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IN THIS ISSUE

SPECIAL ISSUE

International Nanopark in Jiangsu

Not long ago, a project to establish an international nanopark was formally initiated by the Chinese Ministry of Science and Technology and Jiangsu Province. With Suzhou Biotech and Nanotech Park as the mainstay, the new international park is the third of

its kind in the country, following the Jinan Information and Telecommunication Innovation Park, and Tianjin Biopharmaceutical Innovation Park. The nanopark, upon its completion, will become a largest nanotech R&D and commercial application center in the country. It plans to foster 3 strategic alliances for internationally advanced technological innovations, establish 3 international joint labs and 3 international engineering centers, import 300 high caliber nanotech talents and 3,000 experts from both home and abroad, and create a nanotech industry with an annual output exceeding RMB 10 billion.

The nanopark will be built on the socalled 3 (Suzhou Nanotech Institute, Suzhou Nanotech Park, and CAS Nano-industry Base) plus 1 (Suzhou Dusuhu Higher Learning Park) model, striving to establish world class research institutes, innovative nano-businesses, high quality nano-service agencies, and nano industries. It will make itself an integration of basic and applied researches, innovative technology incubation, public technical support platforms, product development and production, and technology consultation and service. The bio-nanotechnology component, the core of the new system, will be built on an area of 863,000 square meters, mainly providing supporting service for R&D, pioneering, and commercial applications.

INTERNATIONAL COOPERATION

NIGCOMSAT-1 Delivered to Nigeria

China Great Wall Industry Corporation (CGWIC) announced on July 6, 2007 that after several days of in-orbit adjustments and tests, it has handed over the Nigerian Communication Satellite (NIGCOMSAT-1), to the Nigerian government. In the meantime, two ground stations have been put into operation for the

purpose. The data received by the two stations show that NIGCOMSAT-1 has so far worked smoothly with fine stability.

Experts told reporters that the successful launch and operation of NIGCOMSAT-1 will play a role in spurring up the social progress and economic development of Nigeria, promoting satellite applications, ground telecommunication, telecommunication network, and economic development across the African continent. The effort will also strengthen the exchanges and collaborations between China and Nigeria, and between China and Africa.

The Nigerian satellite, designed and manufactured by the China Academy of Space Technology (CAST), was launched on May 14, 2007 from the Xichang Satellite Launch Center in China's southwest Sichuan Province.

Using China's Dongfanghong IV carrier as a telecommunication and broadcasting platform, and designed with service life for 15 years, the Nigerian tri-axis satellite has 28 transponders in 4 wavelengths, enjoying an overall performance approaching an internationally advanced level of similar satellites.

China-India Supports Small and Medium Businesses

A China-India seminar on small and medium businesses' innovation and development was recently held in Xi'an. Experts from both countries discussed an array of issues concerning novel models, mechanisms, and collaborations of small and medium businesses in proprietary innovations. At the meeting, Dr. P. Banerjee, Acting Director of Indian National Institute Science, Technology and Development Studies, briefed audiences of the innovation efforts made by small and medium businesses in India. LI Yuan, President of Xi'an Jiaotong University Management School talked about the relationship between knowledge exchanges/applications and proprietary innovations.

During the meeting, both sides inked a bilateral agreement on increasing the visits of scholars between Shan xi Province and India, in an attempt to strengthen local exchanges in the area of science and technology. Both sides also discussed the possibility of established a joint research center to study S&T policies. Participants from small and medium enterprises held business talks during the session. Indian participants also visited the Xi an High-Tech Industrial Park, Xi an Software Park, and Xi an Kami Co. Ltd..

China-Korea Nanotech Center

China-Korea Nanotech Center was opened on July 2, 2007 in Beijing. KIM WOO-SIK, Korean Vice-Premier and Minister of Science and Technology and BAI Chunli, Vice-President and Director of China National Nanoscience Center were present at the inauguration ceremony. According to an accord, both sides will soon start the exchange of researchers and post-graduates, and organize seminars and collaborative studies in the area.

The Chinese Ministry of Science and Technology and Korean Ministry of Science and Technology inked an MOU on establishing a joint center on July 25, 2005. China National Nanoscience Center and Korean National Nanomanufacture Center are the implementers of the MOU. A ceremony was held on July 26, 2005 in Daejeon to celebrate the inauguration of Korean part of the joint center.

RESEARCH AND DEVELOPMENT

Nnanoassemblies Enhance Penetration in Cancers

A study team, led by LIANG Wei and HANG Haiying, research fellows at the Institute of Biophysics, part of

the Chinese Academy of Sciences, has found in its two-year study a drug carrier at the nanoscale. The new carrier allows chemicals travel through cancerous cells, rather than simply delivering them to the cells. Enjoying a capability of telling good cells or bad cells, the new drug carrier effectively enhances the therapeutic effects of chemotherapy, and reduces the toxicity. The finding was published in the July 4th issue of journal *National Cancer Institute*.

The finding shows that glycol–phosphatidylethanolamine (PEG-PE) can be triggered in a self-assembly procedure to form 10- to 20-nm nanoassemblies of doxorubicin and PEG-PE, when it is dissolved in water. Under a powerful electronic microscope, one can see the nanoassemblies that have been enlarged for some 600,000 times being arranged in an orderly spheric manner, looking like a flax fabric.

Experiments on thousand rats showed that the novel PEG-PE–based nanocarrier of doxorubicin increased cytotoxicity, and enhanced antitumor activity with low systemic toxicity.

Unlike other nanocarriers previously developed, the novel drug packaging technology provides a new strategy for design of cancer therapies, through enhancing target concentrations.

Drosophila's Intelligent Capability Confirmed

The journal of *Science* published on June 29, 2007 a report on dopamine-mushroom body circuit regulating saliency-based decision-making in drosophila. The report, written by a learning and memory research team led by GUO Aike, an academician and research fellow at the Institute of Neuroscience, CAS Shanghai Institute for Biological Sciences, shows that *Drosophila melanogaster* can make appropriate choices among alternative flight options on the basis of the relative salience of competing visual cues, with the help of its dopamine-mushroom body circuit. The finding creates

a simplified biological model for understanding the intelligent decision making process of brain, implying that saliency-based decision-making capability is not solely possessed by humans or non-human quadrumana.

The study shows that this choice behavior consists of early and late phases. The former requires activation of the dopaminergic system and mushroom bodies, whereas the latter is independent of these activities. The circuit from the dopamine system to mushroom bodies is crucial for choice behavior in *Drosophila.*

Researchers also found that *Drosophila* is able to make a range of choices before new tasks. It is able to give up a choice that it has already made, to work out a better choice for new tasks, which implies a consistency between stability and flexibility. They also found that the mushroom body in *Drosophila* works together with the dopaminergic system for an amplified function in non-linear S curves.

Key Technical Solutions for LAMOST

China's LAMOST was technically approved on June 29, 2007. It consists of a number of small systems, including a 3-m mirror, 250 fibers, 1 spectrograph, racks, tracking, and control systems. The successful development of small systems indicates that Chinese scientists have found solutions to all key technologies needed for the project, especially internationally advanced thin mirror making techniques, active optic techniques for patching mirrors, and controllable optic-fiber techniques.

CUI Xiangqun, chief engineer of LAMOST, and Deputy Director of CAS National Observatory told reporters that LAMOST, a brand new telescope in concept, is a best solution to addressing the bottlenecks in developing large caliber and large-field telescopes. LAMOST has registered numerous "firsts": both thin mirror and patching techniques on a large mirror, changeable hexagon mirror, two large-caliber patched mirrors used in the same optic system, and

accurate positioning of 4000 optical fibers (compared with 640 fibers currently used in similar equipment). With an effective caliber of 6 meters, the telescope, upon its completion, will become the largest of its kind in the country, or a telescope with the largest field in the world. The effort will double the number of celestial spectrums that can be observed by humans to a 10-million level.

According to a briefing, LAMOST will, in the coming year, add the number of mirrors on the two master mirrors to 24-37, the fibers to 4,000, and the spectrographs to 16, in an effort to complete the construction of LAMOST.

NEWS BRIEFS

Chinasat 6B Launched

"Chinasat 6B", a French-made communications satellite, was lifted by a Chinese Long March-3B carrier rocket into space at 20:08, July 5 2007, from the Xichang Satellite Launch Center in southwest China. The satellite was separated from the carrier rocket 26 minutes after lifting off, and further positioned in a geosynchronous orbit of a perigee altitude of 206 km, apogee 50,030 km, and orbit inclination angle 24.3 degree.

"Chinasat 6B", manufactured by France's Alcatel Alenia Space, has a designed lifespan of 15 years. Equipped with 38 transponders, the satellite is expected to improve telecommunication capabilities across Asia, the Pacific and Oceania.

Home Made 700,000-kilowatt Hydro Generator

A 700,000-kilowatt hydro generator, designed and manufactured by Harbin Generator Works, became a formal part of the state grid on July 10, 2007. The No. 26 generator, under the watch of the Three-Gorge

You àn Central Control Room, has produced technical indicators and parameters that are up to the designed requirements, including workload, speed, and electric pressure. As China ś first proprietary large hydro generator, the new generating system has reached a localization of 100%. The development indicates that China ś power generator makers have reached an internationally advanced level in the area, through a combined process of technology import, joint design, collaborative manufacturing, and digestion/absorption.

The Three-Gorge project plans to install 32 700,000-kilowatt hydro generators, the world ś largest generators in terms of their capacity, caliber, and weight. Before this, 15 generators have been put into operation at the project.

Largest Protein Drug Producing Base

Lumbrokinase series products and associated commercial applications, a national high tech pilot project contracted to BAIAO PHARM, recently passed an approval check. The event marks the establishment of a largest protein drug manufacturing base in the country. The pilot project is designed for an annual capacity of 200 million capsules, 30 million injections, and 2,000 kilos of raw drugs of Lumbrokinase. The project will also produce other protein drugs including pancreatic kinionogenase.

Lumbrokinase, a protease isolated from earthworms possessing a strong fiber dissolving capability, is currently applied to treat cerebral thrombus and strokes. With the support of research institutes under the Chinese Academy of Sciences, researchers have extracted Lumbrokinase from earthworms, with patented products for both domestic and overseas markets.

Proprietary Home Made Bio-Diesel

The recent inauguration of Beijing Jingzhong Yangguang at the Beijing Daxing Economic

Development Park shows that China's domestic markets will soon see home made proprietary lubricant products. A proprietary bio-diesel that cuts down vehicle tail emissions by 95% will be put into production in August.

According to a briefing, the top lubricant products rolled out from the company may allow a 100,000 kilometer continuous operation for gas burning vehicles, and 50,000 km for diesel cars, with a reduced gas consumption of 3%. At present, 78% of China's urban vehicles use foreign brand lubricant products, which generally allow a 7500 kilometer continuous operation. The new technology used in producing the bio-diesel has already passed a technical approval, and is applying for invention patents. The new technology results in a reduced emission of PM10 and sulphur dioxide by 95%, without affecting vehicles 'operation.

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