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NEWSLETTER

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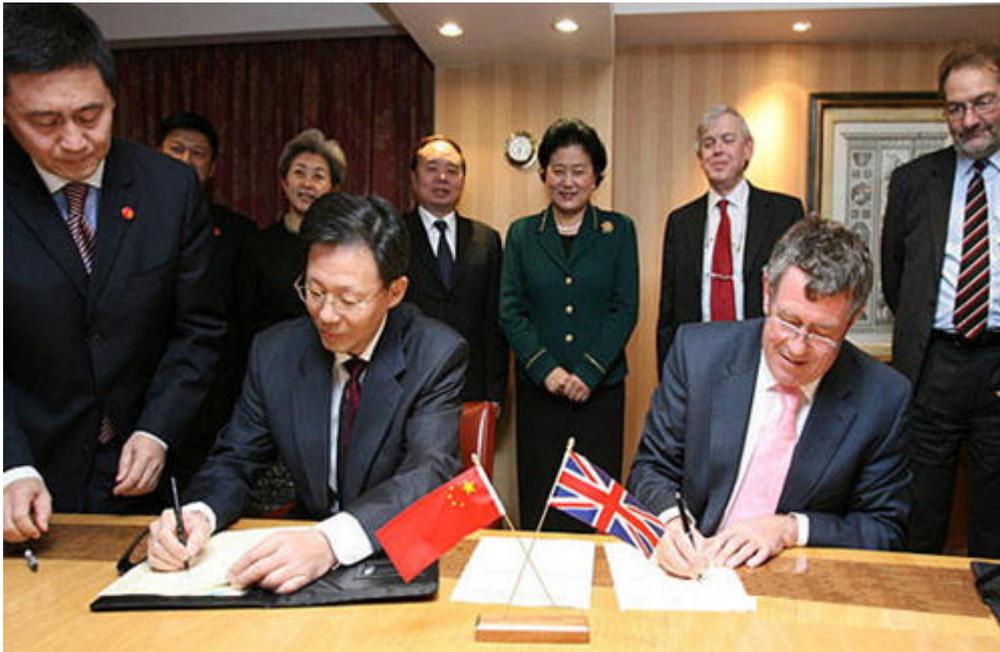
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INTERNATIONAL COOPERATION

China-UK Enhance Innovation Cooperation



LI Xueyong, Chinese Vice-Minister of Science and Technology, and John Denham, British Secretary for Innovation, Universities and Skills, inked on November 17, 2008 a joint statement to enhance the all-round cooperation in the area of science and innovation. LIU Yandong, Chinese State Councilor, was present at the signing ceremony. The Chinese Ministry of Science and Technology also signed an MOU with Research Councils UK (RCUK) to strengthen the partnerships in the area.

RESEARCH AND DEVELOPMENT

Loudspeaker Made of Carbon Nanotubes

Tsinghua University's JIANG Kaili and FAN Shoushan have recently found that thin films of carbon nanotubes can function as loudspeakers when they're fed with the electric currents at sound frequency. Only a few tens of nanometers thick, the speakers are transparent, flexible, and stretchable, and they can be tailored into any shape or size, according to the findings published in the journal of *Nano Letters*.

Unlike conventional speakers, the nanotube-based devices have no magnets or moving parts. They're prepared by first growing carbon nanotubes that are 10 nm in diameter like grass on a 4-inch silicon wafer. These nanotubes are then converted into a continuous film up to 10 cm wide and 60 m long—enough to make 500 10-cm² speakers. Two electrodes are attached to the thin film so that by simply applying a sinusoidal voltage across them, sound is emitted via the thermoacoustic effect.

The nanospeakers "could open up new applications of and approaches to manufacturing loudspeakers and other acoustic devices," said the inventors who led the study. They added that the speakers can be mounted on virtually any surface, including walls, ceilings, windows, flags, and clothes.

Network Management Model Becomes International Standard

A research team, headed by Prof. MENG Luoming of Beijing University of Posts and Telecommunications National Key Lab for Networking and Switching Technology, has recently achieved a new progress in connectionless network management modeling. The new finding has been accepted by ITU as an international standard. The generic connectionless network management model produced by the team was adopted on May 13-23, 2008 in principle as a draft international standard at an ITU SG4 meeting. As a result, the model will be incorporated into the current international standard for generic network information management, or ITU-T M.3100, and become a new international standard: ITU-T M.3100-neutral.

Researchers proposed the flow based connectionless network management concept in creating a connectionless network management model, believing that the flow nature of connectionless networks can be employed to manage the management information of the networks. They made EPON as the network management environment, and established a management information model for connectionless networks. Lab efforts helped them to find the right solutions to addressing network management modeling, which eventually led to the birth of the flow based modeling theory and associated approaches.

First TCM Drug for Arrhythmia

Chinese Medical Association (CMA) announced on November 15, 2008 that China has rolled out its first traditional medicine for treating arrhythmia. The new drug, or the Shen Song Yangxin capsule for its name, developed by YILING Pharmaceutical and fully tested at 36 large hospitals, including Beijing Fuwai Cardiovascular Hospital, Chaoyang Hospital, Nanjing Medical University No. 1 Hospital, and Shandong University Qilu Hospital, has produced the results showing that it is noticeably better than the control group in treating the non-organic ventricular premature beat, and is also noticeably better than the group using western medicines to treat organic ventricular premature beat. In addition to the fine therapeutic effects on chronic arrhythmia, the new drug is able to ease the symptoms, including palpitation, short breath, fatigue, and insomnia. The new drug has so far produced no side effects, allowing the treatment on a long term basis.

The new drug, having been annually used by 2 million patients, is a high tech product honored with the first-place award issued by China Association of Chinese Medicines.

Acupuncture Mysteries Unveiled

LIANG Fanrong, Vice President of Chengdu TCM University, reported the results of 180 clinical cases of treating migraines using acupuncture, at a satellite meeting on acupuncture and human health, during a WHO traditional medicine conference recently held in Beijing. He confirms that acupuncture finds its therapeutic effects mainly in the specificity of acupoints. He and his coworkers will study more of the clinical results and biological basis of the acupoint specificity.

Researchers found that each acupoint has its specificity, through analyzing several thousand ancient and modern acupuncture literatures, and believed that acupuncture travels through channels, allowing the meeting between channels and *Qi*. Researchers treated 180 migraine patients at seven hospitals under the three selected research centers, using internationally recognized random and control methodologies. Patients were split into the acupuncture and control groups in a random manner. In the acupuncture group, patients were treated at the selected acupoints, including Fengchi, Jiaosun, Waiguan, Yanglingquan, and Qiuxuxue. The control group had an acupuncture treatment at false acupoints. Results show that acupuncture is of a better therapeutic effect on migraine patients, compared with the controls, with an enhanced effect 2 hours and 4 hours after the treatment. It also prevents the recurrence and worsening of migraine.

Researchers also studied the biological basis of acupoint specificity, using the pre-phase animal experiment and small scale clinical trials. PET/CT scan results show that migraine and functional dyspepsia patients are noticeably sensitive to the acupuncture treatment. Meanwhile, magnetic resonance imaging based metabonomic study shows that acupuncture also produces a noticeable effect on metabolites.

Proteins Resistant to Chemotherapy

SUN Shuqing, XU Li and coworkers at Beijing Tiantan Hospital and Beijing Institute of Neurosurgery found through clinical studies that four proteins, including P170, MGMT, TOP₂, and GST- π existed in the brain tumors are associated with the resistance to chemotherapy. The expression of these proteins is associated with the sensitivity to and prognosis of chemotherapy. Researchers found that TOP₂ has an expression throughout the cycle, and the lower the differentiation the brain tumor cells, the higher the expression. Patients with a high TOP₂ expression have a shorter life, compared with the one with a low TOP₂ expression. GST- π finds no expression in 11.1% of the patients. These patients are sensitive to both radiotherapy and chemotherapy, with a fine prognosis. 88.9% of the patients have GST- π expression in their tumors. They shall be treated prudently when applying the drugs such as ACNU.

Researchers tested the four protein indicators in 108 brain tumor patients who had a tumor removal operation at the Tiantan Hospital in a period of half a year. Study results show that P170 has a higher expression in the brain tumors at level IV, compared with the expression at level II and III. A study of chemotherapy results indicates that some anti-cancer drugs, such as Vincristine, is poor in treating the patients with a high P170 expression. At the same time, the patients with a negative MGMT expression live longer than the one with a positive reading. The patients with a negative MGMT expression are sensitive to the alkyl groups. 74.3% of the patients with a high MGMT expression are, more or less, resistant to the therapy, with only 25.7% low expression patients being sensitive to the therapy, enjoying a better prognosis.

NEWS BRIEFS

New Abnormal Chromosomes

The Genetics Teaching Faculty, part of Henan S&T University Medical School, has discovered the translocation of chromosomes between two female patients. XIA Jiahui, a CAS academician, and Prof. DAI Heping, both working for China National Key Lab for Medical Genetics, believe that the two abnormal chromosomes are the brand new chromosomes unreported in the past both at home and abroad.

Genistein Inhibits Cancer Growth

Not long ago, XIN Xiaoyan, WANG Xin and coworkers at No. 4 Military Medical School Xijing Hospital, have confirmed a research finding showing that genistein (GEN) is able to inhibit the growth of human ovarian cancer cells in rats. To observe the effects of combined GEN and DDP therapy on treating human ovarian cancer cells in rats, researchers randomly split 20 rat models into four groups. The comparative study shows that GEN is of a noticeable inhibiting effect on the human ovarian cancer cell in rats, and works well with DDP. Researchers believe that GEN inhibits the growth of cancers by suppressing the growth of new tumor blood vessels, and by blocking the blood supply to cancers.

New Approach for Peptides Synthesis

A research team, led by Prof. SUN Huailin at Nankai University School of Chemistry, has recently announced a new approach to synthesize peptides, instead of using amino acids as the raw materials. The journal of *Applied Chemistry*, where the finding was published, thought highly of the application values of the finding, indicating that the reaction enjoys a merit of using cheaper raw materials, desirable for industrial production". Other

international journals, such as *Chemistry & Engineering News*, a magazine run by the American Chemical Society, and *Chemistry World*, a journal of Royal Society of Chemistry, have also reported the findings. The study has been financed by China's National Natural Science Foundation as a key project.

Novel Wave Power Generating Technology

Thanks to more than one year collaborations with CHUAN SHIYU Machinery, the Institute of Electric Engineering, part of the Chinese Academy of Sciences, has recently worked out a display unit to demonstrate the feasibility of wave power generation built on liquid metal magnetohydrodynamics. The Institute has proposed a work principle that is completely different from the conventional wave power generation theory. It employs a magnetohydrodynamic power generator, creating a solid mechanical resistance to the waves, and enjoying numerous merits, including high conversion rate, large power density, compact structures, lower cost, and enhanced mobility. The two developers will continue their cooperation to produce a 25-kilowatt experimental prototype.

Large Wind Generator Converters

Hefei based SUNGROW has recently rolled off large wind generator converters from its assembly line. The company has completed the R&D of converters applicable to large wind generators, through many-year experiments and tests, with the products reaching a level to replace the imported peers. The product lines developed by the company include: 850KW, 1500KW, and 2000KW full power converters for direct-drive wind generators, and 1000KW and 1500KW for doubly fed wind generators. The new development is believed a stimulus to the development of China's wind power industry.

ICD Success for Cardiac Patients

Not long ago, Sichuan University Huaxi Hospital installed Implantable Cardioverter-Defibrillators (ICD) in three patients having advanced chronic heart failures, allowing them to have a stabilized heart beat. The application, the first of its kind in the country, is a technology designed to treat advanced chronic heart failure patients through radio control. The new Implantable Cardioverter-Defibrillator offers a range of new functions, including easing the symptoms of heart failure, preventing a sudden death, and remote monitoring, in addition to all the merits enjoyed by the older models.

More Living Donor Liver Transplantations

It is reported at a liver diseases and transplantation forum recently held in Shanghai that

as of March 2008, China has completed 643 living donor liver transplantation operations. Of them, 406 were made in 2007. Shanghai Renji Hospital is a large operator of living donor liver transplantation. So far it has completed 120 such operations, with some breakthroughs made in living donor liver transplantation for infants. For example, it has performed 14 living donor liver transplantation operations for 14 infants, with a success rate reaching 93%. The first child who had received the operation is now 4 years old, enjoying the development and growth seeing no difference from regular children.

Sequence Oyster's Genome

An Oyster's Genome Program was recently kicked off at the CAS Institute of Oceanology. An international team, headed by ZHANG Guofan, a research fellow of the Institute, and Prof. GUO Ximing at the State University of New Jersey, plans to start oyster genome sequence in December 2008. A refined oyster genome map will be produced in the first half of 2009. According to a briefing, the program is designed to unveil the genomics of oysters and raise the research level of shells and marine genomics, allowing a healthy and sustainable development of the shell breeding industry.

Precision Technology for Rice Growing

Jiangsu Provincial Dept. of Science and Technology has recently organized experts to verify the yield of the rice grown with the precision technology over a field of 105.4 mu (1 mu= 0.0667 hectare). The experimental plots, using the technologies developed by Yangzhou University, have produced a per mu yield as high as 894.9kg. Researchers made the rice growing process an engineering technology, allowing the quantitative diagnosis and regulation at each growing stage. As a result, the rice growing process has its own modules, indicators, and technical specifications, desirable for reaching the goals of high yield, fine quality, efficiency, environment friendly, and safety. In the past three years, the technology has been diffused to some 30 counties in Jiangsu, including Xinghua, Jiangnian, and Donghai, over 33 million mu of fields on a combined basis, and added RMB 3.6 billion worth income to the local farmers.

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