



Science China Newsletter, May 2019

Trends in education, research, innovation and policy



Shaxi, Yunnan Province

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Swiss Spotlight

ETH Alumni taking off at ShanghaiTech

(Laurent Kneip, May 06)

Laurent Kneip, an ETH alumni, is now Assistant Professor within the School of Information Science and Technology at ShanghaiTech University, a brand-new university in Pudong that brings western models to China and gives young researchers an exceptional opportunity to establish and develop their own research agenda. Dr Kneip is an expert in computer vision and tries to enable autonomous systems and mobile applications to use cameras for real-time 3D perception of the environment. His research interests revolve around visual odometry, Simultaneous Localization And Mapping (SLAM), multiple-view geometry, as well as the efficient solution of the underlying algebraic geometric problems. At ShanghaiTech, he founded and directs the Mobile Perception Lab which is focusing on vision for self-driving cars and semantic SLAM. Laurent Kneip obtained a Dipl.-Ing. degree in mechatronics engineering from Friedrich-Alexander University Erlangen-Nürnberg in 2009, and a PhD degree from ETH Zurich in 2013, where he worked at the Autonomous Systems Lab in collaboration with Prof Roland Siegwart. Laurent Kneip was also the recipient of a Discovery Early-Career Researcher Award from the Australian Research Council, allowing him to become an independent senior researcher at the Australian National University and a member of the ARC Center of Excellence for Robotic Vision. In 2017, Laurent Kneip and his co-authors were awarded the Marr Prize (Honourable Mention) for their contribution at the International Conference on Computer Vision.



<http://swissinnovation.org/newsChina/web/2019/00-190506-26>

Start-Up: Neuromorphic computing for vision

(iniVation, May 28)

At iniVation, neuromorphic vision systems are created. Their bio-inspired intelligent technology offers unprecedented advantages over conventional machine vision systems. Founded by the inventors of event-based vision, iniVation combines decades of world-leading R&D experience with a deep network of >200 customers and partners across multiple industrial markets. Their customers include global top-10 companies in automotive, consumer electronics and aerospace. The DVS emulates key aspects of the human visual system. A custom sensor transmits only pixel-level changes, at microsecond time resolution. It is equivalent to a high-speed camera running at thousands of frames per second – but with far less data. The resulting events are processed using novel state-of-the-art algorithms to produce useful information – motion, objects, positions. The DVS has several decisive advantages over traditional image processing, including longer system-level battery life, reduced data rate, high speed, low latency



(<1 ms) and a high dynamic range (>120 dB). iniVation is a spin-off of the University of Zurich and the ETH Zurich and will be in China for the CES ASIA 2019.

<http://swissinnovation.org/newsChina/web/2019/00-190528-86>

1. Policy

Revised Regulation on Government Information Disclosure

(China Daily, May 03)

A revised regulation on the disclosure of government information will go into effect on May 15 to better respond to public concerns. The revision, based on the 2008 version, is aimed at increasing the openness of government affairs and resolving prominent problems in government information disclosure. It also clarified the scope of government information disclosure, calling for constantly expanding information disclosure. Stressing the need to protect the legal rights and interests of applicants and related parties when applying for information disclosure, the revision also made necessary stipulations on the improper exercise of application rights by a small number of applicants as such behaviors affect the conduct of government information disclosure.



<http://swissinnovation.org/newsChina/web/2019/01-190503-fc>

Granting of Subsidies on Military Scientific Research

(China Daily, May 05)

The Central Military Commission (CMC) has approved the release of a set of interim regulations on the granting of subsidies for scientific research posts in the military. The regulations target problems in the granting of subsidies, with solutions to improve the enthusiasm, initiative and creativity of those in scientific research. The regulations center on conditions, procedures and methods, as well as the subjects responsible for granting, elaborating and improving 28 pragmatic measures in six areas. These include that subsidies can only be granted for verified performance, and that members of military scientific research groups not affiliated to the respective military units or departments can also receive performance-based subsidies.

<http://swissinnovation.org/newsChina/web/2019/01-190505-d0>

China to Cut Overcapacity in 2019

(China Daily, May 10)

Chinese authorities said Thursday the country will press ahead with the efforts to cut excess capacity in key areas, including coal and steel sectors, this year. In 2019, the government will focus on structural capacity cuts and promote the systematic improvement of production capacity, according to a circular jointly released by the National Development and Reform Commission and other departments. Since 2016, China has cut crude steel capacity by more than 150 million tonnes and cut outdated coal capacity by 810 million tonnes. The country should consolidate the outcomes of cutting overcapacity and step up inspection to avoid the resurgence of eliminated capacity, it said.



<http://swissinnovation.org/newsChina/web/2019/01-190510-9f>

Standards for Green Technology Innovation Enterprises

(China Daily, May 15)

China will formulate standards for green technology innovation enterprises. Placing more emphasis on green technology innovation, China has vowed to see the emergence of 10 leading enterprises in the field between 2019 and 2022, with each boasting an annual output of above 50 billion yuan (about \$7.31 billion), according to a guideline issued by the NDRC and the Ministry of Science and Technology. Meanwhile, the country aims to support 100 enterprises to establish national green technology centers and authorize 1,000 green technology enterprises in the period.

<http://swissinnovation.org/newsChina/web/2019/01-190515-6f>

AI Giants Calls for Facial Recognition Regulations

(South China Morning Post, May 17)

SenseTime, the world's most valuable artificial intelligence (AI) start-up, has called on governments to establish new regulation for facial recognition systems. This call to action followed the recent decision in San Francisco to ban local police and other agencies from using such technology because of the potential for abuse.



The CEO of SenseTime urges governments to craft regulations instead of restricting the use. He described the introduction of new rules covering facial recognition as "crucial" towards the wider adoption of this form of AI technology around the world, while suggesting the ban would be the "exception" to that trend. In China, for example, facial recognition is now being used not just for access control at border checkpoints, but to take attendance in classrooms and spot jaywalkers. SenseTime has supplied automatic face-scanning technology to more than 40 railway stations and several airports across China, where these systems have recorded near-perfect accuracy rate.

<http://swissinnovation.org/newsChina/web/2019/01-190517-7d>

2. Education

Online Education Sector Grows Fast While Facing Challenges

(China Daily, May 15)

Online English-language courses for children saw an explosive growth in 2018, according to a report released by data-monitoring firm Trustdata on Tuesday. The report on China's online English education market for children shows that the market had more than 15 million users last year, up 168.3 percent year-on-year. It's expected that the market size would surpass 50 billion yuan (\$7.3 billion) in 2019. The market pattern of one-on-one teaching has been gradually formed and the top brands have secured the lion's share of the market, as per the report. Insiders say as Chinese parents increase their spending on education, online education gets more recognition and China's internationalization progresses, online course users will keep growing, The Beijing News reports.



<http://swissinnovation.org/newsChina/web/2019/02-190515-72>

Center for Theoretical Physics Asia-Pacific Opened

(Xinhuanet, May 16)

In the past years, the world's science and technology progress has been speeding up. In May, the international Center for Theoretical Physics Asia-Pacific (ICTP-AP) has been launched in Beijing. The ICTP-AP will be a talent training base and international academic exchange center with global vision, which aims at supporting young scholars and developing regional cooperative research. The center will help the future education better serve the global sustainable development by conducting basic science research, innovation and application.

<http://swissinnovation.org/newsChina/web/2019/02-190516-64>

Technology Expected to Help Bolster Education

(China Daily, May 17)

President Xi Jinping said on Thursday that China is willing to work with other countries in discussing issues related to artificial intelligence and innovative educational adaptations amid AI's rapid development. AI has a profound effect on people's modes of production, daily lives and learning, Xi said in a congratulatory letter to the opening ceremony of the three-day International Conference on Artificial Intelligence and Education in Beijing on Thursday. Xi said tracking AI's global development trend, finding areas for breakthroughs and research priorities and fostering high-quality AI talent that is innovative and cooperative are important missions for educators. China attaches great importance to



AI's deep impact on education and has actively deepened its integration to facilitate reforms and changes in the education sector, Xi said.

<http://swissinnovation.org/newsChina/web/2019/02-190517-c1>

3. Life Sciences / Health Care

Hepatitis E Vaccine in Clinical Trial

(China Daily, May 04)

A Chinese vaccine against the Hepatitis E Virus (HEV) has entered clinical trial in the United States. The vaccine, sold under the trade name Hecolin, was initially developed by a research team from Xiamen University and then transferred to and commercialized by the Xiamen Innovax Biotech Co., Ltd.. Hecolin has been used in China since 2012 for the prevention of hepatitis E. It has been approved by the US Food and Drug Administration (FDA) to enter a clinical trial, which marks the first time that a Chinese vaccine has received green light for clinical trial in the US. Hepatitis E is a liver disease caused by HEV, which is transmitted mainly through contaminated drinking water and food. Large outbreaks of the disease have been reported in at least 30 countries in Africa, Asia and North America. According to the World Health Organization (WHO), there are approximately 20 million HEV infections, 3.4 million symptomatic cases and 70,000 deaths globally every year.



<http://swissinnovation.org/newsChina/web/2019/03-190504-8a>

China Enhances Reporting of Medical Data

(China Daily, May 13)

China has issued a provisional plan to enhance the reporting and management of data from hospitals nationwide. Hospitals are asked to report data on medical quality and security, medical services and hospital revenue, among others, according to the plan issued by the National Health Commission (NHC). Hospitals should also report their proportion of revenue from sales of medicines and the use of anti-bacterial medicines and basic medicines. The plan also asked hospitals to report data related to prescriptions, such as the number of prescriptions on anti-bacterial medicines, narcotic drugs and psychotropic drugs. Reporting of data on the use of hospital beds is also required. The collected data could play a big role in the future formulation of medical policies and the bidding and procurement of medicines, the NHC said.



<http://swissinnovation.org/newsChina/web/2019/03-190513-31>

China Has Nearly 1 Million Medical, Health Institutions

(China Daily, May 24)

The number of China's medical and health institutions, comprised of hospitals, primary-level medical institutions as well as public health institutions for specific purposes, reached 997,434 at the end of 2018, 10,785 more than a year earlier, official figures have shown. The number of hospitals and primary-level clinics increased by over 1,900 and 10,000 to around 33,000 and 944,000 respectively, according to a report on China's medical and healthcare sector issued by the National Health Commission (NHC). Public health institutions for specific purposes, including centers for disease control and prevention, institutions for treatment and prevention of certain specific diseases, maternal and child health centers, and centers of health supervision, totaled around 18,000, down by 1,862 from the previous year.

<http://swissinnovation.org/newsChina/web/2019/03-190524-d6>

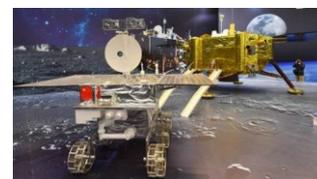


4. Engineering / IT / Computer Science

Chang'e-4 Probe Awakes After Lunar Night

(China Global Television Network, May 01)

China's Chang'e-4 probe, launched on December 8, 2018, made the first-ever soft landing on the far side of the Moon on January 3, 2019. During the lunar night - which is equivalent to a 14 day time-span on Earth - the drone switched to dormant mode due to the lack of solar power. On April 29, the lander and the rover of the Chang'e-4 probe have resumed work for the fifth lunar day. According to the Lunar Exploration and Space Program Center, both are in normal working condition. The mission of the drone include low-frequency radio astronomical observation, surveying the terrain and landforms, detecting the mineral composition and shallow lunar surface structure and measuring neutron radiation. The far side of the Moon has unique features, and scientists expect Chang'e-4 could bring breakthrough findings.



<http://swissinnovation.org/newsChina/web/2019/04-190501-3e>

New Large High-Altitude Air Shower Observatory

(Science Magazine, May 02)

After 3 years of construction, the Large High Altitude Air Shower Observatory (LHAASO), an ambitious new observatory on the eastern edge of the Tibetan Plateau, has begun observations. Although troublesome for humans, the thin air is exactly what makes Tibet good for observing the staggeringly energetic photons that crash into Earth from unidentified objects across the universe. The observatory

has a very powerful optical telescope and will allow China's astronomers to join the hunt for exoplanets, study the evolution of galaxies, and watch for optical counterparts to gravitational waves. By creating infrastructure and astronomical know-how, the observatories in Tibet could pave the way for further successors.

<http://swissinnovation.org/newsChina/web/2019/04-190502-ea>

Spacecraft Tracking Ships on Missions

(China Daily, May 05)

China's spacecraft tracking ship Yuanwang-5 is sailing to the Indian Ocean for a maritime space monitoring mission. China currently has four Yuanwang tracking ships that have completed four missions since January 2019, with more than 140 days at sea, making it a record high in recent years. According to the satellite maritime tracking and controlling authorities, the ships are expected to carry out more missions this year. As China has planned more than 30 space launches planned, the Yuanwang fleet will operate for more than 700 days at sea altogether.

<http://swissinnovation.org/newsChina/web/2019/04-190505-ca>

Real-Time Interpretation Device Using Machine Learning

(South China Morning Post, May 11)

There is an abundance of apps and portable "translators" that can interpret words spoken in one language to another. However, like Google Translate, these services are only capable of one-way interpretation at a time – for example, English to Chinese – but not vice versa without changing settings. Timekettle is a Chinese startup who has developed an algorithm-based interpreting app that promises to skip the set-up process and the startup sells a device, the WT2, together with the app. This device allows you and the other party to converse freely in your respective languages and interpretation takes place in real time for both sides. A few languages are already available such as English, Mandarin, Spanish, Dutch, Greek, German, Russian, Japanese, Thai and Cantonese. The algorithm uses machine learning to recognise voices and accents.



<http://swissinnovation.org/newsChina/web/2019/04-190511-47>

Electric Carmaker Enters Ride-Hailing Market

(South China Morning Post, May 14)

Xpeng, a Chinese electric carmaker has recently jumped into the ride-hailing business after raising over 10 billion yuan from investors. The company, which is backed by Alibaba, has recently received a ride-hailing operation licence from authorities in Guanzhou. It is expected that they will start trial services shortly.



The market entry into the ride-hailing business will intensify competition in an area that has yet to deliver profits for industry giants Didi Chuxing and Uber. However, an employee of Xpeng explained that this move enables the company to promote its cars to a larger customer base and improve user experience. Their goal is to build a smart mobility ecosystem with truly intelligent products, best user experience and value-added services for customers. Despite constant losses on the side of market leader Didi. The company has raised over 10 billion yuan from investors.

<http://swissinnovation.org/newsChina/web/2019/04-190514-33>

Breakthrough in Lithium Production Lowers Battery Cost

(South China Morning Post, May 14)

The production of lithium – an essential ingredient in batteries for electric cars – has become easier and significantly cheaper, thanks to a technological breakthrough. The cost of extracting the mineral has been slashed to a record low of 2,180 US\$ per tonne by the new process. In comparison, over the past years, the international price ranged from 12,000 - 20,000 US\$ per tonne, according to an industry estimate. While China's lithium output is relatively low, it dominates supply, producing nearly two-thirds of the world's lithium-ion batteries. This cost reduction is significant for electric carmakers. About 30 to 50 per cent of the cost of an electric car currently goes into the battery and China has the biggest e-mobility stock on its roads.



<http://swissinnovation.org/newsChina/web/2019/04-190514-9e>

Proptech's Massive Potential in China

(South China Morning Post, May 15)

Globally, investment in property technology has reached US\$20 billion over the past six years, with more than a third of the money going into China. Venture capital companies are taking increased notice of "proptech" as it reshapes how offices and shopping centers are developed. The latest advances in artificial intelligence, blockchain and internet of things technologies have facilitated the process while helping to store and analyse data and improve management -efficiency. For landlords and operators, it is becoming easier to monitor metrics such as occupancy ratio and real-time energy consumption, as well as technical problems like abnormal temperatures or -excessive power consumption. Meanwhile, tenants can benefit from insights to optimize the number of desks as well as the use of meeting rooms and staff areas. The scope and scale of proptech growth in China is massive.



<http://swissinnovation.org/newsChina/web/2019/04-190515-45>



Facial Recognition App for Pandas

(South China Morning Post, May 18)

China has developed an app that allows conservationists to identify individual pandas using facial recognition technology. The software will help scientists gather data on wild pandas who live deep in the mountains and are hard to track. It will collect data on the population, distribution, ages, gender ratio, birth and deaths of wild pandas. Last year, plans were announced to create a bastion for giant pandas to link up and encourage breeding among existing wild populations. Giant pandas have a notoriously low reproductive rate, a key factor – along with habitat loss – in their status as “vulnerable” on the International Union for Conservation of Nature’s Red List of threatened species. More than 80 per cent of the world’s wild pandas live in Sichuan, with the rest in Shaanxi and Gansu. About 548 giant pandas globally live in captivity and the number living in the wild has dwindled to fewer than 2000.



<http://swissinnovation.org/newsChina/web/2019/04-190518-d8>

Beijing Builds Testing Area for Autonomous Vehicles

(China Daily, May 20)

One district in Beijing, the Haidian District, is seeking to expand its lead in self-driving vehicles with a plan to create more spaces for tests. The district will build a demonstration area with 100 square kilometers for self-driving vehicles. This area is part of a 15-point action plan issued by the district government to spur the development and innovation of driverless vehicles and smart connected cars. The place will foster the development of smart connected cars and smart transportation through featuring multiple scenarios, cloud management, simulated tests and data support. Additionally, researchers and scientists will be able to test various new technologies and systems in the demonstration area. Through this project, Beijing seeks to step up international cooperation in the industry and plans to host a high-level competition of driverless vehicles



<http://swissinnovation.org/newsChina/web/2019/04-190520-61>

Helicopter-Hailing is the Future of Shenzhen

(China Daily, May 20)

Pressing a button to call a helicopter to a rooftop was once the stuff of science fiction, but it could soon be a reality in China’s southern metropolis of Shenzhen. An urban air mobility project is expected to make the Chinese innovation hub, renowned for its so-called Shenzhen speed, even faster. The joint project between Airbus and the Shenzhen municipal commerce bureau will add a new dimension to its urban transport system. The two cooperation partners announced that they hope to make this seemingly science fiction project turn into reality by the end of



this year. Shenzhen, the city that pioneered China's reform and opening-up, is among the world's leading innovation hot spots. The city already has an all-electric urban bus fleet and over 20,000 new-energy vehicles. According to a representative of Airbus, the people in Shenzhen will accept and embrace these types of solutions.
<http://swissinnovation.org/newsChina/web/2019/04-190520-10>

Autonomous Driving Not Ready Before 2050

(China Daily, May 20)

Private autonomous vehicles will not hit public roads anytime soon because of safety and cost aspects, according to representatives by Bosch. By mid-century the picture will most certainly look different but forecasts of the technology hitting roads by 2022 are utopian. In China, autonomous vehicles might be a little cheaper due to the smart infrastructure, but the development will still take time. The technology will first be used in some designated areas, like industrial parks. However, before driverless vehicles become commonplace, advanced driver-assistance systems, or ADAS for short, that offer a lower level of autonomous driving will be a major application. Besides automated driving solutions, new energy vehicles and connected mobility are up and coming. China has developed to the biggest car market and is pioneering in various new energy vehicle solutions.



<http://swissinnovation.org/newsChina/web/2019/04-190520-dc>

New Energy Vehicle Sales Increase by 25%

(China Daily, May 20)

Hampered by significant market share losses, Chinese auto brands are struggling to compete for customers with automakers around the globe. The sales volume of Chinese passenger cars in April 2019 declined 27.9 percent year-on-year to 585,000 units. That accounted for 37.1 percent of the total sales of China's passenger vehicles, a decrease of 5.2 percentage points. Even though, many automakers experienced declining sales numbers, BYD - a leading new energy carmaker - saw its volume increase. This was mostly due to sales in new energy models where the sales went up 72.5 percent year-over-year. China produced 102,000 units of new energy vehicles and sold 97,000 new energy cars in April, with year-over-year increases of 25 percent and 18.1 percent, respectively.



<http://swissinnovation.org/newsChina/web/2019/04-190520-1b>

Tax Incentives for Semiconductor Industry in Shanghai

(South China Morning Post, May 21)

The government of Shanghai announced plans to offer tax incentives and funding to nurture the home-grown semiconductor chips industry. This was announced after an executive order barring the use of telecommunications equipment by companies that threaten the US was signed by President Trump. Integrated circuits (IC), artificial intelligence (AI) and biotechnology will be the three key industries that the municipal government of China's premier commercial city will focus its resources on. Anxious to maintain technological self-sufficiency, the country set up an investment Fund in 2014 to nurture indigenous technology and acquire foreign patents and designs. The annual imports of semiconductor chips have risen 30% between 2013 and 2017. Under the "Made in China 2025" industrial strategy, chip-making is one of the 10 key sectors in which domestic players try to catch up and become self-sufficient by 2025.



<http://swissinnovation.org/newsChina/web/2019/04-190521-f4>

Highspeed Train: Chengdu to Lhasa in 13h

(China Daily, May 22)

The Sichuan-Tibet Railway, the second railway line linking the Tibet autonomous region to other parts of China, will operate high-speed trains with a designed running speed of 200 km/h. The 1,600-kilometer-long line under construction is designed to start from Chengdu, pass through Ya'an and Kangding, then enter Tibet via Qamdo and end at Lhasa. The 140-kilometer Chengdu-Ya'an high-speed railway, which serves part of the Sichuan-Tibet Railway, started operation last year with a maximum speed of 200 km/h. Previous reports said that 80 percent of the line will consist of tunnels and bridges, and the cumulative ascent will exceed 16,000 meters, which equals twice the height of Mount Everest. When the line is completed, the travel time by rail between Chengdu and Lhasa will shorten from 48 hours to about 13 hours.



<http://swissinnovation.org/newsChina/web/2019/04-190522-a7>

Ultra-Fast Maglev Train to Enter Production

(CNN Travel, May 24)

Recently, the body prototype for the country's latest high-speed magnetic-levitation (maglev) train project rolled off the assembly line in the eastern China. The floating bullet train will be able to accelerate to speeds of 600 km/h. It is planned, that the train should go into commercial production in 2021 after extensive testings. Many of the involved parties are certain that the project will completely transform





China's travel landscape, filling the gap between high-speed rail and air transportation. For example, travelling from Beijing to Shanghai takes 4.5 hours by train, 5.5 hours by current high-speed train and would only take 3.5 hours with the new maglev train. China already has a maglev train in place which connects Shanghai Pudong International Airport and the city center, reaching a maximum speed of 431 km/h. It is the world's fastest commercial maglev system to date.

<http://swissinnovation.org/newsChina/web/2019/04-190524-d5>

5. Energy / Environment

Rice Cultivation in Saline Soil

(Xinhuanet, May 16)

Rice is a staple food in China, as well as many other Asian countries. About 100 million hectares of soil are saline-alkali in China, of which about one fifth could be ameliorated to arable soil. This is quite a significant amount and the Saline-Alkali Tolerant Rice Research and Development Center aims to speed up research and development of various types of saline soil rice. The center decided to expand its experimental land to more than 667 hectares. The center has set a target of 300 kg yield per mu (one mu is equivalent to 667 square meters). Meanwhile, researchers will study which rice types are suitable for which areas and which saline-alkali land needs to be ameliorated. To scientifically exploit saline soil, increase the grain output, as well as prevent disasters of saltwater intrusion, organizations and institutions have now strengthened cooperation.



<http://swissinnovation.org/newsChina/web/2019/05-190516-15>

Rural Development Through Digitalization

(China Daily, May 17)

The Communist Party of China Central Committee and the State Council have published guidelines which promote the applications of digital technologies in rural areas to boost local development. The country has vowed to achieve initial development of building digital villages by 2020, with 4G internet accessible to more than 98 percent of the administrative villages and the digital economy growing rapidly in rural regions, the guideline said. The upgrade of the internet technology should bring a notable narrowing of the urban-rural digital gap, and by 2035, the country should basically realize rural and agricultural modernization and ensure that all residents enjoy equal public services. While providing more support for rural technological innovation, the country will strengthen ecological protection in rural areas with



digital technologies. An additional point is to improve internet access in rural areas to achieve poverty alleviation.

<http://swissinnovation.org/newsChina/web/2019/05-190517-04>

Low-Cost Underwater Electricity Generator

(China Daily, May 20)

Underwater vehicles, diving robots and detectors require their own energy supply to operate independently of the mother ships for long periods of time. The underwater challenge for power generators is to ensure a high energy density for basic power use and a high power density for activities such as rapid movement. Chinese researchers have recently developed a low-cost underwater system to generate electricity from seawater, offering a new approach to handle short spikes in power demand and maintain longer-term steady power. The key to the new generator is a cathode made of Prussian blue, an open framework structure with cyanide ions and iron ions which can easily accept and release electrons. When combined with a metal anode, the structure can be used to generate electricity from seawater. Tests show that the generator operates stably in corrosive seawater and can withstand mode switches.

<http://swissinnovation.org/newsChina/web/2019/05-190520-08>

Qomolangma Reserve Tests Clean Energy Buses

(China Daily, May 21)

Mount Qomolangma National Nature Reserve in the Tibet autonomous region has started a trial run of clean energy buses to better balance tourism development and environmental protection, local authorities said. Upon arrival at the station, whether by tour bus or private car, tourists will be required to transfer to electric-powered buses, according to Dingri county government, which oversees the base camp for Mount Qomolangma, known as Mount Everest in the West. So far, 13 buses equipped with oxygen supply facilities have been put into operation. The bus station is 79 kilometers inside the north gate of the reserve and about 20 km from the base camp.



<http://swissinnovation.org/newsChina/web/2019/05-190521-0e>

China to Contribute to Sustainable Development of Arctic

(China Daily, May 22)

China will actively participate in Arctic affairs and strive to contribute its wisdom and strength to the sustainable development of the Arctic, Wang Hong, chief of the State Oceanic Administration, said Friday. Attending the Arctic Circle China Forum held in Shanghai, Wang proposed to conduct joint scientific expeditions to



the North Pole and share the observation data with other countries to promote the monitoring and assessment of climate and environmental change in the Arctic in order to deepen the exploration and understanding of the Arctic. China would like to work with other countries to conduct scientific assessments of the impacts of global climate change and human activities on the Arctic ecosystem, and promote international cooperation in the protection of Arctic species and the natural restoration of the Arctic ecosystem, Wang said.

<http://swissinnovation.org/newsChina/web/2019/05-190522-fa>

Seabed Gardens in Mariana Trench

(Xinhuanet, May 29)

Chinese scientist discovered and photographed several seabed gardens". The coral gardens were discovered in the east ridge of the seamount in the south of the Mariana Trench, the deepest place of the earth, by a remote operated vehicle (ROV). In the real time videos that the ROV transmitted back, scientists observed a seabed garden with a lot of colorful corals, sponges and brittle stars at a depth of 880 meters at first and found more in the following exploration. The western Pacific Ocean within 20 degrees of latitude is an oligotrophic sea area because it is far away from land and lacks supplement of nutrients. The upside and bottom seawater in these areas rarely exchange as the temperature is steady the whole year, therefore, the nutrients at the seafloor can not be brought up. However, the ocean currents there are complicated and fast, so they can bring lots of organic matters to feed corals.



<http://swissinnovation.org/newsChina/web/2019/05-190529-14>

More Effective Fracking Technique

(Xinhuanet, May 31)

Fracking is a technique used to extract resources from the rock by injecting water mixed with sand and chemicals. But about 30 percent to 50 percent of fluid injected remains in the rock formation, consuming a large amount of water and posing potential ecological risks. Chinese scientists recently demonstrated that carbon dioxide could be a better fluid used in extracting resources like shale gas within rocks than water. Carbon dioxide fracturing can save a hefty water supply, making fracking viable in arid areas and reduce the risk of damage to reservoirs as aqueous solutions often create blockages in the rock formation. Additionally, it can provide an underground repository for captured carbon dioxide. However, the cost of carbon dioxide captured from emissions is still too expensive to make it an industry-wide fracking fluid replacement. The researchers are planning to conduct further investigations on the technology.

<http://swissinnovation.org/newsChina/web/2019/05-190531-a4>

6. Physics / Chemistry / Material Science / Nano- & Micro Technology

New Material to Tackle Oil Pollution

(China Daily, May 07)

Chinese scientists have developed new biomimetic polypropylene foams for oil-water separation, which can be used to prevent and control oil pollution. Oil-water separation is a global challenge due to increasing industrial oil-containing waste water and frequent oil spills. Consequently, research on high-efficiency oil-water separation materials and technologies has scientific significance and application value. Scientists from the Ningbo Institute of Materials Technology and Engineering under the Chinese Academy of Sciences have designed new biomimetic polypropylene foams with a novel structure that can separate water and oil with high efficiency in complex environments. The research was published in the Chemical Engineering Journal.

<http://swissinnovation.org/newsChina/web/2019/06-190507-c8>

Gaofen Satellites Reduce China's Dependence on Foreign Data

(China Daily, May 17)

China will set up a center for high-resolution Earth observation in the port city of Qingdao to provide satellite data assistance for marine science and technology innovation. Gaofen means "high resolution" in Chinese. China has launched several Gaofen satellites since 2013. The State Administration of Science, Technology and Industry for National Defence has recently signed a cooperation agreement with the city government of Qingdao, to promote applications of the Gaofen remote sensing satellite data in marine environmental monitoring, maritime rights and interests maintenance and disaster prevention. The Gaofen project has helped reduce China's dependence on foreign remote sensing satellite data.

<http://swissinnovation.org/newsChina/web/2019/06-190517-37>

Novel Cement to Halve Construction Cost

(China Daily, May 17)

Chinese researchers have developed a new type of cement concrete using natural soil as well as wind-blown sand. The new green, low-cost cement concrete makes use of construction and industry waste and residue. It contains natural soil mineral, wind-blown sand as well as construction waste and steel slag. It could significantly decrease both construction cost and construction time and according to a report even cut both in half. It can be widely used in the infrastructure construction of roads, railways and airports, agriculture, forestry, water conservancy, electric power and mining projects. According to a newspaper report, the novel cement concrete has already been put into use for some projects.

<http://swissinnovation.org/newsChina/web/2019/06-190517-a6>



Worldwide Third High-Performance Methane Engine

(China Daily, May 20)

LandSpace, a private startup in Beijing, announced that its methane rocket engine successfully underwent a 20-second trial run at the company's test facility. It is the world's third high-performance methane engine. Such engines use liquid methane as a fuel and liquid oxygen as an oxidizer and their advantage is that they are reusable which makes them central to the development of reusable launch vehicles. After the successful tests, the company is now focusing on the development of the ZQ 2 - their second carrier rocket which will be "the largest and most powerful carrier rocket to be designed and built by a Chinese private rocket company", according to LandSpace. The plant is the first privately owned carrier rocket factory in China and the largest of its kind in Asia.



<http://swissinnovation.org/newsChina/web/2019/06-190520-14>

New Waste Incineration Method Curbs Inhibits Toxins

(Xinhuanet, May 30)

A large amount of highly toxic chlorinated aromatic compounds are emitted during solid waste incineration. Substances especially dioxins are listed as persistent organic pollutants by the United Nations Environment Program. Chinese scientists have now developed a method to inhibit the generation of such toxic substances from waste incineration through uncovering the formation mechanism of dioxins. The research has led to the development of inhibition technologies which can reduce emissions of dioxins by more than half in solid waste incineration. The scientists have successfully inhibited the outputs of dioxins in three large-scale solid waste incineration power plants in China by more than half.

<http://swissinnovation.org/newsChina/web/2019/06-190530-1c>

7. Economy, Social Sciences & Humanities

Fossil Reveals a Lot About Denisovans

(South China Morning Post, May 02)

A human jawbone found in a cave on the Tibetan plateau has revealed new details about a mysterious ancient species called Denisovans. The discovery also shows that Denisovans lived at extremely high altitude and, through interbreeding, may have passed on gene adaptations for this lifestyle to modern-day Sherpas in the region. The scientists involved in this finding described it as "spectacular" as it reveals a lot about these archaic humans. They were able to extract DNA from inside the ancient



bone and by comparing this with other ancient DNA and present-day populations they learned that the species must once have been widespread across Europe and Asia. The fossil represents a crucial link between the Siberian specimens and other Chinese fossils from which scientists had previously failed to extract DNA, but which show remarkable anatomical similarities to the Tibetan specimen.

<http://swissinnovation.org/newsChina/web/2019/07-190502-fd>

Philosophy and Social Sciences App

(Xinhuanet, May 17)

The National Center for Philosophy and Social Sciences Documentation has launched its mobile app to provide more convenience for users to access academic resources on mobile devices. It now has over 17 million academic resource items, including content from more than 2,000 different Chinese academic periodicals on philosophy and social sciences, and over 10 million theses on the subject. The app is used by people from more than 30 countries including Asia, Europe, North America and Belt and Road countries. The plan is to provide more free and high-quality academic information services for society and promote China's academic achievements around the world, in order to further integrate and share academic resources in philosophy and social sciences.

<http://swissinnovation.org/newsChina/web/2019/07-190517-5e>

8. Corporates / Startups / Technology Transfer

Tencent Music Performs Better Than Expected

(South China Morning Post, May 14)

China's Tencent Music Entertainment Group beat Wall Street estimates for quarterly profit on Monday, as more users paid for its music streaming services than expected. The company said paid users of its online music service jumped 27.4 per cent to 28.4 million in the first quarter of 2019. As users increasingly consume music through streaming services, the company plans to gradually transform into a pay-for-streaming model in the coming years. Unlike other streaming services like Spotify, Tencent Music generates the lions share of its revenues not with music subscription packages but with services popular in China, such as karaoke and live streaming. The company reported a net income of US\$ 143.4 million for the latest quarter.



<http://swissinnovation.org/newsChina/web/2019/08-190514-48>

Jack Ma: Europe's Tech Regulation May Prevent Innovation

(South China Morning Post, May 17)

Europe lags behind in terms of technology innovation and has not produced as many big tech firms as other parts of the world. Last year, the continent put in place the General Data Protection Regulation (GDPR), a set of data protection rules for all companies that have operations in the region. Jack Ma, Alibaba Group executive chairman and co-founder, urged Europe to stop worrying about technology, as tighter regulation could hamper its ability to innovate and causes the continent to fall behind. A lack of regulation around the internet in the early days allowed China's mobile internet to flourish and for Alibaba to thrive, he mentioned. Compared to the US, whose Silicon Valley has produced the likes of Facebook and Google, as well as China with its technology powerhouses like Alibaba, Tencent and Baidu, Europe has not produced as many big tech firms.



<http://swissinnovation.org/newsChina/web/2019/08-190517-3e>

202 Unicorn Startups in China

(China Daily, May 22)

A unicorn is a privately held startup valued at more than \$1 billion. In 2018, China had 202 unicorns valued at a combined total of \$744.6 billion, according to a report. Seven of the companies are considered super unicorns – companies valued at more than \$10 billion. These seven are Ant Financial, Didi Chuxing, JD Digits and Jinri Toutiao, Kuaishou, Cainiao and Bitmain, valued between \$14.5 billion and \$150 billion. China's unicorns come from 22 industries, with e-commerce, smart logistics, new entertainment, artificial intelligence, and new energy and smart vehicles the top five sectors. The majority is based in Beijing, Shanghai, Hangzhou and Shenzhen, with a combined number of 156. Driven by global capital, China's unicorns have accelerated the pace at which they go public, with unicorns now taking an average of 71 months to IPO. In the time between January 2017 to May 2019, 36 unicorns were listed on the global stock market.



<http://swissinnovation.org/newsChina/web/2019/08-190522-9e>

Upcoming Science and Technology Related Events

#SWISSTECH PITCHING NIGHT

June 12, 2019

<https://is.gd/e3Nyt5>

Deeptech, Startups, Pitches

Shanghai

CES ASIA 2019

June 11-13, 2019

<https://is.gd/jlWMMmB>

Consumer Electronics, Deeptech

Shanghai

Venture Leaders China

June 25- July 5, 2019

<https://is.gd/aoiyan>

Startups, Pitching

Hong Kong, Shenzhen, Shanghai

Drone GP Race @ Swiss Innovation Week 2019

June 12, 2019

<https://is.gd/e0zVpe>

Drones, Innovation

Beijing

Café des Sciences: Engineering Microbes as Living Sensors

June 20, 2019

<https://is.gd/Cil7Rh>

Synthetic Biology

Shanghai

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