



Science, Technology, Education and Health News from China

Number 121 – July 2014

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Introduction

The Story of the Month focuses on the first group of bachelor students admitted to the prestigious University of Chinese Academy of Sciences. In education, public discussions how wealth gap is dividing college entrance exam's future. South China University of Science and Technology, or China's first autonomous university issues diplomas to its first two graduates who both plan to continue their study abroad. In science and technology, China's smartphone leader Xiaomi announces its first wearable device. China plans to build its own super collider. China plans to launch HD observation satellite later this year.

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Story of the Month

University of Chinese Academy of Sciences Admits First Group of Bachelor Students

University of Chinese Academy of Sciences UCAS is the former Graduate School of Chinese Academy of Sciences (GSCAS) which was founded in 1978 as the first graduate school in China. Benefiting from the 117 research institutes of the Chinese Academy of Sciences, the UCAS was able to consistently foster high-quality graduate students over the past decades.

With more than 7'000 master students and 2'000 young doctoral students admitted to UCAS each year, the university has one of the largest young researcher pools in China. In an effort to attract even more young and talented students to a career of science, the university started to recruit bachelor students in autumn semester of 2014. The first UCAS bachelor programs include Mathematics, physics, chemistry, bio-chemistry, material sciences, engineering and computer sciences, covering UCAS' most competitive academic areas.

UCAS plans to admit 300 bachelor level students in 2014. High school graduates from Zhejiang, Liaoning, Shandong, Henan, Hunan and Yunnan Provinces are eligible to apply for the university based on their Gaokao scores, which is expected to fill 2/3 of the admission plan. Prospective students should "have a strong interest in pursuing a scientific career," according to the application guideline of UCAS.

The other 1/3 of the students will be admitted directly by the university through an independent assessment program. Students from Beijing, Jiangsu, Shanxi and Sichuan (provinces that have proven to have consistently great quality students) had the chance to be part of such program through online application or through recommendation by school principals. 200 candidates from each of the four areas had been invited to Beijing for a separate written test and interview, chaired by the members of the Chinese Academy of Sciences. The goal of the test and interview was to test students' knowledge, interest, critical thinking and ethics. Admission decisions were made on the basis of their Gaokao performance (70%), interview performance (20%) and GPA (10%).

Unlike other universities, UCAS plans to have an "elite, credit-based approach" in educating bachelor students. Students will go through 1.5 years of general knowledge training in physics, mathematics, foreign language, social sciences etc., followed by another 1.5 years of general knowledge courses within their respective majors. At the end of the third year, students would choose their academic track and thesis advisor, and will be sent abroad for one semester exchange program at a renowned university or research institute. The final semester will be completed at UCAS where the student would work closely with his/her advisor's research team while completing thesis. If the student wishes to move up to graduate studies, the chances of joining one of the CAS research institutes are very high.

More than 400 high profile researchers from the Chinese Academy of Sciences are ready to work closely with the students as their mentors. Students will have the opportunity to join their mentor's research team, follow his/her career closely and receive valuable research advice from the mentor.

The university has completed the admission for the first 300 bachelor students who will start their studies in September 2014 on the university's campus in western Beijing. Based on the quality of faculty and the level of commitment of the university, it is certainly interesting to follow the path of these hand-selected students who should represent China's best and brightest young minds.



News

1. A wealth gap is dividing the college entrance exams' future

(Global Times, 7-7-2014)

Hidden in the deep mountains of Lu'an, Anhui Province, is a school with a secret recipe for success. For the past four years, Maotanchang has seen more than 80 percent of students passing the national college entrance examinations - gaokao - enrolled by undergraduate universities. Provincial figures, meanwhile, have rarely risen above 40 percent.

More than 500 kilometers away, At Shanghai Foreign Language School, only 35 out of its 235 graduates bother to sit gaokao this year. Half of the remainder has been admitted to overseas universities. The others have been recommended for leading domestic universities without even the need to sit gaokao.

This broad gap between the two schools illustrates the huge and growing disparity between divergent approaches to achieving the best possible future for China's children. Some attribute it to a matter of wealth (training and studying abroad cost several times more than for domestic colleges). Others believe it is more of a "vision gap."

Since the exam system was restored after the Cultural Revolution in 1977, gaokao was the only way to access higher education in China. The grueling ordeal is widely regarded as key to a decent or well-paid job, and high social standing. Only in recent years has any shift in perception occurred. According to the National Institute of Education Sciences, around 1 million high-school graduates sidestepped gaokao in 2013, a number which has been growing by some 100,000 annually since 2010. Studying abroad is believed to be only one cause.

Yet in the small town of Maotanchang in Lu'an, gaokao fever seems to be as unwavering as ever. These returning students' gaokao scores can be raised by an average of 100 to 150 points after a year of training at Maotanchang. "For an exam-oriented education system, this school is a great success," said Li Mingzhi, a teacher from a leading middle school in Hefei, provincial capital of Anhui.

Students and parents in this small town view gaokao as their only reliable shot to effectively lead the family to a better future. Every year, hundreds kowtow and burn incense in front of a famed 100-year-old tree nearby, praying for better luck in their exams.

For at least one group of parents in Shanghai, however, the fiercest battle to secure better futures for their children takes place much earlier - when their children graduate from primary school. Many hire foreigners to tutor their children in oral English one-on-one prior to an interview by Shanghai Foreign Language School.

"Gaokao is our last resort if he fails to get admitted to either," chirruped Zhang Jing, whose 12-year-old son was admitted this May.

Rumors describe entry as a bloody fight in which only families with certain wealth or backgrounds are eventual winners. A teacher said traditionally the school has more recommendation quotas than others in Shanghai where it's a growing trend that students seek higher education abroad.

Gu Xiaoming, a sociology professor with Fudan University, said that the drastically different attitudes towards gaokao have a close relationship with the status of local economic and social development. "In some big cities, parents have figured out its inappropriateness and regarded gaokao only as an option. But most Chinese parents continue to blindly follow suit," Gu said. "Although I have to admit gaokao is a comparatively fair selection mechanism. These exams are still of vital importance to most Chinese families."

With continuing calls to reform the country's gaokao system, a few provinces have launched their own pilot programs. Professor Gu believes comprehensive reform to the gaokao system will take place very soon - maybe even within the next two years. "By that time," he pointed out, "schools that have carried



out exam-oriented education, and students who have prepared hard in an ocean of exercise for years, could find it very tragic."

(<http://www.globaltimes.cn/content/869234.shtml>)

2. **China's first autonomous university issues diplomas**

(*China.org, 12-07-2014*)

South University of Science and Technology of China (SUSTC), the country's first autonomous university, has issued diplomas to two graduates, marking an achievement in the country's higher education reform. Wang Jiale, 17, and He Minghao, 22, who were enrolled in March 2011, passed their dissertation defense and graduated from the school one year early on July 9th, receiving diplomas issued by the university.

In China, diplomas are issued by the Ministry of Education (MOE). The SUSTC is hailed as a pioneer of the country's higher education reform by building China's first professor-led and bureaucracy-free university and issuing its own diplomas.

It started enrolling students without approval from the MOE in 2011. It got the nod from the MOE in April 2012 as the first autonomous university in the country.

Wang will further his studies at the University of Oxford in October and He will choose to study either at University College London or the University of Bristol in September.

"The two graduates entering world-class universities have proven the success of our educational reform," said Zhu Qingshi, SUSTC president and an academician of the Chinese Academy of Sciences. "It also means our diploma has received international recognition."

It is typical for the world's top universities to issue their own diplomas, Zhu said.

The university has established a council to oversee the operation of the institution, challenging China's system of having appointed officials run universities, which is often blamed for stifling the academic atmosphere.

Forty-five students were enrolled in March 2011 as the first cohort of students at the university. About 35 students will graduate next year, as four have quit school and several others are expected to delay their graduation, according to Zhu.

The government of Shenzhen, China's pioneering city for opening-up and reform in coastal Guangdong Province has sponsored the university's founding with the hopes that the institute can fuel the city's economic development with its academic strength.

(http://www.china.org.cn/china/2014-07/12/content_32929900.htm)

3. **Earlier Launch Possible for Space Station Modules**

(*CAS, 21-07-2014*)

The first of three experimental modules for China's planned space station is expected to be launched in 2018, with the other two set for launch in 2020 and 2022, a leading scientist said.

The modules will help form a 60-ton space station.

"We set the date as a preliminary goal," said Gu Yidong, an academic at the Chinese Academy of Sciences and a leading research expert in manned space stations.



Previous media reports set the launch date for the modules at around 2020.

"The date might be changed because a number of factors can influence a launch date. This is a common feature in international research," Gu said at a Beijing forum on space research.

Since the International Space Station is expected to be retired in about 2024, China's station may be the only remaining base for mankind in space.

"It will be a great opportunity for China to develop space science. Meanwhile, China's lunar probe and possible deep space probe projects are set to provide a historic breakthrough for lunar and planetary research," Gu said.

He is confident that after two decades of development the country will help lead the way in exploring and understanding the final frontier.

Scientists are drafting a plan on how to best use the space station to facilitate research.

Gao Ming, director of the technology and engineering center for space utilization under the Chinese Academy of Sciences, which is in charge of drafting the plan, said that the space station will accommodate a specialized lab for applied physics and general research which will study areas such as the origins of life and black holes.

But research will not be solely focused on outer space. Earth observation will play a key role, especially regarding the environment and monitoring disaster response. Experiments on the ground have already commenced to make sure that the modules work as efficiently as possible. These experiments include life sciences, conditions in microgravity and fluid physics, she said.

Because China's space station may play a unique role after 2020, there have been requests from specialists around the world to cooperate, according to Gao with the CAS.

"It will be a win-win situation. China and other countries share common interests in some areas. The cooperation will benefit both sides," Gao said.

Scientists hope the details of any international cooperation can be nailed down later this year.

(http://english.cas.cn/Ne/CASE/201407/t20140721_124854.shtml)

4. **Xiaomi Announces Its First Wearable Device**

(Tech Crunch, 22-07-2014)

Fast-growing Chinese Android smartphone startup Xiaomi, which reported at the beginning of July that it had shifted some 26 million handsets in the first half of this year, has unveiled a new flagship device which it will be hoping powers it over its sales target of 60 million smartphones in full year 2014.

Also today, and as rumored earlier this month, the company took the wraps off its first wearable: a fitness and security bangle called the Mi Band, which costs a throwaway CNY 79 (\$13).

Xiaomi's new flagship handset, called the Mi 4, is a premium smartphone that competes at the top of the market — lining up against Samsung's flagship, the Galaxy S5, and of course Apple's iPhone 5s. And, on the latter note, the Mi 4 looks to have taken some design cues from Apple with distinctly iPhone-esque metal bands running around its edges.

The biggest change is evidently to the design, though — it's out with the Mi 3's rounded plastic sides, and in with a flat metal wrapper that has a distinctly iPhone look. According to Reuters, at its unveiling at the National Convention Center in Beijing on July 22nd, the Mi 4's design drew murmurs of "iPhone" from the crowd.



Back in May, Xiaomi unveiled its first tablet device which also appeared to take design inspiration from Apple — being an iPad mini size combined with the colourful, plastic-backed appearance of the iPhone 5c.

In addition to a new smartphone, Xiaomi unboxed its first wearable on the Mi 4 launch event: the Mi Band. As well as tracking health metrics such as steps and sleep, the bangle can be used as an identity authenticator to unlock a Xiaomi smartphone, i.e. rather than having to type in a password. It also includes a sleep-cycle alarm clock. So Xiaomi is bundling fitness and security features in one wearable to increase the utility.

At such a low price (CNY 79), the company has a big chance to drive serious scale with the Mi Band, according to many analyst. The company is also evidently designing the bangle to encourage users to stay within a Xiaomi ecosystem of devices — which spans Wi-Fi dongles, set-top boxes, phones, tablets and now wearables.

Xiaomi has ambitious market expansion plans as well — with a big global push planned for this year that will take its devices to 14 global regions in total: China, Hong Kong, Taiwan, Singapore, Malaysia, Indonesia, India, the Philippines, Thailand, Vietnam, Russia, Turkey, Brazil, and Mexico. Demand in India for Xiaomi's Mi 3 handset — its prior flagship, which only went on sale in the country today — apparently crashed Flipkart, according to a BGR India report. The e-commerce site had taken in some 100,000 pre-orders for the Mi 3 in India.

(<http://techcrunch.com/2014/07/22/mi-4-mi-band/>)

5. **China to launch HD observation satellite this year**

(*China.org, 22-07-2014*)

China will launch Gaofen-2, a high-definition Earth observation satellite, to space this year, according to the State Administration of Science, Technology and Industry for National Defense (SASTIND).

As one of China's major science and technology projects, the Gaofen satellite series will help in geographic and resources surveys, environment and climate change monitoring, precision agriculture, disaster relief and city planning.

Launched in April last year and still in service, Gaofen-1 provided data on the Lushan earthquake in Sichuan; floods in northeast China; and smog in north and east China during the test period. It also provided Pakistan with image data after an earthquake which happened on Sept. 24.

Gaofen-1 was the first of five or six satellites to be launched for high-definition Earth observation before 2016. It is also the first low-orbit remote-sensing satellite designed to be in use for longer than five years.

Equipped with better technology, Gaofen-2 will be able to see a one-meter-long object in full color.

Wu Zhenyu, researcher with the Development Research Center of the State Council, said the project will boost the development of China's remote sensing industry and ensure more effective social management.

(http://www.china.org.cn/china/2014-07/22/content_33019190.htm)



6. China Plans Super Collider

(CAS, 24-07-2014)

For decades, Europe and the United States have led the way when it comes to high-energy particle colliders. But a proposal by China that is quietly gathering momentum has raised the possibility that the country could soon position itself at the forefront of particle physics.

Scientists at the Institute of High Energy Physics (IHEP) in Beijing, working with international collaborators, are planning to build a 'Higgs factory' by 2028 — a 52-kilometre underground ring that would smash together electrons and positrons. Collisions of these fundamental particles would allow the Higgs boson to be studied with greater precision than at the much smaller Large Hadron Collider (LHC) at CERN, Europe's particle-physics laboratory near Geneva, Switzerland.

Physicists say that the proposed US\$3 billion (CNY18.58 billion) machine is within technological grasp and is considered conservative in scope and cost. But China hopes that it would also be a stepping stone to a next-generation collider — a super proton–proton collider — in the same tunnel.

European and US teams have both shown interest in building their own super collider, but the huge amount of research needed before such a machine could be built means that the earliest date either can aim for is 2035. China would like to build its electron–positron collider in the meantime, unaided by international funding if needs be, and follow it up as fast as technologically possible with the super proton collider.

The machine would be a big leap for China. Ten years ago, Chinese particle physicists would have doubted their ability to host a 52-kilometre machine, says Ian Shipsey an experimental physicist at the University of Oxford, UK. But after several successes in collider and neutrino experiments, including showing in 2012 how neutrinos change from one form to another, China now has “the confidence, for the first time, to propose an ambitious new machine”, says Shipsey.

The Chinese government is yet to agree on any funding, but growing economic confidence in the country has led its scientists to believe that the political climate is ripe, says Nick Walker, an accelerator physicist at DESY, Germany's high-energy physics laboratory in Hamburg. Although some technical issues remain, such as keeping down the power demands of an energy-hungry ring, none are major, he adds.

But China is still a long way from collider dominance. Its main weakness is that its high-energy-physics community is small, says Guido Tonelli, a particle physicist and former head of one of the two major experiments at CERN. If China is to eventually host a super collider, the project will have to be international, he adds. “Nobody would be able to do that alone.”

Wang says that China would welcome international funding contributions for both projects, and that if there is a lot of support the ring size could be expanded to 80 kilometres, increasing the scientific scope (see 'Collision course'). But he adds that the country will not wait for collaborators before pressing ahead. The next two years will be spent sketching out a design and establishing what technical difficulties need to be ironed out. Detailed design, budget and location plans will follow, and construction could begin in as little as five years, adds Wang.

He believes that, in the next five years, the Chinese plans will produce positive competition between China, the United States and Europe, maximizing the chances of a single contender emerging.

There is a final complication. Plans are well under way for an International Linear Collider (ILC), an electron–positron linear accelerator that could operate at much higher energies than China's proposed 52-kilometre electron–positron ring. Physicists are strongly behind the project, but it is yet to secure funding or a host country, says Brian Foster, who leads the European ILC design team. He fears that the Chinese plans could dampen support for the project.

Japan has shown a strong interest in hosting the ILC, but has not “got a stranglehold” on the project, says Foster. He suggests that China could step in, and argues that because the ILC has a wider energy range than a ring collider, the linear accelerator could do more than study the Higgs: it could explore other



poorly understood particles, such as the top quark, and any other phenomena that the LHC might discover. (Nature)

(http://english.cas.cn/Ne/CASE/201407/t20140724_125035.shtml)

(Collaborating Opportunities)

Lift China Conference

Date: September 10th

Place: Shanghai

Contact: <http://liftconference.com/lift-china-14>

Venture Leaders Program in China

Date: September 3rd to 13th

Place: Beijing and Shanghai

Contact: Swissnex China

Swiss academic delegation (for representatives of universities)

Date: Oct 29th to 31st

Place: Shanghai

Contact: Swissnex China

Swiss Day at Shanghai Jiaotong University

Date: October 30th (TBC)

Place: Shanghai

Contact: Swissnex China

Asia – Europe Meeting Workshop on Public Health Emergency Management

Date: September 10th to 13th

Place: Beijing

Contact: Chinese Center for Disease Control and Prevention