

# Science China Newsletter, January 2019

## Trends in education, research, innovation and policy



Huangshan, Anhui Province

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## Swiss Spotlight

### ***Scientist: Establishment of Swiss New Ventures in China***

(Güldem Karamustafa-Köse, January 31)

Güldem Karamustafa-Köse is a social scientist at the Institut Interdisciplinaire du Développement de l'Entreprise (IIDE) within HEIG-VD, HES-SO University of Applied Sciences and Arts - Western Switzerland. She received her PhD in Management from Geneva School of Economics and Management - University of Geneva. Güldem is a member of the IIDE research group focusing on cross-cultural management in emerging markets. She is currently involved in the HES-SO funded research project that explores how Swiss new ventures get established in China. Güldem specializes on the process of learning and adaptation and examines how individuals, groups and organizations can learn and grow through diverse experience. Her research evolves around the themes of organizational learning, cross-cultural management and sustainable development. Collaborating with fellow researchers on various projects, she provides guidance and support to professionals. Güldem also holds an undergraduate degree in Environmental Engineering and a Masters degree in HRM. Prior to embarking on a career as a researcher, she gained experience as an HR professional at a multinational.



<http://swissinnovation.org/newsChina/web/2019/00-190131-2c>

### ***Startup: Out-Of-The-Box Augmented Reality Solutions***

(holo|one, January 31)

holo|one was founded in 2016 by Sven Brunner and Dominik Trost. Recognizing the enormous potential of Augmented Reality early on, they invested everything into the technology in order to create sphere: a unique platform application covering a wide range of use cases for all kinds of businesses, but with a focus on manufacturing, maintenance and augmented collaboration. With this approach, holo|one aims to become the standard for out-of-the-box Augmented Reality solutions across industries and the globe. With that goal in mind, holo|one established a subsidiary in Berlin, Germany in August 2018 and started looking eastward not long after. Later that same year, the startup was awarded office space in Chongqing, China by Sino Swiss Holding AG and fully intends to realize this opportunity by establishing a foothold in the Chinese Market.



<http://swissinnovation.org/newsChina/web/2019/00-190131-dc>

## 1. Policy

### Beijing Promotes Intelligent Connected Vehicles

(China Daily, January 07)

China's capital is seeking to become a model city for intelligent connected vehicles (ICV), aiming to complete a 5G internet of vehicles in key areas of the city in 2020. The goals are set in a four-year action plan on innovative development of ICV in the city, recently issued by the Beijing Municipal Commission of Economy and Information Technology. According to the action plan, Beijing will strive to become a demonstration city of the 5G internet of vehicles, promote the construction of intelligent connected environments for expressways, including Yanqing-Chongli Highway, Beijing-Xiongan Highway and Beijing's new airport highway, and build special lanes for ICV.

<http://swissinnovation.org/newsChina/web/2019/01-190107-8c>

### China to Step up Its Basic Research

(China Daily, January 10)

China will step up its basic research efforts, enhance innovative capabilities, increase international cooperation and improve its supervision and regulation regarding academic misconduct and unethical practices this year, China's top science official said on Wednesday. The country will also begin formulating its science plans for 2021 to 2035, and will start evaluating 16 key scientific fields, including information technology, biology, energy and manufacturing, for their potential in pushing socioeconomic growth, said Wang Zhigang, minister of science and technology. Companies should play bigger roles in studying information networks, smart grids, artificial intelligence and the efficient, clean use of coal, as well as other major projects, Wang said.

<http://swissinnovation.org/newsChina/web/2019/01-190110-6d>

### Regulation Revised to Better Protected World's Largest Telescope

(China Daily, January 22)

No cell phones, no digital cameras, and no smart wearable devices - the Guizhou provincial government has revised a regulation to keep the noise down and prevent human activities from affecting the world's largest telescope. The blanket ban is enforced on radio equipment and electromagnetic gadgets, including tablets, speakers and drones, in the core silence zone of the Five-hundred-meter Aperture Spherical Telescope (FAST). Visitors and tourists who enter the quiet area shall abide by the regulation to minimize confusing operations of the telescope. The regulation is expected to be effective starting from April 1, 2019.



<http://swissinnovation.org/newsChina/web/2019/01-190122-06>

## 2. Education

### Three Grand Projects to Propel Belt and Road Initiative

(Peking University, January 15)

Peking University recently announced three grand projects that will propel the Belt and Road Initiative. The first project will examine the history and culture of the regions along the Maritime Silk Road and Zheng He's Voyages through various means. The second project will attempt to identify how western and oriental civilizations integrate in ancient times and how they pass on from generations to generations. The third project is an International Undergraduate Dual-Degree Program at the Belt & Road Institute. The students will be fully-funded, and they will receive general education at their home universities during the first two years and then study at Peking University for various advanced courses related to management and Chinese studies over the remaining years.



<http://swissinnovation.org/newsChina/web/2019/02-190115-a0>

### Chinese Universities Lead in Emerging Economies

(China Daily, January 17)

Chinese universities dominate this year's rankings of emerging economies universities, according to data published Wednesday afternoon. China enjoyed its best year yet in the Times Higher Education (THE) Emerging Economies Rankings, claiming four of the top five university rankings and seven out of the top 10 institutions. The 2019 tables take in nearly 450 universities across emerging economies around the globe, and covering 43 countries in four continents. China remains the most represented nation in the annual listing, with 72 institutions in total, up from 63 in last year's rankings.

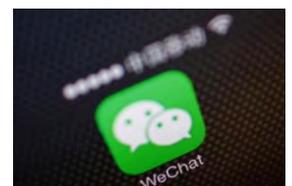


<http://swissinnovation.org/newsChina/web/2019/02-190117-fd>

### Beijing Education Commission to Review Mobile Apps

(China Daily, January 29)

Beijing Municipal Commission of Education said local schools should not publish examination results to students and their parents via WeChat group chats, according to a guideline released by the commission on Tuesday. All 18 districts and counties in the commission's jurisdiction have been asked to conduct a thorough investigation on mobile apps, WeChat and QQ group chats, as well as social media accounts used by primary and middle school students by March 1, so as to provide a better cyberspace environment for students. The guideline said that if inappropriate information, like pornography, online



games, or commercial advertisements, is found, the APP should be suspended for use and deleted. Social media accounts should not be followed if similar content is discovered.

<http://swissinnovation.org/newsChina/web/2019/02-190129-6a>

### 3. Life Sciences / Health Care

#### Anhedonia Paradox in Schizophrenia

(Chinese Academy of Sciences, January 04)

Substantial evidence has suggested the existence of an anhedonia paradox in schizophrenia. Patients with schizophrenia have been found to exhibit an impairment in trait hedonic capacity (self-reported scales/clinical interviews), but their state hedonic experience, as measured by laboratory tasks, appears to be unaffected. To find out the underlying mechanism, researchers at the Institute of Psychology of Chinese Academy of Sciences examined whether anticipatory pleasure is present in both patients with established schizophrenia and individuals with schizotypy. Their results suggested that the emotional (anhedonia) paradox in schizophrenia could be partially accounted for by the dissociation between anticipatory and consummatory pleasure.

<http://swissinnovation.org/newsChina/web/2019/03-190104-43>

#### New-Generation Vaccine for HPV

(China Daily, January 07)

So far, more than 200 distinct HPV types have been identified, of which at least 18 are high-risk types associated with 99% of cervical cancers, the second-most-common cancer among women, after breast cancer. The Gardasil 9 HPV vaccine, which is currently available, provides the broadest protection against infection from nine HPV types, seven of which can cause 90% of cervical cancers. To expand type coverage, the approach used in previous vaccines was to increase the number of virus-like particles. One particle resembles one HPV type, and it can elicit immunity to that type. The more particles a vaccine has, the broader the protection it provides. However, this approach is fraught with difficulties, causing side effects (pain, swelling, fever) and raising manufacturing complexity and production costs. Researchers at Xiamen University have now developed a new vaccine candidate that can protect against more HPV types with fewer particles.



<http://swissinnovation.org/newsChina/web/2019/03-190107-18>

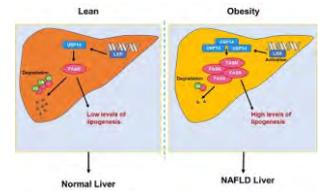


## Treatment of Non-Alcoholic Fatty Liver Disease

(Chinese Academy of Sciences, January 23)

USP14 is the one of the major deubiquitinating enzymes (DUBs) bound to the proteasome, which is known to serve as a quality control component to rescue proteins from wrong degradation. Many studies have shown that USP14 plays critical roles in cellular signaling, neurological functions, and tumorigenesis. Inhibitors developed to target USP14 has shown promising potential for the treatment of various types of cancers. Nevertheless, an important unresolved question is whether there are unknown substrates of USP14 that could play important roles in cellular physiology or diseases. Researchers at the Shanghai Institute of Materia Medica of Chinese Academy of Sciences and Zhongshan Hospital of Fudan University revealed new substrates and a new role of USP14 in non-alcoholic fatty liver disease (NAFLD), which is a major type of metabolic disorders and a severe public health problem worldwide.

<http://swissinnovation.org/newsChina/web/2019/03-190123-d6>



## Cloned Monkeys Shed Light on Circadian Disorders

(China Daily, January 24)

The first five monkey clones made from a gene-edited parent with biological rhythm problems (circadian rhythms) were born during the last six months in Shanghai. The clones were created from the fibroblasts of an adult macaque whose DNA had been edited to remove a gene that helps regulate circadian rhythms. The researchers from the Institute of Neuroscience in Shanghai of the Chinese Academy of Sciences wanted to see if disorders showed up prominently in cloned offspring that lacked the regulation. The monkeys have shown a wide range of negative behavior including reduced sleep, elevated nighttime locomotive activities, dampened cycling of blood hormones, elevated anxiety, depression and schizophrenia-like behaviours. According to Mu-ming Poo, the research will additionally help reduce the quantity of macaques used in biological research.



<http://swissinnovation.org/newsChina/web/2019/03-190124-c9>

## First Womb Transplant Recipient Gives Birth to Healthy Baby

(South China Morning Post, January 24)

Yang Hua who three years ago became the first woman in China to undergo a uterus transplant (donated by her own mother, in November 2015) has reached another medical milestone, by giving birth to a healthy baby boy. She was almost 34 weeks pregnant when doctors delivered the child by caesarean section. Despite his early arrival, the baby weighed in at a respectable 2 kilogram and measured 48



centimeter in length. The new baby, who is currently being cared for in an incubator, is the first in China and 14th in the world to have been born from a transplanted uterus.

<http://swissinnovation.org/newsChina/web/2019/03-190124-0f>

## 4. Engineering / IT / Computer Science

### First Landing on Moon's Far Side

(China Daily, January 03)

Humankind's lunar exploration history saw the opening of a new chapter as the world's first explorer of the moon's far side landed at its destination after a 26-day space journey. The Chang'e 4 lunar probe, the latest step in China's endeavor to explore the silver sphere, landed on the Von Karman crater in the South Pole-Aitken basin and then sent back a picture of the landing site shot by one of the monitor cameras on the probe's lander, marking the world's first image taken on the moon's far side. The successful landing formally inaugurated the world's first expedition to the far side that never faces the Earth and is expected to fulfill scientists' long-held aspiration to closely observe the enormous region.



<http://swissinnovation.org/newsChina/web/2019/04-190103-5f>

### Nearly Half of India's Top-100 Android Apps Come from China

(TechNode, January 03)

The combined effects of a highly competitive market and an aging society at home are pushing Chinese tech giants overseas in search of new markets. India, home to an online population of 500 million people, is becoming a new battleground for Chinese tech firms. Chinese smartphone manufacturers like Xiaomi, Oppo, and OnePlus have established a foothold in the country. However, China's software developers are still catching up as they look to leverage the country's booming app market. Forty-four Chinese apps made it onto a list of India's top-100 Android apps in 2018, up from last year's figure of 18. ByteDance's video app TikTok, Alibaba's UC Browser, and language service Helo are some of the top-ranking apps. Five apps on the top-10 list come from China.

<http://swissinnovation.org/newsChina/web/2019/04-190103-e4>

### Ultra-High Sensitive Pressure Sensor

(China Daily, January 04)

Researchers at the Shenzhen Institutes of Advanced Technology of Chinese Academy of Sciences have developed a pressure sensor with ultra-high sensitivity and fast response time. The new wearable pressure sensor is capable of monitoring real-time pulse waves and act as artificial skin for robots'

hands to detect weak pressure changes. It was designed with a low detection limit, and the response time of the new pressure sensor is less than one millisecond. The researchers developed the high-performance wearable pressure sensor based on microstructured electrodes. It has great application promise in the fields of biomedicine, real-time health monitoring and artificial intelligence.

<http://swissinnovation.org/newsChina/web/2019/04-190104-3d>

## World's First Self-Driving High-Speed Train

(People's Daily Online, January 07)

China's top railway operator announced recently that the country's bullet train Fuxing will become the world's first self-driving high-speed train, with a top speed of 350 kilometers per hour. The secret to such a remarkable achievement is an autopilot system for high-speed trains – CTCS3+ATO. This system is a set of automatic train operation (ATO) devices that can be installed on the existing operating and control system of the bullet trains. It allows the train to depart, run and stop automatically. Additionally, the doors can open automatically upon arrival at each station, as the doors will be connected to the platform shield gates. The trains will also be able to adjust their highest operational speed without human intervention, to guarantee more precise schedules and higher transportation capacity.



<http://swissinnovation.org/newsChina/web/2019/04-190107-b1>

## Obstacle Avoidance in Landing of Chang'e-4 Lunar Probe

(Tongji University, January 10)

When the Chang'e-4 probe reached the hovering position 100 meters above the lunar surface, it successfully captured the laser point cloud image and identified the lunar rocks higher than 15 centimeter or lunar craters lower than 15 centimeter, thus completing the tasks of obstacle identification and safe landing site selection. Under the guidance of obstacle avoidance information, the lander translated several meters to achieve smooth landing. Tongji University and Shanghai Institute of Technical Physics, Chinese Academy of Sciences have worked together for a decade to fulfill the landing obstacle avoidance task of Chang'e laser 3D imaging system. A comprehensive testing ground for space laser load calibration and obstacle detection verification was built at Tongji University, where over 20 calibration and obstacle detection verification tasks were completed for the series of products of Chang'e-3 and Chang'e-4 landing obstacle avoidance laser 3D imaging systems.



<http://swissinnovation.org/newsChina/web/2019/04-190110-20>

## 3D-Printed Footbridge Opens in Shanghai

(South China Morning Post, January 13)

A "smart city" in Shanghai has unveiled its latest hi-tech attraction: a 15-meter long 3D-printed footbridge that is the first of its kind in the country. The footbridge, which engineers said should last about 30 years, was installed over a narrow creek at the Taopu Smart City complex in Shanghai's Putuo district. The span was made as a single piece from a combination of glass fibre and a printable plastic filament known as acrylonitrile styrene acrylate. The bridge is capable of bearing a load of 250kg per square meter, or about the weight of four adults.



<http://swissinnovation.org/newsChina/web/2019/04-190113-bf>

## New-Generation Exascale Supercomputer Prototype

(China Daily, January 17)

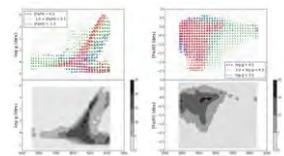
The prototype of China's new-generation exascale supercomputer Tianhe-3 has been tested for over 30 organizations, and it is expected to provide computing services to users in China and overseas. The prototype was operated to meet simultaneous demands from 30 organizations including the Chinese Academy of Sciences and the China Aerodynamics Research and Development Center. It has provided computing services for over 50 apps in fields of large aircraft, spacecraft, new generation reactors, electromagnetic simulation and pharmaceuticals. It is a first-phase result in the research of exascale supercomputer capable of a quintillion calculations per second. The new supercomputer Tianhe-3 will be 200 times faster and have 100 times more storage capacity than the Tianhe-1 supercomputer, China's first petaflop supercomputer launched in 2010.

<http://swissinnovation.org/newsChina/web/2019/04-190117-d0>

## Empirical Stellar Spectra Library

(Chinese Academy of Sciences, January 22)

Astronomers from National Astronomical Observatories of Chinese Academy of Sciences recently presented an empirical stellar spectra library created with spectra from the LAMOST DR5. This library represents a uniform data set and covers a wide span of parameter space. It is the first empirical library which offers the most complete empirical spectra of K-type stars. With the large number of red stars observed by LAMOST, the researchers generated denser K type templates to fill in what is missing in current empirical spectral libraries. The template spectra in the library have resolution  $R \sim 1800$ , with well-calibrated fluxes and rest-framed wavelengths. By performing an internal cross-validation and external comparisons, the researchers verified that the template spectra were labeled with accurate stellar parameters.



<http://swissinnovation.org/newsChina/web/2019/04-190122-99>

## 5G Autopilot Bus

(China Daily, January 23)

An autopilot bus has finished its road test in a 5G network environment in Shandong province. The autopilot bus, developed by leading truck maker Sinotruck, underwent the test on a 4.8 km road. The intelligent connected vehicle (ICV) testing road, featuring 5G network service, has recently been opened for road tests. The autopilot bus has a combination of autopilot driving, internet of vehicles, platform supervision, safety control and autonomous door operating and parking systems. The bus is equipped with facilities such as laser radar, a high-definition camera, integrated navigation and positioning, and can run smoothly at night or in fog and rain. The testing area, with seven 5G base stations, is wholly covered by the high-performance 5G network. The network can help driverless cars detect traffic lights at a distance of one to two kilometers.



<http://swissinnovation.org/newsChina/web/2019/04-190123-3f>

## AI Assistant in Court

(China Daily, January 24)

For the first time in China, AI assistive technology was used at Shanghai No 2 Intermediate People's Court. Inside the courtroom, a screen was placed in front of all people present at the trial, including in the public gallery. When the judge, public prosecutor or defender asked the system ("206 system") it displayed all related evidence on the screen. The 206 system can not only transfer voice into characters precisely but also distinguish questioner and responder. Guide on evidence collection of 102 common cases has been programmed in the system, which can help police reduce or eliminate flaw and omission when they obtain evidence. It also has questioning models for different types of case, providing guide to police during questioning. The system can generate inquiry record automatically afterwards.



<http://swissinnovation.org/newsChina/web/2019/04-190124-6d>

## 5. Energy / Environment

### Researchers Call on Government to Take Tsunami Risk into Account for Future Planning

(South China Morning Post, January 03)

A recent study conducted by researchers at the University of Science and Technology of China and East China Normal University has found that a tsunami almost wiped out civilization in what is today's Guangdong province about 1,000 years ago, highlighting the risk of destructive sea waves to the country's coastal





areas. The academics who carried out the research have called on the government to take that risk into account in future planning – especially in relation to strategic facilities such as nuclear power plants and key infrastructure projects under the “Belt and Road Initiative”.

<http://swissinnovation.org/newsChina/web/2019/05-190103-1c>

## Nuclear Power Plant Starts Operation in Eastern China

(China Daily, January 10)

The first phase of a nuclear power plant in eastern China's Shandong province has started full commercial operation and is expected to help improve local energy mix and environment. The No 2 reactor unit of the Haiyang Nuclear Station in the city of Haiyang finished seven days of continuous operation at 4:30 pm Wednesday, marking the start of commercial operation, the Shandong Nuclear Power Co Ltd announced Thursday. With this new addition, there are a total of 46 nuclear reactor units in operation in the Chinese mainland, with a total installed power generating capacity of 45 GW.

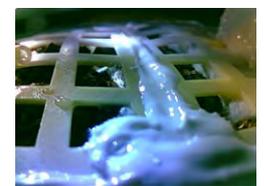


<http://swissinnovation.org/newsChina/web/2019/05-190110-94>

## 'Moon Garden' Experiment Successful

(China Daily, January 19)

The "moon garden" on board the Chang'e 4 probe has ended its operation as planned. Xie Gengxin from Institute of Advanced Technology at Chongqing University said the experiment was not meant to last over the lunar night, so they terminated their 9-day test on January 12. Shoots of cotton had sprouted in its canister, marking the first live matter ever to be grown on the moon. Six living things were placed inside the canister (cotton, rapeseed, potato, thale cress, yeast, fruit flies) aiming to form a simple, self-sufficient micro-ecosystem. The plants were kept alive by sunlight on the moon's surface redirected into the canister. However, when the lunar night came, the surface temperature could drop well below -100C, and the Chang'e 4 lunar lander had to enter "sleep mode" on January 13, so no power was available for the experiment.



<http://swissinnovation.org/newsChina/web/2019/05-190119-37>

## Medical Value of Wood Ear

(Chinese Academy of Sciences, January 22)

Researchers at the Suzhou Institute of Biomedical Engineering and Technology, Chinese Academy of Sciences, and University of Oxford, performed comparative transcriptome analysis on the three major cultivars of Hemuer (also known as wood ear). Wujin, Banjin, and Quanjin are the three main



cultivars of Hemuer in China. The scientists analysed 13,937 unigenes (universal gene), and 12,813 unigenes were annotated to known genes. Principal Component Analysis revealed that Quanjin displayed different gene expression patterns to those of Banjin and Wujin, suggesting an independent origin of Quanjin from Northern China whereas Banjin and Wujin might origin in the South. The KEGG pathway analysis revealed that the surface wrinkle characteristics was relevant to six biological functions, such as starch and sucrose metabolism, MAPK signaling pathway, biosynthesis of amino acids, biosynthesis of secondary metabolites, biosynthesis of antibiotics and metabolic pathways.

<http://swissinnovation.org/newsChina/web/2019/05-190122-b9>

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

### Material and Component Support for Soft Landing of Probe Chang'e 4

(Shanghai Jiao Tong University, January 04)

A research team at Shanghai Jiao Tong University developed high-performance SiC reinforced aluminum-based composite material, which provides material and component support for the soft landing of probe Chang'e 4, and the expedition of lunar rover Yutu 2 on the far side. The high-performance SiC reinforced aluminum-based composite material developed by the team is applied to four key loads in Chang'e 4, including lens barrel, optical bottom plate, frame in space-based optical instrument such as laser range finder, 3D imager and infrared spectrometer, 12 key components in total. Featuring light weight, high rigidity and high dimensional stability, the SiC particle reinforced aluminum matrix composite material can meet the requirements of lightweight, non-deformation and dimensional stability of the load structure, and solves the problem of high resolution and high stability of the space-based instrument.



<http://swissinnovation.org/newsChina/web/2019/06-190104-7b>

### Anticorrosion for Steel with Marine Bacteria Biofilm

(China Daily, January 08)

Corrosion in the marine environment is an international problem that not only causes huge economic losses but also poses a threat to the safety of marine engineering. Most of the traditional anti-corrosion methods rely on chemical or electrochemical means, they typically have a high cost and are not environmentally friendly. Scientists from the Shanghai Maritime University and the South China Sea Institute of Oceanology under the Chinese Academy of Sciences have found that a non-pathogenic marine bacteria extracted from the South China Sea can form a biofilm on the surface of the steel. Through genetic editing, the biofilm shows lasting anticorrosion capabilities. The scientists are also

developing new types of corrosion-resistant steel which can not only withstand the harsh marine environment but are also compatible with coral growth. They can be applied to island and reef construction as well as restoration of coral reefs.

<http://swissinnovation.org/newsChina/web/2019/06-190108-69>

## First Cooperation between China and NASA After 2011

(China Daily, January 11)

Space authorities in China and the United States have been discussing cooperation in lunar and deep-space exploration since the second half of last year, and the two sides exchanged information before the launch of the Chang'e 4 mission to the far side of the moon, the China National Space Administration said. On Thursday afternoon the administration said that before the start of Chang'e 4 mission in December, Chinese scientists involved in the program and their counterparts from NASA's Lunar Reconnaissance Orbiter team had "close communication" to discuss the use of the LRO satellite to observe the landing of Chang'e 4 for scientific purposes.



<http://swissinnovation.org/newsChina/web/2019/06-190111-67>

## Progress on Double-Pointer Attoclock

(Peking University, January 11)

The interference patterns on photoelectron momentum distributions (PMDs) of Ar atoms with two-color corotating circularly polarized fields reveal complex structures with respect to the laser intensity ratio. The main above-threshold ionization peaks and sidebands on PMD distribute oppositely when the fundamental field is much weaker than the second-harmonic field, and the PMD reveals a characteristic single-lobe distribution when the two colors have comparable intensities. Using strong-field approximation, researchers at Peking University explained how the interference pattern on PMD evolves with respect to the relative laser intensity. By analyzing the interference pattern, they revealed the phase difference and the temporal evolution of the emitting electron wave packets. They showed that when monitoring the intensity ratio, the double-pointer attoclock geometry with corotating circular fields can be universally mimicked as the spatially rotating temporal double-slit experiments with the variable slit width, which can be used to probe and control strong-field ionization.

<http://swissinnovation.org/newsChina/web/2019/06-190111-59>

## Moisture-Wicking Fabric

(China Daily, January 15)

Moisture-wicking fabric can pull moisture away from the skin to the exterior of the clothing. It dries quickly and provides a comfortable environment for the human body in hot or humid environments.



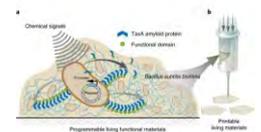
There is a growing market demand for this material. Scientists from Donghua University developed an assembly strategy to create a biomimetic nanofibrous membrane with ultrafast evaporation and quick-dry performance. It exhibits an outstanding water evaporation rate, 2.1 times that of Coolmax fabric, a popular moisture-wicking fabric currently on the market. The research serves as a source of inspiration for the development of high-performance moisture-wicking fabric. Besides sportswear, the research has applications in optimizing functional textiles such as wound dressing materials and diapers.

<http://swissinnovation.org/newsChina/web/2019/06-190115-07>

## Functional Bio-Films

(ShanghaiTech University, January 16)

Bacterial biofilms are microorganism communities encased in their secreted extracellular matrix (proteins, exopolysaccharides, DNAs). Previously, researchers have explored E.coli biofilms for the design of living functional materials exhibiting many attractive attributes. However, E.coli export machinery's inability to secrete large proteins reduces the scope of possible material functionality. Additionally, difficulties with the controlled processing of such complex materials into customizable 3D structures also impede practical application. Lastly, considering potential risks that live bacteria present to human beings and the environment, it is now recognized that in addition to using safe bacterial species, the careful packaging of such materials into confined environments is a necessary design element. To address these issues, researchers at ShanghaiTech University sought to utilize *Bacillus subtilis*, a "generally regarded as safe" gram-positive aerobic bacterium containing only one outer membrane, as a host to design living functional materials.

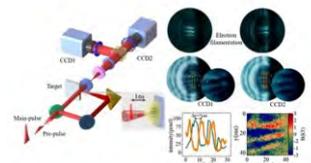


<http://swissinnovation.org/newsChina/web/2019/06-190116-68>

## Ultrashort Laser Pulses Generate Powerful Magnetic Field

(Chinese Academy of Sciences, January 17)

Researchers at Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, have made an important progress in generation of ultraintense magnetic fields with kilotesla driven by millijoule kHz femtosecond laser pulse. By using a laser pulse to irradiate a preformed expanding spherical plasma, the researchers observed fast-electron-mediated filamentary structures and an accompanying self-organized magnetic-tube array with 2000 T. The experiments were performed with a kHz femtosecond laser and a glass target overcoated with an aluminum layer. Using intense ultrashort laser pulse driven high density plasma to produce strong magnetic field and





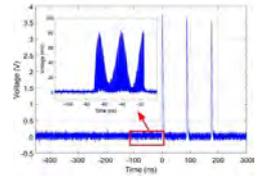
magnetic reconnection, the researchers could simulate many astrophysical processes in laboratories. In addition, the strong magnetic field has important applications in inertial confinement fusion, nuclear physics and material science.

<http://swissinnovation.org/newsChina/web/2019/06-190117-8f>

## "Noise" Interferes with "Signal" in High Power Laser Facility

(Chinese Academy of Sciences, January 21)

High power laser driver is an important part of an inertial confinement fusion (ICF) laser system, composed of front end, preamplifier, main-amplifier, target, and other control and diagnostic system. As an injection laser system, a nanosecond laser pulse of the front end should possess certain features, such as smooth time envelope, high contrast, and good beam quality. Researchers from the Shanghai Institute of Optics and Fine Mechanics of the Chinese Academy of Sciences, have accurately measured and analyzed in detail the temporal contrast levels of laser pulse in the injection laser system of Shenguang-II facility. In their experiment, they found these signal-to-noise ratio (SNR) levels were determined by the extinction ratios of an acousto-optic modulator, an electro-optic intensity modulator, and a combination of pockels cell and thin film polarizers.



<http://swissinnovation.org/newsChina/web/2019/06-190121-51>

## 7. Economy, Social Sciences & Humanities

### Births Drop for Second Consecutive Year

(China Daily, January 22)

Births on the Chinese mainland declined by 2 million last year, the second consecutive year of decline since a universal second-child policy was adopted. Last year, 15.23 million babies were born on the mainland, compared with 17.23 million in 2017, while the birthrate dropped in 2018 to 10.94 per 1,000 from 12.43 per 1,000 in 2017, according to the bureau. The Chinese mainland's population reached 1.395 billion last year, an increase of 5.3 million year-on-year, the figures showed. Before Monday's report, population experts had predicted the number of births would continue to fall in 2018, despite a relaxed family planning policy that allowed all couples to have two children.



<http://swissinnovation.org/newsChina/web/2019/07-190122-3c>

## Beijing to Lift Villages Above the Low-Income Line

(China Daily, January 25)

Beijing will lift all its villages above the low-income line by 2020 as it continues to improve sanitation, green farming and public services in low-income areas, according to a plan released Thursday. By 2020, the city will lift 68,000 households, or 234 villages that have less than 11,160 yuan (\$1,643) of per capita disposable income above the low-income line, said the plan. This is part of the city's rural vitalization scheme that aims to bring modern agriculture, infrastructure and governance to the rural areas. Beijing will also improve garbage classification implementations, toilet construction and waste disposal facilities as well as healthcare services in the villages, according to the plan.



<http://swissinnovation.org/newsChina/web/2019/07-190125-d3>

## 8. Corporates / Startups / Technology Transfer

### Tesla's Factory Breaks Ground in Shanghai

(China Daily, January 07)

US-based electric carmaker Tesla's Chinese factory has broken ground in Shanghai. The gigafactory is the largest foreign investment on record in Shanghai, and the first phase of factory will produce around 250,000 vehicles a year, including Tesla's Model 3. Moreover, the factory will combine the functions of research and development, manufacturing, sales and an electric vehicle innovation center, and will also have an annual output of 500,000 electric vehicles.



<http://swissinnovation.org/newsChina/web/2019/08-190107-dd>

### Microsoft to Open AI and IoT Lab in Shanghai

(China Daily, January 16)

Microsoft Corporation's largest artificial intelligence and internet of things lab will be launched in Shanghai's Zhangjiang Hi-Tech Park in Pudong New Area in April. Spanning 2,800 square meters, the facility is Microsoft's first in the Asia-Pacific region and its third global research and development institution centered on the innovation and industrialization of AI and IoT. The lab will assist its users in developing IoT products and solutions, and boost the integration of AI, IoT and enterprise digital transformation in multiple fields, including manufacturing, retail, medicine and finance. The lab, which is the product of a strategic collaboration between the Pudong New Area government and Microsoft, will help



professionals from related enterprises to develop multi-field integration and make full use of scientific research resources in Microsoft and Zhangjiang, an area known as China's Silicon Valley.

<http://swissinnovation.org/newsChina/web/2019/08-190116-4d>

## 9. Bilateral News

### Tongji and World's Top Universities Launch Intelligent Construction Camp

(Tongji University, January 08)

Recently, a joint camp named Digital Design and Intelligent Construction, co-founded by Massachusetts Institute of Technology (MIT), ETH Zurich and Tongji University, opened in the College of Architecture & Urban Planning at Tongji University. Professor Philippe Block of ETH Zurich and Professor Yuan Feng of Tongji, as visiting professors of MIT, undertook the overall teaching of the camp at Tongji University. Participants from MIT and Tongji University were to design and construct large-scale human-robot collaboration arch-shell structures together by making good use of interdisciplinary knowledge and techniques as programming, such as structure design, digital construction and robot field assembly and construction. Based on the tools, technology and workflow of three-dimensional modeling, Python-coded digital design, and open source COMPASS, the camp would carry out joint research on constructional engineering and digital construction in robotic environment.



<http://swissinnovation.org/newsChina/web/2019/09-190108-c4>

## 10. Call for Grants/Awards

### Call for Papers: Exploring Flow of Information Along New Silk Road

(China Media Observatory, January 02)

The "New Silk Road", or in the Chinese official discourse, the "Belt & Road initiative" was launched in 2013 to reconnect China with countries in Asia, Middle East, Europe and Africa and to establish different levels of cooperation with new partners. Discussions about the New Silk Road and its relationship with all related regions had been mainly conducted in political and economic studies. Much less attention has been paid from the media and communication perspectives. Therefore, the China Media Observatory is looking for papers which analyze the ramifications of the "Belt and Road Initiative" in the context of transnational and cross-cultural communication. Papers must be handed in by March 31, 2019.



<http://swissinnovation.org/newsChina/web/2019/10-190102-12>

## Call: Lecturer Program in Asia

(Robert Bosch Stiftung, January 14)

The Robert Bosch Stiftung offers a scholarship program aimed at university graduates from German-speaking countries and university staff in Asia. Young graduates from Germany, Austria and Switzerland teach German as a foreign language at an Asian university - in the program they are called DACH lectures according to their countries of origin. In addition to their teaching activities, the DACHs are committed to an educational project that serves intercultural dialogue and its personal development.



The program's second target group are local or LOK lecturers. They are German-speaking university staff members in Asia, who receive a monthly grant as well as coaching and continuing education programs. The deadline for applications is February 28, 2019.

<http://swissinnovation.org/newsChina/web/2019/10-190114-ab>

## Call for Startups: Swiss Pavilion @ CES Asia 2019

(swissnex China, January 15)

swissnex China, in collaboration with Venturelab and Presence Switzerland, is organizing a Swiss Startup Pavilion at CES Asia 2019. Taking place from June 11-13 in Shanghai, CES Asia serves as the premier event for the consumer technology industry in China. If you are an innovative Swiss startup looking to take your business to the next level, seize this unique opportunity to showcase your service/product at the biggest electronics fair in Asia. The booth space will be entirely paid for by swissnex China, a pitch event will be organized, and you will be able to expand your network by leveraging swissnex China's local knowledge and network. Preferred Industries are artificial intelligence, audio/visual, robotics, AR/VR, lifestyle technology, HealthTech, IoT, and vehicle technology. The deadline for the application is February 28, 2019.



<http://swissinnovation.org/newsChina/web/2019/10-190115-a9>

## Upcoming Science and Technology Related Events

### Smart Factory – The Fundamentals

March 4, 2019

<https://is.gd/lna1sC>

Digitalization, Industry 4.0, Building Blocks

Shanghai

### ICSREE

May 11-13, 2019

<http://www.icsree.com/>

Sustainable, Renewable Energy Engineering

Beijing

### AI in Healthcare Summit

March 7-8, 2019

<https://is.gd/ytSBVI>

Deep Learning, Personalized Medicine

Beijing

### Swiss Startup Pavilion @ CES Asia 2019

June 11-13, 2019

<http://www.cesasia.cn/>

Consumer Technology, Innovation

Shanghai

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