

Content

Science News from Chinese Media in May 2009
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1 Science News

1.1 Energy

Tianjin becomes a center of international wind power industry (People's Daily, 2009-05-05)

According to the Tianjin Wind Energy Association, to date, 50 enterprises engaging in the manufacture of wind power-generating equipment, key components and parts, as well as supporting services are located in Tianjin. These enterprises enabled the city to form an industry cluster primarily consisting of wind power manufacturing, which will be supported by the wind power service sector, and also components and parts manufacturing.

Thanks to the development and launch of Tianjin's Binhai New Area and its first-class investment environment, renowned foreign and domestic wind power enterprises and a group of supporting enterprises have invested in Tianjin.

Denmark-based Vestas, the world's largest wind power-generating equipment manufacturer, is a global leader in the research and development (R&D), manufacture, sale and maintenance technology of wind turbines. In 2005, Vestas invested money to establish a factory in Tianjin. Over five occasions, the company has invested a total of 363 million USD, making its Tianjin factory an important manufacturing base in China. Meanwhile, Spain-based Gamesa Corporation and India-based Suzlon Energy, the world's second and fifth largest wind power equipment manufacturers respectively, have also invested in Tianjin.

A group of enterprises engaged in the manufacture of wind power units, gearboxes and wind power materials, including Belgium-based Hansen Transmissions International NV (Hansen Transmissions), US-based Reichhold Inc, Sichuan-based Dongfang Electric and Guangdong-based Mingyang Electric, have rushed to invest in Tianjin. Of them, Hansen Transmissions, the world's largest wind turbine and transmission gear producer, is a global leader in the design and manufacture of key wind power generating components and parts, as well as the development and utilization of renewable energy. Its factory commenced production in 2008 following an investment of 300 million euros. US-based Reichhold, the world's largest unsaturated polyester resin supplier of complex material producers, is a global leader in the R&D and manufacture of the unsaturated polyester resin, which is the specialized raw material used in the manufacture of wind turbine blades.

These enterprises, with a total investment of 12.645 billion yuan and a total workforce of 24,760, have formed the most complete system in China's wind power industry. Not only has Tianjin become an important area of integration in China's wind power industry, it has also become the center of the international wind power industry.

World's First "Synthesis Glycol from Coal" Technology Complete in China (CAS, 2009-05-11)

Researchers at the Chinese Academy of Sciences (CAS) have developed for the first time in the world a technology, which can produce glycol ten thousand tons at a time. The technology has passed evaluation organized by CAS recently.

CAS held a press conference to highlight the achievement at the Great Hall of the People in Beijing on May

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7. CAS President Lu Yongxiang and officials from the Ministry of Science and Technology and other government organizations attended the conference.

The technology can synthesize oxalate through phase catalysis of CO gas and then synthesize glycol by catalytic hydrogenation of oxalate, according to researchers at Fujian Institute of Research on the Structure of Matter (FIRSM), CAS.

Application of the technology, which synthesizes glycol from coal instead of petroleum ethylene, suits the situation of energy structure in China. The country lacks oil and gas resources, while having abundant coal resources.

The technology takes CO, NO, H₂, O₂ and ethanol as raw materials, and could help build glycol production on large scale, experts of the evaluation committee said.

The first of its kind in the world with independent intellectual property rights, the technology will help relieve the imbalance between glycol supply and demand in China and bring positive effect to the country's energy and chemical industry.

The first set of equipment will be completed in Inner Mongolia of northern China and put into use late this year. The set will produce about 200,000 tons of glycol from coal every year. A manufacturing industry with process scale of 1.2 million tons will be installed in five years.

Nearly 10 types of new-energy vehicles get "production license"

(People's Daily, 2009-05-15)

China plans to promote 60,000 energy saving and new energy vehicles nationwide in 2012, among which, various kinds of hybrid-powered vehicles will account for over 95 percent, said Wan Gang, minister of Science and Technology on May 14.

At present nearly 10 kinds of new energy vehicles have been given a "production license," and a batch of new energy vehicles including the "zero emission" electric-only powered vehicles will successively appear on the market.

Wan said that, the Ministry of Science and Technology, together with the Ministry of Finance, National Development and Reform Commission and the Ministry of Industry and Information Technology has launched a national energy-saving and new energy vehicle demonstration project. The initially-selected 13 pilot cities will promote the use of new energy vehicles, mainly hybrid-powered, for public transportation, taxi, official business, municipal administration, postal service and other forms of public transport. In some big cities where conditions permit, the ministry will duly promote electric-only powered vehicles and fuel cell vehicles.

In recent years, relevant departments of the Chinese government have stepped up policy support for energy saving and new energy vehicles. As chairman of the state-owned Assets Supervision and Administration Commission of the State Council (SASAC) supervision board Ji Xiaonan pointed out, judging from the development plan of world's major automobile manufacturers, the industrialization era of new energy vehicles will arrive earlier than expected.

Currently, "low emission" hybrid electric vehicles have entered into a phase of large-scale industrialization. Over one million hybrid power vehicles have been sold globally, while mass production of "zero emission" vehicles will be realized in the year 2015, 10 to 15 years earlier than originally expected.

Ouyang Minggao, expert leader of the overall team of the Energy-saving and New-energy Auto Project of the National High-tech R&D Program (863 Program) predicted that future fuels of China's new energy vehicle may show a trend of being composed of three types: hybrid power, pure electricity and fuel cell.

Crisis calls for birth of China's "green miracle"

(People's Daily, 2009-05-15)

When the wind kissing your hair have you ever thought that it is actually an inexhaustible energy resource for mankind?

Recently, an article about Chinese planning to create a "green miracle" became eye-catching news in the UK's "Daily Telegraph". The newspaper reported that wind storms which had annoyed businessman before were now being used for power generation. It has been included in the power generation plan of new green revolution for energy deficient countries such as China. In Daban city, the "windmill forest" of tremendous size has been expanding to the horizon.

Daban city mentioned in the text is 40 kilometers away from Urumqi, and is considered as one of the nine wind zones in Xinjiang. Its comprehensive wind energy resource development potential is over 10 million kilowatts. The wind power development plan referred to as the "new green revolution" is one of the "green government orders" used to promote the development of new energy which is included in the new energy industry revitalization draft plan that has been developed by the National Energy Bureau.

Crisis calling for birth of the revitalization plan

With the spread of the international financial crisis, China is developing new energy source industries such as wind power as an important measure to deal with the crisis. On April 19, Li Keqiang, China's Vice Premier attended the opening ceremony of Zhejiang Sanmen nuclear power project and said, "The current international financial crisis has brought opportunities for new energy industry development. At present, the new energy industry is pregnant with a new economic growth and is also the strategic commanding ground in the new round of international competition."

Against this background, the new plan to revitalize the energy industry has been endowed with more color to promote economic growth. There is no doubt that the expected total amount of 2 trillion yuan investment will have great importance in boosting China's new energy industry development. In addition to seize the opportunity to accelerate the development of new energy industries, occupying the commanding ground of new energy technologies and avoiding the passive situation of backward technology are the other important goals of the revitalization plan. Niu Li, director macroeconomic section of the Economic Forecast Department in State Information Center expressed, "the core of the new energy industry revitalization plan is to occupy the commanding heights."

In April 2007, "Renewable Energy Development 'Eleventh Five-Year' Plan" proposed to focus on the development of renewable energy resource with high potential and mature technology such as wind power generation, biology power generation, biology briquette and solar energy utilization.

In the mean time, with the rapid development of China's new energy industry, the original development plan changed with the times. Take wind and electricity as examples, in the "long-term renewable energy development plan", the goal of installed capacity of wind and electricity in 2010 was 10 million kilowatts, re-revising to 30 million kilowatts in the revitalization plan draft.

Policies boosting industrial development

In recent years, in support of national policy, China's new energy industry showed a rapid development momentum. Data showed that as of 2008, China's total installed wind power capacity reached 12.21 million kilowatts, accounted for 10% of the world's total installed capacity, ranking fourth in the world. In 2008,

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China's new added wind power installed capacity was 6.3 million kilowatts, ranking second in the world's new increment.

The field of solar energy has seen development in leaps and bounds. As of the end of 2008, China's output of photovoltaic cells has reached more than 2500 megawatts, ranking first in the world. In early April of 2009, the Ministry of Finance issued guidelines and subsidies rules for new energy projects. Among them, the subsidy policy cleared the subsidies scopes for three types of technology; they are silicon, polysilicon and amorphous silicon, causing an investment boom of photovoltaic power generation in public construction field.

In addition to wind and solar energy, China also achieved rapid development in other new energy fields. At present, the area of oil plants and energy crops can meet the needs of raw materials which has annual production capacity of 50 million tons of biological liquid fuel; the volume of industrial organic waste water and livestock farms water resources, in theory, can produce nearly 80 billion cubic meters of methane, which is equivalent to 57 million tons of standard coal.

Wind energy to become focus of exploitation

The new revitalization draft plan showed that among the various new energy industries, wind power is the focus of future development. Starting from this year, China will strive to establish a wind power base of more than 10 million kilowatts in Gansu, Inner Mongolia, Jilin, Hebei and Jiangsu in 10 years time. Among them, the total installed capacity of the eastern part of Inner Mongolia and the western region was over 50 million kilowatts, known as the "Three Gorges of wind power" by local departments.

Recently, media quoted the saying of Professor Shi Jingli, a researcher from Energy Research Institute of National Development and Reform Commission, according to the objects of the new plan, by 2010, China will achieve a total installed capacity wind power of 30 million kilowatts; by 2020, the total installed capacity of National Wind Power will reach 100 million kilowatts. This is regarded as a great update for the 2020 goal in the "renewable energy and long-term development plan".

Several years later, when the UK's "Daily Telegraph" reporters come to China again, they may find that the "green miracle" has spread everywhere in China.

Largest Hydropower Station on Yellow River Starts Operation (CAS, 2009-05-20)

China began operating its largest hydropower station Monday on the Yellow River after eight years' construction, as the first two units of the Laxiwa Hydropower Station successfully connected to grid and generated electricity.

The station, located in northwestern Qinghai Province and the upper reaches of the river, has the largest installed capacity, tallest dam and highest outgoing voltage of all hydropower stations on the main stream of the Yellow River, China's second longest river.

The Laxiwa Hydropower Station will be a major source of power for the development of China's west as well as the national West-East transmission project with a total installed capacity of 4.2 gigawatts and a 250 meter-high arch dam, according to station employees.

The other four generators of Laxiwa will start running before the end of 2010, they said.

By then, the total installed capacity of all the hydropower stations on the upper stream of the Yellow River will exceed 10 gw, as several other major hydropower projects will have been completed and gone on stream.

Official: China ranks world 4th in wind power-installed capability**(People's Daily, 2009-05-25)**

With total installed capacity of 12million kilowatts, China has become the world's fourth country in wind power-installed capacity, an official said on Saturday in Beijing.

"Concerning wind power-installed capacity, China is next only to the United States, France and Spain," Lu Yanchang, vice chairman of the China Science and Technology Association, made the above remarks at the fifth China Energy Strategy Forum.

Wind power has become a main force in China's new energy development cause, said Lu, adding that the country had built more than 200 wind power plants as of 2008, with 12.8 billion kwh electricity generated.

China's total wind power has accounted for 1.5 percent of country's total installed electricity capacity. The country will build more wind power projects before 2010, in east coastal areas, and vast western regions, according to Lu.

North Inner Mongolia and Hebei have exploited wind energy earlier than other regions on Chinese mainland. Inner Mongolia, covering 1.18 million square kilometers, boasts 100 million kilowatts of wind energy resources, with enormous white turbines standing high to capture the strong winds from the heartland of Mongolia and Siberia.

The region is striving to increase installed capacity of wind power to more than 10 million kilowatts in 2010, almost half of that of the country's largest hydropower project at the Three Gorges, said Ya Saning, director of the region's economic commission.

Hebei Province will also construct wind power plants with an installed capacity of more than 10 million kilowatts as of 2020, said Zhao Weidong, an official with the provincial Commission of Development and Reform.

1.2 Earth and Environment

CAS Scientists Cultivate New Salt-tolerant Wheat**(CAS, 2009-05-05)**

Scientists with the Xinjiang Institute of Ecology and Geography (EGI), Chinese Academy of Sciences, have recently cultivated a new species of salt-tolerant wheat with an output of more than 400 kilograms per mu (about 666.67 square meters).

With obvious advantages of salt-tolerance and high yield, the new species "Xindong No. 34" can produce 403.32 kilograms of wheat per mu, ranking the first in all testing species. This makes its harvest 6.89 percent higher than that of "Xindong No.26", the first salt-tolerant wheat in China.

The new medium gluten wheat is also good at disease-resistance and lodging-resistance, said Ren Wei, associate researcher of the EGI.

Soil salinization is widespread in west China, which poses as a great obstacle for crop production. Current farming and irrigation methods also threaten to spread secondary salinization. Solonchak agriculture such as cultivation and promotion of salt-tolerant wheat will help relieve pressure of traditional salnization control, and reduce its cost of both financial and time input, said researchers.

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China to Prepare for Drilling Deep Antarctic Glacier Ice Core in 2010

(CAS, 2009-05-06)

China will do preparatory work for the drilling of deep Antarctic glacier ice core at Dome Argus (Dome A) in 2010, a scientist said here Friday.

In China's 26th Antarctic scientific expedition next year, scientists will build deep drilling work shop and install drilling machines, said Li Yuansheng, head of China's Kunlun Station, the country's first research station on the continent's inland.

In January, China set up the Kunlun station at Dome Argus, the pole's highest icecap at 4,093 meters above the sea level.

China's 25th Antarctic scientific expedition team left in October for a 173-day trip, the longest in China's polar expedition history, and returned to Shanghai Friday.

China has another two research stations in Antarctica. The Changcheng (Great-Wall) Station, founded in February 1985, is south of King George Island. The Zhongshan Station, built in February 1989, is south of Prydz Bay on the Mirror Peninsula, eastern of Larsemann Hills.

Six countries, including the United States, Russia, Japan, France, Italy and Germany, have already built inland research stations in Antarctica.

Wei Wenliang, an official for polar expedition affairs with the State Oceanic Administration, said China is planning to build an aid center in Australia to help Antarctic research.

The center, which will be in Sydney or Hobart, will help scientists get to the Zhongshan and Kunlun stations quicker by flights and provide them with more fresh food, Wei added.

Chinese Scientists Paint Global Map of Paddy Methane Emission

(CAS, 2009-05-08)



Methane emissions from rice paddies may have been about 3 times overestimated, according to a new study carried out by researchers of the Chinese Academy of Sciences (CAS).

Total emission amount of world's atmospheric methane °C a major greenhouse gas °C from rice paddies in 2000 is 25.6 million tonnes, instead of previously estimated 80 million tonnes. And the emission of rice paddies in China is only 25% of the estimated amount, according to the new study.

The British science journal Nature reported about the achievement in early April.

Concentration of atmospheric methane has nearly tripled since the industrial revolution, but the contribution from individual sources has remained unclear. "Rice plantation has been regarded culprit of all causes, which put high pressure on China's rice farming," said Yan Xiaoyuan, researcher with the Institute of Soil Science, CAS, who carried out the research.

The Intergovernmental Panel on Climate Change (IPCC) published guidelines for estimation of methane emission from rice paddies in 2006 and recommended to its member countries as one and only method. And this is the right method that Yan and his colleagues use.

Using country-specific estimates of rice harvest area and data on agricultural practices, Yan and his colleagues calculated that methane emissions totalled 25.6 million tonnes over the entire year and mostly came from monsoon Asian countries.

The study found that the release of methane was highly dependent on management techniques: emissions were reduced by 4.1 million tonnes per year if fields were drained at least once during the growing season, and a further 4.1 million tonnes if rice straw was applied off season. They estimate that if both practices were implemented, emissions could be reduced by 30 percent annually.

Chemical substance abnormality relates with aftershocks: experts

(Xinhua Net, 2009-05-11)

Abnormality of some chemical substances is related to aftershocks of the earthquake, said sources with the Ministry of Land and Resources on Monday.

According to an official in charge of the Wenchuan Fault Scientific Drilling Program (WFSD), experts found after monitoring more than 3,000 aftershocks that changes of helium, methane and niton were closely related.

This discovery provided a chance for people to understand the relationship between earthquake and abnormality of chemical substances, he said.

WFSD, started on November 6 last year, is China's first drilling research program after an earthquake to study the mechanism of earthquake. It is recognized as world's fastest response to an earthquake.

The program was conducted between the worst-hit Beichuan county and Yingxiu township. The deepest well has reached 741.5 meters by Sunday.

By drilling experts also found more than 20 zones of fracture left by previous earthquakes in history, which could provide evidence for studies in quake cycles.

In Beijing, a 245-page map of earthquake disaster in Wenchuan was published, which is the last one of the five-book series on assessment and analysis of the Wenchuan earthquake that jolted southwest China last May 12.

Chemical Substance Abnormality Relates with Aftershocks: Experts

(CAS, 2009-05-13)

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Scientists move to identify caterpillars plaguing NW China pastureland**(Xinhua Net, 2009-05-14)**

Experts from Beijing have joined other Chinese scientists in trying to identify the mystery caterpillars that are destroying pastures in the northwestern Xinjiang Uygur Autonomous Region.

"We are waiting for the caterpillars to change into chrysalides, and will be able to identify them only after moths are produced," said Gao Song, a researcher with the Beijing-based Chinese Academy of Agricultural Sciences.

Gao arrived in Xinjiang on Monday to observe samples of the 2-cm thorny green caterpillar with black stripes at a laboratory of Xinjiang Agricultural University. He and his colleagues were expecting to identify them from the size, color, wings and genitalia of the moths.

"The mystery may remain unsolved for months if the caterpillars choose to estivate in the hot, arid summer and postpone their metamorphosis until the fall," he said Thursday.

Su Hongtian, an expert with Ministry of Agriculture, has taken samples of the caterpillars to Beijing, where he hopes to use DNA technologies to identify their species.

"If their DNA data is not in the existing databank, we, too, need to wait until moths are produced," said Su.

The caterpillars have damaged 8,000 hectares of grassland in Usu and forced nearly 20,000 head of livestock and 50 herding families to leave.

It was the worst plague of caterpillars in three decades in the city about 280 km west of the regional capital of Urumqi.

Local herders and entomologists claimed they had never seen the caterpillars before.

Xinjiang has a history of using chickens, ducks and other birds to fight locusts, which are also a menace to grassland. However, the birds showed no interest in the thorny caterpillars in Usu.

The Usu municipal government announced a grazing ban on affected grassland on Saturday and has used spray vehicles to fight the plague with pesticide.

"We expect all the caterpillars to be killed by this weekend," said Mu Chen, an official with the Xinjiang regional headquarters of locust and rodent control.

China's Sea Level to Rise 30 Millimeters in 10 Years**(CAS, 2009-05-19)**

China's sea level will rise by 30 millimeters in the next 10 years, predicted "China's Ocean Development Report 2009", released by the State Oceanic Administration on May 15..

The report indicated that the level of Bohai Sea will go up by 29 millimeters, Huanghai Sea by 31 millimeters, and East China Sea by 30 millimeters.

The rising of sea level is one of the reasons that have caused costal erosion and seawater intrusion. However, the report concluded that human activities such as sea sand mining, coastal engineering construction caused more severe costal erosion than the global climate change did the past 10 years.

China's sea level rises at an average speed of 2.5 millimeters a year, slightly higher than the world's average, according to the report.

"China's Sea Level Report 2007" also said the air temperature in China's costal area rose by 1.1 degree Centigrade, sea surface temperature 0.9 degree Centigrade, sea level 90 millimeters in the last 30 years. The sea level at Tianjin rises the fastest by 196 millimeters, and Shanghai ranked the next by 115 millimeters. The report also presented the pattern that the sea level rose more rapidly in the north than in the south.

The report is the second of its kind. State Oceanic Administration issued the first of the series annual report

in 2008.

1.3 Health and Biological Sciences

China Develops New Diagnostic Reagent to Test for A/H1N1 Flu Virus in Pigs (CAS, 2009-05-06)

China developed a new diagnostic reagent to test for A/H1N1 flu virus in pigs and the new method could provide test results in five hours, the Ministry of Agriculture said Sunday.

The ministry has organized experts soon after the outbreak of A/H1N1 to develop new diagnostic reagents to test for A/H1N1 virus. The method could also provide references for the virus in humans, the ministry said.

The ministry has urged local branches to strengthen efforts on the storage and management of emergency materials for the influenza A/H1N1 prevention and control.

Chinese Scientist Elected NAS Academician (CAS, 2009-05-08)

Dr. Mu-ming Poo, a Chinese-born American scientist serving as director of the Institute of Neurosciences under the Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences (CAS) was elected as new member of American National Academy of Sciences on April 28, 2009.

Ever since 1980's, Dr. Poo has been dedicated to contribute to the reform of China's research and development system. He took part in founding the Department of Bioscience at Tsinghua University from 1983 to 1986 and Hongkong University of Science and Technology from 1988 to 1991. He has also served as the founding director of the Institute of Neuroscience, CAS and the head of the Laboratory of Neural Plasticity since 1999.

Three more scientist of Chinese origin were also elected member of National Academy of Sciences along Dr. Poo. They are Zhang Shengrong from Princeton University, Wang Yongxiong from Stanford University and Xie Yu from the Michigan University.

The election was held during the business session of the 146th annual meeting of the National Academy of Sciences. It altogether elected 72 new members and 18 foreign associates for the year 2009. Those elected brought the total number of active members to 2,150.

CAS vice-president Chen Zhu, academician Zhang Qifa, and Li Aizhen from Shanghai Institute of Microsystem and Information Technology (SIMIT), CAS were also NAS academicians.

King's-led consortium wins € mln EU funding for Chinese Medicine Research (People's Daily, 2009-05-07)

King's College London successfully led a consortium bid for €995,100 of EU funding for a ground-breaking research project that will play an important role in the unification of Western and Chinese approaches to medicine.

The project entitled 'Good Practice in Traditional Chinese Medicine Research in the Post-genomic Era' (GP-TCM) will review the current status of Traditional Chinese Medicine (TCM) research, identify problems and propose solutions by applying modern methods of investigation, as well as providing a forum for the exchange of opinions, experience and expertise among scientists in the EU and China. The three-year

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project aims to propose guidelines and priority areas for future research, and will lead to the formation of a new academic society, the European Society of TCM Research, which is to facilitate and foster sustainable EU-China collaboration in this area.

The research consortium consists of 29 beneficiary partner institutions and small-and-medium-sized enterprises from the EU and China. Partnerships with more than 20 additional non-beneficiary institutions, companies and independent experts are further strengthening its research.

Dr Qihe Xu, Lecturer in the Department of Renal Medicine, Division of Gene and Cell Based Therapy, and coordinator of the project, explains: 'In contrast to the reductionist approach of Western medicine that is based on modern anatomy and cell and molecular biology, TCM uses a unique theory system and an individualized holistic approach to describe health and disease, which is based on the philosophy of Yin-Yang balance. These two medicine systems disagree with each other in many situations since they observe health from their own limited perspective. GP-TCM aims to inform best practice and harmonize research of the safety and efficacy of TCM, especially Chinese herbal medicines and acupuncture, in the EU.'

'The project will be divided into ten parts, which will review aspects of quality control, extraction and analysis of Chinese herbal medicines. Discussion fora that explore the role of functional genomics methodology in researching the safety, efficacy and mechanisms of action of Chinese herbal medicines and acupuncture are at the core of this project. New guidelines about good practice and agreed protocols in related research areas will harmonize future TCM research in the EU, and online tools and research resources will be made available to all EU member states. As an open-start and open-ending consortium, we will invite more organizations to become involved in the work.'

Professor Peter Hylands, Head of the Department of Pharmacy and Director of the Centre for Natural Medicines Research, continues: 'We are delighted to be part of this unique group. In the Centre for Natural Medicines Research at King's we are examining the application of emerging technologies to the solution of difficult problems in the use of traditional medicines. This forum provides an unparalleled opportunity to share our experiences with Chinese and European colleagues and together to develop a twenty-first century road map for the global development of traditional medicines.'

Professor Bruce Hendry, Professor of Renal Medicine, concludes: 'This programme grant is an excellent opportunity for King's College London to play a leading role in the unification of Western and Chinese approaches to medicinal therapeutics.'

CAS Launched Website on A/H1N1 Flu Virus

(CAS, 2009-05-15)

Academy of Sciences (CAS) launched a website (<http://www.avian-flu.info/H1N1>) to allow Chinese scientists to share the latest information about the A/H1N1 influenza virus.

The Institute of Microbiology and Shanghai Information Center for Life Sciences, both institutes under CAS set up the website in an effort to prevent the rapid spreading of the virus.

Researchers could access the research findings made by their counterparts worldwide. The website also publishes the latest news about the flu and its vaccines.

Official: China Might Have A/H1N1 Influenza Vaccine by July

(CAS, 2009-05-27)

China is likely to receive samples of a flu strain by early June that will enable it to manufacture A/H1N1

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influenza vaccine for human use by July, an official said here Tuesday.

"The country has set up a green channel between the World Health Organization (WHO) and the Chinese drug makers. As soon as the WHO releases the vaccine strain, drug companies will be informed and will start manufacturing as soon as they can," Yin Hongzhang, head of the biology production department under the State Food and Drug Administration (SFDA), told Xinhua in an exclusive interview.

"If we can get the strain before early June, our drug companies will have produced the vaccine by July, under current conditions," Yin said. He said the green channel would save drug companies up to one month, compared with normal procedures for developing vaccines.

According to Yin, as vaccine manufacturing requires high-level safety, China must produce one in line with WHO protocols.

Last week, WHO said that drug companies wouldn't be able to make an A/H1N1 vaccine until mid-July at the earliest as the virus was growing slowly in labs, making it difficult for scientists to get the key ingredient for a vaccine.

Yin noted that WHO was not sure yet whether the A/H1N1 flu should be categorized as seasonal or pandemic, which was a problem for drug makers.

Seasonal flu occurs annually in predictable patterns, allowing people to develop resistance, while pandemic flu is rare, meaning that it's hard for people to develop resistance. In the latter case, vaccine doses need to be higher to be effective.

According to Yin, China has 11 drug companies that can produce seasonal flu vaccines but only one can make pandemic flu vaccines.

"Compared with a 1.3-billion population, our current vaccine producing ability is far from enough," said Yin. He added that if the A/H1N1 influenza was confirmed as pandemic, the country would first guarantee vaccine supplies for medical staff.

Yin said a vaccine for A/H1N1 would produce antibodies within two weeks after being injected. It would take another 45 days to two months to take full effect, which would normally last for more than one year.

As of Tuesday, the Chinese mainland had 12 confirmed A/H1N1 flu cases.

1.4 Key Technologies

World's First Quantum Cryptography Network Developed in China

(CAS, 2009-05-07)

Safe quantum communication will be ready for daily use with the world's first optical quantum cryptography network completed in east China's Anhui Province recently. The American journal Science reported about the result, which was published in the latest issue of Optic Express in April.

Led by Pan Jianwei, researchers with the University of Science and Technology of China developed an operational network communication system, which allows real-time voice telephone among three users, or a broadcast from one user to the other two users by using one-time pad encryption.

The chained network topology allows secret keys to be forwarded, in a hop-by-hop fashion, along QKD links. Therefore unconditional authentication and encryption for information transmission by using one-time pad is possible. The middle node acts as trusted relays and increases the key generation rate to a higher degree, said researchers.

Quantum communication, a cross subject of quantum mechanics and classic communication, plays an important part in national security and financial information security, etc, and has high potential for application in other fields.

Scientists home and abroad have been devoted to the research since 1990s. However, quantum communication system remains experimental due to imperfection of lab equipments and lack of true single photon sources.

Recent revolutionary progress has been achieved by introducing the idea of decoy state, and by turning the idea into systematical and rigorous theory and scheme. By using decoy state within the common setup, one can obtain much higher key generation rates and longer distances (typically from less than 30 km, to more than 100 km), in the same level compared with the case of using true single photon sources. This leads to the first successful demonstration by Lo's group from Canada for 15 km, and later for 60km. Recent research by Pan's group has extended the distance to 200km.

Chinese Mathematician to Deliver Report at ICM (CAS, 2009-05-09)



Prof. Peng Shige

Professor Peng Shige at Shandong University, academician of Chinese Academy of Sciences (CAS) will give a keynote speech at the 2010 International Congress of Mathematicians (ICM) in India.

Peng received an invitation from the International Mathematical Union (IMU) to speak at the General Assembly for an hour. It is the first time for a mathematician from the Chinese mainland to receive such honor.

Professor Peng generalized the stochastic maximum principle in stochastic control. Along with Étienne Pardoux, Peng wrote out the general theory of backward stochastic differential equations in a paper published in 1990. His study has various applications in the utility theory and risk measure theory.

Prof Peng had led one of the key projects supported by National Natural Science Foundation of China: "Mathematical finance, Finance Engineering and Business Finance." The project vigorously fostered the growth of mathematical finance in China. Prof Peng also served as the Chief Scientist of one of the National Basic Research Program of China (Project 973): "Quantitative Analysis and Computation in the Control of Financial Risks."

The ICM is the largest congress in the mathematics community. It is held once every four years under the auspices of the IMU. The first conference was convened in 1897 at Zurich, Switzerland. Beijing hosted the 24th General Assembly in 2002. The 26th General Assembly will be held in 2010 in the Indian town of Hyderabad. Usually approximately 18 to 20 mathematicians are to make report to the General Assembly for an hour.

China Allots \$9.2b on Key Technology R&D (CAS, 2009-05-15)

China will support eleven national research programs with at least 62.8 billion yuan (US\$9.2 billion) in one and a half years to achieve breakthroughs in key technology development, the government said Wednesday. Areas covered by the programs included advanced numerically controlled machine tools, trunk-line aircraft, new-generation broadband wireless mobile communications network, and high-end central processing units

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and software.

The programs also focused on the development of large oil and gas field, advanced nuclear power stations that use pressurized water reactor and high temperature gas-cooled reactor, technology for the treatment and control of water pollution, transgenic products, new drug development, and the treatment of major infectious diseases such as HIV/AIDS and viral hepatitis.

A working meeting of the State Council, or the Cabinet, Wednesday endorsed the proposed government investment of 62.8 billion yuan into the programs by the end of 2010.

More investment is expected to be added by enterprises involved in the programs.

The meeting, presided over by Premier Wen Jiabao, was told that the new technologies would help to boost internal market demands as China managed to maintain a steady growth amid global economic downturn.

They will yield profound impacts on economic and social development in China.

The meeting also adopted a plan on stimulating the country's biological technology development in areas such as medicine, agriculture, energy, manufacturing and environmental protection.

Although no details of the plan were immediately released, China will support modern bio-industry enterprises, particularly those with strong research and development capabilities and international competitiveness, according to the meeting.

Companies, universities and research institutes will be encouraged to develop technologies with their own intellectual property rights.

The plan is aimed at giving those companies much-needed support. For example, self-developed bio-industry products would be the first choice in governments' purchase plans. Special investment funds and agencies will be set up to help channel more private investment into biotechnological industries.

The government will enhance the protection of intellectual property rights, and ensure safe use of biological technologies and products, the plan said.

China's Rotorcraft Stands Drill of Search and Rescue in Earthquake Ruins (CAS, 2009-05-18)



A rotorcraft flying robot developed by researchers at the Chinese Academy of Sciences (CAS) took part in a drill of search and rescue in disaster ruins Tuesday in Beijing.

The project is part of "863 Program", China's State High-Tech Research & Development Plan. It was developed by Robotics Laboratory, Shenyang Institute of Automation (SIA), CAS and the country's National Earthquake Response Support Service, aiming to provide intelligent high-tech equipment for earthquake relief.

Following the orders of quick-response and ruin-search, the 40kg robot demonstrated auto takeoff, hovering, flight-path tracking, hedgehop data collecting, and auto landing, realizes quick data collecting and real-time image feedback.

With a maximum payload of 40kg, the robot can cruise as far as 120 kilometers, fly at 3000 meters altitude and withstand strong breeze. Its flight duration can range to 1.5 hours.

Success of the drill enabled the item to enter demo application stage and has provided a solid basis for the use of rotorcraft in China's disaster relief.

1.5 Structure of Matter

China Finishes Upgrade Project of Electron-positron Collider

(CAS, 2009-05-21)

Chinese scientists have successfully finished a five-year upgrade aimed at keeping the country's electron-positron collider (EPC) a leading global high-tech device.

With the upgrading, the collider's capability has been raised by more than 30 times, Academician Chen Hesheng, director of the high-energy physics institute under the Chinese Academy of Sciences (CAS), said Tuesday.

China finished its first physics collider, Beijing Electron-Positron Collider (BEPC), in 1988. It enabled the country's scientists to carry out cutting-edge research in high-energy fields independent of foreign installations.

Scientists used the BEPC to make different particulates, such as electrons, protons or neutrons, collide by giving them extremely high energies.

The CAS high-energy physics institute started the upgrade project for the BEPC in 2004 with an investment of 640 million yuan (94 million U.S. dollars) to meet more research needs.

Chen said the BEPC's new capability is five times better than the collider at Cornell University in the United States.

China Makes Key Progress in Iron-based Superconductor Research

(MOST, 2009-05-20)

With the support of the 973 Program and other programs organized by MOST, CHEN Xianhui Group and WU Ziyu Group of Hefei National Laboratory for Physical Sciences at Microscale, University of Science and Technology of China, teamed up and discovered the large isotope effect in iron-based superconductor. This represents key progress in this field. The research findings were published in the magazine Nature on May 7th, 2009.

Since the discovery of iron-based high-temperature superconductor system, Chinese scientists, at the forefront of international efforts, has made a series of breakthroughs in the field. The group led by Prof. CHEN Xianhui alone has published 3 articles in Nature, and 9 in Physical Review Letters.

1.6 Transport and Space

Domestically produced jumbo jets to take off in 2014

(People's Daily, 2009-05-08)

As one of the highlights of the 4 trillion yuan investment package, the domestically produced jumbo jet project has received close attention since its official launch last year. How has the jumbo jet project progressed? When will the jumbo jets independently produced by China take flight? Reporters paid a visit to the Chinese jumbo jet project's headquarters in Shanghai to find answers to these questions of public concern.

Jin Zhuanglong, General Manager of the Commercial Aircraft Corporation of China (COMAC), said, "We

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have recruited experts nationwide, mobilized over 40 organizations and have more than 400 scientific and technological personnel living together and debating the topic. By integrating our company's current strength, we have initially completed the general technology plan of jumbo passenger jets."

Reporters learned that a preliminary design plan for the Chinese-produced jumbo jet C919 has already been completed. The completion of the initial design plan however, is merely the first step. The domestically produced jumbo jet project still faces the challenge of making breakthroughs in numerous key technologies, including the most critical technology of engines and advanced composite materials.

C919 will be equipped with new-generation engines that are more advanced than those of the Boeing 737. However, as researching and developing engines for jumbo jets are highly specialized and require a long period of time, C919, scheduled to take the maiden flight in 2014, will not be fitted with Chinese-produced engines and will need to purchase engines from global manufacturers.

According to the plan, domestically produced jumbo jet C919 will start its first test flight in 2014 and will be delivered to airlines for operation in 2016.

The jumbo jet project: The total investment will reach 200 billion yuan.

COMAC Chairman Zhang Qingwei told reporters that the jumbo jet program will invest another 60 billion yuan in the next three to five years and by the time the jumbo jet is put on the market, the total funds invested in all aspects of the program will reach 200 billion yuan.

Zhang also said, "We should be able to invest 30 billion yuan in research within the first three years. Another 30 billion yuan will be used toward capacity building. Three big centers will be built in the Shanghai region, and if we include our headquarters as a functional organ, we would be investing another 30 billion yuan within three to five years.

According to relevant reports, the State-owned Assets Supervision and Administration Commission (SASAC), COMAC's largest stockholder, has invested 6 billion yuan, holding 31 percent of the stock, and the Shanghai Guosheng Group, established by the Shanghai Municipal Government, has invested 5 billion yuan, or 26 percent of the stock. Other shareholders include China National Aviation Holding Company, Baosteel, Chinalco, the Sinochem Corporation and other large-scale state-owned enterprises. Zhang said that among the 30 billion yuan invested in research within the first three years, the state's investment will account for less than one-third of that budget while the rest of the sum will depend on capital investment from other sectors of society.

Zhang said, "To successfully develop this jumbo jet and put it on the market, it should gradually foster capabilities that include the availability of supporting products, the forming of the basis for the development of the jumbo jet and the establishment of infrastructure. Investment in the above fields, plus investment in related industries, will reach approximately 200 billion yuan. "

The term "jumbo jet" generally refers to transportation aircraft with a gross take-off weight exceeding 100 tons. It includes military and civil large-scale transport planes, and the trunk-line passenger aircraft with over 150 seats. The Organization for Economic Cooperation and Development (OECD) places jumbo jet manufacturing at the top of its list of knowledge-based economy industries. Currently, only the US, Russia and the EU have the ability to build jumbo jets.

The Chinese jumbo jet program was formally established as a project in 2007. COMAC was established later in May 2008 in Shanghai, marking the substantive start of China's research efforts toward its own jumbo jets. C919 was formally designated as the first model of the domestically produced jumbo jet program.

China-assembled A320 plane makes test flight**(Xinhua Net, 2009-05-18)**

The first Airbus A320 plane assembled in China's northern city of Tianjin took off at 10:45 a.m. Monday for a test flight, from the Tianjin Binhai International Airport.

The plane is due to be delivered to the domestic Sichuan Airlines by the end of June, said Jean Luc Charles, General Manager of the Airbus (Tianjin) Final Assembly Company Ltd.

The test flight will take four hours.

The Tianjin-based assembly company is expected to deliver a total of 11 A320 aircraft this year. Starting from 2011, the company will be able to produce 48 A320 planes every year, said Jean Luc Charles.

Scientists: China the best place to observe longest solar eclipse in 2,000 years**(Xinhua Net, 2009-05-19)**

China is the best place in the world to observe the longest total solar eclipse in 2,000 years that will fall on July 22 and last for more than two hours, Chinese scientists said here Tuesday.

The eclipse would begin at about 8 a.m. on July, 22 (Beijing Time), and the length of the total eclipse of the sun will run for up to six minutes, said Li Ding, director of the Bureau of Basic Sciences of the Chinese Academy of Sciences, at a press conference in Beijing.

He called the eclipse "the most important and spectacular of its kind in this century."

During the eclipse, Chinese scientists would study the sun's chromospheres and corona, and the gravity variations of the solar system's planets, Li said.

In a total solar eclipse, the sun, the moon and the Earth are directly aligned as the sun swings into the cone of shadow cast by the moon.

Observers on the Earth will see the intensely bright disk of the sun replaced by the dark silhouette of the moon, surrounded by a much fainter corona. Eye protection is necessary when viewing a solar eclipse.

The path of the moon's umbral shadow would begin in India, and cross Nepal, Bangladesh, Bhutan, and Myanmar, before it covers China's southern Tibet, central Sichuan Province, southern Hubei, Hunan, Anhui and Jiangsu provinces, northern Zhejiang Province and Shanghai.

After leaving China, the path would curve southeast through the Pacific Ocean.

A partial eclipse could be seen in most of eastern Asia, Indonesia and the Pacific.

China's Fengyun-2E Weather Satellite Begins Weather Monitoring**(CAS, 2009-05-21)**

China's Fengyun-2E weather satellite started its round-the-clock operations Tuesday, according to the China National Bureau of Science, Technology and Industry for National Defense.

At the transfer ceremony of the satellite to the China Meteorological Administration, Sun Laiyan, vice director of the bureau, said that the satellite has passed all tests and demonstrated stable performance since its launch on Dec. 23.

The satellite will ensure continuous data transfer of geostationary (GEO) meteorological satellite. Currently, three satellites of the Fengyun-2 series are operating in orbit.

China announced its Fengyun-2 series satellites project in 2001, which included the launch of three GEO meteorological satellites, namely Fengyun-2C, Fengyun-2D and Fengyun-2E.

Fengyun-2E is mainly designed for gathering meteorological, marine and ground weather data. It weighs 1,390 kilograms and has a life span of three years.

Every 25 minutes it snaps a complete infrared cloud image and water vapor distribution image. The cloud image can cover one-third of the earth surface.

With the Fengyun-2 series and Fengyuan-3 series, China is one of three countries and regions that boasts both GEO and polar-orbiting meteorological satellites.

China Considering Manned Lunar Landing in 2025-2030 (CAS, 2009-05-26)

A space scientist has said that Chinese scientists are considering the feasibility of a manned lunar landing mission at an appropriate time between 2025 and 2030.

China will be able to fetch samples collected by unmanned lunar probe by 2017, Ye Peijian, chief designer of the lunar probe with China's Chang'e Project, said at a science lecture held Friday in Shanghai.

"Through the development of lunar probes, we have made constant progress of the ability to explore the outer space," Ye was quoted as saying by the China News Service.

China launched its lunar mission in 2007 by successfully sending a unmanned probe Chang'e-1 to the lunar orbit. The spacecraft managed to transmit some pictures of the moon's surface back in January last year.

Chang'e-1 ended its 16-month mission on March 1 this year by impacting the moon, bringing the first phase of the nation's three-stage lunar mission to an end.

The second phase will lead to a landing and launch of a rover vehicle on the moon's surface.

According to Ye, China will launch the second lunar probe Chang'e-2 in 2010 which will conduct research at a 100-kilometer-high moon orbit as the preparation for a soft landing by Chang'e-3.

"By 2013, China will send the landing craft and rover vehicle to the moon," he said.

The chief designer said that Chang'e-3 will use variable thrusters to make a vertical landing on the surface near the moon's equator area.

The lunar rover will leave Chang'e-3 and work on the moon's surface for three months, Ye said, adding scientists have decided to adopt isotope technique generator to provide energy for the rover when it is in lunar nights when temperatures drop to 200 Celsius degrees below zero.

For the third phase of the mission, China will recover a spacecraft carrying samples from the moon by 2017, and according to the current design of a sample collector, two kilograms of lunar samples can be brought back, Ye said.

China's Robot Helicopter Ready for Market (CAS, 2009-05-27)

Chinese scientists said Friday their independently developed robot helicopter, which can fly automatically without remote control, was ready for production.

The Shenyang Automation Institute under the Chinese Academy of Sciences has taken four years to develop two types of the robot.

The larger model at 3 meters long is almost the size of a small car, weighs 120 kg and has a payload of up to 40 kg. It can fly for 4 hours at a maximum cruising speed of 100 km per hour.

The smaller model weighs 40 kg and has a payload of 15 kg and maximum cruising speed of 70 km per hour. Installed with a camera, the robot can hang in the air to catch aerial images, and search for or trace targets automatically.

Researchers in the institute said the robot could fly missions based on assigned coordinates and control programs, when wind gusts were below a velocity of force six (11 km per hour).

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"They are fueled by petroleum and priced from 700,000 (102,000 U.S. dollars) to 2 million yuan," said Wu Zhenwei, a researcher at the institute based in northeast China's Liaoning Province.

"We do not have any marketing plan for the robot. But if there are orders, we can make small-scale production, like 20 to 30 units," he said.

Wu said the institute had no corporate partners for large scale production.

The robot project was funded by the central government and listed as a national key research project in 2006 because of its prospects for use in collecting information or carrying cargoes in harsh conditions such as earthquakes or poison gas leaks. It can also be used for spraying pesticides.

10th Anniversary & Commendatory Meeting of Clean Vehicle Campaign Held in Chongqing

(MOST, 2009-05-27)

On May 13th of 2009, a meeting was held in Chongqing at the 10th Anniversary of Clean Vehicle Campaign, in recognition of individuals who have made outstanding contribution to the promotion and application of gas vehicles. More than 200 representatives from domestic producers of gas vehicles, spare parts and refilling equipment attended the event.

In April of 1999, MOST and 13 other departments including former State Environmental Protection Administration initiated the "Clean Vehicle Campaign", and established the National Clean Vehicle Action Coordination and Leading Group Office, aiming to promote key technological research, demonstration and application of gas vehicle-dominated alternative fuel vehicles. After a decade of development, Chinese gas vehicle have steadily improved in terms of technological indicators and performance, and have been applied in almost 100 cities in China. This has formed a large-scale market, and has driven the development of related industries.

China to launch first Mars probe in second half of 2009

(Xinhua Net, 2009-05-28)

China's first Mars probe, Yinghuo-1, is expected to be launched in the second half of this year, an official of the Shanghai Academy of Space flight Technology (SAST) said Thursday.

The probe had passed test of the research phase, Zhang Weiqiang, deputy secretary of SAST Committee of the Communist Party of China, told the third Shanghai International Aerospace Technology and Equipment Exhibition.

The event runs from Thursday to Saturday and includes a full-scale model of Yinghuo-1.

Yinghuo-1 will be launched by a Russian carrier rocket, accompanied by the Russian aerocraft Phobos-Grunt.

The Russian aerocraft is making a sample return mission to Phobos, one of the moons of Mars, Zhang said.

Yinghuo-1 would go into Mars orbit in 2010 after a 10-month, 380-million-kilometer journey, Zhang said.

But unlike the Russian craft, Yinghuo-1 won't land but would only orbit and observe, Zhang said.

The Chinese probe is 75 centimeters long, 75 cm wide and 60 cm high. It weighs 115 kilograms and was designed for a two-year life, according to Zhang. "Yinghuo" means light from firefly in Chinese.

Yinghuo-1 is expected to discover why water disappeared from Mars and explain other environmental changes of the planet, Zhang said.

The project is China's third major space exploration plan after the manned space project and the moon exploration program. It was also the first time that China would explore another planet, Zhang said.

2 MOST S&T Newsletters

2.1 Newsletters No. 546 (2009-05-10)

Focal Points

- * China's NWP System into Operation
- * World Largest Bird-Like Dinosaur
- * World's First Photonic Telephone Network
- * Natural Antiviral Regulator Found
- * Scientists Found Oil Mobilization Network in *Jatropha Curcas*
- * New Probe Telling H1N1 Results in 2 Hours

China's NWP System into Operation

China Meteorological Administration said on April 29, 2009 that it has put into a global numerical weather prediction system developed by Chinese scientists into quasi operation. The development indicates that China has established a well functioned operational NWP system with global numerical weather prediction as the core, in an attempt to accommodate different weather forecast needs.

The new generation global numerical weather prediction system developed by Chinese scientists has won the approval of experts last March for its quasi operation. The enhanced performance of the new system has allowed a valid forecast period up to 7 days for the northern hemisphere. Of the data used in the new system, satellite data has reached 30% or more.

Based on the framework of the new global system, China Meteorological Administration will establish a platform for NWP related studies, in an effort to eventually put the system into an official operation. By 2012, China will realize six major targets in the area: establish a global numerical weather prediction system with a resolution up to 25 km, with a valid forecast period for 7 days or more; develop a regional NWP system up to 5 km, with a raised rainfall forecast score by 5% for Chinese regions; realize a higher resolution typhoon NWP system, with a reduced track forecast error by 5%-10% for the western Pacific region; create a singular vector perturbation based ensemble prediction system with a global resolution at 50 km and regional resolution at 15 km; and establish an enhanced platform for diagnosis/validation and product interpretation.

World Largest Bird-Like Dinosaur

Paleontologists at the Paleontology Research and Development Center, part of No. 3 Geological Survey Institute in Gansu, in collaboration with American scientists, have confirmed that the *Peishansaurus* unearthed three years ago in Gansu is the largest bird-like dinosaur so far found in the world. *Peishansaurus* is both longer and heavier than the *Gallimimus*, a bird like dinosaur found in Mongolia that was once deemed the largest bird like dinosaur unearthed in the world. *Peishansaurus*, including 4 limb bones, 8 tail bones and some neck bones, was unearthed in the northern mountain area of Yujingzi Village in Gansu, China in June 2006.

Lab reconstruction and study shows that the bird like dinosaur has a length about 8m, and a weight of 626 kg. Apparently, it is longer and heavier than *Gallimimus* that is 4m long, weighing 440kg. Researchers also found that *Peishansaurus* has a front claw as long as 15cm, with front limbs that are stronger than other bird

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like dinosaurs, falling into the category of plant-eating dinosaurs. Both Chinese and American paleontologists named it Giant Peishansaurus for its large size and strong limbs.

Chinese paleontologists have reconstructed the skeletons of Giant Peishansaurus based on the fossilized specimen, allowing more people to know and understand the largest bird like dinosaur so far found in the world.

World's First Photonic Telephone Network

A research team, led by PAN Jianwei at the University of Science and Technology of China, has recently made a substantive progress by establishing the world's first photonic telephone network. The development indicates that an absolutely safe quantum communication system is walking into people's daily life from the lab.

In 2003, scientists in a number of countries, including the Republic of Korea, China, and Canada, proposed a quantum coding theory that can be used to address the deteriorated safety of quantum communication over extended ranges under the existing technical know-how. In the summer of 2006, a study team led by PAN Jianwei, Los Alamos National Laboratory in the United States, and a joint study team at Munich University and Vienna University have independently realized the said theory, allowing a safe quantum communication for a range exceeding 100 km. PAN and coworkers have recently raised the safe quantum communication range to 200 km.

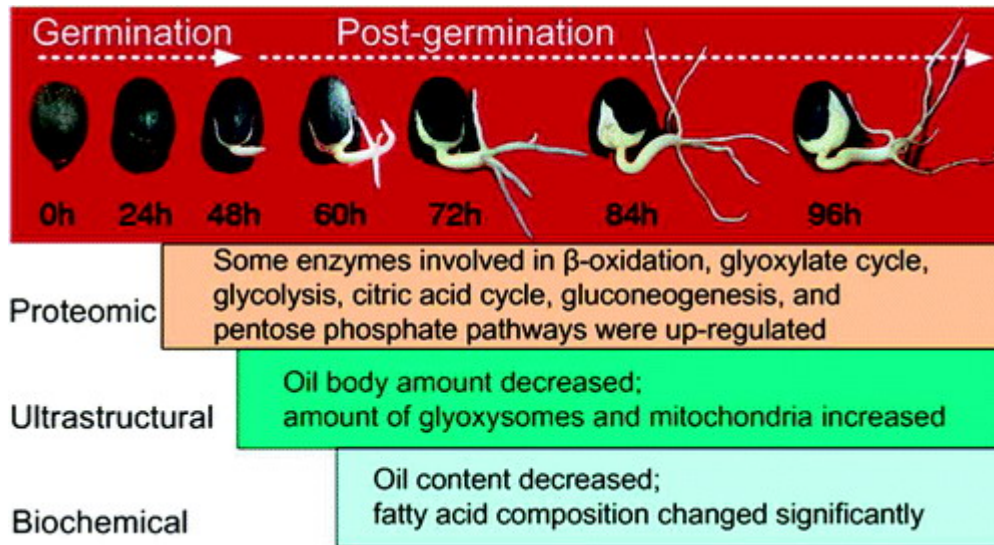
After that, PAN and coworkers have developed the prototype telephone set for quantum communication, and established a scalable photonic telephone network in a commercial optic-fiber network with a node range up to 20 km, allowing the desired coding modality. The real-time telephone network is designed with a completely safe calling mode for three-party conversation, calling upon dialing, and real-time encrypted voice communications. The findings, published in the April issue of Optics Express, were described by the journal Nature as quantum telephone is calling.

Natural Antiviral Regulator Found

A study, led by SHU Hongbing at Wuhan University College of Life Sciences, has found that ISG56 is a negative-feedback regulator of virus-triggered signaling and cellular antiviral response. A paper introducing the findings was published in the April 28, 2009 issue of the Proceedings of the National Academy of Sciences. Another research team, headed by YANG Fuquan with the Institute of Biophysics under the Chinese Academy of Sciences, validated the protein spectrum for the study. Researchers found that ISG56 disrupted the interactions between MITA and VISA or TBK1, two components in the virus-triggered IFN signaling pathways, suggesting that ISG56 is a mediator of negative-feedback regulation of virus-triggered induction of type I IFNs and cellular antiviral responses. The finding adds more details to the functions of ISG56, allowing people to understand the actual regulation process of natural antiviral responses.

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Scientists Found Oil Mobilization Network in *Jatropha Curcas*



Not long ago, SHEN Shihua and coworkers at Chinese Academy of Sciences Institute of Botany made a proteomic analysis of oil mobilization in seed germination and postgermination development of *Jatropha curcas*. Researchers also performed ultrastructural observation and proteomic analysis of endosperm in germinating *Jatropha curcas* seeds. The finding was published in a recent issue of *Journal of Proteome Research*.

Results showed that the oil mobilization was initiated during germination, and then the oil was consumed for early seedling development. The significant change in abundance of 50 protein spots (17 spots are directly involved in oil mobilization) during germination indicated that several pathways including β -oxidation, glyoxylate cycle, glycolysis, citric acid cycle, gluconeogenesis, and pentose phosphate pathway were involved in the oil mobilization. Researchers also concluded that at least two pathways were desirable for oil mobilization.

China Rolled Out H1N1 Test Kit

Chinese Ministry of Agriculture Office of the Press announced May 3, 2009 that Chinese scientists have developed an RT-PCR kit for testing H1N1 viruses. The test kit is able to tell if a person is infected with H1N1 viruses in 5 hours.

Since the outbreak of human infections of H1N1 viruses, Chinese Ministry of Agriculture has organized a number of research institutes, including the National Bird Flu Lab, and China Animal Health and Epidemics Center to work on a fast test kit for the viruses. The National Bird Flu Lab obtained the genetic sequences of H1N1 viruses from an international organization. It took less than one week for Chinese scientists to work out the design of the test kit, and kick off clinical trials. They have made repeated experiments to ensure the valid sensitivity, specificity, stability, performance of the test kit.

The new kit is of a fine sensitivity and specificity, not only desirable for testing swine infections of the viruses but also for detecting human infections.

New Probe Telling H1N1 Results in 2 Hours

The Chinese Academy of Military Medical Sciences announced on May 2, 2009 that its researchers have developed a proprietary nucleic acid probe able to tell H1N1 test results in 2 hours. To accommodate

possible mutations of H1N1 viruses, researchers have worked out three probes specific to the possible genetic mutations.

The proprietary probe has been granted with a national invention patent, making it the only PRC test kit enjoying a national invention patent in the country. 8 intense pathogen test kits built on the said technology have registered for clinical applications. The new test kits will soon be put into use. Meanwhile, researchers are working on the biochips that are able to tell H1N1 viruses and associated drug resistance. These products will be soon made available for clinical applications.

Novel H5N1 Vaccine for Human

The Chinese National Bird Flu Lab announced recently that it has rolled out a cold-adapted live attenuated H5N1 vaccine for human applications, which will keep human from being infected by sub H5N1. The new vaccine, developed by the Lab in collaboration with the scientists at the University of Tokyo, is more reliable with a simplified application (nasal spray), compared with other inactivated vaccines. The vaccine is produced directly from egg based culture medium, free from the complicated processes of concentration, inactivation, and purification, with a greatly shortened production cycle. Meanwhile, the eggs needed for producing the vaccine are only 1% or even 1‰ of the quantity needed for producing an inactivated vaccine, desirable for mass production and storage. A paper introducing the findings was published in a recent issue of journal PLoS Pathogens.

Test Kit for Screening H1N1 Patients



A Guangzhou based study team has developed a test kit to screen possible H1N1 patients on the spot. Made of immune test papers, the test kit is able to tell the results within 3 to 10 minutes without help of any equipment. The test kit has been tested for its validity using the H1N1 strains separated from an H1N1 patient.

The test kit was tested again on May 8, 2009 for its effectiveness at a national key lab for new infectious diseases chaired by YUAN Guoyong, an academician of the Chinese Academy of Sciences at the University of Hong Kong. The lab test has produced a minimum threshold of 1:8000, as effective as its imported counterparts, with a sensitivity matching the ELSA test kit, desirable for massive screening efforts.

The test kit has been clinically tested using the H1N1 strains separated from a H1N1 patient found in Hong Kong, and was proved effective for fast screening.

Chinese Malaria Drug Won International Award

A Chinese medical team, headed by Prof. ZHOU Yiqing of Chinese Academy of Military Medical Sciences, has recently won a non-European prize at the European Inventor of the Year awards (2009) for Artemether, a traditional Chinese medicinal compound for treating malaria. The prize is the first one that Chinese medical community has won in the world.

Artemether, a special malaria drug made of traditional Chinese medicinal herbs, was rated by both the independent judge group and expert judge group set up by the European Patent Office as the best medicine

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for treating malaria, which is also the priority drug used by Chinese doctors in treating malaria in Africa and southeast Asian countries. The malaria drug has been granted with the patents issued by 43 countries or regions, including the United States, Europe, and Japan since 1991, and has been sold in the mainstream international markets. It has since 2001 saved the life of 550,000 patients. Most of them are children under age of 5 in Africa.

Internet Protocols Acceleration

Researchers at the University of Science and Technology of China School of Computers, working with their overseas collaborators, have achieved major breakthroughs in multi-core based Internet protocols acceleration. They accelerated the operation of TCP/IP and HTTP protocols using multi-core technology, which greatly enhanced the input and output of Internet and world wide web. The new technology is able to perform in-depth analysis of the data packages running in the network, securing safe operations of the network in the area of industry, banking, education, medical service, and e-government. A paper introducing the findings was accepted in April 2009 by the annual supercomputer conference sponsored by the American Association for Computing Machinery.

Saline Resistant Wheat

Chinese scientists at Xinjiang Institute of Ecology and Geography have bred out a new wheat species, Xindong 34, featured with salt/alkali resistance and yield increase through many years' experiment. The new wheat species has produced an averaged yield of 403.32 kg per mu (1 mu = 0.0667 hectare), sitting in first place among the new species tested for their increased yield, or 6.89% more compared with Xindong 26, another fine species renowned for its saline resistance and adaptability to droughts. In addition to saline resistance, the new species is doing fine for disease and lodging resistance with quality grains.

2.2 Newsletters No. 547 (2009-05-20)

Focal Points

- * Major S&T Earmark Projects Accelerated
- * Four Suggestions for China-US S&T Cooperation
- * Seminar on Promoting Innovation for Development
- * FY-3 Satellite Data Open to the Public
- * Chip Telling H1N1 Drug Resistance
- * Chinese Scientists Won Marconi Prize Paper Award

Major S&T Earmark Projects Accelerated

An routine cabinet meeting, chaired by Chinese Premier WEN Jiabao, was held on May 13, 2009 to accelerate the implementation of major S&T earmark projects, enhancing the support rendered by science and technology to stimulating the economic growth,

The meeting points out that science and technology should be a major player in supporting the strategy of expanding internal demand, promoting the growth, restructuring, raising to a higher level, and improving people's livelihood. Science and technology is an important part of the package deal to respond to

international financial crisis, and to facilitate a steady and relatively fast development of economy. At present stage, priority tasks have been defined for advancing and accelerating the implementation of major S&T earmark projects. State Treasury will make a package worth RMB 32.8 billion available to support the projects having a fine starting point and able to take full advantage of proprietary innovative findings derived from many-year R&D efforts, or having a fine market perspective and able to realize commercial applications within two or three years, playing a major role in promoting the current industrial development and expanding internal demand; or working to develop major technologies or products that will have a major impact on the future economic and social development. In 2010, RMB 30 billion will be made available for the purpose. Meanwhile, industry is encouraged to make its own R&D investment. Major S&T earmark projects will be mainly implemented in 11 areas, including high end programmed machine tools and basic manufacturing facilities, large airplane, new generation mobile telecommunication network, core electronic components, high end generic chips and basic software, super large integrated circuit manufacturing facilities and associated techniques, large oil/gas fields and coal mine development, advanced large pressurized water and high temperature gas cooling reactors, water body contamination control, new GM species, new drugs, and AIDS/viral hepatitis prevention and control. Additionally, a range of projects will be launched to demonstrate the applications of proprietary innovative products, accelerating the implementation of technology innovation projects, and nurturing new economic growth point.

Four Suggestions for China-US S&T Cooperation

LIU Yandong, Chinese State Councilor, has recently met with a group of senior US officials in Washington, including Arne Duncan, Education Secretary, Steven Chu, Energy Secretary, Tom Vilsack, Agriculture Secretary, and John P. Holdren, the Science and Technology Advisor to President Barack Obama and Director of the White House Office of Science and Technology Policy. Both sides exchanged views on further strengthening the bilateral cooperation in the area of education and science/technology.

LIU told her American counterparts that both China and the United States have paid great attention to the development of education and science/technology, making enhancing the input in education and science/technology a major measure to respond to the current international financial crisis. Having reviewed the fruitful collaborations between the two countries in the area of science and technology in the past 30 years, LIU proposed the following suggestions for further strengthening S&T cooperation between the two countries: 1) consolidate and perfect S&T cooperation mechanisms between the two countries, taking full advantage of the role played by China-US joint committee for S&T cooperation; 2) strengthen the substantive cooperation in the area of energy, especially clean energy and renewable energy, adaptation to climate change impacts and environmental protection, agriculture science/technology, biopharmaceuticals, engineering technology, and basic research; 3) promote joint R&D activities of universities, research institutes, and industry in the two countries, and strengthen the collaborations in the area of mutual interest under the prerequisite of protecting intellectual property rights; and 4) enhance exchanges and cooperation between research institutes and scientists, especially young and middle aged scientists in the two countries.

Seminar on Promoting Innovation for Development



An international seminar on promoting innovation for development, co-sponsored by the Ministry of Science and Technology and the World Bank, was held on May 14, 2009 in Beijing. Participants, 80 in number, came from the People's Bank of China, China Banking Regulatory Commission, China Insurance Regulatory Committee, Securities and Exchange Commission, China Development Bank, the Export-Import Bank of China, Agricultural Development Bank of China, Bank of Communication, China Everbright Bank, provincial and municipal S&T departments, management committee of national high tech parks, university S&T parks, Ministry of Science and Technology, and the World Bank.

Participants heard the report on industrial innovations in China, which elaborated the accomplishments achieved in the area and challenges that Chinese industry is facing, and analyzed a range of related issues, including establishing an incentive mechanism to encourage innovations, enhancing the innovation capacity of private industry, and strengthening the venture capital investment system. Specialists, from Chinese government agencies, the World Bank, India, the UK, and the Netherlands, made keynote speeches on national innovation system, innovation capacity building of Chinese enterprises, innovation strategy of developing countries, innovation oriented fund raising activities in China, design of tech board listing, and development strategy for Chinese S&T enterprise incubators. The talk attracted great attention and profound discussion at the seminar. Participants said the meeting had introduced the experience both at home and abroad on how to promote industrial innovation, incubate S&T enterprises, and address the fund raising problems of small and medium-sized enterprises, which can be an important guidance to carrying out the same activities in China.

FY-3 Satellite Data Open to the Public

FY-3 weather satellite A, China's new generation polar orbiting meteorological satellite, opened on May 15, 2009 its data storage and service system to the public. Both users and general public can download the data and products provided by FY-3 weather satellite via the data dissemination system, or a sharing website, or through the FTP server located on the premises of the National Satellite Meteorological Center. People may also get cloud image messages from the website when booked in advance. In addition to providing traditional search and download services, the new system is designed with an integrated space database, allowing space based distribution and purchase of satellite remote sensing data with the support of GIS platform. The system also furnish the data and products provided by 13 other weather satellites operated by

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European countries, the United States, and Japan, and the satellite meteorological data stored since April 1978.

National Satellite Meteorological Center also established a special data service agency equipped with technical and data service personnel, to provide manual data service and help for major disasters and research projects.

FY-3 weather satellite A has so far provided 2.23TB of real time satellite meteorological data to China and its adjacent areas since December 31, 2008.

H1N1 Viruses Separated and Sequenced

China Diseases Prevention and Control Center received on May 10, 2009 a throat swab specimen from Sichuan Diseases Prevention and Control Center. The specimen was confirmed H1N1 positive after RT-PCR and Real-time RT-PCR tests. The development made first confirmed H1N1 case in China.

Chinese National Flu Center separated the viruses through cell and egg inoculation. The separated viruses have been passed through for two generations. The H1N1 strains were separated on May 17, 2009 from first Chinese H1N1 patient, and named as A/sichuan/1/2009 (H1N1) swl. Chinese scientists completed the genome sequence of H1N1 strains in the early morning of May 18, 2009. Sequence comparison and analysis shows that the viruses came from the same sources shared by the H1N1 viruses found in the United States. Tests also show that the strains are sensitive to neuraminidase inhibitors, such as Tamiflu.

Successful separation of H1N1 strains from Chinese patient provides the needed materials for further test and study, including developing the test kits and vaccine for the purpose, and studying the molecular epidemiologic part and spreading mechanism of the viruses. The genetic information of the viruses separated has been submitted to Genebank and GISAID for further analysis and monitoring in the global context.

Safe Mobile Laboratory

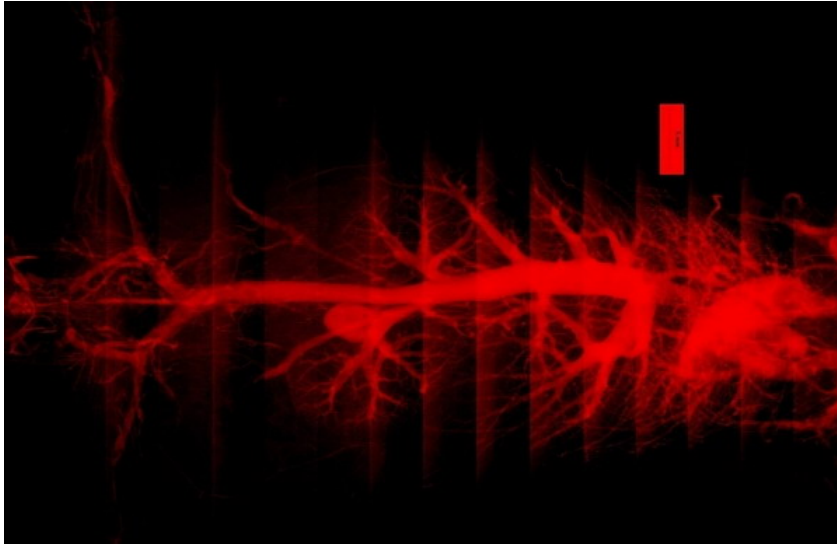
With the support of National 863 Program, the Chinese Academy of Military Medical Sciences has, together with collaborators, developed a mobile lab up to the grade III biological safety standard. The mobile lab has passed the approval check organized by the Ministry of Science and Technology and Ministry of Health. Made up of three modules for experiment, purification/technical support, and preparation, the new lab is designed to meet the grade III biological safety standard defined by Chinese authorities, with a comprehensive performance reaching an advanced level of its overseas counterparts, and better technical layout, major protection function, ventilation, and sewage treatment, compared with the latter. The new lab, designed to work independently to make a quick response to emergency events in a mobile manner, can promptly reach the designated site where public health events or bioterrorist attack take place, and work on the collection, storage, separation, cultivating, and testing of suspected pathogens. The Academy has developed a mass production capacity, allowing 6 mobile labs to be rolled out in three months.

Research Institutes Open to the Public

A ceremony was held on May 17, 2009 in Beijing to open domestic research institutes and universities to the public, a major initiative launched under the National Science Week. The opening ceremony of the National Animal Museum was held on the same occasion. Senior officials from the Ministry of Science and Technology, State Development and Reform Commission, Ministry of Environmental Protection, State Forestry Bureau, Chinese Academy of Sciences, China Association for Science and Technology, and National Natural Science Foundation were presents at the event. Under the initiative, research institutes and

universities shall open to the public their research and experiment centers, including laboratories, engineering centers, instrument centers, natural resource banks, civic science facilities, observation sites, science museums, observatories, and botanic gardens.

Imaging the Impossible



Rat microvessels imaged

A team, led by XU Xuemin at Shanghai Jiaotong University School of Med-X, is working together with Shanghai Guangyuan Biomedical Imaging Station to establish a synchrotron medical imaging center. Together, researchers will develop innovative synchrotron radiation approaches, challenging the limit of live microvessels imaging. So far researchers have achieved noticeable progresses in imaging the microvessels in rat brains, allowing people to view live rat microvessels in several dozen microns.

Chip Telling H1N1 Drug Resistance

Institute of Radiation and Medical Radiation, part of Chinese Academy of Military Medical Sciences, has produced on May 15, 2009 a genetic chip able to tell the drug resistance of H1N1 viruses. According to a briefing, applied with proprietary nanomark signal amplifying technology, the proprietary chip is able to distinguish regular seasonal flu viruses from newly emerged flu viruses, in addition to its reliable detection of H1N1 viruses. The chip is also able to pick up the mutation site predicting the resistance to drugs, such as Tamiflu, and read out test results in 3-4 hours.

10 Million Kilowatts Wind Power

Gansu Province completed the planning at the end of 2007 to build a wind power center able to generate 10 million kilowatts of electricity in Jiuquan. The central government approved the planning in early 2008, for establishing a wind power center with a 5 million kilowatt capacity in 2010, and further to 12 million kilowatts in 2015. The project, made up of eighteen 200,000-kilowatt wind power generators and two 100,000-kilowatt generators, will be built by some 20 investors headed by Datang Gansu Grid. Up to date, a range of preparations, including the construction site for 3.8 million kilowatt wind power generation, environmental impact assessment, and wind turbine bidding, has been completed. The project will kick off its full-fledged construction upon the approval of the State Development and Reform Commission.

Pedigree Ox Cloned



Inner Mongolia University recently announced that a study team led by Dr. LI Guangpeng has cloned out 5 world-class pedigree calves. The animals were cloned from a fine pedigree ox bred out by XU Rigan, Vice President of the Chinese Academy of Engineering using the tube technology. Researchers obtained a tissue of 5-mm from the original ox, and made it to grow out a fetus through cloning, before transplanting the fetus in cows. 5 cloned calves were born with a respective weight of 21.2 kg, 59.5 kg, 32 kg, 45 kg, and 55 kg, enjoying a 100% survival rate. The successful cloning of pedigree species provides fine genetic resources for fast reproduction of quality beef, and laid a theoretical and technical foundation for fast beef breeding and GM animal breeding in the future.

Chinese Scientists Won Marconi Prize Paper Award

CHEN Wei and CAO Zhigang, lecturers at Tsinghua University Dept. of Electronics, have recently been granted with the IEEE Marconi Prize Paper Award, for their paper published in IEEE journal of Wireless Communications. In Unified Cross-Layer Framework for Resource Allocation in Cooperative Networks, a paper co-authored by the Award winner, a unified theoretical framework was proposed for a fair and effective cooperative network that can coordinate different algorithms and protocols. The paper that was granted with the IEEE Marconi Prize Paper Award for 2009 has gone through several rounds of review organized by both Communication Society and Signal Processing Society, part of IEEE, for its quality, originality, practicality, and timeliness.

2.3 Newsletters No. 548 (2009-05-30)

Focal Points

- *More Loans for Small and Medium Tech Businesses
- * Scientific Stimulus for Grain Yield Increase
- * Environmental Change be Compared
- * Improved Understanding of Color VisionEvolution

- * World's First Quantum E-Government Network
- * Software for Writing Correct Chinese Characters

More Loans for Small and Medium Tech Businesses

Not long ago, China Banking Regulatory Commission and Ministry of Science and Technology jointly issued a guidance document to enhance loan support for small and medium tech businesses, through the combined strength of banking and S&T industry. Efforts will be made to support the small and medium tech businesses having proprietary innovations, and desirable for expanding internal demand, readjusting economic structures, creating more jobs, and securing a steady and relatively fast economic development.

The document stipulates that S&T authorities at all levels and national high tech parks shall consolidate relevant resources to establish capital funds for small and medium tech businesses, and provide policy and environment support for making loans available for small and medium tech businesses by setting up guarantee firms, recommending S&T loans, and providing needed consultations. China Banking Regulatory Commission shall encourage and guide banking institutions to establish S&T advisory panel, providing professional views and comments for S&T loans. Meanwhile, a range of supporting mechanisms, including risk assessment, accreditation, and measurement shall be established. Efforts will also be made to loosen the approval of S&T loans and impose a more lenient attitude towards the bad loans owed by small and medium tech businesses. S&T loans can also be guaranteed by taking patents or intellectual property as a deposit.

Scientific Stimulus for Grain Yield Increase

Not long ago, the Chinese Academy of Sciences kicked off an initiative in Changchun to raise grain yield in northeast China through scientific and technological means. The initiative attempts to gather S&T strength of research institutes and centers affiliated to CAS in the region to facilitate agricultural development and promote food security in the locality. Under the initiative, proven agricultural techniques and products will be diffused to different areas in line with local needs. Pilot projects launched at the stage include high yield Jilin corn, mechanized soybean growing, and growing rice in cold areas.

Environmental Change be Compared

A seminar, sponsored by the Chinese Academy of Sciences, opened on May 25, 2009 to officially launch a comparative study of remote sensing applications in monitoring environmental change. The cooperation project, jointly initiated by Australia, Brazil, Canada, and China, was named ABCC to study global change through space based earth observation technologies.

The 10-year cooperation project will be implemented in a three-phase manner. Phase I will last for four years. Researchers who are not from the founding countries may become part of the project in the capacity of non-official member state. Phases II and III will see an expanded scope for the comparative study, allowing more countries to be part of it.

The project works on four major elements that are sensitive to global environmental change: ice, snow, and lakes; arid and semi-arid areas; cold and high-altitude areas, and human activities in the urban areas. Scientists will establish experimental areas for the four elements, collecting new data and working out new algorithms for future applications. The project will also facilitate the establishment of a digital earth prediction platform, and provide its scientific findings to decision makers.

Improved Understanding of Color Vision Evolution

Prof. ZHNAG Shuyi at East China Normal University School of Life Sciences, in collaboration with British and Irish scientists, proposed a new concept to interpret the evolution of visual systems of bats, which challenges the traditional theory that a poor light environment contributes to lost visual functions. A paper introducing the findings was published in the May 26 issue of online journal the Proceedings of the National Academy of Sciences.

Researchers found that most bats have kept a due-color vision for both ultraviolet and red colors, like most mammals, though bats have had a nocturnal life history as long as 52 million years. Furthermore, both non-echolocating and echolocating bats saw no significant differences between them in visual functions.

Researchers have for the first time made gene expression data available for the study, along with the algorithms for reconstructing intact ancestral opsin genes. Based on the new approach, they made the following interpretations to the lost visual functions of some bats: non-echolocating bats were originally living in the trees. In the evolution, some habitats have been turned into dark caves, which led to the lost visual functions in these bats. In the context of CF bats, however, a more developed echolocating capability contributed to the lost visual functions. Well developed hearing capability dwindled the visual functions of CF bats. To adapt to the environment, the degradation of a sensor would automatically enhance the functions of other sensors in a compensatory manner. This works like a blind person who would have an enhanced feeling and hearing capability once his or her visual functions were lost. Compensatory evolution mechanism makes an important guidance for studying the evolution of animals' sensory systems and their nocturnal life.

World's First Quantum E-Government Network

Researchers, led by GUO Guangcan, an academician of the Chinese Academy of Sciences, and Prof. HAN Zhengfu, at the Key Lab of Quantum Information jointly established by the University of Science and Technology of China and the Chinese Academy of Sciences, have created the world's first quantum e-government network run by Wuhu Municipality, Anhui Province. The network is designed with a proprietary unilateral confidential communication scheme working on the equipment enjoying the same functions. The event indicates that China has put its quantum findings into practical applications.

The quantum e-government network has integrated three existing networking technologies in the world to be a multifunctional confidential communication network with multiple levels, able to meet the needs of different clients. One can secure a completely confidential communication between any two points in the network, for safe voice, text, and graphic communication. It also works fine for conference call that needs large communication resources and transmission of confidential documents.

DOA Estimation Based on Fourth-Order Cumulants

A study team, chaired by YE Zhongfu at the University of Science and Technology of China, has recently found a solution to address DOA estimation in the presence of unknown mutual coupling, based on fourth-order cumulants. A paper introducing the findings was published in the May online issue of Signal Processing.

In recent years, researchers led by Prof. YE have made an in-depth analysis of the effects of mutual coupling errors on uniform linear array based on the existing mutual coupling models, and found that under a uniform linear array, mutual coupling has an effect equivalent to a small beam former on each array element. Such an effect is completely same on the elements sitting in the middle of the array, though different on the elements

at the both ends. Researchers effectively wiped out the impacts of mutual coupling on signal processing by making the elements at the both ends an auxiliary element. Experiments show that super resolution direction estimation approaches, including MUSIC, GEESE, and ESPRIT, and self-adaptive beam forming methods, such as SCB, have seen a noticeable improvement in the presence of unknown mutual coupling. Meanwhile, mutual coupling coefficients can be calculated out to be a reference for further validation. The new approach has also been applied to 2-D direction estimation for evenly distributed arrays.

Software for Writing Correct Chinese Characters

Prof. SONG Rou, Beijing Language and Culture University, in collaboration with Prof. LIN Min at Inner Mongolia Normal University, has developed a computer program able to key in and identify Chinese characters in a correct manner based on the description of the form of Chinese characters, and a database containing the common errors that a foreign student may fall into when writing a Chinese character. The system, important for both foreign students learning Chinese and international Chinese language service, makes a powerful tool for helping foreign students learn the Chinese language.

The new system is made up of 20,902 Chinese characters, coded under international standards, and a database gathering the typical errors made by European and American students in learning Chinese. The errors were collected from more than 1,000 papers (500,000 Chinese characters) written by foreign students.

The system is also designed with statistical analysis of common errors.

The system, working with the help of a pen or a mouse, is able to recognize Chinese characters without being trained in the first place. It also works with other popular editing tools and database, allowing incorrect Chinese characters being corrected.

Flying Robot for Disaster Relief

A proprietary multifunctional flying robot, developed by CAS Shenyang Institute of Automation, was tested for its performance at an earthquake exercise held on May 12, 2009 in Beijing, and approved for a limited production. The flying robot, in large and small specifications, looks like a helicopter in shape, having a camera installed at the lower part of the front. With a rotating wing of 3m, and a body length of 3m, the large model is of a 120-kg lifting capacity for 40 kg of payloads, working at 100-kilometer maximum cruising speed an hour with a maximum endurance for 4 hours. The smaller model is designed with a take-off weight at 40kg, and 15-kg payloads, able to run 70 kilometers an hour for up to 2 hours. With a preset target, the flying robot is able to take off, cruise, and touch down on its own. In the field exercise, it has completed a range of preset missions, including taking off, suspension in the air, tracking, low-air information gathering, and touching down.

According to a briefing, the flying robot can be employed to work at earthquake, flood, and fire scenes, or dispatched to watch important facilities, monitor toxic gases over chemical plants, examine power lines and oil pipelines, act as regional air-land and air-sea communication relay, and spray pesticides over croplands and forests.

China Launches Mars Probe in Late 2009

A Chinese made Mars probe made its debut at an international fair for aviation and space technologies and equipment opened on May 28, 2009 in Shanghai. According to head of Shanghai Space Agency, Mars probe, named Yinghuo I, will be blasted off in the second half of the year. It will reach and settle down in Mars orbit in 2010, after a 10-month and 380-million-kilometer journey.

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The probe has so far completed all the required tests and calibration. With a weight of 115 kg and designed life span for two years, the probe will be equipped with the payloads of plasma detector, optic imager, fluxgate magnetometer, and occultation receiver. The probe is designed to understand Mars and its space environment, the reason that has led to the disappearance of water on the Mars, and the evolution of space environment between the earth and planets, creating a basis for deeper space probe in the future. The probe will travel surrounding the Mars, though not make a landing on it.

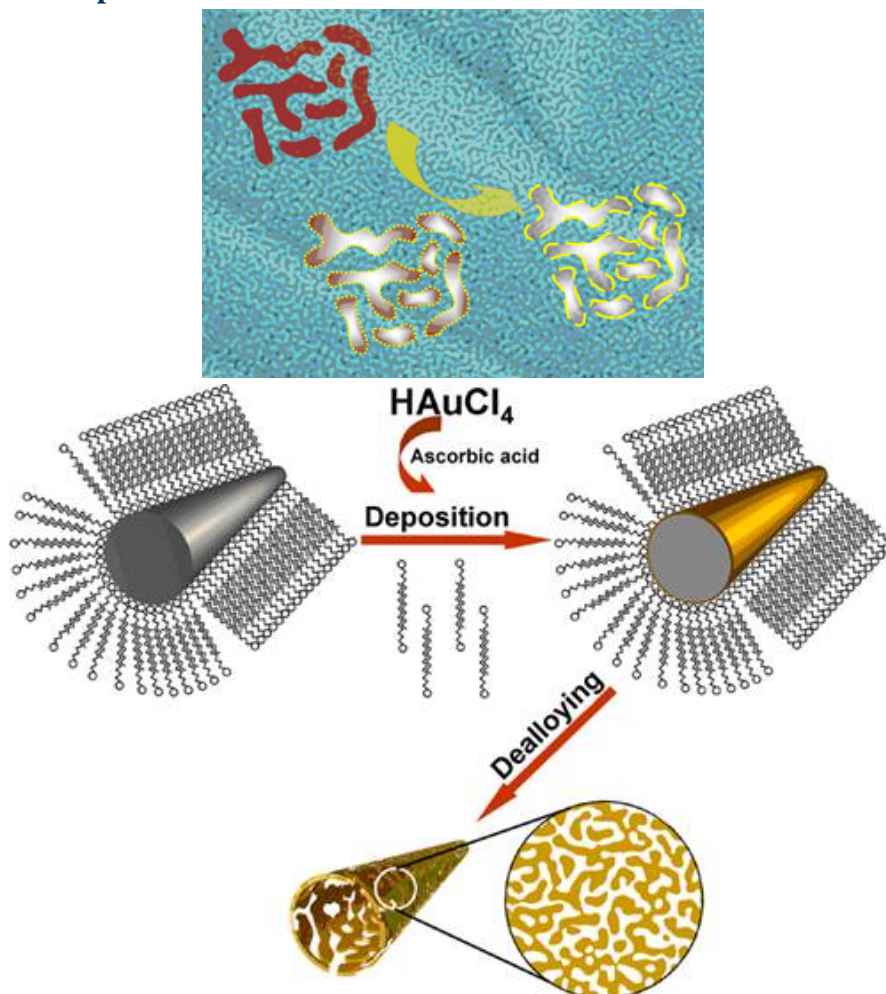
Probing Mars is a cooperative project between China and Russia. Chinese made Mars probe will be launched together with a Russian made Mars probe for a joint expedition to Mars and its satellite.

Chinese Made PET Device

NEUSOFT announced on May 26, 2009 that it has successfully developed a proprietary Positron Emission Tomography (PET) device that has accredited by FDA, bringing more hope for the early detection of a range of diseases, including tumor and cardiocerebrovascular diseases.

Positron Emission Tomography is an advanced no-injury diagnosing technology, through which one can observe cellular metabolisms in human body, and obtain an early picture of changes in brain and heart. Thanks to its 4-year painstaking efforts, NEUSOFT has eventually rolled out a proprietary PET device that works better than traditional X-ray, CT, and MRI.

Nanotubular Mesoporous Bimetallic Nanostructures



A research team, led by Prof. DING Yi at Shandong University Key Laboratory of Liquid Structure and Heredity of Materials, part of the Ministry of Education, has achieved substantive progresses in working out a nanotubular mesoporous bimetallic nanostructure with enhanced electrocatalytic performance. Researchers obtained mesoporous copper with a 3-D continuous structure through dealloying, before rolling out a nanotubular mesoporous bimetallic nanostructure with enhanced electrocatalytic performance under low temperature. The study, published in a recent issue of *Advanced Materials*, was supported by a grant from a number of S&T initiatives, including Major Scientific Research Program sponsored by the Chinese Ministry of Science and Technology, and the National 863 Program.

3 News from Universities

Flood of Central Asian students study in Xinjiang

(People's Daily, 2009-05-15)

Xinjiang's 34 schools qualified to enroll foreign students are attracting a growing number of students from neighboring countries such as Kazakhstan, Kyrgyzstan, Tajikistan, Mongolia and Pakistan.

This is because the international status of the Chinese language is improving and educational expenses in Xinjiang for foreign students are cheap. Xinjiang also boasts a rich culture and scenic landscapes.

Burhan Ahmed and Tahir Muneeb are both Pakistani students majoring in clinical medicine at Xinjiang Medical University.

They said that compared with Europe and the US, tuition fees and living costs in Xinjiang are cheap. Annual tuition fees are around 26,000 yuan and living costs around 15,000 yuan.

There are also opportunities to obtain scholarships. Wang Lili, Director of the Foreign Affairs Office of the Department of Education in the Xinjiang Uygur Autonomous Region said there are currently almost 4,000 foreign students in Xinjiang, over 3,300 of whom are from neighboring Central Asian nations. They are majoring in a variety of fields including languages, medicine and economics.

Overseas universities woo Chinese students

(People's Daily, 2009-05-21)

The University of Melbourne is hoping to foster more exchanges and closer cooperation with Chinese students and academics, said Professor Glyn Davis, vice-chancellor of the institution, during a visit to China. "China is the central part of our international engagement as we have over 3,000 Chinese students now on campus and tens of thousands of graduates in China," Davis said.

With one in seven overseas students throughout the world now coming from China and Chinese students making up the largest single national group of overseas students worldwide, Davis said there is plenty of interest in attracting Chinese students.

Australians, too, are looking to learn. The University of Melbourne has been providing Chinese language lessons for "more than half a century". He said Australians are becoming more interested because of the closer economic ties, cultural attractiveness and because there are an increasing number of young Australian expats in China.

In addition to student exchange programs with top Chinese universities, the University of Melbourne is exploring the possibility of joint research projects in water management, environment protection, medicine and bioscience, added Professor John Dewar, who is in charge of global relations at the university.

Both countries face similar challenges in water management. The university and Chinese Academy of Sciences set up a China-Australia Water Resources Center in Melbourne in 2006.

Nearly 80 percent of Chinese university students have considered studying abroad, according to the latest survey by China Youth Daily. Most going overseas opt to study in the US, the UK, Australia and Canada.

During the global financial crisis, more Chinese students are expected to head overseas because of the pressure to find work and the appreciation of the Chinese currency.

Overseas universities are seizing the opportunity and looking to attract more Chinese students through greater cooperation with Chinese counterparts and organizations.

CAS Graduate University to Recruit 6,500 Students for Master Degree in 2010 (CAS, 2009-05-25)

The Graduate University of Chinese Academy of Sciences (GUCAS) will recruit 6,200 students for master degree studies in 2010, with four disciplines open for application for the first time, according to the news released by GUCAS recently.

The new disciplines include Biopsychology, Bioinformatics, Scientific and Technological Archaeology, and Energy and Electro-technology..

More than 120 institutes of GUCAS will offer 6,200 academic postgraduate seats for master-degree candidates, covering philosophy, economics, law, education, literature, science, engineering, agriculture, medicine and management.

Besides, the university will recruit more than 300 postgraduate of practical type next year, majoring on six disciplines such as material engineering, electric and communication engineering.

Founded in 1978 and backed by more than 110 institutes of the CAS, GUCAS is authorized to grant advanced degrees in 26 primary academic disciplines which include master degrees in 130 branch subjects, and doctorate degrees in 114 secondary disciplines.

With an annual enrolment of more than 10,000 students, GUCAS has over 30,000 current students, among whom half are PhD students. The university offers programs for international students and provides them financial aid with "GUCAS International Students Scholarship".

4 Innovation Management

Chinese Science Citation Database Opens to Worldwide Users (CAS, 2009-05-04)

National Science Library, Chinese Academy of Sciences (CAS) launched its Chinese Science Citation Database (CSCD) at the Science Communication and Self-innovation Forum held in Beijing.

CSCD based itself on the ISI Web of knowledge. With this new platform, users all over the world can access more than 1000 journals published in China and learn about the progress and developments of China's science.

China's production of science papers has been increasing over recent years and its science research and development capacity has earned worldwide recognition. On the other hand, there are few Chinese science journals that are well-known by the international science community and most of the best science papers produced by Chinese researchers are published abroad.

It is in this context that the National Science Library started cooperation with Thomson Reuters to build CSCD in 2007. National Science Library collected and uploaded all historical data of Chinese journals. It

also undertook to carry out test on the database system and on the data itself.

The new database is expected to increase the visibility of Chinese science journals and hence their citations.

MOST Launched New Pharmacy Innovation Program (CAS, 2009-05-12)

Chinese Ministry of Science and Technology (MOST) launched a New Pharmacy Innovation Program on May 5th in Beijing.

It is the largest of its kind, with a total investment of 5.3 billion yuan (about 800 million U.S. dollars). The program consists of 970 projects which will be implemented in two phases within the period of the eleventh Five-year Plan (2006-2010).

New Pharmacy Innovation Program is one of the 16 major science and technology programs laid out in the National Guideline for Medium and Long-term Plan for Science and Technology Development (2006-2020). The overall goal of the program is to realize the pharmaceutical industry's transition from copying/production to innovation, so as to strengthen China's capacity in manufacturing medicine as well as developing new pharmacies.

Minister of Science and Technology Wan Gang noted that there are 3 tasks involved in the program: to develop new pharmacy for the international market, to set up new pharmacy research platforms with some of them being recognized by the international pharmacy industry, to construct a pharmacy innovation system that integrates research centers and pharmacy manufactories.

Some 121 projects with a fund of 1 billion yuan were already launched. Another 849 projects with 4.3 billion funds has been drafted out in line with the "stimulating domestic demand, maintaining economic growth" policy, and will be carried out soon.

Nearly 15,000 researchers will take part in the program. Sang Guowei, academician of Chinese Academy of Engineering will be Chief Scientist of the Program.

Focusing on chemical medicine, the program will highlight biopharmaceutics while featuring Chinese herbal medicine, noted Sang.

VM ZHANG Attends the 2nd China-EU High Level Economic and Trade Dialogue (MOST, 2009-05-21)

On May 7th -8th of 2009, Vice Premier WANG Qishan and European Commission Trade Commissioner Catherine Ashton co-chaired the second China-EU High Level Economic and Trade Dialogue at the EU Headquarters in Brussels. ZHANG Laiwu, Vice-Minister of Science and Technology attended the Dialogue, and delivered a speech entitled "Win-win Cooperation and S&T Innovation Provide New Impetus to Reviving Global Economy".

According to ZHANG, S&T support plays an irreplaceable role in terms of making a major breakthrough in economic development or responding to economic crisis. Chinese government adopted a series of major initiatives to cope with global financial crisis, including Key Technologies R&D Program. He pointed out that tackling the current financial crisis requires closer international cooperation. He also highlighted that through a diverse mechanism, positive progress has been made in such priority fields as energy, environment, information, satellite navigation, and health. Led by innovation, China-EU S&T cooperation also promoted economic and trade cooperation. Prof. CHEN Xianhui alone has published 3 articles in Nature, and 9 in Physical Review Letters.

5 China's International Science Cooperation

China, Brazil to offer satellite data to Africa

(Xinhua Net, 2009-05-20)

China and Brazil will provide satellite observation data for African countries through a joint space program, according to agreements inked here on Wednesday.

The Earth receiving stations of Hartebeeshoek in South Africa, Aswan in Egypt and Maspaloms in Spain will process and distribute data from the China-Brazil Earth Resources Satellite-02B (CBERS-02B) to African states.

"It's also for the first time China became an exporter of Earth observation data," said Guo Jianning, general director of the China Center for Resources Satellite Data and Application.

Before that, China could only buy or share processed information such as satellite pictures from or with other countries, he said.

Brazilian President Luiz Inacio Lula da Silva, at the last leg of his three-day China tour, witnessed the signing of the agreements at the Chinese space center in the northwest suburb of Beijing.

"Those agreements indicated the support and importance China and Brazil attached to African countries, which is also an example of science and technology cooperation between developing countries," Guo said.

The CBERS project was kicked off in 1988 and the first CBERS satellite was launched in 1999. So far, there are three CBERS satellites in space and a fourth one is scheduled to be sent into space in 2011.

Those satellites served for gathering information about land use, agricultural products estimation, water resources investigation, mine exploration, laying out of urban area, environmental protection and monitoring of coast.

"The CBERS satellites have become an important data source for the world and we will continue and expand cooperation with Brazil, as well as some other countries that have show interest," said Zhang Qingjun, top Chinese designer of the CBERS project.

Chinese Scientist Elected as ISRM President for 2011-2015

(CAS, 2009-05-25)



Prof. Feng Xiating from the Institute of Rock and Soil Mechanics (IRSM), the Chinese Academy of Sciences (CAS), was elected president of the International Society for Rock Mechanics (ISRM) for 2011-2015, at the council meeting on 18 May in Hong Kong.

Prof. Feng is now the director of State Key Laboratory of Geomechanics and Geotechnical Engineering. He also served as the chief scientist for the National Basic Research Program, or 973 Program in 2002. He acted as the vice-president of ISRM since 2007.

Feng will start serving his term after the 12th International Congress of the ISRM, which will take place in Beijing, from October 16 to 21, 2011.

It is the first time for a Chinese scientist to be elected president of the ISRM since its founding in 1962.

Abbreviations

- CAS** - Chinese Academy of Sciences
- MOST** - Ministry of Science and Technology
- CRI** - China Radio International