

Science and Technology Daily

VOL.5-NO.222

DECEMBER 27-28, 2025

Top 10 Sci-tech News in China



1. The open-source AI model DeepSeek-R1 showed top-tier performance even under limited computational power.
2. The Experimental Advanced Superconducting Tokamak (EAST) device set a world record by maintaining a stable, long-pulse and high-confinement plasma at 100 million degrees Celsius for 1,066 seconds.
3. Superconducting quantum computer prototype Zuchongzhi 3.0 has solved the quantum random circuit sampling problem 10 trillion times faster than current supercomputers.
4. A high-precision, scalable analog matrix computing chip has been manufactured that outperforms current digital processors in energy efficiency and throughput by up to 1,000 times.
5. China's first invasive brain-computer interface clinical trial was successfully conducted, making it the second country after the U.S. to reach the clinical trial phase for invasive brain-machine interfaces.
6. Research on the Chang'e-6 mission's lunar samples revealed the history of the moon's far side, significantly advancing our understanding of the moon.
7. The long-standing plant science puzzle of how a single plant cell develops into a complete plant was solved, which offers new possibilities for genetic improvement of crops and agricultural biotechnology.
8. Large-area two-dimensional metal materials were developed for the first time, opening new possibilities in two-dimensional material research and technological innovation.
9. *The Recommendations of the Central Committee of the Communist Party of China for Formulating the 15th Five-Year Plan for National Economic and Social Development* has provided a strategic roadmap for China's development from 2026 to 2030, underscoring the pivotal role of sci-tech innovation as a core driver of progress.
10. China's first electromagnetic aircraft carrier "Fujian" was commissioned.

Editor's Note:

The achievements and discoveries in science and technology have not only profoundly reshaped how we live but also given us the confidence to confront challenges and embrace the future. *Science and Technology Daily*, in collaboration with a panel of media partners and academicians, has selected the 2025 top 10 science and technology news stories from China and around the world.



①The Experimental Advanced Superconducting Tokamak (EAST) device. ②The Chang'e-6 lunar probe. ③China's first electromagnetic aircraft carrier "Fujian". ④An AI-generated image of the open-source model DeepSeek. ⑤Artistic illustration of gravitational waves produced by the merger of two black holes. ⑥Google introduces the Quantum Echoes algorithm. (XINHUA/VCG/COURTESY PHOTO)

STI Frontier

Xueying 601: Building an Antarctic Air Corridor

By LU Zijian & BI Wenting

On December 17, Xueying 601, also known as Snow Eagle 601, China's first polar fixed-wing plane, carried out aerial surveys, its first scientific research task during the country's 42nd Antarctic expedition.

Xueying 601's air routes, with the Zhongshan Station as the core and covering more than 20 domestic and international expedition stations, have built an air corridor for Antarctica.

China's own Antarctic airfield

It has been 10 years since Xueying 601 officially commenced service in China's polar exploration endeavors. The aircraft has conducted eight Antarctic expedition tasks, operated for more than 1,100 days and flown for over 2,500 hours, with a total voyage distance of 800,000 kilometers, equivalent to circling the Equator 20 times.

During the first couple of years after Xueying 601 was put into operation, it relied on the airports of other countries to conduct flight tasks.

"Building our own Antarctic airfield and ensuring a controllable flight guarantee was the most urgent need of (our) polar aviation at that time," Zhao Duanran, leader of the aviation operation team of China's 42nd Antarctic expedition team, told *Science and Technology Daily*.

In 2022, China's first sled-style ice runway airport was completed. On March 11, 2023, it was inaugurated and commenced regular summer operations. On May 30, 2024, the airport was granted the four-letter code ZSSW by the International Civil Aviation Organization and named the Zhongshan Ice and Snow Airport.

It has maintained stable operations for over 300 days, with Xueying 601 completing nearly 100 safe takeoffs and landings.

More than cargo delivery

As a fixed-wing aircraft, Xueying 601 is capable of more than quickly transiting personnel and supplies. With precision equipment, it has become an ideal air platform for transportation and scientific research at the South Pole, providing key technological support for such missions.

In January 2016, it flew over the Kunlun Station, China's southernmost research station in Antarctica, at a low altitude, and obtained valuable flight data on takeoff and landing under very high-altitude plateau conditions.

One year later, it successfully took off and landed at the station, located at an altitude of more than 4,000 meters, setting a new record for high-altitude takeoff and landing by this aircraft model. In 2023, it completed the first takeoff and landing in the Grove Mountains region in East Antarctica, opening a new channel for emergency rescue.

"We have acquired scientific observation data spanning more than 200,000 km through Xueying 601 for the past 10 years," said Cui Xiangbin, head of the Zhongshan Station for the 42nd Antarctic expedition. The data collection scope covers key regions in East Antarctica, including Princess Elizabeth Land, where the Grove Mountains are located.

Thanks to the precision scientific instruments on the plane, a series of research achievements have been made — including high-precision subglacial topography mapping of Princess Elizabeth Land, and inversion of subglacial heat flux and geological structures in the region.

These findings provide crucial support for scientists study-

Top 10 Sci-tech News Globally



1. Chinese start-up DeepSeek's promotion of open-source development, with its R1 model enhancing reasoning in large language models through reinforcement learning.
2. The creation of an AI-based tool combined with a brain decoder that can translate a person's thoughts directly into continuous text, without requiring them to speak or process spoken language.
3. Researchers designed enzymes from scratch, using RFDiffusion to generate proteins and a machine learning network called PLACER to evaluate their active site organization.
4. Photonic computing chips outperformed traditional electronic hardware — for example, a Singaporean system achieved over two-orders-of-magnitude improvements in latency and computation time with oMAC compared to commercial GPUs.
5. The NSF-DOE Vera C. Rubin Observatory released its first images, capturing images of millions of distant stars and galaxies on an unprecedented scale.
6. An intelligent surgical robot successfully removed a gallbladder without human assistance.
7. Google introduced the Quantum Echoes algorithm that demonstrates a verifiable quantum advantage over classical computers.
8. Stephen Hawking's area theorem, proposed in 1971, was confirmed with very high precision by the gravitational wave GW250114.
9. *The Global Tipping Points Report 2025*, released by 160 international scientists, warns that Earth has reached its first climate tipping point, with rising temperatures threatening coral reefs.
10. Scientists released the first atlas of cross-species mammalian brain cell development, providing the most detailed spatiotemporal map of brain development to date.



Xueying 601. (COURTESY PHOTO)

ing subglacial environments, subglacial geological structures, the impact of ice sheet stability on sea level change, and for conducting numerical simulations of past and future ice sheet dynamics.

Contributions to international cooperation

Xueying 601 is also key in the scientific research cooperation between China and other countries in sharing aviation scientific observation capability in key areas of the South Pole.

China is a key initiator and participant of the RINGS Action Group proposed by the Scientific Committee on Antarctic Research, and has cooperated with countries including Norway and Australia in observing the ice sheet margins of Enderby Land, a coastal region in East Antarctica.

Since the 41st Antarctic expedition started in 2024, China has sent navigation notices to multiple countries, assumed airspace management responsibilities for the Zhongshan Station, and subsequently piloted operational rules, contributing a technology-driven Chinese solution to Antarctic aviation safety.

Xueying 601's 10-year flight path epitomizes China's independent innovation in polar science and technology alongside international cooperation.

In the future, this "Polar Eagle" will continue to use science and technology as its wings and cooperation as the bridge, contributing China's scientific strength to global polar scientific research and its peaceful utilization.

New Graphic

· IN THE FIRST HALF OF 2025 ·

THE NUMBER OF
CHINA'S DIGITAL CONSUMERS

958 million



Source: China Internet Network Information Center
Designed by SONG Ziyi / Science and Technology Daily

L3 Autonomous Driving Permits Get Green Light

Policy Express

By LIN Yuchen

China has taken a landmark step in the development of intelligent connected vehicles, after the Ministry of Industry and Information Technology (MIIT) granted conditional road approval to two Level 3 (L3) autonomous driving models on December 15, produced under the Changan and Arcfox brands. The decision signals a transition of China's autonomous vehicle industry from the technological verification stage to initial commercial application.

L3 autonomous driving represents a critical threshold in the evolution of vehicle automation. Under China's classification system, driving automation is divided into six levels, from L0 to L5. While L1 and L2 are considered driver-assistance systems, L3 and above formally enter the realm of automated driving. At L3, the automated system can continuously perform driving tasks such as steering, acceleration, and braking under specific conditions. Drivers are no longer required to monitor the road driving environment constantly, but must be able to take over control quickly when the system requests intervention.



A visitor experiences the intelligent system of the Arcfox series of pure electric vehicles at an exhibition in Shanghai. (PHOTO: XINHUA)

This transition has profound implications for liability allocation. Unlike L2 systems, where driving responsibility rests entirely with the human driver, L3 introduces shared responsibility among drivers, vehicle manufacturers, and system suppliers. Experts view the approval of the first L3 models as a policy breakthrough, as it allows autonomous vehicles to enter the market as regulated products through pilot programs, setting a precedent for future commercialization.

Safety remains the central consideration in the approval process. According to industry experts, the two approved models have undergone comprehensive system safety assessments, rather than isolated functional tests. These evaluations cover the entire lifecycle of product development, including design, testing, and validation processes. Key areas assessed include scenario-handling capabilities within defined operational

domains, functional safety, cybersecurity and data protection, and emergency response mechanisms. Independent testing institutions and expert reviews were also involved to ensure objectivity.

To mitigate risk, the pilot program adopts a cautious, conditional approach. The approved vehicles are restricted to specific roads and scenarios and operate under real-time supervision by relevant authorities and local governments. Importantly, the vehicles will not be sold directly to consumers during the pilot phase, underscoring the principle of safety-first and gradual implementation.

The pilot trials will be conducted on selected urban expressways in Chongqing and Beijing, reflecting a controlled yet practical testing environment. Regulators have emphasized that the application channel for L3 pilots will remain open and advance on an approval basis.

More broadly, the launch of L3 pilots highlights China's commitment to balancing innovation with governance. While large-scale adoption of autonomous driving will take time, this step demonstrates that the era of automated mobility is no longer theoretical but increasingly within reach, supported by evolving regulatory frameworks and real-world validation.



Global Journal Observatory

TAMO: Committed to Research That Changes Patients' Lives

By TIAN Lingling

In today's rapidly evolving landscape of cancer treatment, a journal's academic impact should go beyond the printed page and be effectively translated into reliable evidence for clinical decision-making. The journal I serve, *Therapeutic Advances in Medical Oncology* (TAMO), is committed to this mission.

Frontiers of clinical oncology research

Cancer has become a major global public health challenge. According to the latest data, there were approximately 20 million new cancer cases worldwide in 2022. Driven by population aging and lifestyle changes, the global cancer burden is expected to continue rising, with new cases projected to exceed 35 million by 2050.

In this situation, rapidly and reliably translating the latest scientific findings into clinical practice has become critical for the global medical community.

As the flagship oncology journal under Sage Publishing, TAMO strives to publish research of significant value to oncology research and clinical practice. It covers clinical trials and real-world evidence studies, with a focus on cutting-edge topics such as immunotherapy, targeted therapy and biomarker discovery.

In particular, it emphasizes innovative research that can directly improve patient outcomes, thereby serving as a bridge between advancing academic knowledge and optimizing clinical decision-making.

Over the past decade, TAMO has published studies that are not only widely cited in the academic community but have also been incorporated into clinical guidelines and policy documents across multiple countries, exerting a profound influence on cancer treatment concepts and practices worldwide.

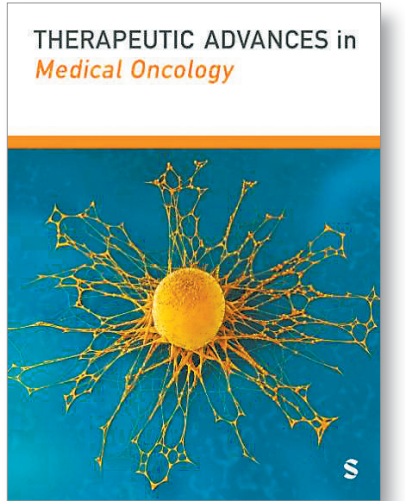
For example, a 2022 article, "Reconsidering T component of cancer staging for T3/T4 non-small-cell lung cancer with additional nodule," was adopted by the expert consensus of the Society of Thoracic Surgeons (U.S.).

By systematically re-evaluating T staging in the presence of additional nodules, the study clarified key factors affecting surgical feasibility and staging stratification, providing evidence-based support for multidisciplinary discussions and resectability assessment in locally advanced cases.

While driving changes in clinical practice, TAMO also emphasizes innovation in scientific communication. We encourage authors to provide plain language summaries alongside their articles and support their publication as independent, secondary outputs.

These articles explain the core value of research in clear, everyday language for patients, caregivers, healthcare professionals and the wider public, thereby expanding the reach and societal impact of oncology research.

We have established a rigorous manuscript handling process: Submissions



Front cover of *Therapeutic Advances in Medical Oncology*. (COURTESY PHOTO)

are first assessed by the editorial team for ethical compliance and scientific quality, followed by peer review.

Each manuscript is peer reviewed by at least two independent experts active in the field, and statistical reviewers are invited when necessary to ensure scientific rigor. Every manuscript is jointly handled by the editor and associate editors, and all associate editors are scholars actively engaged in frontline research, with deep professional expertise and extensive clinical experience, thus providing a solid guarantee of academic quality.

Engaging with Chinese academic community

In recent years, submissions and publications from Chinese authors to TAMO have continued to grow. Chinese researchers have achieved outstanding results in areas such as immunotherapy, targeted drug development, clinical trials and real-world study, and early cancer screening technologies, making important contributions to the development of global cancer treatment.

Currently, more than 10 Chinese scholars have joined the TAMO editorial board, bringing deep expertise in clinical oncology, drug development and related fields, and providing strong support for the journal's growth.

The journal also places emphasis on engaging with Chinese scholars and authors, e.g., organizing webinars to help authors improve their submissions, and is participating in academic events such as the Annual Meeting of the Chinese Society of Clinical Oncology, strengthening its ties with the Chinese academic community.

At the beginning of TAMO's 17th year, I have succeeded Georgia Patey as the new editor. Based in Shanghai, I am committed to providing more direct and effective support to local researchers, helping high-quality academic work to be published and gain broader international visibility.

Looking ahead, TAMO will continue to focus on research from China. We warmly welcome Chinese clinicians and researchers to join TAMO's global academic community to foster deeper collaboration and exchanges.

The author is the editor of TAMO and senior managing editor at Sage Publishing.

Journal Review

The field of tumor treatment has witnessed rapid and cutting-edge advancements in recent years. It is imperative for academic journals to effectively communicate these research achievements to the global community of researchers and clinicians. TAMO is committed to fulfilling this responsibility by disseminating high-quality, clinically relevant research.

As a specialized journal in oncology, TAMO has established a promi-

nent academic standing through its unique mission: accelerating the translation of scientific breakthroughs into clinical practice and evidence-based decision-making. By doing so, the journal plays a critical role in alleviating the global burden of cancer and addressing key challenges in oncology.

— Si Lu, professor and chief physician, Peking University Cancer Hospital and Institute

New Tech Products Sway Foreign Tourists

Observer

By Staff Reporters

AI glasses, robotic pets, and foldable smartphones — these innovative Chinese tech products have become increasingly popular purchases with foreign tourists in China.

In a 3D printing store in Shenzhen, a foreign tourist scanned a QR code, chose an item in a model file and then started his own creation process. The tourist said there is no need to have any tech expertise as customers can download an item from MakerWorld, a website for 3D models. "This experience is excellent," he said.

Cao Zhongxiong, assistant president of the China Development Institute and director of the Digital Strategy and Economic Research Center, said amid the

transformation of instant retail and the realignment of people, goods and venues, China's tech product market has become a large platform for foreign tourists to have immersive experiences and a new gateway to understand Chinese lifestyle.

An AI hi-tech experience store in Shanghai has also attracted many foreign tourists. The in-store products extend from smart wearables to fitness, and 90 percent of them were intelligently made in China.

This store was the second destination for Anna, a 25-year-old Spaniard, and her boyfriend. She said she wanted to buy an AI interactive doll's house to tell her stories about Chengyu, Chinese proverbs normally with four or eight characters, and help her learn more about Chinese culture.

Tech product counters in Sanlitun, Beijing are also welcoming a large group of foreign tourists. A team of Egyptian tourists tried out home appliances like

garment steamers, rice cookers and hair dryers, and marveled at the ingeniously thoughtful human-centered design and the powerful functionality backed by cutting-edge technology.

Tech products have evolved to a highly persuasive new medium, and the use and circulation of these products form the most natural global dialogue between Chinese culture and the spirit of modern innovation, said Sun Yu, researcher at Beijing Open Economy Research Institute, University of International Business and Economics. He regards the purchase of Chinese tech products by foreign tourists as their recognition and choice of the lifestyle and innovative culture embodied in these products.

Tourists share their experiences of purchasing Chinese tech products and showcase the product's key features on social media platforms, which triggers curiosity and discussion, according to

Zhang Menghan, vice director and professor of School of Communication, Soochow University. She added that such sharing enhances product awareness and brand influence.

From another perspective, extending the personal experience of tourists to topics discussed by a larger group not only makes tech products a link between China and other parts of the world, but also efficiently delivers the innovation and pragmatism of "Made in China."

"Made in China" is no longer simply about product selling, but reconstructs and leads global lifestyles, according to Cao. China is no longer only the "world's factory," but leads a new type of trendy global consumption against the backdrop of high tech manufacturing. "Made in China" is now building a new image around the world, and global tourists have cast their vote with their wallets.

High-yield Hybrid Rice Thrives in Saline Coastal Soil

Case Study

By SUN Jin & YU Huiyou

Soil salinization has long constrained agricultural productivity in China's coastal regions. Now, to take up this challenge, local authorities in

the Shenzhen-Shanwei Special Cooperation Zone in south China's Guangdong province have joined hands with scientists in central China's Hunan province.

Building on the legacy of the late Yuan Longping, the "Father of Hybrid Rice," his former research team has driven a collaborative project that has achieved sustained yield growth in the coastal areas of the Shenzhen-

Shanwei Special Cooperation Zone, despite challenging soil and climate conditions.

In February 2023, the Guangdong branch of the Hunan Hybrid Rice Research Center (HHRRC) was established to accelerate the transition from research to field application. Drawing on the successful experience of Hunan province, local authorities introduced a systematic cultivation plan tailored to regional conditions.

The plan included a recommended seed catalogue for early-season and late-season rice, prioritizing hybrid varieties with strong salt tolerance, high yield potential and stable performance, such as "Jingliangyou 3261" and "Zhuoliangyou 1126."

"At the demonstration base, the Jingliangyou 3261 has achieved an average yield exceeding 450 kilograms per mu (about 0.07 hectares) for two consecutive years on soil with a salinity level of 0.3 percent," said Nie Lingli, director of the HHRRC Guangdong Branch. "This is about 50 percent higher than the national average for similar conditions."

As a result, the Shenzhen-Shanwei's rice yield per mu increased by 10

percent in the first year of the program. In 2024, the average yield of early-season rice rose by a further 13.3 percent year-on-year.

To further scale up the achievements, the agricultural science promotion institute of Shenzhen-Shanwei was established.

Through the institute, the Guangdong Branch team successfully secured approval and authorization for multiple salt-tolerant hybrid rice varieties. The team also incubated Shenzhen Xin'an Seed Company, strengthening the link between research institutions and farmers.

"With the institute's technical support, we have promoted over 10,000 mu of hybrid rice seeds," said Yuan Chengwei, general manager of Xin'an Seed.

"We're scaling this project to drive the transformation of Shenzhen-Shanwei's agriculture toward smarter, greener and more precise production systems," said Tang Wenbang, director of the HHRRC. "The goal is to establish a new agricultural paradigm in south China that could also offer valuable experience for other salt-affected regions nationally."



At the rice field of the Shenzhen-Shanwei Special Cooperation Zone, an experts' team screens and identifies varieties. (COURTESY PHOTO)

Crackdowns on Chinese Lidar Can't Mask U.S. Industry Plight



By LIANG Yilian & HU Dingkun

Recently, Raja Krishnamoorthi, a Democratic ranking member of the U.S. House Select Committee on China, introduced the so-called Stopping Adversaries From Exploiting LiDAR Act (Safe Lidar Act), calling for the gradual removal of Chinese-made Light Detection and Ranging (lidar) systems currently used in the United States and a ban on new imports after three years. Exceptions would apply only for limited purposes such as scientific research or cybersecurity testing. Lidar is a remote sensing method used to examine the surface of the Earth.

In his statement, Krishnamoorthi claimed — without evidence — that Chinese lidar products pose a threat to U.S. national security. He argued that the United States must ensure such systems are built by "trusted partners" and insisted that the U.S. and its allies should lead innovation in lidar technology rather than "ceding control of this critical technology to foreign adversaries."

It's a typical example of the old playbook of American politicians banning Chinese sci-tech products from going to the U.S. market by tarnishing them. This rhetoric follows a well-worn pattern. By framing Chinese technology products as security risks, some U.S. politicians seek to block their access to the American market, suppress the development of Chinese industries, and clear space for domestic companies — an approach reminiscent of Washington's earlier campaign against Huawei.

Yet market realities tell a very



The booth of Hesai Technology at an expo in Shanghai. (PHOTO: VCG)

different story. Chinese companies have already emerged as global leaders in the lidar industry. According to estimates by French consulting firm Yole Group, in 2024 four Chinese companies — Hesai Technology, RoboSense, Huawei, and Seyond — accounted for 88 percent of the global automotive lidar market. This year alone, Huawei's lidar installations surpassed 400,000 units in the first half, while Hesai Technology produced more than one million lidar units between January and September.

These gains are not accidental. Chinese lidar companies have pursued a dual strategy of technological innovation and large-scale manufacturing. On the technology front, they have consistently broken through key technical bottlenecks and improved performance. Patent data show that Hesai Technology and RoboSense each hold more than three times as many lidar-related patents as U.S.

competitors, such as Ouster and Luminar. On the manufacturing side, Chinese companies have invested heavily in automation and intelligent production. Hesai Technology's highly automated production line, which relies extensively on industrial robots, can roll out one lidar unit every 20 seconds. Its Maxwell Intelligent Manufacturing Center is the world's first facility to integrate lidar research, development, and manufacturing.

As a result, Chinese lidar products are not only technologically mature but also significantly more affordable. Companies such as Hesai Technology and RoboSense have already driven prices for some models down to around 200 USD.

The contrast with the U.S. is striking. American companies once enjoyed a clear first-mover advantage. Supported by U.S. military autonomous driving challenges, Velodyne pioneered the automotive lidar market and dominated

global sales throughout much of the 2010s, at one point commanding more than 80 percent market share. Volvo strongly backed Luminar's technology development and in 2022 signed an agreement reserving 1.1 million lidar units.

However, the inability to achieve low-cost, large-scale mass production has proven to be a persistent obstacle for U.S. firms. Velodyne struggled with high prices and operational difficulties before merging with Ouster. Mercedes-Benz and Volvo later canceled their partnerships with Luminar. According to foreign media reports, Luminar's lidar products were priced at around 1,000 USD in 2024, and the company had planned to introduce a 500 USD model only by 2026.

The irony is hard to ignore. Just days after the Safe Lidar Act was introduced, Luminar — once the most highly valued lidar company in the U.S. — filed for bankruptcy on December 15. Other U.S. lidar firms are also facing mounting pressure. Ouster, now the highest-valued U.S. lidar company following its merger with Velodyne, shipped just over 7,200 units in the third quarter of 2025. Aeva, ranked second by valuation, posted quarterly revenue less than one-tenth of Ouster's during the same period.

Ultimately, the difficulties facing the U.S. lidar sector reflect deeper structural problems within American manufacturing. Without addressing longstanding challenges, forcing Chinese products out of the market through political means will only raise costs for the government and consumers alike. Even if protectionist measures temporarily create market space, U.S. companies may be unable to fill it — let alone achieve a genuine industrial revival.

China's Innovation Surge Rooted in Tradition

Comment

By ZHONG Jianli

At a recent roundtable on Tiangong Kaiwu, a 17th-century Chinese encyclopedia of crafts, Li Bo, a renowned cultural scholar and professor at Nanjing Normal University, dubbed the book "a DeepSeek of 400 years ago." That comparison — linking an early repository of practical knowledge to a modern open-source AI model — reveals a deeper truth: China's contemporary surge in innovation is less of a sudden rise and more of a revival rooted in a long civilizational habit of problem-solving and practical inquiry.

For a long time, popular narratives of Western media doubled down on the idea that modern China was

somehow alien to innovation. They often portrayed Chinese innovation as a "follower" or "challenger," habitually framing it in zero-sum terms like a "race."

DeepSeek's open-source practice, however, tells a different story: China's innovation is not about building technological walls but about constructing bridges for cooperation; not about hoarding results but about promoting shared benefits.

This open and inclusive spirit is continuous with the historical role of Tiangong Kaiwu after its transmission to Europe, which helped spur technological exchange. Just as technologies recorded in the book — such as patterned looms and steel-casting methods — once benefited the world, today's Chinese digital innovations also aim to become global digital public goods.

From a broader perspective, Deep-

Seek is not an isolated case. Practices like opening China's FAST to global observations, providing the BeiDou satellite navigation system to the world, and carrying international payloads on the Chang'e-6 lunar missions, help outline a new paradigm of Chinese innovation: rooted in the cultural tenet of "If you want to make a stand, help other make a stand, and if you want to reach your goal, help other reach their goal," replacing technological closure with open cooperation and zero-sum competition with inclusive sharing.

This paradigm not only counters the framing of Chinese technological rise as an isolated, competitive threat but also repositions it as a public tool to address humanity's common challenges.

As the Chinese civilization has long emphasized "applying knowledge to practical affairs" and the integration of

technology with people's livelihoods, this pragmatic and open tradition of innovation is the cultural foundation that enables modern Chinese science and technology to be rapidly translated into applications that serve society.

China's juncao (fungus grass) technology has been promoted to more than a hundred countries, effectively helping Pacific Island nations reduce poverty; its hybrid rice has been planted in Southeast Asian and African countries, supporting local people to solve the food shortage; and its new energy vehicles drive around the globe, beneficial to a cleaner, greener world.

If you see China's sci-tech developments through a civilizational lens, you can understand that its innovation can contribute to a broader, shared renaissance of science and technology — one that serves not just national ambitions but global needs.

come at the cost of user privacy."

Consumption patterns reshaped

China's new regulations on labeling AI-generated content (AIGC) officially came into effect on September 1, 2025. Zhang emphasized that regulatory frameworks are evolving to address these challenges. The regulations establish a governance architecture combining visible labels for users and technical traceability. Moving forward, all parties involved in designing and producing AI products must adhere to principles of "data minimization and full-process traceability."

The convergence of a vast, digitally engaged population, endlessly innovative application scenarios, and increasingly robust governance creates a unique ecosystem for "AI + consumption" in China. As AI transitions from a novelty to a natural part of daily life, it is poised to redefine consumer experiences — delivering growth driven not only by scale, but by quality, personalization, and trust.

The journey is just beginning, and the potential remains vast.

Voice of the World

Tech-led Chinese Brands Benefit the World

By QI Liming

In today's volatile global market, the "going global" concept of Chinese enterprises has shifted from the export of products and capital to a new era of exporting brands, organizational capabilities, and management mechanisms.

According to the recent Deloitte's *China FY2025 Societal Impact Report*, a growing number of Chinese brands are winning overseas consumers through tech-driven innovation, thoughtful design, and cultural resonance.

Benefiting global consumers and investors

The British magazine *The Economist* has said that "Innovative Chinese brands are popping up everywhere. Consumers and investors around the world stand to benefit."

An example of this took place in July this year, when the 2025 World Intellectual Property Organization Global Awards announced that Chinese company Unitree Robotics stood out among 780 companies from 95 countries and became one of the award-winning enterprises. Its strong capabilities in the field of robotics have been globally recognized.

And in Egypt, Osama Aboul-Magd, head of the Egyptian Automotive Dealers Association, said the influence of Chinese electric vehicles in the Egyptian market is increasing rapidly. Local consumers also gave feedback that the battery technology and intelligence level of Chinese electric vehicles are reassuring.

Moving towards independent innovation

Chinese brands not only provide products, but also tailor the innovative R&D according to the usage habits of consumers from various parts of the world.

Kim Hee-gyeo, professor at the Kwangwoon University, South Korea, said the rapid development of "Made in

Flexible Screen Opens New 'Display' Window

Hi-Tech

By QI Liming

In recent years, display technology has been upgrading from "rigid" to "flexible." Flexible displays, resilient and stretchable, are increasingly applied in consumer electronics, commercial spaces, intelligent interaction and other fields.

Flexible screens are by no means simply bending traditional glass screens. They are like a multi-layered "rainbow cake" composed of a base, electronic components, encapsulation films, and a cover plate. Each layer of the "cake" has to be flexible so that the entire structure can be bent and folded, while ensuring the display effect and durability of the screen. This requires collaborative innovation in multiple fields such as flexible base materials, core electronic components, structural design, and flexible packaging technology.

With the development of emerging technologies such as smart homes, the Internet of Things, and virtual reality,

China" is mainly attributed to China's efforts in forming manufacturing clusters. This not only reduces costs and enhances productivity, but also promotes innovation through cooperation and competition.

Claudia Januzzi, chairperson of the Brazil-China Institute of Innovation Economy said, "After years of investment in technology and education, China's manufacturing industry has made significant progress in terms of human resources, technical level, and management experience." China has become a major country in sci-tech innovation, and Chinese brands are bringing a positive impact on the world, she added.

Sharing innovative technology with the world

China is shifting from being the "world's factory" to a source of innovation. Carlos Fernandez Bielsa, director of the Spanish New Silk Road Research Center, said the rise of Chinese brands has brought tangible changes to the Spanish market, accelerating the upgrading and innovation of the local market in terms of technology, environmental protection and service models.

"Chinese enterprises have contributed to improving the quality of life for consumers worldwide," Kim said. Chinese enterprises share their technological achievements through open-source methods, providing developing countries with the opportunity to use the latest technologies at a lower cost.

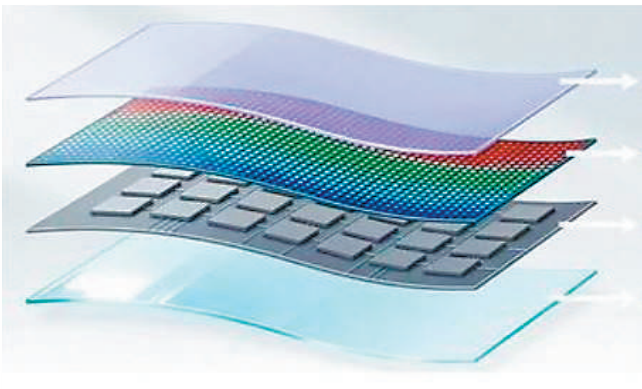
"China supports its domestic enterprises in entering the international market, and at the same time welcomes international brands to enter the Chinese market. This provides an open platform for all countries' enterprises to achieve fair competition, exchange experiences and [provide] mutual benefit and win-win results," Diaa Helmy, secretary-general of the Egyptian-Chinese Chamber of Commerce, said.

display devices need to show higher flexibility and stability. The development of new intrinsic flexible materials is a solution to these problems.

A research team from the Institute of Chemistry, Chinese Academy of Sciences (CAS), has successfully fabricated high-performance intrinsic stretchable PLED (polymer light-emitting diode) devices by introducing microcrystalline elastomers into luminescent polymer matrix.

Intrinsic flexibility not only enhances durability and stability significantly, but also opens up new application scenarios. This shift from "people adapting to devices" to "devices adapting to people" is the core charm of flexible display technology, inspiring expectations for more innovative products in the future.

Currently, intrinsic flexible displays are still in the stage of material verification and have not yet achieved large-scale application. The development of intrinsic flexibility still faces significant challenges in key aspects such as high elasticity self-healing substrates, electrodes, and flexible packaging materials and requires further cross-disciplinary research and joint efforts from the industry chain.



Schematic diagram of flexible screen manufacturing. (PHOTO: The Institute of Chemistry, CAS)

'AI + Consumption' Has Vast Potential

Opinion

By LIANG Yilian & WANG Shanshan

AI has become a powerful catalyst for China's consumer economy. As of the first half of 2025, generative AI products already had numbered 515 million users nationwide. Such a massive user base reflects a profound shift in how Chinese consumers now live, purchase, and engage with digital services.

Experts point to this massive user base as clear evidence of the immense potential for "AI + Consumption" in China, forecasting that AI will unlock remarkable new waves of consumer growth.

AI integrates into daily life

"Ultimately, all technology, including AI, must serve people," said Fang Yi, CEO of Merit Interactive Co, adding that,

"AI + Consumption is one of the most effective paths for AI to move swiftly from the lab to the masses." AI brings smarter, more convenient living, while diverse consumer scenarios, in turn, stimulate innovation and expansion in AI applications.

"This immense user base sends two positive signals," Fang explained. "First, AI technology has achieved scaled, regular adoption. Second, China possesses a solid user foundation for both AI technological iterations and the expansion of consumer applications."

Today, AI is upgrading from an "assistant tool" to a more intuitive "consumption partner." Fang noted that while China's consumer product variety exceeds 230 million items, only 213 application scenarios for "digital technology empowering product variety, quality, and branding" have been widely promoted. This gap indicates that the boundaries of

"AI + Consumption" are far from being reached, especially considering how AI can enhance our lives beyond current imagination.

Balancing innovation with trust

The very strength of AI — its reliance on analyzing user behavior, biometrics, and other sensitive data to make intelligent decisions — raises legitimate privacy concerns. Incidents such as reports of popular AI smart toys collecting and uploading private voice data and home environment information, highlight the risks of over-collection and potential data breaches.

"Users choose AI products ultimately for 'safer services and more efficient experiences,'" said Zhang Shaobo, a cybersecurity expert at Qi An Xin Technology Group. "Security and trustworthiness are the core competitiveness and non-negotiable bottom line for AI products. 'AI + Consumption' should not

Multilateralism, a Necessity for Living Together

Dialogue

By LONG Yun & BI Weizi

"I believed in those early years of my professional career, and I still do, that multilateralism is vital for living together in peace and mutual understanding," former UNESCO Director-General Irina Bokova told *Science and Technology Daily* in a recent interview.

This conviction, forged during her formative years in international affairs, has been a guiding principle throughout her career and she sees its urgency growing: "Even more so today, when we have huge opportunities for sustainable growth and inclusion, but also challenges — conflict, climate change, and the technological revolution."

In her view, UNESCO's mission to build peace through education, science, and culture is more relevant than ever. "This profound humanist conviction remains as salient today as it was in 1945," she said.

As she puts it: Multilateralism is not just a system, it is a necessity for living together.

Heritage as identity

Bokova has long championed a deeper understanding of cultural heritage, one that goes beyond architecture and archaeology.

"We often say that culture and heritage are not about bricks and stones, but about identities and belonging," she emphasized. "They carry messages from the past that are important for societies today and tomorrow."

This perspective guided her leadership at UNESCO, where she expanded efforts to protect both tangible and intangible heritage, from ancient sites to oral traditions and endangered languages.

She cited the restoration of Cambodia's iconic Angkor Wat as a powerful



Professor Irina Bokova. (COURTESY PHOTO)

example of cross-border cultural cooperation, where Chinese and Cambodian experts worked side by side. "This collaboration is not just technical — it's deeply symbolic of mutual respect and enduring friendship," she said.

The site, recognized for presenting "an irreplaceable uniqueness and possessing outstanding universal value," reflects a shared global responsibility. Bokova stressed that such criteria are not ceremonial. They define World Heritage status and justify international commitment to preservation.

She recognizes China's growing leadership in global heritage. "China knows very well the power of culture and the need for the preservation of cultural heritage," she said. "With its 60 sites on the World Heritage list, and 44 intangible traditions, China is one of the leading countries that innovate and expand the interpretation of the World Heritage Convention."

The World Heritage Convention is an international treaty adopted by UNESCO in 1972 to protect cultural and natural sites of "outstanding universal value."

Cities as hubs of innovation

Under Bokova's leadership, UNESCO strengthened the Creative Cities Network, linking urban centers that use culture to drive sustainable development. "I am proud that during my tenure I could declare 11 out of these 12 cities members of this important network," she remarked.

From her perspective, all of this shows China's leadership in crafting new approaches to culture as a powerful driver of creativity and sustainable human development.

"China has found that culture is now an important source of national cohesion and creativity, a pillar of socioeconomic development," she said.

For Bokova, culture is not a luxury: "It is a democratic force for social cohesion and social inclusion and for living together in respect to each other."

She sees institutions like the Beijing Foreign Studies University (BFSU) playing a vital role in preparing future generations for intercultural dialogue. "BFSU has rightfully put forward as its mission equipping students with the knowledge and competencies to understand and respect cultural differences,"

she said.

This mission aligns with UNESCO's broader goal of fostering global citizenship through education. When young people learn to navigate cultural diversity with empathy and skill, they become agents of peace and cooperation.

Empowering the next generation for global service

One of Bokova's lasting contributions is establishing the first internship program between a UN agency and China, a milestone in China- UNESCO cooperation. It made UNESCO the first UN agency to engage in such cooperation with China, "opening pathways for Chinese talent to enter international organizations."

The program created structured training and career opportunities, enabling young professionals to contribute to multilateral work. It includes mentorship, language training, and placements in UNESCO's headquarters and field offices.

She thinks the UN must continue to attract diverse, committed talent: "The UN needs people who believe in multilateralism and are committed to its values, inclusivity and equity. The UN needs people who are committed to making this world a better place for all, who are competent, knowledgeable and, at the same time, ready to embrace change."

Future leaders, she insisted, must be equipped to navigate complex global challenges. "The UN needs people who share the humanistic vision of respect for all cultures and for diversity and who are capable of dealing with complex issues of conflict prevention, development needs and humanitarian action."

Such professionals have to be nurtured. The China- UNESCO program exemplifies how targeted investment in human capital can strengthen global institutions and ensure they reflect the diversity of the world they serve.

BFSU also contributed to this article.

Overseas Echoes

When Needles Built an Indestructible Bridge

By Sudeshna SARKAR

When he was a third-year medical student, Mrigendranath Gantait saw one of his professors perform a "miracle."

"A patient had come to the (Calcutta) Medical College with gangrene in his leg and the doctors said they would have to amputate the leg, there was no other option."

But then a senior professor, Dr. Bejoy Kumar Basu, stepped in. The veteran doctor had been teaching some of his students a medical technique that he had learned abroad. It required finding pressure points in a patient's body and inserting fine, long needles there.

The patient clutched at this ray of hope, the treatment was done, and the gangrene was cured.

The method was acupuncture and Dr. Basu its pioneer in India, having learned it in China.

"History talks about ping-pong diplomacy between China and the U.S. (where the ice in the bilateral relationship was broken by friendly matches between Chinese and U.S. table tennis players). This was acupuncture diplomacy between India and China," Dr. Gantait, now 75 and a veteran acupuncturist himself, told *Science and Technology Daily*.

The introduction of acupuncture in India from China established a historical bond between the two neighboring nations that has withstood the ups and downs in their relationship. Its roots go back to 1938 when Japan's invasion of China had reached a frenzy and Chinese leaders asked India for medical assistance.

The Indian Medical Mission, consisting of five doctors, went to China to treat the war-injured. Two of them left unique legacies of amity: Dr Dwarkanath Kotnis, who died in China, and Dr Basu, who bequeathed all his assets to the government of his home state to promote acupuncture after his death.

"He learned acupuncture when he was in China," Dr. Gantait said. "At that time, there were no books in English available on acupuncture. He took painstaking notes by hand and taught us from his notebook. He also brought some acupuncture needles with him as none were available in India. He would lend them to us by turn and we would practice and treat patients with them."

The medical mission subsequently inspired the India- China joint Medical Mission, a recurring initiative which sends young doctors from both countries to serve in rural areas, consolidating people-to- people ties with medical services.

The seventh joint mission was held this June when 11 Indian doctors and 11 Chinese doctors from the

Affiliated Hospital of Guizhou Medical University went to Shibing, a county in Guizhou province in southwest China. They gave free medical consultations to the community, who are mostly from the Miao and Dong ethnic groups.

Dr. Kotnis, who died in China in 1942 when he was just 32, has memorials both in his hometown in India and in north China. More than silent memorials, they are a continuation of medical services.

In Hebei in north China, a medical school, the Shijiazhuang Ke Dihua Medical Science Secondary Specialized School, is named after him, using his Chinese name Ke Dihua, which younger generations in China still recognize.

A journalist and a think tank member both told *Science and Technology Daily* that their school textbooks taught about the selfless spirit of Ke Dihua, resonating with a nation that commemorates Lei Feng, the young Chinese soldier exemplifying self- sacrifice in the service of others.

In India, the Dr. Kotnis Memorial Committee runs health camps, offering free check-ups, vaccinations, and medicines, as well as an Acupuncture Treatment Center.

On the occasion of Dr. Kotnis's 83rd death anniversary earlier this month, Kong Xianhua, the Chinese consul-general in Mumbai, India, wrote Kotnis's spirit of internationalism and dedication "is still running in the blood of both Chinese and Indian people to make us emotionally closer.... Once the seeds of friendship are sown in their hearts, the young people will continue to carry on the spirit of Dr. Kotnis for generations."

The Chinese government has announced it would sponsor a school in Dr. Kotnis's hometown in India, which would be renamed the Dr. Kotnis Friendship School. The Chinese consulate general and Chinese companies have sponsored renovations, sports facilities and a drinking water system in the school.

Dr. Basu's residence in Kolkata, India, is today the B.K. Basu Memorial Acupuncture Research and Training Institute, that also houses a small museum on Basu and his work.

Dr. Gantait, who is also president of the Acupuncture Association of India, said the Chinese consul-general in Kolkata, Xu Wei, donated acupuncture equipment and needles on Dr. Kotnis's 83rd death anniversary.

"When we go to rural areas and treat villagers with acupuncture, they want to know from where this practice originated," he said. "On being told China, they have a positive feeling about China. Acupuncture acts as a bridge between the people of two nations, creating a feeling of friendship."

Why are Mercury Thermometers Being Banned?

Science Outreach

By WANG Shanshan & BI Weizi

From January 1, 2026, the production of mercury thermometers and sphygmomanometers will be completely banned in China.

What's the reason?

"The ban on mercury thermometer production is a specific measure taken to fulfill China's obligations under the important international Minamata Convention on Mercury. It also reflects the concepts of ecological protection and medical safety," said

Professor Yu Lei of the School of Chemistry and Materials Science at Yangzhou University. The convention's core requirements include prohibiting the mining of primary mercury ore, strictly controlling the use of mercury resources, and gradually phasing out mercury-containing medical products and everyday items.

According to Yu, metallic mercury, commonly known as quicksilver, is unique in being a liquid metal at room temperature, and it is highly toxic and non-degradable.

Inhaling high concentrations of mercury vapour can cause acute poisoning, damaging the nervous system and kidney function. Inhaling mercury vapour can lead to developmental delays in children and foetal deformities

in pregnant women. Furthermore, if a broken mercury thermometer is put in the soil or a river, the mercury will convert into methylmercury, which is even more toxic and can cause long-term damage to the ecosystem.

What are safe alternatives?

Ma Cheng, associate director of the Analytical Chemistry Teaching and Research Office at Yangzhou University, believes that new thermometer products should offer the measurement advantages of mercury thermometers while being safe to use. Electronic thermometers, which are becoming increasingly popular, may be an ideal alternative.

Ma explains that electronic thermometers do not contain mercury, thus eliminating the risk of mercury

pollution. There are two main categories: non-contact and contact. The former includes forehead and ear thermometers.

Contact electronic thermometers resemble mercury thermometers in their use and can measure temperature orally, axillary or rectally. They work by using a temperature sensor to output an electrical signal, which is then processed and displayed digitally. The entire process takes only about 15 seconds.

High-quality products can achieve measurement accuracy comparable to mercury thermometers, significantly improving the efficiency of emergency triage and large-scale temperature screening, while meeting the needs of clinical and everyday use.

Hezhen Yimakan Storytelling Makes UNESCO List

Traditional Eastern Wisdom

By BI Weizi

"Hezhen Yimakan storytelling," a revered Chinese folk tradition, has been included in the UNESCO intangible cultural heritage list, a move that is sure to preserve these time-honored oral customs for generations to come.

On December 11, during its 20th regular session in New Delhi, the UNESCO Intergovernmental Committee for the Safeguarding of the Intangible Cultural Heritage resolved to transfer

China's Hezhen Yimakan Storytelling from the List of Intangible Cultural Heritage in Need of Urgent Safeguarding, to the Representative List of the Intangible Cultural Heritage of Humanity.

The Hezhen community has historically lived along the banks of three rivers: the Amur, the Sungari, and the Usuri in north-eastern China. With a population of just 5,354 people, representing only 0.0004 percent of China's total population, according to the 2010 Sixth National Population Census, the Hezhen community is one of the smallest ethnic minorities in China. Yimakan storytelling is a traditional oral art form encompassing singing and narration that has

been passed down through generations within the Hezhen community.

The stories are recounted by artists in the Hezhen language in both a rhythmic and a prose style. Subjects include heroic actions, shamanic traditions, fishing and hunting lifestyles, folk practices and romance, reflecting the collective memory, education and leisure of the Hezhen people during seasonal labor and festivities.

In May 2006, Yimakan narration was added to the list of representative elements of national intangible cultural heritage. Then, in November 2011, it was added to the Urgent Safeguarding List. The Hezhen community is praised for their

extensive history and vibrant culture, especially its exceptional fishing and hunting skills, intricate pattern art, and the captivating nature of Yimakan storytelling.

Since being designated a project requiring immediate protection in 2011, the Hezhen community has embraced its culture with renewed enthusiasm, resulting in increased participation in Yimakan storytelling and related activities, as well as its preservation and sharing. This has fostered the safeguarding of the Hezhen dialect and rejuvenated their cultural practices, enhancing the cultural identity and historical continuity of the communities, groups and individuals associated with them.

Photo News



Often referred to as the "Lungs of Lhasa," the Lhalu Wetland National Nature Reserve in Xizang autonomous region has been recognized by the World Record Certification Agency as the world's highest-altitude urban natural wetland. Located in the urban area of Lhasa, the wetland covers an area of 12.2 square kilometers at an average altitude of 3,649 meters. (PHOTO: XINHUA)