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# NEWSLETTER

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## IN THIS ISSUE

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- \* Tianjin Woos for Overseas Talents
  - \* Top Ten Climate Change and Low Carbon Events
  - \* New Marine Economic Statistics Released
  - \* WAN Met with ITER Director-General
  - \* World's Largest Stem Cell Bank
  - \* Chinese Train Passed EU "Road Test"
  - \* China Completed 61 Polar Missions
  - \* Fastest High-Speed Train Brake Tester
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## SPECIAL ISSUES

### Tianjin Woos for Overseas Talents

Tianjin launched on February 29, 2012 its first recruitment of 760 posts for high caliber overseas talents. YUAN Ying, Tianjin Foreign Experts Bureau Chief, said the recruitment is open to 10 countries and regions, including the United States, Britain, Japan, through 51 channels.

The first 760 posts retained for high caliber overseas Chinese students, hopefully the personnel qualified to be a leader in an area, involves major disciplines, large projects, and industrial R&D centers. The recruitments are released through numerous channels with attractive offerings.

Some 40 employers, including Nankai University, Tianjin University of Science and Technology, and Tianjin Economic and Technological Development Zone, released their job descriptions, covering more than 20 disciplines, including aviation, aerospace, electronics, petrochemical, new energy, new materials, machinery manufacturing among others, offering 549 senior positions for professors, research fellows, managers, or the equivalent.

## Top Ten Climate Change and Low Carbon Events

Chinese National Development and Reform Commission recently released the top ten events China has staged in 2011 to address climate change issues and low carbon development, along with a Yearbook for China's low-carbon development in 2011. The top ten events are:

- 1) China's 12<sup>th</sup> Five-Year Plan (2011-2015) highlights the importance of addressing climate change issues and low carbon development;
- 2) Chinese State Council issued a greenhouse gas emission control plan for the 12<sup>th</sup> Five-year period, in which greenhouse gas emission targets are defined for the period from now to 2015;
- 3) White Paper "China's policy and action in responding to climate change (2011)" has won positive comments from both domestic and international communities;
- 4) China rendered an important contribution to the positive results stemmed from the United Nations Climate Change Conference in Durban. China has enhanced its aids to the developing countries;
- 5) A highly efficient DC inverter centrifuge group developed by Chinese scientists, the first of its kind in the world, enjoys an energy-saving by 40%, and a raised unit efficiency by 65%, compared with conventional centrifuges;
- 6) Voluntary tree planting campaigns that have lasted for 30 years in China results in an enormous reduction of carbon emissions;
- 7) China completed the construction of a large offshore wind demonstration farm, the first of its kind in the country;
- 8) Cool China, a nationwide low-carbon action initiated by 5 provinces and 10 municipalities caught attention at the Durban Conference;
- 9) 7 provinces and municipalities embarked on a trial for carbon emissions trading; and
- 10) 12 government agencies jointly launched an energy efficiency and low-carbon action at 10,000 enterprises.

## New Marine Economic Statistics Released

According to a new marine economic statistics bulletin released on March 9, 2012 by the State Oceanic Administration, China has registered a gross marine product worth RMB 4.557 trillion in 2011, or 10.4% up from the previous year, or 9.7% as a proportion of GDP. The added value stemmed from the marine industry accounted for RMB 2.6508 trillion, and from marine-related industries RMB 1.9062 trillion. The first, secondary, and tertiary marine industries claimed a proportion of gross marine product at 5.1%, 47.9%, and 47.0%, respectively. It is estimated that in 2011 China has 34.2 million people working for the marine industry, with an increase of 700,000 over the previous year.

In 2011, China's marine industry maintained its growth momentum. More offshore wind farms were put into operation, making the marine power industry enjoy an impressive growth. A range of emerging marine industries, including marine biomedicine and seawater utilization, witnessed a healthy development trend that is faster than last year. Marine shipbuilding industry also saw a steady development, with raised economic indicators, though a slightly dropped growth rate.

In the context of marine economic activities at the regional level, the Pan Bohai region reported a gross marine product worth RMB 1.6442 trillion in 2011, or 36.1% as a proportion of the nation's gross marine product, 1.1% up over the previous year, with the Yangtze River Delta region at RMB 1.3721 trillion, 30.1% as a proportion of the nation's gross marine product, or 1.9% down against the previous year, and the Pearl River Delta region at RMB 980.7 billion, or 21.5% as a proportion of the nation's gross marine product, enjoying an increase of 0.6% over the previous year.

## INTERNATIONAL COOPERATION

### WAN Met with ITER Director-General



WAN Gang, Chinese Minister of Science and Technology, met with Professor Osamu Motojima, Director-General of the ITER Organization, on February 20, 2012. Professor Osamu Motojima expressed his thanks to China's support to ITER's activities, and spoke highly of the management of ITER projects in China. He also informed WAN of the progresses the ITER Organization has achieved and the work plan for the next stage. WAN said China has paid great attention to the ITER projects, supporting its activities in China. China will keep its promise to fulfill the obligations defined under the ITER agreement. WAN hoped that the ITER, under the leadership of Director-General, will promote the smooth implementation of the ITER project in line with the requirements defined by the reference documents.

## RESEARCH AND DEVELOPMENT

### World's Largest Stem Cell Bank

Not long ago, a research team, led by LU Guangxiu at Central South University Institute of Reproductive and Stem Cell Engineering, claimed the establishment of the world's largest human embryonic stem cell bank featured with different tissue compatibility antigens. The stem cell bank is created to be a major seed resource for stem cell therapy, and to provide safe and applicable clinical practice.

LU and coworkers developed a vitrification technology able to build a large vitrification device and improve micro-cell vitrification. They established a technical platform for

massive clinical cell freezing, provided a key solution to creating the desired stem cell bank. The bank has housed more than 300 human embryonic stem cell lines, with an early micro-cell recovery rate exceeding 95%, harvested the world's first homozygous parthenogenetic stem cell line.

LU and coworkers also established a range of stem cell banks for genetic diseases, providing human models for pathogenesis studies and drug screening. Researchers created a pluripotent stem (iPS) inducing platform in Hunan, and conceived the iPS cell lines for 14 diseases. In addition, researchers proved that the embryos discarded because of abnormal clinical fertilization can be a useful source for new embryonic stem cell lines with normal karyotype, which laid a theoretical groundwork for building a large stem cell line bank.

## Hand-Foot-Mouth Virus Anatomized

RAO Zihe and coworkers at CAS Institute of Biophysics reported their new findings on the structures of Enterovirus 71 (EV71) that causes hand, foot and mouth disease in the March 4 issue of *Nature-Structural & Molecular Biology*.

In the study, researchers mapped out the high-resolution structures of EV71 using an X-ray crystallography technique. The structural analysis of the mature virus and natural empty particles shows that the mature virus is structurally similar to other enteroviruses. In contrast, the empty particles are markedly expanded and resemble elusive enterovirus-uncoating intermediates not previously characterized in atomic detail. Hydrophobic pockets in the EV71 capsid are collapsed in this expanded particle, providing a detailed explanation of the mechanism for receptor-binding triggered virus uncoating.

The study provides a model for understanding the structures of EV71, highlighting new opportunities for therapeutic intervention.

## China Completed 61 Polar Missions

According to a polar expedition report recently released by the State Oceanic Administration, China has in 2011 completed 61 expedition missions on the two poles with fruitful results. 37 scientific missions were made on the South Pole, and 24 on the North Pole.

Statistics show that in 2011, 226 Chinese scientists attended Antarctic expeditions, completed 37 scientific missions. Scientists at China's Kunlun Station in the South Pole consolidated the deep ice core drilling site, installed advanced astronomical observation equipment, and made a range of multi-disciplinary investigations into the snow, meteorology, and environment on the Pole. The Great Wall Station carried out numerous

scientific observations in its vicinities, including seismic observation, ecological environment monitoring, organic pollutants monitoring, lichens study, marine biological observation, and ionospheric observation, in addition to the routine meteorological observation. Apart from the routine study of upper air atmospheric physics, geomagnetism, gravity tide, Global Positioning System, and regular meteorological and ozone observation, the Zhongshan Station launched a range of new missions on fish diversity, tide gauge reference calibration, the Southeast Pole geological survey, remote sensing among others.

The 17-day Southern Ocean expedition covered a range of 1,447 nautical miles, with 64 station operations involving physical oceanography, marine biology, marine chemistry, and atmospheric chemistry.

83 Chinese scientists participated in the annual inspection of the Yellow River Station on the North Pole, completed 24 scientific missions on space physics, biology, ecological environment variation, glaciers, and mapping. Meanwhile, efforts were made to prepare policies and standards for polar expeditions.

## NEWS BRIEFS

### Chinese Train Passed EU "Road Test"



A group of light rail trains, developed and manufactured by China Zhuzhou Electric Locomotives for its European clients, passed the EN61133 test at Light Rail Line 1 in Izmir, the third largest city in Turkey.

According to a briefing, ramp rescue is a most important indicator a passenger car has to pass before hitting the rail, as it is a matter of life and death. In the road test, an unoccupied train made a successful "rescue" to an overloaded train, and passed through a section with a slope up to 48‰. Apparently, a range of advanced technologies applied, including high-mount drive control, track friction brake, and shaft drive air brake, saved the

rescue climbing from slipping from the slope.

## Ocean-II Satellite Delivered

Ocean-II satellite was officially put into use on March 2, 2012. As the first satellite developed by China to probe dynamic ocean environment, the new satellite collects wind, wave, flow, tide and temperature data in an ocean environment, under all weathers and at all time. It will work with Ocean-I satellite, making up a three-dimensional monitoring system using both microwave and optical means. The combination of dynamic ocean environment watch and marine resources prospecting will enhance China's ocean monitoring system, raising Chinese made earth observation satellites' probe and monitoring capability.

According to a briefing, Ocean-II enjoys a greatly enhanced remote sensing capability, through a range of proprietary innovations:

- 1) Internationally advanced observational capability. Designed with a measurement precision up to 8.5 cm, an effective wave height to 0.5 m, a wind speed at 2m/sec, and a temperature measurement up to 1.0K, Ocean-II satellite is a major microwave remote sensing satellite in orbit;
- 2) Internationally advanced orbit measurement. The satellite enjoys an enhanced orbit measurement precision from the meter level to the centimeter level, thanks to the advanced equipment applied onboard, including a dual-frequency GPS system and a laser corner reflector;
- 3) Realized a satellite-ground high-speed laser communication at a rate of 504Mbps;
- 4) Some key components were independently developed by Chinese researchers; and
- 5) An integrated digital design system developed by Chinese researchers has shortened the development and production cycle from design, to development, and further to production.

## Fastest High-Speed Train Brake Tester

Not long ago, a high-speed train brake test bench, the fastest of its kind in the world developed by China Academy of Railway Sciences National Engineering Laboratory for High-Speed Rail System, was put into use, and landed a highest test speed up to 530km/h. The test bench is designed to mimic the braking performance a high-speed train can reach at a dynamic scale of 1:1, under dry, wet, low temperature, or snowy environmental conditions with different air flows. Meanwhile, the high-speed brake and pads developed by the Lab also passed the 530km/h test.

## New Marine Expedition Starts in April

Ocean-I, a Chinese made scientific expedition boat, will embark on China's 26<sup>th</sup> marine expedition on April 18, 2012 from Sanya. It will take 380 days for the expedition to complete its missions. The expedition will be conducted in nine legs, with one in the northwestern Indian Ocean, one in the North Atlantic, three in the South Atlantic, and four in the Southwest Indian Ocean, mainly working on polymetallic sulphides and biological resources in the oceans, along with some regional biological and environmental surveys.

In the expedition, scientists will collect geophysical data from the hydrothermal areas using the multi-beam, magnetic, and gravity techniques. They will also gather sulfides, rocks and sediments samples with the help of TV grab, deep drill, and trawls, and shoot the videos and pictures of hydrothermal areas through submarine robots (ROV), in addition to collecting samples at the vent.

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