



:insideview

profile feature



Xiaobing Ren, Chairman of Frontier Institute of Science and Technology, Xi'an Jiaotong University

Frontier Institute of Science and Technology (FIST) was established in December 2010 with an important investment from Xi'an Jiaotong University (XJTU). Within just five years, FIST has set up 11 research centres of excellence in physics, chemistry, bio-science/life science/basic medical science, and materials science. Xiaobing Ren, a scientist in smart materials and the founding Chairman of FIST, discusses here how FIST was established and shares his plans for further development of the institute.

Q: How did you come up with the idea to establish FIST at XJTU?

I started a collaborative working relationship with XJTU back in 2002-2003, first as a *Cheung Kong* Adjunct Professor giving lectures on campus. Then, I built the Multidisciplinary Materials Research Centre. When I was selected as a member of the national '1,000 Talents Plan' in 2009, I anticipated that we would start to see an immense growth in both the quantity and quality of scientists coming back to China. So I proposed that XJTU should seize this opportunity to attract high-level researchers and build a world-class, multidisciplinary research institute. FIST was one of the first research institutes of its kind in China.

Q: What are some of the major achievements since the foundation of FIST?

In terms of academic accomplishments, the high-quality faculty team and research are the major achievements. We have also established a novel academic and administrative management system that has turned out to be very effective. In the first two years we focused on faculty recruitment and setting up labs. We now have 11 research centres and over 40 faculty members, most with overseas training experience. The quick increase in talent has brought growth in both the quantity and quality of research output. We published 162 journal articles last year, a 60% increase from the year before. FIST researchers were the first or corresponding authors of approximately 130 of these papers, and nearly 20 were published in top-ranking international journals. In just the first 10 months of 2015, FIST researchers published 28 papers in top-ranking international journals—a 40% increase as compared to the entire year of 2014. As one example of how the research conducted at FIST

contributes to the development of basic science subjects at XJTU, the research led by Min Zhuo, published in *Neuron*, clarified the mechanism of the interactions between anxiety and chronic pain. This research has great potential for clinical applications, and it was the first publication in *Neuron* to list XJTU as a home institution of the corresponding author.

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Q: What factors do you think contribute most to the success of FIST?

A unique management system and an interdisciplinary approach set FIST apart from its domestic counterparts. Following international practices, we have adopted the tenure-track system and a transparent faculty evaluation system with more nuanced assessment criteria for tenure promotion. While these may be common in Western institutions, they are innovative in China. FIST is also novel in its wide coverage of subject areas with a faculty size similar to that of a university department. Even within the same research centre, faculty members may have very different research backgrounds. By bringing researchers of different fields together to investigate an issue and exchange ideas, we can broaden their views and gain new perspectives. Our students also benefit from interdisciplinary training by participating in these cross-disciplinary research projects.

Q: How do you characterize the education program at FIST?

As just mentioned, we emphasize the interdisciplinary approach in student training to help broaden student views. Graduate students primarily learn by working on research projects—many of which are interdisciplinary—through which they identify study needs and become motivated to study on their own. Another feature

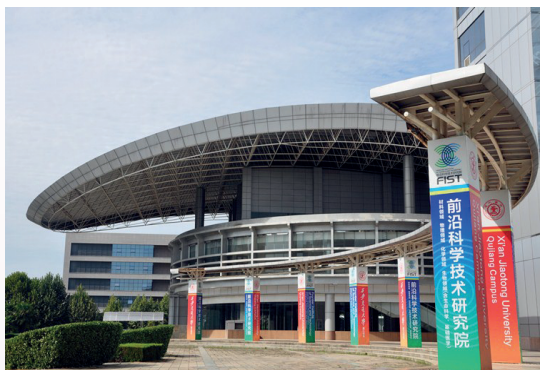
of FIST is its international flavour. As most of our faculty have overseas backgrounds, we can offer seminars in English and ask students to deliver English presentations and reports. Students also have ample opportunities to attend international conferences and short-term training abroad. For instance, one of my students delivered an invited talk at the Energy Materials Nanotechnology Spring Meeting held in the United States in 2013. Some of our students have also published in high-quality international journals as corresponding authors, demonstrating their high research capabilities.

Q: How do you find a balance between conducting research and managing the whole institute?

The institute is not managed solely by me. I am able to continue conducting research thanks to our capable administrative staff. I am primarily in charge of strategic decisions and planning, while Vice Chairman Dr. Xiangli Meng is responsible for the daily management of the institute. The vice chairman position is a full-time administrative role requiring rich management experience as well as overseas research experience—it is important for our administrators to understand science and research so that they can easily communicate with our faculty members and researchers to address burning issues. We also emphasize transparency and democracy in our policy planning, and all faculty members are encouraged to participate in policy making for the institute. In this way, managing the institute is a group effort.

Q: What research fields will FIST focus on in its next stage of development?

We do not set particular focus areas at FIST, as we encourage a multidisciplinary approach. Hot research fields today may not be trendy tomorrow. By conducting multidisciplinary research, we can get innovative ideas and identify new trends and new hotspots. We want to further broaden our research fields by attracting more researchers in math and computer science, biomedical and life sciences, and physics and material sciences. Our five-year goal is to triple our faculty size and become an internationally influential institute of excellence in interdisciplinary research.



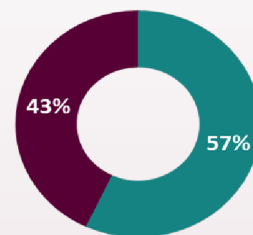
Frontier Institute of Science and Technology (FIST) is an important investment by Xi'an Jiaotong University (XJTU) in an effort to establish a world-class, multi-disciplinary research institute.

FIST has built up a multi-discipline instrument sharing platform valued more than one hundred million RMB yuan. The research fields in FIST cover physics, chemistry, biology (including life sciences and basic medicine), materials science, mathematics, computation, and basic engineering, etc.

After nearly five-year development, FIST has obtained great achievements, and now it is renowned at home and abroad and has made an important contribution to science disciplines in XJTU.

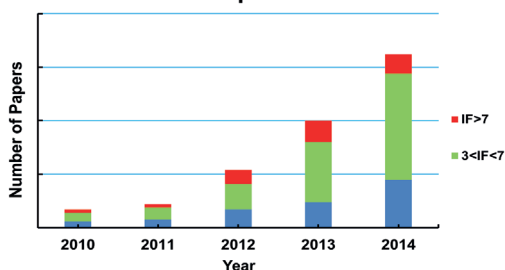
Faculty

- Since its establishment, FIST has attracted thousands of scholars from all over the world to apply for its positions. After strict selection, 44 scholars have joined FIST, including 4 foreign academicians, 9 "1000 Talent Plan" scholars, 6 "1000 Young Talent Plan" scholars, and 1 scholar of NSFC excellent young scientist foundation.
- In FIST, 43% of faculty members are academicians or have national titles. The talent quality and density have reached the top level of the colleges in China.



■ Academicians & faculty members who were awarded national titles

FIST Paper statistics



Publications

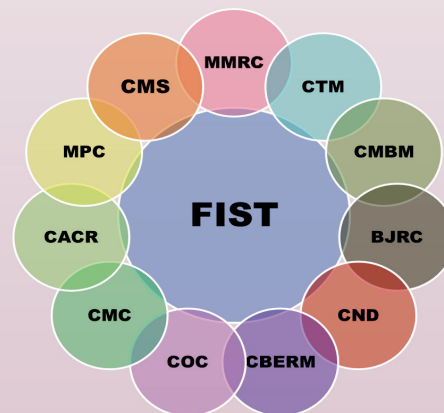
After nearly five-year development, FIST has published a number of outstanding papers in scientific research.

- Among the outstanding papers published in 2014, 72% were published in top-level journals with an IF greater than 3.

IF: Impact Factor

Multi-discipline

- Multi-disciplinary Materials Research Center (MMRC)
- Center of Microstructure Science (CMS)
- Materials Physics Center (MPC)
- Center for Biomedical Engineering and Regenerative Medicine (CBERM)
- Center for Applied Chemical Research (CACR)
- Center for Neuron and Disease (CND)
- Center for Materials Chemistry (CMC)
- Center for Organic Chemistry (COC)
- Center for Mitochondrial Biology and Medicine (CMBM)
- Center for Translational Medicine (CTM)
- Bone and Joints Research Center (BJRC)



Honors & Awards

- Prof. Pengfei Li in Center for Organic Chemistry was awarded the 2015 Thieme Chemistry Journal Award .
- Prof. Min Zhuo and Prof. Jiankang Liu were selected on Elsevier 2014 Most Cited Chinese Researchers list.
- Prof. Ju Li and Prof. Yadong Yin were selected on Thomson Reuters 2014 Highly Cited Researchers list.
- Prof. Xiaobing Ren's study on Strain Glass has become a hotspot of international research. The TMS2015 set up a special session for this topic.
- The paper published on *Science* by Prof. Ju Li, Prof. Xiaobing Ren and collaborators from China University of Petroleum won the 2013 Ten Major Advances in Science in China.
- FIST was awarded National Advanced Group of Professional and Technical Personnel in 2014.