

Cambridge University - Nanjing  
Centre of Technology and Innovation  
Phone: 025-56676020  
Email: [enquiry@cunjc.org.cn](mailto:enquiry@cunjc.org.cn)  
Postcode: 210000  
Address: No. 23, Rongyue Road, Jiangbei New Area, Nanjing, P. R. China  
Follow us on Twitter: @CUNJCnews  
LinkedIn Homepage: @Cambridge University - Nanjing Centre of Technology and Innovation



**Cambridge University - Nanjing**  
**Centre of Technology and Innovation**  
**剑桥大学南京科技创新中心**





01/02

## About the Centre

Cambridge University - Nanjing Centre of Technology and Innovation (the CUNJC) is the first research institute established by University of Cambridge outside of UK, and it is also the only Centre of science and technology innovation that is named after University of Cambridge overseas. As a supporting platform for University of Cambridge's cooperation in China, the Centre covers international high-end original scientific research projects, innovative research and development, achievement transformation, international academic exchanges and talent training.

The Centre is committed to integrating the research system and expert team of University of Cambridge, and in-depth cooperation with local famous universities, research institutes and industrial partners in China. Aiming at the frontiers of world's science and technology, the Centre aims to promote the two-way docking of the world's top universities and international innovation resources with local needs, form an innovative cluster of top resources, comprehensively improve the level of regional technological innovation and transformation efficiency, assist in the construction of a modern industrial system led by technological innovation, and promote the integration of technological innovation to a new level.

The Centre adopts an innovative cooperation model for central operations, supplemented by scientific and standardized project research management and a fair and just benefit-sharing mechanism to enhance its effectiveness. Through a new innovative transformation mechanism, the Centre's willingness, relying on University of Cambridge's rich innovation experience, deep innovative foundation and leading innovative transformation capabilities, combined with the needs of local enterprises, extensively conducted multi-fields, multi-professionals, and multi-directional innovative cooperation without a preset model, cultivating innovative talents and establishing new R&D institutions to guide the establishment of more innovative technological companies.

Daping Chu

Tenured Professor of the University of Cambridge  
Academic Director of the CUNJC





# History of the Centre

**10. 2014 – 11. 2015**

University of Cambridge and Nanjing exchanged visits to confirm the mutual intention of cooperation.



**04.09.2017**

Nanjing Jiangbei New Area Management Committee and University of Cambridge signed a letter of intent for cooperation on the establishment of the "Cambridge University - Nanjing Centre of Technology and Innovation" in Cambridge, England.



**30.07.2018**

The project of the CUNJC was officially signed, which marked the official launch of the only technology and innovation Centre that is named after University of Cambridge in China.



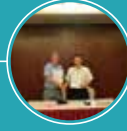
**07.05.2019**

The CUNJC research project was officially launched.



**09.2021**

The long-term base of the Centre was official launched.



**27.07.2016**

Luo Qun, member of the Standing Committee of the Nanjing Municipal Party Committee and full-time Deputy Secretary of the Jiangbei New Area Party Working Committee, met with Professor David Cardwell, academician of the Royal Academy of Engineering and Dean of the Department of Engineering of University of Cambridge. Luo Qun and Professor Cardwell represented Nanjing Municipal Government and University of Cambridge respectively and signed the Memorandum of Cooperation.



**27.03.2018**

Luo Qun, member of the Standing Committee of the Nanjing Municipal Party Committee and Stephen Toope, the Vice-chancellor of University of Cambridge in the United Kingdom, signed a formal cooperation agreement for the project, marking the official settlement of the CUNJC in the Central Business District of Nanjing Jiangbei New Area.



**05.11.2018**

The registration of the CUNJC was completed, and with the first batch of residents officially settling in, it officially came into operation.



**10.09.2019**

The foundation laying ceremony of the long-term base of the Centre and the forum "Working in Partnership in China" was successfully held.



# Development Guarantee

Nanjing pays great attention to the construction of the Centre, fully supports and guarantees the long-term and stable development of the Centre, and has launched a special policy of "five ones". Through the establishment of a special working group and a venture capital fund, the provision of a special fund, and the implementation of a batch special policies and a set of service mechanisms, Nanjing will effectively solve the problems of funds, policies, and talents encountered by the Centre in the development process.

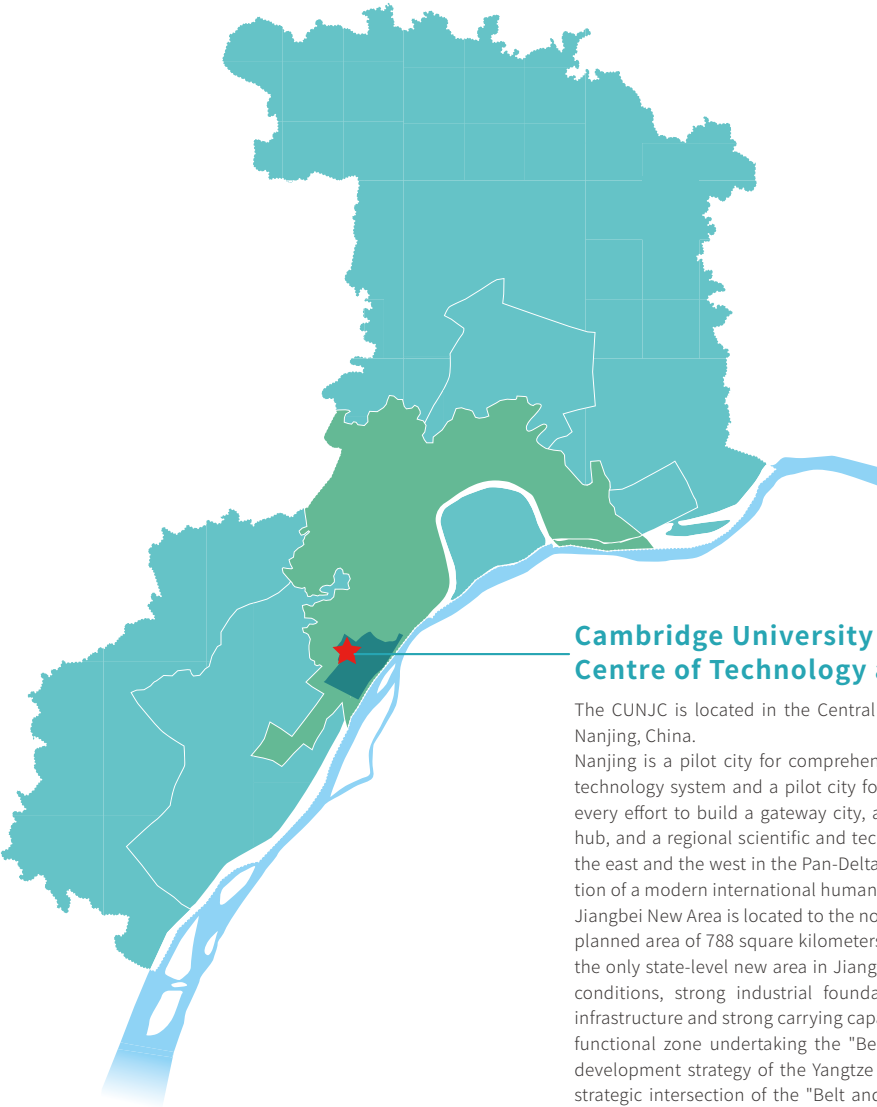
At the same time, in order to strengthen the docking service of the Centre, the Nanjing Municipal Science and Technology Bureau, together in cooperation with the Municipal Party Committee Innovation Office, the Finance Bureau, the Human Resources and Social Security Bureau, the Financial Supervision Bureau, the Jiangbei New Area Management Committee, the Jiangbei New Area Central Business District and related state-owned investment enterprise organizations has jointly established a joint working group of coordination and promotion dedicated to the CUNJC, which will provide special services and guarantees for the needs of the Centre and fully support the rapid development of the Centre through the cooperation of various relevant departments.

As an important overseas cooperation achievement of University of Cambridge, the university attaches great importance to the rapid development of the Centre, taking it as a strategic focus of the university and an important part of the global partnership, as well as a platform and hub for the university's development in China.

Since the establishment of the Cambridge University Nanjing Centre in 2018, the top management of the University of Cambridge places great emphasis on this project as an institutional strategic activity and an important part of its global partnership with the Centre as a hub for the university's collaborative activities in China. The University set up a dedicated working group to support the Centre from the very beginning, with the heads and representatives from Research Operation Office, Legal Office, International Office, Communication Office, Finance, Tax, HR, School of Technology, Department of Engineering, Cambridge Enterprise and other professional service departments.

The development of the Centre is based on the mutual trust between Nanjing and University of Cambridge in order to establish a win-win partnership model of mutual support and equality. In the era of development, led by the innovation of science and technology, the demand for industrial upgrade and the demand for transformation of scientific and technological achievements are driven by each other in this era.

**Daping Chu**  
Tenured Professor of the University of Cambridge, CEO and Academic Director of the Centre



## Cambridge University - Nanjing Centre of Technology and Innovation

The CUNJC is located in the Central Business District of Jiangbei New Area, Nanjing, China.

Nanjing is a pilot city for comprehensive reform of the national science and technology system and a pilot city for innovative cities. The Centre is making every effort to build a gateway city, a national comprehensive transportation hub, and a regional scientific and technological innovation Centre connecting the east and the west in the Pan-Delta region, and is accelerating the construction of a modern international humanistic green city.

Jiangbei New Area is located to the north of the Yangtze River in Nanjing, with a planned area of 788 square kilometers. It is ranked the 13th in the country and the only state-level new area in Jiangsu Province. It has superior geographical conditions, strong industrial foundation, rich innovative resources, strong infrastructure and strong carrying capacity. It is a national-level comprehensive functional zone undertaking the "Belt and Road" initiative and the national development strategy of the Yangtze River Economic Belt. It is located at the strategic intersection of the "Belt and Road" and the Yangtze River Economic Belt. At the same time, in the face of the opportunity of integrated development in the Yangtze River Delta, it is a comprehensive gateway for the Yangtze River Delta to connect with the central and western regions, a strategic fulcrum for East China to bring its prosperity into the hinterland, and a bridgehead to link the development of the core area of the Nanjing metropolitan circle with the northwest area. The district is also equipped with a strong transportation management system.





# Vision of the Centre

Integrate the high-end research system and expert team of University of Cambridge, and cooperate with local research institutes, enterprise platforms and expert teams in China to collaboratively develop and produce market-oriented innovation.

Fully support University of Cambridge's various cooperation in China, become a support platform for the university's activities and development in China, and help the two-way integration of famous universities and institutes.

Aiming at the frontiers of the world's science and technology, strengthen high-level original research, form a major key technology generation mechanism, and build a world-class scientific and technological innovation platform and achievement transformation Centre.

Create an important window for international cooperation and exchanges, promote the effective connection of international innovation resources with local needs, accelerate the gathering of talents and industries, and form a gathering of innovation for top resources.

Build an innovative transformation ecosystem with good growth potential, outstanding technological advantages, and a complete industrial chain, comprehensively improve the level of technological innovation and transformation efficiency, and contribute to the local development.

# Applied Innovation

Original scientific research is the source of innovative research and development, and it is also the feature and essence of University of Cambridge's academic leadership in the world. The Centre will highlight the advantages and value of University of Cambridge, fundamentally improve the level of innovation, and promote the comprehensive and long-term cooperation between University of Cambridge and local universities and enterprises to develop applied innovative research and development. In the initial stage, it will focus on biomedicine and health care, information technology and renewable energy, smart city and environmental protection, zero-carbon and sustainable development and other fields, as well as highlighting Nanjing's leading industries, uniting leading companies, carrying out innovative research and development, and promoting the development of local industries.



## Key Research Studies

### Information Technology and Renewable Energy

With the integration of information technology, smart technology, and the energy industry such as "cloud computing, big data, Internet of Things, mobile Internet and smart city", intelligence and energy industry have nurtured new business models, for instance, smart drone inspections, robot butlers, etc., which will change energy production and the way of consumption.

We will use this as an opportunity to focus on the specific application of information industry technology in the new energy industry, develop intelligence for the deep integration of information technology and renewable energy, and promote the continuous improvement of new industrialization.

### Biomedicine and Health Care

The research and development of biomedical technologies such as genetic testing and targeted therapy are also important areas of technological innovation.

We start from the theoretical basis of physiological mechanisms and conduct technical research in the fields of pathogenic mechanism research, gene cell screening, tumor treatment, big data mining in the health sector, and targeted drug development by different ways such as identifying genes, verifying animal models, and studying pathogenic molecules.

Based on the advanced experimental research platform of University of Cambridge, we will actively cooperate with domestic and foreign experts and scholars and biopharmaceutical companies to create a joint community of development.





Smart City and Environmental Protection

The new type of urbanization led by smart cities is a sublation of the development of traditional cities. It is people-oriented urbanization of quality improvement and smart development.

To build a smart city, it is necessary to establish a resource-saving and environment-friendly technological system, and use green technology to solve new problems in urban development.

We will focus on the construction of smart city infrastructure platforms by optimizing cloud computing design methods, improve the functionality of the hardware equipment of the environmental protection construction platform, and make progress in research on the core technologies of digital modules, to create an environment-first, ecologically livable smart city.

Zero Carbon and Sustainable Development

Zero carbon is the goal of human survival to achieve the concept of nature, health and harmony, and the pursuit of "sustainable development" in production and life.

"Lucid waters and lush mountains are invaluable assets."

Relying on the new development concept, we will focus on zero-carbon energy, zero-carbon buildings, zero-carbon transportation, zero-carbon agriculture, zero-carbon services, zero-carbon life and other fields, and combine with the geographical environment, resource endowments and ecological conditions in order to carry out related research on technical routes, technology development, technology integration and application, to achieve a high degree of integration of nature, man, and technology, and to achieve green, circular and sustainable development of human production and lifestyle.



Research Project

Multi-modality and Hybrid 3-D Ultrasound/Photoacoustic Imaging System Project

The project focuses on voice processing and control applications, computer vision and robotics, and medical imaging. The guiding principle for all research in the laboratory is that a well-designed engineering system must be based on a sound mathematical model. The main research studies include 3D ultrasound acquisition and visualization in CT, ultrasound deconvolution and stiffness imaging, and bone cortical thickness estimation, 3D models from uncalibrated images, object recognition, human-machine interface, visual tracking and localization, and augmented reality, continuous speech recognition and transcription, speech dialogue systems, synthesis and coding, and statistical machine translation.

This project will design and develop new reconstruction methods for the next generation of medical ultrasound imaging systems to further promote the development of clinical medicine and the progress of science and technology.



**Principal Investigator:Richard Prager**

Professor Richard Prager is the dean of the Department of Engineering, University of Cambridge, and received a Ph.D. in Information Engineering from University of Cambridge. He is the founder of the field of medical imaging of the Department of Engineering at University of Cambridge, and also one of the main developers of the free-arm three-dimensional ultrasound system Stradx and Stradwin.





## Study on the Mechanism and Control Strategy of Obesity Complications

The project aims to determine the control mechanism of adipose tissue plasticity and function, to ensure the implementation of prevention strategies for obesity associated metabolic complications, and to study the influence of obesity on the liver lipid network that causes fatty liver. The project will explore the molecular mechanisms that control energy consumption and fat deposition, as well as the mechanism that controls the division of energy to oxidation or storage. The research focuses on obesity and diabetes, and tries to understand why obesity can lead to cardiometabolic complications. The scope of the research includes how to prevent lipid accumulation in these organs by activating brown fat, understand why obesity causes metabolic and cardiovascular problems, and provide reasonable treatments for mechanically driven treatments to prevent complications.

The research results of this project will help to identify molecular targets required for therapeutic intervention and provide a new theoretical basis for identifying treatment strategies for obesity-related metabolic diseases, such as diabetes, fatty liver, and cardiometabolic complications based on the concept of lipotoxicity and adipose tissue dysfunction.



### Principal Investigator: Antonio Vidal-Puig

Professor of Molecular Nutrition and Metabolism, University of Cambridge, Ph.D., School of Medicine, University of Granada, Spain, EMBA from Judge Business School of University of Cambridge, Scientific Director of Metabolic Research Centre, University of Cambridge, Associate Professor of MRC Metabolic Disease Group, Honorary Professor of Nanjing University.

He has successively engaged in research work at Harvard University Medical School and University of Cambridge. He is currently the Professor of Molecular Nutrition and Metabolic Biology at University of Cambridge. He is mainly engaged in the research on the molecular mechanism of obesity and insulin resistance, the molecular mechanism of diabetes and abnormal cardiometabolic complications, and related drug intervention strategies.



11/12

## DropBioApp Engineering droplet-based microfluidic platform for biological applications

Led by Professor Chris Abell, Pro-Vice-Chancellor (Research) of University of Cambridge, the project relies on the Centre, and will build up a set of microfluidic facilities for the Centre including a microfluidic device fabrication workstation, a fluorescence detection rig, and microdroplet sorting capability. This can be used for microdroplets generation, materials synthesis, cell encapsulation, fluorescence sorting, etc.

The project will form a unique single-cell sequencing method based on microfluidic technology, the preparation technology of functional medical microspheres, and a prototype that realizes the integration of high-throughput microfluidic screening, etc., transiting from a research-scale microfluidic technology to industrial-scale manufacturing and production, and will cooperate with local companies in the fields of biomaterials, single-cell analysis, drug discovery and tissue engineering to establish a formal biotechnology business entity with an aim to use the research results for commercial purposes.



### Principal Researcher: Dr. Finian James Leeper

Senior Lecturer of University of Cambridge, Fellow, Graduate Tutor and Director of Studies in Chemistry Emmanuel College, Cambridge. His research interests include Synthesis and studies of substrate analogues and of active site directed inhibitors of enzymes and mechanistic studies on thiamin diphosphate dependent enzymes.





**Principal Investigator:Daping Chu**

Tenured Professor of the University of Cambridge, the Director of Centre for Advanced Photonics and Electronics (CAPE), the Director of Centre for Photonic Devices and Sensors (CPDS), the Academic Director and CEO of the CUNJC, and a guest professor at many domestic universities such as Tsinghua University, Nanjing University and Southeast University.

Professor Chu's research fields include condensed matter physics theory and experiment, semiconductor devices and materials, nanostructures and properties, ferroelectric nonvolatile memory devices, organic electronics and inkjet manufacturing processes.

His current research includes the use of holographic technology to achieve true 3D display, digital lighting and spatial light modulation for optical communication.

By combining 3D image reconstruction with full parallax and occlusion effects with spatial interaction in the spectral and temporal domains, the research provides participants with an unprecedented immersive experience.

**Holographic Interferometer for 3D Surface**

Led by Professor Daping Chu, Tenured Professor of University of Cambridge, Director of Cambridge Centre for Advanced Photonics and Electronics (CAPE) and the Centre for Photonic Devices and Sensors, the project relies on the Centre to explore the integration of pure phase liquid crystal on silicon (LCOS) technology into the interferometer to relax the tolerance of its hardware optical system, which is compensated by computer-generated holograms, thereby reducing equipment costs. The architecture proposed in this project will be able to use low-cost optical and optomechanical components without affecting system performance. In addition, the generated interferogram will also become less complex and can be processed at high speed. The research result of this project is expected to be widely applied to various surface inspection scenarios in scientific research and industrial production, such as optical component inspection, integrated circuit inspection, micro-electromechanical device inspection, and biological cell inspection.



**High power density DC converters of 48V power supply systems used for datacentres**

Led by Dr Long Teng, Lecturer of University of Cambridge, the project relies on the Centre and proposes a new type of DC-DC converter topology and its derivative structure, especially suitable for 48V DC power supply system. This structure improves the power density by at least 50% compared with the current switched capacitor structure, especially in the application scenarios of high voltage conversion ratio. The increased power density can greatly reduce the size of the converter and make the converter closer to the processor (CPU or GPU) in the layout position, and effectively reduce the transmission power loss. Efficient 48V DC-DC converter is the core technology of 48V DC power supply. In the future, the power supply system of the data Centre using 48V DC power supply will reduce energy consumption by more than 7% compared with traditional datacentres.



**Principal Investigator:Long Teng**

Dr. Long Teng is tenured faculty at University of Cambridge. He founded the Applied Power Electronics Laboratory and serves as the director. His main research studies include the application of power electronic devices, the design and development of power electronic converter devices, and the analysis and development of power conversion systems. The main application objects include transportation electrification devices and systems (electric vehicles, electric propulsion ships), wireless power transmission, grid access for new energy and energy storage. Dr. Long Teng has won the General Electric 2014 Best Engineer (Youth) Award, General Electric Bronze Medal twice, published more than 40 SCI-indexed journal articles, and 4 international patents.

# Achievement Transformation

The Centre is committed to taking intellectual property as the core, giving full play to the advantages of universities, and strengthening the transformation of scientific and technological achievements.

On the one hand, we will transform the research results and intellectual property rights of the Centre's scientific research projects into actual productivity through self-investment, technology transfer licensing, cooperative transformation, and valuation investment.

On the other hand, we will introduce high-quality technical resources from University of Cambridge, develop technology transfer services based on domestic industry needs, build a professional service platform that promotes international technology transfer, and boost regional economic development and enhance the competitiveness of high-tech industries.



# International Academic Exchange

Relying on the rich academic resources of University of Cambridge, the Centre actively promotes research exchanges based on key scientific research studies, supports University of Cambridge and Chinese universities to carry out related cooperation, organizes various high-end forums and special academic seminars to ensure the smooth transformation of project research results and the market-oriented innovation model of subsequent projects, while guiding and encouraging scholars at the Centre to conduct academic sharing locally, and gradually expanding the scope of academic research and cooperation.

## Summit Forum



◀ In September 2019, the CUNJC's annual forum "Working in Partnership in China" was held in Jiangbei New Area, Nanjing. Leaders from Nanjing Municipal Government and Stephen Toope, Vice-chancellor of University of Cambridge, attended the forum.

15/16



◀ In September 2020, Nanjing and the University of Cambridge held the Deepening Partnership Development Conference, signing project cooperation agreements, and discussing deepening innovation cooperation.



# International Seminar



◀ In July 2020, the 2020 International Innovation and Achievement Transformation Symposium and Biomedicine and Health Care Project Roadshow was held at the Centre. A total of nearly 40 Chinese and foreign guests including relevant leaders of Nanjing City and Jiangbei New Area, experts from University of Cambridge, domestic university scholars, and well-known investment institutions and business representatives attended this seminar remotely or on-site to talk about the topics of international innovation and achievement transformation in the context of the new era.



◀ In April 2021, taking the important opportunity of the 21st World Intellectual Property Day, the Centre successfully held the International Seminar on Technology Innovation and Intellectual Property, focusing on exploring the full path of creation, cultivation, protection, application and service of intellectual property.

17/18

# International Academic Exchanges



▲ Professor Richard Prager, Dean of the Engineering Department of the University of Cambridge and Director of the Centre, was hired as a guest professor at Southeast University.



▲ Professor Richard Prager gave a lecture on cutting-edge technology entitled "Coherent Pixel-based Beamforming for Ultrasonic Imaging" for teachers and students of Southeast University.

# Alumni Events



◀ In June 2021, as a special brand event in Jiangbei New Area during Nanjing Tech Week, the Centre successfully held the Cambridge Alumni Innovation and Entrepreneurship Salon.



◀ At the Alumni Salon, Cambridge University Press donated original academic books to the Centre. This is the first time that Cambridge University Press has donated a large number of books to its strategic cooperative institutions in China in recent years.

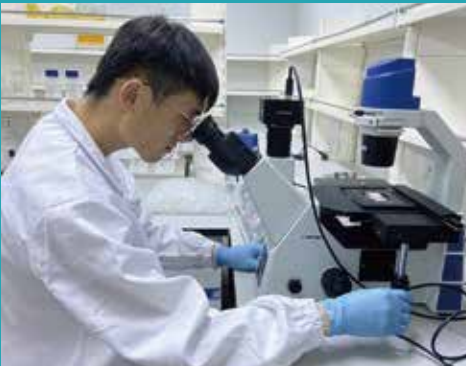
# Talent Training

## Local Talent Introduction

High-end scientific research personnel are an indispensable and important resource for original research. The Centre attaches great importance to talent training, actively revitalizes the talent resources of local universities, and continuously optimizes the talent development environment. The Centre insists on introducing high-end talents from local to engage in cutting-edge project research, helping to improve the level of local scientific research and serving the upgrading of supporting industries. At the same time, it also selects and trains students with the innovative ability and outstanding scientific research potential in local universities to enter the Centre for internships. Utilizing the strong scientific research resources of University of Cambridge and by bringing students in the Centre’ s cutting-edge research projects, it will cultivate world-class top scientific research talents locally, and build a team of high-quality talents with sufficient numbers, excellent quality, optimized structure, reasonable layout, and scientific allocation, to build the cornerstone of the long-term stable development of the Centre.



▲▶ Since July 2020, interns from Tsinghua University, Southeast University, Nanjing University of Technology and other well-known universities have been engaged in assistance work of project research.





# Introduction of Cambridge Educational Resources

Relying on University of Cambridge’s world-renowned top educational resources, combined with the local demand for high-end education, the Centre plans to cooperate with University of Cambridge to carry out educational resource sharing projects. By introducing the superior educational content of University of Cambridge, we will make full use of the professional capabilities accumulated by the university in high-level professional research to provide highly customized consulting, training and other services for external organizations. The Centre will cooperate with relevant Cambridge institutions to develop a series of high-end customized courses for local enterprises, government and other organizations through diversified educational forms such as corporate actions, executive education, and postgraduate courses, and share expertise in best practices, and cultivate the strategic capabilities of local individuals and organizations.



As an important part of University of Cambridge, Cambridge University Press is one of the largest educational and academic publishing houses in the world. It publishes more than 2,000 books and more than 410 academic journals every year, distributed in more than 200 countries around the world. Publications are the link between readers and University of Cambridge, and they are also an important way for the exchange of cutting-edge scientific research results. The Centre will carry out in-depth and extensive cooperation in academic publishing, publication distribution, academic exchanges and other services of Cambridge University Press. Through planning and designing original and strategic topics and activities, the Centre will disseminate cutting-edge academic information and lead the academic development of relevant local sub-fields.



# The Gallery of the Centre

