

N0.590

CHINA SCIENCE AND TECHNOLOGY

# NEWSLETTER

The Ministry of Science and Technology  
People's Republic of China

N0.590

July 30, 2010

## IN THIS ISSUE

---

- \* WAN Attended Clean Energy Ministerial
  - \* National Energy Award
  - \* China-Germany Electric Automobile Seminar
  - \* More Support for China's Scientific Continental Drilling
  - \* New Fossilized Bird Found
  - \* Fast Neutron Reactor Became Critical
  - \* World's First 800 KV Converter Valve
- 

## SPECIAL ISSUES

### WAN Attended Clean Energy Ministerial

The first-ever Clean Energy Ministerial was held July 19-20 in Washington D.C.. Ministers and officials from 23 countries, the EU, and international energy organizations were present at the event. WAN Gang, Chinese Minister of Science and Technology said that clean energy is an area that expects more collaboration between China and the United States. WAN added that clean energy has become a major part of S&T

cooperation between the two countries. Universities and national labs in the two countries have initiated numerous cooperation projects for the purpose. Both sides agreed to establish a joint clean energy research center during US President Barack Obama's visit to China last year. During the ministerial meeting, China and the United States jointly made a proposal to stage electric and advanced automobile demonstrations in the urban areas, promoting clean energy in the two countries. WAN said the proposal has attracted the attention of other countries. The Republic of Korea and Germany have expressed their willingness to be part of the initiative.

## National Energy Award

Chinese National Energy Administration conferred national energy awards to 22 winners on July 23 at the Great Hall of the People in Beijing, the first instance in the area of energy. On the same day, the Administration issued the names of new national energy R&D centers, and established a technology innovation alliance for ultra-supercritical pressure coal-fired power generation technology at 700 .

According to a briefing, 22 energy projects have been granted with national energy awards in 2009. 4 projects won first-place award, 8 projects second-place award, and 10 projects third -place award, for a range of accomplishments, including the localization of large liquefied natural gas (LNG) boat, parallel technology and associated scale application, the localization of pump valve for the nuclear power station at a mega kilowatt level, and plasma fuel free ignition and stabilized burning. The new national energy R&D centers are named after the first 16 same caliber R&D centers were named on January 6, 2010 for nuclear power generation, wind power generation, clean coal transfer and utilization, energy prospecting and development, and associated equipment/facilities. The technology innovation alliance for ultra-supercritical pressure coal-fired power generation technology at 700 is an effort to join the strength of energy and material sectors and relevant research institutes. So far the alliance has completed technical line and top level designs.

## INTERNATIONAL COOPERATION

### China-Germany Electric Automobile Seminar

A China-Germany seminar on electric automobiles, co-sponsored by Chinese Ministry of Science and Technology and German Federal Ministry of Transport, Building and Urban Development, was held on July 16, 2010 in Wuhan. More than a hundred representatives from government, universities, and industry of the two countries attended the meeting. Participants had an in-depth discussion of a range of issues

concerning electric automobiles, including national plan, cost strategy, storage technology, safety technology, charging scheme, market preparedness, and introduction strategy. Participants agreed that the seminar makes a desirable platform for strengthening the cooperation and exchanges between government, industry, universities, and research institutes of the two countries, allowing a strategic alliance to be established in the area.

Electric automobile is a new area created under S&T cooperation between China and Germany, in a move to deepen cooperation and exchanges between the two countries. WAN Gang, Chinese Minister of Science and Technology reached an accord with German Federal Minister of Education and Research Dr. Annette Schavan in June 2009 to deepen the cooperation in the area of electric automobiles. WAN met with Dr. Peter Ramsauer, Federal Minister of Transport, Building and Urban Development in May 2010, and both sides agreed to jointly stage electric automobile demonstrations to support electric automobile demonstrations launched in China and Germany. In June 2010, WAN and Dr. Annette Schavan attended the opening ceremony of a China-Germany summit meeting on electric automobiles and an inauguration ceremony of a joint electric automobile research center. Both sides inked a joint statement to promote the collaborations in the area of electric automobile sciences, spurring up the R&D efforts in the area.

### More Support for China's Scientific Continental Drilling

A team of Chinese scientists, led by Prof. WANG Chengshan at China University of Geosciences, has been working on the ties between major geological events appeared in the Cretaceous earth surface layers and climate change under a National 973 Program. With the support of the Daqing Oilfield, scientists launched a drilling project named Continental Cretaceous. The drilling has hit the depth over 2000m, and produced numerous findings.

At a council meeting on international continental scientific drilling program, specialists from the National Science Foundation (US), GFZ German Research Centre for Geosciences, and Japan Ministry of Education, Culture, Sports, Science and Technology thought highly of the scientific continental drilling made in China, and confirmed their further support to the efforts. Up to date, China's scientific continental drilling project has been supported by ICDP with a sum worth USD 1.2 million, mainly for studying the ties between the continuous continental deposit records under a high temperature over the Songliao Basin in the Cretaceous Period and greenhouse climate change. Chinese scientists will continue the study under international support.

### RESEARCH AND DEVELOPMENT

## New Fossilized Bird Found



A study team, led by Prof. HU Dongyu at Shenyang Normal University, reported their findings on *Shenshiornis primita*, a first ever found new bird genus, in the recent issue of journal *Acta Geologica Sinica*. The fossilized bird, dated back to 120 million years, was found at an early Cretaceous stratum in Dapingfang Township, Chaoyang County in the west part of Liaoning. With a 40cm body length and a primitive non-linear head bone, *Shenshiornis primita* is a special bird genus appeared in the early stage of birds' evolution. The bird has kept primitive cone shaped teeth, with a short tarsi bone for rear limbs, and a toe in reversed direction and three others in grasping position, implying its adaptation to tree resting.

Based on a comprehensive analysis of the bird, HU and coworkers believe that the movable head bone had a retarded development against the bird's normal evolution. Meanwhile, the changed motion system has noticeably weakened the walking capability of the primitive birds. The finding presents the evidences for studying the evolution of birds' movable head bone and their tree resting capability.

## Integrin Regulates Inflammatory Responses

Thanks to the support of Chinese National Natural Science Foundation and National 973 Program, CAO Xuetao, a Chinese Academy of Engineering academician, and coworkers found that integrin CD11b negatively regulates TLR-triggered inflammatory responses

by activating Syk and promoting degradation of MyD88 and TRIF via Cbl-b. Further studies also show that CD11b deficiency enhanced TLR-mediated responses in macrophages, rendering mice more susceptible to endotoxin shock and Escherichia coli-caused sepsis. CD11b was activated by TLR-triggered phosphatidylinositol 3-OH kinase and the effector RapL and fed back to inhibit TLR signaling by activating the tyrosine kinases Src and Syk. Syk interacted with and induced tyrosine phosphorylation of MyD88 and TRIF, which led to degradation of these adaptor molecules by the E3 ubiquitin ligase Cbl-b. Thus, TLR-triggered, active CD11b integrin engages in crosstalk with the MyD88 and TRIF pathways, and subsequently inhibits TLR signaling in innate immune responses. The finding was published in the recent issue of journal *Nature-Immunology*.

## Novel Corn Species with Better Protein

Not long ago, FAN Xingming, a research fellow at Yunnan Academy of Agricultural Sciences, and coworkers worked out technical solutions for breeding new corn species with raised protein quality. They bred out Yunrui I, a corn species featured with high nutritional value and quality. The new variety is the only corn species that has been grown over an extensive area, with a strong resistance to gray leaf diseases.

FAN and coworkers made a systematic study of the ties between the adaptability of tropical and temperate corns and the strength of hybrids, and produced Yunrui I featured with high and reliable yields, wide adaptability, and strong adversity resistance, using backcrossing techniques. A test made by Institute of Crop Germplasm Resources, part of the Chinese Academy of Agricultural Sciences, shows that the new species is strong in resistance to leaf spot diseases, especially the gray leaf diseases popular among the corn plants grown across Yunnan Province. Meanwhile, Yunrui I presents a fine food quality. Up to date, it has been grown over an area of 3.2343 million mu (1 mu = 0.0667 hectare) in Yunnan, Guangxi, and Guizhou, with a raised yield by 162 million kg, and a newly increased output worth RMB 629 million.

## NEWS BRIEFS

### Fast Neutron Reactor Became Critical

CEFR, a proprietary fast neutron reactor developed by China Institute of Atomic Energy, part of China National Nuclear Corporation, became critical on July 21, 2010. The development indicates that China National Nuclear Corporation has established a well functioned R&D and standard system for the sodium-cooled fast reactor, covering reactor physics, thermal techniques, dynamics, structure, looping, instrumental control,

and electric part. Chinese scientists have produced a range of proprietary innovations, and more than a hundred patents. It is worth mentioning that the experimental reactor, made up of more than 200 sub-systems and over 7,000 pieces of equipment, has realized a localization as high as 70% or more.

Chinese scientists have also made some breakthroughs in engineering design. For example, they developed a passive residual heat removal system for accidents, the first of its kind in the world. Additionally, scientists have completed the design of a reactor refueling system.

## Mapping Museum Reopened

China Mapping Museum reopened on July 27, 2010 to the public as a popular science education center. The remodeled museum presents a show floor space approaching 4,000 square meters, allowing texts, pictures, models, and real objects to be displayed in a 3-D and interactive manner, and making visitors aware of the history of mapping science in China and associated extensive applications. In a hall showing mapping equipment, ancient Chinese mapping equipment are exhibited to show the evolution of mapping technologies and equipment in China. 25 territory maps are exhibited in the map hall, showing the changed borders in different dynasties. The digital earth hall presents the development of modern mapping science and technology through a 3-D digital demonstration system, showing accurate geographic information, the largest of its kind in Asia.

The museum has been remodeled to allow interactions between visitors and the things they are viewing. For example, in the digital earth hall, visitors may physically touch the earth ball to show the desired place, from the earth to the moon, and even to the Mars. In the aerial photography section, visitors can make themselves part of the aerial photography process, feeling the charming of unmanned aerial photography.

## World's First 800 KV Converter Valve

A proprietary  $\pm 800\text{kV}/4750\text{A}$  DC converter valve, developed by CSR Zhuzhou Institute for the 6-inch 7200V crystal shutter tube, has recently passed the insulation and shock tests, including operation and lightning shocks. Comparing with AC models, the DC model enjoys the merits of reduced line losses, reduced costs, quick regulation, stable system, and large power transmission. The  $\pm 800\text{kV}$  DC power transmission technology, once applied, will save huge transmission corridor resources, making it more economic and rational. Meanwhile, it makes an effective solution to addressing current overflows when the grid gets short circuited, desirable for enhancing the safety level of power grids.

## Novel Life Detector

A new life detector built on a super broadband radar system, jointly developed by Hunan General Fire Brigade and Hunan Huanuo Electronics, passed an approval check on July 21, 2010. Researchers have developed a range of needed key technologies, including highly reliable nanosecond pulse source, wave fidelity broadband receiving antenna, broadband beam scanning, synthesized image algorithms, radio frequency suppression, and noise reduction. The new life detector enjoys numerous merits, including strong penetration, high resolution, weak signal detection, quick life sign detection against the background with a large noise. The detector is able to effectively pick up humans' limb movement, heartbeat, and breathing within a range of 20m, collecting reliable data for searching the trapped persons.

---

Comments or inquiries on editorial matters or

Newsletter content should be directed to:

Department of International Cooperation, MOST 15B, Fuxing Road , Beijing 100862,  
PR China E-mail:[hzs\\_dyzdc@most.cn](mailto:hzs_dyzdc@most.cn) Fax: (8610) 58881364

<http://www.most.gov.cn>