



Science and Technology Daily

VOL.4-NO.135

MARCH 23-24, 2024

New Quality Productive Forces Technology Opens Up New Paths in Life Sciences

By ZHANG Jiaying & ZHONG Jianli

"Traditional Chinese medicine (TCM) diagnosis usually relies on observation, listening, inquiry and taking the pulse, but now, information technology has transformed diagnostic experience into objective and standardized TCM examination data," Zhang Boli, a renowned TCM doctor and academician of the Chinese Academy of Engineering, said.

These data not only serve as reference information for diagnosis and treatment by TCM doctors but also represent the modernization of the pharmaceutical principles of TCM, he added.

Zhang is one of the several experts *Science and Technology Daily* reporters recently interviewed to see how new technologies are revolutionizing life and healthcare.

Digitization enhances industrial breakthroughs

TCM pharmaceutical principles are not outdated but TCM equipment lags behind, making it difficult to measure and control the quality of TCM. However, modern engineering equipment and technology has made real-time monitoring possible. Medicine components, previously difficult to monitor, can now be controlled online, thus enhancing the quality and production efficiency of TCM.

Zhang gave the example of the Haihe Laboratory of Tianjin University of TCM, which in collaboration with a research team from Zhejiang University, is applying AI technologies such as machine learning to model measurement data from hyperspectrum, Raman spectrum and near infrared spectrum, creating rapid analysis methods.

Wu Xiaoke, president of Heilongjiang Provincial Hospital, said digitalized, intelligent upgrade of medical equipment will drive disease prevention and control, health management, drug research and other areas to comprehensively improve quality and efficiency, providing powerful tools for high-quality development of the related industries.

New technologies expand into new fields

"With genetic testing technology, we now know of 300 to 600 pathogenic genes that are related to deafness," said Wang Qiuju, a professor at the Sixth Medical Center of the People's Liberation Army General Hospital. Genomic technology has discovered the "ghost" genes responsible for recurring deafness within families, Wang added.

See page 3



Farmers work in a field in Nanhe district, Xingtai city, Hebei province. Farmers across China have recently been busy with spring ploughing, sowing and other agricultural activities. (PHOTO: XINHUA)

Editor's Pick

Lithium-ion Batteries: An Emerging Industry

By Staff Reporters

Lithium-ion batteries, together with electric vehicles (EVs) and solar batteries, have been dubbed China's tech-intensive and green "new three items." According to the General Administration of Customs of China, last year, their combined exports were worth over one trillion RMB, up 29.9 percent year-on-year. The Government Work Report on March 5 also mentioned it.

Lithium-ion batteries are crucial to power EVs, and China is taking the lead in manufacturing them, a new strategic emerging industry.

Pioneering the lithium revolution

Chen Liqun, an academician of the Chinese Academy of Engineering, is known as the "father of China's lithium batteries", though he tends to

downplay his role, saying, "I just did my duty."

Chen recognized the potential of solid-state lithium batteries to revolutionize the energy scenario in the future as early as in 1976, when he was sent to Germany by the Chinese Academy of Sciences (CAS) for research.

Two years later, he returned to China and founded the first solid state ionics laboratory in CAS's Institute of Physics. Ten years later, China's first solid-state lithium battery was made there. However, it did not have short-term commercialization potential as its material system, cell design and manufacturing process were immature.

From workshop to world stage

In 1990, Japan's Sony announced the commercialization of liquid lithium-ion batteries.

"If China wants to catch up with Japan as soon as possible and achieve [a] lithium battery breakthrough, it needs to adopt a step-by-step approach tailored to [domestic] development needs," Chen told *China Youth Daily*.

China's first factory was shabby with peeling walls and dimly lit rooms. Chen and his team labored to establish an experimental cylindrical battery line, which eventually produced the first cylindrical lithium-ion battery in China. In 1996, the new battery passed experts' appraisal with its performance reaching the advanced international level.

Building ecosystems

Zaozhuang, located in the south of Shandong province, is a city built on and prospering on coal.

See page 2

SKAO Meeting Plans Growth of Radio Astronomy

By BI Weizi & ZHANG Ye

The Square Kilometre Array Observatory (SKAO) is a major international radio astronomy facility jointly funded by 16 countries and regions.

On March 18 and 19, representatives from SKAO member countries, scientists and SKAO staff gathered in Nanjing to discuss future development and collaborative opportunities, and raise awareness of the Observatory and the SKA project among scientists, policy makers, industries, educational institutions, local communities and the general public.

SKAO is building an array of

thousands of radio telescopes with a total effective receiving area of about one square kilometre, making it the world's largest radio astronomy observatory, according to Wu Xuefeng, deputy director of the Purple Mountain Observatory, Chinese Academy of Sciences.

"SKAO is the next generation radio astronomy facility for the world," Philip Diamond CBE, director general of SKAO, told *Science and Technology Daily* in an exclusive interview.

It will create enough big areas of data collection to enable astronomers to observe the sky in unprecedented detail and faster than any existing sys-

tem, according to the SKAO website.

"The SKAO was born global. International scientists developed the thinking about what's next at various meetings," Diamond said. It's the international collaboration that has made it happen. Many more countries have expressed their intention to join the project, which means the collection area could be expanded further.

As a billion-dollar international project, SKAO will collect radio waves from an array of hundreds of dishes in South Africa and more than 130,000 antennas in the Australian outback. The SKAO headquarters is in Manchester, England.

China, Thailand Co-produce Hydro-floating Solar Power

International Cooperation

By Staff Reporters

A hydro-floating solar project jointly built by Chinese and Thai companies started commercial operation on March 5 to support Thailand's clean energy development drive.

The Ubolratana Dam hydro-floating hybrid power plant, located in Thailand's northeastern Khon Kaen province, integrates floating solar panels with clean hydropower, a high-efficiency energy storage system, and a smart energy management system, according to Dongfang Electric International Corporation, which built the project with its Thai partner and is one of the largest manufacturers of power-generating equipment.

Similar to land-based photovoltaic power stations, floating solar panels generate electricity from the sun's rays. The water on which they float helps to cool the panels, making them 15 percent more efficient than terrestrial solar, according to an estimate from the U.S.-based Environmental and Energy Study Institute.

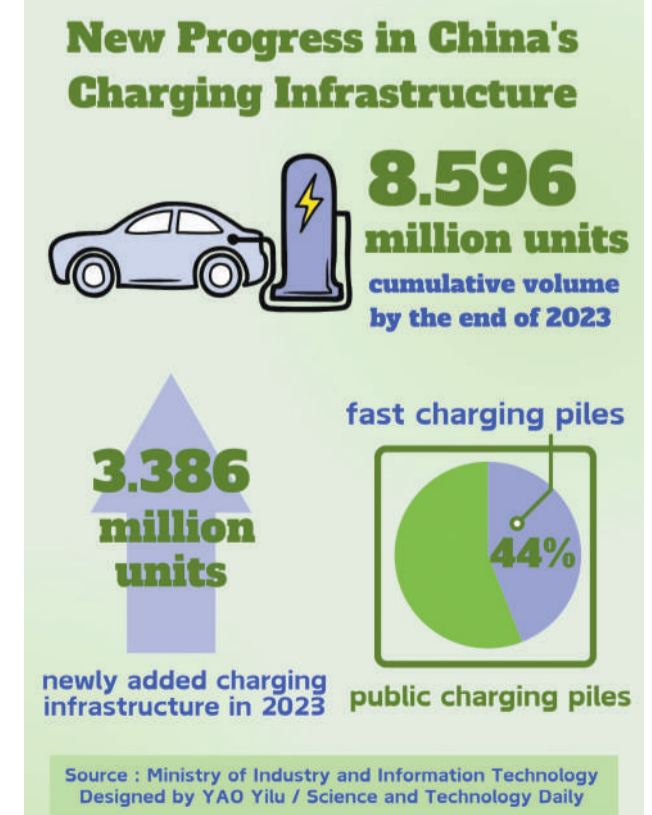
Also, floating photovoltaic plants take up less land and make better use of water space.

Jiraporn Sirikum, deputy governor of the Electricity Generating Authority of Thailand, said building floating solar hybrid power plants is an important step toward clean energy production and power stability in Thailand. Sirikum praised Chinese and Thai companies for delivering the project ahead of schedule, according to Xinhua.

"This showed a serious commitment to promoting clean energy in Thailand. We sincerely hope that the floating solar will help to promote clean energy for the community economy and local society," Jiraporn said at the commercial operation launch.

A Chinese company built a similar floating solar plant in Indonesia, which is the largest of its kind in Southeast Asia. The power plant built by PowerChina Huadong Engineering Corporation is expected to produce 300 million kilowatt hours of energy annually and has a 192-megawatt peak capacity.

New Graphic



WECHAT ACCOUNT



E-PAPER

