China's Sci-tech Rise Chance for Deeper Collaboration

Dialogue

By LONG Yun & FANG Linlin

According to the American Chemical Society (ACS), more than 40 percent of the papers its journals publish now come from institutions in China, while the number of publications authored by researchers in China has quadrupled over the past decade. ACS has also expanded its presence in China. It opened a Beijing office and hired its first employee there in 2013. The team now numbers about 50, and its partner publishing program in China has grown from one journal to nine.

Founded in New York in 1876 by 35 chemists, ACS is one of the world's largest scientific societies and publishes more than 90 peer-reviewed journals. Albert Horvath, its chief executive officer, and Sarah Tegen, its chief publishing officer, spoke to Science and Technology Daily about China's growing weight in ACS publishing and what it means for future cooperation.

A global sci-tech leader

In 2024, Horvath visited China to attend the Chinese Chemical Society congress in southern Guangdong province. Before the meeting, he visited the Shenzhen Institutes of Advanced Technology in the same province. "China's ability to take a concept, a vision, an idea, and then turn that into something tangible in a very, very short period of time was impressive," he said.

China's investment in scientific infrastructure and its support for researchers have contributed to the progress across Chinese institutions, he said. What struck him was how quickly research turns into practical applications, new industries, new opportunities and solutions to real problems. Over the years, he has watched China's scientific progress "with amazement."



▲ Albert Horvath, CEO of ACS



▲ Sarah Tegen, chief publishing officer of ACS (COURTESY PHOTO)

In October, Horvath and his team visited the National Natural Science Foundation of China in Beijing, which supports basic research. According to him, applied strength matters but basic research cannot be neglected. "Really interesting new ideas" emerge from curiosity-driven research, and great discoveries often come from "an individual scientist just following their intuition and their passion."

Tegen first came to China in 2008 and has watched the shift from within the publishing industry. "Energy, catalysis, materials science and AI-enabled discovery are among the many fields where China is particularly strong," she said, noting the Chinese government's ability to set a research direction and mobilize scientists quickly. "China has evolved from an important contributor to science into a real global leader. The kinds of scientific innovations coming out of China are well poised to help all of humanity solve difficult problems."

Quality at the core in the AI era

Today AI is reshaping how research is produced and published, putting research integrity under new pressure. For a major international society like ACS, the impact of AI on research and publishing cannot be ignored.

ACS makes research integrity a daily operational priority. Threats to research integrity existed before AI exploded onto the scene, Horvath said, but AI "changes the dynamic and accelerates the concern." The main change is volume. "You're getting volumes of information that are just incomprehensible to a human reader." As a scientific society, ACS has a role "in promulgating principles of responsible use."

AI can help authors work more efficiently, Tegen said, but it can also be misused to fabricate data and produce unreliable scientific content. ACS spends "significant time and resources" screening for such work. It was one of the first publishers to require authors to disclose their use of AI in creating research or research outputs, and its policy goes beyond disclosure.

Cooperation is essential

China has become one of the most important sources of content for ACS journals. Tegen called the rise of the Chinese journal ecosystem "really positive for global research," because researchers have more choices than ever. ACS has to "continue to earn their trust" through rigorous peer review, research integrity and international visibility, she said.

That trust is built through cooperation. "We look for areas of overlap, where our missions align," Horvath said. In its 150-year history, ACS has endured many changes in its environment while staying focused on supporting scientists and the scientific enterprise.

Over the next five years, he wants to "extend, expand and deepen" the work already underway, and to be measured by outcomes rather than conferences and reports: a stronger talent pipeline, sufficient resources and greater trust between partners.

ACS states its commitment as "to improve all lives through the transforming power of chemistry."

"Individual researchers working alone in single labs really don't drive progress these days. It's really the ability to network people across disciplines and across geographies that really leads to the big breakthroughs," Horvath said. International cooperation is "a critical ingredient in our success as human beings in the future."

Tegen, who has spent her whole career in publishing, defines a journal's objective as existing to help shape a community of scientists and set norms and standards, and that community "can't exist in one geography." "Science anywhere is good for science everywhere," she said, quoting a line she had heard recently.

Deqing Kiln: Precursor of Black-glazed Ceramics

Traditional Eastern Wisdom

By BI Weizi

The Deqing Kiln is a renowned name in the ceramic tradition of the Jiangnan region in east China. The kiln complex, located in Deqing, a county in Huzhou city, Zhejiang province, flourished from the Shang Dynasty (c. 1600-1046 BCE) through to the 13th century. A highly representative folk kiln site, it is primarily known for its celadon (green-glazed) ware. However, its black-glazed ceramics ware is also renowned, occupying a unique and irreplaceable position in the history of Chinese ceramics.

The Eastern Jin Dynasty (317-420) was the Deqing Kiln's golden age. The number of kiln sites increased, and individual kilns became larger. The range of articles was extensive, encompassing bowls, jars with dish-shaped mouths, ewers with chicken-head spouts, storage jars, lamps, incense burners, zuns (ceremonial vessels) and inkstones. These represent the pinnacle of variety and craftsmanship throughout the kiln's history.

Deqing Kiln ceramics typically have thick walls and clay bodies that range in color from pale yellow and light brown to reddish-brown, grey, and purple. From the Eastern Jin Dynasty onwards, the kiln began widely applying a milky-white slip (an underlayer of liquid clay) to the vessel bodies. This sophisticated technique significantly enhanced the texture of the glaze, making the celadon glaze uniform, smooth, lustrous and rich, often covering the entire surface, while the black glaze became thick and glossy.

In academic circles, it is widely accepted that the production of early black-glazed porcelain was inspired by the aesthetic of black lacquered wares from the Han Dynasty (202 BCE – 220 CE). Black glazes were more stable during the firing process, making them better suited to mass production.

The emergence of black-glazed porcelain from the Deqing Kiln ended the long-standing dominance of celadon and opened up new possibilities for the development of monochrome glazed ceramics. One notable surviving example is a black-glazed, four-lugged jar with a flanged mouth. The jar's symmetrical, bridge-shaped lugs were designed to accommodate cords for easier handling and carrying.

Archaeological evidence from the Deqing Kiln has filled a significant gap in our understanding of the development of early Chinese black-glazed porcelain. The firing techniques, refined and passed down over millennia, have formed a vital technical basis for subsequent kiln traditions in the Jiangnan region.

Moreover, the large-scale production of black-glazed porcelain pioneered a new approach to ceramic glaze decoration. It exerted a profound influence on the technical evolution and stylistic development of later classic black-glazed wares, including the renowned Jianzhan or Jian tea bowls made in Jianyang, Fujian province.

Sci-tech Tourism Gains Popularity

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Huangfu Xiaotao, director of the Brand Research Center at the School of Media and Communication at Shanghai Jiao Tong University, says "sci-tech tours" transform unapproachable and professional sci-tech research into tangible, experiential, and shareable projects, meeting the tourists' shift from "viewing scenery" to "seeking knowledge."

Lou Jiajun, a professor at the Department of Culture and Tourism at the School of Economics and Management of East China Normal University, says "sci-tech tours" have the characteristic of being "new, distinctive and unique," enabling tourists to shift from passively receiving information to actively participating in interactions.

Besides changes in the industrial foundation and consumer demand, policy support has also contributed to the growth of "sci-tech tours."

Policy support boosts 'sci-tech tours'

After China relaxed its visa policy, many tourists who took opportunity of that shared their firsthand experiences in China on social media platforms. Among their highlights were the novel and practical "sci-tech tours" and "sci-tech shopping," which in turn attracted more overseas tourists to choose China as a travel destination.

A French tourist who only gave her first name, Amy, spoke about the convenience the policy has brought to "sci-tech tours" in China. She said after a visa-free policy for certain countries was implemented, she could simply buy a plane ticket, pack lightly, and set off for China, making a spontaneous trip possible without spending months on visa procedures.

In the Shenzhen Huaqiangbei Science and Technology Fashion Cultural Characteristic Block, as Thai tourist Hatin put on AI translation glasses, instant subtitles and simultaneous translation started, to his immense excitement. He experienced and shopped along the way, filling his suitcase to the brim, and praised the sci-tech products available in Shenzhen as overwhelming.

Data from the National Immigration Administration show that 682,000 foreign nationals entered China during this year's National Day holiday, of whom 505,000 entered under visa-free policies, up 5.4 percent and 9.2 percent year on year, respectively.

In megacities such as Beijing, Shanghai, Guangzhou and Shenzhen, which are known as innovative sci-tech hubs, more and more sci-tech enterprises are exploring industrial tourism. Various tourism platforms are also collecting proposals from the public for innovative experiences related to science and technology.

The "sci-tech tours" trend has opened up another window through which China's cutting-edge sci-tech achievements can reach the world. This showcases China's more open and cooperative image, and expands the "Chinese bridge" for sharing the benefits of science and technology globally. It expands China's circle of friends on sci-tech innovation, and integrates science and technology with culture to explore a new path and yield more results.

My China Story

Ghanaian Researcher Nurtures China-Africa Agriculture Ties

By WANG Zhuhua, LIANG Lu & XIE Shuyi

Under the bright autumn sun, at the experimental field of Hainan University's Danzhou campus in south China, shea seedlings from Ghana stretch their broad leaves, growing steadily.

Norvienyeku Justice, a Ghanaian researcher at the School of Tropical Agriculture and Forestry of Hainan University, is preparing for a second round of trials for these tropical plants that have traveled such a vast distance. He will see how well the shea trees adapt to Hainan, which too has a tropical climate, and explore a new path of cooperation between African agricultural resources and China's tropical agricultural science and technology platforms.

From Ghana to Fujian in east China and then to Hainan, from learning agricultural technology to researching plant protection, Justice has spent more than 20 years linking his personal research interests with China-Africa agricultural cooperation. "Many agricultural problems are common problems. Experience gained in one region can also help other tropical regions," he said.

A turn toward plant diseases

Justice's connection with China began with higher studies.

In 2003, he entered the University for Development Studies in Ghana to study agricultural technology. Field practice gradually made him realize that even with good water, fertilizer and soil conditions, crops could still suffer yield losses and quality decline due to pests and diseases. This prompted him to shift his research focus to plant diseases.

Justice enrolled at Fujian Agriculture and Forestry University to find more systematic research methods and acquire a doctorate degree with distinction in molecular plant pathology. The change of specialty also meant a cross-cultural experience: Language, teaching methods and the research environment all required readjustment. But the openness and inclusiveness of China's research environment helped him build a deep friendship with Chinese agricultural researchers.

"Different countries face different problems, but the logic of solving them is interconnected." This made him pay more attention to issues of universal significance and become more willing to promote sharing experience.

In 2021, Justice joined Hainan University and began research on green prevention and control of plant diseases. Hainan's unique tropical agricultural resources, rich crop types, open international exchange environment, and talent-friendly free-trade port policies have given him a broad stage.

Research that reaches farmers

"Research cannot remain only on paper and in laboratories; it must also respond to real production needs." This is what Justice often tells his students.

In Hainan, he frequently takes his students to rural areas. Farmers in Baoxi village, Dongfang city, still remember him. They call him Justice and behind the name is the trust built through repeated technical training, field visits and long-term exchanges. Later, local farmers invited him to guide them in agriculture, a sign that they felt what he taught could truly solve problems.

Repeated surveys have made Justice increasingly feel that agricultural research requires not only advanced technology but also an understanding of the production environments of different regions. He encourages students to step out of the laboratory and discover problems on the front lines of agricultural production. "Only by truly seeing what farmers face can we know what research should solve," he said.

From disease identification to green prevention and control, from laboratory testing to field verification, he strives to bring research results close to the needs of industry and help agricultural production reduce its dependence on chemical pesticides and improve quality and efficiency.

A bridge of cooperation

As a Ghanaian researcher, Justice has always paid attention to how African agricultural resources and Chinese research platforms can complement each other. The shea tree trial is one such exploration.

Shea is an important cash crop in West Africa. The oil from its kernels is used in food, cosmetics and other fields. Under natural conditions, shea usually takes 10 to 15 years to begin bearing fruit; but through grafting and other technical means, the fruiting period can be shortened to about five years. If stable shea planting and industrial development can be achieved in Hainan, it will not only enrich local tropical specialty crop resources but also provide a new sample for China-Africa cooperation in agricultural resources.

With the first batch of shea seedlings taking root in Hainan's experimental area, Justice leads the team to keenly monitor their growth, environmental adaptability and key cultivation management points.

Agricultural science and technology exchange is not one-way technology transfer but a two-way interaction among researchers, resources, practical experience and developmental needs, Justice said. In recent years, he has visited Ghana and Zambia with delegations from Hainan University, promoting the construction of overseas science and technology backyard gardens and cooperation among universities in tropical regions, enabling more tropical agricultural technologies, talent and achievements to flow.

One seed connects two countries; one research project means shared wisdom. "I will continue to use research as a bond to promote technological exchange, talent training and international cooperation, so that scientific and technological innovation achievements can take root downward and grow upward," Justice said.

This article was edited and translated by LONG Yun based on the Chinese version.



Norvienyeku Justice. (COURTESY PHOTO)