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SPECIAL ISSUE

More Land with Restored Ecological Functions

CHEN Lei, Chinese Minister of Water Resources said at a national conference on soil moisture conservation held on April 12, 2009 that since 2000, some 1,200 counties have staged soil moisture conservation projects to restore the ecological functions of mountains and grasslands, with an area of 720,000 square kilometers enjoying naturally restored ecological functions. Of them, 390,000 square kilometers of ecological environment has been preliminarily restored. Meanwhile, an array of major national soil moisture conservation projects launched since 2000 has produced noticeable positive effects. In the past decade, China has worked on 16,000 tributaries, and tackled soil erosions over an

area of 480,000 square kilometers. Some 150 million people have been benefited from the efforts, and 20 million people dwelling in the mountainous areas have witnessed an improved livelihood.

Chen added that in the coming 15 to 20 years, China will place all the areas that have suffered soil erosions under control or preliminary restoration, allowing most part of the country to have a sound ecological development, turning slope croplands into terraced fields, reclaiming steep slopes from growing crops, encouraging growing crops over the land having the same heights, and practicing soil moisture conservation oriented growing activities. These efforts will bring down the intensity of soil erosions, and reduce the area suffering medium soil erosion by 50%, with 70% or more eroded ditches being placed under control. As a result, the down flow of mud and sand will be reduced as well. Efforts will also be made to raise people's awareness of soil moisture conservation, and place the man-made soil erosion basically under control. The soil moisture conservation facilities in the ongoing projects shall be designed, constructed, and put into operation along with the main part of the project.

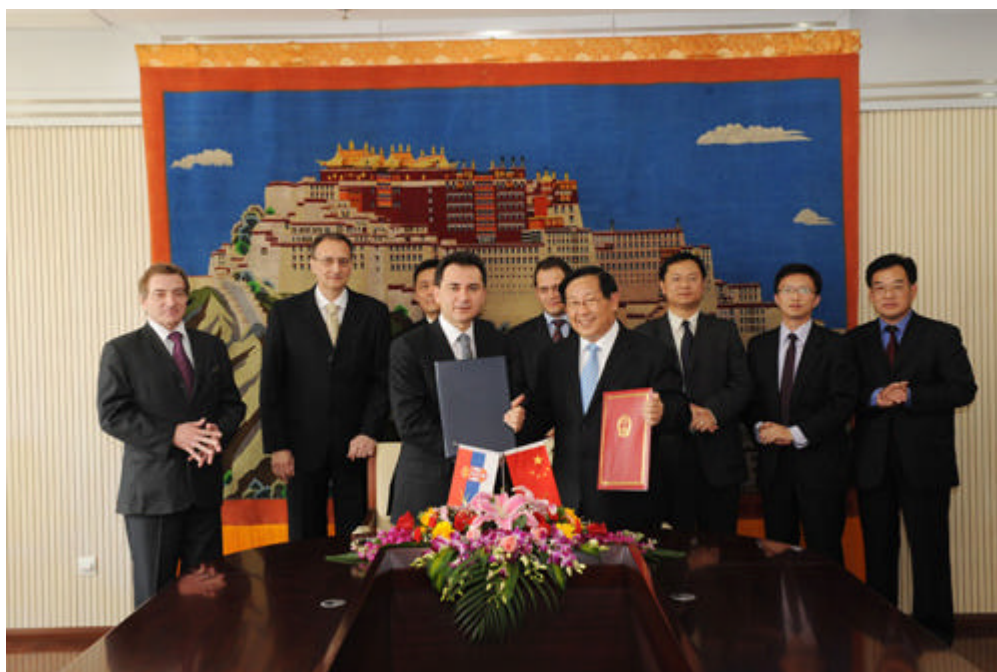
INTERNATIONAL COOPERATION

China-Germany Science and Education Year



WAN Gang, Vice-Chairman of the Chinese People's Political Consultative Conference and Chinese Minister of Science and Technology visited Germany from March 29 to April 1, 2009. During his visit, WAN attended the opening ceremony of China-Germany Science Year (2009/2010), where he said China and Germany should work together for more innovations and mutual benefits, and for writing a new chapter for the cooperation between the two countries in the area of science and education. WAN briefed the meeting of China's latest developments and accomplishments in the area of science and technology, and the efforts initiated by the Chinese government to deal with international financial crisis, climate change, energy efficiency and emission reduction, and international S&T cooperation. During his stay, WAN and his party also visited a number of German research institutes, including the Max-Delbrück Center for Molecular Medicine, the Helmholtz Centre Berlin for Materials and Energy, and German Research Centre for Geosciences in Potsdam. In addition, WAN was briefed about the latest developments achieved by Germany in the area of biotechnology and energy efficiency and emission reduction.

China and Serbia S&T Accord



WAN Gang, Vice-Chairman of the Chinese People's Political Consultative Conference and Chinese Minister of Science and Technology, met with Bozidar Djelic, Deputy Prime Minister and Minister of Science and Technological Development on April 8, 2009. WAN briefed Bozidar Djelic of the latest S&T accomplishments and developments achieved by China. Referring to the current financial crisis, WAN expressed that the Chinese government strives to turn the crisis into opportunities, with enhanced S&T input, in an attempt to provide more momentum for the economic development through S&T innovations. WAN told his counterpart that Serbia is an important partner of China's

international S&T cooperation, and he was expecting more scientific and technological exchanges and cooperation between the two countries, especially in the area of innovations, under the framework of the intergovernmental S&T cooperation accord. At the end of the meeting, WAN and Bozidar Djelic jointly inked the PRC-Serbia Protocol on Cooperation in the Field of Science and Technology on behalf of their respective country.

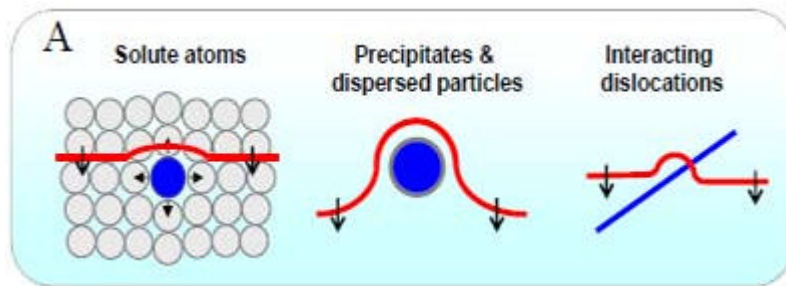
China-US Energy and Climate Change Forum

A China-US energy and climate change forum, jointly sponsored by China Climate Change Commission and American Asia Association, in collaboration with Peking University College of Engineering and Tsinghua University Low Carbon Lab, was opened on April 9, 2009. Experts and scholars from the Chinese Academy of Sciences, Peking University, Tsinghua University, US Development Center, China-US Relations Asia Association, Stanford University, Georgetown University, and Harvard University, were present at the event.

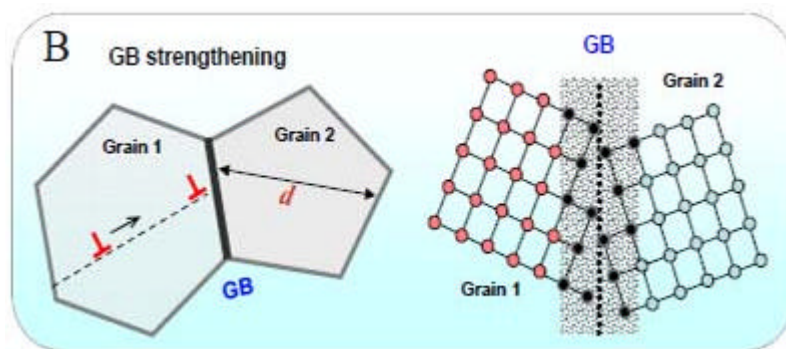
ZHENG Guoguang, Head of China Meteorological Administration said in his speech that the Chinese government established in 2007 a national steering panel led by Chinese Premier WEN Jiabao to deal with climate change issues. China has published the national plan for dealing with climate change, and a medium and long term plan for renewable energy. The Chinese government published in 2008 a white paper on climate change policies and actions, depicting China's efforts in the area. Of the 4 trillion stimulus package offered by the Chinese government to deal with the current financial crisis, an impressive sum has been secured for energy efficiency and environmental protection.

ZHENG added that both China and the United States have shared many things in common in the context of climate and environment. For example, both countries are featured with noticeable climate change, and frequent attacks of extreme weather and climatic events. China and the United States have had laudable collaborations in the area of energy and climate change, with a fine foundation for the future cooperation in the area of power generating system, oil and gas, environmental pollution, and climate research.

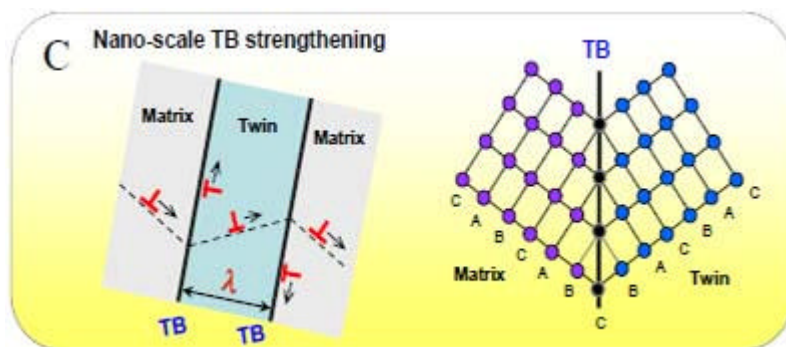
New Approach for Strengthening Materials



A (from left to right): solute strengthening, precipitation, interfacial dislocation



B : Boundary strengthening. Both A and B are the traditional approaches to strengthen materials



C: New approach for materials strengthening at the nanoscale. Coherent twin boundary.

Journal *Science* reported in its April 17, 2009 issue a new finding on strengthening materials by engineering coherent internal boundaries at the nanoscale, jointly worked out by LU Ke and LU Lei, research fellows at CAS Shenyang National Laboratory for Materials Science, in collaboration with S. Suresh, Massachusetts Institute of Technology School of Engineering.

LU and his collaborators worked out nanoscale twin boundaries (<100nm) with high density from pure copper samples, using pulse electrolysis techniques. They found that the decreased thickness of the twin boundaries went along with a noticeably enhanced intensity and ductility. When tensile yield strength reached 1.0 GPa (10 times the Cu), the ductility may jump to 13%, indicating a technique that is completely different from the traditional techniques used for strengthening materials. Theoretical analysis and molecular dynamic modeling also showed that the greatly enhanced strength and ductility is the result of the unique interactions between twin boundaries at the nanoscale and dislocation. For example, an edge dislocation meeting with a twin boundary may result in a new edge dislocation in the twin boundaries, and a new incomplete dislocation in the twin boundaries as well. The new dislocation may slip over the twin boundaries. At the nanoscale, the interactions between dislocation and twin boundaries may lead to increasingly enhanced strength. Meanwhile, the massive incomplete dislocations appeared in twin boundaries allow increasingly enhanced ductility for materials strengthening. It is apparent that the new technique is able to strengthen metal materials while improving its ductility.

China-Africa Discuss S&T Policies

With the support of MOST Department of International Cooperation, a forum to discuss S&T policies in China and Africa, sponsored by the Chinese Academy of Science and Technology for Development, opened on April 7, 2009 in Beijing. Representatives from 21 African countries, including South Africa, Egypt, Kenya, Mozambique, and Sweden and Canada attended the event. Participants discussed a range of issues concerning strengthening S&T cooperation between China and Africa, S&T policies and strategies, and creating a desirable public policy environment for S&T innovations. The meeting makes a stimulus to exchanges and cooperation in the area of science and technology between China and Africa.

Better Respiratory Tract Infection Diagnosis

CAS Institut Pasteur of Shanghai recently inked a three-year respiratory tract infection cooperation accord with L'Air Liquide Fund to detect the activities of new viruses and develop effective diagnosing techniques. The collaborative research will eventually lead to a faster respiratory tract infection diagnosing technique build on biochips. L'Air Liquide Fund will provide EUR 50,000 to the cooperative project, designed to understand the causes and factors contributing to respiratory tract infections, and provide theoretical basis and technical support for establishing an effective epidemic monitoring and control system.

RESEARCH AND DEVELOPMENT

Metabolites Inhibiting Tumor Growth Found

Fudan University announced on April 13, 2009 that the journal *Science* published in its April 10, 2009 issue the findings derived from a study led by XIONG Yue and GUAN Kunliang at the Institute of Biomedical Sciences, under the title of *Glioma-Derived Mutations in IDH1 Dominantly Inhibit IDH1 Catalytic Activity and Induce HIF-1*. The finding has preliminarily revealed the molecular mechanism of gene mutations in facilitating the growth of Glioma, and the effective metabolites for inhibiting the growth of the tumor, casting a hope for treating Glioma and other tumors.

Researchers found that tumor-derived IDH1 mutations impair the enzyme's affinity for its substrate and dominantly inhibit wild-type IDH1 activity. Forced expression of mutant IDH1 in cultured cells reduces formation of the enzyme product, alpha-ketoglutarate (alpha-KG), and increases the levels of hypoxia-inducible factor subunit HIF. In the process, IDH1 mutations act like an accelerator to the growth of tumor cells. Fortunately, researchers at Fudan University have found a "brake" for the acceleration.

Researchers also found that the rise in HIF-1alpha levels was reversible by an alpha-KG derivative. The alpha-KG derivatives are the in-body metabolites produced by human body itself, which is toxicity and repulsion free, desirable for clinical applications.

Deep Sea Raman Spectrometer Tested



With the support of the National 863 Program, Ocean University of China tested its DOCARS-532 (Deep Ocean Compact Automatic Raman Spectrometer) prototype in oceans during the period of March 15-April 1. The tests were made to understand the structural performance, work capability, and stability of the new spectrometer in a deep sea environment, and to run the on-site tests using the samples it brought. Tests show that the prototype device is fully up to the requirements for working in a deep sea environment. The new device enjoys fine airproof and pressure resistant performance, with a laudable reliability. Researchers have also received Raman signals in the tests, through the onboard samples, with all desired goals reached for a sea test.

NEWS BRIEFS

China Launched Second Navigation Satellite



At 0016, April 15, 2009, China successfully blasted off a navigation satellite aboard a CZIIIC launch vehicle, from the Xi'chang Satellite Launch Center. The new satellite, or COMPASS - GZ for its name, is the second geosynchronous aircraft launched by China to provide navigation services for different applications, including mapping, telecommunication, water resources monitoring, traffic and transportation, fishery, mining, forest fire fighting, and national security. The new satellite is part of China's navigation system currently under construction.

China's First SWATH Boat for Scientific Expedition



A SWATH (Small Water-plane Area Twin Hull) expedition boat, designed by China Ship Scientific Research Center, and jointly developed by CAS Institute of Acoustics, CAS South China Sea Institute of Oceanology, and Shenyang Automation, was delivered to its users on April 15, 2009. The SWATH boat, or Experiment I, has a length of 60m, width 26m, tonnage 2,560 tons, and a total weight of 3,071 tons. Designed with a full steel structure, the expedition boat is able to travel 8,000 nautical miles in a run, at a top speed up to 15 knots, with an endurance that can last for 40 days. Able to work smoothly even under sea scale 6, the new boat will be put into operation in May at Guangzhou Harbor for diverse offshore or ocean going scientific studies, including aquatic acoustics, marine physics, geological biology, and marine/atmospheric environment.

Bus in Diamond Shape



A bus in diamond shape, developed by Prof. ZHONG Zihua, President of Hunan University,

and coworkers, made its debut at an Industrial Products Fair opened on April 8, 2009 in Changsha. The new bus, resembling a cockpit, has the interior facilities similar to that of a regular bus. The new bus has two models for 28 seats and 45 seats. Unlike conventional bus designed with a rectangular chassis layout for two axis and six wheels, the new bus has three axis and six wheels in a diamond shape layout, enjoying reduced resistance and turning radius. The rectangular wheel layout of a conventional bus may easily end up in a dead hit in collision, while the diamond shaped bus will only allow 30%-50% of the body to be impacted by a collision, indicating an improved safety. It may also save energy by 30%, compared with a regular bus. With an emission up to national standard 4, it is more environment friendly compared with other buses currently on the road. Researchers are now working on hybrid and pure electric models with a top speed up to 180km for tourism, sightseeing, and commuting.

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_dydc@most.cn Fax: (8610) 58881364

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