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Editor's Pick

Breakthrough in fNIRS Imaging Technology Benefits All

By Staff Reporters

For a long time, the evaluation and diagnosis of mental and psychosomatic diseases have been lacking objective biological indicators. Now, the application of functional near-infrared spectroscopy (fNIRS) imaging technology may help solve this problem.

A research team from Beihang University (BUAA) has developed fNIRS brain imaging equipment with over 100-channels, and received the medical device registration certificate for it. Based on fNIRS imaging technology, an intelligent disease diagnosis and treatment model has also been established.

Fit for purpose

High resolution imaging of brain activity in its natural state has been a challenge worldwide until the advent of fNIRS imaging equipment, which is now considered to be a solution to this problem. The device can record brain activity as people walk, drive, talk, play a musical instrument or games, and also be used on restless children, claustrophobic patients and people who are unable to undergo MRI scans.

However, the current fNIRS equipment, with a unit price of millions of RMB, cannot effectively image the areas covered by people's dark hair, such as the parietal lobe and occipital lobe. This is because many Westerners have light colored hair, while Asians have dark hair, and dark colors absorb 1,000 times more infrared light, said Wang Daifa, who leads the research team at BUAA.

After hundreds of experiments, setbacks and verifications, Wang's team finally made a breakthrough in the physical limit of near-infrared ultra-light detection technology and original signal extraction technology, to overcome the challenge imposed by dark hair with their whole brain imaging technology.

Higher resolution

In 2016, Wang's team founded Danyang Huichuang Medical Equipment Co. Ltd (Huichuang) to manufacture new equipment of high resolution imaging. "After three years of efforts, we began using fNIRS imaging equipment in the clinic, initiating the development of homegrown high-end equipment in this field," said Fu Qijun, R&D director of Huichuang.

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New Graphic

Rise in Chinese-brand Passenger Car Sales (2022-2023)

14.6 million units

11.8 million units

increased by 6.1 percentage point

The market share of Chinese-brand passenger cars

Source: China Association of Automobile Manufacturers
Designed by YAO Yilu / Science and Technology Daily

The Jingu Haihe Tunnel is the high-speed shield tunnel with the largest diameter and longest driving distance in the Beijing-Tianjin-Hebei region. (PHOTO: XINHUA)

Two Sessions

Upcoming 'Two Sessions' Highly Anticipated

By Staff Reporters

The 14th National People's Congress (NPC) and the 14th National Committee of the Chinese People's Political Consultative Conference (CPPCC) will open their second session on March 5 and 4 respectively. Because the NPC and CPPCC are traditionally held in March around the same dates, people have taken to calling them the "Two Sessions" or "Lianghui".

The NPC is the highest organ of state power and the top legislature. Its deputies are elected from all levels of society for a five-year term. They have the right not only to appoint and supervise the chief justice and chief prosecutor of China, but also to formulate and amend the laws.

The CPPCC, also known as China's top political advisory body, was established in 1949, five years before the NPC.

Every year, the CPPCC facilitates China's multiparty cooperation and political consultation mechanism, led by the Communist Party of China. CPC representatives, members of other political parties, and people from all ethnic groups and other parts of society, can offer proposals to participate in the deliberation and administration of state affairs.

The Two Sessions offer the public a practice of "whole-process people's democracy" every year.

The term of "whole-process people's democracy" was first mentioned by President Xi Jinping, and was written into Chinese law in 2021. It is a process which allows "people to pursue, develop and realize democracy" and fully represents the idea of "people are the masters of the country." Specifically, people can engage in democratic elections, consultations, decision-making, management, and oversight.

Every year, a government work report on behalf of the State Council is delivered at the opening meeting of the NPC. It summarizes the past year's achievements, while also proposing China's major development targets and the key tasks of government for the next year.

During the Two Sessions, all NPC deputies will gather together to review the past year's work of the central government and reach consensus on policies for the next 12 months.

The proposals of the Two Sessions are related to many areas. Throughout history, many far-reaching decisions have been made during this period, such as establishing new administrative regions, constructing the Yangtze River Three Gorges Dam Project, joining the World Trade Organization, and eradicating absolute poverty.

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Political Advisor Advocates Unified Carbon Market for Green Growth

By WANG Xiaoxia

To promote carbon peaking and carbon neutrality prudently, China needs a larger carbon trading market with unified rules.

Jiang Pengyu, a member of CPPCC, the top political advisory body, shared his proposal for the upcoming CPPCC session during a recent interview with *Science and Technology Daily*.

Jiang, who is also deputy mayor of Changzhou, Jiangsu province in east China, and chairman of the Changzhou Committee of the China Zhi Gong Party, will propose expanding the carbon trading market at the annual CPPCC session, which kicks off on March 4.

China's national carbon emissions trading market commenced operation

in July 2021, a milestone in achieving China's emission reduction targets. In the past two years, it has made remarkable progress.

Apart from the national carbon market, there are eight local carbon markets in major cities like Beijing, Shanghai and Guangdong. However, they have different trading rules and regulations and the allocation of responsibilities in financial regulations is ambiguous, Jiang said.

Therefore he proposes establishing a unified carbon emissions trading market nationwide, and coordinating the trading systems of the national and local markets, as well as improving the regulatory mechanism of carbon finance.

As the carbon market expands, the

market transaction mechanism will guide the green transition of carbon-intensive sectors and energy consumption structure, encourage innovation in green and low-carbon technologies, and boost green and low-carbon economy, Jiang pointed out.

With China being one of the largest carbon emitters, its carbon trading market will play an important role in global climate governance, he added.

Its successful operation will help reduce global carbon emissions and promote global green and low-carbon development. At the same time, it will demonstrate the effectiveness of the market mechanism in climate governance, and the experience can be shared by other countries and regions, especially other developing countries, Jiang explained.

Solar Power Project Contributes to Bangladesh Green Development

International Cooperation

By Staff Reporters

China's shift towards clean energy development under the Belt and Road Initiative is poised to reshape Bangladesh's energy landscape, as evidenced by recent initiatives aimed at transitioning from coal to renewable energy.

Approximately 120 kilometers from the capital city Dhaka, stands Bangladesh's second-largest solar power station. Around 170,000 solar panels imported from China convert sunlight into electricity, illuminating local homes. This solar power project was initiated in 2019 with the aim of meeting Bangladesh's electricity demands and improving the local energy structure. This ambitious endeavor was undertaken by HDFC SinPower Ltd., and constructed by Fujian Yongfu Power Engineering Co., Ltd. At the end of 2020, the project was operational.

"Despite challenges such as the COVID-19 pandemic, the project was completed in just about a year," said Faisal, a local engineer involved in the project. He also noted that this project was Bangladesh's first solar project built according to Chinese standards, providing impetus to Bangladesh's advancement in renewable energy and earning recognition from various departments, including the Bangladesh Power Development Board.

Over the past three years of operation, the power station has generated approximately 300 million kilowatt-hours of electricity, becoming a crucial power source in central Bangladesh. Local resident Nasiruddin is grateful, saying the solar power station has greatly benefited the community, with many of his relatives and friends now employed there.

The station has also obtained an international Verified Carbon Standard certification in 2023 and is reducing carbon emissions in Bangladesh.

"We hope to actively practice a green development business model in Bangladesh, promoting local economic development and improving livelihoods, while also using investment to propel Chinese technology, standards, and equipment onto the global stage," said Zhou Jinshun, chairman of HDFC.

WEEKLY REVIEW

2024 Mission: 100 Space Launches

China is projected to make about 100 space launches this year. They include the maiden flight from the country's first commercial spacecraft launch site in Wenchang, Hainan province. This is stated in the 2023 blue book of China aerospace science and technology released by the China Aerospace Science and Technology Corporation on February 26.

Manned Lunar Exploration Vehicles Named

The China Manned Space Agency announced the names of the new vehicles for future manned lunar exploration missions on February 24. The new manned spacecraft has been named Mengzhou and the lunar lander Lanyue. They will take astronauts to the moon before 2030.

Chinese Scientist Receives International Award

Huang Xiaojun won the annual Distinguished Service Award of the Center for International Blood and Marrow Transplant Research in San Antonio, the U.S., for his groundbreaking work known as the Beijing protocol in transplantation and cellular therapy on February 23.

WECHAT ACCOUNT



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