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INTERNATIONAL COOPERATION

China-Romania S&T Accord Renewed

At the invitation of Romanian Ministry of Education, Research, and Youth, a Chinese S&T delegation, headed by CAO Jianlin, Vice Minister of Science and Technology, visited Romania on June 27, 2008. During his stay in Romania, CAO, on behalf of the Chinese government, inked an accord with his Romanian counterpart, to renew the protocol on cooperation in the field of science and technology between China and Romania. According to the Protocol, both parties will work on joint scientific research and product development, and facilitate S&T cooperation between the two countries, in the spirit of friendship and cooperation, and on the basis of mutual respect of each other's sovereignty, independence, non-interference in each other's internal affairs, and mutual benefit.

After the signing ceremony, CAO, Chairman on the Chinese side, and his Romanian counterpart co-chaired the 39th China-Romania joint meeting on S&T cooperation. Both parties briefed the other side of the latest S&T development, priority areas, and international S&T cooperation in their respective country. Participants also reviewed and approved an intergovernmental framework for S&T cooperation in the period of 2009-2010, and exchanged views on facilitating S&T cooperation under the new framework. At the end of the meeting, both parties signed a summary report of the meeting, placing 21 cooperation projects involving agriculture, materials, and energy under the support of two governments.

S&T Cooperation between China and Italy

CSTEC and APRE jointly inked on June 12, 2008 an MOU to provide S&T consultation services for collaborative projects between China and Italy, and between China and Europe. Ignasu Asenjo from the EU Mission in Beijing, and Giuseppe Rao from the Italian Embassy in Beijing were present at the signing ceremony, demonstrating their support for the efforts. CHEN Futao, SCTEC Director, and Diassina Di Maggio, APRE Director, undersigned the MOU on behalf of two organizations. The event will produce a positive impact on promoting people-to-people S&T cooperation in both countries.

Climate Warming May Wipe Out Some Plants

A joint study made by CAS Northwest Institute of Plateau Biology and University of Colorado shows that climate warming may lead to a drastically reduced number of plant species on the Qinghai-Tibet Plateau, though grazing may ease the negative impacts. The study was made at an open experimental site in the northeast part of the Plateau, 3200m above sea level with an annual temperature at －2℃. Researchers selected 4 spots on the site. Each spot measured 900m^2. Researchers made grasslands and brushes (35% of the Plateau in area) the study targets. They set up open structures in cylinder form (1.5m x 0.4m) to simulate increased daily temperatures by 0.6～2.0℃. Random grass cutting was applied to simulate grazing. Researchers grew some 30 types of plants in each structure. Study results show that during the period of 1999-2001, 3.9 medicinal plant species and 5.6 grazing species had been lost each year.

Researchers believe that some properties of plants, such as rooting depth, are associated with response to climate warming. For example, a shallowly rooted plant is more vulnerable to the negative impacts of warming, compared with a deep rooted one.

RESEARCH AND DEVELOPMENT

Brain Tumor Drug Resistance Unveiled

Drug resistance of brain tumor stem cell therapy, a paper read by Prof. FANG Jiasheng of Zhongnan University Xiangya Hospital at the 7th Asia Neurosurgery Seminar held on July 2, 2008 in Beijing, has attracted attention of some 300 participating medical experts from more than 20 countries. The paper unveiled for the first time in the world the mystery of drug resistance frequently occurred in brain tumor stem cell therapy. As a major breakthrough in the area, the paper was granted with the KANNO Award, a top prize offered by the Asian neurosurgery community.

Based on his findings and successful separation of brain tumor stem cells, the first incidence in the country, Prof. FANG established a study team in 2003 to work on drug resistance mechanism of brain tumor stem cell therapy. Thanks to painstaking efforts, the team has differentiated gene expressions of brain tumor stem cells, and sorted out the reasons and mechanism behind drug resistance. The findings provide theoretical evidences for targeted brain tumor stem cell therapy, and create a new approach for treating brain tumors, and a new means for studying tumors.

Improved Functional Nanomaterials

Nanostructured functional materials, a project assigned to WU Xintao, an academician

working for CAS Institute of Matter Structures, passed an approval check on July 6, 2008. Working on the synthesis, structures, and performance of nanomaterials, absorbing or hydrogen storing materials, novel lucid ceramic materials, and glass ceramic laser materials with fine semiconductor or florescent applications, the project has achieved the following innovative results: 1) researchers have rolled out nanostructured compounds of semiconductor applications, and nanostructured fluorescent materials able to change color when heated, with an enhanced fluorescent illumination and reliability. They realized the self-assembly of nanostructured clusters in different dimensions, worked out an empirical formula to explain the relationship between coupled magnetism and structure of 6-cored rare earth metal clusters, and improved their performance through regulating materials; 2) researchers studied the approach to synthesize microporous materials in moderate solutions (water), and the relationship between structures and effects, through synthesizing and characterizing porous absorbing materials. The study has made itself a world leader in the area; 3) researchers have made a systematic study of the preparation, structure, and physical and chemical properties of nanostructured lucid ceramics and glass ceramic laser materials with a compound structure, and established a link between structure and performance. They also produced novel nanomaterials with fine illumination performance and application perspectives in the area of photoelectrics. The findings have spurred up the R&D of preparing nanostructured functional materials, and associated structure regulation and structure-effect studies, allowing more applications in the area.

China's Space Based Terrestrial Observation

Thanks to 30-odd-year development, China has established a long term air and space based terrestrial observing system consisting of weather, marine, and terrestrial resources satellites, reported at the 21st international conference on photogrammetry and remote sensing opened on July 3, 2008. The well established air and space based terrestrial observing capacity has allowed China to watch atmospheric, marine, and terrestrial conditions on its territories and in adjacent areas in a dynamic manner.

Up to date, China has successfully launched eight weather satellites, making them part of China's modern meteorological operations, and part of World Weather Watch system under the World Meteorological Organization as well. China has also put two marine satellites into operation, and will eventually establish a proprietary marine satellite system. In collaboration with Brazil, China has so far blasted off three China-Brazil earth resources satellites to survey land resources, forestry resources, water resources, and farming activities. The satellites have also been used to estimate crop yield, map the land, monitor environment and disasters, stage emergency response, evaluate disasters, and plan urban construction.

Equipped with an upgraded meteorological, marine, and resources satellite system, China

has witnessed an enhanced capacity of satellite ground reception, data processing, archiving, and distribution, and is able to receive and process satellite data using Chinese made equipment and facilities. For example, weather satellite reception, data processing, and distribution systems have been fully localized, and Chinese made compact weather satellite reception equipment has found commercial applications in numerous areas.

Chinese Made EIAV Test Agent

An EIAV test agent, developed by the Chinese Academy of Agricultural Sciences Haerbin Institute of Veterinary, has been approved by the International Olympic Committee (IOC) to test possible EIAV incidences in the equestrian events of the Beijing Olympic Game in 2008.

At the invitation of Hong Kong authorities, experts from the Institute tested in December 2006 the blood samples collected from 40 American horses using both Chinese and American made agents. The Chinese made test agent has produced a result that went along completely with the result produced by its American counterpart, for strong positive, weak negative, and healthy indicators, demonstrating the reliability of Chinese made product. Using Chinese bred EIAV antigens, the home made test agent enjoys numerous merits, including fine specificity, high sensitivity, high yield, and low cost, with a price only 1/10 of its American counterpart.

NEWS BRIEFS

Strive for More Food Production

Based on a pre-study, an S&T project for enhancing food production, initiated by the Chinese Ministry of Science and Technology, has made a tracking study of a range of elements that may affect the yield of three major crops across three major plains in the country, including sunshine, heat, moisture, air, leaf area index, photosynthesis, and dry matter. Researchers studied the parameters of high yield crop models, identified the major elements that determine the yield performance of three major crops, sorted out different approaches to tap up yield increase potentials, and established a digital system to monitor crop yield performance across the three major plains. They also set up experimental plots and demonstration sites in the northeast plain, north China plains, and lower and middle reaches of the Yangtze River plains. Under the guidance of theoretical models, and three approaches for tapping up yield potentials, researchers developed key techniques for growing high yield crops, based on different ecological conditions and crop development paths. They also established a common technical model for three major crops, making

single season and annual high yield possible.

Triggering Lightening in a Storm

Researchers with CAS Cold and Arid Region Environment and Engineering Institute made in June 2008 an experiment to trigger lightening in a storm in Binzhou, Shandong. Thanks to synchronous high precision and multi-parameter based observation, researchers have collected the first hand data on triggering lightening in the air. They also obtained accurate data on electric current, lightening, and magnetism, and 3-D images showing the evolution of lightening, through simulating a precursor process of natural lightening. The findings provide important evidences for studying the mechanism of lightening, torrential rain watch and pre-warning, and for lightening protection as well.

Researchers triggered on June 29, 2008 lightening in a storm process, using five lightening diversion rockets, with a 100% success. Three rockets triggered lightening in a classic manner, and two others through an air-based approach. To obtain accurate and precise results, researchers have employed an array of advanced instruments and equipment, including lightening current measuring system, novel color high speed photographing system (150,000 frames/second), and numerous Chinese made instruments, including multi-station electric field meter, broadband lightening electric field monitor, high precision GPS based VHF 3-D positioning system, and narrow band VHF interference system.

Lightening Diversion Rocket

In collaboration with Shaan'xi Zhongtian Rocket, CAS Institute of Atmospheric Physics has rolled out a new generation lightening diversion rocket YL-1. Made of novel compound materials, the rocket is light in weight and high in reliability, with a fine performance for parachuting and wiring in the air. To test individual technologies installed in the rocket, researchers have made series of tests on temperature, vibration, wetting, engine, and parachuting cabin. Repeated flights show that the novel rocket has produced a range of indicators up to an internationally advanced level. A random test flight was launched on June 25, 2008, and three rockets that were randomly selected have worked properly.