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# NEWSLETTER

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SPECIAL ISSUE

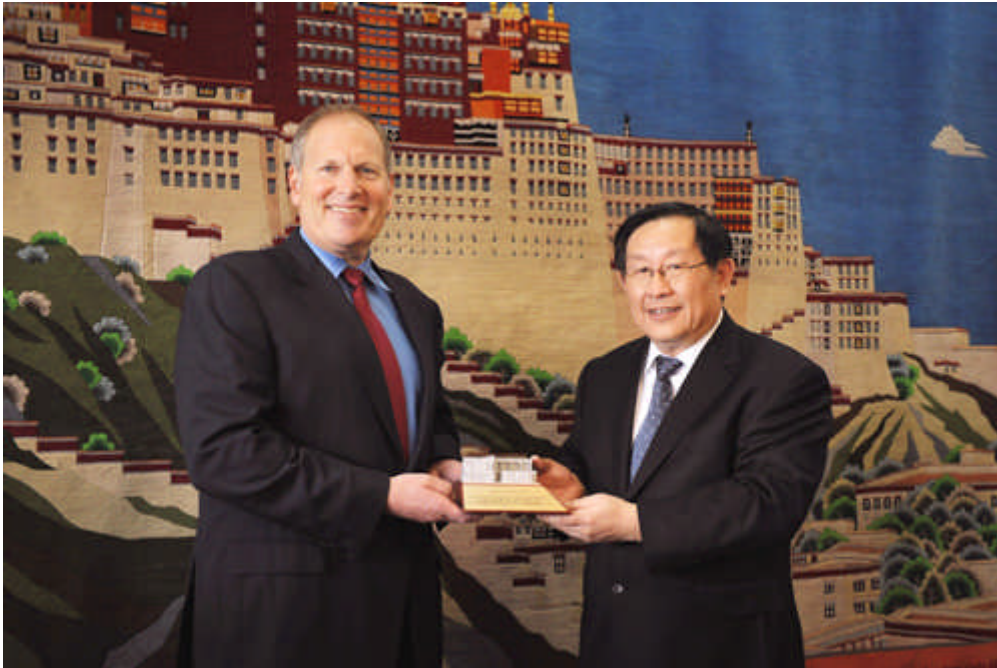
Infrastructure Show in Tech Fair



A range of S&T infrastructure platforms made their debut at a high tech fair held April 8-11, 2010 in Chongqing. LIU Yandong, Chinese State Councilor, and other senior officials were present at the event. The high tech fair exhibited 12 S&T resources sharing platforms, including S&T resources sharing, S&T resources survey, platform standardization, large scientific instruments and equipment, scientific data, S&T literature, and network environment. The Fair also displayed four S&T resources platforms run by local S&T authorities, including Beijing, Shanghai, Zhejiang, and Chongqing. A remote ion probe spectrum sharing platform and a national standard document sharing platform also made their demonstrations and services at the scene.

## INTERNATIONAL COOPERATION

### Science Minister Met with American Guests

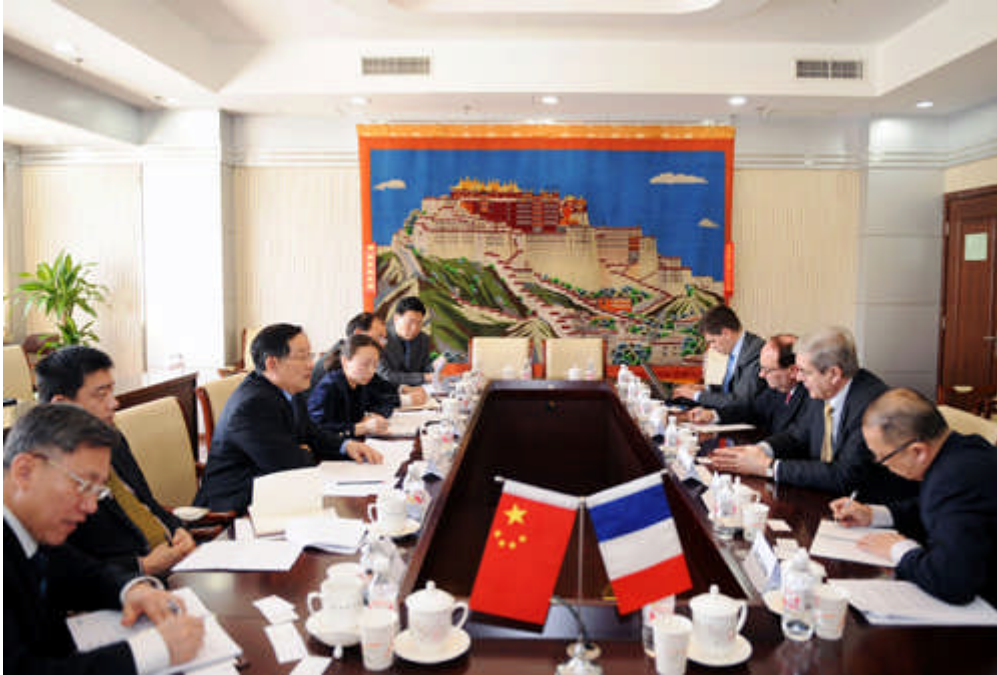


WAN Gang, Chinese Minister of Science and Technology, met with Honeywell Chairman and CEO Dave Cote on April 12, 2010 in Beijing. Both sides exchanged views on the collaborations in the area of energy efficiency, emission reduction, and new energy.

WAN pointed out that the Chinese government attaches great importance to the development and utilization of energy efficiency, emission reduction, and new energy related technologies. In recent years, China has promulgated a range of policies and legislations to create an agreeable policy climate for the development of new and renewable energy. In addition, the Chinese government has initiated an array of campaigns to introduce a thousand electric automobiles in ten major cities, to diffuse the application of photovoltaic technology and products, and to spread semiconductor illumination technology, in an attempt to cope with international financial crisis and foster strategic emerging industries. WAN stressed that efforts have to be made to develop new energy technologies, and to enhance people's awareness of energy efficiency and emission reduction, encouraging energy saving. He also briefed the other side of the latest development of China-US Clean Energy Research Center, hoping Honeywell be part of the cooperation under the framework.

Mr. Cote briefed the other side of the contributions made by Honeywell in the area of energy efficiency and new energy, and expressed the wish to enhance its collaboration with China in the area of biomass energy technology.

**WAN Met with PSA President**



WAN Gang, Chinese Minister of Science and Technology, met with PSA President Philippe VARIN and his party. WAN briefed his guests of the new energy auto policies and measures adopted by the Chinese government, including a campaign to introduce a thousand electric automobiles in ten major cities, and a policy document issued by the State Council to readjust and reinvigorate the auto industry. WAN said that China started to develop electric automobiles in 2000. At present, some universities, research institutes, and tech businesses have achieved technology breakthroughs on three key technologies, including battery, motor, and automatic control. The Chinese government has intensified its support to the collaborations between universities, research institutes and industry, facilitating the industrialization of new energy autos in China. Additionally, government has extended its favorable policies from public buses to private cars.

WAN also discussed the future development trend of auto industry with VARIN, pointed out that energy efficiency and emission reduction shall be the goals for the future development, and expressed his willingness to strengthen the collaborations with PSA Group in the area of new energy autos.

### China-UK Innovation Policy Seminar

A China-UK innovation policy seminar, co-sponsored by MOST Department of International Cooperation and the British Embassy in Beijing, was held on March 25, 2010 in Beijing. Some 100 representatives from the Chinese Ministry of Science and Technology, China Association for Science and Technology, the Chinese Academy of Sciences, the Chinese Academy of Engineering, the Development Research Center of the State Council, Beijing Municipal S&T Committee, Tsinghua University, Peking University and others, attended the

event. David Bacon, Counselor Science and Innovation addressed the audiences of the policies adopted by the UK government in the area of innovation, technology, and life sciences, and the role played by government in scientific research, knowledge transfer, and innovation. He also distributed to the participants the latest report on science and innovation policies in the UK.

Chinese speakers introduced the innovation policies adopted by the Chinese government, reviewed S&T cooperation between the two countries, and pointed out that it is desirable for China to learn the UK's proven experience in the area of innovation policies. Chinese speakers also believed that government is in a position to play an extremely important role in innovation activities, especially by creating an agreeable environment.

## China-EU Clean Production Workshop



A China-EU workshop on clean production technology, co-sponsored by MOST Department of International Cooperation and the European Commission Directorate General for Research, was held March 17-18, 2010 in Beijing. XU Chaoqian, a former deputy director of MOST Department of International Cooperation, GUO Risheng from the Administrative Center for China's Agenda 21, and Georges Papageorgiou, Minister Counselor, Delegation of the EU to China, made their opening remarks at the meeting. Some 140 specialists, scholars, and industrial representatives attended the event.

Participants had an in-depth discussion of clean production technologies applied in four heavy polluters, including mining, steel, cement, and chemicals, surrounding three major

themes: clean mining, low carbon emission production processes, and green chemistry. Participants agreed that it is necessary to enhance the R&D, diffusion, and application of clean production technologies, as the international community works hard to respond to climate change and promote the sustainable development. Technological upgrade and innovations, in particular, would lead to an enhanced efficiency of industrial processes, while reducing the use of hazardous raw materials and emission of hazardous wastes. Participants also discussed the R&D of new equipment and processes, and the optimization of the existing techniques and processes. In addition, participants reviewed the possible collaborations in the area of product life cycle assessment and separation/application of new functional materials.

## RESEARCH AND DEVELOPMENT

### More Clues for Understanding Earthquake Signs

Thanks to their more than 1 year painstaking efforts, a study team, led by Prof. QIN Jianye at Tongji University School of Oceanography, has developed a calculation model able to capture the auspices of earthquakes. Scientists believe that the key to capturing the auspice of earthquake is to know the earthquake clusters, or special mini-quakes that are active all the time above the major quake layer, sharing similar quake waves shown by a major earthquake. Scientists have already found that technically all the active earthquake belts across the globe are accompanied with quake clusters. In the deep part of the earth that sends out quake waves, there exists water. The existing mini break-ups would expand, before the occurrence of a major earthquake, resulted in a reduced liquid saturation. As a result, the quake waves received would see a change, along with an enhanced decay of vertical waves. QIN and his team found that the vertical waves in a region having had a major earthquake in 2004 showed noticeable changes before the quake, after studying the activity of quake clusters.

Based on the decade long observational data, QIN and coworkers found that the vertical quake waves went up sharply 18 months before the major quake, though the quake waves that did not pass the breeding area were not affected. Specialists believe that unlike other quake pre-signs, including animals' unusual reaction, pre-quake, and surface changes, the approach developed by QIN is of a universal application value; 1) it has a solid physical backing; 2) quake clusters are universally active above the quake belts; 3) water is a universal phenomenon in the deep part of the earth where quakes occur. The finding was published in the recent issue of *Bulletin of Seismology of America*.

### Improved Leukemia Therapy

A study team, at the National Key Laboratory for Medical Genomics, Shanghai Institute of Hematology, Shanghai Jiao Tong University School of Medicine Ruijin Hospital, reported its findings on treating acute promyelocytic leukemia (APL) using arsenic trioxide in the April 9, 2010 issue of journal *Science*. It is believed that PML-RAR Oncoprotein is a direct drug target in treating APL using arsenic trioxide. Researchers found that arsenic binds directly to cysteine residues in zinc fingers located within the RBCC domain of PML-RAR and PML. Arsenic binding induces PML oligomerization, which increases its interaction with the small ubiquitin-like protein modifier (SUMO), resulting in enhanced SUMOylation and degradation. The study, making APL a successful case for targeted treatment, was financed by the National 863 Program, National 973 Program, National Natural Science Foundation, and Shanghai Municipal S&T Fund.

## Radiation Resistant Germs Found

With the support of the Ministry of Science and Technology, the Institute of Microbes Application, part of the Xinjiang Academy of Agricultural Sciences, has worked on the radiation resistant germs dwelled in the soils heavily contaminated by radiation, started from 2003. At the end of last year, scientists have harvested diverse germs resistant to 10,000-30,000Gy, and identified one novel germ species, 10 new genus, and more than 20 new varieties. Of them, the radiation resistant Actinomyces and fungus were discovered and separated for the first time in the world.

According to SHI Yuhu, a researcher who is part of the study, the discovery of radiation resistant fungus makes radiation resistant microbes leap from pronucleus to eukaryon, providing scientific evidences for studying the origins of radiation resistant life, and a new explanation of the impacts of global climate change on creatures. As an active part of ecosystems, these microbes play an irreplaceable role in repairing the environment, and in maintaining a balanced ecosystem. Thanks to their super radiation resistance, radiation resistant fungus can be employed to repair the contaminated environment and process nuclear wastes, in addition to their applications in aeronautic and space activities, agriculture, and new medical products.

## Power Line Inspection Drone

An intelligent drone, developed by Shandong Power Grid to inspect power lines, has recently made its successful maiden flight. During the 15-minute cruise, the drone inspected 1.6 km long power lines and 6 towers over an area with rough terrains. The unmanned aircraft is made up of two components: a helicopter platform and an inspection system, with the former working on the flight, and the latter inspecting the power line and towers. Designed to inspect 110-750 kilovolt power lines, the drone is able to make one-hour cruise inspecting a power line route up to 20km in length. It is reported that four flights would produce a workload that has to be completed by 20 power line inspectors.

Unrestricted by terrains, and able to take off and land by simply pressing one button, the unmanned inspection aircraft enjoys promising application perspectives, thanks to its advanced functions, including automatic route tracing, real-time route display, 3-D programmed control flight, visible and infrared dual testing, automatic inspection, multi-route two-way transmission, safe and warning strategy, and infrared thermal image analysis.

## NEWS BRIEFS

### Space Station Progress

NIU Hongguang, Deputy Commander of Manned Space Project disclosed on April 13, 2010 that China will blast off its target flight vehicle Tiangong-I in the first half of 2011, before launching Shenzhou 8 spacecraft for docking experiment in the second half of the same year. After that, China will launch Shenzhou 9 and 10 spacecraft in the first and second half of 2012 respectively. The two will dock with the target flight vehicle Tiangong-I, which is not only a vehicle for docking, but also a simplified space lab for space experiment.

At present, Tiangong-I, CZ2-F launch vehicle, and Shenzhou 8 spacecraft are entering the official production and test. The aboard payloads are also under development and test.

### New Super Rice Species

Breeding new super green rice species, a major project under the National 863 Program for the 11th Five-year period (2006-2010), was officially kicked off on April 8, 2010 at Huazhong Agriculture University in Wuhan. A range of research institutes, including the Chinese Academy of Agricultural Sciences and Huazhong Agriculture University, will breed out super green rice species enjoying the merits of less needs for pesticides, chemical fertilizer, and water with high yields, based on the findings derived from rice functional genome and genetic modification projects, with a focus on sorting out the property markers from fine rice species.

### Novel Oil Well Sensor

The Laser Institute under Shandong Academy of Sciences has recently rolled out a high precision optic-fiber pressure sensor that can be installed in an oil well at a temperature of 220°C and a pressure at 100MPa for a long time. The development has found a solution to addressing the high temperature and high pressure that could compromise the smooth operation of regular electronic and optic-fiber sensors in an oil well. Sensors are often used



to monitor oil well operations in a real-time manner, collecting the information on possible leakage, which would become the evidences for optimizing and readjusting oil drilling techniques, and may raise oil-gas recovery by 5%-10%.

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Comments or inquiries on editorial matters or Newsletter content should be directed to:

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