TSINGHUA NEWSLETTER

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清華大學
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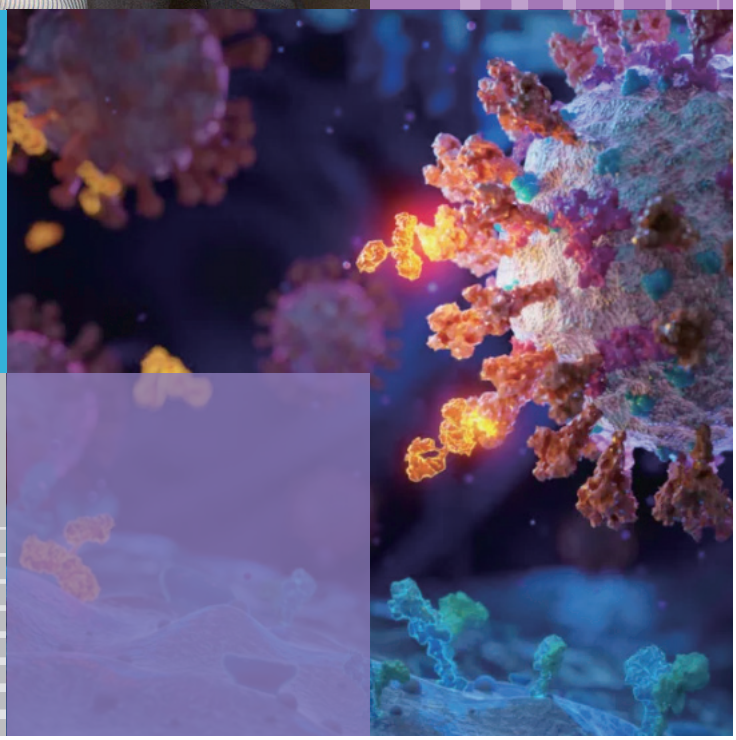

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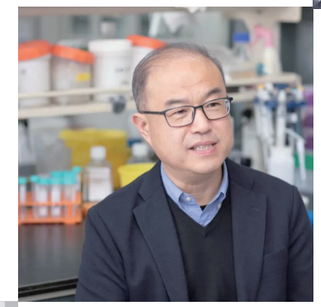

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Tsinghua scientist Wang Dazhong receives China's most prestigious national award

The 2020 National Science and Technology Award Conference was held at the Great Hall of the People in Beijing on November 3.

Academician Wang Dazhong of Tsinghua University received the 2020 State Preeminent Science and Technology Award, China's most prestigious science and technology award, for his outstanding contribution to scientific and technological innovation.

Former President of Tsinghua University, Wang Dazhong is one of the distinguished nuclear scientists in the world who has played a key role in China's nuclear energy development.

Wang, 86, an academician of the Chinese Academy of Sciences, has devoted decades of efforts to advancing innovation in advanced nuclear energy system featured with inherent safety.

Among his many outstanding accomplishments were the research, design, construction, and operation of the world's first Low Temperature Nuclear Heating Reactor (NHR-5) and the first modular High Temperature Gas-cooled Reactor (HTR-10). High temperature gas cooled reactor (HTGR) together with its successor, the very high temperature reactor, is one of the six nuclear energy systems identified and selected by the Generation IV International Forum for further development.

As President of Tsinghua University from 1994 to 2003, he led the top-level design of reform and development strategies at Tsinghua and implemented them, strengthening Tsinghua's position as one of the best universities in the world.

At the award ceremony, fifteen research achievements of Tsinghua University also won other prestigious national awards.

Of all the awards Tsinghua received, three were the State Natural Science Award, two were the State Technological Invention Award, and ten were the State Scientific and Technological Progress Award. Likewise, Tsinghua obtained six awards as the lead institution in research collaboration with other institutions.

The research "Industrial Flue Gas Multi-Pollutants Synergia Control Technologies" led by Li Junhua, professor at the School of Environment, obtained the first prize of the State Scientific and Technological Progress Award. The research project had achieved a great reduction in industrial emission of flue gas, and its findings were subsequently widely applied across the world to make advancements in technology and industry.

Similarly, Prof. Fang Hongwei from the Department of Hydraulic Engineering and Prof. Jiang Peixue from the Department of Energy and Power Engineering won the second prize of the State Natural Science Award and the State Technological Invention Award, respectively, for their great contributions to sediment regulation and thermal protection on aircraft. In addition, both Prof. Fan Jiansheng from the Department of Civil Engineering and Prof. Tang Jie from the Department of Computer Science and Technology won the State Scientific and Technological Progress Awards for their great contributions to high performance structure and smart knowledge service.

By the end of 2020, Tsinghua had won a total of 607 State Science and Technology Awards, including two State Preeminent Science and Technology Awards, 84 State Natural Science Awards, 159 State Technological Invention Awards, and 362 State Scientific and Technological Progress Awards.

Tsinghua professors, alumni elected CAS and CAE members

On November 18, the Chinese Academy of Sciences (CAS) and the Chinese Academy of Engineering (CAE) announced their list of newly elected members. Tsinghua professors Wang Meixiang, Jiang Peixue, Li Keqiang, Luo Yi, and Zhang Ya-Qin, as well as alumni Wang Guoqing and Zhang Zongliang, have been honored as this year's newest members.

New members of the Chinese Academy of Sciences:

Wang Meixiang

Wang Meixiang, a professor at Tsinghua University's Department of Chemistry, earned his master's degree and doctorate in Organic Chemistry from the Institute of Chemistry, Chinese Academy of Sciences.

From 1997 to 2007, he was engaged in the study of biocatalysis, developing the method of enantioselective biotransformation of nitriles to synthesize chiral carboxylic acids and their derivatives. Starting from 2004, he has focused on the macrocyclic and supramolecular chemistry. He has established the chemistry of iconic heteracalixaromatics and coronarenes, advanced the understanding of noncovalent anion-pi interactions, high valent organocopper chemistry and copper catalysis. His most recent ten years' work on zigzag hydrocarbon nanobelts represents a breakthrough in the bottom-up synthesis and has allowed access to atomically precise nanostructures.

Professor Wang has won successively the Qiushi Outstanding Young Scholar Award, the Mao Yi-Sheng Science and Technology Award for Young Scientists, the Chinese Chemical Society Award for Creativity in Organic Synthesis, and the Physical Organic Chemistry Award of Chinese Chemical Society. He was once elected as a member of the Standing Committee of the 10th National People's Congress, and now he serves as a member of the Standing Committee of Chinese People's Political Consultative Conference.

Jiang Peixue

Jiang Peixue is dean of Tsinghua University's School of Mechanical Engineering, director of the Department of Energy and Power Engineering, and dean of the Shanxi Research Institute for Clean Energy, Tsinghua University. He earned his bachelor's degree from Tsinghua University's Department of Energy and Power Engineering and Ph.D. from Moscow Power Engineering Institute, Russia.

His research on fundamental theory and key technologies of heat transfer at micro/nano scale, supercritical pressures and/or extremely high heat flux conditions have been applied to thermal protection on aerospace, CO2 utilization and storage and other fields.

New members of the Chinese Academy of Engineering:

Li Keqiang

Li Keqiang, a professor at Tsinghua University's School of Vehicle and Mobility, earned his bachelor's degree from the Department of Automotive Engineering of Tsinghua University in 1985 and Ph.D. in mechanical engineering from Chongqing University in 1995.

Professor Li has long devoted himself to the research and development of automotive intelligent driving systems regarding dynamic design and control. He has participated in research for the development of three generations of system devices for "Intelligent Safe Driving", "Intelligent Integrated Driving" and "Intelligent & Connected Driving", and realized their application, making important contributions to the breakthrough and industrialization of core intelligent vehicle technologies in China.

He has published over 200 papers and three academic monographs, and has received four science and technology awards, as well as 60 patents, both at home and abroad.

Luo Yi

Luo Yi, a professor at the Department of Electronic Engineering, Tsinghua University, received the B.S. degree from Tsinghua University in 1983, and the M.S. and Ph.D. degrees from the University of Tokyo in 1987 and 1990, respectively.

His research interests focus on compound semiconductor optoelectronic devices and their applications, including semiconductor lasers, LEDs, optical modulators, photodetectors, photonic integrated circuits, and their applications in optical fiber communications, broadband high-speed information sensing, semiconductor lighting and other fields. He has authored over 360 journal and conference papers and received four national awards. He is also the holder of more than 40 patents.

New foreign member of the Chinese Academy of Engineering:

Zhang Ya-Qin

Zhang Ya-Qin, Chair Professor of AI Science and Dean of the Institute for AI Industry Research of Tsinghua University(AIR), earned his Ph.D. from George Washington University in 1989.

Professor Zhang is a world-class scientist and entrepreneur in the field of digital video and artificial intelligence. Many of his image and video compression and transmission technologies have been included in international standards and widely used in the fields of high-definition TV, internet video, multimedia retrieval, mobile video and image databases. He has published over 500 papers and 11 monographs, and has more than 60 international patents.

Two Tsinghua alumni elected as members of the Chinese Academy of Engineering:

Wang Guoqing

Wang Guoqing is currently a researcher and chief information officer of China Aerospace Science and Technology Corporation. He obtained his bachelor's degree and doctorate from the Department of Mechanical Engineering of Tsinghua University.

He has participated in the development of several aerospace models, developed a number of key manufacturing technologies, and solved the bottleneck of model development. He has received three national scientific and technological progress awards, the Ho Leung Ho Lee Foundation Science and Technology Progress Award, the British TWI Brooker Award and many other awards.

Zhang Zongliang

Zhang Zongliang, chief engineer of China Power Construction Group Kunming Survey, Design and Research Institute Co., Ltd. and chief technical expert of China Power Construction Group, earned his bachelor's degree from Tsinghua University's Department of Hydraulic Engineering.

He has organized and participated in the design and completion of 24 large-scale water conservancy and hydropower projects.

Relying on the research and practice of 17 key scientific and technological projects and 30 high dam projects, he has made a series of innovative achievements in dam technology. He is one of the leading figures in the survey and design of water conservancy and hydropower projects in China.

Tsinghua University holds first World Health Forum

The first World Health Forum held by Tsinghua University kicked off on November 20th with senior Chinese officials, foreign diplomats and global health experts attending to discuss how to build a resilient public health system.

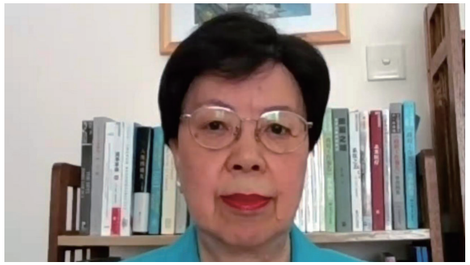
Qiu Yong, President of Tsinghua University, Li Bin, Vice Minister of the National Health Commission, Yang Bin, Vice President and Provost of Tsinghua University, and Liang Wannian, Vice Dean of the Vanke School of Public Health of Tsinghua University jointly launched the first World Health Forum. The opening ceremony of the forum was moderated by Yang Bin.

Qiu Yong delivered a speech at the opening ceremony. On behalf of Tsinghua University, he welcomed the Chinese and foreign guests who participated in the online forum. Qiu said in the face of great challenges related to human destiny, universities should shoulder their due responsibilities with the scientific spirit. On the road to promoting the progress of human civilization, universities should hold up a blue sky for the future of mankind with an open mind.

He mentioned that on March 2 last year, when President Xi Jinping visited the School of Medicine, Tsinghua University, he pointed out that public health security is a common challenge facing mankind that requires joint efforts of all countries. On April 2 last year, the Vanke School of Public Health was officially established. Under the leadership of Dr. Margaret Chan, the school has actively expanded global cooperation and achieved important results. It has had a wide and positive impact at home and abroad, contributing to the protection of human life and health.

Qiu said during the 110th anniversary of Tsinghua University, the university held the Global Forum for University Presidents 2021 and released the "Tsinghua Consensus," which advocates that universities should be more open, more integrative, more resilient and shoulder greater social responsibilities. Looking ahead, Tsinghua University will deepen cooperation with partners around the world with a more open attitude and make important contributions to promoting sustainable development and safeguarding the bright future of mankind.

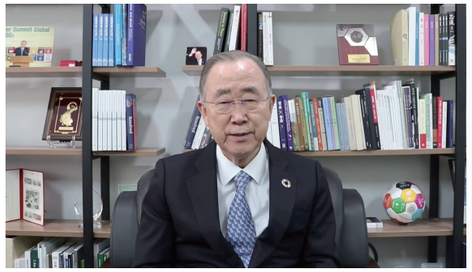
Qiu noted that it is an urgent and fundamental measure to prevent and respond to the global pandemic and strengthen the public health system. The opening of the first World Health Forum is an important step for us to jointly promote the building of a community of health for mankind. He hoped that everyone could work together to build a resilient public health system and promote the construction of a human health community.



In welcome remarks at the opening ceremony, Margaret Chan, Chair of the World Health Forum, said that the ongoing COVID-19 pandemic was causing havoc in many dimensions around the world and its consequences were far-reaching, and that the first forum was being held to respond to the massive unmet need for a resilient public health system around the world.

"The Tsinghua University Vanke School of Public Health, born during this global crisis, has a keen sense of urgency and responsibility to further coalesce global wisdom in health. I thank the University leadership and others for their strong support, the World Health Forum welcomes policy-makers, academia, the private sectors in all countries to join our inclusive dialogue and to take action towards building a global community of health for all," said Chan, who is also the founding dean of the Vanke School of Public Health, which was established in April last year.

Ban Ki-moon, former Secretary-General of the United Nations, spoke highly of the forum, saying that "it is a timely annual tradition for broadening and deepening



future public health dialogue." He said there has never been a timely junction for the public health community to elevate its actions to help achieve the UN's vision of peace, security, good health, and sustainable development health and healthcare all around the world. "Fortify pandemic preparedness and response efforts. Innovatively harness big data. Go farther in protecting human health. Through your vision, I'm confident that we can elevate global health, boost cooperation and leave no one behind," he said.

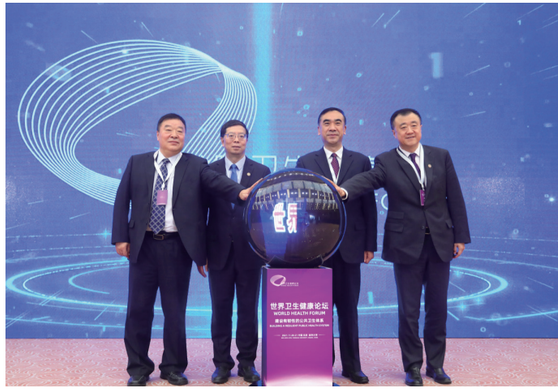
Danilo Türk, former President of Slovenia and current President of the World Leadership Alliance – Club De Madrid, said that in the time of global emergency the world needs emergency cooperation of global proportions. "All governments and all international organizations have to take part in it. No future disease outbreak should be allowed to become a devastating pandemic. Global public health is a global public good and must be protected as such," he added.

relationship between the health, economic, and social well-being", "building a strong and resilient health system", "protecting vulnerable groups to promote social fairness" and " partnerships within and beyond the health sector" as well as "international exchanges and cooperation". He said that the Healthy China 2030 vision was very much in line with this thinking – and WHO very much looked forward to continuing to work closely with China to support progress towards making this inspiring vision a reality.

Mark Suzman, CEO of the Bill & Melinda Gates Foundation, made a detailed illustration on "we are reminded how critical it is to be proactive rather than reactive in our approach to global health." Referring to the cooperation between Bill & Melinda Gates Foundation and China, Mark Suzman said, "China's commitment to address health and development challenges is inspiring and we are impressed by the resilient public health system China has built. We must strengthen collaboration across countries and sectors to work together toward common goals."

Richard Horton, Editor-in-Chief of The Lancet, shared and summarized the implications of the COVID-19 pandemic, climate change and other challenges facing humanity. Horton believed the forum provided an opportunity to "renew our thinking, renew our commitments and renew our action so that we can repair these broken global health systems."

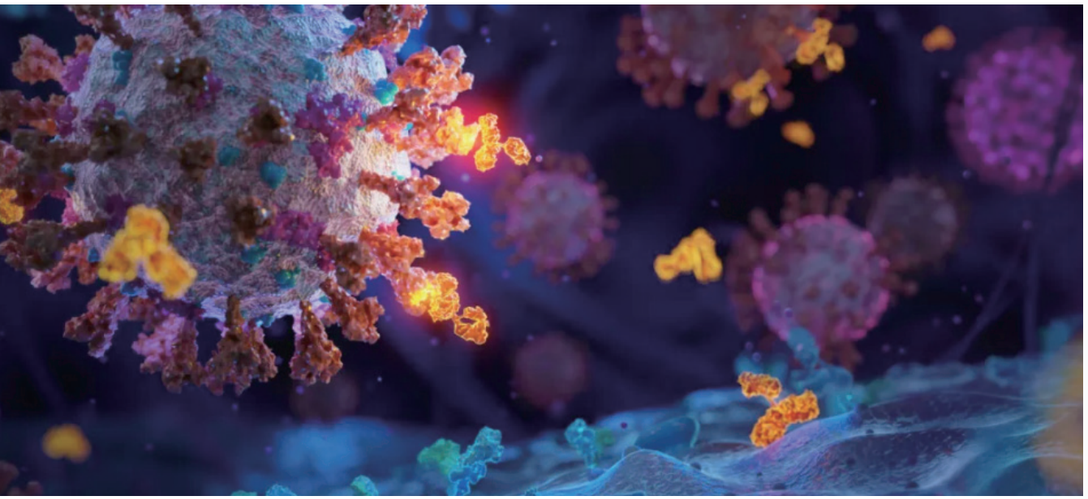
The online forum, with the theme of "Building a resilient Public health System", will hold four plenary sessions



and a special session – the "Youth Power" forum. More than 50 world-renowned scholars, heads of international organizations, experts from international think tanks, health authorities and outstanding entrepreneurs from more than 20 countries and regions will deliver 32 online keynote presentations during the two-day forum. They will discuss about major topics covering the 2030 United Nations Sustainable Development Goals, universal health coverage, pandemic response preparations, ensure human health in a rapidly changing environment, healthcare in the big data era – new technologies, new methods and new trends, exchanging on the present and future of public health under the impact of pandemic. The forum aims to enhance international exchanges and cooperation, promote governance of global public health, and promote the realization of the sustainable development goals and universal health coverage.

The World Health Forum, initiated in 2021, is sponsored by Tsinghua University and undertaken by its Vanke School of Public Health. The forum aims to build an important platform for academic exchange, information exchange and experience sharing for all sectors of the world, build consensus, strengthen international exchanges in the field of public health, and make suggestions for global public health governance and global health development. It hopes to contribute wisdom to the implementation of the UN 2030 Agenda for Sustainable Development and the building of a community of health for mankind.

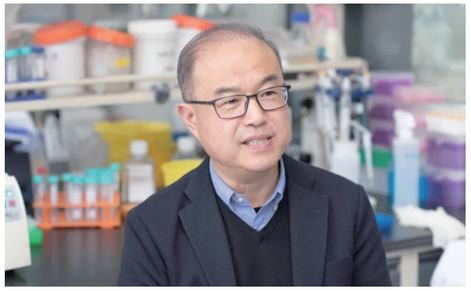
China approves country's first COVID-19 antibody drug, developed by Tsinghua professor and team



A Chinese research team has developed an "antibody cocktail therapy" that can fight against SARS-CoV-2.

The antibody cocktail made of two monoclonal antibodies Brii-196 and Brii-198 has shown an efficacy of 80 percent in cutting hospitalizations and deaths among high-risk groups in multicenter randomized clinical trials.

The treatment has been jointly developed by a research team led by Prof. Zhang Linqi, a professor at School of Medicine of Tsinghua University, the Third People's Hospital of Shenzhen, Guangdong province, and Brii Biosciences.

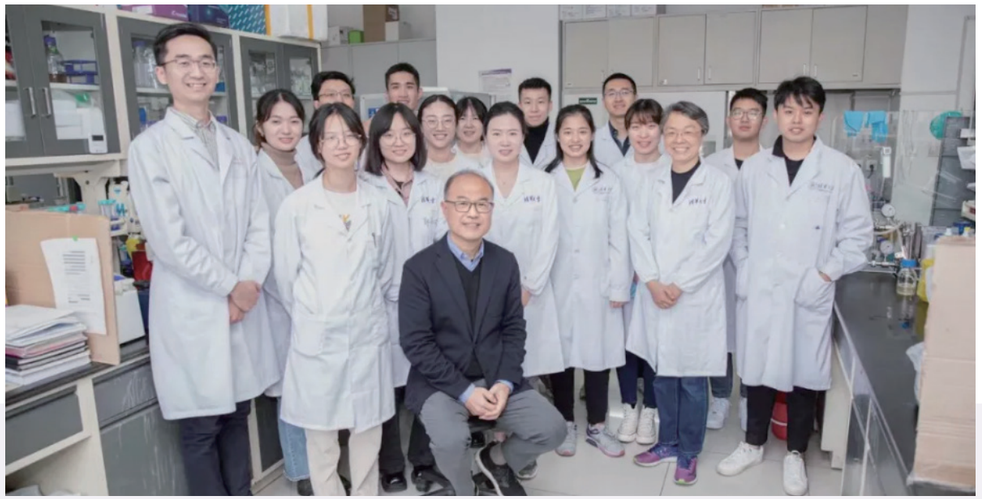


Prof. Zhang has devoted 30 years to studying HIV-1 pathogenesis and vaccine development, and also emerging and re-emerging human viral pathogens such as Middle East respiratory syndrome coronavirus (MERS-CoV), SARS-CoV-1, and SARS-CoV-2.

Prof. Zhang said "at the beginning of the outbreak, we isolated hundreds of antibodies from patients who had recovered from COVID-19. In a joint-effort with Shenzhen No.3 People hospital and Brii Biosciences, we have obtained 206 monoclonal antibodies and selected the best two (Brii-196 and Brii-198) as the cocktail therapy against SARS-CoV-2. They have shown a strong antiviral activity and work well together. Multicenter randomized clinical trials have also suggested that this cocktail therapy could reduce hospitalizations and mortality by 80 percent".

In October, the research team has submitted formal application for conditional approval to China's National Medical Products Administration (NMPA) and for emergency use approval to the US Food and Drug Administration.

During the pandemic, NMPA's Center for Drug Evaluation has initiated a special rolling submission channel, which expedites the review and approval process of the latest and most promising medical breakthroughs such as the antibody cocktail therapy Prof. Zhang's team developed.



The clinical team has conducted very effective clinical trials at home and abroad in strict accordance with international standards. And the data for the reduction of hospitalizations and deaths was generated from a randomized, double-blind, placebo-controlled clinical trial.

"In fact, while being reviewed by Chinese regulators, our antibody drugs have already played a huge role in treatment for those suffering from the sporadic outbreaks of COVID-19. They were used in emergency and compassionate situations in a dozen of provinces and autonomous regions that were experiencing outbreaks," Prof. Zhang said.

The impressive safety and efficacy profile from clinical trials has supported application to and approval by the National Health Commission and the Ministry of Science and Technology.

The antibody cocktail treatment has competitive advantages, according to Prof. Zhang. First, it is very potent in inhibiting the virus from infecting cells. The antibody cocktail can target different sites of the virus, even it is mutated. They are broadly neutralizing antibodies. The team have also modified the antibodies to extend their half-lives. With one shot, the antibody cocktail can persist in the human body for about nine to 12 months. Besides the therapeutic efficacy in current clinical trials, they can also be used for prevention measures.

"Antibody drugs and vaccines are complementing each other. Current vaccines have good efficacy, but are not a hundred percent effective," Prof. Zhang added.

For superinfection cases, this treatment would be particularly useful. In this regard, our antibody drugs, given their high safety and efficacy profile, can make a significant impact in the fight against the pandemic.

"Our antibody cocktail therapy has been leading the way in both clinical progress and efficacy," Prof. Zhang said.

Global MOOC and Online Education Conference 2021 held

The Global MOOC and Online Education Conference 2021 was successfully held online on December 9.

The Conference was jointly hosted by the Global MOOC and Online Education Alliance and the UNESCO Institute for Information Technologies in Education (IITE), on the theme "Together for a Shared Future-Leading Higher Education Innovation in the New Digital Era."

Tsinghua University President Qiu Yong, also founding Chair of the Board of Global MOOC and Online Education Alliance, delivered welcoming remarks at the opening ceremony of the Conference.

He said that the opening of the Global MOOC and Online Education Conference 2021 showcased the Alliance's firm belief in the value of education which must not be interrupted in any way, and stressed that the Alliance would keep on promoting innovation in concepts, models and technologies of education, and developing more open, integrated, and resilient universities.

"2020 was a watershed in human history. The sudden outbreak of COVID-19 has brought unprecedented challenges to higher education globally. On February 3, 2020, more than 57,000 teachers and students of Tsinghua University attended a lesson online together. We keep our word to the whole society that educating people is our undeniable responsibility. Tsinghua uses information technology to promote online teaching on all sides," he said.

"On February 17, Online Classroom was fully launched based on the teaching calendar. On March 27, as the President of the Asian Universities Alliance, Tsinghua hosted a special meeting on fighting COVID-19 among universities online, attended by leaders from 14 universities around the world. On April 24, Tsinghua University and UNESCO jointly held a Special Dialogue for global universities and published Tsinghua University's Research Report on Online Education during COVID-19 Pandemic. On July 23, Tsinghua University launched "Climate Change Global Lecture" as part of its Global Summer School 2020 for teachers and students around the world, where His Excellency Mr. Antonio Guterres, Secretary-General of the United Nations, was invited to deliver his first public speech to teachers and students worldwide since the outbreak of the COVID-19 pandemic. Since the fall semester of 2020, as the prevention and control of pandemic has become a regular practice, Tsinghua has actively promoted online and offline hybrid teaching," he added.

President Qiu also urged higher education institutions to share educational resources, innovative models and concepts, and advanced information technology to jointly promote education of higher quality and inclusivity.

"We must join hands and adopt online and hybrid education for quality higher education resources as public products, promote educational equity, facilitate knowledge dissemination and consensus in carbon neutrality, climate change, and public health, and endeavor to tackle global challenges," he added.

President Qiu also encouraged universities to expand transnational and inter-university cooperation in curriculum and teaching based on hybrid education, and build a platform for students to learn and grow in a multicultural environment.

He underscored the importance of making higher education more open, inclusive and reciprocal, and suggested universities to promote the application of information technology and lead the digital transformation of higher education with a more open attitude.

"Let us join hands, forge ahead abreast, face the future together, and blaze the trail for innovative development of online education in the digital age," he said, concluding his remarks.

The Global MOOC Alliance, recently renamed as "Global MOOC and Online Education Alliance", was officially launched last year at the 2020 Global MOOC Conference, jointly hosted by Tsinghua University and the UNESCO Institute for Information Technologies in Education (UNESCO IITE).

The Alliance serves as a leading platform to build a diverse community of universities and online education platforms from all over the world, facilitating international cooperation and exchanges in educational technologies and innovation to improve the quality of global MOOC and online education.

Following President Qiu's remarks, Wu Yan, Director of the Higher Education Department of the Ministry of Education of China, delivered a keynote speech.

He stated that China has been advancing the development of MOOC by building MOOC platforms and upgrading their application and learning and management features.

Wu shared the practices and experiences in MOOC and online teaching of Chinese universities, such as Tsinghua University, Peking University, Zhejiang University, Xidian University, and Kashgar University.

He said that China's higher education was ready to work with partners from all over the world to open up new prospects in digital education featuring enhanced inclusivity, quality, fairness and efficiency and to promote learning revolution in higher education.

Ochirbat Baatar, President of the Mongolian University of Science and Technology, said that the Conference played a crucial role in promoting international collaboration in resource mobilization to address the current challenges faced by higher education institutions while addressing the Conference as a keynote speaker.

Kuzvinetsa Peter Dzvimbo, CEO of the Zimbabwe Council for Higher Education (ZIMCHE) and Gilford Hapanyengwi. ICT Director of ZIMCHE, presented a case study of the state of digital learning and digital resources at Zimbabwe Universities during their keynote speech. They highlighted that there was a need of online teaching and learning and online examinations guidelines, as well as training for faculty members, to further streamline online education in Zimbabwe.

In his keynote speech Paul Krause, Vice Provost of Cornell University and Executive Director of eCornell, shared his university's practices in online education and highlighted the importance of promoting innovative teaching methods to create a more engaging online learning experience.

He said Cornell University was looking forward to deepening collaboration with higher education intuitions around the world to explore new ways to make online education more effective.

Simon Marginson, Professor of Higher Education at the University of Oxford and Director of the Centre for Global Higher Education, said that the globalization of higher education required more active and fair participation of all partners, bringing together the views and practices of all parties, and jointly promoting a more equitable development of higher education. He also praised Tsinghua University for its contributions to online education in China.

Dr. Atta-ur-Rehman, Chairman of the Prime Minister's Task Force on Science and Technology, Pakistan and Foreign Academician of the Chinese Academy of Sciences, said that countries should develop more open and quality higher education to meet the needs of national development, and the governments of developing countries should implement relevant policies to support the development of online education.

Likewise, the co-chairs of the seven sub-forums that took place as part of the Conference over the last two days shared key outcomes of the discussions at the Conference.

The first sub-forum was on the theme "Building Future-Ready Higher Education through Equitable and Quality Online and Blended Teaching and Learning," whereas the second sub-forum was on the theme "Technology-Enhanced Collaborative and Blended Learning."

The themes of the third and fourth sub-forums were "Educating Future Scientists & Engineers," and "Virtual Mobility and Cocurricular Programming," respectively.

Likewise, the fifth and sixth sub-forums were on the themes "MOOC and Online Learning in Future Education," and "Designing and Delivering the Most Career-relevant Online Programs," respectively. The theme of the last forum was "Metaverse and Immersive Technology in Teaching and Learning."

The Conference concluded with closing remarks from Zhan Tao, Director of UNESCO IITE. He pointed out the deep integration of information technology and education would represent a trend in the future, and that the form of online education and higher education would continue to change.

He said universities, international organizations and other institutions around the world must seize opportunities and face challenges, accelerate the development of quality MOOCs and online educational resources, and achieve international cooperation in higher education featuring openness, inclusivity, reciprocity and shared benefits.

The two-day conference attracted participants from more than 100 international organizations, governments, universities and online education institutions at home and abroad. They shared policies and practices in driving the innovation required in the new global digital era for the higher education sector, as well as examined collaborative ideas and frameworks to build more open, integrative and resilient universities.

World's first HTR-PM nuclear power plant connects to grid

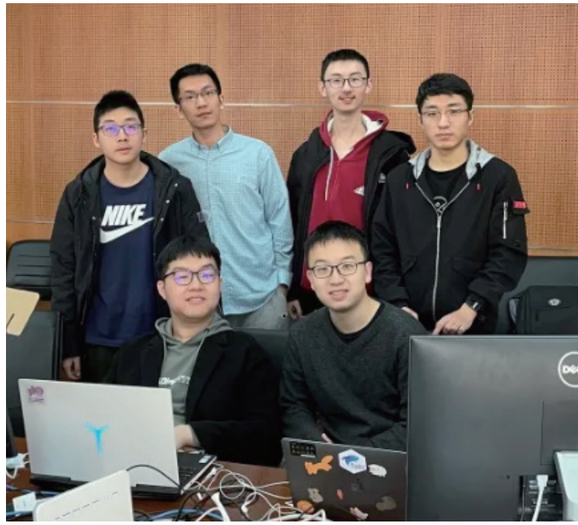
The demonstration nuclear power plant project (NPP) of High Temperature Gas-cooled Reactor (HTGR) at the Shidaowan site was connected to the grid for the first time on December 20, 2021. The project was the First-of-a-Kind (FOAK) NPP of high temperature gas-cooled reactor – Pebble bed Module (HTR-PM) in the world .

This has been achieved through more than 30-years of continuous research by hundreds of Tsinghua scientists, stepping from the basic research of key technologies to the 10MW experimental reactor (HTR-10) at the Institute of Nuclear and New Energy Technology of Tsinghua University (INET) and to the demonstration project of commercial NPP at Shidaowan. Tsinghua scientists worked closely with their partners, China Huaneng Group and China National Nuclear Corporation, to make HTR-PM a successful record that 93.4 percent of the equipment has been manufactured domestically.

When operating at the rated power, the Shidaowan NPP will generate about 1.4 billion kilowatt-hours of electricity per year, providing household electricity for 2 million residents and reducing carbon dioxide emissions by 900,000 tons.

Tsinghua University wins quadruple crown at SC Student Cluster Competition

A student supercomputing team from Tsinghua University successfully defended its crown at the SC21 Student Cluster Competition (SCC) on November 19. The competition was originally arranged to be held in the United States along with SC21 conference, but changed to online due to COVID-19.



It was the fourth consecutive time that the team from Tsinghua University won the title in the competition series since its establishment in 2012. It is also the team's fifteenth victory in all of the top three worldwide SCC events, which also include the ASC held in China and the ISC held in Germany.

The participating team from Tsinghua University was composed of 6 undergraduate students. In the competition, they need to run several applications, like LINPACK, Cardioid, Quantum EXPRESSO, etc., correctly and efficiently on a cluster. Instead of allowing all participating teams to bring their own machines, the organizing committee provided the attending teams with virtual machines this year due to the pandemic. The teams were expected to choose from available cloud resources and build their own computing cluster within a budget of US $1,500.

The change of the competition rules required participating teams to scientifically manage their resources and make execution plans.

The Tsinghua team came up with two plans that were designed to ensure it could complete the contest under different circumstances with a high score.

The team won the overall winner in the SC21 SCC, competing for consecutive 46 hours in all.

Zhai Jidong and Han Wentao, the team's advisors, stressed the importance of training new members in the team.

Sophomore students at Tsinghua University with an enthusiasm for supercomputing were organized to take part in regular training sessions and other relevant activities. Meanwhile, the Department of Computer Science and Technology at Tsinghua University opened related courses to help backup members of the SCC team lay a solid foundation. After going through a period of systematic training, outstanding students became active members in the team.

Many former members of the SCC team at Tsinghua University have persisted in sharing their professional knowledge and experience with high-level contests, even after their departure.

In addition, the advisors encouraged their students to take part in three international student cluster competitions in a move to further consolidate their professional knowledge, psychological strength and overall competence.

Han said the competition also requires the teams to make introductory posters, write research reports and attend interviews, which is a very good training procedure to enhance students' competence and skills.

GLOBAL ENGAGEMENT

Global Youth Summit on Net-Zero Future kicks off

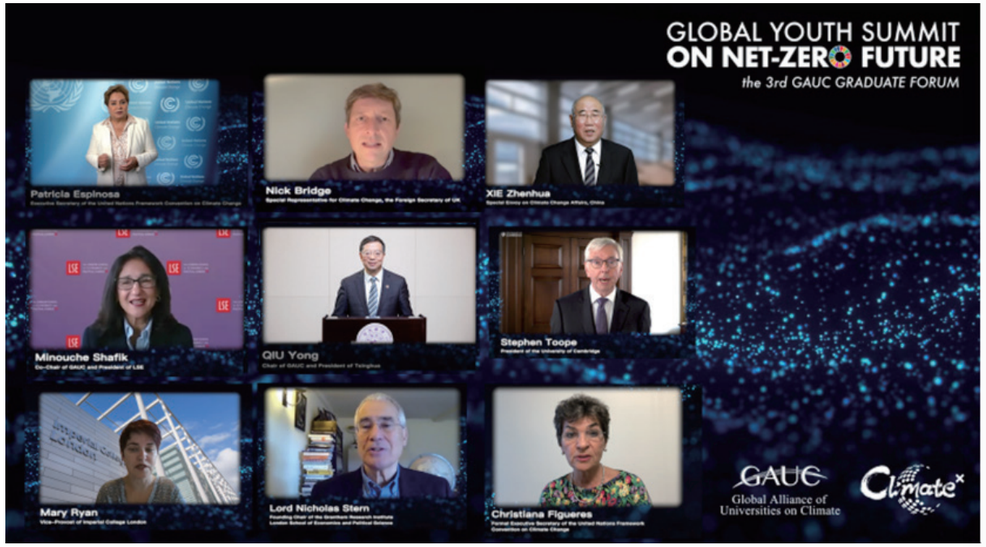
Young people are taking charge of tackling the global climate emergency -- starting today at the "Global Youth Summit on Net-Zero Future" (Climate x Summit) -- with a helping hand from the world's top universities and spurred by the United Nations and leaders from forward-thinking governments and organizations.

Climate x Summit will include more than 30 student-led events through November 5. More than 500 students are committed to this year's activities, which include climate-research competitions, a "hackathon," film premieres and solutions-oriented meetings on how to energize youth across the world.

The Summit is organized by the Global Alliance of Universities on Climate (GAUC), which has member institutions from six continents and was formed during a World Economic Forum meeting in Davos. The youth-led Climate x Summit starts just days before more than 100 world leaders are scheduled to meet in Scotland for the COP26 meeting on climate change.

"We are at a crossroads of advancing action against the climate emergency in 2021. This summit is a springboard for the world's youths to undertake a more active role in mobilizing leadership and demonstrating the collective strengths of higher education institutions," according to the GAUC Alliance and Climate x Summit objective.

The centerpiece of the Climate x Summit is the "Three Tracks", comprising a climate research competition (Academic Track) co-organized by Columbia University, the University of Oxford, Yale University and Tsinghua University; a youth's climate messaging project (Voice Track) organized by the University of Cambridge; and a mini-hackathon (Action Track) for climate change solutions organized by Imperial College London.



The mission of the Three Tracks is to share fresh concerns and ideas from across the world, come up with specific action plans that spark awareness, education and potential solutions to meet the goal set by Paris Agreement to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels. Another goal is for young people to mobilize their collective power to pressure world leaders into policy action.

Among the policymakers and leaders from GAUC's member universities speaking at the opening ceremony were Patricia Espinosa, Executive Secretary of the United Nations Framework Convention on Climate Change; Qiu Yong, Chair of GAUC and President of Tsinghua University; Minouche Shafik, Co-Chair of GAUC and President of LSE; Stephen Toope, President of the University of Cambridge; Mary Ryan, Vice-Provost of Imperial College; Nick Bridge, Special Representative for Climate Change, Foreign Secretary of UK; and Xie Zhenhua, Special Envoy on Climate Change Affairs, China, Lord Nicholas Stern, Founding Chair of the Grantham Research Institute at London School of Economics and Political Science, and Christiana Figueres, Formal Executive Secretary of the United Nations Framework Convention on Climate Change.

Climate x Summit is a collective endeavor by GAUC's 15 member universities, with the strategic partnership of COP26 Universities Network, a growing group of around 80 universities in the UK, the host country of the COP26.

The Climate x Summit gains widespread support from diversified stakeholders, including Bloomberg LP as the Convening Partner, academic support from Elsevier and Springer, COP26 venue support by C-Team affiliated with the Vanke Foundation, and technical support by Global MOOC Alliance.

Patricia Espinosa, Executive Secretary of the United Nations Framework Convention on Climate Change, said that COP 26 is now only a few short weeks away.

"The decisions made in Glasgow will have an impact upon both our short-term and long-term futures. It's essential we achieve success not only with respect to completing outstanding work, but that Parties continue to build climate action demanded by billions throughout the world, " she said.

"Your voices are essential. I specifically thank you for your efforts to achieve a net zero future," she added.

"You are already the most powerful voice I believe in this agenda. Make your voice heard, in your family, in your community, in your university and more widely. You are the future. We need you to be working together, collaborating in that positive, dynamic spirit. Think about a better way and drive that forward," said Nick Bridge, Special Representative for Climate Change, Foreign Secretary of UK.

Xie Zhenhua, Special Envoy on Climate Change Affairs, China, said that youth play an extremely important significant role in the process of achieving carbon neutrality goals.

"They are not only contributors of innovative solutions, but also practitioners to achieve the goal of carbon neutrality, and bearers of climate risks and losses," Xie said, adding that the participation of more young people in the cause of addressing climate change is essential for the world to embrace a carbon neutrality future and embarking on a long-term sustainable development path.

In his remarks, Qiu Yong, Chair of GAUC and President of Tsinghua University, said that to address the global challenge of climate change, more and more entities represented by countries, regions, cities, private sectors and universities are taking active actions, with youth as the stanch force for achieving a zero-carbon future.

He said that in light of this circumstance, the alliance has launched Climate x Global Youth Summit on Net-zero Future, upgraded from the GAUC Graduate Forum, to emphasize the transforming impact and the close interconnection between climate change and other global issues, particularly the UN Sustainable Development Goals (SDGs).

"By bringing together our 15 alliance universities and partners from nine countries across six continents, we will be able to bring more youths into a platform for learning, exchanging, and making their voices heard from a fresh viewpoint on how to achieve a carbon-neutral future," said Qiu.

Stating that the Alliance will give a well-prepared spiritual feast this week, Qiu expressed his hope that everyone takes advantage of this exchange and learning opportunity to interact in depth, enlighten each other, improve together, and empower themselves.

Minouche Shafik, Co-Chair of GAUC and Director of London School of Economics and Political Science, said that this summit is an opportunity to draw attention to the interconnection between climate change and the other UN Sustainable Development Goals, as well as the transforming impact that climate change can have, particularly in areas like food and health, transportation, energy, nature and biodiversity.

She added that it's critically important for younger generations to take on a lead and make their voice heard in this race to zero carbon to protect the future of the planet.

"And of course, universities prepare the leaders of tomorrow, and students have been vocal advocates for urgent action at universities and in their later professional lives," Shafik concluded.

Stephen Toope, President of the University of Cambridge, said that he would like to emphasize the value of academic institutions coming together through networks such as GAUC and events such as the Global Youth Forum.

"Each of our institutions is at the center of extensive partnership networks. It's through these networks that

our expertise and knowledge is felt. By drawing these relationships close, working in partnership with friends and colleagues from across the world, we can help address global challenges like climate change," said Toope.

Mary Ryan, Vice-Provost of Imperial College, said: "Nothing is more pressing than climate emergence. We must all work together to secure a sustainable and equitable future for all. Today, you are leading the way. This Summit is part of the change. I wish you all a productive and enjoyable summit. We all hope for a youth's commitment for real action arising from COP26."

Lord Nicholas Stern, Founding Chair of the Grantham Research Institute at London School of Economics and Political Science, said that young people should be demanding action, and strongly demanding action because it's their future.

According to him, we have to look at things as a whole. Of course, investing in that natural capital does give us negative emissions, but it is about so much more. Strands of integration across climate, biodiversity, and natural capital are extremely important.

Christiana Figueres, Formal Executive Secretary of the United Nations Framework Convention on Climate Change, said that we have to reduce carbon emission by half by 2040 and half again by 2050, while actively restoring nature until we get to net zero emissions by 2050. This is the only path that allows us to pursue economic growth and shared health and prosperity for all.

"Friends, you are the beginning of the Anthropocene era. You are the ancestors of everyone who will live in that period. Today you are writing the future history of human presence on this planet," she added.

Latin American and Caribbean Ambassadors convene at Tsinghua

The Latin American and Caribbean ambassadors and representatives gathered at Tsinghua University Art Museum on October 25 to attend a meeting entitled "2021 Prospering Together - Latin American and Caribbean Ambassadors Convene at Tsinghua." Ambassadors, Charge d 'affaires, Minister Counsellors and other envoys from 21 Latin American and the Caribbean countries visited Tsinghua and shared their views on enhancing cooperation between China and Latin American and the Caribbean countries and prospering together.

"Although the Covid-19 has hit countries all over the world severely, China and Latin America have supported each other and overcome the difficulties together at this trying time, which shows our sincere friendship," said President of Tsinghua University Qiu Yong, welcoming Latin American and Caribbean diplomats.

"The exchanges and cooperation between Tsinghua and LAC have achieved a new level of momentum in recent years. I hope that this Special Event will continue this momentum, elevate our shared expertise of promoting understanding and cooperation, and reflect our spirit of optimism for prospering together," said Chairperson of the University Council Chen Xu, highlighting the significance of the event.

"The geographical distance between China and LAC countries is great. BUT today has demonstrated that our longstanding ties and motivation towards even greater levels of understanding and cooperation make us closer than ever before," said Vice President and Provost of Tsinghua University Yang Bin.

"The meeting at Tsinghua was a great occasion for Latin American and Caribbean ambassadors to get closer to academia here in China to brainstorm and to get to know better the different processes ongoing in China, and also to present LAC countries' views," said Uruguayan Ambassador to China Fernando Lugris in his welcome remarks.

Following the welcome remarks, Prof. Bai Chong-En, Dean of the School of Economics and Management, delivered a keynote speech entitled "The Economic Aspects of the 14th Five-Year Plan — From History to Modern Society."

"Today's event brings us together in the spirit of openness and shared prosperity. Through this event, Tsinghua University hopes to foster even-greater levels of understanding and cooperation," said Li Jinliang, Dean of International Affairs at Tsinghua University.

"It is not only a unique opportunity to get a deeper understanding of China, it is also a precious opportunity for the experts of China to understand Latin America and Caribbean countries," said Chen Taotao, Director of Tsinghua University's Latin America Center.

Several ambassadors and envoys spoke to student journalists in the interview. Let's have a look at what the ambassadors said at the Convene!

Bahamian Ambassador to China H.E. Robert Quant

Head of Energy Section of Brazil to China Leandro Silva

Charge d'affaires of Costa Rica to China Jimena Jaen Baltodano

First Secretary of Cuba to China William Silva Valdivia

Minister Counsellor of the Dominican Republic to China Yamila Fersobe

Guyana's Ambassador to China H.E. Anyin Choo

Peruvian Ambassador to China H.E. Luis Quesada

Tsinghua Impression

Bahamian Ambassador to China H.E. Robert Quant:
It is my first time coming to Tsinghua. It reminded me of my days at university fifty years ago. I have been to several exhibitions in Beijing. I would say the art museum here in Tsinghua is top-class.

Charge d'affaires of Costa Rica to China Jimena Jaen Baltodano :
I've heard of Tsinghua before and today I feel it myself that Tsinghua is truly a top university. Students here are kind and friendly, with huge enthusiasm for learning. The interesting exhibition today shows ancient Chinese civilization and some of the exhibits reminded me of some similar features of Costa Rica.

First Secretary of Cuba to China William Silva Valdivia:
I used to study Chinese at Peking University from 2007-2009. This is my first time in Tsinghua, I think Tsinghua is a very famous university and many foreign students study in here. It's a very good opportunity to communicate with students and professors in this university.

Minister Counsellor of the Dominican Republic to China Yamila Fersobe:
I am impressed by how smart and bright are the students, and the exhibition was absolutely amazing, showing China's history and culture.

Peruvian Ambassador to China H.E. Luis Quesada:
Tsinghua is an impressive university with high academic levels. Students here are kind and friendly with proficient communication skills. Tsinghua is the top university in China and I hope more and more Peruvian students could get access to studying here.

Messages to Tsinghua Students

Bahamian Ambassador to China H.E. Robert Quant:
Learn and try to get involved as much as you can. College time will become the most treasurable memory in your life. To those students from the Bahamas, I hope you can see as much of China as possible.
Head of Energy Section of Brazil to China Leandro Silva:
I will think of what I wanted to talk with myself when I was a student. Study hard but also make friends with people from the world. It's kind of tricky because for one side you need to specialize in your area in which you have to put a lot of efforts. For another now the world is much more collective than it used to be and it's very important to have a broad view and an open mind.

Charge d'affaires of Costa Rica to China Jimena Jaen Baltodano:
I would like to say congratulations at first, because it is a huge accomplishment to attend this top university. And then I hope that you guys could take advantage of it, which means experience different cultures and broaden your horizons. To those students from Costa Rica studying here, I would like to say, step out of our comfort zone. As you step into this country, it will really blow your mind. Just go for it!

First Secretary of Cuba to China William Silva Valdivia:
Keep learning and writing papers. Devote your time to the acquisition of knowledge and devote yourselves to contributing to China. It can also help the world.

Three Words to Describe Your Country

Bahamian Ambassador to China H.E. Robert Quant:
Tourism, friendly, culturally-inclined. The Bahamas is located in the North Caribbean with a tourist-based economy. You can enjoy the sand and beach there and the seawater is crystal clear. People in the Bahamas are friendly and hospitable. We are fun-loving, and we enjoy life. We are also culturally inclined: we love our culture, including the cuisine, dancing, music, and so on.

Head of Energy Section of Brazil to China Leandro Silva:
Young, mixed. Brazil is a very young country compared to China. We have only five hundred years of history. We are also a mixture of different cultures. Immigrants from different cultures have made our country so diverse and vibrant.

Charge d'affaires of Costa Rica to China Jimena Jaen Baltodano:
Peaceful, green, friendly. The first one is peaceful, because we don't have any army, which is a very unique point. The second one would be green, as 26 percent of Costa Rica's land is protected, and also there is a rich variety of plants and Costa Rica wildlife. At last it would be friendly, because people of Costa Rica are very kind.

First Secretary of Cuba to China William Silva Valdivia:
Happy, optimistic, open-minded. Cuba is a small country in Latin America. We are a happy country—people in our country are optimistic and we really want to know more about Chinese culture and history. We have a very close relationship with China as we all know that Cuba was the first Latin American country to establish diplomatic relations with China in 1960. Since then, other countries in Latin America begun to establish diplomatic relations with China.

Minister Counsellor of Dominican Republic to China Yamila Fersobe:
Warm, vibrant, and welcoming. The Dominican Republic is the second largest country in the Caribbean region, with a population of 10.4 million. Our economy had the highest average growth in the past 20 years, mainly with the help of tourism. On the historical and cultural part, it is the oldest European settlement in the Caribbean, and the colonial city is part of the UNESCO heritage. Dominican music is also an important part of the culture.

Uruguayan Ambassador to China H.E. Fernando Lugris:
Productive, digitalized, tourism. Our capital city is Montevideo, and it is also the most distant capital city from China. But we produce high-quality beef and lamb that the Chinese have probably eaten as hotpot or other dishes. We are also in the top 10 most digitalized countries in the world, exporting software to the US and other countries, and developing the market with China. We are also promoting tourism as it is one of our main sources of income as well.

Mutual Understanding and Cultural Exchange

Head of Energy Section of Brazil to China Leandro Silva:
We are from far away countries across the world, but this should not be the excuse for the countries to not know each other better.

First Secretary of Cuba to China William Silva Valdivia:
Now we have 43 Cuban students in China and 67 students receive online class in Cuba because of the epidemic they are unable to attend classes in China. Many young Cubans are willing to come to China to study Chinese.

Guyana Ambassador to China H.E. Anyin Choo:
Different countries have different destinations, but as an English-speaking country which also has a very tiny economy and population, it is quite necessary for us to develop a deep understanding with each other and especially for a unique and peace and equality. I wish to have more young people from Guyana come to China and to have a deep insight into China, and after they return, I really hope they can serve as the bridge of friendship between China and Guyana.

Peruvian Ambassador to China H.E. Luis Quesada:
The cultural interchange between Peru and China started in the 19th century and went through a long history. Many students from Peru are learning Chinese and they are eager to study in China. I am looking forward to further development of the relationship between the two countries.

Uruguayan Ambassador to China H.E. Fernando Lugris:
I always keep in touch with the Uruguayan students, and advise them to travel around China if they can and exchange ideas with Chinese people.

Parallel Event of the 6th China-Africa People's Forum held

On November 18, during the 6th China-Africa People's Forum, the parallel event " Experience Exchange on Poverty Alleviation" , guided by China NGO Network for International Exchanges (CNIE) and co-hosted by China-Africa leadership development Institute (CALDI) of Tsinghua University and China Foundation for Poverty Alleviation (CFPA), was successfully held online Prof. Yang Bin, Vice president and Provost of Tsinghua University, also the Co-President of CALDI, Prof. Liu Huiqin, Party Secretary of the Institute of Education of Tsinghua University and Executive Director of CALDI, Prof. Xie Zheping, Secretary General of CALDI, and Linda Qin, Deputy Office Director of CALDI, attended the event.

Poverty is one of the most serious challenges facing the world today. China and African countries have joined hands in poverty alleviation for a long period of time with great potential. Both sides have accumulated the experience of exchange. The event discussed poverty reduction strategies and policies, exchanged experiences in poverty reduction and development, and encouraged mutual learning.

Guests from China NGO Network for International Exchanges, China Foundation for Poverty Alleviation, Tsinghua University, international representatives from Ethiopia, Cameroon, Liberia, South Sudan and Tanzania, China Agricultural University, CGCOC Group, and Sunmaker Energy Uganda Limited, as well as media representatives attended the event.

Yang Bin, Vice president and Provost of Tsinghua University, Co-President of CALDI, delivered a concluding speech. He introduced the process of poverty alleviation in China and the achievements made in poverty alleviation through education, and expressed that adhering to the goal of building a world-class university with Chinese characteristics, Tsinghua University takes the China Africa leadership development Institute as the platform to promote China-Africa educational cooperation and cultural exchanges. Tsinghua University will actively work with African partners to deal with the poverty challenge with Africa in terms of experience sharing of poverty alleviation through education, leadership program, scientific and technological innovation and entrepreneurship in Africa, and mutual learning with African universities to deepen people-to-people engagement.

Wang Ke, CNIE Deputy Secretary General and Liu Wenkui, CFPA Executive Vice President delivered welcome speeches, highlighting the congratulatory letter from Xi Jinping, General Secretary of the Communist Party of China (CPC) Central Committee and Chinese President, to the 6th

China-Africa People's Forum. The letter reflects the high importance CPC and the Chinese government attaches to China-Africa comprehensive strategic cooperative partnership and non-governmental friendly exchanges, charting the course for inheriting our traditional friendship, enhancing the wellbeing of the people and promoting solidarity and cooperation. The 60 cooperation projects under "Silk Road Community Building Initiative" will certainly inject new impetus into China-Africa people exchanges. China has won an absolute victory in the battle against poverty and accumulated rich practice in poverty reduction. Since last year's pandemic outbreak, the world today is marked by changes unseen in a century. China and Africa need to strengthen cooperation and jointly address the challenges of poverty and development.

Wu Peng, Director of the International Development Department of CFPA, moderated the first part as "Implications of China's Poverty Alleviation Mode for Africa". Representatives of four participating organizations shared their views. Roman Tesfaye, H.E Former First Lady of Ethiopia and CEO of HRF, made a keynote speech. She said that livelihood problem remains an important challenge on the poverty reduction in Ethiopia. She shared the projects on women and children implemented by her foundation in Ethiopia, focusing on the smiling children program implemented in cooperation with CFPA. She hoped that more Chinese partners will work together in the future. Dong Qiang, Associate Professor from China Agricultural University(CAU), introduced the poverty reduction practice of Chinese social organizations in Africa. He said that Chinese social organizations bridged the gap in social services provided by local governments and hoped to focus on introducing China's experience in low-cost solutions for social problems to Africa to benefit more beneficiaries. Gaelle Ayamou, Co-Founder of Think Share and Create Hub (TSCHub), said that China's poverty alleviation model for women and youth groups is worth learning from, and shared the experience of the activities in women's empowerment and innovative education. Gao Lei, Vice President of CGCOC and General Manager in Ethiopia & East Africa of CGCOC, shared the Ethiopia Djibouti cross-border water supply project and the Ethiopian women's vocational training project jointly carried out with CFPA, the agricultural and livestock processing project to be established in the industrial park along the Addis Ababa Djibouti railway and the plan to bring Chinese Juncao technology to help reduce poverty in Africa.

Prof. Liu Huiqin, Party Secretary of the Institute of Education of Tsinghua University and Executive Director of CALDI, moderated the second part of "Case Sharing of Poverty Alleviation and Development Projects under China-Africa Cooperation". Representatives of five participating organizations shared their views. Yan Zhitao, Deputy Executive Director of CFPA made a keynote speech. Since 2007, CFPA has carried out assistance projects in nine African countries, with a cumulative amount of more than 77.22 million RMB, benefiting about 337,000 people. The non-governmental assistance action is mainly committed to the SDGs, addressing to six goals such as poverty eradication, zero hunger, health and well-being, quality education, clean water and sanitation, decent work and economic growth, which have been welcomed and praised by African recipient countries. Clarke Alvin Kpalay, President of the Economic and Trade Cooperation of African Youth (ETCAY) from Liberia, called for changes in educational institutions and the industrial sector to strengthen vocational training for youth and women. Gong Zhiwu, Co-founder of Sunmaker Energy Uganda Limited, shared the vocational training program of the college in East Africa. Gatwech Koak Nyuon, President of Hope for Children In Need (HCIN) of South Sudan, stressed the important role of good governance in creating a peaceful investment environment for Africa, attracting foreign direct investment and achieving economic and political stability. Wilfred Stanley Madinda, adviser to the Prime Minister's office of Tanzania, praised the paradigm shift of China's foreign aid education from "giving fish" to "teaching how to fish".

Chen Xu, Chairperson of Tsinghua University Council, and Guido Saracco, Rector of Politecnico di Torino, reunited online and witnessed the signing of the MoU for joint research in Urban Ergonomics

Chen Xu, Chairperson of Tsinghua University Council, and Guido Saracco, Rector of Politecnico di Torino, reunited online for discovering future collaboration and witnessed the signing of the MoU between the School of Architecture of Tsinghua University and the Department of Architecture and Design of Politecnico di Torino.

Chairperson of the Tsinghua University Council Chen Xu said that the new joint research agreement has brought the collaboration between Tsinghua and Politecnico di Tornio to a new level, and has opened up a great prospect for future collaborations to contribute to a better shared future for mankind.

"Urban Ergonomics tackles the global issue of making sustainable human-scale cities, and will be an important update to the 21st century debate on the future of our cities and habitat," Chen Xu said. "I look forward to the excellent outcome of the joint research by Tsinghua Architecture and Politecnico di Tornio architecture in this very promising new field."

She said that Tsinghua, with the support of many international institutes, raised the topic of Urban Ergonomics as China was launching a new, human-centered urbanization under a complete new set of development ideas.

Guido Saracco, Rector of Politecnico di Torino, said that the signing of the MoU to conduct joint research on Urban Ergonomics would be successful and further strengthen cooperation between his university and Tsinghua.

"I believe that the role of technical universities will be very crucial for the new economies, that we have to design the sustainability process and push with knowledge the growth of our population in our countries," he added. "I am sure the new agreement on Urban Ergonomics is going to fit with new themes and challenges of our joint doctoral program in architecture that is producing nice results with talented people."

Tsinghua University Vice President and Provost Yang Bin, who moderated the signing ceremony, said that the joint research MoU had laid the foundation for an even more

beneficial, comprehensive and sustainable partnership between the two universities.

Tsinghua and Politecnico di Torinoto have a strong collaborative history in teaching, research and design, cultivating outstanding talents with international perspectives for both countries.

More recently, Tsinghua led the design of the Big Air Shougang, a ski jump platform built for the Beijing 2022 Olympic Winter Games, in which the Politecnico di Torinoto team played an essential role. Earlier, Tsinghua had led the curation and the design of the China Pavilion in Venice Biennale 2021, with great support from Politecnico di Torinoto. Likewise, when Politecnico di Torinoto and MAO Torino curated the exhibition "China Goes Urban," Tsinghua made a substantial contribution.

Professor Cheng Xiaoxi, Associate Dean of the School of Architecture of Tsinghua University, and Professor Daniela Bosia, Vice-Director of the Department of Architecture and Design of Politecnico di Tornio signed the Memorandum of Understanding to conduct joint research in the field of Urban Ergonomics, a new domain of design science that tackles the global issue of making sustainable human-scale cities.

Professor Zhang Li, Dean of the Tsinghua School of Architecture, expressed his confidence that assisted by a series of high-profile real-world design interventions, ranging from the venues of the Beijing 2022 Olympic Winter Games, to the adventurous brand new Tsinghua

International Student Centre, to the Carbon-Net-Zero revamp of major urban designs, Urban Ergonomics would be a vivid dynamic that contributes fundamentally to the leading roles of both Tsinghua and Politecnico di Torino in the contemporary world architecture debate.

Professor Zhang explained that the concept of Urban Ergonomics, conceived and raised during the pandemic lockdown, argues for a new set of research and design tools, and a new paradigm for human-centered design science. He said the joint research MoU paves the way for a promising international research design consortium based on Urban Ergonomics.

Professor Michele Bonino, Rector's Delegate for relations with China and Asian Countries of Politecnico di Torino, said that by working together, the two universities would be able to create solutions to improve cities in both China and Italy through well-being infrastructures for contemporary urban life that the field of Urban Ergonomics offers.

During the ceremony, two students—Huang Yetong and Giorgia Cestaro also shared their experiences studying in the joint doctoral degree program. They both thanked the universities for offering an enriching cross-cultural learning environment for their research.

Founded in 1859, the Politecnico di Torino (PoliTo) is one of the most prestigious public institutions at both the International and the Italian levels concerning education, research, technological transfer and services in all sectors of architecture and engineering. Tsinghua and PoliTo have successfully conducted significant collaborations in many academic fields, including bilateral student mobility, joint talent cultivation and joint research.

Top Mathematician Nicolai Reshetikhin joins Tsinghua

World top mathematical physics master Nicolai Reshetikhin has officially joined Tsinghua Yau Mathematical Sciences Center (YMSC). He arrived in China at the end of September and finally stepped on the Tsinghua campus in early November after the required quarantine period. Started from this autumn semester, he opened a course about Invariants of Knots and 3 manifolds for Tsinghua students.

He was invited twice to give speeches at International Congress of Mathematicians(ICM),the most significant event in pure and applied mathematics. At 2010, he was one-hour plenary speaker at the ICM among 17 other world top mathematicians. He is one of the founders of theory of Quantum group and Witten-Reshtikhin-Turaev invariant. He is an important developer of Quantum integrable system, an important contributor of Poisson Geometry, Symplectic geometry and Quantum Kac-Moody algebra. He is also the founder of quantum 6j symbol, which has been used to understand quantum gravity. His work has had a profound influence on mathematical physics studies, more specifically in the fields of low-dimensional topology, representation theory, and quantum groups.

Shing-Tung Yau, the Director of YMSC expressed his ardent welcome to Nicolai's arrival. The master mathematician said Nicolai Reshetikhin will be leading China's best students in Qiuzhen College on the way of growing into leading mathematicians of the next generation. YMSC professor Liu Zhengwei said he is thrilled about working with Professor Reshetikhin.

Previously, he worked as a professor of mathematics at the University of California, Berkeley for 30 years and accepted invitations from Professor Yau last winter. During his work in Tsinghua, besides teaching, he plans to focus on research projects in three areas, including quantum field theory, symmetry, and statistical mechanics, with integrability as the guideline.

2021 International Conference on Art & Design Education held at Tsinghua University

The 2021 Tsinghua International Conference on Art & Design Education (ICADE 2021), with the theme "Ask: Our Diverse World", was recently held both online and offline.

In his speech at the opening ceremony of the ICADE 2021, Peng Gang, chair of the organizing committee of the conference and vice-president of Tsinghua University, extended congratulations to all guests for their on-site and virtual attendance.

Tsinghua University has encouraged synergetic and creative development between different academic disciplines and conducted in-depth cooperation with other universities at home and abroad, Peng noted, adding that the ICADE 2021 is designed to make our world more exciting by deepening mutual understanding, building friendship and strengthening collaboration.

Lu Xiaobo, dean of the Academy of Arts and Design at Tsinghua University, said that the high-level, inclusive and comprehensive conference had drawn the attendance of experts from the sectors of art and design education. He went on to say that they were expected to blaze creative development paths for art education in the worldwide artistic domain through the exchanges of personal ideas during the event.

During the International Forum of Art & Design Institute Presidents, which was held after the opening ceremony of the ICADE 2021, 26 presidents of universities from home and abroad exchanged thoughts about the fields of art and design education.

The International Graduation Exhibition of Art & Design Institutes, a parallel event held on the sidelines of the ICADE 2021, exhibited over 2,000 thesis works from 827 outstanding graduates from 53 prestigious universities and colleges around the world online and offline in 10 categories.

The International Academic Symposium of Art & Design Education, another parallel sub-event of the ICADE 2021, drew the attendance of over 70 professors and scholars from 40 top academies of arts at home and abroad, who spoke about prospective challenges and opportunities facing art and design education in the post-pandemic era and debated the roles played by art and design education in the overall sector of higher education.

During its organization of the ICADE 2021, the Academy of Arts & Design at Tsinghua University gathered faculty members from the frontier disciplines of art and design and set up five workshops transcending the boundaries between various disciplines and culture with the support of many international universities and social organizations to help attendees better appreciate the latest movements in modern art and design education.

2021 International AI Cooperation and Governance Forum kicks off at Tsinghua University

The 2021 International AI Cooperation and Governance Forum, hosted by Tsinghua University in support of the United Nations Development Programme, opened on December 4, 2021.

In this year's forum, leading AI experts and practitioners from around the world focused on the theme of "how to build a balanced and inclusive AI system," and thereby promote the construction of a shared future for mankind. The two-day forum was held in a hybrid online and offline format.

Wang Yongqing, Vice Chairman of the 13th National Committee of the Chinese People's Political Consultative Conference, attended the forum and made an opening speech.

Wang Yongqing said that China's AI governance adheres to the people-centered approach, which always promotes people's well-being, encourages technological innovation, coordinates development and security, and upholds the concept of equality and justice. This approach was in line with the spirit of the United Nations and G20, which aims to promote the comprehensive development of individuals and sustainable development across the economy, society, and environment, he added.

Wang emphasized that the Chinese government supported and encouraged finding solutions to the global digital governance problem based on consultation, contribution and shared benefits, with all countries working together to create an open, fair, just and non-discriminatory digital development environment.

Wang pointed out that the international society must collaborate when faced with the risks and challenges that accompany the development of AI, so as to continuously improve the level of AI global governance.

Qiu Yong, President of Tsinghua University, extended a sincere welcome to all the guests on behalf of the University, and expressed the need to strengthen global cooperation and dialogue to build up a balanced and inclusive AI governance system.

He said while improving social productivity and empowering modern governance, AI also posed many new challenges to public security, privacy, responsibility, ethics, and the already wide digital divide.

President Qiu also said that as one of the most important policy-formulating resources, universities not only needed to make breakthroughs on fundamental AI basic theories and frontier technologies, they also needed to carry on the vision of AI for good, and develop honest AI values and ethics.

He stated that it was the international community's responsibility to establish a science-based international AI governance system, adding that Tsinghua was ready to deepen cooperation and forge ahead together with its partners around the world to promote AI that supports everyone.

President Qiu pointed out that Tsinghua University highly values AI research and education, and it will continue to harness its academic advantages, striving to play a bigger role in AI governance.

Tsinghua has established several AI-related institutes such as the Institute for Artificial Intelligence, the Institute for AI Industry Research, the Institute for AI International Governance, and the Institute of Intelligence Society Governance, which offer innovative experiences in scientific research, talent cultivation, think tank development, international cooperation, and other areas.

Beate Trankmann, Resident Representative of the United Nations Development Programme (UNDP) for China, also delivered opening remarks. She said that AI has played an important role in fighting COVID-19 and climate change. However, at the same time, human biases can also find their way into AI technologies and potentially perpetuate prejudice and discrimination.

As the application of AI becomes more and more omnipresent across the world, international cooperation will be essential to build consensus on common approaches to AI governance that are ethical and fair. Therefore, it will be critical to ensure that the conversation surrounding AI is truly global in nature, with representation open to all countries, she added.

Li Meng, Vice Minister of Science and Technology (MOST), stressed that the governance of AI in the future should be agile so as to balance AI development with safety and security. It should also be adaptive and inclusive so as to ensure the balanced benefits' sharing of different groups, and it should be sustainable so as to achieve intelligent and green development at the same time, he added.

Xu Xiaolan, Vice Minister of Industry and Information Technology (IIT), stated that in the future, the IIT would cooperate with relevant parties on the sustainable and sound development of AI, and the creation of inclusive AI governance norms, striving to open up a new landscape of international cooperation. The IIT was ready to contribute more Chinese wisdom to the establishment of international AI governance institutions and generate more practical results for international scientific and technological exchanges and cooperation, she said.

Ma Shengkun, Deputy Director-General of the Department of Arms Control of the Ministry of Foreign Affairs, stated that China attaches great importance to the security of AI governance, and that the Chinese government has all along coordinated and advanced the development and risk control of AI technology with a responsible attitude. China has also issued ethical principles and norms for researchers, and clarified supervision mechanisms and requirements in a timely manner. In the future, measures should be taken to regulate AI military applications, he added.

Ma stated that AI should abide by international law and fundamental norms governing international relations. With regards to ethics, it should follow the vision of AI for good. As for technology, the evaluation and supervision of AI should also be strengthened. And in terms of governance, global engagement must be advocated for, he added.

Maria-Francesca Spatolisano, Officer-in-Charge of the UN Office of Secretary-General's Envoy on Technology, emphasized in her video remarks that the world could and must work together in order to create inclusive, responsive, and effective global cooperation structures that can meet the challenges posed by AI.

Spatolisano stated that this point was reinforced in the UN Secretary-General's recently released report "Our Common Agenda" where he stressed AI as an area where greater global regulation might be needed and proposed establishing a new multi-stakeholder body on global AI cooperation.

Andrew Chi-Chih Yao, Turing Award Winner, Dean of Institute for Interdisciplinary Information Sciences at Tsinghua University and Chair of the Institute for AI International Governance of Tsinghua University (I-AIIG) Academic Committee, remarked in the video that as AI becomes more and more embedded in our economy and society, it was increasingly important for us to make sure that there is positive energy and interactions between technology and social-economic development. However, at the same time, this new technology also posed many new challenges to privacy, protection, and data security in the area of the digital economy, he added.

Yao stressed that the powerful algorithms, computing power and privacy protection should be the new research direction for AI theory, and he highlighted that the establishment of a balanced and inclusive AI governance system would unlock greater potential and ensure stronger security of AI.

The opening ceremony was hosted by Yang Bin, Vice President and Provost of Tsinghua University.

After the opening ceremony, the forum held the main plenary session themed "How to build a Balanced and Inclusive AI Governance Framework" in which experts from both at home and abroad, including Xue Lan, Dean of I-AIIG and Schwarzman College; Gong Ke, President of the World Federation of Engineering Organizations, Executive Director of Chinese Institute of New Generation Artificial Intelligence Development Strategies and Academic member of I-AIIG; Xu Haoliang, UN Assistant Secretary-General and UNDP Director of Bureau for Policy and Programme Support; Wendell Wallach, Uehiro/ Carnegie Senior Fellow at the Carnegie Council for Ethics in International Affairs (CCEIA) and Academic Member of I-AIIG; Su Jun, Dean of the Institute Of Intelligence Society Governance of Tsinghua University, Director of Think Tank Center of Tsinghua University, and Academic Member of I-AIIG and Rohinton Medhora, President of the Centre for International Governance Innovation, delivered keynote speeches, respectively. Liang Zheng, Vice Dean of I-AIIG, hosted the Main Plenary.

The 2021 AI Cooperation and International AI Cooperation and Governance Forum is hosted by Tsinghua University, organized by I-AIIG, and with UNDP as its international supporting partner. The two-day forum has three main plenaries, a special forum and seven thematic sessions. Over 70 AI experts from China, the United States, the United Kingdom, Saudi Arabia, Italy, Australia, France, Singapore, South Korea, India, Sweden, Denmark, Malaysia and Japan will attend and join the forum discussion. It is estimated that the number of online and offline participants will exceed 500.

Qiu Yong's speech at Global MOOC and Online Education Conference

Blaze the Trail for New Development of Online Education with a More Open Attitude

—Speech at Opening Ceremony of Global MOOC and Online Education Conference 2021

Today we witness the opening of the Global MOOC and Online Education Conference 2021, showing our firm belief in the value of education which must not be interrupted in any way. On behalf of the Global MOOC and Online Education Alliance and Tsinghua University, I would like to extend my warm welcome and heartfelt thanks to all guests from international organizations, governments, universities and online education institutions who are with us today.

2020 was a watershed in human history. The sudden outbreak of COVID-19 has brought unprecedented challenges to higher education globally. On February 3, 2020, more than 57,000 teachers and students of Tsinghua University attended a lesson online together. We keep our word to the whole society that educating people is our undeniable responsibility. Tsinghua uses information technology to promote online teaching on all sides. On February 17, Online Classroom was fully launched based on the teaching calendar. On March 27, as the President of the Asian Universities Alliance, Tsinghua hosted a special meeting on fighting COVID-19 among universities online, attended by leaders from 14 universities around the world. On April 24, Tsinghua University and UNESCO jointly held a Special Dialogue for global universities and published Tsinghua University's Research Report on Online Education during COVID-19 Pandemic. On July 23, Tsinghua University launched "Climate Change Global Lecture" as part of its Global Summer School 2020 for teachers and students around the world, where His Excellency Mr. Antonio Guterres, Secretary-General of the United Nations, was invited to deliver his first public speech to teachers and students worldwide since the outbreak of the COVID-19 pandemic. Since the fall semester of 2020, as the prevention and control of pandemic has become a regular practice, Tsinghua has actively promoted online and offline hybrid teaching. The deep integration of online and offline education and learning has become a new normal in education. From December 9th to 11th, 2020, Tsinghua University and the UNESCO Institute for Information Technologies in Education (IITE) jointly hosted the first Global MOOC Conference and released the Beijing Declaration on MOOC Development. Thanks to the effort of 17 universities and 3 online education institutions around the world, the Global MOOC Alliance was formally established. On December 2, 2021, just a week ago, a board meeting of the Global MOOC Alliance was convened, where all members agreed to rename the Alliance "Global MOOC and Online Education Alliance." In the future, the Alliance will keep on promoting innovation in concepts, models and technologies of education, and developing more open, more integrated, and more resilient universities.

The theme of today's conference is "Together for a Shared Future - Leading Higher Education Innovation in the New Digital Era." At present, a new wave of technological revolution and industrial transformation is advancing by leaps and bounds and information technology has exerted a profound impact on higher education. Knowledge transfer and acquisition, educational concepts and models have all undergone tremendous changes. Facing this global change, universities should encourage higher education institutions to share educational resources, innovative models and concepts, and advanced information technology to jointly promote education of higher quality and inclusivity.

Universities should share quality educational resources and face global challenges with a more open attitude. Universities are the beacon of human civilization, shoulder the important responsibility of inheriting knowledge and culture, and play an important and unique role on major issues affecting the destiny of mankind. We must join hands and adopt online and hybrid education for quality higher education resources as public products, promote educational equity, facilitate knowledge dissemination and consensus in carbon neutrality, climate change, and public health, and endeavor to tackle global challenges.

Universities should strengthen international exchanges and cooperation, and promote higher education innovation with a more open attitude. Higher education institutions should continue to empower teachers and students and promote diversified international cooperation in teaching. We should expand transnational and inter-university cooperation in curriculum and teaching based on hybrid education, and build a platform for students to learn and grow in a multicultural environment. We must seize the opportunity of the era of the Internet that breaks the barrier of distance, and promote online and offline integration, cross-border integration, interdisciplinary integration, and the integration of academia and industry.

Universities should promote the application of information technology and lead the digital transformation of higher education with a more open attitude. We should advance the iterative upgrade of information technology, develop innovative educational forms, scenes and models, vigorously promote the development and application of online teaching technology, and facilitate quality innovation in technology, models, mechanisms, and educational scenes, to make higher education more open, inclusive, and reciprocal.

"Boundless is the ocean where we sail with the wind," goes an ancient Chinese poem. We are about to usher in a brand new year of 2022 together, and the Global MOOC and Online Education Alliance has also opened up new aspects after being renamed. Let us join hands, forge ahead abreast, face the future together, and blaze the trail for innovative development of online education in the digital age.

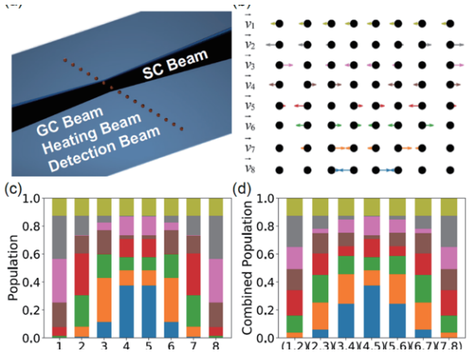
SCIENTIFIC INNOVATION

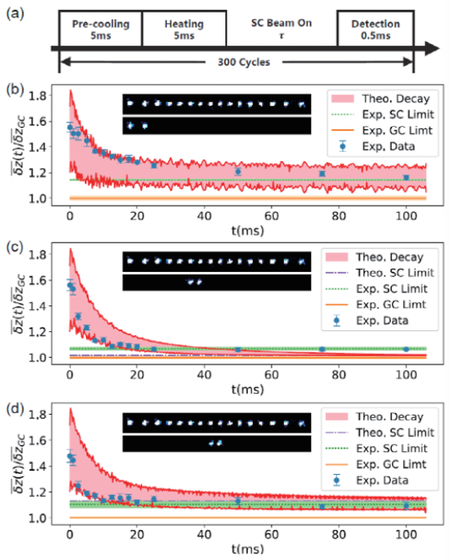
Tsinghua Physicists advance Quantum Information Processing with Large Ion Crystals

Led by Prof. Luming Duan, a research team from the Institute for Interdisciplinary Information Sciences at Tsinghua University has reported the first multi-ion sympathetic cooling experiment on a long ion chain, where the structure of the collective modes must be considered when choosing the cooling ions. This work, entitled "Experimental Realization of Multi-ion Sympathetic Cooling on a Trapped Ion Crystal", is published in Physical Review Letters and marks a significant advance for future large-scale ion trap quantum computing and simulation that requires a long runtime.

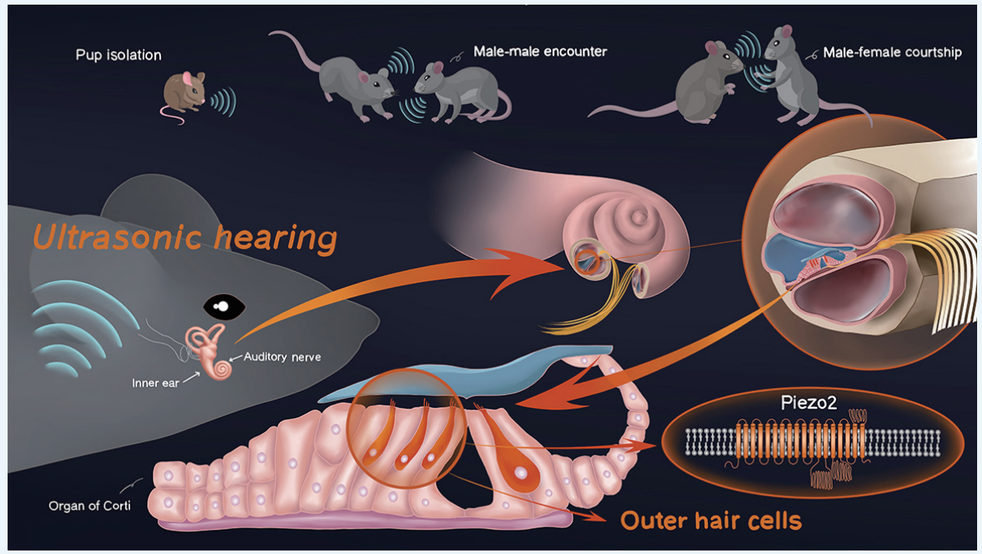
Trapped ions are one of the leading platforms in quantum information science. For quantum computing with a large circuit depth and quantum simulation with a long evolution time, it is of crucial importance to cool large ion crystals at runtime without affecting the internal states of the computational qubits, thus the necessity of sympathetic cooling. In the experiment, the team used a narrow cooling beam focused on two adjacent ions, and optimized the choice of the cooling ions according to the collective oscillation modes of the chain. Thus, by cooling a small fraction of the ions at suitably chosen locations, they showed that cooling effects close to the global Doppler cooling limit could be achieved. Furthermore, their scheme can directly be generalized to 2D and 3D ion crystals with more complicated mode structures.

Co-first authors of the paper are IIIS PhD students Zhichao Mao and Yuzi Xu, and the corresponding authors are Professor Luming Duan, Assistant Professor Yukai Wu, Associate Researcher Zichao Zhou. Other co-authors include IIIS Phd students Quanxin Mei, Wending Zhao, & Yue Jiang, Assistant Research Fellow Xiuying Chang, Associate Researchers Li He & Lin Yao, and Yu Wang, undergraduate from Peking University (currently a PhD student at Harvard University). The research was funded by Beijing Academy of Quantum Information Sciences, the National key Research and Development Program of China, Frontier Science Center for Quantum Information of the Ministry of Education of China, Tsinghua University Initiative Scientific Research Program, Shuimu Tsinghua Scholar Program and International Postdoctoral Exchange Fellowship Program.





Untangling the mystery of ultrasonic hearing in mice



Mice vocalize at frequencies higher than 25 kHz during certain social behaviors, including mother–pup interactions, male–male encounters, and male–female courtship. Mice without Piezo2 ion channels, which are mostly found in the membranes of outer cochlear hair cells, weren't as responsive in ultrasonic behavioural tests, suggesting that this channel may be key to their ultrasonic hearing.

A separate biomechanical pathway allows mice to communicate at high frequencies.

Like many mammals, mice can hear and communicate with sounds well outside the range audible to humans. In addition to their familiar squeaks, mice also use much higher frequency ultrasonic sounds for social communication, between mothers and pups, and during courtship or aggressive interactions.

For a long time, it was thought that animals use the same biomechanical pathways and molecules to hear ultrasonic frequencies, those higher than 20 kHz, that they use to hear lower-frequency sounds.

However, in July a team from Tsinghua showed that mice lacking a mechanosensitive ion channel found in cochlear hair cells, Piezo2, weren't as sensitive to ultrasonic sounds, but remained sensitive to lower- frequency sounds1.

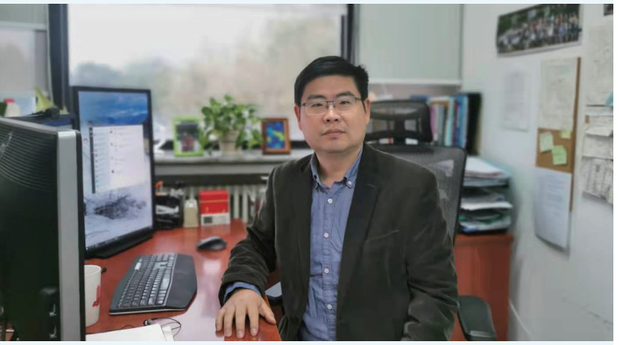
"We thus hypothesized that Piezo2 may play a role in transducing higher frequencies," says Wei Xiong, an assistant professor in the School of Life Sciences at Tsinghua University.

Xiong and his colleagues bred knockout mice that did not express Piezo2, which is involved in the somatosensory system, in their cochlear outer hair cells for the experiment.

The researchers doubled checked that the loss of ultrasonic hearing in mice bred not to express ion channel Piezo2 in their outer hair cells was not due to a loss of hair cells at the basal coil of the cochlea by imaging mouse ears. The whole structure of the inner ear appeared intact with hair cells remaining in normal allocation and abundance in the above video, they wrote.

Ultrasonic responses

Recordings of the auditory brainstem response, measured with an electrode attached to their skull, showed that the knockout mice were significantly less sensitive to ultrasonic sounds compared with controls. In a behavioral test, in which the mice learn to freeze when they hear certain sounds, the knockout mice did not learn to freeze



in response to an ultrasonic cue. This indicates that Piezo2 is essential for mice hearing ultrasonic frequencies within the range necessary for social communication. The results were published in Proceedings of the National Academy of Sciences (PNAS)2.

How, exactly, Piezo2 detects ultrasonic frequencies, and what specific part it plays in ultrasonic hearing, is not yet determined, says Xiong. It appears that Piezo2 is involved in detecting ultrasonic sounds specifically in the outer hair cells, and that it somehow coordinates with the hair-bundle mechanotransduction machinery to achieve ultrasonic transduction, but the details are still to be worked out. "These questions are exactly what we are investigating now," he says.

Understanding hearing loss

The studies demonstrate that hearing uses a more complicated set of mechanisms than was thought, says Xiong. And it raises new questions about the diversity of hearing across different species. Some animals, such as insects and frogs, lack a cochlear structure, but are still able to sense and make ultrasonic vocalizations. Whether Piezo2 is involved in their hearing needs to be examined.
This will also help understand the genetic mechanisms underlying human hearing. People gradually lose their higher-frequency hearing. Further studies of Piezo2 may shed light on the genetic basis of auditory function disorders and bring potential solutions to address age-related hearing loss.

Tsinghua Astrodynamics team wins Global Trajectory Optimisation Competition

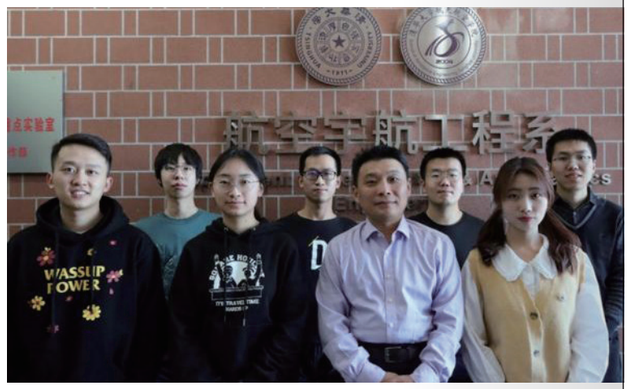
A joint team from Tsinghua University and the Shanghai Institute of Satellite Engineering named TsinghuaLAD&509 has won the Global Trajectory Optimisation Competition, one of the prestigious international competitions in space mission design.

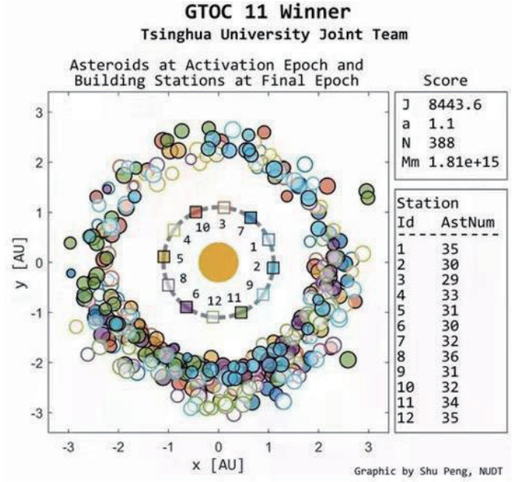
This is the first time that a Tsinghua team has ever won this competition.

The team won first place in the 11th Global Trajectory Optimisation Competition (GTOC 11), outperforming 93 teams participating from around the world with an absolute advantage of 8,443 points. The results of the competition were announced on November 7. GTOC 11 saw the highest number of participating teams since the competition started in 2005.

TsinghuaLAD&509 consisted of eight graduate students from the Tsinghua Laboratory of Astrodynamics (TsinghuaLAD) led by Professor Baoyin and Associate Professor Fanghua Jiang, and two Tsinghua alumni who now work in the space agency.

Initiated by the European Space Agency (ESA), the Global Trajectory Optimisation Competition is the highest international level competition in the field of space mission design, taking place every one-two year over roughly one month during which the best aerospace engineers and mathematicians worldwide challenge themselves to solve a "nearly-impossible" problem of interplanetary trajectory design.





The problem is released by the winning team of the previous edition, who also is free to define the competition rules entirely. The problem needs to be related to interplanetary trajectory design and its complexity high enough to ensure a clear competition winner.

In GTOC 11, the teams were asked was to design the "Dyson Ring" orbit, construct 12 solar power stations in it, and a series of missions to transfer asteroids to these stations while maximizing the transferred asteroids mass and minimizing the cost (propellant) to accomplish these missions.

Solving the problem involved cutting-edge technologies such as a small bodied defense, and the construction of a space station, among others things that have broad engineering application implications for the future.

During the one-month competition period, each team could continuously update and submit new results. The teams could see each other's latest progress, and try to constantly break through their new records, and target a better performance index.

"This race is like a '10,000-meter-long run'. Every step is very solid. At the same time, you need to maintain your advantage to the end to prevent being overtaken by your competitors on the last lap," Professor Baoyin said.

"We are 'racing' and we can see that others are also 'racing' at the same time. Sometimes while updating the task in the middle night, we found that it was not only our team, other teams were also working tirelessly at three or four o'clock in the early morning their local time," Professor Baoyin said. Through continuous effort, the Tsinghua team screened nearly a thousand candidate asteroids suitable for the "Dyson Sphere" from more than 80,000 asteroids in the solar system, and realized the optimal asteroids distribution of different stations. Relying on the high-efficiency optimization algorithms the team developed, the sequence of visiting asteroids was optimized. The Tsinghua team gave their unique strategy for the future use of human space resources.

The best strategy proposed by Tsinghua University Joint Team

The Tsinghua team maintained a strong lead over its rivals throughout the competition, eventually becoming the winner.

"After 16 years of continuous devotion, we finally won the coveted competition. I'm so grateful to my team members. Without their support and hard work, it would not have been possible," said team leader Zhang Zhong.

Congratulations from ESA

Tsinghua has been participating in the competition ever since it started. When Professor Baoyin led a team to participate in the first GTOC, it was the only Asian team. In that edition, the Tsinghua team had ranked last.
The victory of the Tsinghua team in GTOC 11 is a major achievement of China's scientific research, consolidating its leading position in international aerospace events, according to the team.

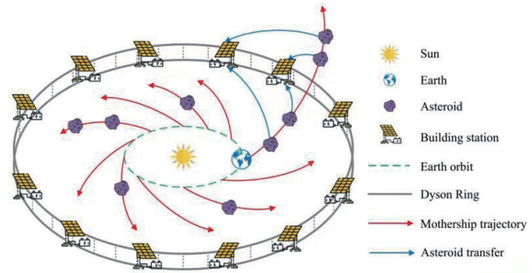


Figure 1 Illustration of the construction of the "Dyson ring".

Recycling electric vehicle batteries sustainably

Researchers at Tsinghua have demonstrated a greener way of recovering lithium from batteries to pave the way for a more sustainable electric vehicle market.

Electric vehicles will be instrumental to reduce carbon dioxide emissions in order to reach carbon neutrality. With more than 3 million electric vehicles sold worldwide in 2020, the question of how to recycle the lithium-ion batteries that power them is pressing, in particular, because lithium mining requires the use of large amounts of chemicals.

For green technologies such as electric vehicles to be sustainable, it's important to quickly identify environmentally friendly ways to recover lithium from spent batteries. Now, Jinhui Li and his team, writing in Green Chemistry, present a fast and sustainable process for the rapid extraction of lithium from the cathode of lithium iron phosphate batteries.

Jinhui Li and his team at the School of Environment at Tsinghua University seek to use chemistry to create more sustainable battery consumption systems.

At present, there are two main types of lithium-ion batteries for electric vehicles: ternary nickel-cobalt manganese (LiNixCoyMnzO2) and lithium iron phosphate (LiFePO4) batteries.

"In May 2021, the monthly output of lithium iron phosphate batteries in China exceeded that of ternary batteries for the first time," observes Li. "This means that the market share occupied by lithium iron phosphate batteries will continue to increase and become the mainstream in the future, and that the development of a suitable recycling technology is urgently needed."

Mechanochemical extraction

Because spent LiFePO4 batteries do not contain precious metals, the economic drive for material recovery is weak. Lithium can currently be recovered from such batteries using technologies based on hydrometallurgy, which uses aqueous solutions to recovery metals from the spent material, but the process is inefficient and involves the use of strong acid reagents, which are cause for serious environmental concerns.

In the new study, the researchers introduce a more environmentally friendly process based on a mechanochemical method, which uses mechanical energy as a driving force to induce a solid-phase chemical reaction to selectively and quickly extract lithium without the need to use acids or the generation of waste water.

"Mechanochemistry is a widely used green technology," explains Li. "Compared with direct hydrometallurgy, the advantages of mechanochemistry are that the reaction space is closed, reducing environmental pollution; a mechanical force accelerates the chemical reaction, which is 3-4 times faster; and, finally, the use and waste of water are reduced."

Practical process

In practice, the researchers put the spent cathode lithium iron phosphate material and a solid-phase oxidant, sodium persulfate, into a ball mill tank, in which the mechanical force generated by the collision of the grinding balls accelerates the oxidation reaction. The iron in lithium iron phosphate is oxidized, and the lithium is released and converted into lithium sulfate. The lithium sulfate is then precipitated and recovered in the form of lithium phosphate.

Using this method, 99.7% of the lithium in LiFePO4 cathodes can be recovered. And the reaction is fast –as quick at five minutes – highly selective, avoids the use of acids and bases, and results in three new chemical products: iron phosphate, sodium sulfate and lithium phosphate.

"We are still trying more solid oxidants and other types of co-milling solid-phase reaction reagents," concludes Li. "We look forward to finding a solid-phase oxidant with a faster reaction rate, or to obtaining a higher value-added lithium product, so as to further broaden the profit margin of lithium recovery."

Tsinghua researchers awarded 2021 ACM Gordon Bell Prize

A 14-member Chinese research team received the ACM (Association for Computing Machinery) Gordon Bell Prize at the 2021 Supercomputing Conference in Saint Louis, US on November 18 for their project "Closing the Quantum Supremacy Gap: Achieving Read-Time Simulation of a Random Quantum Circuit Using a New Sunway Supercomputer".

Recipients of the award, the highest award that is given in the field of high-performance computing applications, include Fu Haohuan and Chen Dexun from Tsinghua University and the National Supercomputing Center in Wuxi. The remaining members of the team are from Zhejiang Laboratory in Hangzhou and Shanghai Research Center for Quantum Sciences.

As key members of the Chinese team, Tsinghua researchers played a leading role in the design and review of research framework and the performance optimizing of irregular tensors in the quantum circuit simulation.

It is the third time that researchers from Tsinghua University have been recognized with this prestigious award.

In 2016 and 2017, Fu took part in research for developing a highly-scalable solver for atmospheric dynamics, as well as for nonlinear earthquake simulations, receiving the award two years consecutively.

Meet Tsinghua alumni who look up at the starry sky

Editor's Note

Space exploration has never ceased to exist on mankind's agenda relating to astronomy.

On October 16, China launched the Shenzhou-13 mission to the Tiangong space station successfully, marking the start of the country's longest spaceflight.

The three-member crew — mission commander Major General Zhai Zhigang, Senior Colonel Wang Yaping and Senior Colonel Ye Guangfu — will then float into the core module, which is the first and also central section of the permanent space station — Tiangong, or Heavenly Palace. They will install equipment and verify technologies and plans for the next steps in the Tiangong space station program.

Major General Zhai Zhigang, is an alumnus of the School of Aerospace Engineering, Tsinghua University.

Behind the success of this mission are the efforts of countless people, and some of the figures have their roots in Tsinghua.

"I will return to the vast space, overlooking the beautiful homeland, and build a space laboratory station of our own."

——Liu Boming

"A fire alarm suddenly sounded in the orbital cabin when we were about to leave the cabin. Sparks could be fatal in space, as the orbital module is likely to explode", says Liu Boming.

It was in 2008 when Liu flew on a mission in which he was even prepared to sacrifice himself. "So we made a temporary decision to change the exit procedure by displaying the Chinese national flag first". Fortunately, after investigation, the orbital cabin fire alarm was a false alarm. During this mission in 2008, Liu and another Tsinghua alumnus Zhai Zhigang, conducted China's first spacewalk.

Liu Boming and his colleague Tang Hongbo, who wore a new generation of "flying" extravehicular spacesuits independently developed by China, successfully exited the cabin and completed the first mission of the Chinese space station astronauts. This is also the first time in 13 years that the Chinese once again left a "Chinese footprint" in space, and the mission of Shenzhou-12 was a complete success.

The mission today is still full of challenges, but Liu Boming always has strong faith in the development of China's aerospace engineering.

Liu Boming is an alumnus of the School of Aerospace Engineering. He is among the first batch of astronauts in China and the astronauts of the Shenzhou-12 mission.

" What I learnt at Tsinghua was to contribute to the country."

——Gu Zhenfeng

What drew Gu Zhenfeng to astronomy was his participation in the Shenzhou-5 report conference during his sophomore year. The speeches made by the flying heroes have strengthened Gu's determination to "send astronauts to space".

Although the sites for a manned space launch are usually located in the Gobi Desert in the northwest, where the natural environment is relatively harsh, none of these hindered Gu's choice upon graduation. "I ran to Jiuquan without hesitation as soon as I graduated", says Gu.

Over the years, Gu never forgot why he started, no matter how many conundrums he was put under. Now after more than 50 launch missions, Gu Zhenfeng has assumed the important role of command and coordination.

Gu Zhenfeng is an alumnus of the School of Aerospace Engineering. He is a commander of the space launch mission at China Jiuquan Satellite Launch Center.

" Manned spaceflight is a matter of life and death"

——Rong Yi

"I went for whichever model needed, and was always at the forefront of the work," says Rong Yi, who obtained her doctoral degree in Engineering from Tsinghua University. In 2013, as the commander of Shenzhou-10, Rong came to Jiuquan city early to prepare for the upcoming launch. In order to maintain a comprehensive understanding of the mission, during the 40 days she spent in Jiuquan, she was busy working on various subsystems of the rocket during the day, and often worked into the early hours of the morning to control the technical status.

"How Tsinghua has built my character is beyond expectations", says Rong. Education is not only the transmission of knowledge, but also the construction of personality. The mentors and friends at Tsinghua University had a profound impact on Rong. Her mentor Wang Xilin has not only taught her knowledge and skills, but also the importance of taking up leadership positions and caring for colleagues.

When it comes to manned spaceflight, Rong believes that it is "a matter of life and death". That is why at the launch site, her colleagues always felt that a very tenacious drive existed inside her skinny body. "The job carries with it a heavy responsibility.

Though the flight time of the rocket is very short, its safety depends on our day-to-day quality management to ensure. It is the responsibility and mission of every manned rocket team member to have the astronaut sit inside the rocket and have him/her reach the intended orbit safely and accurately."

Rong Yi is an alumna of the School of Aerospace Engineering. She has participated in seven launches of Tiangong-1, Shenzhou-8, Shenzhou-9, Shenzhou-10, Tiangong-2, Shenzhou-11 and Shenzhou-12.

" A person's value is often reflected when connected to others and society."

——Wang Yan

"When I was in junior high school, I would read aerospace magazines every day during lunch break, and whenever I saw that my country was still limited by others for lack of its own navigation system, I felt upset", says Wang Yan, a recent Tsinghua graduate from the Department of Energy and Power Engineering.

Such simple feelings also became his first motivation in choosing power-related majors and eventually determined Wang's career choice at the China Academy of Space Technology (CAST).

Wang's long-term training in the social work system at Tsinghua University has had a significant impact on him. "People cannot exist apart from the state and society. A person's value is often reflected when he or she is connected to others and society", says Wang. Such values played a strong guiding role in his job search. Wang focused more on whether he could participate in major national projects, respond to national needs, and create more value for society.

Exploring the vastness of the universe, developing the space industry and building a space power is an unremitting pursuit of his space dream. "It is my honor as an engineer and a Communist Party member to join the General Department of CAST and participate in major national projects. I hope that in the future I can live up to the expectations of my country's people, uphold the fine style inherited from Professor Gu (Wang Yan's mentor), and do something practical inside the aerospace system", says Wang.

Wang Yan is an alumnus of the Department of Energy and Power Engineering. He is working in the General Design Department of China Academy of Space Technology (CAST).

Yu Zhou's climate action for a net-zero future

Editor's Note

Tsinghua University plays an active role in promoting the 17 UN Sustainable Development Goals (SDGs) by nurturing innovative talents, enhancing research, among many other important ways.

This time in TsinghuaRen for SDG series, we will hear the story of Yu Zhou, who worked at the UNDP (The United Nations Development Programme) for one year after graduating from the Schwarzman College, Tsinghua University in August 2020.

"Climate Action" is for sure a core concept for Yu Zhou. Either in his current position with the Energy Foundation China, a non-profit organization that supports universities and research institutes to make policy recommendations to achieve China's carbon neutrality goal, or before this with UNDP, one of his concentrations is tackling the climate issues.

Yu Zhou, a Schwarzman scholar, says his time at the UNDP was in fact what motivated him to change a job and focus squarely on the 13th Sustainable Development Goal: Climate Action, which aims to take urgent measures to combat climate change and its impacts.

After graduating from the Schwarzman Scholars Master Program, a rigorous and outstanding Master of Global Affairs degree program at Tsinghua University in 2020, Yu joined the UNDP's SDG Finance Team and was supposed to go to Thailand.

His team was responsible for supporting small and medium-sized enterprises and startups in Southeast Asia to respond to and recover from the effects of Covid-19, and to align their business strategies with the SDGs, as part of the UNDP's Covid-19 Response and Recovery Venture Accelerator Initiative launched in collaboration with Draper University in the US.

Unable to join his team in person in Bangkok due to Covid-19, Yu Zhou worked remotely with them, launching a two-week-long online training program, in which 40 well-known venture capitalists from 27 countries taught startups much-needed business skills to attract investment. At the same time, the companies were also offered a series of courses developed by UNDP on environmental, societal, and governmental (ESG) practices to promote socially responsible investing and thereby attain the SDGs.

While staying at the UNDP China Office in Beijing, Yu also participated in other work issues such as drafting and translating the proposal, reports, and studies as well as developing the knowledge products and workshops to extend the sustainable development of Chinese enterprises abroad, bearing the goal to promote 2030 SDGs Agenda.

These experiences in UNDP undoubtedly offered him a good chance to have a general understanding of SDGs from a global perspective as well as to see how these concepts are put into practice.

"Of course, governments have a big role to play. But that's not enough. To successfully implement the SDGs and to safeguard the future of the planet, it is equally crucial to fully mobilize the private sector to put these essential concepts into the decision-making process in enterprise's investment and operation activities." Yu explains.

From September, Yu Zhou began his new job as a program associate at the Energy Foundation China, seeking to leverage his experience at the UNDP to promote climate action in China. He is responsible for formulating the foundation's development strategy and strengthening its cooperation with universities and government research institutions to promote low-carbon policy advice.

Yu says he decided to work at the foundation as he wanted to specialize in the field of climate change particularly.

"While working at the UNDP, I came to a realization that I should specialize in one of the SDGs. Given my longtime interest and previous experiences working on the issue of climate change, I felt I should reach out to promote climate action," he adds.

Yu completed his undergraduate studies at the Department of Foreign Languages and Literatures of Tsinghua in 2017. During his undergraduate years, Yu was part of the university's Siyuan Leadership Program, which aims to deepen students' understanding of the country's development and broaden their international outlook through a variety of academic research projects, social practices, and internship opportunities.

Diverse opportunities in Tsinghua led Yu to participate in several research projects and case-analysis competitions, as well as to study at Heidelberg University in Germany as an exchange student, deepening his understanding of global issues such as climate change.

"It was in 2015 when I went to Germany, which was a turbulent time in Europe," Yu says. The terrorist attack in Paris, the refugee issue of Germany, the financial crisis of Europe...something that could only be discussed in class previously was happening around him for the very moment.

"On the one hand, I realized that global governance is quite a complex field that requires much wisdom. On the other hand, this unforgettable experience inspired me to devote myself to the greater good of humanity," he says.

So upon completing his undergraduate studies, Yu was enrolled at the School of Public Policy and Management for a master's degree in 2017, seeking to further immerse himself in global public affairs.

In 2019, Yu interned at the Asian Infrastructure Investment Bank (AIIB), where he was part of the preparatory team for the Bank's Annual Meeting held in Luxembourg that year. For the meeting, the Bank had adopted Act Green Together (AGT), an initiative to make its meeting environmental-friendly and carbon neutral. Yu, together with his colleagues, calculated the carbon footprint of all the panelists attending the meeting and adopted measures such as limiting the use of paper materials during the whole meeting. In this way they called for accelerated efforts and quicker steps to achieve the peaking of emissions at an early date while bolstering the development of new working styles. The AIIB claims in its website that the 2019 Annual Meeting achieved carbon neutrality after all unavoidable carbon emissions were offset.

Yu says his time at the AIIB taught him that change was possible.

After completing his master's degree, Yu Zhou applied for the Schwarzman Scholars Master Program, hoping that getting into the program would open new possibilities for him. Because of his strong academic background and leadership skills, Yu was successfully enrolled in the program, majoring in economics, public policy, and global affairs.

"Tsinghua provides so many opportunities for its students to go outside of the campus and explore the world, such as overseas exchange programs, social research activities, and international academic seminars," Yu Zhou says. "I do not set many boundaries when it comes to my future. All I know is that life is full of possibilities."

Leading the way in the fight against climate change

Editor's Note

Tsinghua is home to a diverse community, constantly striving to play an important part in solving today's pressing global challenges. Climate change is one such challenge many outstanding #TsinghuaRen have been actively engaged in addressing.

To promote climate action, they have been passionately involved in a wide range of activities, including attending the Global Youth Summit on Net-zero Future and the CBD COP15.

This article features some of these individuals, their work and views on addressing the biggest challenge facing humanity.

Zhang Shangchen

"I'll never forget that one summer. My hometown experienced extreme weather—three days of heavy downpours.That was the first time I realized how climate change is affecting our lives," recalls Zhang Shangchen from China, a senior student from the School of Environment of Tsinghua University.

Alarmed by this personal experience, Zhang decided to focus on addressing climate change and other environmental problems. So, he took part in the 2019 United Nations Climate Change Conference, also known as COP 25, held in Madrid, Spain.

"During my time there, I was amazed and motivated to see students from different fields working together to promote climate action," he says. "Being with them gave me new insights and broadened my vision. But most of all, the experience made me recognize the importance of youth participation in addressing climate change."

As a youth delegate of the Global Alliance of Universities on Climate (GAUC), Zhang closely worked with different stakeholders to promote solutions for sustainable development. Later, at Tsinghua, he organized the 5th Model Climate Change Conference of Parties.

He says he looks forward to working with youth from all over the world to come up with new ideas and solutions for sustainable development.

As extreme weather events have become more frequent, causing great damage to life and property around the world, Zhang believes it has never been more urgent than now to act together decisively to reduce the impacts of climate change.

"Regardless of where we are and what age or profession we are in, we all have the power to make a difference. And we must act now," he says.

Ava Waitz

Ava Waitz, a Schwarzman scholar, is another Tsinghua student actively working on climate-related issues. As a student who studied materials science and engineering during her undergraduate studies, she hopes to work with

other passionate people like her and use her expertise towards a more sustainable future.

She recently participated in the 15th Meeting of the Conference of the Parties to the Convention on Biological Diversity (COP15) held in Kunming, Yunnan Province as a student representative, where she, together with other youth participants, issued a declaration "Climate Response and Biodiversity Protection under Carbon Neutrality Goals."

The declaration calls for greater international collaboration in addressing climate change. "Climate change and reduced biodiversity is the realistic, urgent, and impending threat and challenge for humankind. In the face of the climate crisis, humankind shares a common future where only cooperation can achieve win-win situations. Against this backdrop, youth cooperation is of vital importance," reads the declaration.

"I think it was a particularly powerful signal to have students from the US and China read the statement together since our two countries have some of the biggest roles to play in mitigating climate change," says Ava. She is very grateful to have the opportunity to participate in the CBD COP15 and to deliver a message to youth calling for action on climate change.

She says striving to build a community of life for humanity and nature is her obligation as a member of the younger generation of the 21st century. "We must reverse the impacts of climate change."

Cheng Haosheng (Samson)

"I used to think environmental conservation is all about saving natural resources and energy. However, when I was a senior in high school, a directly climate-related typhoon hit my homeland Macao, causing ten deaths around my neighborhood. As I witnessed in person how climate change took the lives of people, I told myself I can't just be a passive observer," says Samson, a Tsinghua student from the School of Environment.

Samson took part in the 6th Model Climate Change Conference of Parties, Tsinghua University, which drew over 190 participants from 50 schools and nine nations. Likewise, to raise public awareness of sustainable development and promote climate action, he has been co-operating an association called "Genervision House" in his homeland Macao.

During his internship at the National Center for Climate Change Strategy and International Cooperation, Samson was involved in global climate negotiation and governance research; and he took part in COP15 as an assistant of the forum of "Towards a Carbon Neutral Future: Synergy between Climate Change and Biodiversity".

"I also took part in the Global Youth Summit on Net-Zero Future this year, a high-level climate event to energize youth across the world," he says. "The summit not only enabled the youth to deepen their understanding of climate change and build consensus, but it also offered an international platform for the youth to speak on the issue of climate change and urge researchers, policymakers, and ordinary people around the world to act now to achieve a sustainable future for all."

En route from Beijing to Islamabad, I saw the real Xinjiang

Harood, a third-year postgraduate student at Tsinghua University's School of Materials Science and Engineering, is something of an adventurer, always stepping outside his comfort zone and doing things that inspire others to dream big.

In 2018, he, with a friend, set out on a 28-day motorcycle road trip from Beijing all the way to Islamabad, the capital of Pakistan.

The trip, which covered a distance of around 6,000 kilometers, took them past the picturesque rolling grasslands in Inner Mongolia, the vast sandy expanse of the Gobi Desert in Gansu, and the lush green mountains and deep blue lakes in Xinjiang.

They also rode their bikes through rural areas and cities, stopping in between, interacting with people they came across, and trying out local food.

Following a day-long ride, they would put up their tents alongside mountains and rivers and settle down for the night only to wake up the next morning to ride further.

From Kashgar, the bordering city in Xinjiang which was an important trading center on the ancient Silk Road, they made their way through the winding Karakoram Highway, also known as the China-Pakistan Friendship Highway, to Islamabad. One of the world's highest paved roads, the highway arguably offers some of the most spectacular views of snow-capped mountain peaks and rugged mountainous terrain.

Exciting as the trip was, it also came with its own set of challenges. Riding a bike under the scorching sun through the desert for hours with no signs of life was no easy task for the two friends. Also, the lack of good foods at times would make them question their decision to go on a road trip. But then again, they would cheer each other up and keep going.

Harood still remembers with pleasure how a random local biker in Xinjiang approached them with a friendly greeting while they were waiting at a road interaction for the traffic light to turn green, at whose house they would eventually end up staying for a night. He says he was moved by the biker's hospitality.

Before going to Xinjiang, he had noticed some foreign media reports that claimed some kind of genocide happening there, but he found the region nothing like it was described in those reports.

He says there were security checkpoints in places, but they were for the region's safety, and he didn't see anyone crying in Xinjiang. The officials he met were accommodating, and no one ever checked his belongings or tried to stop him while he was on the road. The Muslims living there were willing to share their happy lives with them and were looking forward to welcoming more foreign tourists so that they could see the true Xinjiang for themselves, he says.

Harood has gathered many valuable and memorable experiences during his time in China.

He joined as a volunteer in 2020 for the official website of the Beijing 2022 Olympic and Paralympic Winter Games. He, likewise, worked to correct the spelling and grammatical mistakes on the public display signs at different Olympics venues. He says the motto of the Winter Games 2022, "Together for a Shared Future," has inspired him to live up to the ideals of the motto.

Looking forward, Harood, who is impressed by the development and progress in China, wants to bring back the knowledge he has learned in China to help develop his country, Pakistan.

She delivered a speech at the UNGA on behalf of youth volunteers

On December 2, 2021, the President of the 76th session of the UN General Assembly, the Permanent Missions of Brazil and Japan to the United Nations, the United Nations Development Programme(UNDP), and the United Nations Volunteers (UNV) Program held an informal commemorative UN General Assembly meeting to mark the 50th Anniversary of UNV and the 20th anniversary of the International Year of Volunteers. Among the speakers at that meeting in the General Assembly Hall of the UN Headquarters in New York was one Tsinghua University graduate: Kabelo Botlhe Dikobe from Botswana.

Dikobe, who graduated in 2019 with a master's degree from the Tsinghua School of Journalism and Communication, is an international UN Youth Volunteer, working as an Executive Analyst at the Office of the Executive Director of UN Women at its headquarters in New York. She had been invited to speak as the representative of international UN Youth Volunteers.

Speaking from the podium in the General Assembly Hall as the two giant screens on either side of the podium displayed her face in close-up, Dikobe made a convincing case for leveraging data to solve shared social problems and the youth's role in it.

She highlighted how volunteerism had provided an entry point for young people like her to address complex socio-economic challenges through new models of volunteering that involve new technologies and online connectivity, imperative to the changing needs of the world, especially as people confront the changes brought by the COVID-19 pandemic.

Advancing a new narrative of connected volunteerism for effective youth leadership, Dikobe underlined the urgent need to understand and solve social problems with data. "During the pandemic, as a local and online volunteer from the Global South, I recognized the need to leverage on research and data to help track and mobilize communities so that no one is left behind," she said.

This year's theme for International Volunteer Day is "Volunteer Now for our Common Future." To Dikobe, the theme means generating data-driven insights into shared social problems volunteers could draw on to take effective measures in resolving them.

In her speech, she said she agreed with the UN Secretary-General's data strategy, which aims to unlock the data potential of the UN system for better decisions and stronger support to people and the planet—in the moments that matter most. She also pointed out that volunteers across the world could use "big data" productively to further review existing societal challenges and strengthen and empower community-led monitoring.

Dikobe, an advocate for equal women's representation in the media and environmental protection, has extensive experience in global communications and journalism. She was a contributing freelance journalist for China Daily's Global edition, writing about China-Africa affairs, and worked as a journalist for The Botswana Gazette newspaper. While in Beijing, she served on an ad hoc basis as a State Visit Ad Hoc Committee member of the Embassy of Botswana during the Botswana-China Business Forum. She was a Business Communication and Law lecturer until recently.

She also has an impressive track record working as a volunteer. At Tsinghua, as a member of the Tsinghua University African Student Association, she volunteered in a wide range of activities: she supported and facilitated international events on cultural diversity, Africa Day, youth leadership and Beijing Women empowerment seminars. She also worked as an intern with Tsinghua's Global Communication Office, sharing Tsinghua stories with the world.

In the wake of the COVID-19 pandemic, Dikobe worked with the African Girls Empowerment Network in Nigeria as an Advocacy, Fundraising and Communications volunteer. In her country, she served as a local volunteer with Volunteer Hub as a Communications Officer, raising awareness on volunteerism and holding civic discourse on gender-based violence, environmental awareness, and socio-economic challenges youth face.

In April 2021, Dikobe joined UN Women through its inaugural Young Women Leaders Program, a partnership initiative with the United Nations Volunteers program. The program has allowed her to contribute to UN Women's operations in New York by sharing her voice, passion, and commitment to gender equality.

Given her outstanding accomplishments, Dikobe had the privilege to attend the informal commemorative UN General Assembly meeting as a speaker and share her volunteer experiences on behalf of youth volunteers.

"Volunteerism is at the core of how diverse groups of young people are passionately seeking social transformation around them. An enabling environment for volunteering that fosters creativity, innovation, and data-centric best practices from youth, I am confident that this large population of youth volunteers can be a great value add in achieving the 2030 Agenda for Sustainable Development, for all," she said, concluding her speech to a round of applause from the audience. She has made the whole Tsinghua community proud.

DIVERSE CAMPUS

Tsinghua University Innovation Contest and Tsinghua Great Idea Challenge spark creativity

The finals of the 11th Tsinghua University Innovation Contest and 2022 Tsinghua University Creative Challenge (for freshman) were held last month at the Tsinghua School of Economics and Management. From its core position of "looking for ideas to advance social development," the competition seeks out great ideas which can create value and bring solutions for sustainable development to human society.

After more than four hours of competition, the "cool, easy-to-park, changeable, locking, foldable handlebars" team won the championship of the challenge.

Journey of Innovation

The opening speech was addressed by LI Chang, president of the student association of science and technology. He said this competition was the first school-level science and innovation competition for freshmen. The purpose is to discover, cultivate and improve freshmen's innovative mindsets, break the academic limitations of Tsinghua students, and expand students' creativity: this reflects the three-pronged approach to talent cultivation by integrating the shaping of values, the cultivating of skills and the imparting of knowledge. He said this also embodies university innovation culture and the value of social innovation.

The University Student Science and Technology Association and Tsinghua x-lab organized the competition, which encouraged students to participate in interdisciplinary competitions and to take their ideas to the market and society. This year's competition combined competition and courses, and aimed to merge a curriculum knowledge system with scientific and creative events, and to comprehensively improve the students' scientific literacy and innovation.

Exchanges over Competition

The final pitch was divided into five tracks: campus optimization; public welfare and social innovation; sustainable urban development; environment and energy; and healthcare.

At the competition, teams introduced their products or services to the sub-track judges using videos, pictures,

and physical objects. The teams shortlisted for the final needed to present in turn to the group jury. Each team had 7 minutes, of which 5 minutes would be presentation time and 2 minutes question and answer.

The "cool, easy-to-park, changeable locking foldable handlebars" team from the campus optimization track attracted attention as soon as it appeared. Unlike the teams that displayed concept pictures, they brought an actual prototype of a foldable bike with a white body and silver folding handlebars.

They dug into the reasons why it was difficult to park and collect bikes on the Tsinghua campus and found that the handlebars of bicycles parked side by side would block each other, which led them to the idea of foldable handlebars. Foldable handlebars could cut the required parking space nearly in half, and would allow nearly twice as many bicycles to be parked in the same area. They also bring other advantages. The team used a triangular structure and lock to transform the folded two handlebars into a front wheel lock. The triangular design resembled the reactor on the front of Iron Man's chest. The team leader said, "I hope the design can make bike rides a little closer to being as cool as Iron Man."

The team members responded confidently to judge GUO Wei's questions about practicability and safety. They said that such problems were considered at the start of the design. For example, a handlebar length adjustment mechanism was added, and the modified structure of the design was simple and would not affect basic functions such as braking and gear adjustment.

HAO Xiuqing, deputy director of Tsinghua X-lab, said at the project review that although the participants came from different majors and focused on different themes, their confidence and calmness showed the creativity and vitality of Tsinghua's freshmen. Their ideas were not merely creative but also considered technical and commercial feasibility.

The judges conducted a final review after all 15 teams completed their presentation and ranked each, as well as named an overall competition champion.

DING Kairui, leader of the team that designed the "Cool, easy-to-park, changeable locking foldable handlebars," said at the awards ceremony that his biggest achievement in the competition was learning to let himself leverage others' strengths and listen to their suggestions. The idea for this project came not only from the contestants, but was also a crystallization of the brainstorming and wisdom of the whole class.

Creativity for Future

HAN Wentao, deputy secretary of the CCYL Tsinghua University Committee, said he appreciated the wonderful showing by the finalists. The students looked to the campus, the country, society and mankind to solve current problems. This spirit is worth encouraging, he said. On the journey of creativity, innovation and entrepreneurship, everyone showed great creativity, Han said.

HAN said although some teams ran into logical problems during the pitching phase, he hoped everyone would not feel defeated. The creative competition was still a good opportunity. During one's first year, it's especially important to think out of the box, and to record and express your ideas based on daily observations and thoughts. This is the real significance of this competition, HAN said.

HAN said he hoped students would use the competition as a starting point, make good use of the resources available inside and outside school, interact with and polish their skills with teachers and students, and explore their own path to creativity, innovation and entrepreneurship.

Building a more accessible and inclusive society

Editor's Note

December 3 marks the International Day of Persons with Disabilities. Let's have a look at what Tsinghua teachers and students strive to work for a more accessible and inclusive society.

01

"Accessibility is not just for people with disabilities, but for all of us."

Modern buildings and public infrastructure are now more advanced, safer and stronger than ever before. But not all of them are still good enough when it comes to accessibility for people with disabilities and others facing mobility issues such as the elderly and pregnant women.

To fix the problem, Tsinghua University's Institute for Accessibility Development (ADI) has been promoting awareness and pushing for inclusive designs that make buildings and other infrastructure accessible to all, regardless of mobility challenges.

Accessibility is the basis of a sustainable inclusive society, the common denominator of the whole society, the basic condition of guaranteeing equality and dignity for all people, and also an important part of science, technology and art, according to the institute.

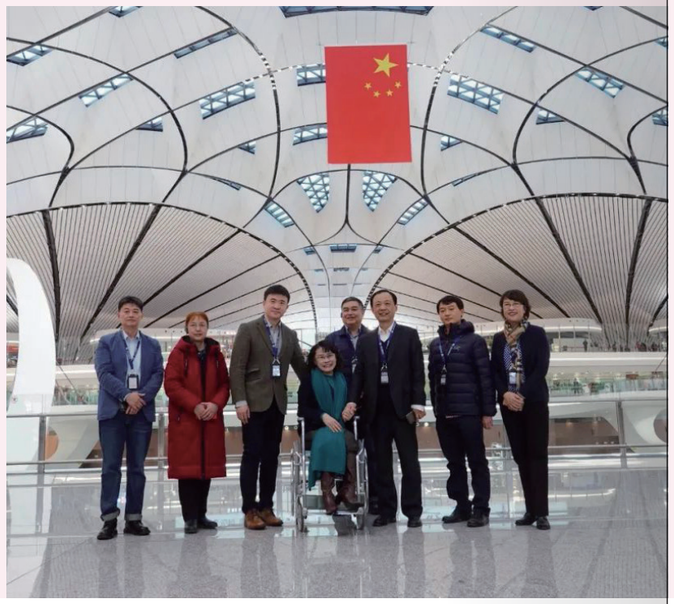
As the number of people with disabilities is increasing around the world due to population ageing and a rise in chronic health conditions, Shao Lei, president of the institute, says enhancing barrier-free access to buildings and other facilities has never been more crucial.

Tsinghua's Institute for Accessibility Development serves as an accessible technology innovation platform, which has been playing a crucial role in building a barrier-free campus environment at Tsinghua.

More and more campus facilities are now becoming barrier-free and as accessible as possible. The Teaching Building No. 4 is the first teaching building in the university to realize a barrier-free transformation fully. Accessible ramps have been installed outside the entrance on each floor to ensure those in need can easily access to other spaces.

Besides, many new facilities were installed, including barrier-free toilets, external barrier-free elevators with braille buttons and voice floor broadcast, and the configuration of sound amplifier interfaces for hearing-impaired students in classrooms. Barrier-free toilets and elevators have been added to provide basic protection for teachers and students in need.

The university has also begun upgrading existing on-campus facilities such as playgrounds, libraries, landscape parks, entrances and exits of departments, martyrs' monuments and other areas and facilities to make them barrier-free. The moves highlight Tsinghua's social commitment to building an inclusive campus where the universal concept of accessibility is fully recognized.



02

"The international communication is a window for the development of China's accessibility field"

Off-campus, Tsinghua's Accessibility Development Institute has actively participated in several large-scale national projects, all the while sharing China's success stories in building a barrier-free society on the international stage.

Recently, Shao Lei, Sun Liyang, and other faculty members of the institute served as the 2022 Olympic and Paralympic Winter Games "distinguished accessibility experts".

They participated in all kinds of barrier-free environment construction consultation work, providing barrier-free facility design and related services of expert diagnosis and demonstration, and participated in the barrier-free acceptance and review work of each competition venue. The optimization suggestions put forward by them were concretely implemented, with organizers installing barrier-free facilities and other related services at the competition venues for the Games.

They were involved in formulating the Beijing 2022 Olympics and Paralympics Winter Games barrier-free guide, which laid out specific actions for creating a barrier-free environment for the Games.

They also lead the Olympic stadium design team to improve the barrier-free design of concrete projects. Their work has been fully recognized by the China Disabled Persons' Federation, the Winter Olympic Organizing Committee and the host city.

03

"Let everyone study, work and live independently and equally"

Like the institute, the Student Accessibility Research Association at Tsinghua has been carrying out a range of activities to promote accessibility for people facing mobility challenges.

Jin Anyuan, head of the Student Accessibility Research Association in Tsinghua says, "After being involved with the disability community, I realized that the promotion of accessibility and inclusivity requires the active involvement of people from all walks of life. Through the association, I got to know a lot of friends and conduct valuable research on the issue."

Aimed to "let everyone study, work and live independently and equally," the Student Accessibility Research Association has been working on three aspects: the publicity of the concept of accessibility, the barrier-free environment construction and promotion, and cooperation and exchanges with organizations working on barrier-free access.

"Accessibility doesn't particularly involve complicated processes or technologies. A change in mindset is the most important first step," Jin says.

The association has cooperated with other universities to hold academic salons and students' accessibility forums. Besides, it supports middle schools in setting up youth missions and participating in accessibility promotion.

"The power of students is infinite. I believe that every successful seed is planted in one's heart today, and there will be one more person with an inclusive mind to develop in the future," says she.

The association has also been pursuing interdisciplinary collaboration, bringing up new ideas and solutions to promote barrier-free access for people with disabilities.

"It is an important issue of social inclusion and sustainable development," Jin says.

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