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SPECIAL ISSUE

New Energy Auto Demonstration

It is reported from a new energy auto meeting jointly held on February 17, 2009 by the Ministry of Finance, Ministry of Science and Technology, State Development and Reform Commission, and Ministry of Industry and Information Technology, that China will stage new energy auto pilot projects in 14 cities, including Beijing, Shanghai, Chongqing, and Shenzhen.

In an interim document on funding new energy auto pilot projects jointly issued on January 23, 2009 by the Ministry of Finance and Ministry of Science and Technology, it is stipulated

that the central government will secure a bullet subsidy to the buyer of energy efficient or new energy autos, including hybrid, electric, and fuel battery cars in the cities where pilot projects have been put in place. The amount of the subsidy will be determined in line with a range of factors, including the base price differences between traditional cars and new energy cars, scale, and applicable technologies. A low emission or hybrid car buyer can be subsidized in a range from RMB 4,000 to RMB 420,000, depending on the type and energy efficiency of the cars, while an electric car or fuel battery car buyer may enjoy a government subsidy from RMB 60,000 to RMB 600,000. The document also asks the local treasury to secure corresponding funds to support the efforts.

INTERNATIONAL COOPERATION

New Progress for Cell Biology

ZHU Xueliang, a research fellow at Laboratory of Molecular Cell Biology, CAS Shanghai Institutes for Biological Sciences, and ZHENG Yixian at Department of Embryology, Carnegie Institution for Science, have found through study that both Nudel and dynein have played an important role in the assembly of the lamin B spindle matrix, allowing a proper microtubule organization during spindle assembly. The finding was published in the February 9, 2008 online issue of *Nature Cell Biology*.

Researchers studied the changes in microtubule organization, and found that microtubules grew first from Aurora A, in a shape of aster, together with Lamin B particles on microtubules. The microtubules would grow larger in density but shorter in length over time into a spherical matter. The two asters would be further developed into spindles, with a high concentration of Lamin B particles. They also found that the isolated spindle matrix has contained both dynein and Nudel, and that Lamin B interacts directly with Nudel. However, disrupting the function of Nudel or dynein would result in disorganized spindle and spindle poles, indicating that dynein and Nudel regulate assembly of the lamin B matrix. Researchers suggest that more work needs to be done to understand the functions of spindle matrix, as the isolated spindle matrix has contained a range of important proteins for cell signal forwarding, regulation, and membrane shipping.

The study was funded by the Chinese Ministry of Science and Technology, National Natural Science Foundation, Chinese Academy of Sciences, Howard Hughes Medical Institute, and Carnegie Institution for Science.

New Nanometer Laser

Prof. ZOU Bingsuo at Hunan University Micro-Nanotechnology Research Center, in collaboration with NING Cunzheng of Arizona State University Institute of NanoElectronics, has demonstrated the new world record peak wavelength changes continuously from 500 to 700 nm by expanding the tuning range of the laser chip. As a major breakthrough over the past ranges up to several dozen nanometers, the finding was published in the recent issue of *Nano Letters*.

The study team headed by Prof. ZOU worked out expandable nanowires using 1-D nanostructure growing technique, trying to avoid the match problems of different materials. In collaboration with the research team led by NING, they developed a spatially continuously tunable laser (for green, yellow, orange, and red light) with a superbroad wavelength tuning range, unmatched by any other available semiconductor-based technology.

The new materials derived from the said technology can find wide applications in the area of new illumination sources, optic communication, molecular and biological sensors, and solar cells. For example, it can produce a much higher luminance and save more energy, if made into a light device to replace incandescent light bulbs. It can greatly improve the performance of optic components for optic communication. One can develop self-illuminating sensors using the materials to enhance the efficiency and sensitivity of molecular and biological tests. The new laser device can also be used to improve the existing spectrum technology. The material produced from the technology is also a booster to the photoelectricity conversion rate, if applied to solar cells.

Fruitful China-UK S&T Cooperation

Recommended by MOST Department of International Cooperation, and funded by the UK Foreign Office Strategic Program Fund in 2008, MOST Evaluation Center has, in collaboration with UK institutions and experts, made an evaluation to the S&T cooperation activities launched under the bilateral programs. Thanks to the concerted efforts of both Chinese and UK teams, the joint evaluation has completed case study and associated study tours. Both Chinese and UK researchers have studied the public research management system, S&T programs, S&T policies, and the theories and methodologies employed in evaluating research institutes in both countries. The initiative has allowed Chinese researchers to have an improved knowledge of the public research system, evaluation management system, organizational model, and the latest new S&T evaluation theory and practices in the UK.

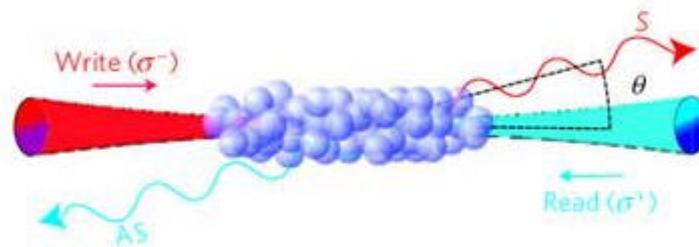
China Provides Satellite Data and Images for Australian Wildfires

Australia experienced the rampant wildfires that it has never ever had in history in February 2009, with heavy death tolls and property losses. As the request of the Australian

side, the Chinese Ministry of Civil Affairs has provided the needed remote sensing data and images derived from the satellites to Australian Cooperative Research Centre for Spatial Information (CRCSI). Chinese researchers started the procedures for responding to natural disaster emergency using space technology on February 6, 2009 when Australian wildfires erupted, and made a plan to start satellite observation based on environmental satellites, China-Brazil resource satellite, and Beijing I satellite. They also established the channels for disseminating the satellite data and products. Chinese Academy of Sciences Terrestrial Observing and Digital Earth Science Center provided daily newsletter on the distributions and variations of wildfires to the Australia side, including analysis reports of infrared image data. Chinese research institutes have also assisted the Australia side to evaluate the impacts of wildfires and burned area.

RESEARCH AND DEVELOPMENT

Record Storage Time for Single Quantum Memory



PAN Jianwei and his coworker ZHAO Bo, CHEN Yuao et al at Hefei National Laboratory for Physical Sciences at Microscale, University of Science and Technology of China published their latest findings in February 1, 2009 online issue of journal *Nature Physics*, reporting the realization of the storage of long-lived quantum memories. In collaboration with the counterparts from Germany and Austria, the study team headed by PAN made an experiment to store quantum state using atomic state, while prolonging spin waves. They have for the first time in the world extended the storage time of single quantum memories to the order of a millisecond, two orders of magnitude longer than reported so far, bringing practical long-distance quantum-communication networks a step closer.

Researchers identified and isolated the distinct mechanisms responsible for the decoherence of spin waves in atomic-ensemble-based quantum memories. They found that the dephasing of spin waves caused by atomic movement also makes a major factor causing short quantum memories, in addition to the impact of magnetic field. Unfortunately, the decoherence of spin waves have been ignored in the past studies. As a

result, researchers made an attempt to store quantum state using magnetic-field-insensitive states, or so-called clock states, and succeeded in extending the storage time of the quantum memory to 1 millisecond, or 300km for light traveling in air or through optic-fibers.

New Levitated Train for Daily Operation

A Chinese made levitated train that is able to run at a reduced speed expects to test run in April before being put into mass production. Designed with a maximum speed up to 120km and made up of two locomotives, the new levitated train will test run 100,000 km for a range of indicators, including top speed, turning radius, and climbing. Experts say that the new levitated train, developed by Beijing Levitated Train Holding, is equipped with a range of internationally advanced technologies for levitation, control, and system integration.

Comparing with regular rail transportation, levitation transportation enjoys noticeable strength in climbing, turning, and noise reduction, allowing levitated trains to pass by civic buildings in the city proper, for a greatly reduced area occupied and costs. Additionally, the electromagnetic field produced by the levitated train will not pose harms to passengers, as it has a top radiation strength that is not even higher than the magnetic field produced by a TV set.

World's Largest AC Locomotive Passed Tests

The world's largest AC locomotive (9600 kilowatts) passed safety tests on February 15, 2009 at Zhuzhou Electric Locomotive, and will soon be delivered to its clients in Beijing. Equipped with a large power locomotive enjoying the single axle power at 1,600 kilowatts, the new locomotive has registered an enhanced performance of system integration, traction motor, and transformers. Up to date, the locomotive maker has signed sales contract for 500 locomotives, with an amount worth RMB 11 billion. Zhuzhou Electric Locomotive has also kicked off the development of a 6-axle locomotive (7200 kilowatts). The new locomotive will have a shortened R&D cycle with more proprietary solutions, compared with the 9600 kilowatts model, and will roll off the assembly line in June.

According to a briefing, an electric locomotive is able to save energy worth RMB 500,000 a year, compared with an oil burning internal combustion locomotive. There are now some 17,000 locomotives in the country, with only less than a third of them being the electric locomotives. That means the annual replacement of 1,000 internal combustion locomotives with the electric one will save energy worth RMB 500 million. Additionally, replacing an internal combustion locomotive with an electric locomotive means cutting down the annual tail emissions from 4,000 sedan cars in a city.

China's First Zoonoses Lab

China's first Zoonoses Lab was established on February 18, 2009 in Changchun. The new lab is designed to work on the prevention and control of Zoonoses, including highly pathogenic bird flu, SARS, rabies, and foot-and-mouth disease. The lab, established by the Chinese Academy of Military Medical Sciences Institute of Military Veterinary, has gathered high caliber research personnel, including academicians of the Chinese Academy of Engineering. Equipped with advanced instruments and equipment, such as liquid chromatograph mass spectrometer and flow cytometry, the Lab will work on an array of Zoonoses, including highly pathogenic bird flu, SARS, rabies, foot-and-mouth disease, brucellosis, EHEC, hemorrhagic fever, and Kala-azar. Additionally, the lab will have some basic research activities on Hendra virus, Nipah virus, monkeypox, and West Nile virus appeared in the adjacent countries.

China Ready for Bird Flu Vaccine Production and Storage

Not long ago, Chinese State Food and Drug Administration has approved the production of human bird flu vaccine, allowing industrial test and authority approval at the same time. The vaccine, jointly developed by Beijing Kexing Bioproducts and China Diseases Prevention and Control Center, is designed for the age groups from 18 to 60. The new vaccine has been approved on April 2008 by the State Food and Drug Administration for drug registration. The administrative efforts have made China ready for bird flu vaccine production and storage, allowing the government to use them when pandemics is on the way.

Multi-system Single-chip Radio Frequency Transceiver

Shanghai Pudong based Zhanxun Telecom has recently rolled out a single-chip radio frequency transceiver: QS3200. The new transceiver supports a range of mobile phone protocols, including TD—SCDMA, HSDPA, EDGE, GPRS, and GSM. The chip is the smallest in size among its counterparts, allowing the size of the print circuit board being reduced to 600mm². Experiments show that the single-chip radio frequency transceiver is able to greatly enhance the receiving, transmission, and amplification performance of mobile phones. As the first single-chip radio frequency solution compatible to 2G, 3G, and 3.5G systems, it will produce a positive impact on developing China's proprietary 3G mobile phone protocols. The new product expects to be sold in the marketplace in the second

quarter of the year.

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