科技日報

Science and Technology Daily

VOL.4-NO.138 APRIL 20-21, 2024

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New Quality Productive Forces

Digital Tech Unleashes New Quality Productive Forces

By YU Haoyuan

China's ongoing advancements in science and technology are heavily influenced by "new quality productive forces". The forces are driving strategic future and emerging industries, which have the potential to introduce disruptive technological advancements in an era of intelligent information.

The emergence of "new quality productive forces" extends beyond mere changes in the productive forces. It fundamentally reshapes the relationship between production and the social system. For example, it enhances the capabilities of industrial chains, fosters the growth of emerging industries and promotes the development of future industrial layouts. Digital technology serves as a critical driving force in realizing these functions.

Upgrading traditional industries

In recent years, the integration of new-generation digital technologies, such as big data, AI, and 5G across various industries, alongside the rapid emergence of data-related businesses and models, has elevated data into a primary production tool. The production, processing and utilization of data have accelerated transformations in economic and social realms, fundamentally altering production methods and lifestyles. This disruptive change has not only driven improvements in total factor productivity, but also created vast opportunities for economic growth and profoundly influenced human production and life.

The *China Digital Economy Industry Development Research Report (2023)* highlights the increasing pull effect of highly digitized industries on China's economy. From 2012 to 2022, the proportion of highly digitized industries, primarily encompassing productive services such as finance and scientific research, surged from 16.8 percent to 22.4 percent, indicating a relative increase in their pull effect by 10.9 percent.

Researchers Qing Kaiqiang and Yang Yang, from Yunnan University, argue that the digitization of traditional industries enhances efficiency while reducing resource consumption and environmental pollution, thereby bolstering market competitiveness.

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Returned Chinese cultural objects are seen at a handover ceremony at the Chinese Consulate General in New York, the United States, on April 17, 2024. The U.S. side returned 38 pieces of Chinese cultural objects to the Chinese side during the handover ceremony. (PHOTO: XINHUA)

Editor's Pick

The Birth of 'Unbreakable Glass'

By WANG Xiaoxia & YONG Li

A short video that went viral online recently shows the screen of a Huawei smartphone remaining intact after being used to crack walnuts, hammer nails, and driven over by a car.

This remarkable strength and durability is attributed to the phone's nanocrystalline glass, or Kunlun Glass, a completely homemade product by a local enterprise called Chongqing Aureavia Hi-tech Glass Co., Ltd. (ATG), which has spent years perfecting the technology.

From lab to factory

So, how can a small piece of glass that is only about half a millimeter thick be so tough?

"That's because a palm-size piece of microcrystalline glass is filled with billions of high-strength nanocrystals," Jiang Hong, a renowned expert in the field of specialized glass in China, told *Science and Technology Daily*. "The regular arrangement of these crystals endows the material with superior physical and chemical properties, which can effectively block cracks and greatly improve the strength and resistance of the glass."

Therefore, specialized glass, including the nanocrystal glass line, has a huge demand in many other emerging industries, apart from smartphones.

However, this market has long been monopolized by foreign manufacturers. Learning about this situation, Bai Yibo, an entrepreneur in Chongqing conceived the idea of stepping into the field of new materials. At the same time, Jiang's research results in aviation glass and mobile phone screens were urgently in need of industrialization. Sharing the same vision, the two visionaries joined hands and established ATG in July 2014.

Although ATG holds Jiang's pioneering technology, Bai soon realized that the industrial mass production was far more difficult than expected.

Removing the bubbles

From the construction of ATG in 2014 to the launch of the production line in 2018, an investment of up to 400 million RMB was pumped into the company. But the mass production faced a major challenge as the output was always plagued with defective glass filled with bubbles.

"The theoretic formula can be verified in the laboratory, but the production process can only be adjusted and demonstrated on the production line," said Peng Can, head of the equipment power department of ATG, who has rich experience in glass production and factory construction.

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Consumer Expo Demos Unique Global Brands

By Staff Reporters

The 4th China International Consumer Products Expo in south China's Hainan province from April 13-18 shone a spotlight on international cooperation, welcoming new international brands, and providing opportunities for global companies to tap into the Chinese market and meet consumers' evolving demands.

The expo attracted more than 4,000 exhibitors from 71 countries and regions, featuring a diverse range of "new, unique, and special" products, highlighting the dynamism of the consumer market.

Vice Minister of Commerce, Sheng Qiuping, emphasized the Expo's role in promoting consumption upgrades and fostering international trade partnerships. He highlighted China's commitment to developing digital, green, health and service-oriented consumption, driving innovation and creating new growth areas in the consumer sector.

The expo served as a comprehensive platform for showcasing cutting-edge technologies and aesthetic designs, such as a Silicon-based LED yellow light.

It also featured thematic events like the nationwide launch of the consumer goods trade-in program and consumer innovation sessions on a global scale, offering a platform for showcasing new products and facilitating business collaborations.

Domestic and international exhibitors showcased their strengths, with Guangdong and Hubei pavilions highlighting regional advantages and premium consumer goods. New products like a civilian off-road vehicle and innovative tea utensils attracted significant attention, signaling opportunities for market expansion and brand promotion.

Ambassadors and representatives from various countries expressed their optimism about the Expo's impact on promoting their brands in China. Irish Ambassador to China Ann Derwin highlighted the positive reception of Irish products among Chinese consumers, encouraging continued participation in the Expo.

Overall, the Hainan Expo serves as a catalyst for global brands to tap into China's vast consumer market, promoting mutual growth and fostering economic partnerships.

The Expo's success underscores the country's commitment to consumer-driven economic development and innovation.

(Related story: see page 3)

UNESCO Inspires Collaboration on Karst Research

International Cooperation

By LIN Yuchen

An initiative to promote global karst science and technology cooperation, urging all parties to strengthen exchanges and cooperation in karst geological research, was released by the International Research Center on Karst, under the auspices of UNESCO in Beijing on April 16.

This initiative, released during an event featuring China-Slovenia karst carbon cycle technology innovation and cooperation, aims to support global carbon cycling, mitigate geological disaster risks, and protect karst geological relics, promoting extensive collaboration and drawing up a blueprint for the future of karst science and technology innovation worldwide.

Karst is a landscape with distinctive hydrology and landforms that occur when the underlying rock is soluble. The word is originated from a karst plateau region in Slovenia, a limestone region renowned for its exposed rocks, caves and diverse formations. Karst covers about 15 percent of the Earth's land area, providing approximately 25 percent of the world's population with drinking water and boasting rich resources in water and minerals.

Gao Xiang, director general of the China Science and Technology Exchange Center (CSTEC), emphasized the importance of enhancing research on karst carbon cycling and its environmental effects. This effort not only contributes to the protection of global karst ecological environments, but also provides an innovative path for human cooperation in addressing climate change, carbon reduction and carbon neutrality.

China has been cooperating formally with Slovenia on karst research since the 1990s. Alenka Suhadolnik, ambassador of the Republic of Slovenia to China, highlighted their centuries-old tradition in karst research and over 30 years of collaboration with China, expressing hopes for joint efforts from scientists of both sides in nature conservation.

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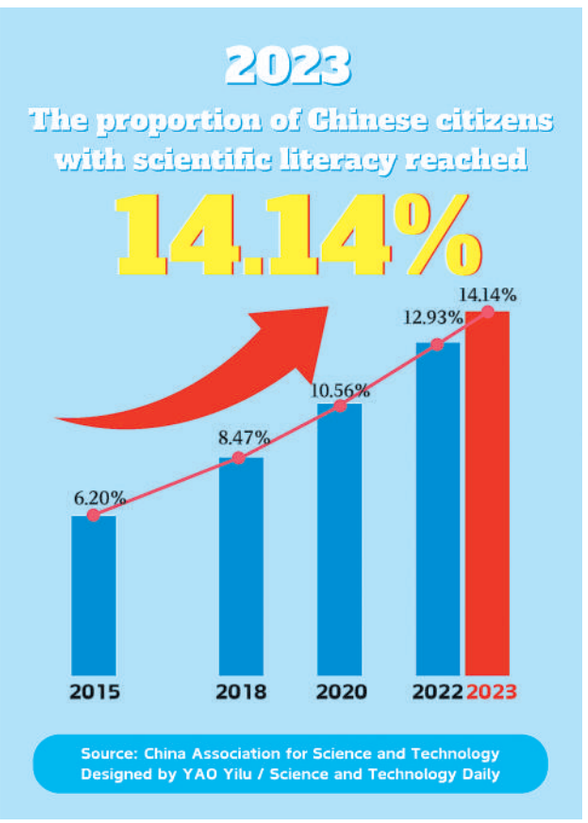
New Graphic



WEEKLY REVIEW

Tiandu Satellites Conduct Earth-Moon Transmission, Routing

China's communication and navigation technology test satellites, Tiandu-1 and Tiandu-2, have successfully carried out experiments on new technologies such as highly reliable Earth-Moon transmission and routing, which could effectively improve the accuracy of spacecraft in determining the lunar orbit.

Novel Method to Analyze Fast Radio Bursts

Based on the rich data from China's Five-hundred-meter Aperture Spherical radio Telescope, a research team at the National Astronomical Observatories of the Chinese Academy of Sciences (CAS) proposed a novel method for a comprehensive analysis of the behavior of active fast radio bursts in the time-energy domain, revealing the randomness of the behavior.

Heavy-ion Accelerator for Cancer Treatment Invented

Chinese scientists have invented an advanced medical facility, called heavy-ion accelerator, to assist the human battle against cancer. The high-speed carbon ions it produces are channeled into the treatment area to kill the tumor cells of cancer patients.

Study Reveals Global Store of Soil Carbon

Researchers from the CAS have found a massive 2,305 billion tonnes of carbon stored as soil inorganic carbon in the top two meters of soil worldwide, which is more than five times the carbon found in all of the world's vegetation. This hidden pool of soil carbon could be key to understanding how carbon moves around the globe.

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