MANOHAR PARRIKAR INSTITUTE FOR DEFENCE STUDIES AND ANALYSES
मनोहर पर्रिकर रक्षा अध्ययन एवं विश्लेषण संस्थान

CHINA SCIENCE AND TECHNOLOGY REVIEW

May 2025

- **China-Latin America Science and Technology Cooperation**
- **China Launches its First Asteroid Sample Mission**
- **Scientific Collaboration Projects**
- **Scientific Research Breakthroughs and Discoveries**
- **China Science Diplomacy**

China-Latin America Science and Technology Cooperation

Strengthening China-Latin America bilateral relationship, especially in science and technology sector, the Fourth Ministerial Meeting of the China and CELAC (the Community of Latin American and Caribbean states) Forum, held on 13 May in Beijing, demonstrated a strong commitment to cooperation in science and technology. In his keynote address, Chinese President Xi Jinping underlined the expansion of cooperation in trade, investment, finance, science and technology, infrastructure, clean energy, artificial intelligence and building China's science and technology partnership with Latin American and Caribbean countries.

At the end of the meeting, all 33 participating countries, except Argentina, adopted two major documents – The Beijing Declaration and China-CELAC Joint Action Plan for Cooperation in Key areas (2025-2027). In the Beijing Declaration, the member states agreed to the consolidation the CELAC-China Forum as the platform for expanding bi-regional cooperation between Latin America and the Caribbean and the PRC; supporting the role of Global South countries and acting in accordance with the purpose and principles of the United Nations Charter. For cooperation in the area of science and technology, the China-CELAC Joint Action Plan underscored the promotion of joint research and development in agriculture technologies; establishment of joint laboratories in artificial intelligence applications, cloud computing and radio spectrum; deepening multi-dimensional cooperation in earth science research, geological disaster prevention and management and joint training of scientists working in the geosciences.

Parallel to the Fourth Ministerial Meeting of the China and CELAC Forum, on 13 May the Chinese Minister of Science and Technology Yin Hejun and Brazilian Minister of Science, Technology and Innovation Luciana Santos signed a Memorandum of Understanding on Joint Construction of Technology Transfer Centre to organize various forms of technology transfer based on the needs of both parties and also promote start-ups and technological innovation.

It is be noted that China-Latin America and Caribbean or China-LAC Technology Transfer Center, established in 2023 in Dongguan, Guangdong, is the only national-level institution, approved by the Ministry of Science and Technology, PRC, for cross-border technology transfer between China, Latin America and the Caribbean.

China Launches its First Asteroid Sample Mission

China successfully launched its first asteroid sample-return mission, *Tianwen-2,* on 29 May from the Xichang Satellite Launch Center in Sichuan Province, Southwest China. The head of the China National Space Administration (CNSA), Shan Zhongde, stated that the successful launching of *Tianwen-2* represents significant steps in China's journey to interplanetary exploration and he "expects groundbreaking discoveries and expanding humanity's knowledge of the cosmos."

Meanwhile, the endeavor of *Tianwen-2*, as stated by Deputy Director of CNSA Lunar

Exploration and Space Engineering Center, Han Siyuan, is to achieve multiple goals i.e. collecting samples from the near-earth asteroid 2016h03 and exploring the main-belt comet 311P, which is more distant than Mars. Once the samples are brought back to Earth, laboratory analysis will be carried out to determine the sample's physical properties, chemical and mineral compositions and structural characteristics.

Scientific Collaboration Projects

Subsequent to the renewal of the agreement between the International Centre on Space Technologies for Natural and Cultural Heritage (HIST) of Chinese Academy of Sciences and the UNESCO, the HIST is set to embark the third phase operation (2025-2033). In the third phase, the HIST will build space archaeology into an internationally recognized discipline and expand a global governance framework for heritage protection based on space technologies. It will establish a global database for the conservation of UNESCO-designated sites, develop methodologies for collection and dissemination of Earth observation and expand an international network of space technologies for heritage conservation.

HIST successfully completed its first and second phase, where more than 20 research projects were carried out and published in high-quality peer-review journals. The HIST is an international organization established in 2011 by UNESCO as a Category 2 Centre in Beijing and hosted by Aerospace Information Research Institute of Chinese Academy of Sciences. The objective of the organization is to develop and utilize space designated sites to support UNESCO and its member states in the implementation of the World Heritage Convention and the UN 2030 Agenda for Sustainable Development.

Scientific Research Breakthroughs and Discoveries

The Institute of Automation of the Chinese Academy of Sciences, in collaboration with National Astronomical Observatories of Chinese Academy of Sciences developed a cutting-edge artificial intelligence model, FLARE, offering a transformative tool for astronomical research. According to Chen Yingying, a researcher from the Institute of Automation, due to limited observational data a comprehensive studies on the sudden burst of energy caused by the release of magnetic fields in the star atmosphere were unable to carry out. But with the latest cutting edge tool, it will be able to address those existing gaps.

Biologists from the Shenzhen Institutes of Advanced Technology and Shanghai Jiao Tong University successfully engineered a novel bacteria strain capable of degrading organic pollutants in high-salinity industrial wastewater. Prof. Dai Junbiao, a corresponding author of the study, explained that the research team employed synthetic biology techniques to engineer a bacteria strain with modular metabolic pathways. Subsequently, by integrating five artificial degradation pathways into a single bacterium, they enabled the simultaneous breakdown of biphenyl, phenol, naphthalene, dibenzofuran and toluene, which are all representative of aromatic pollutants. Within 48 hours, it achieved over 60 percent removal of all five target

pollutants, with the complete degradation of biphenyl and near 90 percent degradation rates for complex compounds like toluene and dibenzofuran.

China Science Diplomacy

To commemorate the 75th anniversary of Sino-Danish diplomatic relations, the scientific communities from China and Denmark, led by Chinese Minister of Science and Technology Yin Hejun and Minister of Higher Education and Science of Denmark, Christina Egelund, held the "China-Denmark Green Innovation Day" on 19 May in Copenhagen. In the meeting attended by experts from scientific research institutions, universities and enterprises, exchanges on science and technology innovations policies, areas of common concern, including data sharing and intellectual property rights, and future cooperation were conducted.

Meanwhile, parallel to the event, Clean, a Danish national cluster for water and environment technology and the University of Chinese Academy of Sciences signed a Memorandum of Understanding (MoU) to build a platform for cleantech innovation and green industry that connects Danish startups and SMEs with Chinese industrial parks, research institutions and government initiatives. In the backdrop of the MoU, CEO of Clean Kim Fredenslund stated that "Creating those clusters together is a major step for Clean" as both sides have shown willingness to collaborate.

On 30 May Dou Xiankang, President of the National Natural Science Foundation of China held a bilateral meeting with a visiting delegation from Australian Academy of Science (AAS) head by Prof. Chennupati Jagadish, President of AAS and Ms. Anna-Maria Arabia, CEO, AAS. The agenda of the meeting was to advance reforms in the policy relating to joint funding for research projects, refining peer-review procedures and facilitating academic exchange between scientists from both sides.