China Science & Technology NEWSLETTER

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

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2017 National Science and Technology Award Conference Held in Beijing

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2017 National Science and Technology Award Conference Held in Beijing

On the morning of January 8, the CPC Central Committee and the State Council convened the National Science and Technology Award Conference in Beijing. Xi Jinping, General Secretary of the CPC Central Committee, President of China and Chairman of the Central Military Commission, expressed his congratulations and awarded certificates of the 2017 State Preeminent Science and Technology Award to Chinese Academy of Engineering (CAE) member Wang Zeshan from Nanjing University of Science & Technology and CAE member Hou Yunde from Institute of Viral Disease, Chinese Center for Disease Control and Prevention. After that, Xi Jinping and other CPC and state leaders conferred upon the awardees the State Natural Science Award, State Technology Invention Award, State Science and Technology Progress Award and International Science and Technology Cooperation Award.

Premier Li Keqiang remarked that since the 18th CPC National Congress under the leadership of the CPC Central Committee with Xi Jinping as the core, China has witnessed tangible progress in science and technology, which has made important contributions to the historic achievements and transformation in boosting economic and social development. At the new historical juncture, to drive quality economic growth and meet the requirements of the people for better lives, we must act in line with the deployment of the 19th CPC National Congress and the Thought on Socialism with Chinese Characteristics for a New Era, further implementation of the innovation-driven development strategy and rally greater and more enduring efforts for development of science, technology and innovation (STI).

As stated by Premier Li, to build China into a country strong on science and technology, we must strengthen basic research, improve the diversified investment mechanism, facilitate integration between basic research and applied science and enhance innovation capacity. As enterprises should become the major players of technical innovation, we must implement and improve the policy measures for innovation input by enterprises and guide various kinds of technical innovation factors in concentrating in enterprises. Efforts must be made to deepen the reform on S&T system, improve innovation incentive mechanisms and give more autonomy in personnel, funding and property and the right in deciding technical roadmaps to innovation teams and leading talents, so that the scientists and engineers who have made concrete contributions can gain both fame and wealth in the course of generating more international leading innovative outcomes. Moreover, we must carry forward the spirit of innovation and creation, enhance innovation supply capacity and efficiency and elevate mass entrepreneurship and innovation to a new high; strengthen protection of IP; deepen international cooperation, integrate ourselves into global innovation network in a proactive manner and build up a world highland of innovation.

(Source: Xinhua Net, January 8, 2018)

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Highlights of 2017

National Science and Technology Award Conference

The National Science and Technology Award Conference was held in Beijing on January 8. The S&T Award is an important system the CPC and the country uphold and a specific manifestation of the guidelines of respecting labor, knowledge, talent and creation. Here are the highlights for the Conference.

Granting of awards

After three-tiered evaluation of discipline evaluation team, evaluation committee and awarding committee, the following have been selected:

271 projects

9 experts

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2 laureates of 2017 State Preeminent Science and Technology Award	CAE member Wang Zeshan from Nanjing University of Science & Technology CAE member Hou Yunde from Institute of Viral Disease, Chinese Center for Disease Control and Prevention
35 State Natural Science Awards	2 first prizes and 33 second prizes
66 State Technology Invention Awards	4 first prizes and 62 second prizes
170 State Science and Technology Progress Awards	3 grand prizes, 21 first prizes (including 3 innovation teams) and 146 second prizes
International Science and Technology Cooperation Award	7 awardees

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Priority measures for National S&T Award in 2017

In line with *the National S&T Award Regulations* and its implementation rules, we conducted processes of recommendation, formal examination acceptance, preliminary assessment, evaluation, review and accreditation, reported to the State Council for approving the awardees and projects. The CPC Central Committee and the State Council convened the National Science and Technology Award Conference.

In 2017, the reform on S&T award made concrete progress. On May 31, the State Council issued *the Program on Deepening the Reform on the System of S&T Award*. In accordance with the requirements of the award committee, the reform was pushed forward in six aspects:

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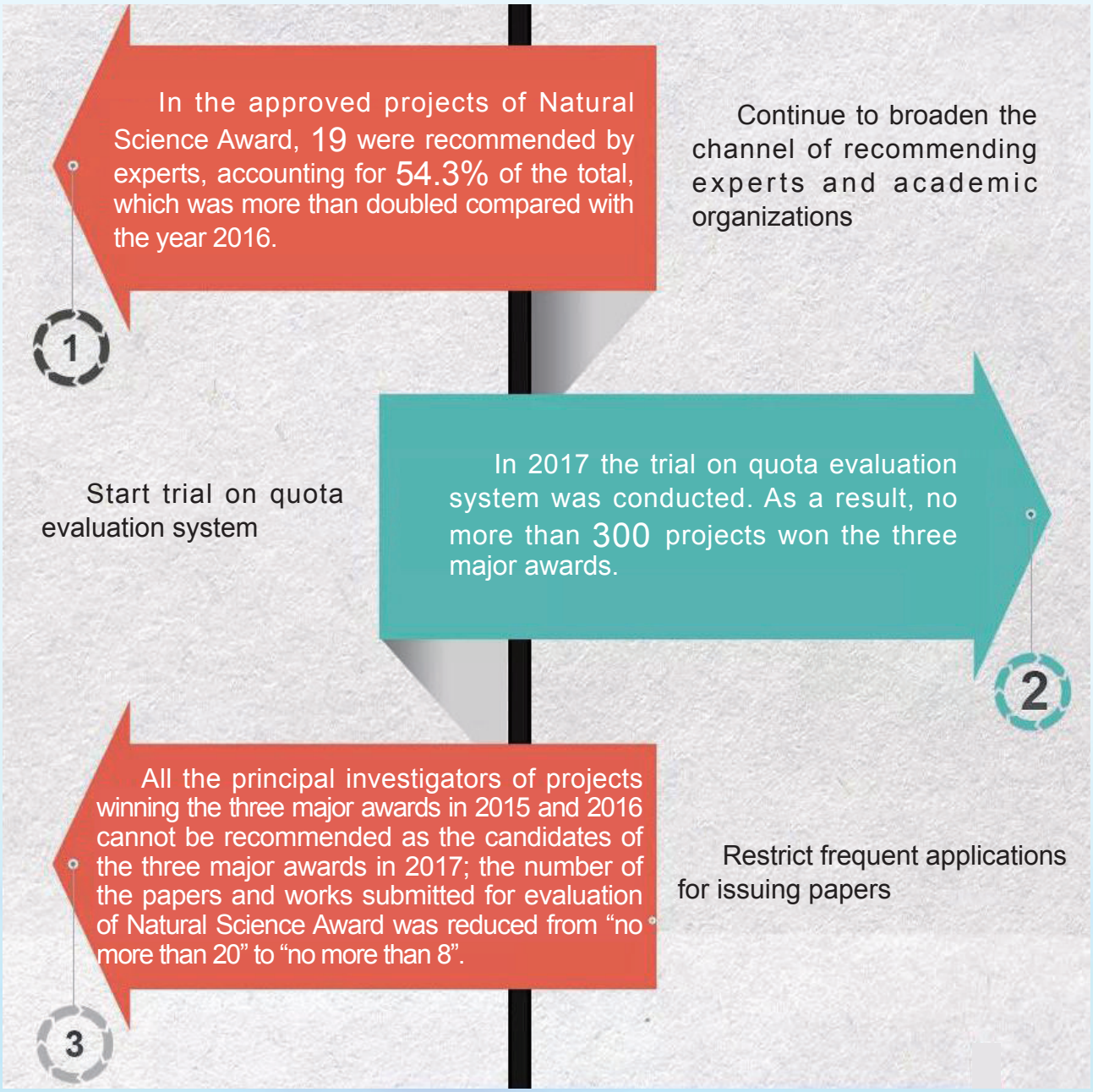

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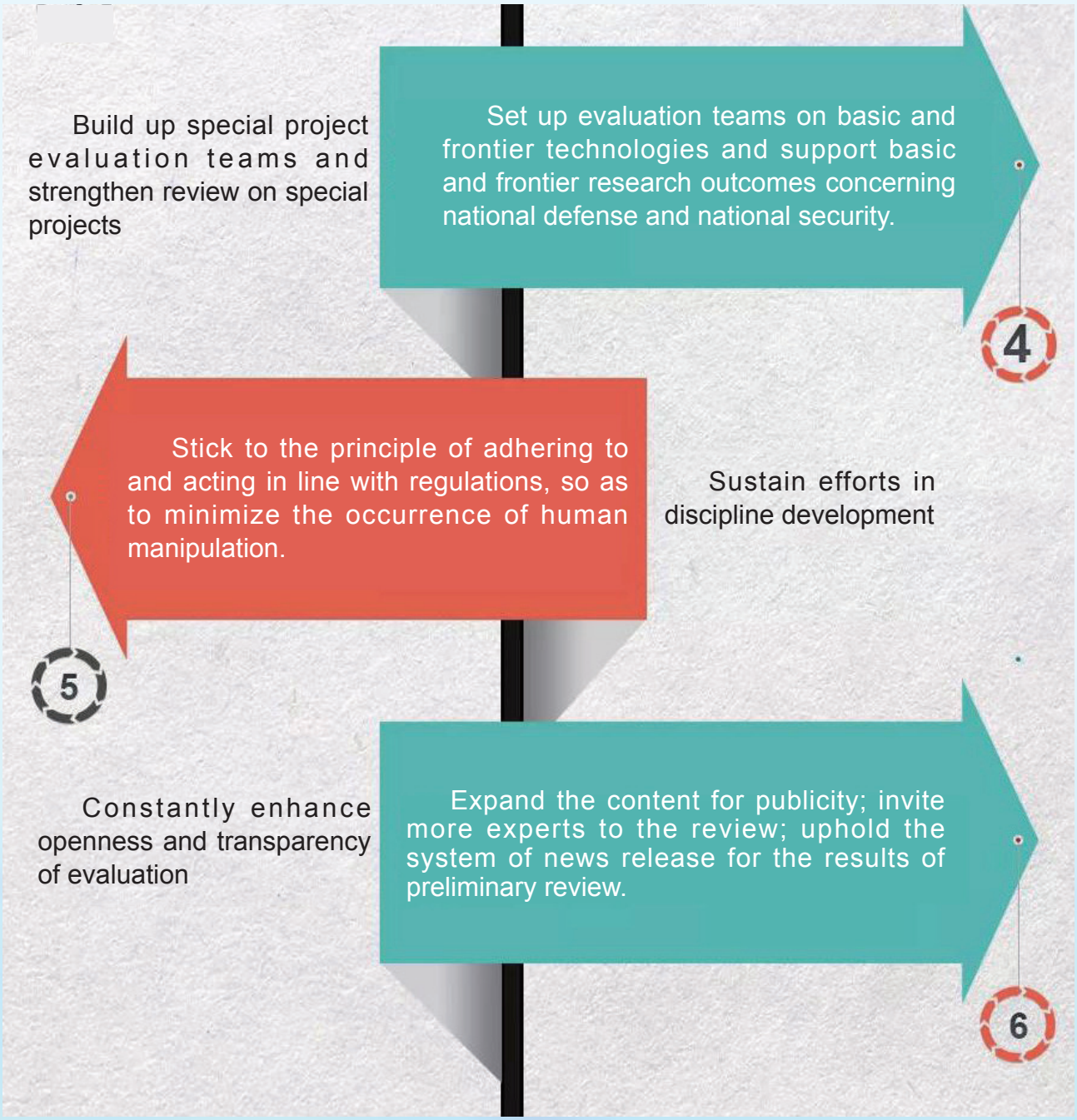

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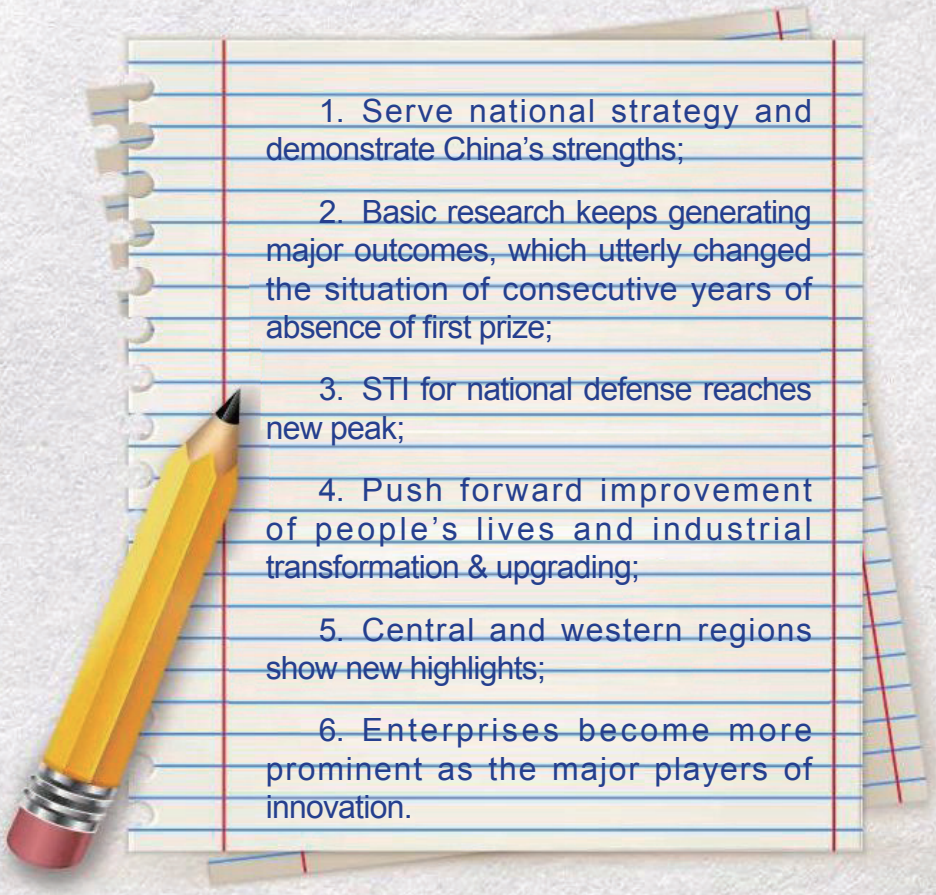
Characteristics

Those winning the awards in 2017 are not only major projects of national strategic demand, but also STI outcomes for improvement of people's livelihood. They have the following features:



1. Serve national strategy and demonstrate China's strengths;

2. Basic research keeps generating major outcomes, which utterly changed the situation of consecutive years of absence of first prize;

3. STI for national defense reaches new peak;

4. Push forward improvement of people's lives and industrial transformation & upgrading;

5. Central and western regions show new highlights;

6. Enterprises become more prominent as the major players of innovation.

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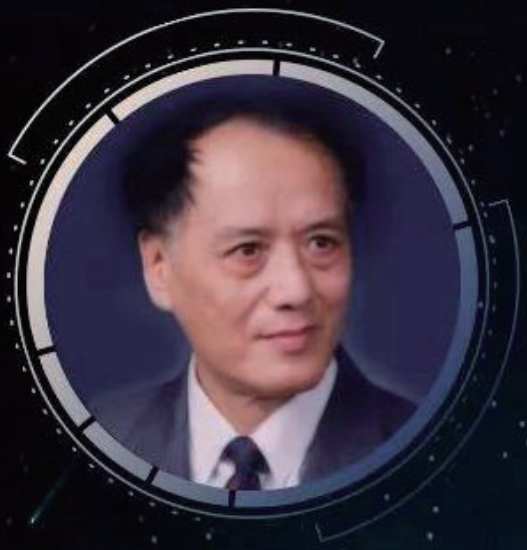
Laureate of 2017 State Preeminent Science and Technology Award



Wang Zeshan

“The need of the country is what I research for.”

Member of CAE
Professor of Nanjing University of Science & Technology
Pioneer of civil and military application of explosives

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Main achievements

He created the technology for reusing obsolete explosives and won the first prize of State Science and Technology in 1993. He is respected as the “King of Explosives”.

He invented propellant charging technologies with low sensitivity, solved the problem of long-term stable storage and markedly increased the energy utilization ratio of propellant. He therefore won the first prize of State Technology Innovation Award in 1996.

He developed universally applicable long-range and modular charging technology. As a result, China witnessed the launch range of cannons up by more than 20%, with the ballistic performance utterly surpassing similar artillery from all other countries. He therefore won the first prize of State Technology Innovation Award in 2016.

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Main achievements

He laid the foundation for China's molecular virus research.

He succeeded in creating the first Chinese genetically engineered drugs — α 1b and blazed a trail for R&D of our innovative genetically engineered drugs. He was therefore respected as the "Father of Chinese Interferon".

He led the industrialization of our first genetically engineered new drug and facilitated the industrial development of our modern biomedical technologies.

He also led the efforts in building up a system of infectious disease prevention and control featuring coordinated innovation nationwide, which comprehensively enhanced our capability in preventing and controlling emergence and outbreak of infectious diseases.

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Laureates of 2017 International Science and Technology Cooperation Award

1. Earl Ward Plummer, USA

Dr. Earl Ward Plummer (Born in October, 1940) is a professor in Louisiana State University, USA. He is a member of both the US National Academy of Sciences and American Academy of Arts and Sciences. He was recommended by Chinese Academy of Sciences (CAS).

Prof. Plummer is a famous scientist in condensed matter physics, especially in surface science. He has been recognized as the pioneer in the spectroscopy of single atoms on surfaces, in the discovery of surface states and multipole plasmon modes of metals, as well as in the precise measurement of the many-body effects on surface electronic structures. His discovery of charge density waves at the metal/semiconductor interface has immensely inspired the following research in critical phenomena in low-dimensional systems. He also proposed simplifying complex surface chemistry process into studying hydrogen-surface interaction, elevating the integration between surface physics and chemical research to an unprecedented level. He has published over 400 hi-level academic papers, with over 17,000 total citations.

Prof. Plummer has mentored many outstanding Chinese young physicists and has actively endorsed them to return to China. In 2000, he founded the International Center of Quantum Structures (ICQS) in the Institute of Physics, Chinese Academy of Sciences and served as the chief scientific advisor. The center has brought together many top Chinese physicists who have been engaged in science collaboration and made contributions to numerous influential research achievements. ICQS has been playing an immense role in promoting Chinese physicists onto the international stage. Many founding members of ICQS have become leaders in the field of science and technology in China. The innovative model of international collaboration established by ICQS has been adopted by other universities and institutions in China. Recently, he worked with the team from Institute of Physics CAS in successfully manufacturing the world's first device that can realize two-dimensional detection of photon energy and momentum. Prof. Plummer has been enthusiastically serving as a scientific advisor and consultant for China, and promoting the development of China to the rest of the world. He has made remarkable contributions to science and technology collaboration with China.

2. Salikhov Shavkat, Uzbekistan

Dr. Salikhov Shavkat (born in December, 1944) is a biochemist and an academician of Uzbekistan Academy of Sciences (UzAS). He serves as the Director of the Institute of Bioorganic Chemistry of UzAS. From 2006 to 2016, he served as the President of UzAS, a Cabinet Member and Chairman of the Science and Technology Committee of Uzbekistan. He was awarded the "Hero Medal" by the President of Uzbekistan. He was recommended by CAS.

As the leader in the field of bio-organic chemistry in Uzbekistan, Dr. Salikhov Shavkat has very high academic reputation in Central Asian countries. He has published more than 300 papers and five monographs. More than 70 invention patents have been authorized and 15 new drugs developed by him

have gone on the market in Uzbekistan.

In his 15-year cooperation with CAS, he jointly produced over 20 PhD and postgraduate students, sent over 20 scholars for mutual visiting each year and co-developed over 10 projects. As a strategic scientist, he first put forward the proposal on founding the China-Uzbekistan Joint Research Center. In 2013, Central Asian Drug Research and Development Center of Chinese Academy of Sciences was formally unveiled in Uzbekistan. By giving play to the strengths of both countries, the center will focus on Central Asia natural medicine research, work to promote Chinese medicines in Central Asia and Europe and help Uzbek medicines get registered in Chinese market. Moreover, He has coordinated with all sides and raised three million dollars for construction to ensure smooth implementation in legal person entity registration, land procurement and semi-works & research building construction. He also initiated registration of two medicines in Uzbekistan and that of two medicines in China. The TCM Type-5 new medicine co-developed by both sides is undergoing Phase-II clinical in a smooth manner. Over 60 papers were co-authored with Chinese counterparts and 5 patents have been jointly applied. As the pioneer of the science and technology cooperation on the Belt and Road, the chief designer and chief coordinator of Central Asian Drug Research and Development Center, Dr. Salikhov Shavkat has made great contributions to scientific and technological cooperation between China and Uzbekistan.

3. Shoucheng Zhang, USA

Dr. Shoucheng Zhang (born in March, 1963) is a theoretical physicist, a member of the US National Academy of Sciences and a foreign member of the Chinese Academy of Sciences. He is the J. G. Jackson and C. J. Wood professor of physics at Stanford University. He was recommended by Consulate-General of the PRC in San Francisco.

Prof. Zhang is a distinguished theorist in condensed matter physics. He is well known for his outstanding contributions to a variety of research fields, such as quantum spin Hall effect, topological insulator & superconductor, quantum spintronics, copper-based and iron-based high-temperature superconductivity and superfluid & magnetism. His work has been recognized by important awards, including the Europhysics Prize, the Oliver Buckley Prize, the Dirac Medal and the Yuri Foundation Prize in physics.

He has been actively engaged in collaboration with Chinese scientists from Tsinghua University, the Institute of Physics of the Chinese Academy of Sciences and Shanghai Jiao Tong University. The cooperation has significantly promoted the scientific developments in China, and enables China to play a worldwide leading role in the related fields such as quantum anomalous Hall effect, topological insulators and Weyl semimetals. In close cooperation with Professor Xue Qikun from Tsinghua University since 2009, he has made major breakthroughs in quantum anomalous Hall effect and observation of novel properties of three-dimensional topological insulator material. He has offered valuable food for thought for development of the discipline, organized many academic meetings and forums in China and served as head after establishing Quantum Science and Technology Research Center of Tsinghua University with Prof. Xue Qikun. The center soon grew to become an extremely influential center in the world. Over the decades, Prof. Zhang has mentored plenty of Chinese graduate students and postdoctoral associates both in the Institute for Advanced

Study of Tsinghua University, and most of them have become young pioneers of relevant fields in China.

4. Philip David Coates, UK

Dr. Philip David Coates (born in September, 1948) is a Fellow of the Royal Academy of Engineering of the UK, Director of the UK Polymer Interdisciplinary Research Center, Director of the Medical Device Innovation Manufacturing Center of the British EPSRC and Chief-editor of the international journal of *Plastics Rubber & Composites*. He was recommended by Chinese Embassy in the UK.

Prof. Coates is a famous scientist in the field of international polymer processing research, inventor of Die Drawing technology of polymers and distinguished expert in on-line detection theory and methods during polymer processing. He has published more than 300 papers in major international journals like Science, published 16 books and gotten16 patents. He was invited to many important international macromolecule conferences to deliver speeches.

Thanks to the close cooperation with China for more than 10 years, 5 international R&D cooperation platforms have been established in China, such as the International Polymer Microprocessing Center and China-UK Advanced Materials Research Institute, etc. He is the leader of 8 projects including several international cooperation projects of Ministry of Science and Technology of China and China-UK Science Bridge, etc. He cooperated with Sichuan University on the research into micromolding and microextrusion of polymer nanocomposites. In cooperation with Beijing University of Chemical Technology, they tackled the processing problems of bio-based soft material elastomers. While cooperating with Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, they tackled the physics problems during polymer micro-processing. In cooperation with China Petrochemical Corporation, they took the lead in the applied research of solid-state orientation technology in China, and many cooperation achievements have been applied. Thanks to the close cooperation, the polymer processing theory and technology of China has been improved. His outstanding contribution enhanced the international influence of China's polymer discipline and strengthened the long-term stable relationship in science and technology between China and the United Kingdom.

5. Deliang Chen, Sweden

Dr. Deliang Chen (born in July, 1961) is a Swedish scientist who holds the August Röhss Chair at the University of Gothenburg, Sweden. He is also an elected member of the Royal Swedish Academy of Sciences, the Third World Academy of Sciences, and the Royal Society of Arts and Sciences in Gothenburg. He was recommended by CAS.

Prof. Chen is an internationally renowned climate researcher who has made significant contributions to regional climate, atmospheric circulation, climate dynamics and climate change research.

He has maintained long-term cooperation with multiple Chinese institutes. He also serves as a member of the executive committee of the international program "Third Pole Environment" led by the Chinese Academy of Sciences, where he made great contributions to the "*Assessment of Environment Change on the*

Tibetan Plateau" report. The report has helped substantiate eco-environmental policy-making in the region. During his tenure as Science Director for the National Climate Center of China (2002-2008), he set up the first Regional Climate Center in Asia (the Beijing Climate Center) and the Global Producing Centre for long-range forecasts under the World Meteorological Organization and brought about sound application outcomes in climate forecast and impact evaluation through introducing regional downscaling technology. He also served on the science committee of the Department of Earth System Science, Tsinghua University, where he helped advance the university's earth sciences with more global engagement by raising constructive suggestions for climate change research. Besides promoting achievements by Chinese scientists worldwide, he also invited his Chinese counterparts for international endeavors and helped nurture a number of young scientists. Thanks to his efforts when serving as Executive Director of ICSU, the first China-based international program office of International Council for Science was established. This has played an important role in promoting China's scientific and technological innovation on the international stage.

6. Yang Shi, USA

Dr. Yang Shi (born in March, 1960) is a renowned scientist in the field of epigenetics and founder of dynamic regulation and recognition of histone methylation. He is professor of Harvard University and member of the American Academy of Arts and Sciences. He was recommended by Shanghai Municipality.

Prof. Yang Shi has long been dedicated to research into epigenetics and chromatin biology. Over the nearly 30 years, Prof. Shi has systemically elucidated the mechanisms underlining the dynamic regulation of histone methylation, a post-translational modification that is critical for many biological processes. His discovery of the first histone demethylase LSD1 demonstrated the dynamic nature of what was once thought an irreversible modification, which gave an end to the 40-year debates of the reversibility of histone methylation and led to breakthroughs in tumor treatment thanks to its application in pharmacy. He issued 24 papers in top-notch journals such as *Nature and Cell*, with over 28,000 SCI citations.

Since 2005, he has been engaged in collaboration with China, facilitating the establishment and development of epigenetics in China. He co-founded the Institutes of Biomedical Sciences (IBS) and Center of Epigenetics of Fudan University, which have recruited a number of overseas top-notch talents thanks to his academic impact. IBS has accomplished a great deal of academic progress and has been designated as a National Base for International Science and Technology Cooperation. He worked with Tsinghua University, Peking University and CAS in setting up the development framework and painting a blueprint for epigenetics development in China. For extensive international cooperation, he also established serial exchange and research activities including the annual Epigenetics Retreat, the first of its kind in China. Thanks to his efforts, China is rapidly becoming an important player in epigenetic research in the world and has made many breakthrough discoveries and significant international influence in the areas of basic mechanisms, chromatin structure dynamics and early embryonic development. He has contributed a great deal in helping found and develop the discipline in our country.

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7. Polichronis-Thomas Spanos, USA

Dr. Polichronis-Thomas Spanos (born in February, 1950) is a Professor of Rice University, member of US National Academy of Engineering, American Academy of Arts and Sciences, foreign member of European Academy of Sciences and foreign member of Russian Academy of Sciences. He was recommended by Shanghai Municipality.

Dr. Spanos has long been devoted to stochastic dynamics and nonlinear mechanics. His research outcomes enjoy extensive application in the world. Presently he serves as the editor-in-chief of two important international journals, and member the Executive Board of the International Association for Structural Safety and Reliability. He was bestowed the first US presidential award for young scientist, the Freudenthal medal, Newmark medal and von Karman medal by the American Society of Civil Engineers.

Prof. Spanos has devoted himself to advancing research cooperation with Chinese scholars. Since 2008, he has been carrying out concrete and fruitful academic collaboration with nearly 20 universities in China, including Tongji University, Zhejiang University and Harbin Institute of Technology, etc. With Tongji University as the main base, he has facilitated the China-US-EU cooperation network on reliability and stochastic mechanics. Serving as the Co-Director, he helped establish the International Joint Research Center for Engineering Reliability and Stochastic Mechanics in Tongji University. Prof. Spanos and his Chinese counterparts have jointly organized a series of important international academic meetings, which effectively promoted the exchanges between scholars home and abroad and elevated the international impact of our research outcomes. The research achievements of the collaboration activities with Chinese researchers in earthquake engineering and stochastic dynamics have been applied successfully in seismic design of high-rise buildings, wind-resistant design of large-span structures and safety of high-speed trains, which concretely promoted technological advancement. He was appointed as the Chair Professor of Changjiang Scholar by the Ministry of Education of China, and served as the leading professor in the “Programme of Introducing Talents of Discipline to Universities (‘111’Program) in Disaster Reduction and Prevention in Civil Engineering”. He delivered nearly 40 lectures in about 20 universities with the audience exceeding 4,000, and recruited and supervised over 30 visiting scholars and joint PhD students from China, making important contributions to the development of Chinese youth talents.

(Source: MOST, January 8 2018)