put into operation on October 8, 2008 in Kunshan, Jiangsu. The technologies used in the production line were jointly developed by Tsinghua University and Visionox, with an investment exceeding RMB 500 million. The new production line, installed on a work site of 30,000 square meters with a clean workshop of 3,000 square meters, is able to produce some 12 million small size OLEDs in a year.

Tsinghua University and Visionox have so far filed 154 domestic and international patent applications on OLED materials, components, techniques, and drivers, of which 120 are Chinese invention patents, and 21 international invention patents, with 43 grants, including 6 international grants. Some of the patented technologies have been applied in production activities, allowing a raised efficiency, enhanced performance, and reduced cost

of production.

New Record Yield of Glutinous Rice

Not long ago, Chinese scientists have registered a record yield of glutinous rice at 1111.02 kilos in the Binchuan County of Yunnan Province. The novel hybrid glutinous rice, or Jianuo 1-You-6, has passed the yield check organized by the National Hybrid Rice Engineering Center at the Lijiao Township in the Binchuan County. Removed from moisture and debris, the yield, derived from 1.12 mu (1 mu= 0.0667 hectare) of glutinous rice, reaches a new world record: 1111.02 kilos/mu, with a grade II quality.

World's Largest Oil Pump Press

The world's largest oil pump forging press recently made its debut in Shanghai. The proprietary Chinese made 16,500-ton forging press has been put into bulk production at the Shanghai Heavy Duty Machinery. Applied with an internationally advanced direct oil pump drive, the press can perform diverse missions in a flexible manner under the control of computers, with a forging precision as high as 2.5mm. The three-beam and four-pillar structure has reduced the weight and raised the strength and stability of the press.

Probing Earthquake Fault Lines

A scientific drilling has recently been kicked off by the scientists under the sponsorship of the Ministry of Land and Resources and the Chinese Academy of Geological Sciences, in an attempt to understand the fault lines shaped up in the Wenchuan Earthquake and associated mechanisms, capture the first hand information on aftershocks, and raise the monitoring and forecast capability of earthquakes. Thanks to the field investigations made by scientists for several months in the earthquake hit areas, 4 drilling sites have been chosen along the fault lines from Beichuan to Yinxiu, and from Anxian to Guanxian. A precursor well with a depth of 800-1200m and three main wells ranging from 2000 to 3000 m deep will be bored from the September of 2008 to the end of the 2009. Seismographs will be installed in the main wells to monitor and predict future quakes. The wells will become the second long term underground earthquake observation station in the country, following the first deep-well (5 km) based long term earthquake observation station established in the East China Sea.

Rice Protein Better Than Milk

Prof. QIAN Shengqiu, at the University of Science and Technology of China Dept. of Applied Chemistry, found through his more than one month study that the protein extracted from

the crushed rice is of a nutritional value that is better than milk, without causing allergy. Some eight kilos of protein can be extracted from 100 kilos of crushed rice. Prof. QIAN extracted protein from rice in 1993, without further study, nor an attempt to make it commercialized. Thanks to his recent more than one month study and experiments, Prof. QIAN has developed a proven technology for extracting protein from the crushed rice.

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