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China Association for Science and Technology

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Newsletter

Headlines

- ◎ The 20th CPC National Congress opened in Beijing on October 16
- ◎ 2022 China–Japan–ROK Forum on Women in Science held in Beijing
- ◎ Chinese Society of Aeronautics and Astronautics (CSAA) launches a European Representative Office in Paris
- ◎ Chinese scientists discover new lunar mineral and name it “Chang’ e stone”
- ◎ China captures images of the solar transition zone

Editor's Note:

The 20th National Congress of the Communist Party of China opened on October 16, 2022 and demonstrated to the world China's commitment to opening-up and cooperation. As the largest non-governmental organization of science and technology professionals in the world, CAST upholds the spirit of openness, trust and cooperation and works to promote international scientific exchange and cooperation. We provide stable and sustainable support for Chinese scientists to engage in international cooperation and share research findings for the benefit of humanity and its sustainable development.

We look forward to your comments and suggestions. Please send them to newsletter@cast.org.cn.

News in Focus

The 20th CPC National Congress opened in Beijing on October 16 **The following are some highlights from the report:**

- Xi Jinping called on all members of the CPC to strive in unity to build a modern socialist China in all respects

- The five years since the 19th National Congress of the CPC have been truly momentous and extraordinary

- The past decade marked three major events of great immediate importance and profound historical significance for the cause of the Party and the people

- The CPC has secured historic achievements and seen historic changes in the cause of the Party and the country over the past decade

- China sees historic rise in economic strength; China joins ranks of world's innovators

- CPC achieves over-

whelming victory, fully consolidates gains in fight against corruption

- Great transformation over past 10 years of new era marks a milestone

- Opening new chapters in adapting Marxism to Chinese context, needs of the times

- Xi expounds on CPC's central task

- Xi underlines essential requirements and unique features of Chinese modernization

- Next five years “crucial” for good start of China’s modernization drive
 - Xi lists major principles in building modern socialist China
 - China to accelerate creating new development pattern, pursue high-quality development
 - Xi stresses promoting high-standard opening up
 - Xi underscores role of education, sci-tech, talent in modernization drive
 - Innovation remains at heart of China’s modernization drive
 - Whole-process people’s democracy is democracy in its broadest, most genuine, most effective form
 - Building a modern socialist country in all respects under rule of law
 - Xi calls for building cultural confidence, strength
- Xi pledges to improve people’s wellbeing
 - Xi stresses improving income distribution system
 - Xi stresses safeguarding national security, social stability
 - Xi calls for advancing Beautiful China Initiative
 - China to work toward carbon goals actively, prudently
 - Xi stresses upholding, improving policy of One Country, Two Systems
 - CPC to unswervingly advance cause of national reunification
 - China dedicated to promoting human community with shared future
 - China will never seek hegemony or engage in expansionism
 - Full, rigorous Party self-governance an unceasing endeavor

2022 China-Japan-ROK Forum on Women in Science held in Beijing

On September 2, the 2022 China-Japan-ROK Forum on Women in Science was held in Beijing themed “Women in Science, together for a Better Future.” The forum shared practices and experiences setting examples for women scientists to improve their leadership, honor outstanding young female scientists, provide research opportunities for their academic growth, and help them balance their family responsibilities.

According to the 2021 UNESCO Science Report, in Japan and South Korea, female scientists now account for a fifth of the total research workforce. In China, 40% of science and technology workers are women. In recent years, over a dozen female scientists from China, Japan, and South

Korea have been awarded the L'Oréal-UNESCO For Women in Science International Awards in recognition of their exceptional achievements to meet the challenges of our century and efforts to build a better world.



The 2022 China-Japan-ROK Forum on Women in Science

Working Group for UN Environment Consultation–China Association for Science and Technology (WGUNEC-CAST) selected to host side event at COP27

On August 29, 2022, the Working Group for UN Environment Consultation–China Association for Science and Technology (WGUNEC-CAST) was selected to host a side event at the 27th Conference of the Parties of the UNFCCC (COP 27).

The side event, titled “Climate Change and Sustainable Development in the Post-COVID-19 Era,” is scheduled to be held online on November 6-18, 2022. It will focus on the United Nations Sustainable Development Goal 13 “Climate Action” (SDG13) and invite top Chinese and international experts and scholars to discuss wide-ranging issues related

to climate change and sustainable development including the latest climate change science news, the path to achieving inclusive and sustainable economic growth, the global economic recession under COVID-19, COVID-19’s impact on climate change mitigation, climate change mitigation strategies, and strategies for sustainable economic development under COVID-19.

Established in September 2005, WGUNEC-CAST is committed to determining stage-specific guidelines, strategies, and action plans for CAST to participate in UN environment consultation activities. It is headed by Qin Dahe, a member of the Chinese Academy of Sciences and one of China’s most prominent scientist on climate change.

Key takeaways from 2022 World New Energy Vehicle Congress: Toward a faster, farther, and

smarter future

The 2022 World New Energy Vehicle Congress (WNEVC), which took place on August 26-28, drew wide attention. According to statistics, in the first half of 2022, global sales of new energy vehicles exceeded 4.22 million, with 2.6 million coming from China. Today, 21.6% of Chinese drivers own a new energy vehicle.

Participants of the congress agreed that technology advances in the industry have significantly improved user experience with longer cruising range, faster charging time, smarter driving, and better support facilities. In terms of the relationship between new energy vehicles and urban development, Wan Gang, President of the China Association for Science and Technology (CAST) and President of WNEVC, said, “With rising ownership of new energy vehicles, China need to act quickly and

build more new types of infrastructure to support high-level autonomous driving and push for closer integration of smart new energy vehicles, smart transportation, and smart cities.”

Gao Zhenhai, Dean of the College of Automotive Engineering of Jilin University, said that compared to traditional gasoline cars, smart cars are more driven to meet people’s needs. “As car design evolves from passive adaptation to active adaptation, from batch development to people-centered customized design, car makers will put more of a premium on the driving experience while ensuring safety,” said Gao. “This will reshape the relationship between people, vehicles, and the environment.”

Events and Exhibitions

Chinese Society of Aeronautics and

Astronautics (CSAA) launches a European Representative Office in Paris

On September 10, 2022, the Chinese Society of Aeronautics and Astronautics (CSAA) officially opened a European Representative Office in Paris, France. Chen Li, Minister of the Chinese Embassy in France, attended the opening ceremony and delivered a speech. The International Council of Aeronautical Sciences (ICAS) sent a congratulatory letter for the occasion.

The office opening of the first overseas agency of CSAA reflects the importance China and Europe attach to aerospace cooperation. Choosing Paris demonstrates the vitality and potential for collaboration between China and France in science, economy and trade, and talent exchange. Chen expressed hope that the office will leverage its strengths to further

promote science and technology cooperation and talent exchange and contribute to friendship between the two countries.

The 10th International Bridge and Tunnel Technology Conference opens in Shanghai

On September 13, 2022, the 10th International Bridge and Tunnel Technology Conference opened in Shanghai, themed “Promoting Innovation and Development and Building High-Quality Projects.”

The conference was attended by more than 300 representatives from enterprises, institutions, international organizations, universities, research institutes, industry societies, and associations. Over 30 Chinese and international academicians and 80 industry experts and scholars shared their research in hybrid mode. The conference

also launched a special exhibition to celebrate China’s feats of engineering over the past decade, with a display of over 60 major bridge and tunnel projects completed by top Chinese engineering teams.

International Forum on Emerging Sports Industry and Urban Renewal opens in Beijing

On September 3, 2022, the 2022 International Forum on Urban Emerging Sports Industry and Urban Renewal was held in Shijingshan District, Beijing, as part of the 2022 China International Fair for Trade in Services (CIFTIS). Chinese and international participants discussed the prospects of the sports industry with special focus on emerging sports industry and urban renewal.

As a form of exchange and cooperation at the non-governmental level, sports can bring people closer and build consen-

sus. In a video speech, Finnish Ambassador to China Leena-Kaisa Mikkola said that Finland was the first country to start a winter sports year with China. She expressed hope that Finland and China would continue to strengthen sports cooperation and deepen exchange and cooperation in fields of stadium construction, circular economy, and energy efficiency improvement.

Markus Teuber, commissioner of China affairs at the Mayor’s Office of Duisburg in North Rhine-Westphalia of Germany, outlined the path taken by Duisburg in transformation and development. He said that the forum is of great significance and that he looks forward to more collaboration with the Shijingshan in practices of urban renewal.

Shijingshan was once the heart of Beijing’s heavy industry. Now with new emphasis on international exchange

and cooperation and a drive to pursue sustainable development, the district has tapped into its industrial and Winter Olympic Games legacy and transformed into a new urban center of snow and ice sports.

First Tianjin International Cancer Conference

On September 2-3, 2022, the first Tianjin International Cancer Conference took place in Tianjin. The event was sponsored by the China Anti-Cancer Association (CACA), Tianjin Medical University Cancer Institute and Hospital (TMUCIH), and Tianjin Anti-Cancer Association and *Cancer Biology & Medicine*.

Speaking at the conference, Academician Hao Xishan, honorary president of the conference, director of China's National Clinical Research Center for Cancer (NCRCC), and director of the Tianjin Cancer Institute, said that as science and tech-

nological innovations bring breakthroughs and convergences, new medical theories, medical applications, and cross-cutting technologies will continue to emerge. He expected to see rapid development and application of artificial intelligence, medical big data, precision medicine, and to find new breakthroughs in basic research and in application of new tumor mechanisms and new target drugs. The deep integration of biomedicine and new generation information technology will provide new impetus for cancer diagnosis, treatment, and rehabilitation and bring opportunities for innovations in oncology research and the continual improvement of cancer diagnosis and treatment.

Advances in International S&T Communication

IEEE/CAA Journal

of Automatica Sinica registers fast growth since inception

Founded in 2014 by the Chinese Association of Automation (CAA) and the Institute of Electrical and Electronic Engineers (IEEE), The *IEEE/CAA Journal of Automatica Sinica* (JAS) publishes high-quality cutting-edge research based on original ideas in many fields such as automation, including automatic control, artificial intelligence, systems theory and engineering, pattern recognition and intelligent systems, information processing, robotics, navigation, guidance and control, cyber-physical systems, Internet of Things, blockchain, and cloud computing. Over 67% of its editorial board members are internationally renowned scholars.

As of 2022, JAS has been indexed in key databases such as SCI, EI, Scopus, and DBLP.

It has grown into a world-class key journal under the China Science and Technology Journal Excellence Action Plan, a T1 high-quality science and technology journal in automation by CAST, a high-quality science and technology journal in computing, a Chinese science and technology core journal, and an ESI indexed journal. It has ranked among China's Most Internationally Influential Academic Journals (Top 5%) for five consecutive years. JAS is the top journal in engineering technology and computer science among all Chinese Academy of Sciences (CAS) journals. It now boasts an impact factor of 7.847, which ranks 7th, or the top 10% in the field of automation and control systems, the only Chinese Q1 SCI journal ever to achieve the honor. Its latest CiteScore was 13.0, near the top of all Q1 journals in its fields of research, and the first in the field of control and optimization.

JAS now ranks among the top 5%-7% of journals in computer information systems, control and system engineering, and artificial intelligence. It is listed among the top 12% of the global TOP1000 computer and electronics journals and the first Chinese journal in the field. It ranks 8th in the top publications of Google Scholar's automated metrology and control theory and is the world's youngest and only Chinese journal among the TOP20 publications in the discipline.

S&T News

China's air quality and water environment show rapid and significant improvement

On September 15, 2022, at a series of press briefings themed "China in the Past Decade," Huang Runqiu, Minister of Ecology and Environ-

ment, said that China's air quality has made breakthrough improvements over the period. The average concentration of fine particulate matter (PM_{2.5}) had dropped to 30 micrograms per cubic meter in 2021, down from 33 in 2020 and 46 in 2015. For the first time, it has fallen below 35, the WHO Interim Target-1 value. The proportion of days with good air quality in China has reached 87.5%, up 6.3% from 2015.

With regards to the water environment, Huang Runqiu said that China has, in recent years, amended the Water Pollution Prevention and Control Law, and formulated a series of laws and regulations such as the Yangtze River Protection Law, and made 20 plus pollutant discharge standards to provide a legal basis for water protection. China has also reformed and adjusted the functions of multiple watchdogs to achieve

unified supervision of water protection.

The Yangtze River has, for the past two consecutive years, met Grade II standard, the second-best level in the country's five-tier quality system for surface water, in all sections of its trunk. China has organized efforts to check all sewers that empty into the upper and the middle reaches of the Yellow River, and as a result, the Yellow River has met Grade III quality standard in all its mainstem.

Black and smelly water bodies were once the biggest environmental problems afflicting urban areas. Through coordinated efforts across multiple departments, China has eliminated black and smelly water bodies in 295 urban built-up areas at the prefecture level and above. From 2016 to 2020, the newly installed sewage pipes in cities at the prefecture level and above had reached

99,000 kilometers in length, enough to circle the Earth's equator twice. More than 1,200 industrial parks at the provincial level and above have achieved centralized sewage treatment.

China captures images of solar transition zone

The Chinese Academy of Sciences (CAS) recently released the first dynamic images of the solar transition zone, also known as the layer between the solar chromosphere and the corona. The images were captured by the Solar Upper Transition Region Imager (SUTRI) aboard the test satellite SATech-01 from the Ne VII line at 46.5nm. The move marks China's first successful observation of the solar transition zone.



The 46.5 nm sun image observed by the SUTRI on the satellite platform (shown by the arrow) (Source: The National Astronomical Observatory of the Chinese Academy of Sciences)

SATech-01 is the first space test satellite developed by the Institute of Microsatellite Innovation of CAS. It was sent into sun-synchronous orbit 500 kilometers away from the earth aboard a "Lijian-1" rocket from

the Jiuquan Satellite Launch Center on July 27, 2022.

SUTRI was jointly developed by the Huairou Solar Observation Base of the National Astronomical Observatory of CAS, the School of Earth & Space Sciences at Peking University, and the Institute of Precision Optical Engineering (IPOE) of Tongji University.

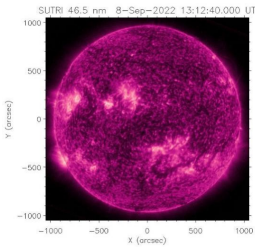


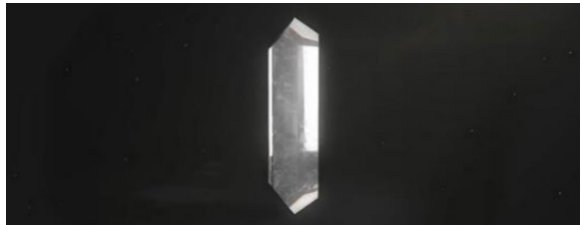
Image of the 46.5 nm Sun observed on September 8, 2022 (Source: The National Astronomical Observatory of the Chinese Academy of Sciences)

The Ne VII 46.5 nm line selected by SUTRI is formed in a region of about 500,000 degrees in the Sun's atmosphere (located in the high transition region), a key region connecting the lower atmosphere and the corona, and was poorly understood in the past. SUTRI is the

world's first 46.5 nm solar imager based on the multi-film narrow-band filter technology. This observation is also a follow-up to the seamless spectrometer on the United States Skylab in 1973 (with defects of aliasing), and the first complete image of the sun captured at 46.5nm in nearly half a century.

Chinese scientists discover new lunar mineral and name it “Chang’e stone”

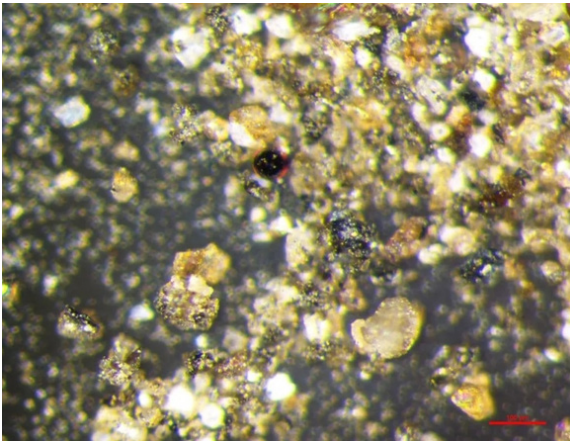
On September 9, 2022, on the eve of the traditional Chinese Moon Festival, the China National Space Administration and the China Atomic Energy Authority jointly released the latest findings made by the Chang’e 5 lunar exploration mission in Beijing. Dong Baotong, Vice Chairman of the China Atomic Energy Authority, said in the briefing that Chinese scientists had named the new mineral they discovered “Chang’e Stone.” It was the sixth new mineral found on the moon so far, making China the world's third country, after the United States and the Soviet Union, to make such a discovery.



Ideal crystal structure of Chang’e stone

Chang’e stone is a phosphate mineral that exists in lunar basalt grains in columnar crystal structure. From 140,000 lunar sample particles, scientists at the Beijing Institute of Geology of the China National Nuclear Corporation used multiple high-tech X-ray diffractions to isolate a single crystal particle with a size of 10 micrometers to successfully decipher its structure.

The stone was voted a new substance by the Commission on New Minerals, Nomenclature and Classification (CNMNC) of the International Mineralogical Association (IMA). Chang'e 5 returned to Earth on December 17, 2020, carrying back 1,731 grams of lunar samples. The China National Space Administration has so far distributed, in four batches, 152 pieces, or 53,625.7 micrograms of lunar samples collected so far for research. Over 98 teams from 33 institutes have taken part in the effort, with many international scientists and international graduate students working on board.



Microscopic photo of the lunar sample

China's first astronaut in space Yang Liwei shares experience with students

On September 15, 2022, China Science and Technology Museum invited astronaut Yang Liwei to give young Chinese students a special aerospace science class. Yang Liwei flew on China's first crewed space mission. He is now deputy chief designer of China's manned space project and a member of the Inter-

national Academy of Astronautics (IAA). He provided an overview of China's manned spaceflight program to participants both online and offline, shared how astronauts are selected and trained in China, and described how he felt on the mission.

When asked what foods astronauts cannot eat in space, Yang Liwei noted that the flight menu today is so diverse that they can go almost a week without eating the same thing twice, but they still need to be careful about what they eat. For instance, if they are going to work out of the cabin, they should avoid beans which may cause intestinal gas.

Yang Liwei said that in the early days, astronauts had to bring oxygen tanks from Earth into space, but today, through a process called "electrolysis," which uses electricity from the environmental control and life protection system to

split water into hydrogen gas and oxygen, space stations can produce and supply oxygen through a renewable method. In the future, if interstellar flight is carried out, the crew might adopt new ecological means such as growing food and vegetables onboard to produce oxygen.

CAST is the largest non-governmental organization of scientific and technological professionals in the world. Through its 211 member societies and local branches all over the country, CAST maintains close ties with millions of Chinese scientists, engineers, and other professionals working in fields of science and technology.

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