南開大學化學學科
Chemistry, Nankai University
• 1921-2021 •

MARKING 100 YEARS OF EXCELLENCE IN CHEMISTRY

The College of Chemistry at Nankai University marks its centenary by celebrating its legacy and looking forward to a global future.

By Karen Emslie *C&EN BrandLab*

The College of Chemistry at Nankai University (NKCC) dates back to 1921, making it one of the earliest chemistry departments at a Chinese university. Over the past century, NKCC alumni have advanced discovery in areas as varied as agriculture, chemical engineering, and defense. Contemporary researchers are building on this legacy.

As NKCC sets its sights on the future, the institution's faculty and students are tackling challenging areas of chemistry that serve the needs of today. Their work spans theory and application and probes many of the world's most pressing concerns, including carbon neutralization, clean energy use, and disease prevention and control.

BREAKTHROUGHS BUILT ON CHALLENGING CHEMISTRIES

NKCC comprises two departments, chemistry and chemical biology, and three research institutes investigating elemento-organic chemistry, polymer chemistry, and applied chemistry and engineering. NKCC also houses two research centers, the National Engineering Research Center of Pesticide (Tianjin) and Research Center of Analytical Science, as well as two Key State Laboratories—specialized national laboratories supported by the Chinese government.

Among NKCC's many achievements are high-profile breakthroughs. In 2019, a team led by Qilin Zhou won a National

AT THE TIME OF THIS WRITING, THE FACULTY IS COMPOSED OF:

361	FACULTY MEMBERS
133	PROFESSORS
67	ASSOCIATE PROFESSORS
29	NATIONAL OUTSTANDING YOUNG TALENTS
35	NATIONAL SENIOR YOUNG TALENTS
42%	OF NKCC PROFESSORS AND ASSOCIATE PROFESSORS ARE UNDER AGE 45

NKCC's global outlook and position is demonstrated in rankings of the world's chemistry departments: 9 globally in the 2020 Nature Index of leading institutions in chemistry, 32 in U.S. News and World Report, and 20 for chemistry globally in ShanghaiRankings 2021.

Natural Science Award for its synthesis of a chiral spirocyclic catalyst that reached a record-breaking turnover number—a measure of catalytic efficiency—of 4.5 million.

NKCC's work in the field of green pesticides has also broken new ground. A team of researchers led by Zhengming Li investigated the relationship between the structure of sulfonylurea herbicides and their activity. Their findings led to the discovery of monosulfuron, an environmentally friendly pesticide.

In line with the Make Nankai Excellent strategic plan of 2016, the university has designated the synthesis of new types of matter as a core research priority. The plan promotes scientific exploration in three key areas: catalysts, energy conversion and storage materials, and materials with biological effects.

Recent accomplishments in clean energy conversion and storage include Yongsheng Chen's design of organic laminated solar cells that achieved a world-record-beating photoelectric conversion efficiency of 17.3%. In another example, Jun Chen's team developed stable conductive electrode materials to improve chargeable lithium batteries.

The current faculty is led by Dean Shoufei Zhu and Secretary of the Party Committee Shoumin Zhang. Among more than 100 principal investigators are eight academicians of the prestigious Chinese Academy of Sciences and Chinese Academy of Engineering. NKCC's commitment to nurturing early excellence is clear in its support of young faculty talent, as well as in its vibrant student population.

Deputy Dean Fangyi Cheng describes the students he supervises as "diligent, persistent, and passionate" in their approach to scientific research. "The motivation of my students is also an inspiration for me to keep learning," he says.

COLLABORATIONS WITH GLOBAL REACH

NKCC researchers are embracing an interdisciplinary approach to solving complex scientific and technological challenges. Teams work closely with colleagues in fields such as materials science and engineering, biology, environmental science, and artificial intelligence. Zhu and Cheng agree that it is important to strengthen the communication between disciplines and promote the cross-fertilization between different fields.

Initiatives such as the founding of the Haihe Laboratory of Sustainable Chemical Transformations and the Renewable Energy Conversion and Storage Center further support multidisciplinary research and ensure that NKCC is positioned at the intersection of the academic exploration and industrial application of chemistry.

Nurturing links with international institutions is also a vital component of scholarship at NKCC. Initiatives include student exchange and collaborative research programs with universities in California and Michigan in the US, and in Glasgow, Leicester, and Cambridge in the UK.

As NKCC celebrates its centennial, faculty and students are building on the institution's distinguished legacy and embarking on a new century of discovery and exploration. Their research is powering cutting-edge scientific solutions and technologies with global impact. Nankai University now sits firmly on the map as an international hub of chemistry excellence.

VIRTUAL COLLECTION

To explore recent research from the College of Chemistry at Nankai University, please see this sponsored virtual collection in the *Journal of the American Chemical Society*.

https://cenm.ag/nankaiuniv

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