Content

Science News from Chinese Media in February 2009
Collected and Compiled by the Helmholtz Beijing Office

Helmholtz News Concerning China

As the deadline of getting a valid invitation and submitting application to CSC is approaching, the telephone line of Helmholtz Beijing Office has been belling all the time. Students are asking for advices and supports, Helmholtz scientists are looking for assistance to evaluate the applicants or interview them per telephone calls or SKYPE or Adobe online conference facility. We have just figure out the Adobe is the most convenient instrument, as just with two PCs equipped with a webcam, people can already talk face to face online, and one side can upload and present his slides as with an expensive video-conference facility.

We have had a couple of successful examples: Prof. R. Gerzer from the Institute of Space Life Science, DLR and his colleagues have interviewed 6 students per Adobe-conference facility. Three of these students are outside of Beijing and their trips are refunded by the Helmholtz Beijing Office. 4 out of the 6 candidates are seen as interesting candidates, two of them have already received supporting letter for a scholarship, and two further students are still on the waiting list.

Dr. I. Drexler from HMGU has got 7 applicants. With the assistance from Helmholtz Beijing Office, he could use one Helmholtz-CSC scholarship to receive his first candidate with a Helmholt-CSC scholarship and the second candidate with a 4 years CSC full scholarship. Prof. A. Weber from DKFZ has interviewed 4 candidates and issued two invitation letters. After clarifying the situation concerning the available scholarships, he switched form the Helmholtz-CSC scholarship to a 4 year's full CSC scholarship for his candidate number one, and his second candidate has also find another possibility to another Helmholtz scientist. Prof. M. Loechelt has also picked up two students from 4 interviewed students. He switched also to a 4 years CSC scholarship and asked his candidate number 2 to run for a DAAD scholarship with another scientist. Besides, Dr. J. Stellbrink, Dr. U. Rascher and Dr. S.Becker from FZJ, and Dr. M. Rode all have had intervied their candidates and made their decision after the interview.

Besides, we have received also two visits: Dr. Suppan und Dr. K. Schaefer from IKU-FZK have visited Peking, sponsored by a KIT project. They are in the first line preparing a workshop in Germany concerning the air-pollution in Beijing, and have taken this opportunity to meet students. They could make the decision to take two students for a PhD in FZK, fully sponsored by a four years CSC Scholarship. Dr. Weibo Li from the Inst. of Radiation Protection in HGMU attended an EU workshop with the Chinese National Nuclear Administration. He has also taken the opportunity to meet the potential partners in the Tsinghua University and the Inst. of Radiation Protection, China Disease Control Centre (CDC). This trip helped him to select a sandwich student under the Helmholtz-CSC programme.

The most spectacular news from the Chinese media in this edition of China Highlights is China's willingness to pump its nuke power targets to 5% of national energy mix by 2020, which nearly doubles its nuclear power capacity to 70 gigawatts (GW).

Helmholtz Beijing Office

1 Science News

1.1 Energy

CAS Launches Photovoltaic Research Initiative
(CAS, 2009-02-02)

The Chinese Academy of Sciences (CAS) has launched an initiative to boost the development of solar energy technology, in a bid to turn it into a major energy source in China by 2050. The initiative, which was approved by CAS's CCP committee on Dec. 23rd, 2008, was made public on the annual meeting of CAS officials in late January.

CAS had started to motivate its experts to make an action plan and to set up a platform to support the research in solar energy utilization. It aims to forge complete value chain including basic research, application research and market research.

The plan will be carried out in three phases, including "utilization in selective areas" by 2015, "utilization as an alternative energy" by 2025 and "large-scale utilization" by 2035, respectively.

CAS experts said that China has a large potential for solar energy development. The duration of sunshine for two-thirds of its territory is more than 2,200 hours a year. It also has vast desert areas, where solar energy could be "harvested". According to an energy industry survey by CAS experts, China has made enormous progress in photovoltaic sector. However, the research centers are scattered and lack of cutting-edge technology.

The United States, Japan and European countries began to develop solar energy in the 1970s. Government investment has greatly promoted solar energy research and development, especially in Japan, Germany and Australia.

Germany has been promoting a so-called "Solar Energy Family Program", and fixed solar energy facilities on the roofs of homes. Japan has launched a program to accelerate the use of solar energy, and to cut the price of solar energy by half within three to five years.

Experts said that lowering the costs for using solar energy is the key for stepping up the use of this renewable energy in China.

China's nuke power targets 5% of national energy mix by 2020
(Xinhua Net, 2009-02-04)

The country aims to nearly double its nuclear power capacity to 70 gigawatts (GW), comprising 5 percent of the national energy mix by 2020, China Daily reported Wednesday.

The target was set in the country's latest revision of its energy development plans, as made in 2006, which aimed for 40 GW, the newspaper said.

But the revision is still awaiting approval from the State Council, China Daily cited another newspaper, the 21st Century Business Herald as saying.

The energy authorities would start building 8 more nuclear power plants in the next three years, with 16 reactors whose total installed capacity will surpass 10 GW, according to a quote from the National Energy Administration (NEA) sources carried by the report.

There are currently 11 nuclear reactors in operation with a combined capacity of about 9 GW, supplying more than 1 percent of the country's energy demand, according to China Daily.

The newspaper said the country would also invest 580 billion yuan (84.8 billion U.S. dollars) in the power industry alone this year, citing the state broadcaster China Central Television.

China will also step up efforts to develop renewable energies such as wind and solar power, promote the mergers and acquisitions of coal-fired power plants, and upgrade the country's energy structure, said Zhang Guobao, the NEA Director, at a national energy conference held Tuesday in Beijing.

China's largest wind power facility R&D center to be established in Xi'an

(People's daily, 2009-02-09)

China Northern Locomotive and Rolling Stock Industry (Group) Corporation would invest another six billion yuan (about 882.4 million U.S. dollars) in western China's Xi'an city to build the largest wind power facility research center, the company has said.

According to the agreement between the company and the municipal government of Xi'an of Shaanxi Province, four billion yuan will be invested first in six wind power product manufacturing projects, which are scheduled to be completed in 2011.

The second phase involves an investment of two billion yuan to build railway transportation and develop wind power system by 2015, according to the agreement.

The company has invested one billion yuan and developed six projects in the city since 2000, said the company.

China eyes independent nuclear power development

(Xinhua Net, 2009-02-18)

China can rely on and will promote the use of its own technologies in developing nuclear power projects, a senior energy official said Wednesday.

The proportion of domestic technologies and equipment used in the country's nuclear power projects should be required to reach a certain level, said Zhang Guobao, head of the National Energy Administration (NEA), at an NEA work conference here Wednesday.

He gave no details on what level would be appropriate, saying the use of independent technologies should be a "significant factor" to be considered in the planning, appraisal and approval of nuclear power projects.

China has 11 nuclear power reactors in operation, all using second generation technologies comprising mainly pressurized water reactors, but also including boiling and heavy water reactors. Three of these use domestic technologies, four use French designs, two use Canadian designs and the other two Russian.

The country has another 22 nuclear reactors under construction and 20 of them apply CPR-1000, the China-developed second-generation technology.

"China has made major breakthroughs in the research and development of some key nuclear power equipment," said Zhang. "The country can fully rely on its own technologies to support nuclear power development in the next two to three decades."

The third-generation technology, which uses light water reactors, is the latest and is considered safer and more efficient than previous designs.

Four nuclear power reactors in China, whose construction is scheduled to begin in 2009 and 2010, will use the third-generation technology designed by the U.S. firm Westinghouse.

China has highlighted technological innovation as a way of improving its industrial competitiveness and boosting the economy in the face of the global financial crisis.

The State Council, or the Cabinet, unveiled a support plan for machinery manufacturing industries early this month, encouraging the use of self-developed key technologies and equipment in major projects.

Zhang told the meeting that developing nuclear power is crucial to adjusting China's energy structure, saying advancing the development and use of independent technologies will significantly serve that purpose.

About 70 percent of China's electricity comes from thermal power stations. Coal burning has become a major source of carbon dioxide emissions.

The government has set a target for installed nuclear power capacity of 40 million kilowatts by 2020, which will need an estimated investment of 450 billion yuan (66.2 billion U.S. dollars).

The capacity totals 9.1 million kilowatts at present, or 1.1 percent of the country's total installed electricity generation capacity.

"We'll further adjust our plan to develop nuclear power and strive for a quite big increase in the share of nuclear power generation," said Zhang, without giving details. Last year, he told Xinhua that the installed nuclear power capacity could reach 60 million kilowatts by 2020.

Meanwhile, industry insiders say the absence of a standard system for domestic nuclear power equipment and a lack of funds is hampering China's bid to support home-developed technologies.

"The lack of a technical standard system will hinder the promotion of domestic nuclear power equipment and raw materials," said Zheng Dongshan, vice president of the China Guangdong Nuclear Power Group.

Zhang said the government aimed to establish a standard system for nuclear power technologies and equipment within five years.

Solar power plant to supply 30,000 homes by 2010

(Xinhua Net, 2009-02-20)

China is planning to construct a domestically designed solar thermal power plant which is capable to power at least 30,000 households, China Daily reported Thursday.

The plant, to be Asia's first 1.5-megawatt solar thermal power station, will start construction in Beijing's suburb as soon as next month, said Wang Zhifeng, chief of the plant.

Designed by the Chinese Academy of Sciences, the plant is expected to cost 100 million yuan (14.7 million U.S. dollars) and will start operating in 2010.

Covering 13 hectares, the plant will be funded from the Ministry of Science and Technology, the Beijing municipal government and the academy.

Wang, also laboratory director for solar thermal power at the academy, said the experimental power plant would be designed and operated by 10 Chinese institutions and companies, including the academy, Xi'an Jiaotong University, Huadian Corp. and Himin Solar Group.

The plant is expected to generate up to 2.7 million kwh of electricity per year, equivalent to

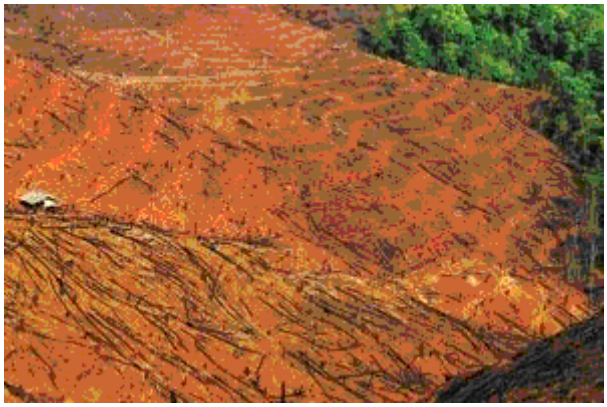
eliminating 2,300 tonnes of carbon dioxide emissions from conventional power plants, Wang said.
Its solar tower is designed to be 100-meter tall and is surrounded by 100 heliostats composed of curved mirrors which track the sun and redirect its rays to a receiver at the top of the tower.
The receiver would convert concentrated solar thermal power from the heliostats into thermal power. Steam from the receiver outlet would be sent directly into the turbine for electricity generation.
Solar thermal power plants are typically much larger than plants made of photovoltaic solar panels that use sunlight to produce electricity.

CAS, BP Co-invested in Clean Energy Joint Venture
(CAS, 2009-02-23)

Chinese Academy of Sciences (CAS) joined hands with British Petroleum Group (BP) to invest in clean energy. Their joint venture Clean Energy Commercialization Centre (CECC) opened officially on February 18, 2009 in Shanghai.
The joint venture, which is located in the Shanghai Zhangjiang Science and Technology Innovation Park, involves a total investment of 486 million yuan.
The CECC will work to integrate energy-related technologies developed by CAS institutes and other research organizations into manufacturing systems, and commercialize technologies such as coal gasification and conversion, carbon capture and storage, coal bed methane and underground coal gasification.
BP and CAS reached a primary agreement on the venture early in August 2007 as a step to tap China's potential clean energy market. In addition, CAS vice-president Jiang Mianheng signed a framework agreement on building long-term strategic partnership with John Morgan, Senior Vice President of British Petroleum Group (BP) on February 2, 2009 in London.
The establishment of CECC will be a milestone for CAS and BP's collaboration in clean energy.

1.2 Earth and Environment

Tropical Paradise against Rubber Plantation
(CAS, 2009-02-02)



China's rainforests are being stripped to make way for rubber plantations.

Xishuangbanna, the Dai Autonomous Prefecture in China's southwestern Yunnan province, had always been the dreamland for many that seek tropical beauty and peace. Yet its beauty is threatened by the onslaught of rubber plantations recently. Xishuangbanna Tropical Botanical Garden (XTBG), CAS' flagship institute for conservation research has been waging a war against rubber plantations.
Since its founding in 1959, XTBG researchers have been collecting ecological

and biological data in this region, and they see drastic deterioration in the region's ecosystems, especially over the last decade when the demand of rubber soared. According to He Yunling and Zhang Yiping from XTBG, rubber plantations increased from 12% of the total land cover to 46%, whereas forested areas dropped from 49% to 28% between 1988 and 2006. Temperature and precipitation data from meteorological stations in Xishuangbanna show that the region has been warming since the 1960s, with less rainfall and more severe droughts, as stated by Hu Huabin and Liu Wenjun , also from XTBG.

Economic development has been the driving force behind deforestation and over plantation of rubber. "Destroying ecosystems will backfire and hit economic development in the long run," warns Cao Min, an ecologist at the XTBG. With research providing basis for the policy-makers, XTBG is seeking to work with the local officials to counter the serious problems facing the ecosystem in the region.

A pilot program of Biodiversity Conservation Corridors Initiative in the Greater Mekong Subregion initiated by World Bank had been running successful and is being exercised on a large scale. Meanwhile, XTBG is expecting to expand into a tropical research institute with larger capacity to cope with the challenges.

"There is no doubt that our road will be long, that our climb will be steep." Barack Obama's statement is also appropriate in addressing the ecological crisis that is challenging China at large and threatening Xishuangbanna in specific.

China's Antarctic Inland Research Station Opens

(CAS, 2009-02-04)

China's first Antarctic inland research station, the Kunlun Station, officially began operation on February 2, 2009. The opening ceremony of the Kunlun Station was held simultaneously at China's Antarctic Zhongshan Station and Kunlun Station via satellite telephone at 9:25 am local time, 12:25 pm Beijing time.

On behalf of the Chinese government, Chen Lianzeng, Head of the Chinese government delegation and Deputy Director General of the State Oceanic Administration, declared in the Antarctic Zhongshan Station that the Kunlun station opened on February 2. The first director of the Kunlun Station is Li Yuansheng, who is also head of the Inland Research Team, while Xia Limin and Li Shiming, deputy heads of the Inland Research Team, are the vice directors of the station.

CAS to Build 500-million-yuan Scientific Expedition Ship

(CAS, 2009-02-09)

The Chinese Academy of Sciences (CAS) will build a scientific expedition ship, with an investment of 500 million Yuan (about 72 million U.S. dollars). It will be the biggest of its kind built by CAS, according to the Qingdao-based Institute of Oceanology of CAS (IOCAS).

The project was approved by China's National Development and Reform Commission. The vessel, named "Science", is expected to be put into use in 2011.

The vessel, with a total displacement of 4,400 tons, will be free from limitation of range ability, and will help promote CAS' oceanic research into deeper ocean.

"Science One", currently CAS' biggest investigation vessel will be replaced after "Science" starts its service. The total displacement of "Science One" is 3,300 tons.

CAS Researcher Elected Commissioner of Global Climate Adaptation Network
(CAS, 2009-02-16)

Fu Bojie, a scientist from the Research Center for Eco-Environmental Sciences, CAS was elected the commissioner of the scientific commission of the Global Climate Adaptation Network in Asia-Pacific Region, at the organization's annual consultative meeting in January.

The multifunctional network was initiated by the United Nations Environment Programme (UNEP) and other UN organizations and experts. It will mobilize the resources of relevant regional centers and ground networks to enhance key scientific, technical and most importantly institutional capacity for adaptation in a synergic and coherent manner.

The Network will also help meet the increasing demands for climate change adaptation with the growing supplies of the world's best knowledge and technology from existing facilities and institutions.

Fu, also director-general of the Bureau of Science and Technology for Resources and Environment, CAS wrote about the environmental challenges China faces and its strategies to cope with them in an editorial in Science on August 1, 2008.

"For decades, rapid economic growth and the improvement of human living status for the world's biggest population have been accomplished at the expense of environmental integrity. Now, human welfare, rather than living status, should be a priority in developing a strategy for a sustainable China," Fu wrote in his article, titled "Blue Skies for China".

Scientists Make First Satellite Map for China's Wetlands
(CAS, 2009-02-20)

Scientists from Chinese Academy of Sciences (CAS) Tuesday said they had made the first satellite map of China's wetland areas, in order to better monitor and manage the areas.

The map, which took scientists two years to complete, comprises 600 scenes of satellite images with each scene covering an area of 34,225 square kilometers, said Gong Peng, chief scientist of the project, who is also a researcher of CAS's Institute of Remote Sensing Applications.

According to statistics from the institute, China has a natural wetland area of 308,000 square kilometers as of 2000, including natural lakes, marsh, shallow water along the coast, and inter-tidal shoals.

"The number shows a 50,800 square kilometers decrease compared with the data collected ten years ago," said Gong Peng.

A wetland is an area of land that is saturated with moisture. China has 38 national wetland parks, and more than 550 natural wetland reserves, holding 2.7 trillion tonnes of fresh water.

Wetland areas in China are mainly in Tibet and Inner Mongolia Autonomous Region, and also Qinghai and Hei Longjiang provinces.

"Right now the number of natural wetland areas are reducing, while the constructed wetlands are rising, which is due to the increase of aquaculture areas in some eastern China provinces where fishermen make aquaculture business," Gong said.

"But the newly added areas have limited function and cannot displace the effect of the natural wetlands," Gong added.

Chinese government earmarked 16.5 billion yuan (2.4 billion U.S. dollars) to protect and restore

wetlands during the 11th five-year plan period (2006-2010).

Water Pollution Spreading in Southwest China's Karst Area
(CAS, 209-02-24)

Scientists found water pollution both organic and inorganic is spreading from isolated spots to a wider area in southwest China's karst area.

"Urban, industrial and agricultural wastes are turning 3066 underground rivers in the area into sewage," said Yuan Daoxian, academician of Chinese Academy of Sciences (CAS), who led his team to carry out research in water pollution.

Unchecked dumping of wastes from city life, industrial and agricultural production is threatening water quality and life and production of civilians across the area. Concentration of PAEs rises to 233.5ng/L, with carcinogenic PAHs as high as 51.4ng/L, researchers in Yuan's team found.

Mining industry is flourishing, spreading pollution to wider areas and destroying natural soil around the mine area. "Water pollution resulted by mining industry in the area will be a big problem for geology in Guangxi province," said Yuan.

More engineering activities resulted in water drain and zero-flow of springs, costing normal civilian life in the area. More attention on hydrogeological survey is needed before significant engineering projects, Yuan said. Current environment assessment should also include more experts on hydrogeology.

"Top priority at present is to expand the range of groundwater environmental survey in karst area, monitoring the general situation and developing trend in the area," said Yuan.

The process will last about two years. Further scientific research, groundwater monitoring projects and protection and regulation planning will follow on this basis.

Immigrating Birds Alarm China for Ecosystem Damages
(CAS, 2009-02-27)

Carduelis chloris

Bird experts suspected that the immigration of birds from Europe to China was posing a threat to the local ecosystem.

Carduelis chloris is originally a European species. Those birds appeared in China more than 10 years ago as stragglers, passing migrants or winter migrants. However, they have become the breeding and resident birds in the country in recent years.

"At least 20 species of birds are migrating from Europe eastward to China and other countries," said Ma Ming, a researcher from Xinjiang Institute of Geography and Ecology (XIEG), Chinese Academy of Sciences (CAS). He added that the living space for those birds expands at a speed of 70-80 kilometers a year east bound.

What made the bird travel so far to reside in a foreign land? Besides other reasons, researchers summed up the reasons as the global warming, the overuse of fertilizer and industrial pollution. The warmer climate made it possible for passing migrant bird to reside, and the pollution and fertilizer

helped kill its natural enemy.

Ma said Columba oenas, Steptopelia senegalensis and dozens of other species of birds were found almost every year as new migrants in the areas east to their original habitats.

A direct consequence of this expansion will be the decrease, and even distinction of some local species, warned bird experts.

Zhongshan station celebrates 20th birthday

(Xinhua Net, 2009-02-27)

The Chinese Antarctic Zhongshan station celebrated its 20th birthday on Thursday.

The station is the second Chinese research station in Antarctica and accommodates 60 scientists in the summer and 25 in the winter.

The station is well-equipped with living quarters, a power and water supply house, a meteorology house and several special observation huts for different scientific programs.

The station, built on Feb. 26, 1989, is located south of Prydz Bay on the Mirror Peninsula, and east of the Larsemann Hills. It is used for research in marine, glaciological, geological and atmospheric sciences and for expeditions inland.

1.3 Health

China Approves Anti-bird Flu Drug for Human Clinical Trial

(CAS, 2009-02-03)

The Shanghai Institute of Materia Medica (SIMM) of Chinese Academy of Sciences (CAS), one of China's top drug research institutions, has obtained clinical trial approval from China's State Food and Drug Administration (SFDA) for an anti-bird flu drug.

The drug, Zanamivir, which is a kind of sialic acid depressants for influenza virus, is used to treat influenza caused by Influenza Virus A. It changes the virus' aggregation and spread in infected cells by depressing the neuraminidase in the virus.

Zanamivir is currently the second effective anti-bird flu drug in the world besides Oseltamivir. The drug is developed associated by SIMM, Nanjing Simcere Dongyuan Pharmaceutical Co., Ltd. and Nanjing Yifang Pharmaceutical Co., Ltd., leading by Jiang Hualiang and Shen Jingkang, vice presidents of SIMM.

Scientists develop ways producing anti-bird flu drug Zanamivir

(Xinhua Net, 2009-02-04)

Scientists in Shanghai and two pharmaceutical companies in Jiangsu province have successfully developed ways to produce the anti-bird flu drug Zanamivir, based on a licensing agreement with pharmaceutical giant GlaxoSmithKline (GSK), China Daily reported Friday, citing local media report.

Zanamivir is an antiviral medication that can block the action of influenza A and influenza B, the two most common types of flu. The drug, marketed by UK-based GSK under the trade name Relenza, is said to be on par with Oseltamivir, a drug produced by Swiss pharmaceutical company Roche under

the trade name Tamiflu, in battling bird flu in humans.

GSK reportedly licensed Chinese companies to produce Zanamivir in 2006 but it did not offer related techniques to make the drug. It also needs to be approved by Chinese authorities for sale in the country.

The drug has received approval from the State Food and Drug Administration for clinical tests, the Shanghai-based Orient Morning Post said on Tuesday.

Roche has reportedly granted sub-licenses for the production of the generic drug Oseltamivir to the Shanghai Pharmaceutical Group and the Shenzhen-based HEC Group in 2005, while Zanamivir was not manufactured and sold in China until 2006 when GSK signed a licensing agreement with the Nanjing Simcere Pharmaceutical Group.

The agreement grants Simcere the right to make generic copies of its influenza drug Relenza for developing countries and is intended to expand supplies of Zanamivir in areas worldwide that may be on the frontline of a possible influenza pandemic, according to GSK.

"At that time, we invited the Shanghai Institute of Materia Medica under the Chinese Academy of Sciences and Nanjing Effact Pharm Drug Development Corp to join efforts to make the generic Zanamivir, because GSK provided limited technical support in synthesizing such drugs," Cao Song, a spokesman for Simcere said.

The deal may help reduce the price of Zanamivir in China and other countries covered by it, Cao said.

Approval for clinical tests was issued on Nov 7, but the Shanghai Institute of Materia Medica announced the breakthrough only recently.

The final form of the drug will be a powder that is inhaled, earlier reports had said.

"Test procedures for the drug Zanamivir are still being decided. It would take a long time to complete the clinical trials," said Xu Xiaoping, a member of the institute.

Chinese medical expert's COPD study voted Lancet's Paper of 2008

(Xinhua Net, 2009-02-06)

A study led by prominent Chinese medical expert Zhong Nanshan on a low-cost treatment for chronic respiratory disease has been voted the people's choice for the Lancet journal's paper of the year 2008.

The editors' choice went to Werner Hacke and colleagues' study of alteplase for ischaemic stroke in the online selection during which 21,556 votes were cast.

The PEACE study of carbocisteine in chronic obstructive pulmonary disease (COPD) carried out by Zhong Nanshan and his associates reported a 24.5 percent lower annualized rate of exacerbation of COPD with carbocisteine treatment.

The 1-year placebo-controlled randomized trial of 709 patients from 22 centers in China also found that COPD treatment using carbocisteine, a relatively cheaper mucolytic drug, can reduce treatment costs by 85 percent, the report said.

An article on the website of the Lancet journal noted that COPD is predicted to cause 65 million deaths in China between 2003 and 2033. Hence, the work of Zhong and his colleagues has important implications for treating COPD in developing countries.

Chronic obstructive pulmonary disease (COPD) is a lung ailment that is characterized by a persistent blockage of airflow from the lungs. The most common symptoms of COPD are breathlessness (or a

"need for air"), abnormal sputum (a mix of saliva and mucus in the airway), and a chronic cough.

Zhong, an academician of the Chinese Academy of Engineering and the director of the Guangzhou Institute of Respiratory Diseases, was one of the leading scientists who helped control the spread of the Severe Acute Respiratory Syndrome (SARS) in China in 2003.

Experts Identify Key Drug Target in Bird Flu Virus

(CAS, 2009-02-09)

Researchers from the CAS Institute of Biophysics, Nankai University and Tsinghua University have identified the three-dimensional structure of a key region of the H5N1 avian influenza virus that is involved in viral replication. In their article published in Nature, the team led by Liu Yingfang and Rao Zihe propose that this region could constitute an important target for new anti-influenza drugs.

The avian influenza A virus contains the RNA polymerase, an enzyme responsible for directing replication and transcription of viral RNA inside the nuclei of infected cells. Liu and Rao's team determined the crystal structure one of the enzyme's three subunits, called PA, and showed that it has strong endonuclease activity. Host messenger RNA binds to this endonuclease site and is then cleaved, triggering the production of viral messenger RNA.

The H5N1 subtype of the influenza virus is entrenched in poultry worldwide and there is a fear that it could give rise to a pandemic if the virus mutates to transmit efficiently among humans. Of the 405 reported human cases of avian influenza since 2003, 254 have proven fatal. Two drugs are currently available to treat influenza, Tamiflu (Roche) and Relenza (GSK), which it is hoped can be used in the event of a H5N1 pandemic.

However, reports of increasing drug resistance in some H5N1 strains have created the need for effective new anti-influenza drugs. The polymerase genes are the most highly conserved among the influenza virus, and the work by Liu and Rao's team provides a platform for drug design. Their structure can be used as a basis for developing inhibitors, as potential new anti-influenza drugs, that block the function of the PA endonuclease.

At the same time, a French team led by Stephen Cusack has reported an equivalent structure from a H3N2 subtype human influenza virus.

Paper abstract: http://www.nature.com/nature/journal/vaop/ncurrent/abs/nature07720.html

Liu Yingfang's homepage: http://159.226.118.206/detailt.aspx?newsno=8158

Rao Zihe's homepage: http://www.xtal.tsinghua.edu.cn/people/raozh.html

Chinese Scientists Publish Research Finding in Nature Cell Biology

(CAS, 2009-02-12)

Two Chinese scientists published their research finding about Nudel and cytoplasmic dynein in the British science journal Nature Cell Biology on February 9, marking a new achievement in China's cell biology study.

Nudel and cytoplasmic dynein play significant roles in the assembly of spindle matrix, and in regulating proper formation of spindles in mitosis process, according to the research, which was carried out by Zhu Xueliang, a researcher of Shanghai Institute for Biological Science, Chinese Academy of Sciences, and Zheng Yixian, professor with Carnegie Institution of Washington.

Spindles, a spindle-like dynamic structure formed by canaliculus, see to equational separation of genetic material (chromosome) in mitosis process of eucaryotic cell. Therefore, abnormity of

spindles will cause genetic instability and lead to the death of cells or result in tumors and cancers.
The research was jointly sponsored by China's Ministry of Science and Technology, National Natural Science Foundation of China, Chinese Academy of Sciences, Howard Hughes Medical Institute and Carnegie Institution of Washington in the United States.

Scientists seek to unravel date code
(Xinhua Net, 2009-02-12)

Chinese and Saudi scientists are working together to unravel the genetic code of the date palm, which Arabs call the "king of the oasis".
By mapping out its genetic structure, the scientists hope to determine its genome organizations and all its genetic characteristics, Yu Jun, professor and associate director of the Beijing Institute for Genomics (BIG), under the Chinese Academy of Sciences, said Wednesday.
It will also provide basic information for other species within the Phoenix genus and enable scientists to work out ways to control the red palm weevil - the most destructive and dangerous pest in the growing areas for coconut and date palms in Asia, Yu said while introducing the project to President Hu Jintao during his visit to King Abdulaziz City for Science and Technology (KACST).
The Date Palm Genome project is viewed as a landmark mission between Chinese and Saudi scientists. It is the first research project under the Saudi-Sino Science and Technology Collaboration Framework Memorandum signed in 1996. It is also the largest life science research project funded by the Saudi Arabia government.
Wishing the joint genome project a success, Hu said China is willing to push forward the science and technology cooperation with Saudi Arabia.
With the arrival of 11 Chinese scientists from Yu's institute six months ago, the project has provided good experience for their Saudi colleagues, Dr Morahim S al-Mesnilem told China Daily.
The scientists have so far set up for three platforms for starting genomic and bioinformatics studies, nutrition and metabolism analysis, and research into the date palm's genetic breeding and biotechnology.
The date palm, one of 60 species of palm, is one of the oldest cultivated trees.
"It is the only tree that can tolerate such hard conditions - water deficiency, salty soil, and so on," he said.
The Saudis have treasured the trees for generations as they provide shade against the burning sun. Their fronds are used to thatch roofs and woven into baskets, while its fruit is eaten.
"For centuries, the dates have been our main source of food and energy," al-Mesnilem said.
After the modern Kingdom of Saudi Arabia was founded in 1932, the date palm was incorporated in its national emblem, as representative of "vitality and growth".
Saudi's groves feature more than 20 million trees and more than 320 varieties of the fruit, and yield 15 percent of the world's date palms.
The country also donates a large amount of dates to hunger-stricken countries through the United Nation's World Food Program.
BIG is renowned for its work on the International Human genome project, its sequencing of chicken genome diversity, and its mapping of silkworm genes.

Chinese Scientists Find Achilles' heel for SARS Virus

(CAS, 2009-02-23)

Researchers at Wuhan University in central China's Hubei Province had identified a gene code which controls the SARS virus' duplication and transmission in human body.

The research finding might provide cure for the severe acute respiratory syndrome (SARS), which infected more than 8,000 people and claimed over 770 lives in an outbreak in 2003.

American scientists found coronavirus was what caused the deadly disease in April 2003. But international scientists were not able to track down how the virus survives and duplicates in human body. The danger of another outbreak still exists, as some wild animals still carry the virus, experts said.

Guo Deyin, professor with State Key Laboratory of Virology of the College of Life Sciences of Wuhan University, and his doctoral student Chen Yu published the result on latest issue of the Proceedings of the National Academy of Science of the U.S.A. (PNAS) in February.

The so-called "nonstructural protein nsp14" gene code has two kinds of RNA N7-MTase activities, scientists found after analysis on several RNA processive enzyme peculiar to coronavirus. The N7-MTase activity was proved to be important for SARS virus' replication and transcription and can thus be used as an effective drug target to develop anti ¨Cviral drugs for control of coronaviruss.

Furthermore, the observation that the N7-MTase of RNA life could function in lieu of that in DNA life provides interesting evolutionary insight and practical possibilities in antiviral drug screening.

"Nonstructural protein nsp14" helps to disguise genetic information for virus so as to evade recognition of immune system. Large amount of virus were therefore sent to attack human body with protection of the protein, explained Chen Yu.

The research paper was co-authored byTien Po, academician of Chinese Academy of Sciences, and director of the Modern Virology Research Center of the university.

Abstract Links: http://www.pnas.org/content/early/2009/02/10/0808790106

Homepage of Guo Deyin: http://59.174.92.166/cn1/faculty/guodeyin.htm

Homepage of Tien Po: http://59.174.92.166/cn1/faculty/tb.htm

Chinese-made human insulin goes global

(People’s Daily, 2009-02-27)

After the Tonghua Dongbao Group successfully developed China's first recombinant human insulin with self-owned intellectual property rights in 1998, the history of foreign products monopolizing the Chinese market for recombinant human insulin came to an end.

It also made China the third country in the world with the capability to produce and market recombinant human insulin, after the US and Denmark.

At present, the recombinant DNA human insulin line of products made by Dongbao has been registered and certified in over 20 countries including Russia, Poland, Mexico, Brazil and Ukraine. From 2001 to present day, freeze-dried powders and preparations of Tonghua Dongbao human insulin has earned nearly 40 million USD in foreign exchange from exports.

1.4 Key Technologies

Computer Scientists Offer Smarter Tool to Spot Porn Websites
(CAS, 2009-02-18)

Scientists with the Chinese Academy of Sciences (CAS) will offer government organizations and website operators a more intelligent computer tool to discover pornography and lewd materials on Internet.

Last December, Zhang Quan and his colleagues at the CAS Institute of Acoustics developed a system of comprehensive Chinese character recognition, which could identify porn contents on Websites not only by key words but also by syntax and other language index.

"The system functions as a search engine. You input a website address, and it will automatically open every page on the site and examine words, sentences and paragraphs for pornographic materials," Zhang, chief scientist of the program told Xinhua on Thursday.

"It is smarter than keyword-based search engines, because it can discern articles which are critiquing porn materials from those which are merely talking dirty," he said.

The system could also pick up ambiguous paragraphs which it could not comprehend for examiners to scrutinize, he said.

The CAS official website and some of its institutes' websites have already adopted the system for trial use.

"We anticipate that many government organizations and website operators will find it useful," said Zhang, "and we will soon put the software into the market."

Scientists also established a database of "pornographic like" words working as a "searching standard" for the examination.

The software could be used by supervision watchdogs or websites themselves for a real-time supervision on the web contents.

However, Zhang admitted that the new invention could only sniff out "pornography in written form", and could do nothing about images or audio-visual materials.

"We have yet to find an effective way for audio-visual examination, which needs further advanced technology," Zhang said.

In early January, seven government departments including the State Council's Information Office and the ministries of Public Security and Culture, jointly launched a nationwide crackdown campaign on porn websites. As of Tuesday, a total of 1,911 porn websites were shut down.

It later extended the campaign to mobile phone games, online novels, blogs, videos, radio programs, mobile phone websites, chatrooms and instant messenger groups.

Min Dahong, a senior mass communication fellow at the Chinese Academy of Social Sciences (CASS), said the government crackdown campaign would help build a much healthier web environment for Chinese youth.

1.5 Structure of Matter

Physicists Extend Quantum Memory to Milisecond

(CAS, 2009-02-13)

Physicist Pan Jianwei and his research team at the University of Science and Technology of China (USTC) successfully extended quantum memory to milisecond.

Prof. Pan and his team at Hefei National Laboratory for Physical Sciences on Microscale and Department of Modern Physics collaborated with scientists in Germany and Austria to do the research. They published a paper on the research finding in Nature Physics on February 1, 2009.

They identified and isolated distinct mechanisms responsible for the decoherence of spin waves in atomic-ensemble-based quantum memories, through an experimental investigation into extending the storage time of quantum memory for single excitations, according to the paper abstract.

They also succeeded in extending the storage time of the quantum memory to 1 ms, by exploiting magnetic-field-insensitive states, or so-called clock states, and generating a long-wave length spin wave to suppress dephasing. The result represents an important step towards long-distance quantum communication and will provide an empirical approach to large-scale quantum information processing.

Paper abstract: http://www.nature.com/nphys/journal/v5/n2/abs/nphys1153.html

Diamond No Longer Nature's Hardest Material

(CAS, 2009-02-20)

Diamond lost its title of the "world's hardest material" by 58% to a rare natural substance, according to a new research by Chinese scientists. Pan Zicheng at Shanghai Jiao Tong University and colleagues simulated how atoms in two substances believed to have promise as very hard materials would respond to the stress of a finely tipped probe pushing down on them.

Extreme conditions

The first, wurtzite boron nitride has a similar structure to diamond, but is made up of different atoms.

The second, the mineral lonsdaleite, or hexagonal diamond is made from carbon atoms just like diamond, but they are arranged in a different shape.

Only small amounts of wurtzite boron nitride and lonsdaleite exist naturally or have been made in the lab so until now no one had realised their superior strength. The simulation showed that wurtzide boron nitride would withstand 18% more stress than diamond, and lonsdaleite 58% more. If the results are confirmed with physical experiments, both materials would be far harder than any substance ever measured.

Doing those tests won't be easy, though. Because both are rare in nature, a way is needed to make enough of either of them to test the prediction.

Rare mineral lonsdaleite is sometimes formed when meteorites containing graphite hit Earth, while wurtzite boron nitride is formed during volcanic eruptions that produce very high temperatures and pressures.

Flexible friend

If confirmed, however, wurtzite boron nitride may turn out most useful of the two, because it is stable in oxygen at higher temperatures than diamond. This makes it ideal to place on the tips of cutting and

drilling tools operating at high temperatures, or as corrosion resistant films c on the surface of a space vehicle, for example.

Paradoxically, wurtzite boron nitride's hardness appears to come from the flexibility of the bonds between the atoms that make it up. When the material is stressed some bonds re-orientate themselves by about 90º to relieve the tension.

Although diamond undergoes a similar process, something about the structure of wurtzite boron nitride makes it nearly 80% stronger after the process takes place, says study co-author Changfeng Chen at the University of Nevada, Las Vegas, an ability diamond does not have.

Single crystals

Natalia Dubrovinskaia from the University of Heidelberg in Germany has carried out similar research.

"This is important because any attempt to give an insight into the mechanism that improves a material's property, especially hardness, is technologically extremely significant," she told New Scientist.

The more that is understood about what influences the hardness of materials, the more it will become possible to design hard materials to order, she explains.

However, she points out that in order to prove the theory, single crystals of each material would be needed. So far there are no known ways to isolate or grow such crystals of either material.

Links:

http://www.newscientist.com/article/dn16610-diamond-no-longer-natures-hardest-material.html

1.6 Transport and Space

East Asia builds world's largest radio telescope network

(Xinhua Net, 2009-02-01)

East Asian astronomers are building the world's largest radio telescope array to see the deep into the galaxy and black holes and more accurately determine the orbits of lunar probes such as China's Chang'e-1.

The array, called the East Asia Very Long Baseline Interferometry (VLBI) consortium, consists of 19 radio telescopes from China, Japan and the Republic of Korea (ROK) that cover an area with a diameter of 6,000 kilometers from northern Japan's Hokkaido to western China's Kunming and Urumqi.

The VLBI technology is widely used in radio astronomy. It combines the observations simultaneously made by several telescopes to expand the diameter and increase magnification.

Shen Zhiqiang, secretary general of the East Asia VLBI consortium committee, told Xinhua Sunday, the consortium has carried out experimental observations and frequent academic exchanges since the idea came into being in 2003.

One main task of the consortium is to improve the three-dimensional map of the Milky Way galaxy obtained by Japan's VERA (VLBI Exploration of Radio Astrometry), according to the project's development plan.

Hideyuki Kobayashi, director of Japan's Mizusawa VERA Observatory, told the Science Magazine in

the U.S. earlier that the consortium would help astronomers obtain high quality data on galactic structures.

Full-scale observations of the consortium are scheduled to start in 2010 which will connect at least 12 Japanese and four Chinese stations, in addition to three Korean ones that are under construction.

Shen said, "The actual number of telescopes included could change as the countries involved are building new ones -- like the 65-meter-diameter radio telescope being built in Shanghai."

"In addition," Shen said, also a researcher at the Shanghai Astronomical Observatory, "Chinese astronomers have made huge success in applying VLBI technology to determine the orbit of Chang'e-1, China's first lunar probe."

Shen's research team also used VLBI to find the most convincing proof so far that there is a super-massive black hole at the center of the Milky Way galaxy.

Currently, China's four telescopes participating in the consortium are still focusing on tracking the Chang'e-1 satellite, Shen said.

"But we are carrying out experimental observation tests as much as possible to prepare for the cooperation with Japan and ROK," he said.

The China VLBI Network announced on Jan. 20 that it successfully used the Internet to achieve high-speed data transmission called e-VLBI, an important direction for future VLBI technology development.

"The e-VLBI technology will play a vital role in China's lunar and Mars explorations which have already been launched," Shen said.

Meanwhile, Korean and Japanese astronomers are cooperating to build in Seoul a correlator to integrate large amounts of data into high-resolution images, a fundamental preparation for the consortium.

Radio telescopes differ from optical ones in that they use radio antennae to track and collect data from satellites and space probes. The first radio antenna used to identify astronomical radio sources was built by Karl Guthe Jansky, an engineer with Bell Telephone Laboratories, in the early 1930s.

China Builds World's First GPS Station in Antarctic's Dome Argus

(CAS, 2009-02-10)

Chinese scientists built the world's first permanent GPS automatic tracking station in Antarctic's Dome Argus (Dome-A). It will provide geodetic data for surveying and mapping in Dome-A, one of the coldest inland areas in Antarctic.

"The tracking station will provide significant data for Glacial Dynamics research and application research of GPS in troposphere and ionospheric," said Dr. Zhang Shengkai, researcher of the 25th Chinese Antarctic inland expedition team.

Researches can also be carried out on the stable state of inland ice-sheet in Antarctic and space physics through this GPS tracking station, added Zhang.

The station, titled "China Satellite Observatory in Dome-A", will keep working with battery pack providing necessary power supply after expedition teams leave the country's Antarctic research station, Kunlun Station.

The station, formed by a red pole with butterfly-shaped antenna on the top and white FRP radome, stands at the center of the square in front of the Kunlun station's main building.

The Kunlun station, China's third Antarctic research station, also the first on the continent's inland,

was erected at Dome Argus (Dome A), the pole's highest icecap at 4,093 meters above the sea level, on Feb. 2 by China's 25th expedition team to the South Pole.

China, Japan build "sharp eyes" for further space observations
(Xinhua Net, 2009-02-10)

China and Japan are making prominent contributions to a cutting-edge East Asian radio telescope network by respectively building the world's top-level radio telescope apparatus to be dedicated to further observations into the galaxy and black holes.

FAST, short for the Five-hundred-meter Aperture Spherical Radio Telescope, is the world's largest-aperture radio telescope announced so far and is under construction in a karst-landform village of southwestern China's Guizhou Province.

Japanese astronomers, meanwhile, are planning to launch the second generation of its world leading space radio telescope program called VSOP-2 which allows satellites to carry antennae into the space and therefore, expands the telescope network to beyond the earth's surface.

Mark J. Reid, astronomer at the Harvard-Smithsonian Center for Astrophysics in the United States, told Xinhua in an email Tuesday, the two apparatus would help East Asian astronomers play a large role in the venture of space exploration.

"The huge FAST telescope will ultimately allow detection of fainter sources of celestial bodies," Reid wrote, "and the Japanese space antennae will yield the highest angular resolution possible."

Due to be completed in 2013, FAST could be used to study physical laws of objects under extreme conditions and help search for extraterrestrial civilizations by identifying possible interplanetary communication signals, official website of the project said.

Japan's VSOP-2, second generation of the VLBI (Very Long Baseline Interferometry) Space Observatory Program scheduled to launch in 2012, would further expand the baselines between the telescopes. Armed with other advantages over the first generation such as higher observing frequencies and increased bandwidths, the VSOP-2 would gain higher resolution and sensitivity.

Radio telescopes differ from optical ones in that they use radio antennae to track and collect data from satellites and space probes. The VLBI technology used in radio telescopes combines the observations simultaneously made by several telescopes to expand the diameter and increase magnification.

The two apparatus, to be included in a large radio telescope network called the East Asia VLBI consortium, could each cooperate with the radio telescopes stationed on earth.

The consortium, whose full-scale observations are expected to start in 2010, consists of 19 radio telescopes from China, Japan and the Republic of Korea (ROK) that cover an area with a diameter of 6,000 kilometers from northern Japan's Hokkaido to western China's Kunming and Urumqi.

China's four telescopes participating in the consortium are still focusing on tracking Chang'e-1, China's first lunar probe, said Shen Zhiqiang, a VLBI researcher at the Shanghai Astronomical Observatory.

"But we are carrying out experimental observation tests as much as possible to prepare for the cooperation with Japan and ROK," Shen said.

The Korean side, with three telescopes to join the network, is working with the Japanese on building a correlator to be put in use by end of next year in Seoul.

Se-Hyung Cho, initiator of the Korean VLBI Network (KVN), told Xinhua in an email, the correlator

combines the observed data from each station of the East Asia VLBI consortium for synthesized high-resolution images.

Korean astronomers will design their observational study based on available "spatial resolutions and sensitivities" - ability to obtain clear images of the observed object, of the East Asia VLBI network, Cho wrote.

The first radio antenna used to identify astronomical radio sources was built by Karl Guthe Jansky, an engineer with Bell Telephone Laboratories, in the early 1930s.

China to station new generation of radars to better meteorological services

(Xinhua Net, 2009-02-11)

China will station a new generation of meteorological radars across the country in the next five years aiming to improve meteorological services and diminish the influences of weather hazards, authorities said Wednesday.

The China Meteorological Administration (CMA) said the new radars would be stationed in the major areas or blind regions of existing meteorological services, and economically developed areas suffering frequent weather damages.

Wang Shourong, deputy administrator of CMA, told Xinhua that the new radars would monitor meteorological hazards in the rural and coastal areas, major rivers, transportation lines and economic zones. They would be able to meet demands from industries such as irrigation, aviation, marine and forestry.

Wang said the new radars could pre-locate medium and minor weather systems such as cumulonimbus and tornadoes. They could also warn if there were heavy rains coming.

The National Development and Reform Commission, the country's top economic planner, has announced a development guideline for meteorological radars, aiming to install 158 radars nationwide by 2010.

Of the 5.783 billion yuan (846.71 million U.S. dollars) of investment, 3.523 billion yuan was from the central budget and the rest from local governments and relative departments.

A total of 150 radars have already been equipped, the CMA said.

With a wide territory rich in landforms, China is often challenged by tough weather conditions. The rare heavy snow and ice at the beginning of last year paralyzed transportation systems in many parts of the country. Currently, the northern areas are suffering the most severe droughts in decades.

Shanghai to Build 65m-Diameter Radio Telescope

(Xinhua Net, 2009-02-11)

Shanghai Astronomical Observatory, CAS will build a 65m-diameter radio telescope in its Sheshan station in suburban Shanghai with help from the municipal government. It will be completed in 2012 as the largest rotatable radio telescope in Asia, only next to the 110m-diameter telescope based in the United States and the 110m-diameter telescope based in Germany.

The new radio telescope will find application in deep space exploration missions and basic astronomy research. It will also be used in China's lunar exploration program as an important part of China's Very Long Baseline Interferometry (VLBI) array system of radio telescopes.

Currently, the VLBI network in China is composed of four telescopes in shanghai, Beijing, Kunming and Urumqi.

The VLBI successfully carried out orbit determination and positioning in the launching of the lunar obitor Chang'e -1. The 65m-diameter telescope will guide the lunar rover's way to the moon together with other VLBI telescopes when the second phase of the country's lunar exploration program is carried out in 2012.

"We have been making efforts in the past 30 years to develop VLBI technology, and contribute to the international astronomic research," said Shen Zhiqiang, a research professor with the observatory. "We are proud that the technology was used in the lunar exploration."

The telescope will also be included in the East Asia VLBI consortium which consists of 19 radio telescopes so far from China, Japan and the Republic of Korea (ROK).

China's new energy vehicles head for the world

(People's Daily, 2009-02-11)

Pilot programs for the demonstration of energy conservation and new energy vehicles will be launched in 13 cities including Beijing and Shanghai, according to a circular issued by the Ministry of Finance and the Ministry of Science and Technology on Jan 24.

Prior to this, from the delivery and use of the thirty Foton Euro-V hybrid buses in Guangzhou at the beginning of 2008, to the launch of BYD dual-mode F3DM electric sedan and the establishment of the Beijing New Energy Auto Design and Manufacture Base at the end of 2008, China's new energy vehicle sector were already stepping up to the forefront of the world.

Remarkable achievements

As early as 2005, Foton started an investment of over 600 million yuan in research and development of hybrid vehicles, said Zhao Jingguang, Deputy Party Chief of Beiqi Foton Motor Company. To date, Foton's hybrid buses are already put into massive production. During the 2008 Beijing Olympics, the zero-emission and pollution-free Foton Euro-V fuel cell bus made its own contribution to guaranteeing Beijing's air quality during the Games.

At the end of 2008, China's first new energy auto design and manufacture base was established at the Beiqi Foton Motor Company. The base, which involves a total investment of five billion yuan, possesses three important green energy technologies -- clean energy, alternative energy and new energy technology, and is keeping pace with the world, Zhao explained.

"This will have a demonstrative effect and will play an important role in driving the development of new energy vehicles in other regions of China," he said. On the day the base came about, Beijing Public Transport Holdings signed a procurement agreement with Foton for 800 hybrid urban buses and chassis.

Shenzhen-based BYD Auto has also made gratifying achievements. According to Xu An, Manager of the company's PR department, BYD has invested more than one billion yuan in research and development of new energy vehicles. Only for the battery sector of the hybrid vehicle, BYD established a research and development team of over 500 members.

BYD's dual-mode F3DM electric sedan can automatically switch to engine mode in case of low battery, said Xu. "It is the world's first electric auto that would not rely on charging stations, owing to its automatic electricity-gas switch function. With this technology, we will commercialize plug-in dual-mode electric cars two or three years ahead of the international automobile giants". Shenzhen Government has already confirmed its first order for dozens of BYD's electric cars.

BYD said it would market its all-electric car by the end of 2009. Foton also indicated that during the

same time it would launch its compact all-electric cars designed for individual buyers.

In addition to BYD and Foton, there are many other automakers in China that have made remarkable achievements in new energy vehicle development. During the Beijing Olympics, automakers such as Chery, ChangAn, Dongfeng, FAW and Jinghua provided society with a number of new energy vehicles they independently developed, including all-electric cars powered by lithium batteries, hybrid buses and sedans, fuel-cell cars and all-electric field cars.

Profound significance in the development of new energy vehicles

The development and promotion of new energy vehicles is of profound significance to sustainable economic and social development.

With the rapid development of the Chinese economy in recent years, the conflict between economic development and protection of natural resources and the environment is increasingly prominent. Enhancing the country's independent ability for innovation, fulfilling the national strategy for energy conservation and emissions reduction and maintaining sustainable social and economic development have become long-term, challenging tasks for China, said Wan Gang, Vice Chairman of the Chinese People's Political Consultative Conference (CPPCC) and Minister of Science and Technology, at the "2008 Forum on Green Energy Vehicle Development in China" on August 31, 2008.

The industrialization of new energy vehicles is still in its preliminary stage. The first customers of the dual-mode BYD F3DM are mainly enterprises. Xu says that it continues to be difficult for an individual to purchase an electric vehicle, and that BYD will make great efforts to encourage individual purchases in 2009. Presently, the situation at Foton is the same, with nearly all buyers of its hybrid vehicle being enterprises.

Zhao Jingguang explained that there are three factors restraining the industrialization of new energy vehicles. First, it is not clear how consumers will receive the vehicles. Second, new energy vehicles are still under development, and there exists the question of reliability in the transformation process from development to production. Third, new energy vehicles are much more expensive than traditional vehicles. Facing these difficulties, Zhao said that the government's promotion and support is of utmost importance. The industry requires not only financial support, but also backing through policy.

Large-scale promotion requires the nation's support, the government's encouragement for the consumption of new energy vehicles and in particular, customer recognition, said BYD's Xu An.

Over the past two years, the Chinese government has already started attaching importance to implementing policies that encourage the development and application of new energy vehicles.

In February 2006, the State Council released documents that supported the development of new energy vehicles. In the "National Guidelines on Medium- and Long-term Program for Science and Technology Development (2006-2020)", the State Council listed "low-energy consumption and new energy vehicles" as a priority topic and "hydrogen and fuel cell technologies" as frontier technologies. In November 2007, the National Development and Reform Commission formulated the "Rules on the Production Admission Administration of New Energy Automobiles".

At the launching ceremony of the Beijing New Energy Auto Design and Manufacture Base on December 28, 2008, Wan Gang said that the Ministry of Science and Technology, along with positive cooperation from relevant departments under the State Council, would take effective measures to further support research, demonstration and industrialization of energy conservation and new energy vehicles and advance this industry in China.

Those measures to be adopted including expanding investments in research and development to promote sustained technological development of new energy vehicles, organizing nation-wide demonstrations of new energy vehicle in order to speed up its industrialization, using international experiences as a reference to adopt stimulus policies to support the development and industrialization of new energy and organize and setting up technological and innovative alliances for the new energy sector, enhancing the production teaching research integration.

Satellite collision not to "delay" China's space program
(Xinhua Net, 2009-02-13)

The wreckage of US and Russian satellites that collided over Siberia poses a threat to China's satellites in orbit, but the country's space plan will proceed as scheduled.

A privately owned US communications spacecraft collided with a defunct Russian military satellite about 800 km above northern Siberia at 4:55 pm GMT on Tuesday, according to the US Strategic Command, which made it public on Wednesday.

The 560-kg US satellite, of Iridium Holdings LLC, was launched in 1997 and the Russian Cosmos-2251, weighing almost a ton, was sent in space in 1993.

Chinese scientists are monitoring the debris to gauge the potential threat to the country's satellites, said Tang Bochang, co-designer of China's first spaceship Shenzhou I. But the country's space exploration program, including sending a "space laboratory module" next year, will not be delayed.

It is not known yet whether the crash was an accident or took place because of a human error, said Tang, who is also chief designer of recoverable satellites with Beijing-based China Academy of Space Technology. But the 500 or so pieces of the two satellites floating in space pose a potential threat to the more than 900 satellites. Most of them have been sent by US, Russia and China (which has 54 satellites).

The Chinese space authority has prepared back-up plans. "We can adjust the orbits of the satellites already in space. And we can redesign the orbits of those yet to be launched," Tang said.

About 4,000 satellites and used rocket parts, apart from about 6,000 pieces of debris that can be seen, are traveling in space around 20,000 km an hour, according to NASA.

The two satellites' wreckage poses little threat to the International Space Station, about 1,200 km above the Earth's surface, NASA and the Russian Federal Space Agency both said yesterday.

But it would take weeks to determine the full magnitude of the crash, NASA said. "We knew this was going to happen eventually," said Mark Matney, an orbital debris scientist at Johnson Space Center in Houston.

A spokesman for the Russian civilian space agency Roscosmos, Alexander Vorobyev, said on state TV's Channel I that "for the international space station, at this time and in the near future, there's no threat".

Tuesday's collision was the first high-speed impact between two intact spacecraft, NASA officials said. Space objects in orbit have collided accidentally on four other occasions, NASA said. But those were considered minor and involved parts of spent rockets or small satellites.

Iridium Holdings has a system of 65 active satellites, which relay calls from portable phones that are about twice the size of a regular mobile phone. It has more than 300,000 subscribers, with the US Department of Defense being one of the biggest.

The company said the satellites' loss was causing brief, occasional outages in its service and that it

hoped to fix the problem by Friday. Iridium expects to replace the lost satellite with one of its eight in-orbit spares within 30 days.

China signs contracts for mass production of domestic regional jet
(People's Daily, 2009-02-14)

China's state-owned Shanghai Aircraft Manufacturing said Friday it signed contracts with four other factories, marking the start of mass production of the country's first domestically developed regional jet, the ARJ21-700.

The four companies are the Avici Commercial Aircraft Co. Ltd. (ACAC) and aircraft component factories in Chengdu, Xi'an and Shenyang. ACAC will produce the main bodies, while the other threewill make wings and other parts.

According to Luo Ronghuai, deputy general manager of ACAC, there have been 208 orders for ARJ21 jets from foreign and domestic customers, including an order for 25 from U.S.-based GE Commercial Aviation Services.

The first five planes will be delivered next year, with 10 to be delivered in 2011 and 15 in 2012.

Luo said this year would be "the year of trial flights" as four planes would make trial flights. The first ARJ21-700 made a trial flight in Shanghai on Nov. 28.

CAS: China begins tracking debris from the US-Russian satellite collision
(People's Daily, 2009-02-16)

The Chinese Academy of Sciences (CAS) monitoring network operated by the Purple Mountain Observatory (PMO) has begun tracking the debris created in the US-Russian satellite collision, Zhao Changyin, a researcher at the PMO, announced on February 12.

Zhao said the collision of the satellites occurred above northern Siberia, Russia. Since it happened outside the observational airspace of existing Chinese observation stations, they could not monitor the situation at the time of the event. However, the CAS monitoring network has later begun tracking the debris from the collision, and will closely follow the impact of debris on in-use Chinese satellites.

Zhao explained that this collision is estimated to create large swarms of treacherous debris, which will disperse within a rather wide area, mainly around the altitude at which the collision occurred. Therefore, the collision will not only pose a threat to other satellites that move at that altitude, but will also have an impact on satellites at other altitudes. However, the probability of another similar collision is quite slim.

Zhao added that similar collisions have occurred in the past. On July 24, 1996, the French electronic reconnaissance satellite Cerise slammed into the remains of the final-stage Ariane V16 rocket. On January 17, 2005, the fragments of a Chinese Long March-4 rocket collided with the remains of a final-stage US rocket.

China develops maglev train for urban transport
(People's Daily, 2009-02-18)

A Chinese company is developing low- and medium-speed maglev train with hopes that it may offer a new option for urban transport, local media reported Wednesday.

Although research and development work will be completed in April this year, a locomotive has been in testing over the past eight years, traveling some 30,000 km on test tracks.

China Daily said the train with a top speed of 120 km per hour was developed by the Beijing Enterprises Holdings Maglev Technology Development Co. Ltd., in cooperation with the National University of Defense Technology.

"The maglev train will be ready to go into mass production once it has completed 100,000 test kilometers," the English-language newspaper quoted the company's chairman Liu Zhiming as saying.

However, the company has yet secured a commercial contract, though Shenzhen city in south China approached the company and asked it to conduct a feasibility study into the use of the maglev technology for the planned urban rail project, said the newspaper.

Shanghai, China's financial hub, is the only Chinese city operating commercial high-speed maglev line. The Shanghai Maglev Train using German technology was put in use in early 2003, with the maximum normal operation speed of 430 km per hour, said the company's website.

The technology used on the low-to-medium speed maglev, however, was wholly developed in China. Experts believe the train would offer huge potential for public transport, because it is cheaper than subway to build and run, and is less noisy.

At present, only Japan has a low-to-medium maglev line in commercial operation. The United States and the Republic of Korea were also developing similar technology, according to a report of Beijing Daily.

China Provides Australia with Satellite Images and Data on the Bushfire
(MOST, 2009-02-19)

The continuous high temperature has plagued the southern Australia, especially Victoria and South Australia since February 2009, leading to the worst wild fire in the country’s history and causing severe casualties and losses. Coordinated by Chinese organizations including the Ministry of Foreign Affairs, MOST, the Ministry of Civil Affairs (MCA), the Chinese Academy of Sciences, and the Embassy of the People’s Republic of China in Australia, National Disaster Reduction Center of the MCA promptly provided satellite monitoring images and information on the Australian bushfire to Cooperative Research Centre for Spatial Information (CRCSI) of Australia.

China's Lunar Exploration Invites Public Competition
(CAS, 2009-02-27)

China's lunar exploration program will open to the public and adopt competition mechanism in research and developing projects, according to China's State Defense Science and Technology Industry Bureau.

The bureau will invite qualified research organizations and manufacturers to attend public bidding for more than 90 key technology projects, which include the explorers for lunar landing and roving in the second phase of the Lunar exploration.

Specialists on lunar rover system discussed with 130 relevant experts from China's 30 key universities, who know well about technical demand of items in the second phase of lunar exploration. Meanwhile, research institutes and manufacturers can get better comprehension on research capability and technical reserve in the universities. Further communication and cooperation will follow on interested items.

Scientific power in universities will be dug out through this kind of cooperation. Furthermore, introduction of competition mechanism may help reduce cost of the project, shorten time limit and

improve the project's accountability, the bureau said.

Unmanned space module to be launched in 2010, await space docking
(Xinhua Net, 2009-02-28)

China plans to launch an unmanned space module into orbit as early as the end of 2010.

It is expected to meet with another unmanned spacecraft, Shenzhou-8, which is scheduled to be launched in early 2011. It would be the country's first space docking.

A spokesman with China's space program said Saturday that scientists on the ground would control the space docking between the orbiter and the unmanned spaceship.

The module, named Tiangong-1, is designed to provide a "safe room" for Chinese astronauts to live and conduct scientific research in zero gravity.

Weighing about 8.5 tonnes, Tiangong-1 is able to perform long-term unattended operation, which will be an essential step toward building a space station.

Xinhua has learned that a prototype of the module is almost completed and scientists have started to upgrade and renovate ground service equipment for the unmanned space module.

After successfully sending spacecraft Shenzhou-5, piloted by the country's first taikonaut (a Chinese term for astronaut) in 2003, China has sped up its space program. Its goal is to run its own space station.

Chinese scientists began prototype research the space docking in 2007.

The priority for this year is to assemble prototypes of Tiangong-1, Shenzhou-8 and their carrier rocket. They also plan to build a new Long March 2F, which was used to propel three astronauts in the Shenzhou-7 mission last year.

The space program, carried out by the People's Liberation Army's General Armament Department, also aims to finish experiments on coordination of different systems of the Tiangong-1mission this year.

Space docking technology has been widely recognized as one of the most sophisticated space skills as it requires precise controlling of two high-speed spacecraft which meet and dock in space.

China has already test launched unmanned space orbiters. Before the Shenzhou-5 mission, in which then Yang Liwei made China the world's third country to master manned spaceflight, four other unmanned experimental spaceships had been tested.

Paralleling research of the space module, China achieved a major leap in its manned space activity in the third manned mission Shenzhou-7 last year when Zhai Zhigang made the country's first spacewalk.

To realize the ultimate goal of building a permanent space laboratory that allows astronauts to conduct larger scale experiments, Chinese scientists will encounter further obstacles such as to produce its own reusable spacecraft.

During China's latest space mission, the chief designer of the spacecraft system Zhang Bainan said China would begin the mass production of its Shenzhou spacecraft starting from the Shenzhou-8mission.

Zhang said the mass-produced model would serve as a space shuttle between China's space station and the ground, and may also transport astronauts and cargo for other countries.

The transportation vehicles currently in use between space stations and the ground are mainly space shuttles of the United States and Russia's Soyuz spacecraft.

2 News from Universities

Winter camp for Russian students kicks off in China
(People's Daily, 2009-02-16)

A 12-day winter camp for Russian students kicked off here Sunday as a reciprocal program that marks the 60th founding anniversary of diplomatic ties between China and Russia, according to the Ministry of Education.

During the 12 days, a total of 60 primary and middle school students from Russia will visit schools and historical sites in Beijing and south China's Hainan Province. Meanwhile, parties and various sports contests will be held for them and their Chinese counterparts to better understand China's history and culture.

Since 2001, tens of thousands of students from China and Russia have attended such summer and winter camps in the other country. The Russian students have visited some 20 cities across China, including Dalian, Suzhou and Shanghai.

"China and Russia have been sharing a long history of communication and cooperation regarding education, and mutual understanding and friendship between the two countries' youngsters is of great significance to bilateral ties," said Wu Zaofeng, a senior official in charge of international exchange and cooperation under the Ministry of Education.

Wu said, through deepened cultural cooperation between China and Russia, more students were gaining opportunities to learn. He hoped that the two sides would push forward the summer and winter camp activities to strengthen the friendship among young people.

The winter camp is held by China's Education Association for International Exchange.

Chinese State Councilor urges efforts to build world-class universities
(People's Daily, 2009-02-17)

Chinese State Councilor Liu Yandong wants more efforts to be made towards building world-class universities in order to meet the strategic demands of the country's modernization drive.

Efforts should be given to upgrade competitiveness and promote the influence of Chinese universities, Liu said at a conference Monday.

World-class and high-level universities are symbols of a country's overall national strength, and play a significant role in driving forward a country's development, she said.

To build such universities has an important bearing on the fundamental interests of the Chinese nation and the long-term interest of the country's modernization, Liu added.

The official urged universities to set their development goals based on their historic traditions, subjects characteristics and resources. She also wanted them to give priority to the development of key disciplines and train top-notch talents with innovative ideas.

Universities should enhance their capacities in scientific innovation and social services, promote management reform and upgrade international exchange, she stressed.

China awards scholarships to poor college students with good academic records
(People's Daily, 2009-02-23)

China held a ceremony here Sunday to award national-level scholarships to college students from poor families with outstanding academic performances.

The scholarship program, titled "The National Scholarship", was founded in 2002 and is aimed at helping poor college students. About 50,000 such students receive the award each year.

State Councilor Liu Yandong said at the ceremony that the government would continue to provide aid to poor students despite the financial crisis.

Around 700 student representatives attended the ceremony. An evaluation team set up by the Ministry of Education and the Ministry of Finance selected the recipients.

3 Innovation Management

Intellectual Property Rights Website of CAS Launched

(CAS, 2009-02-03)

The Bureau of Comprehensive Planning, the National Science Library and CAS recently launched the website of Intellectual Property Rights of CAS in Beijing (http://www.casip.ac.cn) .

The website will integrate the most-updated and comprehensive information on intellectual property rights owned by CAS institutes and report on scientific and technological achievements of CAS researchers.

With the aim to present industry with CAS' research programs and bridge the needs of the industry with CAS' research results, the website serves to speed up the exchange of information on intellectual property rights of CAS and promote intellectual property rights transfer.

China overtakes the UK to rank sixth in the world in PCT filings

(People's Daily, 2009-02-06)

On February 1, the State Intellectual Property Office website quoted the World Intellectual Property Organization (WIPO) website saying that China surpassed the UK in number of Patent Cooperation Treaty (PCT) filings in 2008, ranking sixth in the world. In addition, a Chinese company for the first time ranked first among all companies in the world for number of filed PCT applications.

Through PCT patent filing, applicants can apply for patents in only one language at one patent office (receiving Office), and the filings will be legally valid in every PCT member country. China became a PCT Contracting State in 1994.

WIPO data shows that the number of PCT filings in the world set historical records again in 2008. The top three countries in application number were still the US, Japan and Germany, followed by South Korea, France, China, the UK, the Netherlands, Sweden and Switzerland.

In 2005, China ranked in the top 10 for the first time. China and South Korea were the two developing countries with most PCT filings in 2008.

Of the 6,089 Chinese PCT filings, over one-third came from the two communication equipment manufacturers Huawei and ZTE. China's performance was still weak in the fields of medical technology, computer technology and pharmaceuticals which took the most part of filings in 2008, showing that in terms of PCT filings, only a few enterprises in China are performing well in certain fields.

CAS, NSFC Join Hands to Support Use of Large Scientific Equipments
(CAS, 2009-02-19)

The National Natural Science Foundation of China (NSFC) and the Chinese Academy of Sciences (CAS) signed an agreement on February 17 to set up a fund to help universities and science institutes use CAS's large-scale scientific equipments for their research.

The two organizations will each provide half of the initial fund of 40 million RMB. The fund will be open to applications from 2009 to 2011.

It will help researchers to use the second phase construction of the Beijing Electron Positron Collider (BEPCII), Heavy Ion Cooler-Storage-ring Synchrotron System in Lanzhou, Shanghai Synchrotron Radiation Facility (SSRF) and Hefei Synchrotron Radiation Facility.

The fund is open to higher education institutions and research institutes nationwide, and will facilitate the integration and sharing of sci-tech infrastructures and increase the efficiency of large-scale scientific facilities, said Bai Chunli, vice president of CAS.

According to source from NSFC, its budget in 2009 could still maintain a 20% increase in spite of the financial crisis and a constrictive financial budget. NSFC financed 1265 projects with a total investment of 680 million RMB from 1999 to 2008.

China built 361 off-campus postdoctoral research centers in 2008
(People's Daily, 2009-02-20)

China built 361 off-campus postdoctoral research centers in 2008 and selected 3,997 people to receive special government allowances, said Yin Weimin, Minister of Human Resources and Social Security, during the national human resources and social security working conference held on February 19.

China also for the first time included 400 highly skilled talents in the State Council's special allowance program. In addition, there were over two million people participating in the knowledge upgrading training program for specialized technical personnel.

Yin said the Ministry of Human Resources and Social Security worked with the Organization Department of the CPC Central Committee in 2008 to enact and implement the plan to bring 1,000 high-level talents from overseas and continued to carry out the financial aid program for Chinese scholars who had studied abroad and returned home to work. The program has provided subsidies to 290 people, with total financial aid reaching 14.09 million yuan.

The ministry and the department also conducted research to provide opinions on the reform of the engineering system, announced evaluation measures for postdoctoral research centers located in educational institutes and off-campus postdoctoral research centers, and offered special subsidies for postdoctoral scientific funds. They also printed and distributed guidance opinions regarding evaluation work on corporate technological talents, and launched the pilot program of implementing evaluations for corporate technological personnel at 60 large-sized enterprises directly under the supervision of the Central Government.

4 Miscellaneous

CAS Report: China's Cultural Influence Ranks 7th in the World
(CAS, 2009-02-02)

The index of China's cultural influence ranks 7th in the world, behind the US, Germany, UK, France, Italy and Spain, according to China Modernization Report 2009 - A Study on Cultural Modernization, released by the Center of Modernization Research of China, CAS on January 17th, in Beijing. The index is based on various indicators and data from 2005.

He Chuanqi, leader of the research project and Director of of the research center, said the major indicators are the nation's index of cultural life modernization, index of cultural competitive power and index of cultural influence. Based on statistics compiled in 2005, the international rankings of China's cultural modernization are generally as follows: of 131 nations, China's index of cultural life modernization ranks 58th, on par with other preliminarily developed countries; its index of cultural competitiveness ranks 24th, on the level of medium power countries in the world; and its index of cultural influence ranks 7th, placing it among the world class powers. This is to say that the index of China's cultural influence performed better than its index of cultural competitive power, and its index of cultural life modernization had the largest gap behind other countries. Therefore, the key to China's cultural modernization is to raise the level of modernization in cultural life.

The report also points out that the strategic goals of China's cultural modernization in the 21st century can be divided into two stages. The first stage's goal is that, by 2050, cultural life modernization should achieve the level of moderately developed countries; the first cultural modernization should be completed in an all-round way and the second cultural modernization should begin. The second stage goal is that by 2100, cultural life modernization should be promoted to the rank of developed countries and the second cultural modernization should be completed in an all-round way.

Drought-resistant seeds to help growers
(Xinhua Net, 2009-02-10)

The Ministry of Science and Technology has listed 20 types of drought-resistant wheat seeds to help farmers combat the worst dry spell in large parts of the country since 1951.

Though the seeds have been available in local markets, many farmers still do not know about them, Wang Xueqin, chief of the ministry's agriculture department, told China Daily Monday.

That is why the ministry has decided not only to promote the seeds, but also provide technological help to farmers who buy them, he said.

Farmers who have lost wheat seedlings to the dry spell can sow the drought-resistant seeds, which cost largely the same as the common varieties, and "reduce their losses", Wang said.

"The government will provide farmers with 50 kinds of new seed technologies and relative services, too, as part of the free drought relief work," Minister of Science and Technology Wan Gang told a meeting yesterday.

But despite the efforts it would be difficult for the country to reach last year's wheat output level of 109 million tons, the highest since 2003.

The worst drought to hit the country in more than half a century has hurt the livelihood of people in eight provinces - Hebei, Shanxi, Anhui, Jiangsu, Henan, Shandong, Shaanxi and Gansu. And till

Friday, it had damaged or destroyed crops on about 158 million mu (10 million hectares).

"The crops in drought-hit regions may not survive the unexpected drops in temperature," said Wang Zhimin, a professor of China Agricultural University.

Many farmers have been using wheat seeds with a short growth period because of the warm winters in recent years, he said. But usually such seeds are not cold-resistant.

In spring, temperatures can drop drastically at nights, something such seeds cannot sustain because they don't have the special features of the stronger drought-resistant varieties, Wang Zhimin said.

Though local governments have raised their subsidy levels for farmers to help them buy more irrigation and water-saving equipment, farmers could still face heavy loses, he said. For example, a farmer in Hubei has to pay 30 yuan as water and electricity fee for every mu of land he/she irrigates, he said.

But it's too early to say if the drought will influence the price of wheat this year because that it also depends on the total output of the grain, he said.

Irrigation covered more than half of the wheat fields in the drought-hit provinces, Minister of Agriculture Sun Zhengcai said on Sunday, and 85 million mu of them have been irrigated in provinces such as Henan, Anhui, Shandong and Hebei.

Space Walk Tops List of China's Basic Research News Stories in 2008

(CAS, 2009-02-13)

"Successful launch of the spaceship Shenzhou-7 and space walk of one of its astronauts" topped the list of top ten news stories about China's basic research in 2008. The list was compiled and released by Ministry of Science and Technology in Beijing on Tuesday.

Following are the ten stories, which were selected by the ministry's expert committee from more than 30 candidates.

1. Successful launch of the spaceship Shenzhou-7 and space walk of one of its astronauts
2. Publication of China's first picture of moon taken by its moon orbiter Chang'e-1
3. Development in the fe-base superconducting research under high temperature
4. Completion of the Large Sky Area Multi-Object Fiber Spectroscopic Telescope (LAMOST) project
5. Complete sequencing of the diploid genome of an Asian individual
6. Research on factors affecting the strength of the Asian monsoon in the past 200,000 years
7. Building-up and full operation of Heavy Ion Research Facility in Lanzhou Cooler Storage Ring (HIRFL-CSR)
8. Three dimensional structure of the polymerase PAC and PB1N complex the avian influenza H5N1 virus
9. The founding of natural variation in Ghd7 as an important regulator of heading date and yield potential in rice
10. Discovery of possible evidence which could prove the mass of the dark matter particle being annihilated.

China science association to set up science libraries in counties

(People's Daily, 2009-02-21)

The China Association for Science and Technology (CAST) plans to set up 200 libraries across the

country this year in an effort to promote science in grassroots organizations.

The move is part of CAST's 50 million yuan (about 7.3 million U.S. dollars) project to establish 1,000 libraries nationwide in a time span of five years ending 2012.

The libraries, which will be built in 200 counties in 26 provinces including Heilongjiang, Shanxi and Yunnan, will each feature a collection of 3,000 popular science books, a computer and a printer, according to a CAST statement released Friday.

Library managers, most of whom are staff from local science organizations, will also provide science lectures and training sessions for farmers, young people and community residents.

CAST had built libraries in 100 counties as of 2008. Its statistics show that more than one million people have benefited from the project.

5 Abbreviations

CAS - Chinese Academy of Sciences

MOST - Ministry of Science and Technology

CRI - China Radio International