

President XI Calls for Building China into World Science and Technology Leader

Chinese President XI Jinping called for efforts to develop China into a world leader in science and technology at the opening ceremony of this year's CAS General Assembly in Beijing.

XI said as China strives for prosperity and rejuvenation, it needs to devote a huge amount of resources to promoting science and technology, and endeavor to become a world center for science and innovation.

Referring to the situation as “pressing”, the President called on the country's science and technology workers to seize the opportunities and rise to challenges. He asked scientists to aim for the frontiers of science and technology, take the lead, and become vanguards in innovation in the new era.

In his speech, XI said that historic and structural changes have taken place in China's science and technology sector. China is going through a transition from quantity accumulation to quality leap-forward and from breakthroughs in certain fields to overall improvement of performance. As a new round of scientific, technological and industrial revolutions is reshaping the world, the impact of science and technology on a country's future and its people's

wellbeing has never been so profound as today, he said.

XI said that efforts must be made to ensure “high-quality science and technology” to underpin the development of a modernized economy. By integrating the internet, big data, and artificial intelligence with economic development and industrial innovation, China will move from the low to the medium or high end of the global value chain.

He called for courage in researchers to explore the uncharted courses so one day China will have all self-developed core technologies. “The initiatives of innovation must be secured in our own hands,” he said.

XI called on Chinese scientists to be deeply involved in the global science and technology activities by offering Chinese wisdom, and by promoting the building of a community with a shared future for humanity. This could be achieved through deepening international cooperation, making use of global innovation resources, and fostering win-win partnerships to deal with common challenges such as food and energy security, health and climate change.

While working on its own development, China should also bring benefits to other countries and peoples and help with better development in the rest of the world, XI said.



Chinese President XI Jinping addresses the opening of the 19th General Assembly of the Chinese Academy of Sciences and the 14th General Assembly of the Chinese Academy of Engineering in Beijing on May 28, 2018. (Photo: Xinhua)

XI also called for efforts to create a friendly environment for innovation, and mechanisms to foster talents and let everybody display their talent. He also stressed the role of youth in a country's future. "Numerous children in China dream of becoming a scientist. We should make science an appealing career for them," he said.

The opening ceremony was presided over by CAS President BAI Chunli and attended by members of the

Standing Committee of the Political Bureau of the CPC Central Committee, including Premier LI Keqiang, WANG Huning and HAN Zheng.

The 19th General Assembly of the Chinese Academy of Sciences and the 14th General Assembly of the Chinese Academy of Engineering were convened in Beijing from May 28 to June 1, 2018. (Based on reporting by Xinhua News Agency)

Foreign Scientists Attracted to Work Long-term in China

On May 22, 2018, the Ministry of Science and Technology of China issued guidelines that support science ministries and commissions to consult foreign experts and attract non-Chinese scientists to full-time positions in China. Declaring the country's goal to "deeply engage foreign talents" in its major research programs at all levels, the announcement said that non-Chinese scientists not only are welcomed to participate in research projects funded by the Chinese government, but also will have the opportunity to lead such projects as their principal investigators via "open and fair competition", or could even play a role in the management and designing of national programs at very high levels.

"The new policy shows that the Chinese government is embracing international collaboration as a key to its innovation ambition, using science as a gateway," commented WEN Ke, executive director of the Division of Innovation and Development Policy, Institute of Science and Development under CAS. It is likely that the move will soon be reflected in areas such as life and environment sciences, she said, where there are a lot of common scientific challenges to tackle.

In 2010, stem cell researcher Miguel Esteban from the Guangzhou Institutes of Biomedicine and Health, CAS became the first non-Chinese scientist to lead a

major scientific research project in China as its principal investigator with a grant of 28 million yuan (4.4 million US dollars).

By far, Italian particle physicist Rinaldo Baldini has been working at the Beijing Electron Positron Collider's BESIII Experiment for some years. "This collider produces 1,000 times more particles than I had studied, and there were plenty of open questions I would—and did—find the answer here," he told *BCAS*. "I like a lot my work and to stay in Beijing. I like Chinese people and the food."

But Baldini also found it difficult, if not impossible, to find a foreign newspaper in the city. "Beijing needs improvement to become an international city, where a foreigner may feel closer to their home," he said.

At the moment, most foreign scientists only pay brief visits to China instead of coming to do research on a long-term basis. The Ministry's document indicated a profound shift in the emphasis of China's talent recruitment policy, from luring only Chinese to both Chinese and non-Chinese—for them to come and stay. With several million to tens of million yuan worth of start-up funding, which is significantly higher than a scientist can expect even from the US or Europe, they have the chance of becoming part, or leader, of many exciting, world-level projects going on in China.

Institute of Physics Celebrates 90th Anniversary

The Institute of Physics (IOP), Chinese Academy of Sciences celebrated its 90th birthday in June 2018 with hundreds of staff researchers, alumni and international collaborators. By organizing a symposium on the 8th and a forum on the 9th, IOP aimed to “honor the past and look into the future.”

IOP is one of the oldest, biggest and most prestigious research institutes under the Chinese Academy of Sciences. Its origin can be dated back to 1928, when the National Research Institute of Physics, Academia Sinica was established. In 1950, by merging the National Research Institute of Physics, Academia Sinica and the Institute of Physics, National Academy of Peiping (established in 1929), a new institute was founded as the Institute of Applied Physics, Chinese Academy of Sciences. Eight years later, it adopted the current name of IOP.

IOP has made essential contributions to the founding of modern physics in China, though it started with a very limited number of researchers who worked on a small range of research subjects. Today, it is a large-scale research institution with an extensive and multidisciplinary scope. The research fields at IOP now range from condensed matter physics to optical physics, atomic and molecular physics, plasma physics, and theoretical and computational physics. IOP is also hosting the National Center for Condensed Matter Physics Research with funding from the Ministry of Science and Technology of China.

Over the years, IOP researchers have filled in many gaps in the development of modern physics in China. They developed the country's first hydrogen and helium liquefiers, synthesized the first artificial diamond, and built the first ruby laser in China. Research outcomes with international impact include the discovery of copper and iron based high-temperature superconductors, topological insulators, the quantum anomalous Hall effect, and Weyl semimetals, among many others. Meanwhile, the institute has developed high-tech products such as high quality neodymium permanent magnets, lithium-ion batteries, single-crystal silicon carbide substrates, and high-temperature superconductivity filters which have hit both domestic and global markets.



The Institute of Physics, Chinese Academy of Sciences celebrates its 90th anniversary on June 8, 2018 in Beijing. (Photo: XIN Ling)

Ward Plummer, a condensed matter physicist from the Louisiana State University and winner of the 2016 CAS Award for International Scientific Cooperation, was also present at the symposium. “We are here celebrating the 90th anniversary of the Institute of Physics, which is only a decade longer than my journey from a small fishing village on the coast of Oregon, around the United States to my home away from home—IOP,” he said.

LU Yu joined IOP about 60 years ago. Back then, “modern condensed matter physics was almost non-existent in China,” he recalled. However, during the past 40 years, especially since the beginning of the 21st century, the situation has dramatically changed. “A number of outstanding young scientists from China, with cutting-edge research output, emerged on the world arena. The transition from total isolation to close international exchange and collaboration is a key factor contributing to this success,” he said.

Plummer said he was very impressed. “It is inconceivable that anyone in 1928 could have imagined that in 2018 the Institute of Physics would be an internationally recognized center for research and development in material science. The future of IOP is even more exciting than the past, with the development of the Huairou Science City and the IOP generated Materials Genome and Clean Energy Platforms at Huairou,” Plummer told *BCAS*.

Three CAS Researchers Receive Tan Kah Kee Young Scientist Award

This year's Tan Kah Kee Young Scientist Award goes to a total of six researchers, as announced by the Tan Kah Kee Science Award Foundation in Beijing on May 30, three of whom are from CAS: Dr. HUANG Zheng from the Shanghai Institute of Organic Chemistry, Dr. WU Beili from the Shanghai Institute of Materia Medica, and Dr. SUN Yele from the Institute of Atmospheric Physics.

Dr. HUANG Zheng, recipient of the 2018 Tan Kah Kee Young Scientist Award for Chemistry, focuses on the research of organometallic chemistry and homogeneous catalysis. His team has developed several catalytic processes for efficient conversion of low-cost alkanes to value-added chemicals, and for polyethylene degradation to diesel fuel. He has published more than 40 peer-reviewed papers in high-impact journals, including *Nature*, *Science*, and *Nature Chemistry*. His research was supported by the Thousand Young Talents Program and the National Science Grant for Outstanding Young Scholars. He is also the recipient of the Chinese Chemical Society-Evonik Innovation in Chemistry-Distinguished Young Scientist Award, the Chinese Chemical Society-China Homogeneous Catalysis Young Investigator Award, and the Distinguished Young Talent for Innovation in Science and Technology Award (Shanghai Branch, Chinese Academy of Science).

Dr. WU Beili, who bagged the 2018 Tan Kah Kee Young Scientist Award for Life Sciences, is a principal investigator at the Shanghai Institute of Materia Medica (SIMM), Chinese Academy of Sciences. She earned her PhD in biophysics from Tsinghua University in 2006, and did her postdoc at the Scripps Research Institute in La Jolla, California from 2007 to 2011. She was recruited by the Hundred Talent Program and started her own research group at SIMM in 2011. Her research focuses on the structural basis of G protein-coupled receptor (GPCR) signaling transduction and the development of new therapeutics for severe human diseases. Her lab has solved high-resolution crystal structures of six GPCRs. These structures reveal binding modes between different receptors and their selective ligands, and provide



Three researchers from CAS bagged the 2018 Tan Kah Kee Young Scientist Award (from left): Dr. HUANG Zheng from the Shanghai Institute of Organic Chemistry, Dr. WU Beili from the Shanghai Institute of Materia Medica, and Dr. SUN Yele from the Institute of Atmospheric Physics in Beijing.

insights into the molecular mechanisms of GPCR signal recognition and modulation. The findings have improved our understanding of GPCR signal transduction and will facilitate drug development for the treatment of HIV infection, thrombosis and diabetes. In the past five years, Dr. WU published eight papers in *Science*, *Nature* and *Cell*. She has received numerous awards, including the Outstanding Young Female Scientist Award in China, Tanjiazhen Life Science Innovation Award, and ShuLan Young Scientist Award in Medical Science.

Dr. SUN Yele, winner of 2018 Tan Kah Kee Young Scientist Award for Earth Sciences, is a researcher at the Institute of Atmospheric Physics and associate director of the State Key Laboratory of Atmospheric Physics and Atmospheric Chemistry. His research mainly focuses on the characterization of the composition, sources, and formation mechanisms of atmospheric aerosols. He is also studying the interactions between boundary layer dynamics and air pollution. He is author and co-author of more than 130 SCI papers. He was recruited via the Thousand Young Talent Program, and has been awarded the Young Scientist Award of Chinese Academy of Sciences and the National Natural Science Award (second class), among others. Dr. SUN received his PhD degree from Beijing Normal University in 2006 and did his postdoctoral research at the State University of New York, University of California at Davis, and Colorado State University.