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# NEWSLETTER

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## SPECIAL ISSUES

### Key S&T Infrastructures to be Built

The State Development and Reform Commission publicized on February 25, 2007 a capacity building plan of proprietary innovations for 11th Five-year plan period (2006-2010), where it is proposed to establish 12 key S&T infrastructures, and some 30 national scientific centers and labs, and create and upgrade approximately 300 national key labs.

According to the plan, jointly worked out by the State Development and Reform Commission, the Ministry of Science and Technology, and the

Ministry of Education, during the 11th Five-year plan period, the central government will finance the construction of 12 key S&T infrastructures for a range of scientific activities, including spallation neutron source, high magnetic field, large astronomic telescope, marine scientific expedition vessel, air-born remote sensing, icing wind-tunnel, continental tectonic environment monitoring, engineering material safety assessment, protein study, the Meridian Space Weather Monitoring Project (Meridian Project) , ELF detecting network for underground resources probe and seismological forecast, and agrobiological safety.

It is proposed that during the 11th Five-year plan period, efforts will be made to create some 30 well-equipped open national scientific centers or labs that will produce a scale benefit, with a strong innovation capability, in the strategic area of information, life sciences, space, marine, nanotechnology, and advanced materials. Efforts will also be made to establish and upgrade 300 national key labs in the area having increasing interdisciplinary and innovative activities.

During the same period, the central government will spur up the development of information and biotechnology industries, advancing the information process of national economy, making enhancement of industrial core competitiveness as a goal, and establishing a number of facilities to support the R&D of core industrial technologies for electronic components, integrated circuit and software, next generation network, new generation wireless mobile telecommunication, information security, major new drugs, infectious diseases prevention and control, and modernization of traditional Chinese medicine.

To achieve the goals defined by the plan, the state will enhance its investment in building infrastructures for basic, public good, and strategic researches, strengthening the guidance of government investment for private investment, enhancing the support of policy oriented banking service, increasing the pre-tax deduction for building industrial R&D facilities, and exempting or reducing duties and import added value tax for importing the research facilities that cannot be manufactured domestically.

### **National Catalog for Proprietary Innovative Products**

QIN Yong, Deputy Director, Department of Development and Planning under the Ministry of Science and Technology, said on February 26, 2007 that China will launch a process to accredit qualified proprietary innovative products, starting from this year. A national catalog for proprietary innovative products, to be finalized in the year, will be a credit reference for

government procurement at different levels. The accreditation will be made based on a by-law jointly issued on December 31, 2006 by the Ministry of Science and Technology, State Development and Reform Commission, and Ministry of Finance for certifying proprietary innovative products. The products that have passed through the accreditation will be listed in the catalog.

According to a briefing, the listed products will be recommended for government procurement, procurement for major national projects, and other similar activities financed by the state treasury. The listed products will also enjoy an enhanced support in being certified as a high tech business, S&T findings spin-off, and other credit gaining events. The Ministry of Finance is currently working on favorable policies for the listed products. For example, the state budget will make the listed products the priorities for procurement. Other activities such as bid for government procurement and bid review will also take more credits for these products.

The by-law for certifying a proprietary innovative product defines the following seven criteria for accreditation: 1) the product shall agree with national laws, industrial policies, and other related policies; 2) the product shall have a proprietary intellectual property; 3) the product shall be of a proprietary brand name; 4) the product shall enjoy reasonable innovative features; 5) the product shall be technically advanced, and at an international leading position, compared with similar products; 6) the product shall be of a fine quality certified by qualified accreditation bodies at the national, provincial, municipal, or autonomous region level; 7) the product shall be of potential economic and market perspectives, or can be a substitute for the imported. A product can be a national proprietary innovative product, only when it agrees with all above mentioned conditions.

The by-law also stipulates that the accreditation of proprietary innovative products shall follow the principle of volunteer application. Any enterprise, or public institution that is a qualified Chinese legal person on the Chinese territories can file an application for accreditation.

### Capacity Building for Innovative Enterprises

Under the co-sponsorship of the Ministry of Science and Technology, the State-owned Assets Supervision and Administration Commission, and All China Federation of Trade Unions, a meeting was held on February 27, 2007 to set up role models for innovative enterprises. XU Guanhua, Chinese Minister of Science and Technology, pointed out that the joint initiative

constitutes a concrete step to establish a technology innovation system with industry as the key player, enjoying the combined efforts of industry, universities, and research institutes, in an attempt to foster a large number of innovative enterprises, making them the pillars of China's economy, through learning from role models.

XU added that in the future, efforts will be made to create fine environment, and promote the capacity building of innovative enterprises, through the following steps: 1) deepening the system reform, making a sound system guarantee for industrial technological innovations, establishing a fair market order for competition, regulating the relationship between administrative management and market, and accelerating the establishment of a well regulated modern industrial system and corporate governing structure; 2) formulating supporting policies and by-laws for implementing the National Outline for Medium and Long Term S&T Development Planning (2006-2020), establishing a policy system favoring industrial technological innovations, and establishing a coordination and supervision mechanism for implementing, in collaboration with authorities concerned; 3) integrating innovative resources, providing guidance and support for addressing key technologies restricting the industrial development. Providing an enhanced support for industrial innovative activities using financial appropriations, discount government loan, venture capital investment, and subsidies in a balanced manner; 4) strengthening the capacity building of industrial R&D infrastructures and personnel contingent, and raising industrial capability of technological innovations; 5) promoting a close combination of industry, universities and research institutes, and establishing a well-functioned chain for technological innovations.

### Top Ten Events for China's Basic Research in 2006

The Basic Research Management Center under the Ministry of Science and Technology, and the Department of Associations and Academies affiliated to China Association for Science and Technology made on February 15, 2007 a joint announcement of top ten events for China's basic research in 2006 as follows:

- 1) X1835, a novel particle was discovered on the Beijing Positron and Electron Collider;
- 2) Powerful evidences have been found to confirm the evolution of bilaterian animals in the Precambrian;
- 3) The ripe forest soil is found to cumulate organic carbon in a sustained manner;

- 4) A short-peptide that is able to deliver large molecule drugs through skin has been found;
- 5) The gravity height and the brain area that helps fruit fly to identify and memorize graphs has been determined;
- 6) An interference resistant quantum-key distribution solution has been developed for optic-fiber telecommunication;
- 7) It has been confirmed through study that human stem cells can survive in goat;
- 8) The distance between the Milky Way Perseids Arm and the solar system has been precisely measured;
- 9) It is found that the synapse between hippocampal neurons and nearby glial cells is of a long term potentiation; and
- 10) EAST has successfully made a physical discharge.

The above-mentioned findings have been proved important to the world scientific communities. For example, the finding, by ZHOU Guoyi of the South China Botanic Garden, part of the Chinese Academy of Sciences, on the ripe forest soil cumulating organic carbon in a sustained manner, has been thought highly by the journals *Science* and *Nature* as a theoretical foundation for taking ripe forests a new carbon sink, which challenges the traditional theory that the ripe forest soil keeps a balanced organic carbon, and results in a fundamental change of academic thinking of the existing carbon cycle in the ecosystem. The world first EAST device, independently designed and developed by Chinese scientists, successfully made a physical discharge on September 28, 2006, which caused a stir both domestically and internationally. Both the journals *Science* and *Nature* praised that China has created the history of fusion study. International Advisory Committee for EAST also sent its congratulations by saying that it is an unusual accomplishment made in the fusion study, and is a major milestone for developing fusion energy in the world. XU Ye at CAS Shanghai Observatory, and ZHENG Xingwu with the Department of Astronomy under Nanjing University, in collaboration with scientists from the United States and Germany, have precisely measured out the distance and moving speed between the Milky Way Perseids Arm and the solar system. Binney, a renowned scientist in the field, believes that the finding makes a solution for high precision distance measuring using the very long baseline interferometer, and heralds a new era for measuring distant celestial bodies using astronomic triangulation.

INTERNATIONAL

## COOPERATION

### Climate Warming Affects Mount. Ximalaya

A study, jointly conducted by the scientists from China, France, Russia, and the United States and published in the journal of *Paleoclimatology*, confirmed the fact that climate warming has affected the snow cover on the Mount. Ximalaya. Scientists reached the conclusions based on the ice cores collected by Chinese scientists from the mountain. Chinese scientists had collected three ice core specimens at a northern site of 6518m above sea level on the Mount Everest in 2001 and 2002 respectively, which provides a solid evidence for studying climate change over the mountains since 2000.

Upon the analysis of ice core specimens, scientists found that in recent years, the air embedded in the glaciers over the Mount. Ximalaya has been noticeably reduced, compared with 2000, with a noticeably increased snow melt over the surface of glaciers in the summer. The finding has proved that global climate warming has affected the snow cover of the mountain, and the so-called world ridge has unexceptionally been affected by the 'heat wave', though scientists are currently not in a position to deduct the rise of air temperature since 2000 simply from the gas concentration of the glaciers.

## NEWS BRIEFS

### National S&T Awards for 2006

CHEN Zhili, State Councilor, announced a decision to honor the winners of national S&T awards for 2006, at a conferring ceremony held on February 27, 2006 in Beijing. According to the decision issued by the State Council, LI Zhensheng, an academician of the Chinese Academy of Sciences, and research fellow at the CAS Institute of Genetics and Developmental Biology, is the winner of Top National S&T Award for 2006. CHEN also announced winners for other national S&T awards. The National Natural Science Award has sorted out 29 winners, including 2 for first-place prize, and 27 for second-place prize. The National Technology Invention Award for 2006 is conferred to 56 winners, of which 1 for first-place prize, and 55 others for second-place prize. 241 individuals or organizations have been chosen as

the winners of the National S&T Advancement Award for the same year, including 1 for special prize, 20 first-place prize, and 220 second-place prize. 2 foreign scientists are honored with the PRC Award for International Scientific Co-operation.

### China Builds 1.2MW Wind Turbine

A project to develop the key technologies for making wind turbines at the MW level, contracted to Xinjiang Jinfeng S&T Co. Ltd. under the framework of the National 863 Program during the 10th Five-year period, has rolled out the technologies and techniques needed for designing and manufacturing a 1.2MW Direct Drive Permanent Magnet Synchro-Generator. The effort has produced two prototype generators. The first generator has worked over 8000 hours on a combined basis, and passed the performance test made by Windtest. The second prototype has been running for some 600 hours, with a localization approaching 74%.

The project team has completed the design of dynamic structure for the wind turbine, worked out strategies for simulation analysis and control, designed and developed key components and parts for vane, permanent magnet generator, and wheels, rolled out the needed converter and control systems, and mastered the technologies for both assemble and testing.

With the support of a major national S&T program, Jinfeng has realized the industrialized production of wind turbines at the 600kW and 750kW level, and mastered the key technologies for designing and manufacturing the wind turbines at the MW level.

### Largest Marine Field in China

During the 10th Five-year period, the SINOPEC Southern Branch, in collaboration with China University of Petroleum, and the SINOPEC Southwest Branch, found a Puguang Gas Field, the largest marine gas field so far discovered in China. As of February 2007, the marine field has reported a reserve exceeding 300 billion cubic meters.

According to a briefing, while locating the Puguang Gas Field in a fast, efficient, and safe manner, the SINOPEC Southern Branch also found a number of other gas bearing structures enjoying a reserve over 100 billion cubic meters across the northeast parts of Sichuan Province, using a string of new mining theories, including the multiple hydrocarbon-bearing

stratigraphic associations, the source-reservoir-seal associations, and the complex reserve control, and special techniques for predicting carbonate rock storing layers in hilly areas.

According to national authorities concerned, the theories and technical findings derived from exploring the Puguang Gas Field have credited the growth of deep natural gas reserves in Sichuan Province, and accelerated the process to find more marine fields not only in south China, but also in other parts of the country as well.

### China Next Generation Internet Approved

Not long ago, a demonstration network for China Next Generation Internet (CNGI), developed by CNC, and a core CNGI network built by the Chinese Academy of Sciences, passed experts' approval. The project, a major part of CNGI demonstration contracted to both CNC and the Chinese Academy of Sciences, has covered seven cities, including Beijing, Shanghai, Guangzhou, Shenyang, Changchun, Chengdu, and Lanzhou. Completed in November 2006, the demonstration network has interconnected Beijing Network Switch Center, Shanghai Network Switch Center, and other five CNGI core networks and international IPv6 network.

Both CNC and CAS have worked closely to supplement each other with their respective strength, staged an array of demonstrations, including IPv6 monitoring, national network, and distance-learning. The CNGI core network, jointly developed by CNC and CAS, has become an important platform for developing China's next generation Internet technologies, and associated major applications and key infrastructures.

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