中国科学院学部
Academic Divisions of the Chinese Academy of Sciences

CASAD Newsletter

2015-4

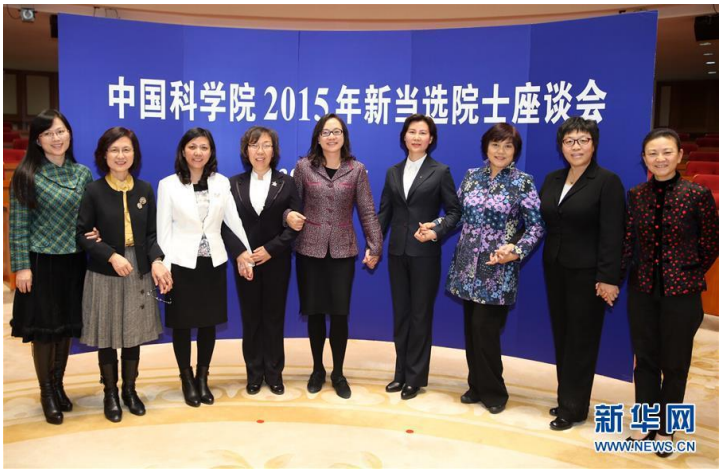
MAJOR NEWS

China Think Tank Invigorated by New Members

Dec 08, 2015

Sixty-one Chinese and 12 foreign scholars were recently inducted as members into the Academic Divisions of the Chinese Academy of Sciences (CAS), bringing total Chinese and foreign membership to 777 and 82, respectively.

These inductees are the first new members since the Academy revised its charter to cut administrative interference last year.



Nine female scientists were elected CAS member this year. (Image by Xinhua)

Nine female scientists were among the group, the largest number of females since the induction regulation was adopted in 1992.

As the highest national academic title in science and technology, CAS membership is a lifelong honor. "Yet it is regarded more as a beginning," said LI Peng, a new female member this year. "New research and academic efforts are needed to make oneself worthy."

The Academic Divisions of CAS play an important role as the top think tank involved in China's economic and social development. The Academic Divisions produce dozens of consulting reports and suggestions on key issues every year, supporting state decision-making on economic and social development, national security and progress in science and technology.

Members also have a responsibility to model academic integrity and advance their fields.

"You have more to do. You must set an academic example for younger scholars and newcomers," said ZHOU Qi, a researcher from the Institute of Zoology, also a newly elected member this year.

CAS elects new members every two years. (CAS Website)

12 Famous Scientists Elected 2015 CAS Foreign Members

Dec 07, 2015

12 famous scientists (see table 1) were elected Foreign Members of CAS at the Membership Election Meeting held on November 13, 2015 for their scientific achievements and contributions made to the promoting of the development of science and technology in China, including two Nobel laureates, Prof. Robert H. Grubbs of the California Institute of Technology and Prof. Paul Nurse of the Francis Crick Institute.

New foreign members also include Prof. Markku T. Kulmala of the University of Helsinki, the first CAS foreign member from Finland, and Prof. Atta-ur Rahman of the University of Karachi, the first foreign member from Pakistan.

The Foreign Members are elected from all parts of the world, who have made important contributions to the cause of science and technology in China and who enjoy high academic standing internationally. (CASAD)

Table1 12 newly elected CAS foreign members in Nov. 2015

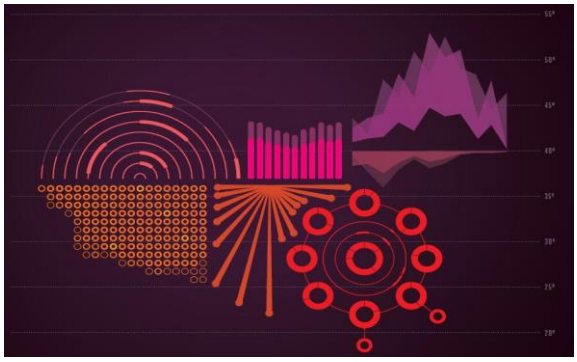
Name	Nationality	Affiliation
Richard Lawrence Edwards	USA	University of Minnesota, USA
Huajian Gao	USA	Brown University, USA
Martin Groetschel	Germany	Berlin-Brandenburg Academy of Sciences and Humanities, Germany
Robert Howard Grubbs	USA	California Institute of Technology, USA
Markku Tapio Kulmala	Finland	University of Helsinki, Finland
Charles M. Lieber	USA	Harvard University, USA
Anders Lindquist	Sweden	Shanghai Jiaotong University, China
Paul Nurse	UK	The Francis Crick Institute, UK
Atta-ur Rahman	Pakistan	University of Karachi, Pakistan
Simon D.M. White	UK	Max Planck Institute for Astrophysics, UK
Xiang Zhang	USA	University of California Berkeley, USA
Xiaowei Zhuang	USA	Harvard University, Howard Hughes Medical Institute, USA

Chinese Academy of Sciences Maintains High Performance in Nature Index China 2015

Dec 18, 2015

The Chinese Academy of Sciences (CAS) keeps a high profile with its abundant research output, according to the Nature Index 2015 published as a supplement in Nature released on December 17 by the Nature Publishing Group.

The Nature Index 2015 China supplement, published by Nature Publishing Group, shows that CAS is the world's largest institutional contributor to the Nature Index. In 2014 its WFC was 1,308 (its AC was 3,124), significantly higher than that of the second-ranked institution, Harvard University, with a WFC of 865.



The Nature Index 2015 China supplement, published with Nature on 17 December, shows China's total contribution to high-quality science has risen to become the second largest in the world, surpassed only by the United States.

CAS has taken 56 of the top 200 institutions of the Index, with the University of Science and Technology of China ranks in China's top five university contributors.

The Academy is the top institutional producer in chemistry WFC, both in China and around the globe. The Institute of Chemistry (ICCAS) is the top contributing CAS institute by WFC. Its research strengths lie in molecular and nanosciences, organic and polymeric materials, chemical biology, as well as energy and green chemistry.

By subject areas, CAS leads not only in chemistry, but also in physical sciences, and earth and environmental sciences, with higher WFCs in these major subject areas than any other research institutions worldwide.

These cutting-edge areas of chemistry tend to have an applied aspect and are essential for industrial innovation. For instance, an ICCAS researchers' study on the assembly mechanism of organic composite materials

strongly contributed to the development of flexible photonics and the realization of nanophotonic circuits for next-generation optical information processing. (CAS Website)

MEMBERS

CAS President, BAI Chunli Re-appointed as President of World Academy of Sciences

Nov 20, 2015

CAS President, Bai Chunli has been re-elected as the president of the World Academy of Sciences for another two years.

Bai Chunli addressing the opening ceremony of the 26th general meeting of the World Academy of Sciences (TWAS) in the Austrian capital Vienna on Nov. 19, 2015. [Photo: gb.cri.cn]

His reappointment was announced at the academy's general meeting in the Austrian capital Vienna on Thursday.

Looking ahead, Bai Chunli said the TWAS would continue to pursue academic talent while increasing diversity within the academy.

"We have enhanced the support for young scientists by setting up the Young-Affiliates network for them to initiate academic communication. We also want to attract more young and female academics to the TWAS. Not only do we pay attention to the South-South cooperation, but we also put emphasis on the North-South cooperation."

Bai, also the President of the Chinese Academy of Sciences, became the first Chinese president of the TWAS when he took office in 2013.

During his first two years in office, he invited five more countries to join the academy as well as helped it set up several research centers in China. (CRIENGLISH.com)

Quantum Teleportation Milestone Wins Physics World Breakthrough of the Year Award

Dec 11, 2015

The Physics World 2015 Breakthrough of the Year goes to PAN Jianwei, who is CAS member and LU Chaoyang from the University of Science and Technology of China in Hefei, for being the first to achieve the simultaneous quantum teleportation of two physical properties of a fundamental particle – the photon.

The prize, which recognizes outstanding physics research, will be awarded to PAN, LU and their team on Friday 11 December. PAN was "very excited indeed" for his work to be chosen as the Physics World Breakthrough of the Year, which is selected by a panel of four Physics World editors and reporters.

LU and PAN's team is the first to have simultaneously transferred a photon's

spin (polarization) and its orbital angular momentum (how its wavefront rotates) to another photon some distance away. Their research, published in Nature in February of this year, shows how they were able to reliably and repeatedly carry out the teleportation.

In 1993 an international group of physicists proved theoretically that the teleportation of a quantum state is possible, so long as the original state being copied is destroyed – one of the laws of quantum mechanics (the "no-cloning" theorem) dictates that a quantum state cannot be perfectly copied. Successfully teleporting a quantum state therefore involves precisely measuring a system's state, transmitting that information to a distant location and then reconstructing a flawless copy of the original state. In other words, a complete perfect transfer is done when the first particle loses all of the properties that are teleported to the other.

"Quantum teleportation is a 'disembodied' way to transfer the quantum states of an object over long distance – disintegrating in one place and reappearing intact in another distant location – without actual transport of the object itself," explains PAN.

The first experimental teleportation of a photon polarization was achieved in 1997 – a project PAN was involved in – and many other entities have been transferred since then. But all of these experiments were limited to teleporting a single property and scaling that up to even two properties has proved to be a herculean feat, until now.

Although it is possible to extend PAN's method to teleport more than two properties simultaneously, this becomes increasingly difficult with each added property – the likely limit is three. To do this would require the ability to experimentally control 10 photons, while the current record is eight.

The team is working hard to change that, though, and PAN says that they "hope to reach 10-photon entanglement in a few months". Indeed, he hopes to double that figure to 20 within the next three years. "We should be able to teleport three degrees of freedom of a single photon or multiple photons soon," he adds.

PAN adds that "quantum teleportation has been recognized as a key element in the ongoing development of long-distance quantum communications that provide unbreakable security, ultrafast quantum computers and quantum networks". Quantum teleportation is expected to play an essential role in the development of quantum computers and quantum cryptography systems, which use the properties of photons, atoms and other quantum systems to store, process and transmit information. (Physics World)

Asteroid Named after CAS Member, WU Zuze

Dec 01, 2015

An asteroid has been named after Wu Zuze, a scientist known for his contribution to stem cell research, Chinanews.com reported.

A ceremony was held on Monday to officially announce the naming of Wu Zuze Asteroid, currently numbered 207809, which was discovered by a Chinese researcher at Purple Mountain Observatory, Chinese Academy of Science (CAS) on October 9, 2007.

Wu, born on October 19, 1935 in Zhejiang province, is a CAS academician known as the Father of Stem Cells in China.

To date, around 120 asteroids have been named after Chinese luminaries, institutions and places. (ECNS)

CASAD

An Advanced National Think-tank
to the Chinese Government on Major Science
and Technology Issues

CASAD IN BRIEF

As a comprehensive and large national scientific institution, the Chinese Academy of Sciences (CAS) comprises three major parts -- a comprehensive research and development network, a traditional merit-based academic society like US NAS and a system of higher education. The merit-based part of CAS is represented by the Academic Divisions of the Chinese Academy of Sciences (CASAD). Founded in June, 1955, six years after the founding of CAS, ***CASAD has served as an advanced national think-tank to the Chinese Government on major science and technology issues****. The strategic advice and proposals that CASAD has provided over the past years have played an important role in the construction of the national innovation system, the initiation and launch of various major scientific policy and programs and extension of science to the general public.*

Today this learned body consists of six divisions, respectively in mathematics and physics; chemistry; life and medical sciences; earth sciences; IT-related sciences and technological sciences, which help organize and carry out strategic studies and advice on different topics. It now has more than 700 academicians called CAS Members and 82 Foreign Members. CAS Members who enjoy prestigious honor in Chinese science are elected from various research institutes and universities including line-industry supported ones following strict and highly competitive process. The Foreign Members are elected from all parts of the world, who have made important contributions to the cause of science and technology in China and who enjoy high academic standing internationally.

Made by: *Bureau of Academic Divisions, Chinese Academy of Sciences*
Phone: *86-10-5935-8373(O)/8300(Fax)*
Email: *ywang@cashq.ac.cn*
Website: *http://www.casad.cas.cn/*