



中国科学技术协会
China Association for Science and Technology

NO.36

April 2024

CAST Newsletter

First “Science Diplomacy and
Automotive Science
Popularization” Forum opens





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Headlines

First “Science Diplomacy and Automotive Science Popularization” Forum opens



The roundtable on science diplomacy: innovation and collaboration in new energy technology between China and Europe
Photo credit: *Science and Technology Daily*

On March 1, 2024, the first “Science Diplomacy and Automotive Science Popularization” opened in Beijing alongside the Senior Science and Technology Diplomats Beijing Tour. The event gathered experts from industry organizations and automotive companies across the supply chain to discuss the prospects and future trajectories of the new energy vehicle industry guided by the “dual carbon” goals. It also explored how science diplomacy and automotive science education could boost China’s new energy vehicle industry amid an evolving landscape. Wan Gang, President of CAST and the World New Energy Vehicle Congress (WNEVC), attended and delivered a keynote address.

During the event, the China Association for International Science and Technology Cooperation (CAISTC) signed a strategic cooperation framework agreement with the Beijing Auto Museum. The agreement marked the establishment of a long-term partnership between the two entities, aimed at compre-

hensive collaboration spanning popularization of automotive science, international cooperation on new energy vehicles, automotive technology innovation, and integration of new energy vehicles into the public sector.

Accelerating global collaboration on new energy vehicles

In his speech, Wan Gang emphasized the importance of collaboration with Belt and Road countries on new energy vehicles. He underscored the roles of enterprises, research institutions, scientific communities, and individual scientists in propelling reforms within international regimes and encouraged their proactive engagement in shaping governance protocols within the sector. He also emphasized the role and contributions of non-governmental scientific entities in fostering international cooperation in the new energy vehi-

cle highlighted *Nature's* keen interest in the WYSS initiative. It was followed by another article titled “World Young Scientists Summit Envisions Future of Sustainable Development,” released in Chinese on *Nature's* official WeChat account on March 4. Previously, in October 2023, *Nature* also featured a bilingual piece titled “Young Scientists Summit: A Forum for Shared Growth” in both its journal and its official WeChat account.

Organized by CAST, WYSS is dedicated to building a global community of shared future, with a primary focus on the theme “Governing the World’s Talent, Creating a Better Future.” The summit has convened five consecutive sessions, establishing extensive networks with over 100 countries, numerous foreign universities, and a multitude of international scientific organizations. It has attracted participa-

tion from over 30 Nobel laureates and Turing Award winners, nearly 400 esteemed members of science academies from both China and abroad, and over 5,600 aspiring young scientists.

WYSS holds its first sub-conference

On March 8, 2024, WYSS held its inaugural sub-conference in Hong Kong, drawing over 100 exceptional young scientists, esteemed scholars, and professionals from around the world. Centered on “Life Sciences,” the conference delved into emerging technologies in regenerative medicine and the application of stem cells in treating diseases. Renowned scientists from various corners of the globe shared their latest research findings and cutting-edge technologies, fostering a collaborative environment geared towards advancing scientific and medical progress.

WYSS has scheduled two additional sub-conferences in May and July, offering young scientists and scholars opportunities to explore a wider range of topics in science and innovation.

(Source: Official website of CAST)

Academic Exchange

IHFCA achieves ISO 37301 compliance management system standard certification

Recently, the International Hydrogen Fuel Cell Association (IHFCFA) achieved certification from DNV, the world’s leading classification society, for compliance with the ISO 37301:2021 management system standard.

This certification encompasses data security, anti-commercial brib-



The ISO 37301 certification certificate issued to IHFCA
Photo credit: Official website of IHFCA

ery, and anti-monopoly compliance within IHFCA's operational management activities. ISO 37301 represents a cutting-edge international standard for compliance management systems aimed at assisting organizations in mitigating compliance risks through prevention, detection, and response mechanisms. It provides a structured framework and guidance for establishing, implementing, maintaining, and enhancing compliance management systems that align with organizational objectives, context, and stakeholder expectations. The standard serves as a pivotal tool in facilitating risk identification, management, and bolstering organizational governance and reputation.

By attaining the ISO 37301:2021 compliance management system standard certification, IHFCA reaffirms its dedication to fostering collaboration and knowledge exchange in hydrogen and fuel cell sectors. The association aims to establish an international platform for exchange and cooperation spanning the entire industry value chain. It seeks to

optimize international technical standards and regulations, advocate for prudent management of information security, drive global technological advancements and adoption of hydrogen energy and fuel cells, cultivate a favorable market environment conducive to the widespread application of hydrogen energy and fuel cells, and contribute to the realization of global carbon neutrality objectives.

(Source: Official website of IHFCA)

International Awards

Chinese scientist Yao Tandong receives glaciology's highest honor

On February 24, 2024, the International Glaciological Society (IGS) announced Yao Tandong, a member of the Chinese Academy of Sciences (CAS) and



Photo of Yao Tandong
Photo credit: Official website of ITP

the Honorary Director of the Institute of Tibetan Plateau Research (ITP) of CAS, as the recipient of the esteemed Seligman Crystal, the highest honor in the glaciological community. This accolade acknowledges Yao's pioneering contributions to glaciology, climatology, and environmental change on the Tibetan Plateau as well as his global leadership in climate change and ice-core research.

Established in 1962 by IGS and named after its founder, the Seligman Crystal is awarded to a single person or a collaborative group or team that has made exceptional scientific contributions to glaciology. The nominee's research contribution should have exerted a long-lasting

impact on the understanding, direction, or focus of a glaciological discipline and have transformed the discipline in a unique way. This may include opening up a new area of the discipline or radically transforming thinking in an area and will typically include producing a substantial high-impact body of consistently leading-edge work.

(Source: Official website of ITP)

Beihang University Professor Li Li awarded Rising Star of 2024 IEEE CS TCSE Distinguished Awards



Li Li announced as the Rising Star of the 2024 IEEE CS TCSE Distinguished Awards

Photo credit: Official website of Beihang University

On February 26, 2024, the IEEE Computer Society Technical Community on Software Engineering (TCSE) announced the recipients of its annual Distinguished Awards. Among them, Chinese scientist Li Li from the School of Software at Beihang University was honored as the Rising Star. This recognition highlights promising young researchers in the field of software engineering. With a membership base of 420,000 spanning 175 countries, IEEE selects only one individual globally for this esteemed award each year.

(Source: Official website of Beihang University)

JES youth editorial board member Du Yao receives 2024 IAGC Ebelmen Award



Photo of Du Yao
Photo credit: Official WeChat account of *JES*

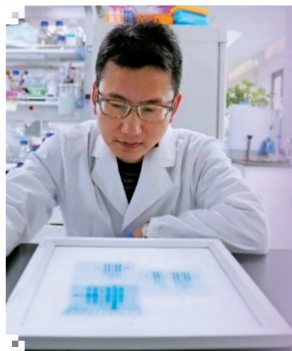
Recently, the International Association of Geochemistry (IAGC) announced Professor Du Yao, the *Journal of Earth Science (JES)*'s youth editorial board member, as the recipient of the 2024 Ebelmen Award. This recognition is one of three major international academic awards presented by IAGC in honor of the legendary French chemist Jacques-Joseph Ebelmen. Established in 2007, the honor is

awarded biennially to a geochemist of particular merit and outstanding promise less than 35 years old at the time of nomination. Awardees are invited to deliver presentations at premier international gatherings on geochemistry such as the Goldschmidt Conference and presented with a framed certificate in recognition of their achievements.

(Source: Official WeChat account of *JES*)

Scientist Profile

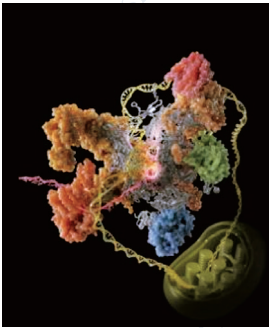
Chinese scientist Zhang Yu unlocks secrets of chloroplast PEP gene transcription



Zhang Yu is a research fellow at the CAS Center for Excellence in Molecular Plant Science (CEMPS) and Deputy Director of the Institute of Plant Physiology and Ecology. He specializes in transcription mechanisms, transcription regulation, transcription-coupled DNA repair, and transcription-mediated DNA methylation. His research findings have been published extensively in esteemed international journals such as *Science*, *Nature*, *eLife*, *Nature Communications*, and *Nucleic Acid Research*. "Genes serve as the 'underlying code' of life," according to Zhang. "Like a CPU, they have the capability to extract data stored in the 'hard drive' of chloroplast genomes."

Photo of Zhang Yu
Photo credit: thepaper.cn

On March 1, 2024, *Cell* published a paper titled “Cryo-EM Structures of the Plant Plastid-encoded RNA Polymerase” authored by Zhang Yu’s team in collaboration with a team from Huazhong Agricultural University. Featured as the cover article, this research delved into the architecture of the chloroplast gene transcription, shedding light on what had previously been considered a “blank space” in plant gene research.



Representation of the chloroplast PEP structure
Photo credit: thepaper.cn

Eight years to unveil chloroplast PEP structure

Acting as the “tran-

scriptor” for chloroplast DNA, the plastid-encoded RNA polymerase (PEP) plays a pivotal role in chloroplast development and function. Despite its significance in regulating plant photosynthesis, the structure of PEP has eluded researchers for years.

In 2016, Zhang Yu spearheaded a mission to unravel this mystery. Fueled by an insatiable curiosity and relentless determination, his team embarked on an eight-year journey, convinced that unlocking PEP’s secrets would shed light on the chloroplast gene transcription process.

Overcoming challenges in PEP purification

Their main hurdle lay in purifying PEP, which was found in extremely low quantities within chloroplasts.

In 2019, drawing inspiration from the pioneer-

ing work in plant plastid transformation and applications of Ralph Bock, Director of the Max Planck Institute of Molecular Plant Physiology and a member of the Leopoldina, Zhang identified a breakthrough. By incorporating a DNA sequence as a tag into the gene sequence of PEP, he devised a method to extract PEP from complex components through affinity purification, thus isolating the chloroplast gene transcription protein complex.

Following this discovery, Zhang reached out to Associate Professor Zhou Fei from Huazhong Agricultural University, a former student of Professor Bock. Together, they employed ingeniously designed labeling techniques specific to chloroplast PEP, enabling swift and precise extraction from tobacco leaf cells.

Buoyed by this success, their focus shifted to

Nicotiana benthamiana, a model plant known for its high efficiency in chloroplast gene transformation. They embarked on an intensive regimen, planting 200 tobacco plants every two weeks and continually harvesting leaves. Ultimately, they surmounted the challenge posed by the low abundance of chloroplast PEP.

Completing the final piece of the puzzle

Research showed that chloroplast PEP consists of 20 “components” (protein subunits) orga-

nized into 5 functional modules: catalytic, scaffold, protective, RNA, and regulatory. While the catalytic module is encoded by the chloroplast genome with its protein subunits originating from cyanobacteria, other modules are encoded in the nuclear genome, and their protein subunits are sourced from eukaryotic cells. These modules undergo transcription in the cytoplasm before being transported to the chloroplast for assembly.

As explained by Zhang, “These subunits undergo transcription in the

nucleus, followed by transcription in the cytoplasm before being transported to the chloroplast,” Zhang explained. “There, they combine with the catalytic module to form a complete complex capable of PEP activity.” Zhang Yu’s discovery unveiled the structure of the chloroplast gene transcription mechanism, marking the long-awaited revelation of the “missing piece” in our understanding of RNA polymerase structural variations across all three life domains.

(Source: thepaper.cn and news.cn)

Upcoming Conferences



2024 IEEE 7th International Electrical and Energy Conference (CIEEC 2024)




Dates: May 10-12, 2024



Location: Harbin, Heilongjiang Province, China



Hosts: The China Electrotechnical Society (CES), the Institute of Electrical and Electronics Engineers (IEEE) Beijing Section, and the Harbin Institute of Technology (HIT)


 The conference will feature science academy members, renowned experts, and professors from across the globe in fields of electrical engineering and energy applications. Key topics of discussion will include advanced motor system design, motor drive and control, electrification of transportation, electrical equipment for extreme environments, efficient power conversion, highly reliable intelligent power electronic technologies, new energy power systems, integrated energy systems, power markets and demand response, smart operation and maintenance of energy new infrastructure, and power electronic devices.


 For more information, check out: <https://www.cieec.com.cn/>


51st International Conference on Plasma Science (ICOPS2024) and 4th Asia-Pacific Conference on Plasma and Terahertz Science (APCOPTS)


 **Dates:** June 16-20, 2024


 **Location:** Beijing, China

 **Hosts:** The China Electrotechnical Society (CES), the Institute of Electrical Engineering (IEE) of the Chinese Academy of Sciences (CAS), and the IEEE Nuclear & Plasma Sciences Society (NPSS)

 The conference will provide a dynamic platform for global academic exchange and exhibition of plasma science and technology. It will explore the latest breakthroughs and research directions and strategies. Moreover, it aims to foster international and regional collaboration, knowledge sharing, and talent development in the field.

 For more information, check out: <https://www.icops2024.com/>

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