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Innovation Pathway

Building Xiong'an New Area into Innovation Hub

Xi Jinping, general secretary of the Communist Party of China (CPC) Central Committee, on Monday called for efforts to build the Xiong'an New Area in north China's Hebei province into an innovation hub in the new era and a model of promoting high-quality development.

Xi, also Chinese president and chairman of the Central Military Commission, inspected the Xiong'an New Area on Monday, where he also chaired a symposium on further advancing the high-quality construction and development of the new area.

He emphasized the need to firmly uphold Xiong'an New Area's primary functional positioning as the major recipient of functions relieved from Beijing that are non-essential to its role as China's capital.

The new area should strengthen endogenous development momentum through reform and innovation, and unlock vitality via reasonable concentration of production factors and resources, Xi said.

On Monday morning, Xi arrived in Xiong'an and traveled by vehicle to inspect construction progress in the start-up zone. He then visited China Huaneng Group Co., Ltd., which moved over 1,000 employees to Xiong'an in October 2025, and heard briefings on the company's relocation, industrial layout and innovative development.

At the company, he had a cordial exchange with representatives of officials and staff from relocated organizations already operating in the new area and those currently under construction, to learn about their life and work.

Xi also visited the Xiong'an campus of Beijing No. 4 High School, where he conversed with teachers and students in the classroom to learn about the teaching situation there. In the school canteen, he examined the dining environment and the variety of dishes available.

On Monday afternoon, Xi chaired the symposium and delivered an important speech. He acknowledged that important progress has been achieved in the construction and development of the Xiong'an New Area.

It has been fully proved that the CPC Central Committee's decision to develop the new area is entirely correct, and all related work has been solid and effective, he added.

Xi stressed efforts to relieve Beijing of functions non-essential to its role as the national capital and integrate them into the new area in a more vigorous and orderly manner, and advance the construction of relocation projects for state-owned enterprises directly administered by the central government, universities and hospitals in an active, steady and phased manner.

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This photo taken on March 25, 2026 shows the Zhongguancun International Innovation Center in Beijing, China. (PHOTO: HONG Xing / Science and Technology Daily)

2026 ZGC Forum Focuses on Global Innovation

By LIANG Yilian, SUN Mingyuan & HUA Ling

Technological achievements cannot remain mere prototypes in the lab — they must find their way to the production line to truly become new quality productive forces. The 2026 Zhongguancun Forum Annual Conference, which opened in Beijing on March 25, has brought together thousands of participants from over 100 countries and regions to focus on translating scientific and technological innovations into industrial outcomes.

Themed "Integrate Technological and Industrial Innovation," this year's edition consists of five main segments: plenary sessions, achievement releases, technology trade, a frontier competition, and supporting events.

Driving technology commercialization

Lin Xin, vice minister of science and technology, said at a press briefing that the agenda mirrors the latest global technological trends. The discussions will center around the integration of cutting-edge fields such as 6G communications, brain-computer interfaces, and cell and gene therapies with future industries.

Technology trading, which serves as a crucial bridge connecting technological innovation with industrial advancement, has long been a cornerstone of the forum. This year, the technology trading segment has over 20 targeted matchmaking events, with the number of registered investment institutions hitting a record high. More than 500 high-quality domestic and international tech projects will

hold on-site roadshows and presentations.

China's top 10 scientific advances in 2025

The opening ceremony presented "China's Top 10 Scientific Advances of 2025," spanning a wide range of fields, including physics, life sciences, energy materials, Earth sciences, and information technologies.

They included the discoveries made possible from samples brought by the Chang'e-6 mission, revealing the evolutionary history of the moon's far side and the effects of giant impacts on it for the first time. Another innovation is a scalable method for producing flexible ultraflat diamond films, a material with promising applications across multiple industries. See page 3

International Cooperation

BFA Injects Stronger Impetus into Regional Development

By YAO Yian

Themed "Shaping a Shared Future: New Dynamics, New Opportunities, New Cooperation," the Boao Forum for Asia (BFA) Annual Conference 2026 was held in Boao, south China's Hainan province, from March 24 to 27.

This year marks the 25th anniversary of the BFA, which has become a prestigious platform for promoting exchanges, collaboration and common development among Asian nations and the wider world.

This year's conference centered on forging broad consensus on upholding multilateralism, opposing protectionism, deepening open cross-border cooperation, and bolstering inclusive, sustainable growth for Asia and the broader global economy.

Nearly 2,000 delegates from over 60 countries and regions took part in about 50 sub-forums, roundtable discussions, and dialogues.

The forum released two flagship annual reports at a press conference during the summit.

Asia remains the world's primary growth engine, with its economy forecast to expand by 4.5 percent in 2026. The global center of AI development is progressively shifting from the United States and Europe toward Asia, according to the report titled *Asian Economic Outlook and Integration Progress Annual Report 2026*.

The AI industry chain is now extensive and complex, with different Asian countries possessing their own strengths across various vertical sectors, said Deloitte China Research partner Lydia Chen. "Moving forward, collaboration at the industrial, software, data and policy levels will help facilitate a more convenient and efficient flow of key factors."

Asia is emerging as a pivotal force in the global shift toward greener, low-carbon energy, moving from "the largest center of traditional energy consumption" to "a leader in clean energy development," according to the report titled *Sustainable Development: Asia and the World Annual Report 2026 — Sustainable Development in Asia amid Global Transformation*. See page 2

WEEKLY REVIEW

China's Large Telescope Releases over 30 mln Spectra

China's Large Sky Area Multi-Object Fiber Spectroscopic Telescope (LAMOST) on Tuesday issued its latest dataset to domestic astronomers and international collaborators. It includes more than 30 million spectra, cementing its position as the survey project with the highest number of released spectra worldwide.

Chinese Researchers Make a Breakthrough in Lithium Battery Technology

Chinese scientists have developed a new type of electrolyte, marking a breakthrough in the country's core lithium battery technology. The achievement, made jointly by researchers from the Shanghai Academy of Spaceflight Technology and Nankai University, is expected to double the range of existing lithium batteries and significantly improve their low-temperature performance. **NASA to Pause Gateway Lunar Station, Accelerate Return to Moon**

NASA announced a set of initiatives to accelerate the return to the moon, including pausing the Gateway lunar orbital station in its current form, and building a sustained lunar surface presence. It said it will incorporate more commercially procured and reusable hardware to enable frequent and affordable crewed missions to the lunar surface, initially targeting landings every six months.

Hair-thin Sensors to Revolutionize Cancer Detection

Scientists from Australia and Germany have developed hair-thin sensors that can detect multiple cancer biomarkers simultaneously. The tiny sensors use ultra-fast 3D micro-printing technology, which targets biomarkers and is printed onto optical fiber tips to measure several biomarkers simultaneously, including temperature and chemical changes.

New Graphic



WECHAT ACCOUNT



E-PAPER



STI Frontier

Giant 'Power Bank' Lights Up E. China

By Staff Reporters

The first unit of the Tiantai Pumped Storage Power Station in Zhejiang province was officially connected to the grid recently, adding a gigantic "power bank" to east China's electricity network. At the station, water cascades from the upper reservoir, leveraging a world-class 724-meter water head to drive turbines and generate green electricity. At the mountain's base, the lower reservoir gathers the water, ready to pump it back uphill for storage when power is abundant and demand is low.

This releasing and storing efficiently transports electricity across time and space. Once fully operational, the station is expected to supply 1.7 billion kWh of clean energy annually, enough to power a city of 1.6 million people, according to the project builders, China Three Gorges Construction Engineering Corporation.

Building a "crack-resistant dam"

The upper reservoir's dam holds back 6.89 million cubic meters of water at a height of 953 meters, placing it under immense pressure. Dams of this nature are typically constructed from flexible rock-fill dams and rigid concrete faces, which makes them strong against compression but vulnerable to cracking from tension. Temperature changes could also deform the supporting rock-fill, and subject the concrete surface to the risk of cracking.

The construction team's solution to these challenges began with the concrete formula. Initial "trial-and-error" attempts with six different mixes were tried — but they either lacked early

strength, were too costly, or even worsened cracking.

A breakthrough came when Zhou Tao, a project manager, studied the concrete microstructure of basalt fiber. He asked if a chemical bond, not just a physical mix, with the cement could be the key.

Shifting focus to the interface between materials, the team systematically tested 18 formulas across three dimensions — thermal, mechanical and durability — running 12 standard and three simulated environment tests for each.

After six months, a winning combination emerged: low-heat cement, basalt fibers and a cracking agent. In tests, crack width was reduced by nearly 60 percent, and ultimate tensile strength increased by 30 percent.

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Pilot Program to Scale Up Hydrogen Energy Usage

Policy Express

By TANG Zhexiao

The Ministry of Industry and Information Technology (MIIT), along with the Ministry of Finance and the National Development and Reform Commission has jointly launched an initiative to pilot the comprehensive application of hydrogen energy, proposing to drive innovation in hydrogen technologies and equipment.

The initiative aims to scale up hydrogen energy for urban application across diverse fields by 2030, with the average price of terminal hydrogen expected to drop below 25 RMB per kilogram, and to around 15 RMB per kilogram in some advantageous regions, while the national ownership of fuel cell vehicles is projected to double that of 2025, reaching 100,000 units.

By expanding the scale of application, breakthroughs in hydrogen energy technologies, processes and equipment will escalate to facilitate the iterative upgrading of fuel cells, electrolyzers, storage and transportation systems, and materials. The resulting plan is to promote hydrogen energy as a new driver of economic growth, supporting a comprehensive green transition in economic and



Workers conduct safety inspections in a hydrogen refueling station in southwest China's Chongqing. (PHOTO: XINHUA)

social development.

This pilot initiative will expand hydrogen energy applications from a single scenario of fuel cell vehicles to diversified sectors, including transportation and industry, and build a "1+N+X" integrated application ecosystem. Within this framework, "1" represents the general scenario of fuel cell vehicles, "N" indicates application scenarios in the industrial sector, and "X" refers to innovative application scenarios.

Five urban clusters will be selected based on their merits and each pilot period will last for four years. Financial support in the form of grants, with an upper limit of 1.6 billion RMB for a single pilot city, will be made available and the funds will be specifically used for comprehensive hydrogen energy applications.

Furthermore, pilot cities are encouraged to actively introduce supportive policies in the R&D of key technical

equipment in hydrogen production, storage, transportation and utilization. The cities are also encouraged to improve coordination between fiscal and financial policies. Meanwhile, enterprises are encouraged to create conditions that align with policies such as interest subsidies on loans for service sector operators, thereby providing diversified financial support for pilot projects on the comprehensive application of hydrogen energy.

Additionally, the policy and institutional environment will be upgraded to encourage the introduction of facilitative measures — such as enabling the inter-city transit of fuel cell vehicles.

China's hydrogen energy industry has achieved several breakthroughs, entering a critical phase of a rapid and large-scale development.

By the end of 2025, the cumulative sales of hydrogen fuel cell vehicles in China reached close to 40,000 units, with 574 hydrogen refueling stations constructed and a daily refueling capacity exceeding 360 tons, ranking first globally.

The pilot program aims to drive down costs through large-scale, multi-scenario applications, facilitate breakthroughs in hydrogen technology and equipment innovation, and promote the high-quality development of the hydrogen industry.



Global Journal Observatory

Horticulture Research: Decoding 'Beauty and Flavor' of Life

By CHENG Zongming

In the minds of many, horticulture seems to be the leisure art of tending to flowers and plants or savoring fruits and vegetables. However, under the scientist's microscope, the fragrance of the rose or the sweetness of the strawberry is underpinned by complex genomics and biotechnology. This is the realm *Horticulture Research* has focused on: decoding the "beauty and flavor" of life through cutting-edge science.

Cultivating a healthy academic ecosystem

Since *Horticulture Research's* launch in 2014, we have set a clear mission: to publish a high-level journal and, more importantly, to cultivate a vibrant global horticulture ecosystem, offering scholars worldwide a platform to showcase their work and exchange ideas.

In the early days, to ensure this Chinese university-hosted journal integrated into the international mainstream, I traveled frequently among universities and institutions in China, the U.S. and Europe. In 2016 alone, I chaired and attended 15 academic conferences and visited nine universities and research institutions to solicit manuscripts, and promote the journal's philosophy. Through this process, I realized that what scientists crave most is not just publishing papers, but in-depth academic exchange and international collaboration to advance horticultural science.

Therefore, we began to undertake several "extra duties." We started the International Horticulture Research Conference, which has become a premier academic event for fundamental research in global horticulture. It has been held 12 times across China, the U.S., the UK, Italy and beyond.

On this platform, scholars discuss face-to-face topics like how to enhance tomato storage and transport by gene editing, determine apple maturity using non-destructive testing, and extend the blooming period of flowers via molecular breeding. The synergy between the journal and the conference has transformed *Horticulture Research* from a publication into a multidimensional, warm community of scientists.

We also host regular online academic exchanges for our authors to share insights and discuss their papers, ensuring that young scholars and students can benefit from these exchanges.

An objective academic gatekeeper

As a frontline scholar, I intimately understand the anxiety and anticipation in the submission process. Therefore, we have an "author-centric" service philosophy. We do not look at the authors' "titles" or the prestige of their affiliated institutions; we judge research only by its scientific value.

One event left a deep impression on me. In 2024, a young scholar submitted a



Front cover of *Horticulture Research*, Volume 13, Issue 1. (COURTESY PHOTO)

manuscript detailing his discovery of a highly significant and novel gene controlling the prickly trait in Solanaceae plants. After peer review, the journal accepted it.

However, after the manuscript was pre-published online, it was questioned by a senior American scholar, who claimed that some of the experimental data was unreliable. We immediately organized a rigorous professional review; through strict evaluation by the editorial board, it was determined that the data were solid, the conclusions were reliable, and the accusations were unfounded. The paper was thus published as scheduled.

A month later, this senior scholar published similar findings on the gene in another journal. This convinced me that the courage to endorse innovation based on professional judgment is the key to earning the respect of international peers. I also realized that fair academic competition requires impartial editors-in-chief and journals, rather than being obsessed with identity and status. This is what constitutes a healthy academic ecosystem.

Forging the link from basic science to the dining table

Today, *Horticulture Research* has grown into a reputable journal in global horticulture. Its submissions cover China, the U.S., the UK, Italy, Spain and the Netherlands.

Its latest impact factor is 8.5, and its Journal Citation Indicator is 2.34, both ranking first in the field. The number of annual published papers has grown from over 30 in the early days to more than 300 today.

Yet, this is far from the endpoint. By publishing horticultural research findings, we aim to bridge basic science and the horticulture industry so that people enjoy more nutritious fruits and vegetables, better tea and coffee, and more beautiful flowers, ultimately contributing to a better quality of life for all.

The author is the editor-in-chief of Horticulture Research.

Tech-industry Integration Propels Manufacturing Upgrade in Kaifeng

Case Study

By YAO Yian & SUN Yue

The city of Kaifeng in Henan province, central China, focuses on key industrial chains such as automobile manufacturing, modern food and biomedicine driven by innovation.

To do this, the city has implemented a series of targeted measures, including building innovation platforms, tackling technological bottlenecks, promoting the commercialization of R&D achievements, and strengthening innovation entities.

At a recent high-quality development conference in Kaifeng, Henan Lixing Yiyuan Food Co., Ltd. (Lixing Food) shared its experience of going global with

its signature sour- and spicy vermicelli products via technological innovation.

In 2025, Lixing Food, in response to market demand at home and abroad, developed more than 20 new products and extended the shelf life of its sour- and spicy vermicelli by 30 percent through technological innovation. Sun Qingxin, chairman of Lixing Food, said the company will continue to ramp up R&D investment to take Henan's sour- and spicy vermicelli to the global market.

The dividends of sci-tech innovation have been effectively translated into tangible development results for the enterprise.

Kaifeng's three-year action plan is advancing innovation-driven development and accelerating the formation of new quality productive forces. From building high-level sci-tech innovation

platforms to strengthening the principal position of enterprises in innovation, the city has taken all-round measures to facilitate in-depth integration of sci-tech and industrial innovation.

The year 2025 proved remarkably fruitful for Kaifeng's sci-tech innovation platforms. A total of 23 new provincial-level innovation platforms were approved, and 55 new municipal-level innovation platforms were established.

The number of Zhongyuan Scholar Workstations, where distinguished experts lead research teams to solve technical challenges, facilitate technology transfer, and cultivate local scientific talent, rose to six. The Songdu Laboratory, focusing on technological innovation and industrial application, was put into operation.

Breakthroughs were also made in

sci-tech research projects: 313 municipal-level sci-tech plan projects were launched, nearly 40 sci-tech projects at or above the provincial level were approved, and a stream of original and disruptive technological achievements emerged, laying a solid technological foundation for the city's industrial development.

Kaifeng is also boosting corporate innovation through expanded financial support and faster commercialization of research achievements. In 2025, the city issued over 1.5 billion RMB in innovation-focused loans, and hosted 11 branded events to drive the transfer of advanced technological outcomes.

Its annual technology contract transaction volume surpassed 10 billion RMB for the first time, as the commercialization of local sci-tech results continues to gather pace.

a level deviation within 0.02 mm. "Even a 0.01 mm error could affect efficiency and lifespan," said Qiang Linlin, a project engineer.

During the vertical hoisting, monitoring screens showed a gap in the concentricity curves, suggesting a potential slight tilting of the rotor. The operation was immediately stopped. Visual inspection was inadequate. Recalling a 3D laser positioning instrument used during construction, the team used it as a monitor in the pit bottom.

With this dual guidance, the operator carefully adjusted the angle. After 30 minutes, the rotor settled perfectly into place, with a center deviation of 0.05 mm and level deviation of 0.01 mm.

The construction of the power station has now entered the fast lane. The first unit went live in December 2025, the second in January 2026, and all four are expected to be operational by September 2026.

Giant 'Power Bank' Lights Up E. China

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The team then developed a temperature control model for the dam, accurately predicting stress resulting from temperature changes. The 62.5-meter-high, 566-meter-long dam remained resilient, with leakage at just one-tenth of the designed limit — a remarkable achievement in China's pumped storage sector.

Forging a "super slide"
The team's next challenge was safely channeling water from the upper reservoir to the underground powerhouse. Two massive steel-lined inclined shafts — each 483.4 meters long with a steep 58-degree slope — were required, and these "super slides" had to withstand extreme pressure from the 724-meter water head.

At the time, the hydropower steel

made in China could withstand a maximum of 800 MPa. Given the choice between expensive imports and seizing the opportunity for innovation, the team resolved to develop 1,000 MPa high-strength steel.

The initial phase was tough. After two years, steel samples from five mills failed to meet requirements. Undeterred, the team visited the rolling mills, analyzing processes and adjusting alloy compositions until the first qualified plate was produced. However, the qualification rate for mass-produced steel plates was less than 50 percent. Inaccurate control of heat treatment was subsequently identified as the problem.

Through intense research and expert consultations, they refined the entire heat treatment process: ensuring uniform furnace temperature, precisely controlling the atmosphere, and standardizing cooling. With each improvement, the qualification rate soared to 92 percent. "This marked China's true mastery of 1,000 MPa steel manufacturing," said Yao Liang, deputy general manager of Zhejiang Tiantai Pumped Storage Co., Ltd.

Today, this domestically produced steel forms the core of the station's water conveyance system.

Installing the "giant heart"
The rushing water finally hit the reversible pump-turbine units in the underground powerhouse — the "giant heart" of the station. It pumps water uphill to store energy and reverses to generate power.

Precision installation was critical. With 481 tons in weight and 4.996 meters in diameter, the rotor demanded a center deviation of less than 0.1 mm and

ry, chairman of The 48 Group, has said.

These initiatives will build long-term cooperation platforms for governments, enterprises and research institutions across the region.

China's commitment to multilateral-

ism, free trade and inclusiveness offers crucial strategic stability to a world marked by market volatility and growing protectionism, Denis Depoux, global managing director at the Munich-based Roland Berger, said.

BFA Injects Stronger Impetus into Regional Development

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"Asia's green transition, particularly energy transition, is deepening and positioning the region as a spearheading global force," said Li Baosen, deputy secretary-general of the Global Energy In-

terconnection Development and Cooperation Organization.

China has become a global leader in robotics and green energy, sectors that are not isolated but foundational layers for the future economy, Jack Per-

Journal Review

As a foundational platform in horticulture, *Horticulture Research*, through its rapid development, has stimulated academic vitality and expanded the field's global influence.

The journal upholds rigorous publishing standards, and serves and unites the global scientific community. By organizing high-level academic events such as the annual International Horticulture Research Conference, it has forged a dynamic academic hub that fosters idea exchange and collaborative innovation among scholars worldwide.

Concurrently, its exploration of deep integration and development has garnered recognition within the

industry. Its recent receipt of the China Publishing Government Award for Journals testifies to its professionalism and leadership.

I expect *Horticulture Research* to adhere to its ethos of excellence in publishing, and courageously champion disciplinary innovation. May it play a stronger role in agricultural modernization and the revitalization of the seed industry, contributing China's wisdom to human well-being and global ecological security.

— Yu Jingquan, academician of the Chinese Academy of Engineering, and professor at Zhejiang University

Japan's Space Surveillance Accusation Unfounded



By LIANG Yilian & HU Dingkun

On March 15, *The Japan News* published an article online that claimed Chinese remote-sensing satellites pass over Japan roughly once every 10 minutes, "monitoring" Japan's Self-Defense Forces and the U.S. military bases in the country.

At times, the report said, as many as four satellites may pass over the same target almost simultaneously.

The framing is telling. By highlighting figures such as "once every 10 minutes" and "four satellites flying overhead simultaneously," the report portrays Japan as a vulnerable party under constant surveillance and reinforces the so-called "China satellite threat" narrative. To readers unfamiliar with space technology — or those predisposed to view China through the lens of suspicion — such numbers can sound alarming and convincing.

In reality, it is a deliberate exaggeration of China's satellite activities. The passage of Chinese remote-sensing satellites over Japan is largely a natural consequence of orbital mechanics.

China operates a large number of remote-sensing satellites, many of which serve civilian purposes such as disaster prevention and mitigation, land and resource surveys, water conservancy and meteorological monitoring.

According to the report itself, the satellites in question primarily operate



China launches seven satellites, including Pakistan's PRSC-EO2, from Yellow Sea waters on February 12, 2026. (PHOTO: XINHUA)

within the latitude band between 35 degrees north and 35 degrees south. Vast areas of southern China and the southeastern coastline — as well as parts of southern Japan — fall within this band and share similar latitudes.

Given the geographical proximity of China and Japan and the relatively low orbital inclinations of many observation satellites, it is inevitable that satellites designed to monitor China and the nearby seas will periodically pass over Japanese territory. Presenting such routine orbital movements as evidence of targeted surveillance is both inaccurate and technically unsound.

Ironically, while expressing concern about Chinese satellites flying overhead "every 10 minutes," Japan itself is

building a satellite constellation capable of observing the entire world at roughly the same frequency.

The Institute for Q-shu Pioneers of Space, Inc. plans to establish a constellation of 36 synthetic aperture radar satellites by 2027, which would enable observations of any location on Earth approximately every 10 minutes.

According to reports by outlets such as *Intelligence Online*, the project is already supplying reconnaissance imagery to Japan's Ministry of Defense and has reportedly provided intelligence support to Ukraine, becoming involved in the Russia-Ukraine conflict.

In recent years, Japan is increasingly promoting the militarization of space, often citing perceived threats from

neighboring countries as justification for expanding its capabilities in the space domain.

In June 2020, Japan announced plans to strengthen its space defense capacity by improving missile detection and tracking capabilities and launching multiple satellites to rapidly assess missile activities in surrounding regions.

In July 2025, Japan released its first set of guidelines aimed at strengthening its outer-space defense posture, citing the need to counter potential "killer satellite" threats and proposing the introduction of so-called "bodyguard satellites" to protect its space assets.

Against this backdrop, Japan's latest claims about Chinese remote-sensing satellites may also serve a broader purpose: creating political momentum for further militarization of space.

The global media has reported that Japanese Prime Minister Sanae Takaichi wants to join the U.S.' "Golden Dome" program. The initiative reportedly involves deploying weapons in outer space for missions such as missile interception.

As the world's second-largest space power by satellite count, China has consistently advocated the peaceful use of outer space and promoted international cooperation in the development of space technologies.

If Japan has a clear conscience, there is no need to be alarmed by a Chinese remote-sensing satellite operating normally in orbit. But if Tokyo is determined to push forward a new form of militarism in space, it will inevitably invite greater scrutiny from the international community.

Voice of the World

GCI a Pathway for Peaceful Co-existence

Edited by QI Liming

March 15 was the third anniversary of the China-proposed Global Civilization Initiative (GCI), marking a pivotal moment in global discourse. Calling for inter-civilizational dialogue and mutual learning, the vision GCI offers is more than an abstract ideal. It serves as a much-needed path forward for a world urgently seeking new models of coexistence.

Across the globe, people have gained a deeper understanding of the significance of this initiative in the context of the century-old changes.

The current conflicts and unrest in the Middle East have deepened Kawa Mahmoud's understanding of the contemporary value of the GCI. As the Head of the Global Civilization Initiative Research Center headquartered in Iraq, he believes the GCI advocates mutual respect and inclusive dialogue, which helps break the narrative framework of "Clash of Civilizations" and builds a bridge for enhancing understanding and trust among different civilizations.

Mahmoud said in an era of escalating turmoil and increasing uncertainty, the GCI offers crucial guidance for steering the world towards a future of peace, stability and inclusive development.

At a time when the international situation is so complex, conflicted and diverse, the Chinese philosophy of harmony brings clarity of thought.

Mars Sariev, a political scientist and expert on Central Asian issues from Kyrgyzstan, understands the essence of the GCI from China's role and actions on the multilateral stage. The "Shanghai Spirit" upheld by the Shanghai Cooperation Organization emphasizes "respect for diversity of civilizations," and China-Central Asia cooperation also attaches importance to "mutual respect, mutual trust, mutual benefit and mutual assistance" among different civilizations, he said. Both of

these align strongly with the GCI.

The GCI provides more space for dialogue among countries around the world that have different historical and cultural backgrounds but are facing the same challenges, he said.

In early February, the year 2026 was designated Year of China-Laos Friendship. The two countries share the natural bond of the Lancang-Mekong River and the modern infrastructure bond of the China-Laos Railway.

Kertmee Sackdanouvong, acting director of Center for China Studies at National University of Laos, believes that under the guidance of the GCI, exchanges and mutual learning between the two countries will flow naturally into the daily lives of the two peoples, forming a deeper bond of friendship.

Connected by the love of theater and drama, the UK town of Stratford and Fuzhou city in Jiangxi province, east China, became twin cities in 2016. Steve Ansell, artistic director of stage at the University of Leeds in the UK recalls how he was once astonished when attending drama activities in Fuzhou, and seeing Chinese audience's familiarity with Shakespeare. He said it was "far beyond his expectations," and affirmed that the echo of cross-cultural resonance is key to cultural exchange activities.

Yukteshwar Kumar, former deputy mayor of Bath city in the UK, has been paying close attention to the cultural and people-to-people exchanges between China and the UK in recent years. He said the GCI will effectively promote cultural exchanges, especially enhancing mutual understanding among young people, thereby contributing positive energy to the stable development of bilateral relations.

These ongoing cultural exchanges between China and foreign countries are powerful examples of GCI implementation and how they continue to strengthen bonds and promote harmony and understanding between people.

Hi-Tech

World's First BCI Device Registration Approved

By GONG Qian

The world's first market launch of an invasive BCI (brain-computer interface) medical device has become a reality, after China's National Medical Products Administration recently approved the registration application for an implantable BCI device to restore hand motor function. Developed by Shanghai-based Neuracle Technology, it also signifies a shift from experimental to clinical use.

The product is designed to help patients aged 18 to 60 who suffer from quadriplegia caused by cervical spinal cord injuries and are unable to perform grasping movements.

Two electrodes are implanted without direct contact with brain tissue to ensure implantation safety and signal effectiveness. When connected to an external device such as a pneumatic glove and activated, the coin-sized invasive device can collect and decode the patients' electroencephalogram (EEG) signals in real time, allowing for control of the pneumatic glove through thoughts to perform actions including grasping and picking up objects, and drinking water.

There is also no need for frequent battery replacements for patients as the device is powered wirelessly via a magnetic coil.



An implantable brain-computer interface device to restore hand motor function developed by Shanghai-based Neuracle Technology. (COURTESY PHOTO)

AI for Good: Ethical Imperatives

Comment

By GONG Qian & SUN Yue

As AI technology becomes widely adopted in the commercial sector, efficiency gains and industrial upgrading have brought a new type of abuse termed "AI data poisoning." Some businesses now use technical tools to flood generative AI systems with promotional content, in an attempt to influence its responses. Even counterfeit products could be recommended in the responses by fabricating false promotional content.

The underlying logic of algorithmic recommendations relies on data authenticity. Yet at present, content review and data verification mechanisms in some AI large language models remain inadequate, creating opportunities for profit seeking through disinformation. Not only

does this disrupt market order and mislead consumers, but it also erodes public trust in the digital ecosystem.

Faced with these industry loopholes and ethical risks, enterprises are pressed to take proactive steps to build dual defense in technology and ethics. Information review and data verification should be integrated throughout the R&D process, with technical measures used to trace data sources and ensure the authenticity and compliance of AI training data. Meanwhile, automated interception should be launched for mass-generated and suspicious promotional copy. The enhancement of AI identification capabilities through simulating disinformation attack scenarios, improving detection of false content, and enabling AI to gradually "distinguish right from wrong" is also necessary.

However, the implementation of such proactive measures remains limited, and a unified industry-wide techni-

cal and ethical protection system has yet to be established. Only when more enterprises embed ethical requirements into the entire lifecycle of AI design, research and application, and make compliance checks and content screening mandatory standards for AI product development, can the loopholes of technology abuse be closed at source, ensuring that technological innovation stays within ethical boundaries.

The healthy development of the industry requires both corporate self-discipline and strict regulatory constraints. China has already introduced relevant regulations to govern AI applications. The Interim Measures for the Management of Generative AI Services mandate that AI service providers fulfill their primary responsibility for information content management and guarantee the authenticity and accuracy of training and retrieval data. In addition, the Basic Security Requirements for Generative AI

2026 ZGC Forum Focuses on Global Innovation

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International cooperation takes center stage

The Action Plan for International Cooperation in Open Science released at the forum shows China's commitment to open international collaboration in science and technology. The plan outlines mechanisms for the global sharing of 10 major scientific research infrastructures, aiming to foster cross-border collaborative innovation.

Beijing, a hub for national strategic scientific endeavors, is positioning itself as a global center for scientific innovation, transforming large-scale research facilities from domestic use to international openness. Several critical national scientific instruments are now included in the action plan, contributing to the capital's efforts to advance global scientific cooperation.

Maximizing the value of technology

The true value of scientific achievements lies in their application. In his address, Benoît Dubuis, president of the Swiss Academy of Engineering Sciences, emphasized the timeliness of the forum's theme, noting that technology's real impact comes from its translation into practical solutions.

He said Chinese companies and their international counterparts, along with investors, are engaging in global collaboration, while researchers are advancing technology and product development through platforms such as systems integration labs.

Jia Yiwei, deputy general manager of the Zhongguancun Development Group, said this year, the forum is working with eight partners and over 60 member institutions to build an ecosystem for technological exchange and cooperation.

The forum has brought together global companies and high-growth technology firms — including AstraZeneca, Kunlun Tech, Sugon, and Moonshot AI — through dedicated corporate sessions and networking events, fostering a diverse and collaborative environment for technological exchange.

Dimitar Tomov, an official from the Bulgarian Embassy, said the forum reflects China's leading role in the global intelligent technology revolution and hoped for sustained long-term collaboration between Bulgaria and China in science and technology to jointly drive industrial transformation.

"The forum provides an important bridge for cooperation among international science parks," said Salvatore Majorana, director of the Italian Kilometer Rosso science park. Majorana sees significant potential for collaboration between

China and Europe in scientific innovation and industrial application.

Looking ahead: the future of innovation

This year's forum also features 60 parallel forums to delve into cutting-edge topics such as 6G technology, brain-machine interfaces, and advancements in cell and gene therapies. These discussions will explore the intersection of technological innovation and industrial application, laying the groundwork for the future of science and technology.

The 2026 edition is jointly organized by several Chinese government agencies, including the Ministry of Science and Technology, the National Development and Reform Commission, and the Ministry of Industry and Information Technology.

Since its founding in 2007, it has evolved into a major international event, fostering collaboration and innovation in science and technology on a global scale.

Materials Science Sparks Sustainable Development

Dialogue

By Staff Reporters

In October 2025, Italian Professor Federico Rosei, an internationally renowned materials scientist who has dedicated many years to researching microscopic quantum materials technology at the atomic and molecular levels, was elected a fellow of The World Academy of Sciences, in recognition of his efforts to promote scientific development in developing nations.

Rosei has a strong and long-standing connection with China. In 2015, he was appointed a "Changjiang Scholar" Chair Professor by China's Ministry of Education, and has played a pivotal role in establishing talent-training programs between Canadian research institutions and Chinese universities, including Soochow University and the University of Electronic Science and Technology of China.

Research on sustainable development

"I have always been interested in fundamental research, but over time, I gradually shifted my focus to sustainable materials such as multiferroic materials, quantum dots, nanostructured materials and excitonic solar cells," said Rosei.

During his time in Canada, he investigated a wide array of material systems. Drawing on fundamental principles, he engaged in materials design, clarifying the intricate relationships between material structure and properties. In the process, he developed various devices applicable to renewable energy technologies.

When discussing the latest advancements in materials science, Rosei places



Prof. Federico Rosei (left). (COURTESY PHOTO)

particular emphasis on the appeal of nanomaterials: "When materials are scaled down to the nanoscale, their properties undergo dramatic transformations and begin to exhibit 'quantum' effects that are typically unobservable at the macroscopic scale," he said.

From 2013 to 2023, he served as the UNESCO Chair in Materials and Technologies for Energy Conversion, Saving and Storage. In this role, he led the creation of a collaborative network spanning 22 countries and 30 institutions, including numerous universities in China. "Through exchanges and mutual visits between faculty and students, joint research projects, and the sharing of knowledge in emerging fields, we have nurtured a large number of outstanding young scholars," he said.

Lab to industrial application

In the field of industrial collaboration, his partnership with Jiangsu Meike Solar Co., Ltd. has set a stellar example.

Responding to the challenge of harvesting solar energy, they developed a solar photovoltaic window and door system utilizing quantum dot concentrators, effectively endowing traditional glass windows and doors with solar cell capabilities.

"This concept is innovative because the solar panels harvest solar energy and serve as structural building materials, making full use of the exterior walls' vast surface area," he said. This technology overcomes the challenges associated with traditional silicon-based photovoltaic panels, such as their large footprint and redundant investment, while supporting innovation in new energy technologies and driving industrial upgrading.

In 2020, he played a pivotal role in establishing the Institute of Quantum and Sustainable Technology (IQST) at Jiangsu University (JSU). Focusing on critical scientific questions in the field of photovoltaic new energy technology,

IQST prioritizes research into the atomic and molecular-level structural design of materials, as well as the application of quantum theory.

Working alongside the JSU team, he forged long-term, stable collaborative partnerships with institutions such as Soochow University, Nanjing Tech University and Nanjing University. Together, they have published over 50 high-level academic papers and undertaken five provincial- or ministerial-level research projects.

China: a hub of high-quality talent

"Working with Chinese scholars is always a pleasure. They have an admirable professional ethic and are so devoted to their research that I often find it hard to keep up with them," Rosei said. He takes great pride in the Chinese students and postdoctoral researchers he has mentored, noting that many of them have gone on to enjoy successful careers after returning home.

In his view, Chinese universities produce high-quality research. "These institutions are equipped with state-of-the-art facilities, backed by ample funding, and, most importantly, they have attracted a multitude of young talent eager to make their mark."

Rosei spoke highly of China's advancements in the field of materials science: "Currently, the epicentre of materials science research has shifted to Asia — a shift driven primarily by China's progress. China has set ambitious goals centered on its dual carbon goals and has made remarkable strides; indeed, it is now leading global development in the renewable energy sector. Every visit to China is an adventure and a learning experience for me."

This article is in cooperation with International Talent Magazine.

Tech+Culture

Tech Empowers Archaeology: Seeing the Unseen

By Staff Reporters

While traditional field archaeology relied on shovels and brushes to uncover artifacts, guided only by human eyes and hands, the efforts were limited to what could be seen and touched.

Today, with science and technology integrated into archaeology with unprecedented depth, not only have precision and efficiency greatly improved but it has also opened up dimensions of information that traditional methods could never reach.

Remote sensing: 'sharp eyes'

The state of Chu was an important regional state existing between 770 and 223 BCE. The Chu royal mausoleum in Wuwangdun in Anhui province, east China, is the largest, highest-ranking, and most structurally complex royal Chu tomb scientifically excavated in the country to date.

Today, the excavation site is a hub of activities. A temporary protective shed has been erected over the site and laboratories from various disciplines are busy cataloging and preserving the artifacts unearthed from the tomb.

However, just six years ago, this site was merely a mound rising about 16 meters above the ground.

How was the underground site precisely located? Archaeologists used their "sharp eyes."

Professor Zhang Wenjie, vice dean of the School of History and Cultural Heritage at Xiamen University, who led the entire excavation process, described how it was done: During the exploration phase, high-level domestic research teams used large-scale remote sensing technologies, such as satellite remote sensing and drone aerial photography, to conduct preliminary surveys and assess the tomb's macro structure, burial mound, possible distribution of accompanying graves, and the scope of the cemetery.

Remote sensing offers a high vantage point and a broad field of view. By analyzing images of large areas captured by satellites and drones, archaeologists can identify large sites based on differences in surface vegetation and soil color. This technology records the spatial layout of sites and their relationship with the surrounding environment, providing a basis for subsequent excavation and protection plans.

Since the Wuwangdun tomb had been disturbed by multiple robberies, it was possible that the burial environment had changed. Rash excavation could damage the original positional information and state of the artifacts.

Therefore, it was necessary to use "sharp eyes" to see clearly what lay beneath.

The archaeological team employed geophysical detection techniques such as high-density resistivity for non-destructive detection of the tomb pit structure and the layout of the coffin chamber. This allowed them to predict the condition of the underground remains and customize a more refined excavation plan.

Precision excavation

The widespread application of remote sensing, digital, and intelligent technologies has made fieldwork more precise and efficient. During the excavation phase, new technologies and methods ensure smooth progress in the work and the safety of the relics.

"Dry lasts a millennium, wet lasts 10, but halfway between, it rots in half a year." This is how the archaeological community sums up their experience acquired through extensive field practice.

The temperature and humidity of the storage environment affect the relics and fluctuating conditions can even lead to tomb collapses. To address this, the archaeological team injected inert gas to reduce the exposure of the revealed relics to oxygen. They also used methods like automatic mist spraying to control the temperature and humidity of the excavation site.

When extracting the artifacts, the team combined traditional methods with new techniques. They used menthol for temporary consolidation, plaster and polymer bandage procedures, liquid nitrogen freezing, and box-lifting technology to extract large artifacts. This maximized the retention of archaeological information, ensured the safety of artifacts during transport, and facilitated subsequent conservation and restoration.

As the excavation progressed, traces of ink, suspected to be remnants of characters, were found on the overlapping surfaces of the coffin lid planks. However, due to mud contamination, only minimal ink traces were visible to the naked eye, and most inscriptions were unidentifiable.

The archaeological team used infrared cameras to record over a thousand ink-written characters on the coffin lid planks. These characters indicated the orientation, compartment names and other details of the coffin chambers. This information helped identify the functional division of the different coffin chambers and provided a basis for in-depth research into the construction of the tomb.



An exhibit at the exhibition "Echoes of King Kaolie — Archaeological Discoveries from the Wuwangdun Tomb No. 1" in the National Museum of China in Beijing, China. (PHOTO:XINHUA)

Hybrid Vigor: Breeding Better-quality Plants, Animals

Traditional Eastern Wisdom

By BI Weizi

China is one of the earliest countries in the world to systematically make use of hybrid vigor (heterosis). From the pre-Qin period to the Ming and Qing dynasties, a comprehensive practical framework was developed for animals, silkworm farming, crops and horticulture using hybrid vigor, where better quality animals and plants result from crossbreeding.

During the Western Zhou and Spring and Autumn period, the *Yi Zhou Shu* and *Chu Ci* document the hybridization of horses and donkeys to produce mules. Northern nomadic peoples pioneered interspecific hybridization techniques, and mules were considered "extraordinary

animals." During the Han dynasty, mules spread to the Central Plains through contact with various ethnic groups and became important draft animals. However, hybridization techniques were still in the exploratory stage. By the Wei, Jin and Northern and Southern dynasties, this technology had gradually matured.

During the Ming dynasty, breakthroughs were achieved in silkworm hybridization. In Song Yingxing's *Tian Gong Kaiwu* (*The Exploitation of the Works of Nature*), hybridization between silkworm varieties is recorded, with the achievement of "superior hybrids" clearly identified: A yellow-cocooned female and a white-cocooned male produced offspring with brown cocoons that possessed traits of both parents. This is the world's earliest written record of utilizing hybrid vigor in silkworms, predating the West by several centuries.

During the Qing dynasty, refined

breeding techniques were developed. In goldfish hybridization, the *Jinyu Tupu* (*Illustrated Treatise on Goldfish*) recommended selecting superior breeds and matching traits for hybridization, resulting in varieties such as variegated and dragon-eye — a prime example of hybrid vigor in ornamental animals.

In rice breeding, naturally mutated rice plants were discovered, and after years of selection, varieties of imperial rice were developed that exhibited early maturity and high yield. Successful trials were conducted in the northern regions such as Chengde and Beijing, overcoming planting boundaries.

The characteristics of ancient Chinese utilization of hybrid vigor can be summarized in four points: First, animal-led hybridization, represented by mules and dzo (cow and yak hybrid). This was the earliest and most successful example of distant hybridization in

the world. Second, a milestone in silkworm breeding. Inter-variety hybridization was achieved in the Ming dynasty, clearly demonstrating the concept of "generating superior varieties," making China a pioneer in insect hybrid vigor.

Third, the practice-driven approach, primarily based on production experience rather than modern genetic theory, yet the techniques were precise and the results significant. Fourth, its applications were wide-reaching, covering draft power, food, textiles and ornamental uses, and supporting the development of ancient agriculture and handicrafts.

The use of hybrid vigor in ancient China predates that in the West by around 1,000 years, representing a significant innovation in the history of world agricultural science and technology, and providing the practical basis for modern hybrid breeding, including hybrid rice, corn and livestock.

Sword of Goujian: Still Razor-sharp after Millennia

Science Outreach

By BI Weizi

The Sword of Goujian is a bronze sword famous for its exceptional sharpness, detailed pattern of black diamond engravings, and its remarkable resistance to corrosion, something very unusual among existing artifacts from a similar time period. Unearthed in 1965 from a historic grave in Hubei province, the sword is recognized by the markings on its blade as crafted and

owned by Goujian, one of the final rulers of Yue during the Spring and Autumn period (770-481 BCE).

It is believed that the sword has retained its remarkable razor-like edge and corrosion free surface due to its chemical makeup and an almost airtight sheath.

The blade was crafted from a bimetallic mixture of copper and tin. Before Chu swordsmiths created steel blades, high-quality Bronze Age swords were deemed those that effectively balanced the use of tin in the bronze mixture. A high concentration of tin provided hardness but also increased the risk of brittleness, whereas a low concentration resulted in a

robust yet soft-edged blade.

A major metallurgical advancement by blacksmiths in the regions of Wu and Yue led to the production of a double-cast blade, initially using a low tin bronze alloy for the central ridge to ensure toughness and flexibility, followed by a high tin bronze alloy on the blade edge for enhanced hardness and strength. A bronze sword with both hardness and strength was thus made possible.

The Sword of Goujian visually represents this metallurgical method, where the yellow-red and yellow-white hues of the blade's ridge and edges respectively symbolize the aesthetic characteristics of this technique. Com-

positional analysis confirmed that the blade's body ridge is primarily composed of copper, which enhances its pliability and reduces the risk of shattering; conversely, the edges contain a higher tin content, which increases hardness and helps maintain a sharper edge; sulfur also diminishes the likelihood of tarnishing in the designs.

The Sword of Goujian is recognized as one of the earliest existing examples of ancient Chinese sword-making that employed intricate metallurgical composition. The "chemical wisdom" has provided significant motivation for contemporary metal corrosion protection methods, particularly in the realm of cultural artifact conservation.

Building Xiong'an New Area into Innovation Hub

From page 1

Xi stressed systematic planning and the integrated advancement of high-quality development and efficient governance, urging efforts to improve the public service system, safeguard and enhance people's well-being, and actively explore future-oriented smart city management models.

Xiong'an must develop a modern industrial system suited to its realities, Xi said, noting that it should advance the high-standard development of a

science park to accelerate the application of scientific and technological achievements.

The new area should cultivate clusters of emerging industries and industries of the future, pioneer the implementation of innovative policies in science and technology, finance and other fields, and create a market-oriented and law-based business environment that is up to international standards, he added.

Source: Xinhua