

Science, Technology, Education and Health News from China

Number 104 – February 2013

Please note that the previous newsletters can be downloaded from the website of the Embassy of Switzerland in China: www.eda.admin.ch/beijing¹. To subscribe/unsubscribe or send us your comments, please send an email with the corresponding subject to chenchen.liu@eda.admin.ch.

Introduction

This month's newsletter starts with a background update on the new President of the Natural Science Foundation of China. In science and technology, China's own dark-matter exploration project Panda X is under the spotlight, China and Chile launched a joint astronomy research center, electric cars are still booming in China despite global doubt. In education, China decided to end free postgraduate education. In health, the Chinese Academy of Sciences announced the detection of a toxic compound in Beijing's smog; North Korea's nuclear test spurred widespread concern on radiation in China.

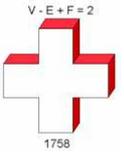
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¹ Please click on the blue texts to activate the hyperlinks to either email addresses or related websites.



Story of the Month

Natural Science Foundation of China with New President

The Chinese Natural Science Foundation, a foundation managing an annual budget of over RMB 15.1 billion (USD 2.42 billion), announced the appointment of a new president, Dr. YANG Wei on February 22nd, 2013. Amidst the once-in-a-decade power handover of the Chinese government, this is the first minister-level personnel change in the science and technology sector.

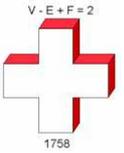
Dr. YANG, an engineer, is now in his 50s, holding a bachelor degree from the Northwest University of Industry in China, a master degree from Tsinghua University and a doctoral degree from Brown University of the United States, making him the first NSFC President with a doctoral degree from a well-known foreign university. He is also a member of the Chinese Academy of Sciences.

Dr. YANG has a mixed academic and political career. He worked for Tsinghua University for 30 years, as professor, dean and president of the academic degree appraisal committee. He started his political career in 2004 when working as the director general of the State Council Academic Degree Committee while heading the Department of Academic Degrees and Graduate Students Education of the Ministry of Education between 2004 and 2006. He was then appointed as the President of Zhejiang University in 2006.

As the president of Zhejiang University, one of China's most prestigious research universities, Dr. YANG launched an overall reform that covers student admission and education, faculty administration and personnel appraisal. With the new HR appraisal reform, faculties and administrators of Zhejiang University who used to be evaluated with the same standard are now streamed into administrative posts, academic posts (subcategorized into teaching and researching) and R&D posts with different appraisal systems. Dr. YANG was also the mastermind of a number of other reform measures in Zhejiang University, including admitting 80 outstanding 2nd year high school students directly into the university and opening online open courses to the public. His reform, especially the HR reform, provoked heated debate in the Chinese education sector, putting Dr. YANG in the spotlight as a "bold reformer".

Compared to his predecessor Mr. CHEN Yiyu, a locally educated zoologist with an academic career in the Chinese Academy of Sciences, Dr. YANG clearly has much more experience in universities and has a global vision thanks to his overseas study experience at Brown. According to 2012 statistics, 82.05% of the NSFC-supported projects went to university applicants. The in-depth insight of Dr. YANG in the higher education sector is a definite good fit to the trend and will enable him to better address the needs of university applicants.

While the mega-sized science funds managed by the Ministry of Science and Technology has been criticized as too top-down and coming with too much bureaucratic strings attached, the NSFC enjoys a good reputation in China for its transparency and its support on bottom-up, curiosity-driven research efforts. As the Chinese government is in the process of optimizing the governance of science and technology, the appointment of Dr. YANG is an indication of the government's commitment to a continuous reform towards a more merit-based and less bureaucratic science and technology sector in China.



News

1. **Dark-matter Hunt Gets Deep**

(Nature, 20-02-2013)

More than 1,000 metres underground, physicists have set traps of liquid xenon to catch their prey: hypothetical particles of dark matter that might very rarely interact with ordinary matter as they drift through Earth. With construction costs on the order of US\$10 million each, such experiments are a relatively cheap way to work out the composition of 85% of the matter in the Universe. But does the world really need four of them?

Ongoing experiments Italy, the United States and Japan are now being joined by a fourth in China, called PandaX. Installed in the deepest laboratory in the world, 2,500 metres under the marble mountain of JinPing in Sichuan province, PandaX will this year begin monitoring 120 kilograms of xenon. The team hopes to scale the tank up to 1 tonne by 2016, which would mean that the experiment had developed more quickly than any other dark-matter search. "We want to demonstrate that world-class research in dark matter is possible in China," says Xiangdong Ji, a physicist at Shanghai Jiao Tong University in China and a spokesman for PandaX.

Dark-matter researchers in the West are excited by the ambition of the project, but some question the duplication of effort. "Spending all our money on different direct-detection experiments is not worth it," says Stefan Funk, an astrophysicist at the SLAC National Accelerator Laboratory in Menlo Park, California, who admits that he is biased — he looks for dark matter indirectly, by watching the heavens for a possible γ -ray signal.

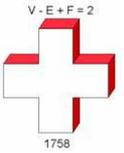
Enter PandaX, which was born when China's National Natural Science Foundation and Ministry of Science and Technology funded a team that included members of the XENON collaboration. They set up an experiment of their own, deep within JinPing mountain, in a small laboratory that opened in 2011 after just two years of construction. PandaX hopes to rival XENON100's current sensitivity for lighter WIMPs by the end of this year, although Ji acknowledges the challenges of working in a remote area of central China while relying on overseas suppliers for many parts.

China, together with a consortium of universities including some in the United States, is spending about \$15 million to build PandaX, but the team would like more international partners. In January, PandaX applied to the US Department of Energy (DOE), which has not set up an agreement to work with the Chinese foundation, but the US agency declined. Instead, the DOE is spending its money on another group that split off from the XENON collaboration: the Large Underground Xenon (LUX) experiment at the Homestake gold mine in South Dakota.

Rick Gaitskell, a physicist at Brown University in Providence, Rhode Island, and spokesman for LUX, says that the United States needs its own deep underground lab to maintain its dark-matter expertise. "Why would we give up that leadership position and move all that experience overseas?" he asks.

But Ji, who now has access to perhaps the best underground lab in the world, says that some consolidation is inevitable. The international community is unlikely to support more than two xenon experiments with multi-tonne detectors, he says, and the United States will need to choose which effort to back. In the meantime, he says, it is not a bad idea to have many groups working to improve the technology. "That will help build the ultimate dark-matter experiment."

(<http://www.nature.com/news/dark-matter-hunt-gets-deep-1.12455>)



2. China Ends Free Postgrad Tuition

(Xinhua, 06-02-2013)

The State Council, or China's cabinet, announced on February 6th that the country will begin to charge tuition fees for all its postgraduate students while offering more flexible choices of student financial aid.

Starting from the fall semester of 2014, all newly matriculated postgraduates in Chinese universities will be charged tuition fees, the cabinet said in a statement released after an executive meeting chaired by Premier Wen Jiabao.

The move marks the phasing out of a system that allowed students of government-funded postgraduate programs to enjoy tuition waivers. Instead, the country will improve its financial aid system, introducing more kinds of scholarships to help students cover their tuition fees, the statement said. It added that the country will increase subsidies for student teaching and research assistants and improve other financial aid policies including student loans. The central government also vowed to gradually increase funds earmarked to state-backed Chinese universities for improving the quality of their postgraduate education.

The Ministry of Education trialled the cancellation of free postgraduate tuition at a number of universities in 2006, before gradually expanding the scope to cover all 112 schools nationwide that are supported by the central government.

Under the new policy, yearly tuition fees for master's degrees and doctorates in academic disciplines are capped at 8,000 yuan (1,272 U.S. dollars) and 10,000 yuan respectively, while standards for professional degrees remain unchanged, said the statement.

"We have jobs and positions for which skilled workers cannot be found, and on the other hand, we have talented people who cannot find jobs; technical and vocational education and training is the answer," said Lu Xin, the vice minister of education, at a conference in June 2012.

(http://news.xinhuanet.com/english/china/2013-02/06/c_132155955.htm)

3. Toxic Compound Found in Beijing Smog

(Chinese Academy of Sciences, 19-02-2013)

Large amounts of organic nitrogen compounds were found in Beijing smog in January, the worst month in recent years. According to a recent report by the Chinese Academy of Sciences, the chemicals are believed to be the major components that killed more than 800 people in the Los Angeles photochemical smog over six decades ago.

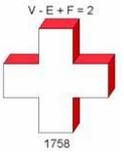
Beijing's sky were charcoal grey for most of January. PM 2.5 monitoring stations in the Beijing-Tianjin-Hebei area recorded five bouts of heavy pollution, lasting a good 22 days. Smog persisted throughout January and returned with fresh bouts of pollution in February. Experts believe the cause for the prolonged pollution is a direct consequence of both man-made emission and disruption of natural ecological balance.

The Chinese Academy of Sciences says the prolonged smog is caused by a combination of intensive coal burning, car emissions, cooking pollutants and a particular weather pattern created an inversion layer over the low-lying city.

Wang Yuesi, Atmospheric Physicist of Chinese Academy of Sciences, said, "Car exhaust is the primary cause in Beijing, contributing about a fourth of the air pollution. Coal fumes are the secondary cause."

Most alarming is that the Academy says they've found organic nitrogen particles, a key component in the deadly photochemical smog in Los Angeles in the 1950s and the Great Smog in London.

Professor Pan Xiaochuan of School Of Public Health, Peking University, said, "Nitrogen compounds, when reaching a higher density, could cause acute respiratory symptoms such as coughing and shortness of breath. It's a stressor for asthma. And our clinical records show an appreciable increase in respiratory patients last month."



But Professor Pan doubts that photochemical smog formed in Beijing. The conversion requires the presence of sunlight to form ground-level ozone. Beijing has hardly any sunlight on foggy days.

Professor Pan Xiaochuan said, "Photochemical smog usually contains large amounts of ozone, aldehyde, and a chemical compound called PANS. The last chemical in particular has an almost tear gas effect on humans: irritated eyes, dry mouth and serious coughing. In Los Angeles, 800 people died in three or four days. In Beijing, the situation is much less severe."

But no one disputes the cause for the smog. Experts have called to reduce car emissions, and improve fuel quality. They have also suggest limiting industrial production and improving the process of coal burning so people in China can breathe easier.

(http://english.cas.cn/Ne/CASE/201302/t20130219_99029.shtml)

4. Nuclear Test Sparks Radiation Fears

(Wall Street Journal, 16-02-2013)

Chinese authorities are moving to tamp down public worries about radiation soon after North Korea set off a nuclear test not far from their common border.

The Chinese government released radiation readings on 14th and 15th — and then again on 16th — in the northeastern part of the country that showed no signs of elevated levels. Based on weather forecast data provided by the National Meteorological Information Center, "even if a radiation leak takes place, it will mainly head toward the southeast and won't affect our country at the moment," the ministry said in an initial response on its website Wednesday, one day after North Korea carried out its third nuclear test.

They mark the first regional tests results disclosed since a number in the wake of the Fukushima nuclear crisis in Japan two years ago. That incident fueled panic in some quarters, driving shoppers to stockpile salt to prevent radiation-related illnesses.

The readings this week come amid signs of a jittery public. "Should I trust it or not? I'm still young," one online user said on Sina Weibo of the government's rest results. Online Chinese in recent days have widely reposted a graphic with Japanese captions showing radiation spreading to parts of China in addition to South Korea and Japan, prompting demands for official explanations. The Chinese website of the Japanese newspaper Asahi Shimbun posted the graphic on its official Sina Weibo account. While the origin of the graphic is unclear, Asahi later said it was from the first nuclear test by North Korea in 2006, and it apologized.

No artificial radioactive nuclide was found in seven aerosol samples collected from northeastern provinces of Heilongjiang, Jilin, Liaoning and Shandong, the ministry said in a statement the 14th. It came to the same conclusion on 15th after testing 33 aerosol samples collected from these areas.

Even if the rumors about excessive radiation are proven wrong, it could be hard to change the public's mistrust of the officials and strong repugnance against North Korea's nuclear activities. Although the Chinese government has expressed its "firm opposition" against the latest nuclear test, many in the public are calling for a shift of Beijing's attitude toward its long-term political ally.

"Reposting [rumors] is a reflection of [the public's] mistrust of official accounts and its strong detest of North Korea's nuclear tests," another Weibo user said.

Attorney Yuan Yulai on his Sina Weibo account noted that the foreign ministry's statement was exactly the same as during the earlier tests.

(<http://blogs.wsj.com/chinarealtime/2013/02/16/nuclear-test-sparks-radiation-fears/>)



5. **Astronomy Research Center Launched by China, Chile**

(Xinhua, 02-02-2013)

An astronomy research center was jointly launched Friday by the Chinese Academy of Sciences (CAS) and Chile. The center will aim to better explore international astronomical resources and cooperate with other south American countries in the field of astronomy.

Under the name of "China-Chile Joint Research Center for Astronomy", the center will provide a "long-term" and "steady" platform for cooperation among China, Chile and other south American countries.

"Chile has an ideal environment for astronomical observation, which will enable Chinese astronomers to promote astronomical research of south American countries," said Zhan Wenlong, vice president of the CAS, at Friday's launch ceremony.

Zhan added that China is advanced in the fields of theoretical astronomy, numerical simulation research and equipment research and development. This makes it possible to offer talent training and technological support for Chile.

However, the field of observational astronomy remains underdeveloped in China as it lacks a world-class astronomical infrastructure and admirable observational sites.

Zhan noted that the establishment of the center is expected to change China's current astronomical research situation by jointly carrying out cutting-edge observation and technology research.

Chile's ambassador to China Luis Schmidt Montes said that the south American country will obtain 68 percent of the world's total astronomical infrastructure by 2020. The Chile government expects to promote all-out scientific and technology cooperation with China in the field of astronomy.

http://www.chinadaily.com.cn/world/2013-02/02/content_16195333.htm

6. **First Chinese Company Joins WWF Emission Reduction Program**

(Xinhua, 30-01-2013)

The World Wildlife Fund (WWF) announced that a north China company has become the first Chinese company and also the first photovoltaic (PV) manufacturer to join the WWF's Climate Savers program.

Yingli Green Energy Holding Co., Ltd., a leading solar energy company based in the city of Baoding in north China's Hebei province, is the first Chinese company to set a specific renewable electricity consumption target., the WWF said. Yingli has agreed to reduce the intensity of its greenhouse gas emissions per megawatt (MW) of PV module production by 13 percent by the end of 2015 in comparison to 2010 levels. The company also plans to reduce emissions from purchased goods and services per MW of PV module production by 7 percent and to reduce emissions from upstream transportation by 10 percent by the end of 2015.

The Climate Savers program, initiated by the WWF in 1999, now features the participation of 30 member companies that have set targets for emission reduction and are working with other companies, suppliers and partners to implement solutions for a clean, low carbon economy.

Peter Beaudoin, head of WWF's China office, said it is "very demanding" for companies to join the program. "Companies that agree to set emission-cutting goals and actively promote the application of renewable energy can become member companies." More Chinese companies have launched campaigns to combat climate change, Beaudoin added.

"We are very glad to become the first Chinese company and the first solar manufacturer to join the program," said Miao Liansheng, chairman and CEO of Yingli. "Yingli is working to provide affordable, green energy to ordinary people while carrying out our company's social and environmental responsibilities to reduce energy consumption and emissions in our production and operations."



Yingli also pledged that at least 4 percent of the electricity the company consumes will come from renewable sources, especially solar energy, by the end of 2015.

Renewable energy only accounts for 1 percent of the country's current energy consumption.

Yingli will launch a global solar PV manufacturing standard in 2015 with the support of the WWF in order to promote reduced energy consumption in the PV industry, increase the utilization of renewable energy and reduce emissions.

"Yingli's move demonstrates that Chinese companies are working hard to support the growth of renewable energy. We hope more companies can learn from Yingli to develop their own clean and renewable power plants so as to contribute to emission reduction efforts," said Donald Pols, director of WWF's China for a Global Shift Initiative and a member of Yingli's Climate Savers application review committee.

(http://news.xinhuanet.com/english/sci/2013-01/30/c_132139117.htm)

7. **Electric Cars Going Out of Style? Not in China**

(Wall Street Journal, 21-02-2013)

Geely Automobile, Dongfeng Motors and other Chinese automotive firms are bidding to take over Fisker, maker of the Karma premium electric sedan. And Buffett-owned BYD plans to launch the Denza — a brand new electric car developed in a joint venture with Daimler — later this year.

China's Wanxiang Group received U.S. government approval just last month to purchase A123 Systems for \$256 million. Before bankruptcy, A123 Systems had been America's most advanced developer of batteries for electric cars and a recipient of \$133 million in grants from the federal government.

China's relentless pursuit of electric cars looks curious because it comes at a time when confidence in electric cars in the U.S. and elsewhere appears to be hitting new lows.

Electric vehicle sales remain a mere drop in the automotive sales ocean. For all the news headlines they generate, electrics still account for a tiny fraction of one percent of cars bought each year. Private buyers just are not convinced yet.

Holding back sales are two stubborn shortcomings:

First, batteries can add up to \$10,000 to the cost of a conventional sedan. Case in point: The gasoline-powered Chevrolet Cruze outsells the electric-powered Chevrolet Volt by 10 to 1 even though they are built on the same basic platform.

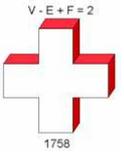
Second is range anxiety. If you get an edgy feeling when your mobile phone battery flashes low, imagine running out of juice on a cold winter day on a highway between cities, as happened with the Tesla.

So, how to explain China's accelerated pursuit of electric vehicle technology? Companies like Geely, BYD and Wanxiang are essentially betting that Beijing will follow through on its promise to have five million electric vehicles on Chinese roads by 2020.

Officials in the capital have a strong desire to avoid American-like addiction to oil from volatile regions like the Middle East. And Chinese citizens are growing increasingly irate as sections of the country get blanketed with hazardous air pollution.

To move beyond oil into electrics, look for Xi's lieutenants to start with buses, taxis and government fleets — vehicles that tend to have fixed routes that can be served easily by a set of local charging stations. Cities like Beijing, Shanghai and Shenzhen can ramp up demand for electrics with a single stroke of the pen because they directly own vehicle fleets that number in the tens of thousands.

More pieces of the puzzle start to come together when you realize that the Shanghai Auto Industry Corporation (which is owned by the city of Shanghai) formed a joint venture in 2009 with now Chinese-



owned A123 Systems. This brings the market, the battery maker and the vehicle producer into a tight circle around Shanghai.

For most countries in the world, gasoline engines prevail over electrics because of their superior range and affordability. The market has the final word.

But China is different. The world's second-largest economy can go much further to induce electric vehicle growth with generous rebates (electric vehicle buyers in Beijing now qualify for a \$9,600 subsidy), rapid installation of charging stations in key cities and, most powerful of all, direct purchase mandates.

As the Chinese like to say about business in the People's Republic: "Look at the mayor, not the market."

(<http://blogs.wsj.com/chinarealtime/2013/02/21/electric-vehicles-going-out-of-style-not-in-china/>)

Events (March 15th – April 15th 2013)

Science, Technology and Education-related Events in China

China Development Forum 2013

Date: March 23rd to 25th

Place: Beijing

Contact: <http://www.cdrf.org.cn/2013cdf-cn/>

The 6th International Petroleum Technology Conference

Date: March 26th

Place: Beijing

Contact: CNPC

2013 China International Machinery Industry Fair

Date: March 14th to 16th

Place: Ningbo

Contact: <http://www.chinamaching.cn/>

5th China Energy-Saving and Emission Reduction Exhibition (Beijing)

Date: March 21st to 23rd

Place: Beijing

Contact: <http://www.sinojnjp.cn/cn/index.asp>

2nd China International New Energy Vehicle Forum

Date: March 27th to 29th

Place: Shanghai

Contact:

<http://www.ourpolaris.com/nev2013/cn/o-Organizing.asp>

Boao Forum for Asia Annual Conference 2013

Date: April 6th to 8th

Place: Boao

Contact: <http://www.boaoforum.org>

Swiss-related S&T, Education and Health Events and Announcements

Swiss federal government scholarships application in process

Date: until end of March

Contact: China Scholarship Council

<http://www.csc.edu.cn/require/>

Mars en Folie in Beijing

Date: March 9th

Place: Beijing

Contact: Embassy of Switzerland in China

Breakfast on Innovation and Entrepreneurship with Olivier Glauser, Alumni EPFL, co-founder Shankhai Sports

Date: March 19th

Contact: Swissnex China

Reception of the St. Gallen Symposium in Beijing

Date: March 27th

Place: Beijing

Contact: Embassy of Switzerland in China