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Xuelong Completes Survey for 42nd Antarctic Expedition

By Staff Reporters

The ocean team of Chinese icebreaker Xuelong, also known as Snow Dragon, finished the ocean survey tasks of China's 42nd Antarctic Expedition on February 19, with the last acoustic release transponder retrieved from the Ross Sea.

Zhang Haifeng, head of the team, said they carried out a comprehensive survey of the hydrological environment, marine organisms, marine chemistry and atmospheric environment in the Amundsen Sea, the Ross Sea and nearby waters.

Survey of penguin habitats was conducted simultaneously.

The work started on January 24, with the team battling unfavorable weather with wind and snow, thick fog, surging waves and severe ice conditions. Focusing on the key elements of the marine ecosystem, they deployed and retrieved subsurface moorings, used new type krill trawls, and made observations using disposable conductivity-temperature-depth instrument, Zhang said.

The team retrieved four sets of ecological buoys and deployed four new sets. Abundant biological samples were also collected, including krill, midwater fish and benthic organisms, which will help understand the nutrition structure of key pelagic species as well as track and understand the changing trend of key populations.

The mission used new technologies and new equipment. The polar ecological buoys were equipped with domestically produced acoustic and optical detection modules, which enable sequential continuous observation for a long time in the ocean under ice.

Antarctic krill are very sensitive to climate and ecological environment changes. For example, the reduction of sea ice could threaten their food sources and habitat, and the rising seawater temperature could trigger their retreat to higher altitude.

The new type of improved krill trawl has a multi-layer design, which increased catch rates and facilitated monitoring krill distribution across different water layers, according to Li Shuai, head of the quarter deck working group.

The team analyzed the regularity of krill distribution, their interannual variations, feeding habits, and trophic relationships within the food chain. The objective is to promote sustainable utilization of biological resources and protection of marine environment in the Southern Ocean, Li said.

As a member of the Convention on the Conservation of Antarctic Marine Living Resources, China is contributing research data and scientific solutions, which not only help evaluate krill resources, but are also crucial to understand how climate change influences polar ecosystems, according to Li.

The ocean team members of Xuelong and summer team members of the Qinling Station will board the vessel to the Port of Hobart in Australia, and then fly back to China.

Xuelong will sail to the Zhongshan Station in east Antarctica for subsequent tasks.



Humanoid robots play football in Wuhan city, Hubei province, February 24, 2026. A variety of electric vertical takeoff and landing aircraft and humanoid robots made their debut at an event in Wuhan, showcasing the province's latest achievements of low-altitude economy and artificial intelligence. (PHOTO: XINHUA)

STI Frontier

Development of 4th Gen OLED Screens

By Staff Reporters

High energy efficiency, long lifespan and high color purity have always been essential to the display industry. However, furthering the success of Organic Light-Emitting Diode (OLED) beyond conventional low-luminance display applications used to be hampered by the low power efficiency (PE) at high luminance.

With more than 10 years of commitment, scientists from Tsinghua University, in collaboration with domestic enterprises such as Visionox Technology Inc., have demonstrated the strategic implementation of an exceptionally high-PE, high-luminance OLED, using a phosphor-assisted thermally activated delayed fluorescence (TADF)-sensitized narrowband emission. They ultimately achieved mass production and commercial application of the fourth-generation OLED adopting phosphor-assisted TADF-sensitized fluorescence (pTSF).

Breakthrough luminance strategy

Previously, OLED technology had advanced to the third generation, and the breakthrough to high PEs was made possible by using phosphorescence and TADF emitters. However, a problem with OLEDs remained unresolved, namely the tendency for efficiency to decrease with increasing luminance, known as efficiency roll-off.

Duan Lian, a chemistry professor at Tsinghua University, recalled that in 2011, when the third-generation TADF materials from abroad had made a breakthrough, he found the weakness of TADF materials after careful research, and proposed a solution to the exclusion of high PE and high luminance — instead of using a TADF emitter, using TADF materials to sensitize the energy transfer to high-color-purity fluorophores.

Deriving from their previous work on pTSF, the Tsinghua research team unveiled a breakthrough strategy for OLEDs

to fully exploit the potential of a high PE under a high luminance, which was implemented on the basis of a multiple sensitized narrowband emission from a pTSF emitting layer, constituting ternary components: a TADF sensitizing-host, a phosphor-assistant and a multiple resonance (MR) emitter.

As a consequence, pTSF devices could realize a 100 percent exciton utilization in a sub-microsecond-scale, which greatly relieved the critical issue of PE roll-off with increasing luminance, highlighting the potential for the continued success of OLEDs beyond conventional low luminance display applications.

Expanding color gamut

The team started by developing the pTSF red light, which significantly increased the lifespan of the device. However, the project was once again halted as no breakthrough was made in the key narrowband red light material.

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Report for Spring Festival

Innovation Unleashed: From Smart Cities, Trains to Rockets

By Staff Reporters

China's innovation journey never stops. From the AI-powered smart city ecosystem in Xiong'an and Shandong's gram-precision commercial rocket assembly to Datong's digitally transformed locomotive factories, sci-tech innovation is reshaping the country's development landscape.

Xiong'an: A model of innovation

In the Zhongguancun Science Park in Xiong'an New Area, the R&D team of Mech-Mind Robotics, a company that makes industrial 3D cameras and AI-powered software for intelligent robotics, is upgrading its intelligent production line. Since settling in Xiong'an in 2024, the company has attracted numerous talents

in the field of AI.

"In Xiong'an, there are changes every quarter, even every month," the company's representative Ma Xiaoqian said. Xiong'an's AI and other application scenarios are strengthening the foundation for smart cities and helping companies develop.

Currently, over 750 companies have signed agreements to operate the 33 themed buildings in Xiong'an, forming a distinctive development model of "one building, one industry."

The "upstream and downstream" industrial ecosystem, where adjacent buildings are essentially connected, has led to a high concentration of innovative elements in Xiong'an. Algorithm development, computing power support, and ap-

plication scenarios are all condensed within a single building so that companies can collaborate on innovation without leaving the premises.

This model has not only reduced communication costs and improved innovation efficiency, but also acts as a gravitational field attracting industrial clusters.

Rich scenarios such as smart transportation, ecological protection, and digital governance are also boosting the application of new technologies and industries, becoming an important engine for cultivating new quality productive forces.

In the underground utility tunnels, inspectors use a smart city system to remotely inspect the neatly arranged pipelines. See page 2

International Cooperation

APEC 'China Year' to Boost Regional Prosperity

Edited by LU Zijian

Chinese Foreign Minister Wang Yi called for building a prosperous and stable Asia-Pacific at the opening session of the First Asia-Pacific Economic Cooperation (APEC) 2026 Senior Officials' Meeting (SOM), held recently in Guangzhou, south China's Guangdong province.

The first SOM and related meetings took place from February 1 to 10 in Guangzhou. They were the first official event China held as host of APEC in 2026.

The APEC "China Year" adopted a theme of "Building an Asia-Pacific Community to Prosper Together." It carries forward both APEC's consistent vision and reflects a deeper commitment to further elevating regional cooperation, based on the achievements already made, Wang said.

China will focus on the three priorities of openness, innovation and cooperation, and advance the following key tasks: firmly upholding one main goal, exploring two key pathways, accelerating three major transformations, and deepening multifaceted cooperation.

"We should be more determined than ever to hold high the banner of building an Asia-Pacific community and explore objectives and a roadmap for community-building in the period ahead," Wang said.

He encouraged parties to advance the process of building a free trade area of the Asia-Pacific and improve the network of connectivity, saying the APEC connectivity blueprint for 2015-2025 proposed at the 2014 Beijing meeting has already delivered important progress. "We should build on that," Wang said. See page 3

WEEKLY REVIEW

World's Smallest Ferroelectric Transistor Developed

A research team from Peking University has developed the world's smallest nano-gate ferroelectric transistor that operates at an ultralow voltage of 0.6 volts, with the physical gate size reduced to 1 nanometer. The device has achieved voltage compatibility between ferroelectric memory elements and logic transistors. Their study was published in *Science Advances*.

New Breakthrough in Optical Communications and 6G

Chinese researchers have achieved a breakthrough in optical communications and 6G wireless technology by realizing cross-network convergence between fiber-optic and wireless communication systems. By integrating photonics with ultra-wideband devices, the research team demonstrated seamless fiber-wireless operation at record-breaking data rates.

Software Automatically Segments Brainstem Nerve Bundles

A research team of MIT, Harvard, and Massachusetts General Hospital have developed an AI-powered software capable of automatically segmenting eight distinct bundles of nerve fibers in the brainstem from any diffusion MRI sequence. The tool offers a new window into brainstem white matter pathways.

Revolutionary Long-term Data Storage System Created

Microsoft researchers have developed a data storage system capable of preserving readable information for at least 10,000 years, with the potential to last far longer. The team used a high-energy laser to imprint deformations into a 3D chunk of borosilicate glass, the kind used in ovenware.

New Graphic



Source: A Research Led by Professor Guo Qinghua, Peking University
Designed by SONG Ziyan / Science and Technology Daily

Cultivating New Growth Drivers in Service Consumption

Policy Express

By LI Linxu

In its latest move to boost consumption, China has rolled out a work plan to accelerate the cultivation of new growth drivers in service consumption.

In recent years, China's consumption structure has been shifting from goods-dominant to a more balanced pattern where service consumption plays an increasingly prominent role, said Kong Dejun, director general of the Department of Trade in Services and Commercial Services of the Ministry of Commerce.

Chinese people's expenditure on services has emerged as a key driver of China's high-quality economic growth. From 2020 to 2025, per capita expenditure on services grew at an annual average rate of 8.5 percent. In 2025, services spending accounted for 46.1 percent of per capita consumption, up 3.5 percentage points year-on-year, according to Kong.

The growing vitality of service consumption has been particularly evident in the ice and snow economy. From November 1, 2025 to January 31, 2026, ski resorts nationwide received a total of 118 million visits, including 1.255 million



Tourists have fun at a ski resort in Qingdao, Shandong province. (PHOTO: XINHUA)

inbound visits, said Ai Yu, deputy director general of the Sports Economy Department of the General Administration of Sport of China.

During the same period, robust participation in ice and snow sports spurred related consumption. Total spending at ski resorts and surrounding areas reached 69.15 billion RMB, while the number of transactions reached

890 million, up six percent year-on-year, according to Ai.

Looking ahead, China's service-consumption sector is entering an important strategic opportunity period, with the potential to further lift the overall consumption rate and drive high-quality growth.

The role of inbound consumption is also highlighted in the work plan.

Efforts will be made to strengthen overseas promotion of entry policies and inbound tourism, accelerate the global coverage of online visa processing, and enhance the convenience of immigration, residence, and overall entry for foreigners.

In 2025, the number of foreign nationals entering and exiting China via all ports reached 82.035 million, up 26.4 percent year-on-year. By the end of 2025, nearly 13,000 tax-refund shops for overseas visitors operated nationwide, and sales of tax-refund goods for overseas travelers surged 95.9 percent in 2025, said Yan Dong, vice minister of commerce.

More efforts will be made to increase the number of tax-refund stores, further optimize tax refund services, and enhance convenience for overseas visitors, so as to attract more inbound tourists, Yan added.

Given its linkage to multiple service-consumption sectors, the Ministry of Transport will foster new growth points through developing self-drive tourism, promoting the high-quality development of small- and mini-passenger vehicle rentals, and expanding night-cruise, yacht and cruise-ship consumption, said Liu Dong, deputy director general of the ministry's Comprehensive Planning Department.



JAT: Enabling Analytical Chemistry to 'See' Deeper

By TU Hailing

Detecting trace pollutants in environmental monitoring, tracking drug metabolism in the body for precision medicine, and elucidating the composition and structure of new materials — these seemingly unrelated applications all rely on the same discipline: analytical chemistry.

Analytical chemistry bridges the macroscopic and microscopic worlds, and is often called the "eyes" of science and technology. With these "eyes," people can distinguish objective facts from subjective conjectures through precise detection data. The more advanced the technology of the "eyes," the deeper our understanding of the world becomes. My team and I aim to enable these "eyes" to see even deeper, clearer and farther.

The Journal of Analysis and Testing (JAT), the first international English academic journal on analytical chemistry in China, was launched in 2017. The journal's academic influence has steadily increased. It is now ranked in the Q1 category of the Clarivate Journal Citation Reports and has become a pivotal journal in the international analytical chemistry field.

A simple, original aspiration has consistently driven our progress: to enable analytical chemistry to better address the challenges of our time.

Fulfilling academic missions

As awareness of the harm caused by emerging pollutants to society and the environment grows, the rapid identification and detection of these pollutants has emerged as a critical challenge in global environmental governance.

Our team held an in-depth discussion in 2024 and in 2025, we launched a special issue titled *Identification and Detection of Emerging Pollutants* to address the challenges of managing emerging pollutants. It featured cutting-edge research from renowned experts worldwide.

By integrating multidisciplinary approaches such as materials science, biotechnology and AI, this issue provided solutions to key bottlenecks in current detection methods, including slow response times, insufficient accuracy and difficulties in real-time monitoring, while advancing technological innovation in pollutant detection.

Promoting interdisciplinary collaboration

When diseases lurk deep within the human body, how can we detect them earlier, pinpoint their locations more accurately, and minimize harm to healthy tissues? This is a long-standing challenge in medicine, one where analytical chemistry can make a meaningful contribution.

Near-infrared I/II region optical technology, with its superior penetration capabilities and reduced side effects, enables deeper and clearer visualization within the body. Combined with photo-thermal or photosensitization effects, it



Front cover of the Journal of Analysis and Testing, Volume 9, Issue 4. (COURTESY PHOTO)

facilitates targeted intervention in lesions, emerging as a key direction in next-generation precision medicine.

In 2023, we curated a special issue, *Near-infrared I/II Theranostics*, to systematically review this cutting-edge field, focusing on the interdisciplinary integration and innovation of chemistry, materials science, optical imaging and biomedicine.

The issue comprised multiple reviews and research papers authored by domestic university research teams. It elucidated how interdisciplinary collaboration can overcome the limitations of traditional diagnostics and treatments, addressing clinical pain points such as the difficulty in locating deep-seated lesions, the side effects of treatment, and the challenges posed by drug-resistant bacteria.

Although it will take time for these achievements to transition from laboratory to clinical practice and truly benefit patients, the path forward is now clear.

Driving disciplinary development

Reflecting on *JAT*'s nine-year journey, I am increasingly convinced that analytical chemistry is valuable not only in advancing technology, but also in responding to the demands of the times. From environmental governance to precision medicine, and from new material development to energy transformation, analytical chemistry is moving from "backstage" to "frontstage."

Looking ahead, *JAT* will uphold the principles of "precision, interdisciplinary approach, practicality, and internationalization." We foster deep integration between analytical chemistry and fields such as biomedicine, materials science and environment and energy, thereby advancing scientific research from methodological innovation to industrial application.

We look forward to collaborating with scholars worldwide to advance our disciplines and contribute to scientific efforts to address global challenges.

The author is the editor-in-chief of the Journal of Analysis and Testing.

New Standards for Low-altitude Economy Issued

By SUN Jin & YANG Xue

New guidelines setting out a comprehensive standard system for the low-altitude economy were released jointly in late January by China's Ministry of Industry and Information Technology and four other government departments.

The system, aimed at fostering sector growth through clear, unified rules, is expected to be basically established by 2027, according to the guidelines, and by 2030, China will have established over 300 standards for the low-altitude economy. This will form a structurally optimized, advanced, rational, and internationally compatible standards system.

The standards system aims to encompass the full industrial chain, including low-altitude aircraft, supporting in-

frastructure, air traffic management, safety oversight, and diverse application scenarios.

Currently, in its nascent stage, the sector is transitioning from pilot projects to scaled and standardized development, with accelerated deployment across the industrial chain.

"Clear technical guidance will help reduce the costs of R&D, construction, and operation for related enterprises, bringing new opportunities for the low-altitude sector," said Ding Haiyu, deputy head of the China Mobile Research Institute.

The guidelines establish unified technical pathways and standardize data interfaces for low-altitude communication, navigation and sensing systems.

This is expected to facilitate the coordinated networking of 5G-advanced

base stations and the accelerated maturity of integrated sensing and communication technologies.

To enhance safety oversight and operational safeguards, the guidelines reinforce requirements such as the "one drone, one code" rule and real-name registration system.

Additionally, the guidelines clarify performance indicators and testing methods for low-altitude equipment and infrastructure.

As a national initiative for a low-altitude economy standards system, the release of the guidelines strengthens the institutional foundation for the sector's high-quality development.

Ding added that the low-altitude infrastructure field is expected to enter a more standardized phase of development.



Innovation Unleashed: From Smart Cities, Trains to Rockets

From page 1

Thousands of sensors act like loyal sentinels, guarding the lifeline of this city 24 hours a day.

From the digital brain in the cloud to the multi-level underground infrastructure project, Xiong'an has become a vivid example of innovation-driven green development, turning the blueprint for the future city into reality.

Digitalization boosts train manufacturing

From the "Heping" steam locomotive to the "Fuxing" intelligent locomotive, CRRC Datong Co., Ltd. has produced countless locomotives for trains traveling all over China. Digitalization and intelligentization have given new vitality to this cradle of traditional high-end equipment manufacturing.

In the assembly plant of CRRC Datong, automatic guided vehicles (AGVs) come and go along electric screen cabinet manufacturing cell lanes. These cubic, delf machines have greatly enhanced production efficiency.

When the AGVs come across operating staff in their routes, their sensors instantaneously identify the "barrier" and they stop. Only after the staff walk away do the AGVs continue moving along

their preset routes to the destination.

When they stop there, trays carrying materials like precision electrical parts pop out automatically, no manual handling is needed.

Liu Tao, an assembler at the factory, said the workers had to use forklifts previously to transport materials. "The factory floors are vast and the workstations scattered; so we had to make dozens of trips a day. Our calves would cramp from all the running," Liu said.

With the AGVs taking care of moving materials, the assemblers can focus on precise assembly.

In the bogie factory, a click on the command button of the operating platform makes a mechanical arm slowly rotate, securely grip the heavy vehicle wheels and axles, lift them and precisely position them into the wheel set assembly machine.

The entire sequence is seamless, with even the bolt tightening torque executed with pinpoint accuracy, perfectly meeting the process specifications.

Ten years ago, experienced craftsmen were needed to do all this work, said Song Wei, head of the wheel set press fit workstation. With the intelligent system, the production

plan, material information and technological parameters are all on screen, and the system guides the operator throughout the entire process with real-time reminders.

"Following the system, even green hands can do high standard work. Production efficiency has increased by over 30 percent, and the production qualification rate is nearly 100 percent," Song said.

Weighing rockets to the gram

In a sunlit assembly hall in Haiyang, Shandong, workers are completing final checks on the Gravity 1 Y3 launch vehicle. Its core stage, four solid boosters, and payload fairing will soon be integrated into the world's most powerful all-solid rocket, scheduled to fly in the first half of this year.

One of the last steps is weighing each major component, a process locally called zhang cheng, or "taking the measure."

Crane operator Dong Lei carefully lifts the 10-meter-long, multi-ton core stage and moves it onto a high-precision scale. The reading must be accurate to within 0.1 kilogram.

"Even a small weight difference can affect the flight path," explains Wang

Wuqin, deputy director of the test center. Engineers reweigh every part to adjust flight software based on the actual mass, which can vary due to coatings or assembly materials.

What sets Gravity 1 apart is its "three-and-a-half stage" design: three stacked solid cores with four strap-on boosters. This configuration, rare among commercial solid rockets, enables flexible mission planning. Future flights could use zero, two, or four boosters, or even switch to liquid ones.

But bundling boosters creates a tough challenge. They must stay firmly attached during ascent, then separate sideways without shaking the core. The joint between the booster and the core handles about 200 tons of force while enduring intense vibration and heat. If the materials fail, the parts could fuse together and prevent separation.

"This isn't just mechanics," Wang says. "It combines structural design, materials, control systems, and aerodynamics, all at once."

Currently, only China's Long March rockets use this technique. Gravity 1 is the first commercial all-solid rocket in the country to master it, filling a key gap in domestic space capability.

Journal Review

Analytical chemistry, as a fundamental measurement science, serves as a key driver in advancing numerous cutting-edge technological fields. The rapid development of *JAT* is a vivid testament to the vitality and global influence of this discipline.

The success of *JAT* lies in its commitment to the concept of high-level internationalization in journal operations. By establishing an international editorial board and a rigorous peer-review process, the journal has created a platform for sharing knowledge, which fosters intellectual exchange and collaborative innovation among scientists worldwide.

JAT also proactively addresses global issues such as public health and environmental governance by organizing cutting-edge special issues to guide disciplinary directions. This demonstrates the high sense of responsibility of academic journals in serving the scientific community.

Looking ahead, I hope *JAT* will continue to strengthen its role as a hub for global communication in analytical chemistry, not only publishing high-level papers, but also inspiring new ideas and fostering new consensus.

— Wang Haizhou, a member of the Chinese Academy of Engineering

Absurdity! Blaming Northvolt's Collapse on China

Clear Voice

By LIANG Yilian & HU Dingkun

Recently, some Swedish media outlets have claimed that untested Chinese-made machinery was responsible for the bankruptcy of the country's well-known battery maker Northvolt. In response, a spokesperson for the Chinese Embassy in Sweden said that attributing Northvolt's bankruptcy to a Chinese equipment supplier is baseless, completely untenable, and a typical case of scapegoating and shifting blame.

Northvolt traces its origins to 2015, when former Tesla executives founded SGF Energy to develop batteries for electric vehicles. In 2017, it was renamed Northvolt. Over the following years, it raised more than 15 billion USD in funding, secured 50 billion USD in orders, and announced plans to build six gigafactories across Europe and North America. Its rise was meteoric, and its fall abrupt. In November 2024 and March 2025, Northvolt filed for bankruptcy protection in the United States and Sweden, respectively.

Rumors linking Northvolt's collapse to Chinese machinery first surfaced in September 2024. Lars Wilderäng, a best-selling Swedish author, alleged in his personal blog that the lithium-ion battery production equipment supplied by the Chinese company Wuxi Lead Intelligent Equipment suffered from major defects and had effectively "brought Northvolt down." Wilderäng even speculated that Chinese firms had deliberately sabotaged Northvolt in order to acquire it after bankruptcy. Such conjecture, it must be said, aligns more with his professional background as a science-fiction novelist than with industrial reality.

Even a basic application of common sense shows how implausible it is to attribute Northvolt's failure to Chinese equip-



The road to Northvolt's stalled battery plant in Heide, Schleswig-Holstein, Germany, October 2025. (PHOTO: VCG)

ment suppliers. Wuxi Lead Intelligent Equipment is a global leader in new-energy manufacturing equipment. In 2024, its orders accounted for 22.4 percent of the global market, with certain products holding a market share exceeding 65 percent worldwide. All equipment exported to the European Union strictly complies with international standards and has passed CE certification by independent third-party agencies, fully meeting EU safety and technical requirements. Claims of "untested" machinery or "technical defects" therefore simply have no validity.

Wuxi Lead Intelligent Equipment's equipment is sold across multiple countries and regions, and has long served leading new-energy companies in Germany, France, Hungary, and beyond. It maintains long-term partnerships with nearly all major global battery manufacturers, including CATL, BYD, Tesla, and Samsung SDI. Additionally, its production lines operate stably worldwide, recognized by international markets.

Notably, a Northvolt engineer with the username "circuspabygget" wrote on the U.S.-based forum Reddit that there was no evidence of deliberate sabotage, calling Wilderäng's claims pure conspiracy theory. In his view, the primary cause of Northvolt's collapse was poor decision-making by management, especially the persistent expansion projects made despite output falling far below expectations.

The facts support this assessment. From its inception, Northvolt devoted enormous energy to media promotion, fundraising, and aggressive expansion, while failing to establish even the most basic manufacturing capabilities. Manufacturing performance relies on far more than machinery alone. According to an investigation by Swedish newspaper *Norran*, Northvolt's production lines were plagued by management chaos and chronic inefficiency. Insiders also revealed that up to 80 percent of its products failed to meet quality standards, largely due to fundamentally flawed process design.

The resulting soaring costs and revenue losses were inevitable. As financing dried up, the company collapsed. Statistics show that between January and September 2023, Northvolt lost over 100 million USD per month, yet delivered only 79.8 megawatt-hours of batteries — less than 0.5 percent of its planned 2024 capacity.

In fact, Northvolt's fate was clear from the very beginning. According to The Aleph Report, a European technology news outlet, for a company claiming to revolutionize green energy cells, Northvolt's leadership team had no actual experience in this field. Not a single senior executive had built a battery factory before, let alone a competitive cell manufacturing business.

This raises an obvious question: how did a company with no expertise secure tens of billions of dollars in funding? Here, too, the "China factor" played a role. Northvolt consistently promoted its mission as helping Europe achieve battery self-sufficiency and reduce reliance on China. By politicizing industrial development, it successfully attracted backing from several European governments and investment institutions.

The irony is striking. A company that championed independence from China in fact imported large quantities of machinery and raw materials from China — only to have some media outlets then blame its collapse on Chinese equipment.

Northvolt's bankruptcy has inflicted heavy losses on investors and dealt a serious blow to the development of Europe's new-energy industry. Sweden can draw lessons from this fiasco, abandon protectionist and one-sided thinking, and stop spreading misinformation. Only by adopting a rational and pragmatic approach can China and Sweden advance mutually beneficial cooperation in the new-energy sector and jointly safeguard the stability and smooth functioning of global industrial and supply chains.

Voice of the World

China Moves Ahead in Humanoid Robotics

By Staff Reporters

During the annual Spring Festival Gala this year, one of the most-watched television programs in the world, humanoid robots captivated audiences with performances that included synchronized martial arts, acrobatics and cultural choreography.

Robots manufactured by domestic companies such as Unitree Robotics, Galbot, Noetix and MagicLab executed complex moves alongside human performers.

According to Al Jazeera, the performance showcased China's rapid progress in humanoid robotics, a field whose long-term potential is seen primarily in industrial and agricultural applications.

"People should absolutely be taking these robots seriously," Reyk Knuhtsen, an analyst at SemiAnalysis, told CNBC. "After this Spring Festival Gala demonstration, they're becoming visibly more lean, fluid, and capable."

In an online CNBC report, Sam Altman, CEO of the U.S.-based OpenAI, described the progress of Chinese technology companies as "remarkable" and "amazingly fast" across many fields, including AI and robotics, speaking about competition in emerging technologies.

Altman said Chinese firms are advancing quickly and in some areas are "near the frontier" of innovation.

These comments come amid intense global competition to develop general AI and integrate advanced AI into industry, services, and national infrastructure.

According to research firm Omdia, China accounted for about 90 percent of

global humanoid robot shipments in 2025 and Morgan Stanley projects that China's humanoid sales will more than double to 28,000 units this year. This indicates that China will continue to dominate this sector worldwide.

Scholars say China's advantages in hardware supply chains, application scenarios, and policy support make it well prepared for a new wave of technological revolution represented by embodied intelligence.

"The fundamental advantage that China has is a nearly vertically integrated robotics value chain: from the rare earths and high-performance magnets to the physical components, and the batteries," Zornitsa Todorova, head of thematic FICC research at Barclays, told CNBC.

As Chinese manufacturers push technological boundaries, the government is promoting frameworks for global AI governance, advocating international cooperation on safe and ethical deployment of AI.

China has put forward initiatives such as the Global Artificial Intelligence Governance Initiative and proposals for international AI cooperation organizations to develop global norms around the technology.

A recent editorial in *Nature* said that an AI arms race will not guarantee greater safety or prosperity for people. All parties need to reach a consensus on AI safety and its use. The article also emphasized that China's proposal to establish a World Artificial Intelligence Cooperation Organization should be welcomed, and researchers and authorities around the world should engage.



On February 13, 2026, a bionic robot performs a dance in the carriage of Train T48. (PHOTO: XINHUA)

China Injects Momentum into APEC Cooperation

Opinion

By Staff Reporters

The Asia-Pacific Economic Cooperation (APEC) is the premier forum for economic cooperation in the Asia-Pacific region, boasting the broadest membership and greatest economic influence. China, as an important member of APEC, a leader in regional cooperation, a defender of multilateralism, and the main engine of the world economy, will host the 33rd APEC Economic Leaders' Meeting in Shenzhen, Guangdong province in November 2026, fully demonstrating the responsibility of a world leader.

China will not only inject strong momentum into regional cooperation but also enhance certainty, stability, and confidence in global economic recovery and international collaboration.

This year also marks China's third hosting of the APEC meeting. Chen Xu, chair of the 2026 APEC Senior Officials' Meeting (SOM), said that China hosted APEC meetings in 2001 and 2014, leaving an indelible mark on APEC's history.

In 2014, China advocated for jointly building an Asia-Pacific partnership featuring mutual trust, inclusiveness, cooperation and mutual benefit. In 2020, China systematically expounded on jointly building an open, inclusive, innovative, interconnected and mutually beneficial Asia-Pacific community of shared future.

China has actively participated in practical cooperation across various fields under the APEC framework, and cooperated with all parties to foster an open economy in the Asia-Pacific, Chen said.

From geopolitical tensions to economic fragmentation, today's world is facing complex challenges. Unilateralism and protectionism are on the rise, and the international economic and trade order is facing severe challenges. The Asia-Pacific region is facing decisions about its future direction, and international cooperation is also facing the test of either advancing or regressing.

Against this backdrop, China's role as the host of the APEC 2026 meeting carries significance that extends far beyond APEC itself, and even beyond the Asia-Pacific region. Chinese Vice Foreign Minister Ma Zhaoxu said.

For the 2026 APEC "China Year," openness, innovation and cooperation are three priorities. "Openness" refers to developing an open economy, opposing protectionism, and promoting trade and investment liberalization and facilitation.

"Innovation" indicates upholding an innovation-driven development model, advancing new quality productive forces, and creating new growth drivers for APEC cooperation.

"Cooperation" involves leveraging the comparative strengths of APEC economies, enhancing policy synergy and experience exchanges to achieve mutual benefit.

Shield Machine Boasts 'Smart Brain'

Hi-Tech

By QI Liming & YU Huiyou

Researchers of Hunan University together with China Railway Construction Industry Co., Ltd., have developed an intelligent system for shield tunneling operations, risk prevention and control. Installed in the super-large diameter shield equipment, the system offers the shield machine a "smart brain" capable of precise control and risk prevention.

During underground excavation, it is difficult for humans to precisely control the operating parameters of the

shield machine, which can easily lead to risks such as instability of the excavation surface, excessive surface subsidence, and imbalance of the shield machine's structure. With this intelligent system, the shield machine learns to autonomously identify the geological conditions and predict risks, ultimately achieving precise decision-making.

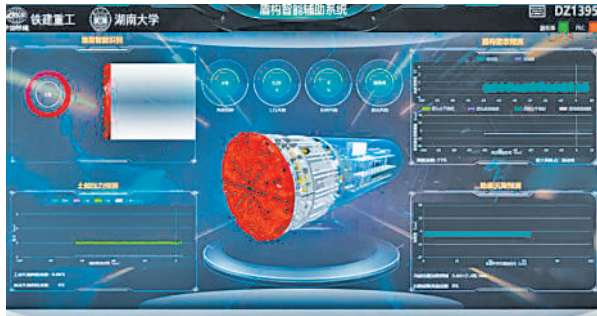
The system can also provide real-time warnings for potential hazards to the shield machine, offer intelligent decisions on excavation parameters, and make excavation operations in complex geological conditions more stable and efficient.

Currently, in the Shanghai metro construction project, the accuracy of pa-

rameter-assisted decision-making of this intelligent system exceeds 90 percent, and it can control the deviation of the shield machine's excavation position to within 30 millimeters.

In the Guangzhou intercity rail project, equipment fault diagnosis and intelligent operation and maintenance efficiency have increased by 20 percent because the system, compared to the traditional method of troubleshooting by referring to documents.

This has helped to increase equipment utilization by 12 percent and boost the monthly progress of typical working conditions by five percent.



Intelligent operation interface display of the shield machine. (COURTESY PHOTO)

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LIFE IN CHINA

Two Sessions Special

Foreign Experts: China's Innovation Ecosystem to Benefit the World

By LONG Yun & BI Weizi

As China's 2026 Two Sessions approach, the global community is looking not just for economic targets, but for insights into China's unique development path, a path defined by people-centered development, open scientific collaboration, sustainable green transitions, and the harmonious coexistence of deep cultural roots with frontier technology.

"How can a civilization honor Liangzhu while racing ahead in quantum computing, microchips and AI?" asked Shahbaz Khan, director and UNESCO representative to the Regional Office for East Asia.

For Khan, who has been visiting China since 1999, the answer lies in a unique coexistence that defines the nation's modernization. Recalling a time when "China was still catching up with the rest of the world," Khan said he is struck by the "consistency of effort" seen today. "People work hard and they also cherish family, tradition and festivals," he said. "There's a balance between ambition and humanity."

For Khan, China is a living model where "science serves society, innovation lifts communities, and progress is measured not just in patents or GDP, but in human dignity." "That's the beauty of China," he remarked.

Foreign experts framed their expectations for the upcoming Two Sessions within this broader context of balanced and human-centric development. They anticipate that the policies discussed will not only drive technological breakthroughs but also institutionalize the open ecosystems and sustainable practices that allow this unique "Chinese model" to flourish and contribute globally.



The Five-hundred-meter Aperture Spherical Radio Telescope in southwest China's Guizhou province on January 25, 2026. (PHOTO: XINHUA)

Francesco Faiola, an Italian researcher at the Research Center for Eco-Environmental Sciences of the Chinese Academy of Sciences, has spent 12 years in China, witnessing its transformation from "a phase of rapid catch-up to one characterized by systematic innovation."

His expectations are built upon this solid foundation. He said recent policies focus on regional integration initiatives like the coordinated development of the "Beijing- Tianjin- Hebei" region and "Yangtze River Delta," signaling China's clear intention to build collaborative innovation ecosystems rather than isolated "peaks" of scientific excellence.

He welcomed the ongoing establishment of an open governance framework grounded in clear rules. "Clear rules inspire far greater confidence for long-

term collaboration than ambiguous discretion," Faiola said.

Regarding the 15th Five-Year Plan (2026-2030), Faiola observed that China's commitment to international collaboration is evolving from "one-way introduction" to a deeper model of "two-way exchange" and "joint ecosystem building." Chinese scientists are already taking a leading role in global discussions on ethical standards for stem cell research, marking a shift from "participant" to "contributor."

Building on this positive momentum, Faiola anticipates continued empowerment for major international scientific programs jointly led by Chinese and foreign teams. Citing global research on emerging pollutants as a prime example, he said such collaborations will

significantly enhance China's growing influence in shaping the global scientific agenda.

Confident in the ecosystem's current vitality, Faiola highlighted its proven ability to provide a complete pathway "from curiosity-driven research to real-world impact," empowering global talent to translate discoveries into solutions for shared human challenges.

Extending this vision of systemic strength to the critical field of sustainability, Muhammad Salman Nasir, a 37-year-old Pakistani scholar and associate professor at Tianjin University, said China is already "playing a pivotal role in advancing global carbon neutrality."

Nasir highlighted China's key strength: its ability to "integrate national policy with academic and industrial innovation, enabling rapid scaling of technologies like green hydrogen, solar fuels, and carbon capture." He described China's research system, marked by strategic funding, interdisciplinary collaboration, and effective pilot-to-industry pathways, as a valuable model for other nations.

Regarding the 15th Five-Year Plan, Nasir expressed confidence that proposals for building a new energy system and developing a circular economy will further reinforce these strengths, enabling China to continue leading global efforts in sustainable technological innovations and offering a replicable blueprint for the world's green transition.

The perspectives of the three experts illustrate a comprehensive expectation that the Two Sessions will not only refine the mechanisms of scientific collaboration and green development but also continue to foster the unique harmony that makes China's path to modernization so distinct.

Tech+Culture

Chinese New Year: Tradition Meets Tech in Year of Horse

By Staff Reporters

The celebrations across China at the start of the New Year of the Horse showcased a festival that honored ancient customs while embracing modern innovation and welcoming the world.

From the tropical shores of Hainan in south China to Beijing's historical temple fairs, this Spring Festival demonstrated how the Chinese New Year continues to evolve while maintaining its cultural core of family reunion and harmony.

Traditional customs meet modern flair

Liakhova Albina, a Russian social media influencer based in Hainan, decorated her apartment with traditional couplets on paper, shopped for festive goods, and prepared a grand reunion dinner.

She shared these experiences online, introducing her international followers to Chinese traditions.

"This Spring Festival, I felt warmth that crosses borders," she said and her sentiment echoed across the country.

Celebrations have become creative nationwide. The China-chic market at Journey to the West Paradise in Huai'an, Jiangsu province in east China, a theme park dedicated to the classic Chinese novel *Journey to the West*, was an illuminating example of that. So was water town Wuzhen's popular tech-powered light show in Zhejiang province, also in east China.

The horse zodiac has inspired a wave of cultural and creative products. In Gansu province in the northwest, artisans made embroidered horse paintings, seal carvings, and cloisonné ornaments based on local horse culture.

"The zodiac culture is an important carrier connecting public emotions," said Diao Jinuo, vice dean of the Culture and Tourism Integration Innovation Research Institute at the Communication University of China. "The popularity of Horse Year products reflects the maturing of festival derivative markets."

Technology enhances festival experience

Technology has added new dimensions to traditional celebrations. In Xiamen, Fujian in southeast China, a digital intangible cultural heritage event along the century-old Qilou arcade regaled visitors with overseas Chinese remittance history, lacquer line carving, and Gezai opera through AR and VR technologies.

A "human-robot dance" performance streamed online to over 100,000 viewers.

"We add technological elements to intangible heritage to innovate the presentation and inheritance of traditional culture," said Lin Gonghua from Zhixing Mozuo Artificial Intelligence Technology Co.

Humanoid robots danced at the Chinese New Year gala at the UN headquarters in New York. (PHOTO: XINHUA)



Humanoid robots dance at the Chinese New Year gala at the UN headquarters in New York. (PHOTO: XINHUA)

Traditional Eastern Wisdom

Siku Quanshu: Largest Collection of Chinese Books

By BI Weizi

The Siku Quanshu or the "Complete Library in the Four Branches of Literature," is a Chinese encyclopedia commissioned during the Qing dynasty by the Qianlong Emperor. Commissioned in 1772 and completed in 1782, *the Siku Quanshu* is the largest collection of books in imperial Chinese history, comprising 36,381 volumes, 79,337 manuscript rolls, 2.3 million pages, and about 997 million words.

The initial compilation of *the Siku Quanshu* began with the Siku Quanshu Zongmu Tiyaobibliography, which was completed by 1773. The first workable drafts were completed in 1781. These included bibliographical information on all

the works included in *the Siku Quanshu* in full, as well as a large number of works that are mentioned only by title.

As indicated by its title, the *Siku Quanshu* has four categories, which reference the divisions of the imperial library: "Classics or Jing(经)" is the canon ramified by Confucius since the Han dynasty (202 BC-220 AD); "Histories or Shi(史)" is the collection of works related to history, geography, official positions, political affairs, and biographies; "Masters or Zi(子)" are texts focusing on philosophy, arts, and sciences; "Letters or Ji(集)" contains literature such as poetry and personal letters, and writings meant for the masses.

In the course of editing, a large number of corrections were made to local re-

cords. Personal documents, often describing the actions of noteworthy local people, were often included in the Annotated Bibliography of the Four Treasuries if their contents could be verified through central government records. In *the Siku Quanshu* itself, documents that could not be verified were often included by title only. Even officially sponsored writings, such as local gazetteers, were not safe from the scrutiny of the compilers.

Medical knowledge was often documented through case studies, on the model of 25 instances in Sima Qian's Records of the Grand Historian, which combined narrative with analysis.

Similarly, works on philosophy took Huang Zongxi's writings as their model, though they came to be divided

Development of 4th Gen OLED Screens

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Since the red light is hard, Duan resolutely switched the direction of R&D to green light material. The turning point came in 2019, when the team developed narrowband green fluorescent materials, a world first, solving the core compatibility problem of "bright color" and "high exciton utilization rate," making pTSF technology feasible in manufacturing, Duan said.

To promote a technology from labs to industry requires in-depth cooperation among multiple parties. The Tsinghua research team, in collaboration with material manufacturers such as Jiangsu Sunera Technology Co., Ltd. and Eternal Material Technology, developed narrowband green fluorescent materials that

can be mass-produced and meet commercial specifications. Visionox was responsible for the optimization of device structure and process, to realize the mass production of the new generation of OLED screens.

Through over three years of collaboration, the research team have continuously adjusted the material combinations and formulation plans, making screens equipped with high PE pTSF devices reduce power consumption by over 12 percent and increase lifespan by 15 percent, and expanding the color gamut from the conventional DCI-P3 standard to the broader BT.2020 standard.

Industrialization of pTSF technology

However, mass production was con-

fronted with the challenges of equipment adaptation and process optimization.

The emitting layer of the previous generation of devices was composed of two components and could be produced by a dual-source evaporation process. Li Guomeng, an expert in devices from Visionox, said that the new pTSF device consists of three components and a three-source co-evaporation process is needed.

The change of production process requires a large number of meticulous adjustments and optimizations. For example, internal layout adjustments, temperature and humidity control, and airflow parameter settings could all directly affect the stability, yield and cost of the process.

"Even though we have made a lot

of preparations, the performance of mass produced pTSF devices remains unknown. Many new technologies often perform well in the laboratory, but problems arise during mass production," Li said.

After hundreds of adjustments and optimizations, Visionox completed the technology verification process in 2023. In 2024, the company further upgraded the pTSF technology, continuously improving the quality. In the fourth quarter of 2025, OLED screens based on pTSF technology had entered mass production and began to be applied to the latest domestic flagship models.

The industrialization of pTSF technology has driven the collaboration of the upstream and downstream enterprises in the fields of organic materials and evaporation equipment, an overall improvement of the domestic display industry supply chain.