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# NEWSLETTER

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## SPECIAL ISSUES

### "Double Hundred Projects" for Resources Utilization

The National Development and Reform Commission has recently released a circular stating that it will initiate during the 12<sup>th</sup> Five-year period (2011-2015) 200 projects for the comprehensive utilization of resources. The "double 100 projects" will include 100 demonstration bases and 100 enterprises that are supposed to play an exemplary role in the comprehensive utilization of resources. The initiative is staged to boost the overall level

of resources utilization, promoting the development of strategic emerging industries, and accelerating the change of economic development mode.

The "double 100 projects" will focus on three major areas: mineral resources and associated ores/tailings (coal bed methane power generation is not included); industrial wastes, gangue, fly ash, gypsum as an industrial by-product, smelting slag, construction wastes (coal gangue based power generation is not included); and recycling of wastes, waste tires, waste packaging, and waste textiles.

The Circular states that China will develop a resources utilization capacity of 200 million tons a year at the end of the 12th five-year period, enjoying a 30% newly added capacity. The demonstration projects shall recover at least 40% of the mineral resources they used, and achieve a comprehensive utilization rate of 45% or above. Meanwhile, the "double 100 projects" will achieve an output value worth more than RMB 100 billion, creating jobs for some 200 million people. Additionally, the initiative will help nurture large businesses of international competitiveness, and establish resource utilization R&D centers, in an attempt to develop China's own proprietary resource utilization products with core competitiveness, breaking through the bottleneck of common problems, and allowing some key technologies developed by Chinese researchers reach an internationally advanced level.

## China's Largest Resources Reform Platform

It is reported from the Fengdong New Town in the Xixian New Area of Shaanxi Province that the government will build an S&T resources center there, the largest of its kind in the country. The development marks a substantive step made in reforming the use of scientific and technological resources in the country.

In June 2009, the State Council issued a "Guanzhong-Tianshui Economic Zone Development Planning", stating that efforts shall be made to build a scientific and technological resource reform base with Xi'an as the center. As a result, China's first S&T resources reform center broke ground on July 28, 2011 at the Fengdong New Town in the Xixian New Area.

With the support of Xi'an Jiaotong University and Shaanxi Institute of Industrial Technology, the new town has attracted a range of strategic emerging industries, including a smart grid technology and equipment engineering center, a manufacturing parts selection and procurement e-commerce platform, a commercial application base for Shaanxi Institute of Electronics Industry, a green low-carbon energy equipment demonstration center, an alloy steel supermarket, an R&D center for high-end CNC key components and associated industrialization, and a complex bevel precision testing center, among others. Meanwhile, the new town has enhanced the construction of municipal and public utility systems, with an investment worth RMB 6 billion, in an effort to create desired

infrastructure conditions for tech businesses to station in the new town.

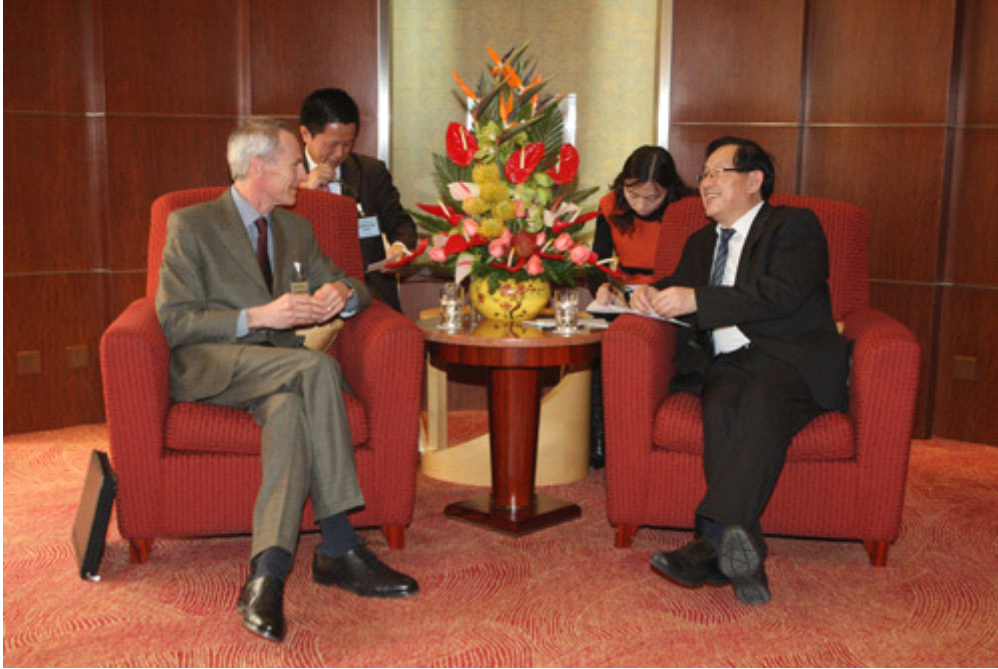
## Engineering Doctorates for Major S&T Projects

The Ministry of Science and Technology Major Projects Office and the State Council Academic Degrees Committee jointly announced at a university-business matchmaking event held on March 30 that China will open engineering doctorates for major S&T projects. According to preliminary statistics, major national S&T projects have asked for engineering doctorates in some 80 majors. Some 140 companies have registered a need for engineering doctoral graduates that accounts for more than 800 in total.

The State Council Academic Degrees Committee says engineering doctorates will be a major task to be worked on this year jointly by the degree-granting institutions and industry, and that it will stage a joint program to nurture engineering doctoral students in line with major national projects, exploring the new approach to bring out the needed talents for engineering fields through the concerted efforts. The initiative has won the support of both Ministry of Finance and Ministry of Education, which will allow universities and enterprises to have additional quota for admitting engineering doctoral students and associated financial support.

INTERNATIONAL COOPERATION

WAN Met with French Guest



WAN Gang, Vice-Chairman of Chinese People's Political Consultative Conference and Minister of Science and Technology, met with Jean Dominique Senard, Managing Partner, the Michelin Group on March 18, 2012 at "China Development Forum 2012. WAN appreciated the efforts made by the Michelin Group in addressing climate change, reducing greenhouse gas emission, and developing new energy vehicles. Having been informed of the latest development of the Michelin Group and its development strategy in China, WAN briefed his French guest of China's new energy vehicle policies, focusing on the demonstration of electric vehicles, especially electric buses, and associated market diffusion and new business models.

### WAN Met with Irish Guests

WAN Gang, Chinese Minister of Science and Technology, met with Richard Bruton, Irish Minister for Jobs, Enterprise and Innovation, on March 27, 2012, and jointly inked a Memorandum of Understanding on research and innovation cooperation between the two organizations. The MOU is signed to deepen and enhance research and innovation cooperation between the two organizations in the selected areas, including life sciences and information and communication technology, among others, promoting the win-win bilateral cooperation between research institutions, high-tech parks, and business sectors in the two countries.

RESEARCH AND DEVELOPMENT

## Chinese Made PM2.5 Monitor

LD310 and LD320, the two real-time respirable particulate matter monitors developed by Chinese engineers, passed the experts' verification check on March 29, 2012. With the support of the National S&T Support Program and an S&T initiative staged by the Beijing Municipal Government, Beijing Huifenglong BioTech and Chinese Academy of Environmental Sciences jointly developed LD310, an instrument able to measure the size and spectrum of aerodynamic particles. Applied with the core technologies of measuring the aerodynamic flight time of scattering optical particles and vents acceleration, the instrument is designed not only to measure PM2.5 concentration, but also to reflect the deposition site of aerosol particles in the respiratory tract, suitable for studying the harmful effects of aerosol particles on human health. LD320, a scatter optical particle spectrometer able to measure the size and spectrum of atmospheric particles, is important for establishing a PM2.5 monitoring system in China, thanks to the core technologies applied, such as particle acceleration and scattering optical particle measurement.

The two instruments have passed the tests for technical performance, environmental adaptability, and applications, in addition to a comparison with an overseas prototype instrument built on the beta ray method.

## Wearable Assistive Robot

A wearable assistive robot, jointly developed by the CAS Institute of Intelligent Machines, Institute of Solid Physics, and Anhui Traditional Chinese Medicine School to help the disabled and elder persons, recently passed an acceptance check. The robot is designed to be worn on arms, waist, and legs, assisting an elder, or a disabled person with some motion capability to walk or to use their hands like a normal person.

Researchers made a range of innovative designs, including hip joint empowering mechanism, sensor-based human motion intention capture, and man-machine balance in the movement. They also developed the patented designs and processes, including hypothetical compliance control, mechanical design of robotic exoskeleton, motion information acquisition, and fall prediction, among others.

The robot has been proved effective assisting the disabled or elderly people to take care of themselves, or work independently, reducing the burdens on both family and society. Meanwhile, the findings derived from the project will find broad applications in human biomechanics, heavy physical work, health care, manufacturing, and entertainment.

## Marine-II Starts Applications

It is reported from a data products launch recently held by the State Oceanic Administration for Marine-II satellite that the half-year in-orbit testing and trial applications has equipped the marine satellite with the capability of providing application services. According to a briefing, the satellite has been working smoothly in orbit with a good linkage between the satellite and the ground control, and is able to prepare data products at levels 0, 1, 2, and 3, and handle 11 major environmental parameters. The official distribution of the data products from the satellite will enhance marine disaster prevention and mitigation, maritime rights and interests protection, marine resources development, marine environmental study, and national defense.

The trial applications confirmed the satellite's huge application potentials and perspectives in a range of areas. For example, the satellite is able to monitor the storms at sea, covering 90% of the globe on a daily basis, which makes it the only one in the world possessing such a capability. In 2011, it captured the location and pattern of the tropical storm "Banyan", and the northwest Pacific sea surface temperature data it collected became part of the marine environment forecasting system released to the public started from November 26, 2011. It is said the data products stemmed from the satellite, once formally incorporated into the forecasting system, will raise the prediction accuracy by 10%.

Marine-II is China's first dynamic ocean environmental satellite, integrated with both active and passive microwave remote sensors, enjoying the high-precision orbit measurement and determination capability, along with a global observing capability for all weathers at all time. It is mainly designed to monitor and investigate marine environment and associated dynamic parameters, including sea surface wind field, wave height, currents, sea surface temperature among others. It can be directly used to provide real time data for making a severe sea condition warning or forecast. The satellite was launched on August 16, 2011. Its payloads started to work and sent data to the ground on October 1 the same year. It was officially delivered to the State Oceanic Administration on March 2, 2012.

NEWS BRIEFS

65-m Radio Telescope in Shanghai



In the picture, one can see a 65-m radio telescope, jointly financed and built by the Chinese Academy of Sciences, Shanghai Municipal Government, and China Lunar Exploration Project. Sitting at the foot of a hill named Sheshan in Shanghai, the RMB 200 million worth project is staged to enhance China's deep space exploration capability, especially the orbit determination capability, providing precise positioning and orbit determination service to China's lunar probe, Mars probe, and other deep space probes. It will also substantively enhance the sensitivity of China's Very Long Baseline Interferometry (VLBI).

Started to build in December 2009, the radio telescope is schedule to have its antenna structure installed at the end of 2012. It will provide the VLBI orbit determination service to China's lunar probe II during the period of 2013-2014. The entire telescope system will be completed in 2015.

## New Communications Satellite Launched



At 18:27, March 31, 2012, China blasted off APSTAR-7 communications satellite developed by Thales Alenia Space France (TASF) for APSTAR aboard a CZIIIB launch vehicle, from the Xi'chang Satellite Launch Center. 26 minutes after lifting off, the Xi'an ground control received the data showing that the satellite was separated from the carrier rocket, and entered a geosynchronous transfer orbit at a perigee of 209 km, an apogee of 50,419 km, and an orbital inclination of 27.4 degrees.

APSTAR-7 is an advanced communications satellite developed by Thales Alenia Space France for APSTAR, aboard with 28 C-band and 28 Ku-band transponders for a design lifetime over 15 years. The satellite will replace the current APSTAR-2R satellite at 76.5°East Longitude, providing beams to Asia, Middle East, Africa, Australia and part of Europe, and in-beam and cross-beam broadcast and telecommunication services to China, Middle East, Central Asia, and Africa.

## Disciplinary Development Planning

Not long ago, Chinese Academy of Sciences and National Natural Science Foundation jointly inked a framework document to enhance strategic collaborations in the area of disciplinary development planning. A book series named "China's disciplinary development strategy in the coming decade" were also released at the same event. The two organizations jointly launched a study of disciplinary development planning for 2011-2020 in April, 2009. Some 600 specialist and scholars, including 196 academicians, made themselves part of the study. The efforts led to a master report on disciplinary development planning, and 19 reports for individual disciplines.



Under the cooperation framework, Chinese Academy of Sciences and National Natural Science Foundation will set up a joint steering panel and a joint working group, inviting a qualified strategic research team to work on disciplinary development planning, with the results stemmed from the study being shared by the two organizations.

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