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SPECIAL ISSUE

Marine Ecological Survey Guide

Marine ecological survey guide, a national standard prepared by No. 1 Institute of Oceanography, part of State Oceanography Bureau, was recently put into official enforcement. The standard, built on the theory of marine ecological health, works on three major aspects, including marine organisms, environment, and human activities. It outlines ecological evaluation indicators for biological colonies, ecological functions, and ecological pressure, with an array of major requirements listed for writing a marine ecological survey report. The guide provides technical approaches and framework for marine ecological survey, ecological evaluation, and environmental impacts evaluation, allowing the results of such surveys compatible. The standard, also in English version, has been submitted to the International Standardization Commission, as an entry to its database, as well as a reference to other countries.

INTERNATIONAL COOPERATION

China-Japan Tree Break Project

Chinese and Japanese officials were plants trees

China and Japan jointly kicked off on March 19, 2008 a marine tree break project in Qinzhou, Guangxi. Both parties signed an accord on the launch ceremony, to strengthen afforestation and forest protection efforts in the Beibu Gulf. According to a briefing, with an investment worth RMB 2.575 million, the project will grow 54.7 hectares of trees, including Casuarinaceae, Hibiscus tiliaceus L., Sonneratia apetala, Rhizophora stylosa, and Avicennia marina, and build a wave break as long as 4432m. Both signatory parties agreed that Japan-China Greenery Foundation would finance the project with an annual sum of 10 million Japanese Yen, starting from 2007, for three consecutive years. Both Chinese and Japanese officials expressed their support to the construction and

Chinese and Japanese officials expressed their support to the construction and protection of the forest break, wishing to make the Beibu Gulf a green sea under a blue sky.

Joint Study of Ancient Monsoon and Climate

An oriental S&T forum, co-sponsored by Guangdong Dept. of Science and Technology, Guangzhou Daily, and UK Consulate-General in Guangzhou, was held not long ago to discuss monsoons and climate change in ancient Asia. The event, aiming at facilitating exchanges between Chinese and British scientists, allowed people to have a better understanding of climate change in ancient time.

RESEARCH AND DEVELOPMENT

More Findings on Bird Flu Viruses

Starting from 2005, Chinese scientists have tracked down bird flu viruses in migrant birds over the Qinghai Lake area for three consecutive years, said GAO Fu, Head of Chinese Academy of Sciences Institute of Microbiology, at a China-Europe seminar on newly emerged and re-emerged infectious diseases held on March 17, 2008 in Shanghai. Researchers have found that the bird flu strains appeared in 2006 and 2007 are similar to that appeared in 2005, indicating that the viruses appeared in 2006 and 2007 could be passed by migrant birds, though not excluding the possibility of viruses' local circulation in the region.

In the investigation, Chinese scientists analyzed QH06 H5N1 viruses appeared in 2006 and QH07 H5N1 viruses emerged in 2007, using full genome sequence and evolution tree. They found that QH06 strains were derived from the viruses appeared in 2005. An antigen analysis also showed that QH06 strains were of a resemblance to both QH05 and QH07 strains.

New Generation Optic Fabry-Perot Sensor

Not long ago, a research team, led by Prof. RAO Yunjiang, Optic Technology Center, part of University of Electronic Science and Technology, has for the first time in the world worked out a new generation optic Fabry-Perot sensor using 157nm and femtosecond laser processing techniques. The technique allows researchers to work out the smallest online Fabry-Perot sensor with best optic performance and highest work temperature (800℃) in the world. As a technical solution to the precision measurement under high temperature, the tiny sensor will find its applications in the sectors notorious for extreme conditions, such as aviation, space, and energy industries.

Comparing with traditional approaches, it is an easy operation to make a Fabry-Perot sensor chamber using laser technique. The laser processing technique also allows high quality massive production. The finding has been published in *Optic Telecommunication*, and *Chinese Optics Letters*.

World's First Hybrid Excitation Wind Turbine

Baotou Huiquan Rare Earth Industry Group established on October 2006 a conglomerate, in collaboration with Inner Mongolia S&T University and Baotou Aineng Control Engineering, to work on grid wind turbine at the megawatt level. The collaboration has resulted in the first dual armature hybrid excitation wind turbine in the world. The prototype generator was installed in July 2007 in the Baitou District of Baotou City for trial operation. 3600-and-odd hour trial operation has shown that the novel generator has been up to all technical indicators required, and is ready for mass-production. The conglomerate is currently working on the same type of generator at 1.5 and 2.5 megawatt levels. The 1.5 megawatt generator is expected to be off the assembly line at the end of this June. According to a plan, the conglomerate will produce 300 sets of 1 megawatt and 1.5 megawatt wind turbine this year. It will expand the scale to 500 sets in 2010.

Karyopherin Beta Protein Studied

Xiamen University School of Life Sciences has recently announced a breakthrough in studying karyopherin beta proteins. A paper introducing the findings was published in the March 19 issue of journal*Molecular & Cellular Proteomics*. Prof. TAO Tao and associate Prof. JI Zhiliang and the research teams led by them have made a systematic study of the evolutionary and transcriptional patterns of these proteins using bioinformatics approaches. Beta-karyopherins are ubiquitously but nonuniformly expressed in distinct cells and tissues. In yeast and mice, the titer of some beta-karyopherin transcripts appears to be regulated both during the cell cycle and during development. Further virtual analysis of promoter binding elements suggests that a range of transcription factors regulate most beta-karyopherin genes expression. These findings emphasize new mechanisms in functional diversification of beta-karyopherins and regulation of nucleocytoplasmic transport.

Technology for Containing Unintended Spreading

Not long ago, a study team, led by Prof. SHEN Zhicheng at Zhejiang University School of

Agriculture, has invented a simple and reliable containment strategy for transgenes, allowing a signature being printed on transgenic rice. When a transgenic rice escapes from experimental plots or tries to be mixed with conventional rice, it could easily be wiped out by pesticide. The findings, published in the March 19 issue of PLoS ONE, have filed both domestic and international patents.

Researchers have found a novel method for creating selectively terminable transgenic rice. In this method, the gene of interest is tagged with a RNA interference cassette, which specifically suppresses the expression of the bentazon detoxification enzyme, and thus renders a transgenic rice to be sensitive to bentazon, a herbicide used for rice weed control. They generated transgenic rice plants that were highly sensitive to bentazon but tolerant to glyphosate, which is exactly the opposite of conventional rice. Field trial of these transgenic rice plants further confirmed that they can be selectively killed at 100% by one spray of bentazon at a regular dose used for conventional rice weed control.

Furthermore, researchers found that the terminable transgenic rice created in this study shows no difference in growth, development and yield compared to its non-transgenic control. Therefore, this method of creating transgenic rice constitutes a novel strategy of transgene containment, which appears simple, reliable and inexpensive for implementation. It also means that the novel technique is able to meet the non-transgenic control needs imposed on food and seeds for export.

Nutrition Alleviates Type II Diabetes

Scientists at CAS SIBS Institute of Nutritional Sciences recently proved through an experiment that nutrition is an important interference in treating type 2 diabetes. In collaboration with the Yapei Company, scientists made the experiment on 100 patients who have taken a nutrition supplement called Ansuyilijia once every day. Six months later, these patients were recorded with improved diabetes indicators, showing a significant difference, compared with the control group.

In the six-month clinical experiment, researchers divided 150 diabetes patients into a control group (50 patients) receiving diabetes education and dietary management, and an interference group (100 patients). In addition to diabetes education and dietary management, the patients in the interference group were also given with special carbohydrate nutritional supplements on a daily basis. Final results show that the patients in the group had a reduced weight from 75.7kg to 72.8kg, a reduced blood sugar level from 8.62mmol/L to 7.39mmol/L, and a haemoglobin level from 7.1 to 6.3. The control group did not show a significant change of major indicators, though with a reduced body weight.

Better Macromolecule Luminescent Material

Organic macromolecule luminescent material and its applications in display, a project undertaken by CAS Chagnchun Institute of Applied Chemistry, has produced a range of key technologies in the area of material science and information science, laid a solid foundation for the future technological innovations in the area. Chinese scientists have for the first time in the world worked out a technical line for single macromolecule emitting white light, through partial energy shift and electric load restriction, which creates a new direction for developing a white light macromolecule system. They also developed a molecular design and macromolecule approach for the integration of transmission unit and illuminate unit. Their efforts have resulted in low cost and high performance phosphorescence emission built on copper, a resource abundant in the world, and in new approaches for processing high performance phosphorescence emission materials.

NEWS BRIEFS

Robot for Antarctic Expedition

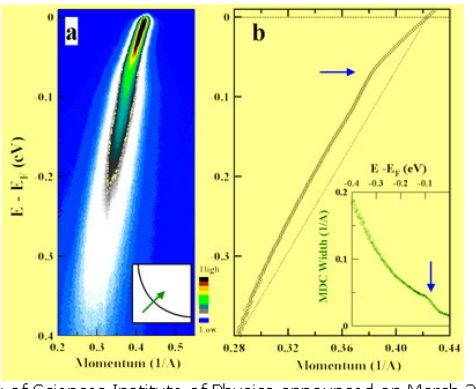
Trial flight of a low air flying robot

With a wingspan of 3.2m, body length 2.2m, and a weight 20 kg, the low air flying robot is able to fly at a speed of 90-110 km an hour with a payload of 5kg, or cruise at an altitude of 150m. During the 24th scientific expedition to the Antarctica, Chinese scientists had test the flying robot on the spot, the first time in the 20-0dd-year expedition activities carried out by China.

Let robot prepare for ice and snow surface

This robot has been designed to walk over ice or snow surface, covers, slopes, and dunes independently. With a weight of 300 kg, and maximum operational radius of 25km, the ice surface robot can carry a payload of 40kg, or drag a load as heavy as 100 kg.

New Electron Coupling Form Identified



Chinese Academy of Sciences Institute of Physics announced on March 20, 2008 that Chinese scientist ZHOU Xingjiang and his coworkers, Dr. Genda Gu of Brookhaven National Laboratory in New York, and Dr. T. Sasagawa with Tokyo Institute of Technology, have identified a new form of electron coupling through a Chinese made Laser-Based Angle-Resolved Photoemission Spectroscopy. The high temperature superconductor finding was reported in *Physics Review Letters* published on March 14, 2008. The instrument has created a novel means for high precision oriented experiments, facilitating studies of material science and physics.

Space Telescope to Launch in 2010

According to a report published by China Association for Science and Technology on March 20, 2008, China' s first Hard X-ray Modulation Telescope (HXMT) will be launched around 2010. The launch of the telescope will facilitate scientists' observation of astrophysical phenomena, such as black holes. In addition, China has been part of other planned collaborations, including SVOM, SMESE, and WSO-UV.

The report says China is working on the site selection in both west China and the Antarctic. China planned construction of FAST with a diameter of 500m, and its involvement in the development and operation of an international large ground telescope in the future, will allow China to be a leader in the area.

China' s New Anti-AIDS Drug in Clinical Trials

Thank to their 5-odd-year painstaking efforts, Aiboweitai, a proprietary anti-AIDS drug developed by Chongqing Frontier Biotechnique under the financing of the National 863 Program, was recently approved by national authorities for phase I clinical trials. With a strong inhibiting effect on HIV viruses, and a range of merits, including sustained effect, low side effects, and low treatment costs, the novel drug has registered a performance better than the similar anti-AIDS drugs currently approved for use. The new drug will add hope for prolonging AIDS patients' life and reducing their economic burdens.

Academic Capacity Building for 2008

At a news briefing, sponsored by China Association for Science and Technology on March 20, 2008, on academic capacity building in 2008, the development status, and future trends of some 20 disciplines, including physics and astronomy, were discussed. The meeting also reported the work status of 898 journals run by the organization. The news briefing, being held every March, is a platform to let the S&T community and entire society to know the disciplinary developments and the development of S&T journals in the country.

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