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CAST Newsletter

African Engineering Capacity-Building Initiative aims to foster new momentum in China-Africa cooperation

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Headlines

African Engineering Capacity-Building Initiative aims to foster new momentum in China-Africa cooperation

On March 17, 2025, the African Engineering Capacity-Building Initiative was officially launched in Nairobi with the joint support of CAST and the World Federation of Engineering Organizations (WFEO). The event brought nearly 200 representatives from the global engineering community together.

In his address at the ceremony, CAST Executive President He Junke emphasized the importance of joint efforts between China and Africa amid the dual trends of the Fourth Industrial Revolution and the green transition. "Enhancing engineering capacity is essential for achieving modernization in both China and Africa," he said. "CAST is committed to being a long-term partner and steadfast supporter of the initiative. We hope it will contribute to cultivating engineering talent, addressing shared challenges, and strengthening people-to-people bonds. Our aspiration is that this program becomes a flagship example of open cooperation and mutual benefits and helps build an all-weather China-Africa community with a shared future for the new era."

WFEO President Mustafa Shehu expressed appreciation for CAST's support. He noted that progress toward the UN's 2030 Sustainable Development Goals in Africa had been relatively slow. He mentioned that the African Engineering Capacity-Building Initiative, part of the UN's International Decade of Sciences for Sustainable Development (IDSSD), aimed to bridge the technological divide between nations and promote localized solutions for development. He expressed a desire for broad support from all stakeholders.

At the ceremony, CAST and WFEO signed a Memorandum of Intent to formalize cooperation on the initiative. The China Society of Engineers (CSE) also signed separate Memorandums of Understanding with the Institution of Engineers of Kenya (IEK) and the Engineers Board of Kenya (EBK).

(Source: Official website of CAST)

China-UK international cooperation in scientific research reaches new heights

On March 21, 2025, Luo Hui, Director-General of the CAST Department of International Affairs, met Sir Keith Burnett, President of the UK's Institute of Physics (IOP)

and Fellow of the Royal Society (RS), in Beijing alongside his delegation visiting China. The two sides reached consensus on strengthening international exchange and cooperation in scientific research between China and the United Kingdom.

Both parties expressed a commitment to creating more opportunities for international exchange among young scientists from both countries, with a focus on supporting and nurturing early-career researchers to foster the next generation of scientific talent. They also agreed to deepen cooperation in academic publishing, particularly through editorial training and exchange programs between Chinese and British physics journals. In addition, the two sides committed to building collaborative platforms in emerging fields such as low-carbon technologies and AI ethics, aiming to promote international research cooperation and explore innovative solutions to global challenges.

(Source: Official website of CAST)

China and Hungary agree to deepen multi-level people-to-people exchange in science and technology

On March 27, 2025, Luo Hui, Director-General of the CAST Department of International Affairs, met in Beijing with László Bódis, Deputy State Secretary for Innovation at Hungary's Ministry of Culture and Innovation, and his delegation during their visit to China.

Both sides recognized that China and Hungary attach great importance to scientific and technological innovation and talent development, presenting significant opportunities for bilateral cooperation. Looking ahead, they expressed a shared intention to establish an academic exchange network focused on nurturing young scientific and technological talent and encouraging greater dialogue and collaboration among early-career scientists in both countries. They also pledged to jointly promote the mutual recognition of engineering qualifications and the development of capacity-building programs, with the goal of helping more young engineers and technical professionals from China and Hungary enter key industries such as new energy vehicles and biotechnology. In addition, the two sides agreed to deepen collaboration in science communication and scientific culture by organizing traveling science exhibitions and scientist-themed displays, aiming to spark greater interest in science among young people.

(Source: Official website of CAST)

China and Zimbabwe reach preliminary agreement on engineering cooperation and capacity building

Recently, Luo Hui, Director-General of the CAST Department of International Affairs and Vice President and Joint Secretary-General of the Chinese Society of Engineers (CSE), met in Beijing with Martin Manuwa, former Chair of the Engineering Council of Zimbabwe (ECZ) and Chair of the WFEO Committee on Engineering Capacity Building (CECB).

The two held in-depth discussions and reached a preliminary consensus on enhancing future cooperation between ECZ and the CSE Secretariat, advancing the African Engineering Capacity-Building Initiative, and supporting the establishment of the International Federation of Engineering Societies for the Belt and Road (IFES). Both parties expressed intent to strengthen collaboration by facilitating exchange and mutual learning between engineers from China, Zimbabwe, and the broader African region; promoting Continuing Professional Development (CPD) initiatives; and integrating training resources to support professional growth in the engineering sector.

(Source: Official website of CAST)

IHFCA and African Union Commission discuss green hydrogen development

IHFCA delegation at the AUC headquarters
Photo credit: Official website of IHFCA

On April 7, 2025, a delegation from the International Hydrogen Fuel Cell Association (IHFCA) met in Addis Ababa, Ethiopia, with Sara Elhagh, Head of the Energy Division of the African Union Commission (AUC), Haruna Kachalla Gujba, Senior Energy Advisor, and representatives from the Chinese Mission to the African Union.

IHFCA reaffirmed its commitment to deepening its strategic partnership with the AUC to accelerate the adoption of green hydrogen as a sustainable energy solution across Africa. During the meeting, the two sides held in-depth discussions on innovative strategies for scaling up green hydrogen technologies, highlighting the critical importance of financing mechanisms, technology transfer, and cross-sector collaboration in advancing Africa's energy transition. A global advocate for clean energy, IHFCA pledged to support Africa's green hydrogen ambitions through three key initiatives: sharing technical expertise, facilitating investment, and promoting scalable projects. Through closer cooperation with the AUC, IHFCA aims to help pave the way toward a cleaner, more resilient energy future for the continent.

(Source: Official website of IHFCA)

Academic Exchange

China Science and Technology Museum and South Africa's Sci-Bono Discovery Centre join hands to advance China-Africa scientific and cultural cooperation

On March 18, 2025, a CAST delegation visited the Sci-Bono Discovery Centre in South Africa. During the visit, the China Science and Technology Museum and the Sci-Bono Discovery Centre signed a Memorandum of Understanding.

Under the agreement, the two sides plan to establish a China-South Africa Science Space at the Sci-Bono Discovery Centre, aiming to provide the South African public with high-quality science education resources, strengthen exchange and cooperation between the two countries in science and culture, and contribute to building an all-weather China-Africa community with a shared future for the new era.

Located in Johannesburg, the Sci-Bono Discovery Centre is the largest science center in Africa.

(Source: Official website of CAST)

Center for Excellence in Engineering Capacity Building launched in South Africa

On March 19, 2025, the Center for Excellence in Engineering Capacity Building was officially launched in Johannesburg, South Africa.

The Center's establishment is a key initiative under the Memorandum of Understanding (MoU) signed between CAST and South Africa's Department of Science, Technology and Innovation, witnessed by the presidents of both countries. The project is jointly promoted by the Chinese Society of Engi-

neers (CSE) and SANY Group. It aims to support the continuous professional development of engineers by providing a platform for the Chinese and South African engineering communities to collaborate on developing engineering standards, addressing technical challenges, and enhancing engineering capabilities.

The MoU, signed on September 2, 2024, and witnessed by the two presidents, committed CAST and South Africa's Department of Science, Technology and Innovation to deepening bilateral cooperation in areas such as public engagement in science, scientific and people-to-people exchange, mutual recognition of engineering qualifications, engineering and mathematics education, and the promotion of women's participation in science and technology.

(Source: Official website of CSE)

TCAMS 2025 explores frontiers of materials science and strengthens international cooperation and innovation

Participants presenting research at TCAMS 2025
Photo credit: Official WeChat account of C-MRS

From March 24 to 26, 2025, the Trilateral Conference on Advances in Materials Science (TCAMS 2025), jointly organized by the Chinese Materials Research Society (C-MRS), the Materials Research Society of Singapore (MRS-S), and the Materials Research Society of India (MRSI), took place in Singapore. The conference focused on three major topics—computational materials, 2D & quantum materials, and energy materials—on which in-depth discussions were held that provided a valuable platform for advancing international collaboration in the field of materials science.

Professor Li Guangxian, General Supervisor of C-MRS, noted that the accelerating pace of global technological development has made the importance of international collaboration in materials science even more evident. He emphasized that China, Singapore, and India should work together to strengthen

resource sharing and enhance academic synergy to drive scientific innovation and industrial applications.

At the conference, distinguished experts and scholars from China, Singapore, and India delivered presentations highlighting the latest research developments and potential applications across the three thematic areas. Participants noted that the conference offered a valuable platform for academic exchange and expressed hope that it would foster closer collaboration and promote interdisciplinary advancement in materials science.

(Source: Official WeChat account of C-MRS)

New Chinese edition of Moomin Books released to celebrate 75 years of China-Finland diplomatic relations

On April 16, 2025, the Embassy of Finland in China and China Science and Technology Press (Popular Science Press) jointly hosted a launch event for a new Chinese edition of Moomin books. The event marked the celebration of the 75th anniversary of China-Finland diplomatic relations and the upcoming 80th anniversary of the creation of the beloved Moomin characters.

Launch event of a new Chinese edition of Moomin books
Photo credit: China Science and Technology Press

Created by renowned Finnish author Tove Jansson, Moomins are cherished cultural icons in Finland and have gained widespread international recognition. Since their debut in 1945, Moomin books have been translated into 55 languages worldwide. To commemorate the 80th anniversary of the Moomins in 2025, China Science and Technology Press released a brand-new Chinese edition featuring a high-quality translation and fresh design, offering Chinese readers a renewed reading experience.

New Chinese edition of the Moomin books
Photo credit: China Science and Technology Press

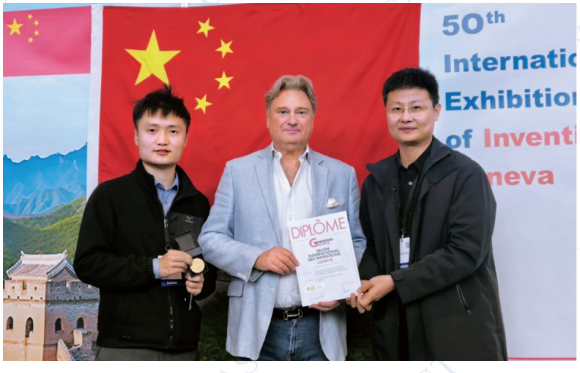
Finnish Ambassador to China Mikko Kinnunen offered congratulations

on the release. Ning Fanggang, General Manager of China Science and Technology Press, said that bringing the Moomins to Chinese readers represented a concrete step by the press to promote cultural exchange between China and Finland. He added that the press would continue to deepen its efforts to introduce and develop Moomin stories.

(Source: China Science and Technology Press)

International Awards

Chinese scientists achieve breakthroughs in heart health monitoring



David Taji (center), President of the Jury, presenting an award to Professor Chen Yan (right) and Associate Research Fellow Zhang Dongheng (left) from the School of Cyber Science and Technology of USTC
Photo credit: Official website of USTC

On April 13, 2025, at the 50th International Exhibition of Inventions Geneva, the University of Science and Technology of China (USTC) and its spinoff company, Zhongke Radio Sensing AI, won a gold medal for their jointly developed invention, Contactless Heart Health Monitoring Technology and Application. The project stood out for its innovation and practical value.

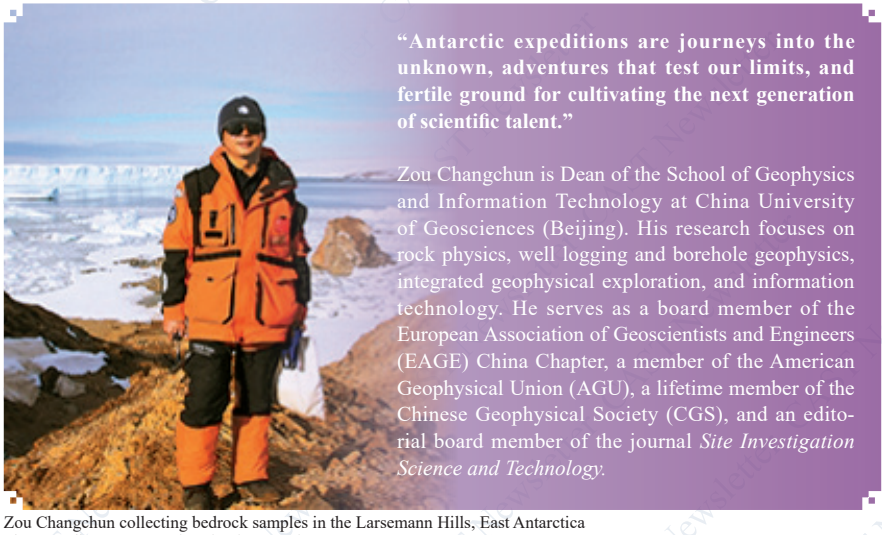
The research team spent several years developing this technology, overcoming major technical challenges such as weak signal extraction, environmental noise suppression, and multi-scenario adaptability. By combining medical-grade monitoring accuracy with a seamless, non-intrusive user experience, the technology offers a groundbreaking solution for the early detection of heart conditions.

Another invention by Professor Chen Yan's team, the Large-Scale Commercial WiFi Sensing-Communication Integrated System, co-developed with the Institute of Artificial Intelligence at the Hefei Comprehensive National Science Center (Anhui Provincial AI Laboratory), received a silver medal at the event.

(Source: Official website of USTC)

Scientist Profile

Chinese scientist Zou Changchun gives Antarctica's subglacial bedrock a "CT scan"



"Antarctic expeditions are journeys into the unknown, adventures that test our limits, and fertile ground for cultivating the next generation of scientific talent."

Zou Changchun is Dean of the School of Geophysics and Information Technology at China University of Geosciences (Beijing). His research focuses on rock physics, well logging and borehole geophysics, integrated geophysical exploration, and information technology. He serves as a board member of the European Association of Geoscientists and Engineers (EAGE) China Chapter, a member of the American Geophysical Union (AGU), a lifetime member of the Chinese Geophysical Society (CGS), and an editorial board member of the journal *Site Investigation Science and Technology.*

Zou Changchun collecting bedrock samples in the Larsemann Hills, East Antarctica
Photo credit: *Science and Technology Daily*

During China's 41st Antarctic expedition, researchers and students from China University of Geosciences (Beijing) joined the team aboard the Xuelong 2 icebreaker. At the departure ceremony, Zou, a veteran of the 40th Antarctic expedition and the first Chinese scientist to conduct drone-based electromagnetic surveys of Antarctica's subglacial bedrock, passed on the expedition flag to the new team.

"Veteran pioneer" exploring beneath the ice

Despite being one of the older members of the 40th Antarctic expedition, Zou Changchun showed more drive and energy than many of his younger colleagues. He understood the significance of their mission clearly: "Conducting geophysical surveys beneath Antarctica's ice sheet and mapping its subglacial geological structures and water systems are critically important. These data help scientists better understand the continent's geological evolution and provide vital insights for global

climate research."

Drone-based electromagnetic surveying is an emerging geophysical method already widely used in many parts of China, but it made its Antarctic debut during this expedition.

The trial was extremely challenging. Researchers needed to place signal transmitters on the ground, mount receivers on drones, and lay out a massive coil covering an area of roughly 250,000 square meters.

"The terrain under the ice sheet was incredibly complex," Zou recalled. "In some places, the elevation was so high that we had to find a detour. In others, the slopes were too steep, so we had to search for relatively flat ground to lay the coil."

Once the setup was complete, the drones took off to collect data. When the team successfully retrieved the measurement results, Zou could hardly contain his excitement: "This survey essentially gave Antarctica's subglacial bedrock a 'CT scan'. By combining the electromagnetic data with magnetic anomalies and other geophysical parameters, we gained a much more detailed understanding of the bedrock's physical properties and geological structures beneath the ice."

A song of ice and fire: A life-and-death battle in Antarctica

Antarctica, a mysterious, ice-shrouded continent, boasts breathtaking natural beauty, but beneath its stunning landscape lie hidden dangers and relentless challenges. During his expedition, Zou Changchun came to deeply appreciate the harsh realities of this frozen land.

The test site was located about 10 kilometers from China's Zhongshan Station, but the journey to reach it was fraught with peril. Crevasses and hidden ice holes lurked beneath the snow like invisible traps. Zou recalled one terrifying incident: While surveying the terrain, he accidentally stepped into an ice hole about 60 to 70 centimeters deep. Only with the help of his teammates did he manage to climb out. Even now, the memory still makes his heart race.

Antarctica's unpredictable weather posed another challenge. Clear skies could give way to blizzards in an instant, slashing visibility to less than five meters. When that happened, the team had to quickly take shelter behind rocks. On the most grueling day, Zou and his teammates worked for 13 straight hours under the dim glow of the polar day, completing surveys along 11 lines. "Geophysical exploration here means racing

against time," Zou said. "You have to seize every precious 'weather window' and work as efficiently as possible whenever conditions allow."

Even more worrying than the weather was the risk of equipment failure. Antarctica's unique magnetic environment could cause instruments to malfunction, unable to cope with the extreme conditions. If a device broke down and there was no backup, it was nearly impossible to replace it on-site.

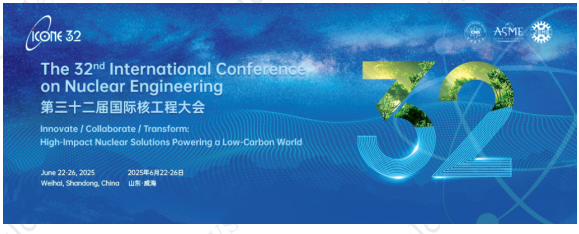
Leading his team with determination, Zou used a domestically developed drone-based detection system to achieve significant breakthroughs. But he remains clear-eyed: "Considerable room for improvement and upgrading still remains."

In this vast white desert, through resilience and ingenuity, Zou Changchun is helping write a new chapter of China's contributions to uncovering the secrets buried beneath Antarctica's ice.

(Source: *Science and Technology Daily*)

Upcoming Conferences

32nd International Conference on Nuclear Engineering to be held in Weihai, China, June 22-26



The 32nd International Conference on Nuclear Engineering (ICONE 32), jointly organized by the Chinese Nuclear Society (CNS), the American Society of Mechanical Engineers (ASME), and the Japan Society of Mechanical Engineers (JSME), will take place from June 22 to 26 in Weihai, Shandong Province, China.

This year's conference will focus on the theme "Innovate/Collaborate/Transform: High-Impact Nuclear Solutions Powering a Low-Carbon World." Key discussion topics include thermal-hydraulic methods, experiments, and safety analysis, computational fluid dynamics, nuclear codes and standards, probabilistic risk assessment and severe accidents, and emerging technologies such as artificial intelligence and high-performance computing in nuclear engineering.

(Source: Official website of CNS)

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