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profile feature



南京工业大学
NANJING TECH
UNIVERSITY

Wei Huang, PhD, member of the Chinese Academy of Sciences, president of Nanjing Tech University, China

Nanjing Tech University (NanjingTech) is a leading higher education institution in Jiangsu Province in eastern China. It was established in 2001 in a merger between the former Nanjing University of Chemical Technology and Nanjing Institute of Architecture and Civil Engineering. A multidisciplinary university with a focus on engineering, NanjingTech has 29 schools and more than 30,000 students. Here, Wei Huang, president of NanjingTech and member of the Chinese Academy of Sciences, shares his plan to build a world-class university by boosting research and expanding its scope.

Q. What do you want to achieve during your tenure at NanjingTech?

I came to NanjingTech in 2012 as the newly appointed president, at which time NanjingTech was already a provincial demonstration university for innovation and entrepreneurship. The university has progressed a lot over the past decade and has evolved from an engineering-based university to a multidisciplinary one with degree courses also in humanities and social sciences. To seek sustainable growth, we have set a strategic goal of building a comprehensive, research-oriented and globalized university. This goal also forms a part of our long-term plan: to become a first-class university in China within five years and a world-class university by 2030.

Q. Why is it important to be a comprehensive university?

It is a global trend. Almost 80% of today's top-rated universities worldwide are multidisciplinary. In China, the trend began in the 1990s with higher education reform. A comprehensive university not only cultivates all-round students, but also facilitates the development of interdisciplinary research, which is essential for scientific innovation. However, being "comprehensive" does not necessarily suggest having an all-inclusive set of subject areas or an equal emphasis on each area. Instead, we will reinforce our university's traditional strengths – chemical engineering, material science and technology, civil engineering and architecture. Building a comprehensive university will better serve these subjects by encouraging cross-disciplinary collaboration.

Q. What are the research strengths of NanjingTech?

As I have mentioned, our traditional strength lies in engineering and technology. Capitalizing on those strengths, we established the Institute of Advanced Materials (IAM) in 2012, with a focus on flexible electronics.

We have integrated our expertise in organic electronics, biomaterials, nano-technology and plastic electronics to establish a joint international laboratory of flexible electronics, endeavouring to be at the vanguard of scientific and technological advances. Within a few years, we have built an innovative team of plastic electronics and photonics researchers, whose research output has the potential to be applied in organic light-emitting diode (OLED) technologies, insertable medical devices and high-efficiency solar batteries.

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Q. How do you plan to strengthen research capacity at the university?

We have set up a plan to support basic and applied research in specific areas of physical science and information science; to promote life sciences geared towards frontier research; and to support humanities and social science research by developing management studies. Life science, in particular, attracts our attention as China is still trailing other research powerhouses in this aspect despite of the huge potential. We want to channel our resources in engineering and technologies to life sciences research, contributing to the diagnosis and treatment of major diseases. The successful implementation of this plan depends on talented researchers. Thus, we have piloted a tenure-track system in the IAM and introduced incentive mechanisms to attract high-quality

researchers from world-class universities. Reform on researchers' performance assessment is also taking place.

Q. What are the globalization strategies of NanjingTech?

We are strengthening international collaborations in both education and research and have established partnerships with quite a few world-class universities. For research collaborations, our objective is to enhance China's R&D capabilities and to promote industrial and technological progress. Thus, we also put much emphasis on research commercialization. Recently, we are partnering with Oxford University to establish a joint laboratory in Suzhou, China. Our other international partnerships include the Sino-Australian Joint Centre for Advanced Materials with the Griffith University, a joint research centre with the University of Zaragoza in Spain, and the NanjingTech-RAS-MSU Joint Research and Innovation Centre with the Russian Academy of Sciences and Moscow State University, to name but a few. The launch of the Nature Partner Journal *Flexible Electronics* also marks our effort to promote the global reach.

Q. What is the key driver to the university's development?

A talent pool is essential to our development. One of our priorities now is to attract outstanding researchers, as well as competent school administrators. We have established a Buffer Base for Overseas Talents to create a supportive environment geared to international standards. We offer these promising researchers internationally-comparable compensation packages. The idea is to help researchers returning from overseas to better adjust to the new environment here. As a returnee myself, I experienced some difficulties upon returning from Singapore, as the application for research grants requires time, energy and experienced personnel, especially when it comes to major projects. Our buffer base initiative, therefore, will assist researchers throughout the process. It will also support the career development of young researchers, since we are not only keen on attracting talented researchers, but also willing to invest in their future.

Nanjing Tech University

Buffer Base for Overseas Talents

The Buffer Base for Overseas Talents at Nanjing Tech University was established in August 2012, based on the Institute of Advanced Materials (IAM) and the Institute of Advanced Synthesis (IAS). Led by Wei Huang, member of the Chinese Academy of Sciences, the talent base has quickly gathered more than 100 distinguished scholars from world-class universities, such as Cambridge University, Imperial College London, Northwestern University, University of California, National University of Singapore and Nanyang Technological University. Young scientists active in the frontiers of science are the backbone of the NanjingTech buffer base.

The talent base is a pilot site of management reform at NanjingTech. With the aim of building new mechanisms, platforms and organizational culture, it endeavors to foster a supportive cultural and policy environment for the healthy development of high-quality researchers returning from overseas. Following the culture of "SCIENCE", an acronym of Skepticism, Curiosity, Industriousness, Enthusiasm, Novelty, Confidence and Ethics, researchers at the NanjingTech Buffer Base for Overseas Talents have achieved a series of high-visibility research results in advanced chemical manufacturing, organic photonics, nano-photonics, bioelectronics and power electronics. Their original works were published in top international academic journals and have won high reputation for IAM and IAS.

Hongyu Chen

Professor and Executive Dean of Institute of Advanced Synthesis (IAS)

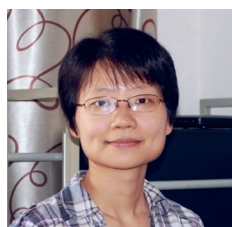


Institute of Advanced Synthesis (IAS) is a new and vibrant research centre at Nanjing Tech

University. I decided to return to China and work in IAS because I have confidence in this new platform, where I can enjoy the academic freedom and help others. With world-class faculty and facilities, along with open and fair management, I believe that IAS will rise quickly among Chinese academic institutions.

Xiao Huang

Professor of Institute of Advanced Materials (IAM)

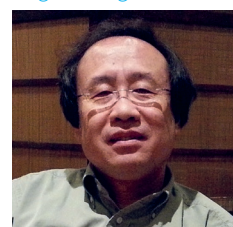


Trained as a materials engineer, I joined Nanjing Tech University for its renowned strength in

chemical and materials science and engineering, as well as its reputation as a cradle for many national top scientists and engineers. After joining the university, I do feel its strong culture in research and innovation. Also, the university has provided flexible policies for new staff, especially those returning from overseas, to better accommodate to the new working environment. I think NanjingTech is the right place for young researchers like me to begin our own careers.

Yan Xiao

Professor and Dean of College of Civil Engineering



Situated in a region with rich history and culture, combined with the most dynamic development

in the world, Nanjing Tech University has embarked on a journey to challenge the many outstanding unknowns facing the mankind and to become a top academic institution. I feel fortunate to join NanjingTech and to work with many excellent scholars in an open and free academic environment.

Zexiang Shen

Professor and Dean of College of Overseas Education



Nanjing Tech University represents the new global university in China. Its aggressive drive to

engage world-class universities and the rich history of Nanjing City have made NanjingTech a preferred choice for talented researchers. Many well-established scholars from overseas are attracted to NanjingTech by its faculty-centred approach and the strong support from top management. With a sizable foreign faculty and student population and the metropolitan nature of the City, NanjingTech provides an ideal environment for international faculties to work and live.



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Nanjing Tech University

Building a comprehensive research university with global reach

Nanjing Tech University, a comprehensive university with a focus on engineering, is striving to become a world-class university by expanding its multidisciplinary programmes, enhancing research excellence and promoting international collaboration.

Located in the culture-steeped city of Nanjing — an ancient capital of China — century-old Nanjing Tech University (NanjingTech) boasts a rich history and a solid reputation. Having nurtured a large number of talented researchers and achieved fruitful research results, NanjingTech is attaining global renown as a comprehensive university

with a focus on engineering. Staying true to the university motto of “honour the moral integrity, strive for excellence, persist in fortitude and combine learning and practice”, generations of NanjingTech students and staff have overcome many hurdles in exploring the frontiers of science. Their scientific achievements have benefited all of humanity.

In 2013, NanjingTech witnessed breakthroughs in its reform and development. Being the leading founder of the Synergetic Innovation Centre for Advanced Materials, it became one of the first 14 Chinese higher education institutions selected for the Plan 2011, a national programme that promotes innovation

in universities. To seize new opportunities for growth, the university has set the strategic goal of building a comprehensive, research-oriented and globalized university. At the moment, NanjingTech is striding towards its ambition to construct world-class academic disciplines and become a first-class university.

To attain these goals, the university is seeking to expand its comprehensive range of programmes. It currently has 11 faculties and 29 schools, covering eight academic disciplines: engineering, science, medicine, management, economics, law, humanities and arts. More than 30,000 students are enrolled in these programmes, and they are supported



by around 2,800 faculty and staff. To enhance its comprehensiveness, the university is deepening its reforms in key areas, which include setting up and tailoring academic programmes, enhancing student support and scientific research, as well as promoting development through cultural exchange.

Research lies at the centre of NanjingTech's push to become a world-class university. High-level research is being conducted by the university's elite research team, including 7 members of the Chinese Academy of Sciences and Chinese Academy of Engineering, 8 Cheung Kong Scholars sponsored by the Chinese Ministry of Education, eight chief scientists in charge of the national 973 Programme (National Basic Research Program of China), 19 researchers recruited under the state 1,000 Talents Plan and 11 awardees of the National Science Fund for Distinguished Young Scholars. The university also supports more than 50 key research-and-development institutions in various subject areas, five of which are at the national level. For instance, the state-certified National Centre for International Research of Flexible Electronic Materials and Devices and the State Key Laboratory of Material-Oriented Chemical Engineering are the leading centres in their fields. Another indicator of the university's dedication to research is its research budget, which has exceeded 3 billion RMB for the last decade, topping domestic universities of its kind. A large proportion of the science and technology research budget comes from state-sponsored projects, such as the National High-tech Research and Development Programme (863 Programme) and the National Basic Research Programme (973 Programme).

Since the beginning of this century, NanjingTech's strong research capacity has brought along numerous national awards, as well as international recognition. Thanks to the faculty's research prowess and high-quality publications, NanjingTech was ranked 46th among Chinese academic institutions, according to the 2015 table of Nature Index, an indicator of high-quality research.

Research highlights

- **Breakthrough in the research and development of organic optoelectronics by achieving an ultralong excited state in organic molecules under ambient conditions, which will enable wider application of organic phosphors. (Published in *Nature Materials*.)**
- **Successful development of a novel optical data encryption and decryption technology by synthesizing luminophores based on phosphorescent iridium (III) complexes, enhancing the security of information transmission. (Published in *Nature Communications*.)**
- **Fabrication of a perovskite light-emitting diode (LED), which has one of the highest energy conversion efficiencies in the world. (Published in *Nature Photonics*.)**
- **Innovation of using ultrathin nickel-based hydroxide as a feasible and effective encapsulation material for lithium/sulphur battery cathodes, significantly improving cell behaviours. (Published in *Nature Communications*.)**
- **Design of innovative, environmentally friendly equipment for the pulp and paper industry, achieving zero discharge of pulping wastewater with the application of the membrane technology.**

Geared towards globalization, NanjingTech actively cooperates with world-class universities so as to draw on their experience and to create an innovative higher education institution with its own characteristics. The university has established partnerships with more than 70 quality universities and research institutions in over 30 countries and regions to collaborate on scientific research and student training. For instance, a joint institute with the University of Sheffield has been established, which offers joint degree programmes in chemistry, financial mathematics and materials physics. The collaboration will extend to Masters and PhD programmes, as well as research projects. Other research collaborations include the joint laboratory of plastic electronics with the Imperial College London, the joint research centre on organic semiconductor with the University of St. Andrews and the nano and biomaterial research centre with the Nanyang Technological University, as a few examples.

Globalization is also exemplified in the university's recruiting strategy. Taking a human-resource-centred approach, NanjingTech is making an all-out effort to attract bright minds from around the world. In addition to flexible and vigorous talent recruitment mechanisms,

the university also adopts an innovative human-resource management mode with new incentive policies, a talent mobility system, an updated compensation assessment mechanism and all-rounded service support. All these efforts are in line with international standards and aim to create a supportive and stimulating environment where talented researchers can maximize their potential.

Against the backdrop of the full implementation of Plan 2011, NanjingTech is building top-class research platforms and cultural environment to attract and retain a high-quality faculty, whose intelligence and efforts will underpin the goal to build a comprehensive research university with global reach and true excellence.



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Contact

E-mail: hr@njtech.edu.cn
Tel: 86 25 58139145
 86 25 58139143, 86 25 58139140
Website: <http://www.njtech.edu.cn>