

# China Science & Technology NEWSLETTER

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Department of International Cooperation Ministry of Science and Technology(MOST), P.R.China

China's Achievements in 2017

**[International S&T Cooperation]**

Minister Wan Gang Meets with UNDP Administrator

Minister Wan Gang Meets with IEA Executive Director

**[Work on Science and Technology]**

MOST Announces Establishment of 6 National Labs

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## China's Achievements in 2017 >>>

### >>> Fuxing Hao: Pride of "Made in China"



△ On June 25, 2017, China Standardized EMU was named Fuxing Hao.

On June 26, the Fuxing Hao with our own IPR made its first departure from Beijing and Shanghai simultaneously. Compared with Hexie Hao, Fuxing Hao has its designed life extended by 50% and can run at a highest speed of 400km/h with lower noise. Moreover, facilities such as sockets, wifi and reading lamps are provided. The emergence of Fuxing Hao marked China's hi-speed trains being totally made in China from appearance to core technologies. In particular, we managed to develop all the software by ourselves, which symbolized a critical step from chasing to leading for our hi-speed railway development.

## China's Achievements in 2017 >>>

### >>> Mozi quantum satellite seizes commanding heights of quantum science and technology



#### △ Mozi quantum satellite takes the international lead in realizing 1000km-class quantum entanglement distribution

On August 10, the Chinese Academy of Sciences (CAS) announced that the Mozi quantum satellite has fulfilled its three major objectives of quantum entanglement distribution, quantum key distribution and quantum teleportation during its one-year stay in space. It opened the door of globalized quantum communications, space quantum physics and quantum gravity experimental test, which helped China seize the commanding heights of quantum science, technology and innovation.

## China's Achievements in 2017 >>>

### >>> Shenhai Yongshi (Deepsea Warrior) completes deep sea testing



On October 3, the manned submersible named Shenhai Yongshi, on board the ship Tansuo-1, returned to port in Sanya after an over 50-day expedition. It has completed all the deep-sea testing in the South China Sea. The testing proved the functions of 4,500m-manned-submersible and marked the success of the related research. Shenhai Yongshi was the second deep-sea manned submersible of China. Compared with Jiaolong, the biggest difference was that over 95% of the components of Shenhai Yongshi were made in China. For example, its buoyancy material, deep sea lithium battery and manipulator were all developed by China.

## China's Achievements in 2017 >>>

### >>> C919 completes test flight successfully



On May 5, our first independently developed jetliner C919 completed its first test flight in Shanghai Pudong International Airport. On December 17, the second C919 passenger plane completed its first flight successfully. The two test flights marked a crucial step in the research and manufacturing of the C919 passenger plane and a new journey of comprehensive testing. With a maximum flying distance of 5,000km and world leading comprehensive functions, C919 is competitive compared with Boeing 737 and Airbus A320.

## China's Achievements in 2017 >>>

### >>> 1st home-built aircraft carrier launched



On April 26, China's first home-built aircraft carrier was launched in the shipbuilding plant in Dalian. It was completely designed and built by China, which marked a new stage of our national defense and a new milestone of military development.

## China's Achievements in 2017 >>>

### >>> 10,000-ton type destroyer launched



An aircraft carrier is naturally accompanied by fleet. On June 28, the launching ceremony of the new-type destroyer was held in Shanghai. The 10,000-ton destroyer completely developed by China has reached international advanced level among its counterparts in other countries, becoming a landmark warship for the strategic transformation of the navy.

## China's Achievements in 2017 >>>

### >>> 1st flammable ice drilling trial succeeded in South China Sea

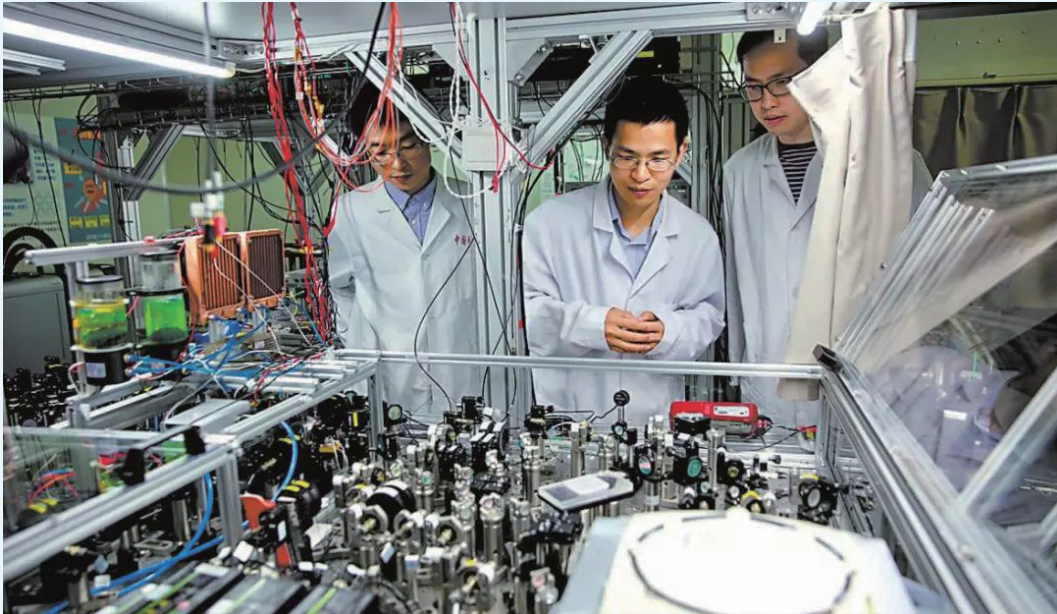


On May 18, China succeeded in its first flammable ice drilling trial, which marked China becoming the first country to realize stable and constant gas production in flammable ice drilling trial. China keeps breaking record of the duration of constant gas production in its trial, which has caught the attention of the world.



## China's Achievements in 2017 >>>

### >>> China creates the world's first photon quantum computer



On May 3, the world's first photon quantum computer was born in China, surpassing the classical computers. The computer was completely "created in China". And the sampling rate of the prototype was 24,000 times faster than its international counterparts. In line with the theories of quantum coherence and superposition, quantum computing boasts super fast parallel computing and simulation capacity. The computing capacity will witness exponential growth with controllable particles, which can provide effective solutions to deal with large-scale supercomputing problems which cannot be resolved by classical computers.

## China's Achievements in 2017 >>>

### >>> Saihanba becomes world role model of ecological progress



#### △ Wind power generation facilities in Saihanba forest

Over the past 55 years, the people in Saihanba have developed one single pine tree into a vast ocean of trees. Thanks to the efforts from the 369 pioneers to the three generations of people, the local have turned deserted mountains and sandy land into beautiful existence. On December 5, UNEP awarded the UN Champions of the Earth Award to the forest rangers in the Forest Farm, so as to honor their achievements in turning vast deserts into ocean of trees.

## China's Achievements in 2017 >>>

### >>> Tianzhou-1: China's first cargo spacecraft



The Tianzhou-1 cargo spacecraft was launched into space successfully on April 20 and completed for the first time the trial of in-orbit propellant refueling with Tiangong-2 on April 27. This marked the success of the space mission of Tianzhou-1. As the first cargo spacecraft developed by China, Tianzhou-1 is designed to fulfill the core missions of rendezvous and docking with Tiangong-2 space lab and in-orbit propellant refueling. It has paved the way for building an interaction system between space and earth, a space station that is cared by people for a long time and an open international space research platform.

## China's Achievements in 2017 >>>

### >>> Beidou system expands into a global network



On November 5, China's 3rd generation navigation satellite was successfully launched into space, which marked the official start in building the Beidou Navigation Satellite System. The 2nd set of satellites of Beidou-3 are expected to be launched in 2018.

## China's Achievements in 2017 >>>

### >>> 1st astronomy satellite launched successfully



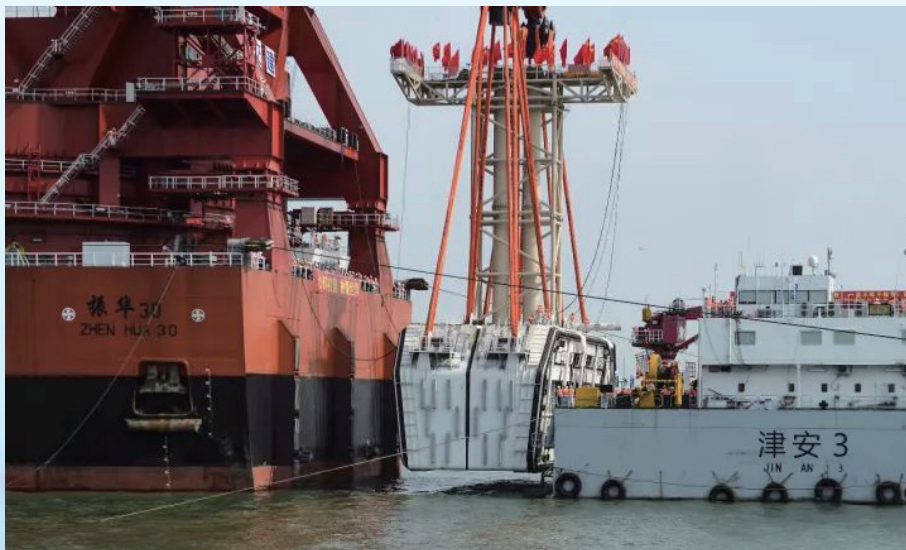
On June 15, China launched its hard X Ray Modulation Telescope – Huiyan. It was our first large X Ray astronomy satellite with a designed life of four years. Its emergence and launch marked the end of absence of independent observation data in high-energy astrophysics.

## China's Achievements in 2017 >>>

### >>> Main structure of HK-Zhuhai-Macau Bridge declared complete



On July 7, the undersea tunnel of the HK-Zhuhai-Macau Bridge was completed. This is not only the first immersed tunnel of the country, but also the longest, deepest and most technically difficult one in the world. This means the completion of the main structure of the Bridge.



#### △ The undersea tunnel was put under the sea on May 2, 2017

The undersea tunnel technology is extremely difficult, but China started from scratch and worked against the difficulties independently. Those efforts have resulted in the cross-sea bridge with the greatest difficulty in construction, which enjoys the fame of Qomolangma in the community of bridge building.

(Source: Wechat of MOST, December 23, 2017)



## [International S&T Cooperation] >>>

### >>> Minister Wan Gang Meets with UNDP Administrator

On December 11, 2017, Minister Wan Gang of the Ministry of Science and Technology (MOST) met in Beijing with a delegation led by Achim Steiner, Administrator of the United Nations Development Programme (UNDP). Minister Wan Gang congratulated Steiner on his election as UNDP Administrator and affirmed the cooperation between MOST and UNDP in the fields of fuel cell vehicle demonstration and Technical Task Force (TTF). Minister Wan Gang briefed the guests on the measures which China has adopted for poverty alleviation through science and technology innovation, mitigation of and adaptation to climate change and sustainable development. He expressed the hope for strengthening cooperation with UNDP in the field of science and technology innovation, sharing the Chinese experience and practices and helping the least developed countries and small island countries to enhance their capacity in climate change adaptation.

Administrator Steiner appreciated the concept of innovative, coordinated, green, open and shared development advocated by the Chinese government, affirmed UNDP's cooperation with MOST within the framework of South-South Cooperation and Belt and Road Initiative, and pointed out that UNDP shares the same vision with MOST in eliminating poverty, adapting to and mitigating climate change and providing economic development opportunities. Administrator Steiner said that UNDP attaches great importance to the adoption of innovative technologies in poverty alleviation, applauds involvement of MOST in UNDP's future laboratory design and planning, and may consider setting up a branch of its future laboratory in China.

Before the meeting, the two sides signed the *Memorandum of Understanding between the Ministry of Science and Technology and the United Nations Development Programme*. According to the Memorandum of Understanding, MOST and UNDP will collaborate in the fields of knowledge, technology and innovation sharing along the Belt and Road, international exchanges and transfer of innovation technologies, innovation demonstration zones for the 2030 Agenda for Sustainable Development and South-South Cooperation Platform for Sustainable Development.

(Source: MOST, December 14, 2017)



## [International S&T Cooperation] >>>

### >>> Minister Wan Gang Meets with IEA Executive Director

On December 8, 2017, Minister Wan met in Beijing the delegation led by Dr. Fatih Birol, Executive Director of International Energy Agency (IEA). The two sides exchanged views on CEM, EV Initiative and CCUS in an in-depth manner.

Minister Wan thanked IEA for its excellent services as the CEM Secretariat and EV Initiative Secretariat. With strong data collection and analysis capability, IEA can help CEM member states facilitate the implementation of all the initiatives in a more scientific and effective manner. MOST will adopt a proactive stance to deal with the challenges. For example, efforts will be made to promote new energy vehicle (NEV) development. China has reached the goal of producing and selling 700,000 NEVs and is expected to sell 1,000,000 such vehicles in 2018. MOST is dedicated to developing clean energy into a major energy source, while strengthening research into reduced clean and highly-efficient use of coal and CCUS technology.

Dr. Birol spoke highly of the CEM8 held successfully in June 2017. He pointed out that the meeting was efficiently organized and the agenda was designed in a visionary manner, which manifested the status quo of booming transition to clean energy globally, highlighted China's strong leadership in this process and set an example for the hosts of future CEMs. IEA stands ready to offer consistent support to all countries in clean energy transition. China has witnessed fast development in the area of NEV, which has won so many followers across the world.

(Source: MOST, December 13, 2017)



[Work on science and technology] >>>



## >>> MOST Announces Establishment of 6 National Labs

### *National Labs under development*

*Here is what you need to know*

*On November 27 MOST announced approval of establishing **six** national labs on molecular sciences and other areas after experts' review.*



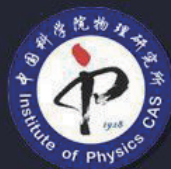
# [Work on science and technology] >>>



Peking University



Institute of  
Chemistry CAS



Institute of  
Physics CAS



Huazhong University  
of Science and  
Technology



Beijing National Lab for  
Molecular Sciences



Beijing National Lab for  
Condensed-matter Physics



Wuhan National Lab  
for Optoelectronics



Tsinghua University



Institute of Metal  
Research CAS



University of Science and  
Technology of China



Beijing National Lab for  
Information Science and  
Technology



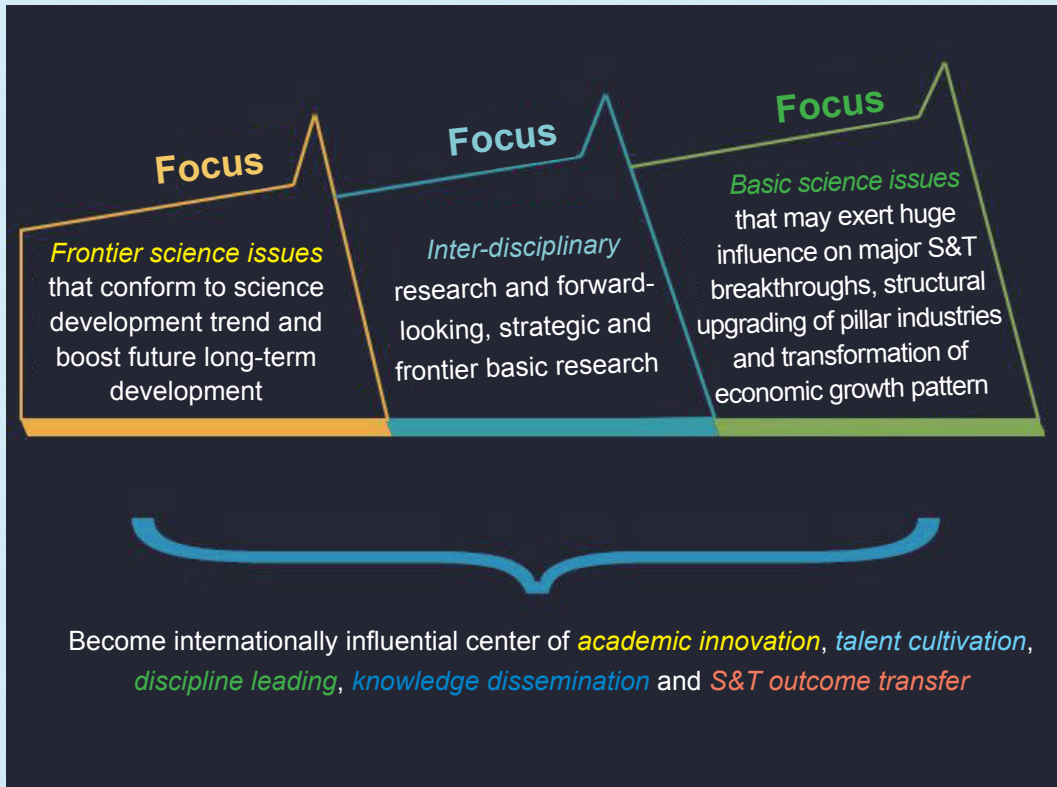
Shenyang National Lab for  
Materials Science



Hefei National Lab for  
Physical Sciences at the  
Microscale



# [Work on science and technology] >>>





Development  
process

National Research Centers



In 1984

launched the program on building state key labs

In 2000

launched pilot program on the establishment of national labs

In November 2003

MOST approved establishment of five national labs

In December 2006

Expanded pilot programs on establishment of national labs oriented to ten major areas

In November 2017

MOST approved establishment of six national labs on molecular science and other areas



