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INTERNATIONAL COOPERATION

China-Italy Cooperation in Environment and Energy

On March 19, 2009, a talk was held between CAO Jianlin, Chinese Vice-Minister of Science and Technology, and Corrado Clini, a senior official from the Italian Ministry for the Environment, Land and Sea, to review the implementation of an emission reduction project in the area of residential housing. The project is made up of three components: 1) prepare a new environment guide and standard for the design, construction, and management of residential buildings in China; 2) study and design clean development mechanism (CDM) projects for Chinese residential construction activities; and 3) design and develop pilot projects.

CAO said that China has adopted a range of measures for energy efficiency and emission reduction and for adaptation to climate change impacts as well, and enhanced R&D, demonstration, and diffusion efforts in the area of energy efficiency, new energy, cyclic economy, clean production, pollution control, and climate change, with laudable accomplishments. He stressed that both sides have strengthened cooperation and exchanges by working on the major issue of global climate change, grasping the development opportunity brought by PCDM to China, and by taking full advantage of international resources.

At the meeting, both sides expressed their confidence in promoting and facilitating the implementation of the projects in the area of environment and energy, and their wishes for the active participation of research institutes and industry, adding new blood to the cooperation activities in the future, and raising the cooperation to a new height.

China-Sweden Biomass Energy Workshop





A biomass energy workshop, co-sponsored by the Chinese Academy of Engineering and the Swedish Royal Institute of Technology, was held on March 24-25, 2009 in Nanning. Some 150 experts, scholars, and entrepreneurs from both countries attended the meeting, discussing a range of issues concerning biomass energy applications and associated environment. Bioliquid fuel, fibrin ethanol, lignose ethanol, and bio-diesel were most discussed at the meeting. Participants had extensive exchanges of views on the development of bioliquid fuel, conversion of wooden fibrin into ethanol, utilization of organic wastes, producing ethanol fuel using cassava, and optimization of biogas works. Some 20 representative spoke at the meeting, introducing the latest findings in the area. Participants also visited relevant factories and research institutes in Guangxi.

UN Culture and Environment Network

Yun'nan University School of Ethnic Studies and UN University Institute of Sustainable Development and Peace jointly inked on March 24, 2009 an accord to establish a UNU culture and environment network. Yun'nan University School of Ethnic Studies will strive to build the network into an open platform for academic exchanges, taking advantage of its resources and strength in ecological anthropology. It will seek for a balance between culture, science & technology, and legislation in environmental protection, allowing culture to play an important role in environmental protection. UN University will be responsible for the macro management of the network, utilizing its international position and international academic resources in the area, facilitating and promoting scientific research and international exchanges in the area, sponsoring international forums and training courses,

training doctoral students in cooperative manner, preparing and publishing journals and study reports, and making the network an international center for cultural, ecological, and environmental studies.

Joint Study of Radix Isatidis

Not long ago, ZHONG Nanshan, President of Chinese Medical Association (CMA) and an academician of the Chinese Academy of Engineering, and researchers from Guangzhou Baiyunshan Hutchison Whampoa Traditional Medicines visited the United States National Institute of Health. The Chinese party has reached a cooperation agreement with the Institute on the joint study of the therapeutic effects of radix isatidis on different viruses. Both parties agreed that during the one-year cooperation, NIH will screen the therapeutic effects of radix isatidis on viruses using its advanced virus models. The screening will cover two dozens of highly pathogenic strains of viruses, including flu, bird flu, SARS, hepatitis B, and shingles. The promising candidates will be further studied in vivo.

RESEARCH AND DEVELOPMENT

Chinese Scientists Found Oldest Fossilized Bony Fish



A reconstructed *Guiyu oneiros* (by Brian Choo, Museum Victoria, Australia) and the fossilized specimen.

ZHU Min and his coworkers at Institute of Vertebrate Paleontology and Paleoanthropology, part of the Chinese Academy of Sciences, have achieved important findings on ancient vertebrates by discovering an ancient bony fish showing the mixed features of gnathostomes. The finding has filled up the gap between different gnathostomes in shape, demonstrating all the possible features an ancient gnathostome may have had. The study, published in March 26, 2009 issue of journal *Nature*, provides the best and most complete fossil data ever collected for studying the origin and division of gnathostomes.

Researchers made several rounds of excavations over Qujing and Zhaotong in Yunnan. They unexpectedly unearthed in April and May 2008 an almost intact bony fish specimen, in addition to the scattered bony fish skull and upper/lower jaw specimens. They studied the specimen and gave them a name *Guiyu oneiros*. These fossils are the oldest fossilized bony fish unearthed so far by scientists, which advanced the record of such fish by some 8 million years.

Better Approach for Synthesizing Polyoxin

A study team, led by Prof. DENG Zixin, a CAS academician at Shanghai Jiaotong University, in collaboration with Chinese Academy of Sciences Institute of Microbiology, has landed an important progress in synthesizing polyoxin. Researchers have screened out 20 genes needed for synthesizing from 39 candidates, and realized engineering production of polyoxin in a heterogonous host, which creates a ground for commercial application of metabolism engineering technology.

According to a briefing, researchers have also established genetic and biochemical models for synthesizing polyoxin, through cross-disciplinary studies involving molecular genetics, biochemical, and chemistry. The findings, published in recent online issue of journal *Biochemistry*, have applied for national invention patents.

Key Rice Yield Enhancing Gene Found

FU Xiangdong and his coworkers at CAS Institute of Genetics and Developmental Biology have screened out a mutated gene called DEP1 through their 5-year study. The mutant is able to enhance meristematic activity, resulting in a reduced length of the inflorescence internode, an increased number of grains per panicle, and a consequent increase in grain yield. Researchers also found that all the high-yield paddy rice varieties grown in the northeast and the lower and middle reaches of the Yangtze River have had a DEP1, indicating that the mutant plays a role in yield enhancement. According to FU, the mutant is not only able to result in more yields for paddy rice, but may also work on other major crops, such as wheat and barley. The findings, published in March 22, 2009 online issue of journal *Nature Genetics*, is of an important application perspective for breeding high-yield crop seeds at the molecular level, and for more high-yield crop species.

Super Floating Materials

PAN Qinmin, a chemist from Harbin Institute of Technology and his coworkers have recently rolled out a postage stamp-sized copper mesh boat that is applied with a rough and uneven coating to the surface of the mesh for reduced contact with water and for keeping water from penetrating the porous material. The miniature boat is able to float freely on the water surface, and carry a weight that is 50% heavier than the boat itself. The innovative boat can be repaired using simple techniques, when cut open by sharp objects. The finding was published in the recent issue of journal *Applied Materials and Interfaces*.

Core Technology for Preparing Novel Fibers

A research team, led by Prof. Xiao Changfa at Tianjin University of Technology, has been working on the technology for preparing hollow fiber membrane and associated products and applications since 1998. The efforts have resulted in the proprietary key technologies for preparing the high performance hollow fiber membranes with new functions. The new technologies and products caught visitors' attention at the 11th (2008) International Show of Membranes and Water Treatment held in China.

Researchers have gone beyond the limit imposed by the traditional techniques, namely a regular chemical fiber has to be designed with a linear large molecule structure, and created a new approach for preparing fiber materials with new functions. The research has produced 28 papers, 9 Chinese invention patents (3 grants), and 1 international invention patent.

Novel Auto Speed Sensor

A proprietary GMI (giant magnetoimpedance) based speed sensor, developed by YANG Xielong, WANG Jiangtao, and ZHAO Zhenjie at East China Normal University, recently passed an approval check.

Researchers, in collaboration with SHANGHAI Auto, China Space Machinery and Electronics, Double Microelectronics, and Ningbo Auto Electric, have achieved major improvements in the design and packaging of material components, nanocrystal growth, magnetic circuits, and circuit chips, with an enhanced temperature specificity, sensitivity, and integration, and a reduced size. The new sensor has stood up the tough temperature test running from -40 to +150 . The required length of nanomaterials has been cut down to 2mm, for a greatly reduced size. It has been adapted to the required shape and size for the model of Roewe 750ABS. The preliminary 1,000-kilometer road tests in a mountainous area in Zhejiang and in the city proper of Shanghai have exposed no failures. The technology has been used to produce new products that will be installed on Chinese made hybrid cars and Roewe fuel battery cars.

NEWS BRIEFS

Seafloor Deserts Found in the Taiwan Strait

An expedition team, led by SHI Qian at Xiamen University of Technology Dept. of Environmental Engineering, ZHANG Junyuan of CAS Qingdao Institute of Oceanography, and CAI Aizhi at Xiamen University School of Ocean and Environment, has found, through field expeditions, a gigantic seafloor desert (15,000 square kilometers) with a reserve up to a hundred trillion tons of sands on the seafloors of the Taiwan Strait. The rich sand reserve

is able to meet the needs of construction activities at both sides of the strait for more than a hundred years. The seafloor desert is made up of the sands in middle or fine size of grains mixed with rich shell debris, beach rocks, and basalt.

Robot Press

Harbin Engineering University Institute of Robots has recently rolled out an automatic press "Duanzao I" that has passed field experiments. The new system, combining the traditional manual operations and robot technology, allows an unmanned operation entirely controlled by computer programs. It is able to complete a range of dangerous, monotonous, and heavy operations, including feeding, turning, and unloading, with an effectively reduced intensity of labor and risks, improved automation, and enhanced efficiency.

Thanks to more than one year efforts, researchers have found solutions to allow robotic arms to work under a high temperature of 1100 ~ 1200 , and to resist strong vibrations and shocks in the consecutive pressing operations. Having solved a range of technical difficulties for working with the existing equipment, the robot press has made a successful trial operation at the production line.

Phase II AIDS Vaccine Trials Launched

China kicked off on March 21, 2009 phase II clinical study of AIDS vaccine in Nanning. Researchers will recruit new volunteers for the clinical trials, in an attempt to test the safety and effectiveness of Chinese made AIDS vaccine. Jointly implemented by a group of research institutes, including Guangxi CDC, National Institute for the Control of Pharmaceutical and Biological Products, Jilin University National Lab for AIDS Vaccine, and Changchun BCHT Biotechnology, Phase II study will focus on the further assessment of the safety and immunogenicity of the vaccine, providing evidences for assessing the strength of vaccine in the following clinical trials. Phase II study, conducted in Guangxi, will recruit 30 volunteers for the first part of the study. Volunteers will be protected of their legal rights in such a study.

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