



Science-Switzerland

News on Swiss science, technology, education and innovation

Table of Contents

1. Policy	1
2. Higher Education	1
3. Life Science / Health Care	2
4. Nano / Micro Technology / Material Science	4
5. Information & Communications Technology	5
6. Energy / Environment	6
7. Engineering / Robotics / Space	10
8. Physics / Chemistry / Maths	10
9. Architecture / Design	12
10. Economy, Social Sciences & Humanities	12
11. Technology Transfer / IPR / Patents	13
12. General Interest	13
Upcoming Science and Technology Related Events	14

1. Policy

Climate Change Summit

(Federal Department of Economic Affairs, October 29, 2009)

Minister of Economy of the Swiss Confederation, Doris Leuthard, along with a high-level business delegation attended the « Swedish-Swiss Cleantech and Innovation » forum in Stockholm from October 28-30. The event was the opportunity to discuss the global challenges in the area of energy and the environment as well as to meet the Minister of Trade in the Swedish Government, Ewa Björling.

<http://www.news-service.admin.ch/NSBSubscriber/message/en/29775>

2. Higher Education

ETH Zurich And Swiss Universities Top Ranked

(ETH Zurich, October 08, 2009)

ETH Zurich has moved up four places in the Times Higher Education (THE) and Quacquarelli Symonds (QS) rankings this year, thus putting it in 20th place. Harvard, Cambridge and Yale Universities occupy the top spots and all first ten positions are occupied exclusively by American and British universities. With its 20th place, ETH Zurich is rated as the best university in continental Europe. In this respect, it has improved in every single research area. However, other Swiss universities have also improved their ranking: the EPF Lausanne moved up from position 50 to position 42 and the University of Zurich from 106th to 92nd place. According to a THE-QS press release, the results show a “dramatic fall” among American universities in the Top 100: only 36 remain there in 2009 out of 42 in 2008.

http://www.ethlife.ethz.ch/archive_articles/091009_THE_QS_Ranking_su/index_EN

Swiss Federal Institutes Of Technology Ranked Top In Europe

(ETH Zurich & EPFL, November 02, 2009)

The 2009 Academic Ranking of World Universities (ARWU), compiled by Shanghai Jiao Tong University, affirms EPFL and ETH Zurich top places among European Universities. In the field of physics, ETH Zurich takes third place in the European comparison, and even comes second in chemistry. EPFL moved to the 1st place in Europe in the field of Engineering/Technology and Computer Sciences. It shares its top European place with Cambridge University.

<http://actualites.epfl.ch/index.php?module=procontent&func=display&id=2329>

http://www.ethlife.ethz.ch/archive_articles/091102_Shanghai_Ranking_lul/index_EN



3. Life Science / Health Care

New Retina's Neural Circuit With Dual Function

(myScience.ch, October 07, 2009)

Scientists from Botond Roska at the FMI in Basel and at the École Normale Supérieure in Paris have identified a new neural circuit in the retina responsible for the detection of approaching objects. Surprisingly, however, this is not the only function the circuit fulfills. The same nerve cells are also responsible for nighttime vision. This is the first time such a dual function has been demonstrated, shedding new light on the nervous system's information-processing capacity. In animals and humans, a looming threat triggers the same kind of behavior - freezing followed by flight. The uniform nature of this response suggests that the perception and processing of approaching motion is clearly defined and embedded in the brain.

<http://www.myscience.ch/en/news/retina&rss=1>

Prize For Research In Molecular Nutrition

(EPFL, October 08, 2009)

Johan Auwerx from EPFL has received the Danone International Prize for Nutrition for his research in molecular nutrition. More precisely, his studies focus on the mechanism of shedding of fat from adipose tissue, thereby paving the way for new preventive and therapeutic strategies to combat obesity and cardio metabolic diseases such as type 2 diabetes and hypertension.

<http://actualites.epfl.ch/index.php?module=procontent&func=display&id=2325>



First Woman To Win Marcel Benoist Prize

(EPFL, October 12, 2009)

Under the ordination of the Federal Councilor Pascal Couchepin, the board of trustees of the Marcel Benoist Foundation awarded the 2009 Marcel Benoist Prize, a sum of 100,000 Swiss francs, to Professor Françoise Gisou van der Goot, member of the Global Health Institute at the EPFL. The laureate has been recognized for her work in infectious diseases, notably in how bacterial toxins make their way through a cell and how the cell reacts to these toxins. This is the first time this prize has been awarded to a woman, as well as the first time EPFL has been undividedly awarded the prize. Considered the "Swiss Nobel Prize," the Marcel Benoist Prize has recognized scientists established in Switzerland for their important work and its impact on human life since 1920.

<http://actualites.epfl.ch/presseinfo-com?id=813>



Counterfeit Drugs Detection Machine

(Swissinfo, October 12, 2009)

Swiss engineers and pharmacists have built a low-cost machine aimed at helping poor countries detect counterfeit medicines. Fake drugs are a growing public health problem, especially for developing nations. The World Health Organization (WHO) says over 30 per cent of medicines sold in many African countries may be counterfeit. The Geneva-Lausanne School of Pharmacy, together with the Fribourg College of Engineering and Architecture, have come up with a unique quality-control solution. Their aim was to design a tool that was cheap, simple, sturdy and able to cope with extreme weather conditions. The low-cost analytical device uses capillary electrophoresis, a recognized technique which separates molecules by size and electrical charge.

<http://tinyurl.com/yz877yz>



Insomnia Linked To Addiction

(Swisster, October 19, 2009)

After a five-year study of narcoleptic patients, a team of scientists working at the Universities of Geneva and Zurich confirms that a hormone implicated in the regulation of sleep also influences addictions. The research, carried out on humans for the first time, is expected to lead to new treatments of both insomnia and drug dependency. Narcolepsy is a chronic disorder characterized by excessive daytime sleepiness in which a person experiences extreme fatigue and can fall asleep at inappropriate times. It is caused by the lack of hypocretin – essentially a neurotransmitting hormone, which governs sleeping patterns. The combined study of 14 narcoleptics and 14 healthy subjects has demonstrated that hypocretin is closely linked with how we become addicted to certain substances.

<http://www.swisster.ch/regions/swiss-scientists-link-insomnia-with-addiction.html>



Swiss Scientists Elected By European Molecular Biology Organization

(EPFL, October 21, 2009)

The European Molecular Biology Organization (EMBO) has elected around 60 researchers to its prestigious ranks, three of them, Françoise Gisou Van der Goot, Didier Trono and Yann Barrandon, being EPFL scientists. With two professors from Basel being chosen and one from Geneva and one from Zurich, Switzerland has obtained seven seats at the heart of one of the oldest and well-known institutions in the field of molecular biology. Since the foundation of EMBO in 1964, it has been organizing programs for sponsoring and networking scientists and edits authoritative publications in the field of molecular biology

<http://actualites.epfl.ch/index.php?module=procontent&func=display&id=2327>

Two Phases Olfactory Perceptions

(SNF, October 27, 2009)

Researchers at the University of Geneva as part of the NCCR Affective Sciences have succeeded in demonstrating that the evaluation of olfactory perceptions actually follows a very strict order. When met with an odor, the brain first determines whether, for example, a perfume is familiar or not. Only then does it categorize the scent as pleasant or unpleasant. These two phases were identified in an experiment testing physiological reactions to the perception of different odors. Eighteen test persons were attached with electrodes to specific areas of their face and body and then asked to breathe in pairs of aromatic samples of different types. Researchers measured the electrical activity of facial muscles, the perspiration on hands and heart rates and then recorded the data on a comparative timescale. The results brought researchers a big step closer to revealing the origins of the emotional mechanisms linked to the senses and to odors in particular.

<http://www.snf.ch/E/current/SNFInfo/Pages/default.aspx?NEWSID=1304&WEBID=0>

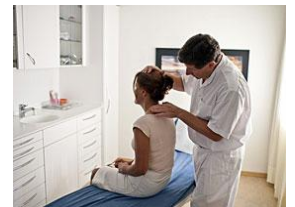


Switzerland's Health Systems Is Sick

(Swissinfo, October 30, 2009)

Findings from a government-sponsored study into how doctors treat chronic pain are in part a condemnation of Switzerland's exploding health costs. The authors of the study, "Musculoskeletal Health – Chronic Pain", said that many treatments including surgery were often carried out unnecessarily. Lead author Andreas Stuck, a geriatrics specialist at Bern University, revealed that, for example, surgery for hip, shoulder or knee problems was scheduled 40 times more often in some regions than in others. Stuck says the example does highlight the lack of guidelines for physicians to follow when treating patients with chronic ailments. The five-year study, funded through the National Research Programme, also found that some types of common treatments are ineffective, including electrical stimulation and injections into joints.

http://www.swissinfo.ch/eng/science_technology/Pain_study_finds_health_system_chr



Migration History Of Leprosy Bacteria

(EPFL, November 02, 2009)

Leprosy still affects hundreds of thousands of people today throughout the entire world. An international team headed by EPFL professor Stewart Cole has traced the history of the disease from ancient Egypt to today and in doing so has made a public health study essential for combating the disease. For thousands of years an undesirable and persistent companion has been traveling with man wherever he goes. Mycobacterium leprae, the bacterium that causes leprosy, has only one known natural host – mankind. And because of man's many travels, this bacillus has colonized the entire earth. It is this migratory relationship that Stewart Cole, EPFL professor of Microbial Pathogenesis, and his team have analyzed in a study to be published in Nature Genetics. Geneticists, microbiologists, and even archeologists have followed the bacteria's traces from their lab to the Silk Road and the tombs of Egyptian mummies.

<http://actualites.epfl.ch/presseinfo-com?id=815>





Funding To Fight Malaria

(Swisster, November 18, 2009)

The Bill and Melinda Gates Foundation provides organizations in the Geneva area with massive funding to fight malaria, the world's most 'expensive' neglected disease. Medicines for Malaria Venture and the Path Malaria Vaccine Initiative aim for the availability, access and affordability of solutions against the curable and preventable disease. The Bill and Melinda Gates Foundation dedicated close to three billion US dollars last year to neglected diseases. Through its Global Health Program the organization addresses diseases that destroy lives and bludgeon economies – predominantly in developing countries – but receive insufficient attention from the pharmaceutical industry.

<http://www.swisster.ch/regions/geneva/gates-lavishes-funding-health-partnerships.html>



Swine Flue Could Spread Due To Low Vaccination Rate

(Swissinfo, November 20, 2009)

According to a health office survey, only 27 per cent of respondents were prepared to get vaccinated against swine flu. It also reported the country's third swine flu fatality. After the death of a five-month-old infant and a 50-year-old woman suffering from diabetes, a 46-year-old woman, who was HIV positive, has died. Some 16 patients have also been taken into intensive care. The current infectious wave in Switzerland, which began at the end of October, is expected to last two to three months. "It could become a big wave, with more people with complications and more hospitalized," Werner Wunderli, a virologist at Zurich University. "There is not enough immunity among the general population to break down transmission."

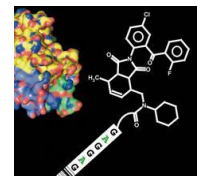
<http://tinyurl.com/yz5qlmv>

DNA-Encoded Substance Collection

(ETH Zurich, November 24, 2009)

With a new screening method, based on a DNA-encoded substance collection, ETH Zurich researchers from the group headed by Dario Neri, professor of bio-macromolecules at the Institute for Pharmaceutical Sciences, are attempting to revolutionize the search for potentially active substances for medicines. Because it is simple, fast and cheap, the new method could also be of interest to the pharmaceutical industry. In the context of this project the group is already searching for new active substances against rheumatoid arthritis.

http://www.ethlife.ethz.ch/archive_articles/091123_screening_verfahren_per/index_EN



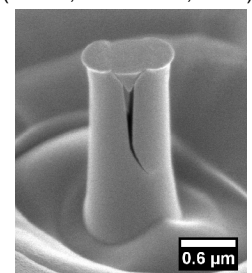
4. Nano / Micro Technology / Material Science

Silicon Metal-like Technology

(EMPA, October 08, 2009)

Silicon, the most important semiconductor material of all, is usually considered to be as brittle and breakable as window glass. On the nanometer scale, however, the substance exhibits very different properties, as Empa researchers have shown by creating minute silicon pillars. If the diameters of the columns are made small enough they yield to the pressure and undergo plastic deformation, as a metal would. This discovery opens the way for completely new design techniques from a materials point of view for mechanical micro-systems and in the watch industry. Results show that it might be possible to use silicon like a metal in mechanical applications. Metallic materials are fault tolerant and are capable of absorbing shock loads by deforming without breaking.

<http://www.empa.ch/plugin/template/empa/3/88033/---/l=2>



"Mushroom Violin" Challenges Stradivarius

(Swissinfo, October 21, 2009)

The wood protection/biotechnology group at the Swiss Federal Laboratories for Materials Testing and Research (Empa) and a violin maker are revolutionizing the design of violins by using wood that has been treated with filamentous fungi. This makes the wood lighter by reducing its thickness, since they decompose the wood cells from the inside, thus making the cell walls thinner. This has a direct influence on the wood's acoustic properties. In addi-





tion the filamentous fungi re-open the cell membranes – the link to the exchange of material between cells, which with dead wood is blocked. As a result the sound can permeate the wood more quickly and so sounds more harmonious.

<http://tinyurl.com/yjvcfnf>

Micro Fluidic Chip Technology

(IBM Research Zurich, November 17, 2009)

Zurich scientists Luc Gervais and Emmanuel Delamarche in collaboration with the University Hospital of Basel in Switzerland have developed a new diagnostic test that uses capillary forces to analyze tiny samples of serum or blood for the presence of disease markers. Capillary action is the tendency of a liquid to rise in narrow tubes or to be drawn into small openings. The innovation is based on a chip made of a silicon compound, similar to those used in computer chips, thus leveraging IBM's vast experience in developing and manufacturing silicon semiconductor wafers. The chip, which measures 1 × 5 centimeters, contains sets of micrometer wide channels where the test sample flows through in approximately 15 seconds, several times faster than traditional tests. The results are so quick and accurate that a patient's serum or blood sample, could be tested immediately following a heart attack to enable the doctor to take a course of action and to predict the patient's survival rate.

http://www.zurich.ibm.com/news/09/lab_on_a_chip.html

Graphene-Like Polymer With Atomic Accuracy

(EMPA, November 19, 2009)

Physicists at Empa, together with chemists from the Max Planck Institute, for the first time, succeeded in synthesizing a graphene-like porous polymer with atomic accuracy. The researchers allowed chemical building blocks of functionalized phenyl rings to “grow” spontaneously into a two-dimensional structure on a silver substrate. This created a porous form of graphene with pore diameters of a single atom and pore-to-pore spacings of less than a nanometer. In the “bottom-up” technique based on molecular self-assembly the molecular building blocks join together spontaneously at chemically defined linking points to form a regular, two-dimensional network. This allows graphene-like polymers to be synthesized with pores which are finer than is possible by any other technique.

<http://www.empa.ch/plugin/template/empa/3/89763/---/l=2>

5. Information & Communications Technology

Innovation Award For Privacy-Enabled Smart Card Technology

(IBM Research Zurich, October 01, 2009)

IBM Research scientist in Zurich, Switzerland, have been honored with the 2009 Innovation Award from the Society for Computer Science (GI), a German nonprofit professional society. The award recognizes the scientists' pioneering work on a smart card to embed advanced technology that offers simultaneously both strong authentication and privacy. IBM's card uses sophisticated, yet efficient, cryptographic algorithms to ensure that the user's real identity, including personal attributes and behavior profiles, are never exposed to a service provider, without the user's consent. This technology is suitable for a wide range of applications, including insurance, healthcare services, credit cards, or incentive systems, such as airline frequent flyer programs.

http://www.zurich.ibm.com/news/09/smart_id.html

National Medal Of Science For ETH Zurich Emeritus Professor

(ETH Zurich, October 08, 2009)

Rudolf Kalman, ETH Zurich emeritus professor of mathematics, has received another top honor. After receiving the Charles Draper Prize in January 2008, which is regarded as the “Nobel Prize” of the engineering world, the native Hungarian has now been awarded the National Medal of Science by Barack Obama – one of the highest accolades for researchers in the USA. Rudolf Kalman was honored for the Kalman filter, which was named after him. The filter is a mathematical technique that removes the “noise” from streams of data. It is used to estimate and control the gradually changing condition of complex systems optimally from incomplete information. The Kalman filter revolutionized control theory and is used in countless technical systems to this day.

http://www.ethlife.ethz.ch/archive_articles/091008_kalman_per/index_EN



Telecom World Will Remain In Geneva

(Swisster, October 12, 2009)

Despite poor company attendance and low visitors' figures, the International Telecommunications Union (ITU) announces that the next Telecom World in 2011 will remain at Geneva's Palexpo. ITU Secretary-General, Dr Hamadoun Touré says he is 'very satisfied' with this year's five-day event, which ended on Friday. But the event attracts less than half the pre-event predictions of 40,000 visitors. The issue sums up the pressure felt by World Telecom 2009 which began to toil under the weight of the economic crisis at the end of last year, prompting rumours of event cancellation. Targets of 1,000 exhibitors were hastily revised as companies – including industry heavyweights such as Nokia and Alcatel – elected to stay away.

<http://www.swisster.ch/news/science-tech/positive-spin-fails-revive-glum-telecom-world.html>

Next Revolution In Internet Technology

(Swisster, November 02, 2009)

To improve data crunching capabilities when the Large Hadron Collider (LHC) reaches full power in a few weeks time, the European Organisation for Nuclear Research (CERN) has been driving the next revolution in Internet technology. Similar to "cloud" computing, CERN's computers link with tens of thousands of PCs and over a hundred data storage systems all over the world. The new network is simply known as "the Grid". Around 100,000 processors at 140 institutes have been linked up in 33 countries involved with the Grid, so that scientists working in one country will be able use computers in another, a system made possible by widespread penetration of optical fibers in telecommunications systems. Some 9,000 scientists are expecting the Grid's gargantuan appetite for numbers to help them keep up with floods of data provided by the LHC, around 15 million gigabytes every year.

<http://www.swisster.ch/news/science-tech/cern-drives-next-it-revolution-with-grid.html>



Award For Intelligent Trip Planner

(EPFL, November 20, 2009)

routeRANK, an EPFL start-up website in the Parc Scientifique allowing users to find the best way to their destination according to personalized criteria, has been chosen as a Microsoft Start-up of the Day for November 19th. Using a unique algorithm, the start-up's founder and chairman Jochen Mundiger created an intelligent way to plan one's trips that takes into account public transportation, car and air travel, while also giving you the CO2 emissions for those who wish to consider the ecological impact of their travels. "The algorithm focuses on the 'interesting' routes and drops the uninteresting ones," says Jochen, "In a way, it is similar to a chess computer, in that it does not calculate all the possible moves, but only the promising ones."

<http://actualites.epfl.ch/index.php?module=procontent&func=display&id=2334>

6. Energy / Environment

Micropollutants In Urban Drainage Systems

(EAWAG, October 01, 2009)

The Swiss Federal Office for the Environment (FOEN) presented its synthesis report on the MicroPoll project, in which Eawag played a major role, to the media. The conclusion drawn by the chief Swiss environmental authority in the report is that retrofitting 100 wastewater treatment plants is the most effective way of preventing contamination from micropollutants in urban drainage systems. Complementary to this, measures are also needed to reduce contamination at the source. Within the scope of the MicroPoll project, a number of organizational and technical measures were investigated. Urban drainage systems could be cleansed more effectively by merging smaller wastewater treatment plants with larger ones.

http://www.eawag.ch/medien/bulletin/20091001/index_EN





Futuristic Green Alpine Hut

The new hi-tech environmentally friendly Monte Rosa mountain refuge is designed to obtain 90 per cent of its power needs from the sun. Launched in 2003 as a project of the Swiss Alpine Club (SAC) to mark the 150th anniversary of ETH Zurich, the hut was officially inaugurated on September 25. But unlike the traditional stone chalet shelters, the new five-story hut is state of the art. Built on stainless-steel foundations, its polygon exterior is covered with a silver aluminium shell and the spiral interior is completely made out of wood. ETH Zurich and SAC describe it as "the most complex wooden construction in Switzerland". The refuge, which can house up to 120 hikers and climbers, produces 90 per cent of its electricity from the sun (16 kilowatts) thanks to an ultra-modern photo-voltaic system integrated into the southern façade.

<http://tinyurl.com/yg8qnhy>

(Swissinfo, October 02, 2009)

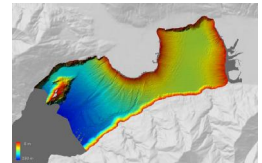


Sophisticated Sonar Topography Measure System

With the aid of a sophisticated sonar system, the Swiss Federal Institute of Aquatic Science and Technology Eawag can produce three-dimensional topographical images which show channels and other structures at the bottom of Lake Maggiore with centimeter-scale accuracy. It is the first time that such detailed topographical surveys of Swiss lake floors are performed. Using modern sonar equipment, in contrast to conventional echo sounders, it is possible to determine a large number of depth points with each measurement. Depth values can thus be calculated for each square meter of the lake floor, and the data can then be processed to produce three-dimensional images. The images now available even reveal underwater cables or small craters from which methane is released.

http://www.eawag.ch/medien/bulletin/20091005/index_EN

(EAWAG, October 05, 2009)



Atmosphere Simulations Rewarded By Latsis Prize

One of the four University Latsis Prizes for 2009 was given to Elie Bou-Zeid, from Laboratory of Environmental Fluid Dynamics and Hydrology at EPFL. He has been recognized for his work done on numerical simulations of the outer layer of the atmosphere. The Latsis Prize is awarded annually on behalf of the Geneva-based Latsis Foundation by the Swiss National Science Foundation (SNSF) and honors the outstanding scientific achievements of a research scientist under the age 40 working in Switzerland.

<http://actualites.epfl.ch/index.php?module=procontent&func=display&id=2323>

(EPFL, October 06, 2009)



Models For Typhoon Simulations

ETH Zurich researcher Michael Faber, Professor of Risk and Safety at the Institute of Structural Engineering, and his team are developing models that can be used to assess the typhoon and earthquake hazards together with their associated risks more effectively. Based on physical models, they can simulate and adjust the complete life-cycle of a tropical cyclone in real time – from the formation of a typhoon and its course to the changes in pressure, speed and strength until it eventually hits land. What's more, the models are adjusted on the basis of all previous observations. Using these parameters, an approaching typhoon can be generated and they can monitor what happens and how high the amount of damage and financial losses is likely to be.

http://www.ethlife.ethz.ch/archive_articles/091006_Taifun_ch/index_EN

(ETH Zurich, October 06, 2009)

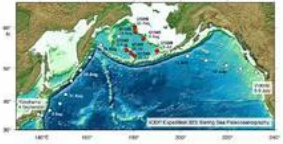




Sedimentary Records In Bering Sea

(ETH Zurich, October 13, 2009)

ETH Zurich researcher Greta Bartoli, as part of the Integrated Ocean Drilling Program (IODP), spent two months working on board a research ship in the Bering Sea. The expedition collected more than 5 km of sediment at seven sites and had some continuous sedimentary records of the Pleistocene and Pliocene Epochs down to 4 million years ago with sedimentation rates of about 12 cm per 1000 years. These high rates will enable climatic reconstructions with a resolution of about 200 years. The Bering Sea is a very highly productive region and the sediments contain a lot of organic carbon. The microbiological activity is very high in the sediments and bacteria are found alive and active even at 700 m below the seafloor.

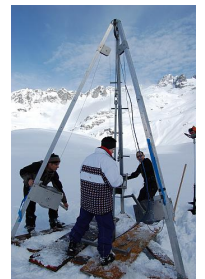


http://www.ethlife.ethz.ch/archive_articles/091013_iodp_beringmeer_gb/index_EN

Glaciers As A Source Of Pollutants

(EMPA, October 13, 2009)

Researchers from Empa, the ETH Zurich and Eawag have analyzed sediment layers in the Oberaarsee and have been able to reconstruct the processes by which long-lived organic compounds have accumulated in the ice over the last sixty years. A study just published in the journal «Environmental Science and Technology» describes how shrinking glaciers have, for about ten years now, become a secondary source of pollutants which have long been banned and are no longer produced in industrial quantities. When glaciers shrink due to the effects of global warming, the retreating tongues sometimes reveal things which have been buried in the ice mass for decades or even centuries. This includes chemical substances such as those known as POPs – short for persistent organic pollutants.

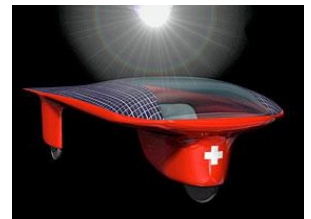


<http://www.empa.ch/plugin/template/empa/3/88480/---/l=2>

Swisspirit Participate Tough Solar Race

(Swissinfo, October 16, 2009)

The world's toughest test for solar cars begins later this month with Swisspirit to go along a race track of more than 3,000 kilometers. The latest Swisspirit is the brainchild of WSCO7, a non-profit organization based in La Neuveville on Lake Biel. Its aim is to foster research, development and the spread of new technologies for people and their environment. Testing will be tough because the solar cars in the race have to stand up to rather special traffic conditions such as jumping kangaroos and road trains. But the main challenge will come from the dry heat of the desert with temperature going up to 50 degrees Celsius



<http://tinyurl.com/yg4np6h>

High-Resolution Snow Radar

(Swissinfo, November 01, 2009)

The XBand precipitation radar, an almost one-ton device which was winched onto the mountainside of Davos, Switzerland, will be in operation until spring. Through the Federal Institute for Forest, Snow and Landscape Research (SLF) and Ecole Polytechnique Fédérale de Lausanne (EPFL), the state-of-the-art radar will help gauge exactly how much snow is falling in the area. Combined with knowledge gained from weather sensors across the valley, the results could help scientists improve avalanche prediction in a tough mountain environment. This high-resolution radar, which uses three-centimeter pulses to interact with falling rain and snow, will be able to overcome variability in time, space and scale.



<http://tinyurl.com/yjwkohb>

Wasteless Hand Washing System

(Swisster, November 03, 2009)

Creaholic, a Bienne-based innovation house, is developing a wasteless hand washing system that saves water by up to 90 per cent. Countries and states suffering water scarcity and public facilities in a whole spectrum of fields could benefit from the machine according to project leader Denis Crottet. Depending on thoroughness and personal hygiene, an average individual uses between 0.5 and 1.5 liters of water to wash its hands – especially con-



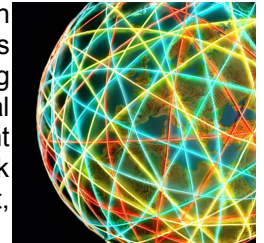
sidering the recent spate of anti-swine flu campaigns which advise the practice as often as possible. Creaholic's prototype all inclusive hand washing system claims to do the same cleansing job, just as efficiently, using one deciliter or ten per cent of the average.

<http://www.swisster.ch/news/business/bienne-group-creates-wasteless-water-device.html>

Investment In Energy Research

(EPFL, November 04, 2009)

In order to insure the development of their networks, EOS Holding (EOSH) is investing in research. The group has signed an agreement of partnership with EPFL, known for its numerous activities in the energy field: storage, solar cells, and hydroelectricity. The holding will finance 10 million Swiss Francs over the next five years for research and educational projects in this field. Signed November 4th, the partnership is divided into two different agreements. The first will comprise a teaching and research chair – EOSH will finance the work of a professor at one million Swiss Francs per year during five years. The second agreement, with a similar length and amount, will sponsor various research projects at EPFL.



<http://actualites.epfl.ch/presseinfo-com?id=819>

Dow and HPL Sign Technology Transfer Agreement

(CNN, November 12, 2009)

The Dow Chemical Company announced the transfer to Dow of collective assets from HPL (High Power Lithium). This technology transfer merges HPL's enabling advanced technology with Dow's unrivaled ability to apply and bring the technology to market according to Fernand Kaufmann, Chairman of HPL. HPL is a spinout company from Professor Graetzel's laboratory at the EPFL focused on the development of nano-structured metal oxides energy storage materials and novel electrolytes for use in next generation lithium ion batteries.

<http://tinyurl.com/yevkhsd>

Global Climate Change Debate

(ETH Zurich, November 13, 2009)

ETH Zurich held a climate debate entitled "Climate Change - Where is Switzerland Heading?" ETH-Zurich researchers were joined by guests from politics and commerce to discuss possible solutions as to how we can combat global climate change. The keynote speaker, Swiss Federal Councilor Moritz Leuenberger, dampened the expectations of the UN climate summit in Copenhagen: as far as he is concerned, there will be no "miracle of Copenhagen". He was pleased that the scientists taking part in the ETH-Zurich climate debate generally agreed upon the facts and necessary action. The Federal Councilor pointed out that the industrialized countries were responsible for climate change.

http://www.ethlife.ethz.ch/archive_articles/091113_klimagespraech_red/index_EN

Water Treatment Technology

(EAWAG, November 17, 2009)

Membrane technology is playing an increasingly important role in drinking water treatment. The latest developments in membrane technology were discussed by experts from Switzerland and abroad at a conference organized by the Swiss Gas and Water Industry Association (SVGW) and the Swiss Federal Institute of Aquatic Science and Technology (Eawag). Attention has been focused on ultrafiltration in particular: in this process, raw water is forced under pressure through a membrane with a pore size of around 0.01 micrometers. Thanks to ultrafiltration, minute particles such as suspended matter, bacteria, parasites and even viruses are effectively eliminated. This means that, with this technology, water is not only mechanically purified but also disinfected. The use of chemical additives such as chlorine or ozone can thus be reduced or dispensed with entirely.

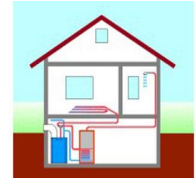
http://www.eawag.ch/medien/bulletin/20091117/index_EN



Energy Initiative To Promote Heat Pumps

(Swisster, November 18, 2009)

Swiss power company CKW says a new five million- franc energy efficiency initiative will cut heating costs and lower carbon emissions. The utility, which produces and distributes electricity, aims to replace 1,000 outdated heating systems in central Switzerland within a year. The federal government describes the initiative as “very attractive”. CKW’s idea to help households replace inefficient heating systems seems to be well-timed. Pots of 5 million francs from company coffers will subsidy new installations. Electric heat pumps extract warmth from areas in and around buildings where it is not needed, and circulate it to parts of the building where people need to stay warm. The pumps can also transfer heat from the ground to a water tank. Locating ambient heat and circulating it in the right direction improves home thermal efficiency.



<http://www.swisster.ch/news/business/home-heat-pumps-cut-electricity-bills.html>

7. Engineering / Robotics / Space

First Roll Out For Solar Airplane

(Solar Impulse, November 06, 2009)

The Solar Impulse team has brought the HB-SIA prototype out of its construction hall and tested its 4 engines for the first time. With the hangar doors wide open, the prototype was slowly wheeled outside. The 6.40m high vertical stabilizer was then mounted on the rear of the fuselage, which could only be done outside due to insufficient height in the hangar. Markus Scherdel, the test pilot, boarded the HB-SIA, and – for the first time other than test bed runs – powered up all 4 engines simultaneously to a propeller speed of 400 rpm, the speed needed for maneuvering on the runway. The test program is currently carried through step by step; the plane will first taxi slowly over the runway, testing its ground maneuverability, then it will start picking up speed, until it finally takes off, skimming over the runway a few meters above the ground.



<http://www.solarimpulse.com>

Top-Class Research Award For Micro-Robots Start-Up

(EPFL, November 18, 2009)

Imina Technologies has won the 2009 KPMG Tomorrow’s Market Award with its prize money of CHF 50,000. The prize was presented at the EPFL’s Innovation Day and rewarded a start-up company whose micro-robots could revolutionize nanomanipulation. The mobile micro-robots perfected by Imina Technologies are getting ready to replace traditional manipulators that are used to take hold of, touch or penetrate samples viewed under a microscope. No larger than dice, they enable extremely precise tasks to be performed five to ten times more quickly. The user moves the robots around the sample object with the aid of a joystick. The robots move forward by micro-steps (several thousand per second) that are generated by a piezoelectric effect.

<http://actualites.epfl.ch/presseinfo-com?id=821>

8. Physics / Chemistry / Maths

Expanding Universe

(ETH Zurich, October 02, 2009)

“Discovering the Expanding Universe” is the title of the new book by Harry Nussbaumer, Professor emeritus at the Institute for Astronomy at ETH Zurich, and Lydia Bieri, Assistant Professor at the Mathematics Department at Harvard University. They describe how, through advances in experimentation and theory, astronomers broke free from religious explanations and moved closer to the present-day concept of the universe. The authors place the book’s focus on the years 1917, when Albert Einstein substantiated modern cosmology, to 1931, when he accepted the idea of an expanding universe – which he had previously called “abominable”. The authors describe the scientific contributions made by physicists such as Einstein, Edwin Hubble, Georges Lemaître and Willem de Sitter, as well as the conflicts that arose between a few of them in the process, and how these were resolved.

http://www.ethlife.ethz.ch/archive_articles/0909xx_expanding_universe_nsn/index_EN



PSI User Awarded Nobel Prize in Chemistry

(PSI, October 07, 2009)

The Paul Scherrer Institute (PSI) congratulates Professor Venkatraman Ramakrishnan on its Nobel Prize in Chemistry. Ramakrishnan, from MRC Laboratory of Molecular Biology in Cambridge, UK, is a long-term user of the Swiss Light Source SLS at the Paul Scherrer Institut in Switzerland. He used this facility for his prize winning studies on the structure of the ribosome a large complex molecule which can be seen as the factory for the production of proteins.

http://www.psi.ch/medien/medien_news_e.shtml



High-Tech Electron Microscope

(ETH Zurich, October 27, 2009)

An electron microscope with glasses that correct the spherical aberration of the lens in order to achieve even higher resolution is currently being assembled at the Electron Microscopy Centre (EMEZ). It is the first high-tech electron microscope of its kind in Switzerland. It is needed in semiconductor technology to verify the layer structure and the atomic configuration at the interfaces between different semiconductor layers. In nanotechnology it enables the visualization of how the nano-particles are constructed or how the materials scientist's composite materials are structured on an atomic scale. In biology it makes sense to use the instrument when the surface of isolated macromolecules needs to be reconstructed or to simultaneously image and determine the molecular weights of large macromolecular complexes that a mass spectrometer cannot record individually.

http://www.ethlife.ethz.ch/archive_articles/091027_EMEZ_su/index_EN

Latsis Prize Reward Higgs Boson Characterization

(ETH Zurich, October 27, 2009)

After one year of an enforced the Large Hadron Collider (LHC), the particle accelerator at Cern near Geneva, restarts. Scientists are full of anticipation to spot the feverishly sought after Higgs Boson, an elementary particle of matter, in the flood of proton collision data. If this mysterious particle, hitherto existing only in theory, is actually detected, one ETH Zurich researcher will have played a major role: Charalampos Anastasiou, tenure track assistant professor in particle physics. His theoretical considerations and complex calculations predict precisely which of the innumerable collisions will signalize the Higgs boson. For this achievement, the assistant professor receives this year's ETH Zurich Latsis Prize.

http://www.ethlife.ethz.ch/archive_articles/091026_latsis_preis_ETH_per/index_EN



Observation Of Half-Quantum Vortices

(EPFL, November 13, 2009)

NCCR Quantum Photonics researchers Lagoudakis and Deveaud-Plédran publish in Science. The EPFL group confirmed experimentally a theoretical prediction made 25 years ago by Volovik and Saloma. The scientists observed quantized vortices in 2008, which demonstrated the signature of superfluidity in the polariton Bose Einstein condensate. In 2009, in another region of the sample the researchers observed Half Quantum Vortices (HQV). Half quantum vortices can also be depicted as a superposition of two fluids out of which one would spin with a full vortex and the other one would be staying still.

<http://nccr-qp.epfl.ch/page20526.html>

Large Hadron Collider Restarted

(Swissinfo, November 21, 2009)

Following the repair of damage from an explosion more than a year ago, CERN, the Geneva-based physics research centre relaunched its Large Hadron Collider (LHC) facility in mid-November and will gradually power up the accelerator in phases. LHC is the world's largest atom smasher built to reproduce "Big Bang" conditions. After a year's delay, the beams began circulating in the huge tunnels under the Swiss-French border. The experiments will not begin until January when the LHC is operating at full capacity.

<http://tinyurl.com/y9k5m5u>



9. Architecture / Design

Brick Wall Construction By Robot

A robot is currently building a looping brick wall right in the middle of New York. Over a period of three weeks, passersby could watch the “Pike Loop” installation in the making on a traffic island. The digitally controlled construction of the sculpture was developed at ETH-Zurich's Professorship of Architecture and Digital Fabrication. Brick is a dominant feature of New York's cityscape, and Pike Street is no exception: from October 5 – 27, the citizens of Manhattan could follow in real time how an industrial robot uses innovative technology to transform the traditional material into a complex infinite loop.

http://www.ethlife.ethz.ch/archive_articles/091020_pikeloop_lul/index_EN

(ETH Zurich, October 20, 2009)



EPFL+ECAL Lab Present “Give Me More”

Researchers from Lausanne's Federal Institute of Technology (EPFL) and designers from Lausanne's University of Art and Design (ECAL) combine their creativity to kick-start innovation in new fields. The “Give Me More” exhibit shows how imagination can give technology a boost and guide us towards uncharted territories. Sensorial perceptions, heightened awareness, new stories, unexpected horizons... Give me more of my own reality and make me dream. That, in a nutshell, is what “augmented reality” is about and what the project currently under way at the EPFL+ECAL Lab sets out to demonstrate. The EPFL+ECAL Lab was started only a couple of years ago when the ECAL was transferred in 2007 to a former hosiery factory. In its short existence, it has already developed creative partnerships with London's Royal College of Art or San Francisco's California's College of Arts. The present exhibition is heading out to California where it will be presented at Swissnex, Switzerland's science and technology outpost in San Francisco.

<http://www.swisster.ch/regions/vaud/epflectal-lab-show-gives-reality-a-boost.html>

(Swisster, October 16, 2009)



Future Cities Laboratory

Together with the National University of Singapore and Nanyang Technological University, ETH Zurich is looking to establish the Future Cities Laboratory from mid-2010 as an interdisciplinary research platform centered around three key research areas: firstly, sustainable building technology, new materials and architecture; secondly, the city as an urban system with challenges like public and private transport, sustainable water supply or social developments; and thirdly, spatial planning dimensions, such as the issue of reconciling urban and rural environments. The new approach consists in combining these focal points intelligently and exploring how they interact.

http://www.ethlife.ethz.ch/archive_articles/091028_futurecitieslab_MM/index_EN

(ETH Zurich, October 28, 2009)

10. Economy, Social Sciences & Humanities

Fear Of Being Laughed At Study

Gelotophobia – or the fear of being laughed at, is no matter for mirth according to a study published recently by a team at the University of Zurich working with researchers based in 73 countries where more than 22,000 individuals answered a questionnaire issued in 42 languages. For the first time, research has demonstrated that the phobia is something of a universal trait with almost everyone slotting onto a sliding scale of suffering. However, extreme victims face significant social challenges. Extreme symptoms of the fear of being laughed at appear to be based on an inability to decode humor: “They often interpret the smiling of a conversational partner as a put down. They seem to have problems with these types of signals,” Dr. René Proyer, lead author, explained.

<http://www.swisster.ch/regions/zurich/zurich-study-assesses-fear-being-laughed.html>

(Swisster, October 21, 2009)





Growth Is Driven By Innovation

(ETH Zurich, October 30, 2009)

A new study from ETH Zurich and the University of St. Gallen reveals that acquisitions often cost a lot and are not all that profitable. Twice the return can be achieved if the growth is driven by in-house innovations. Companies grow stronger and more secure if they focus on innovations instead of many large-scale takeovers. This is what a study by Georg von Krogh, ETH Zurich Professor of Strategic Management and Innovation, and Sebastian Raisch, Assistant Professor of Strategic Management at the University of St. Gallen, recently published in the Harvard Business Review has shown. The authors analyzed the top 500 corporations in terms of turnover. The study revealed that the companies that grew on the back of product or service innovations achieved better results in the long run. This group of the corporations examined even managed to generate almost twice the return for its shareholders compared to companies that primarily achieved their revenue growth through acquisitions.

http://www.ethlife.ethz.ch/archive_articles/091030_van_Krogh_paper_tl/index_EN

Clinton At Opening Of Center For Disability And Integration

(Uni. St. Gallen, November 05, 2009)

The Center for Disability and Integration (CDI-HSG) at the University of St. Gallen (HSG), Switzerland, was opened with an event which calls on all sectors of society, and particularly companies, to take on the challenging but economically competitive step of employing more people with disabilities. In his capacity as patron of the MyHandicap Foundation, which gave a private donation to establish the CDI-HSG, President Bill Clinton said that the work of the newly-formed Center will be very important to improve the lives of people with disabilities, both in Switzerland and in Europe, to shift from a system of helplessness to empowerment.

<http://tinyurl.com/ykdv24l>

11. Technology Transfer / IPR / Patents

12. General Interest

Peace Prize For Improbable Research

(Swisster, October 05, 2009)

Smashing a full beer bottle over someone's head during a pub brawl causes less damage to the skull than using an empty one, according to researchers at the University of Bern. While previous tests have calculated the force required to fracture a human cranium, the experiment in Bern demonstrated that empty and full beer bottles are both capable. Results of the Swiss experiment also suggest that empties withstand more energy before shattering. Therefore an aggressor would have to strike harder to effect breakage. Their experiments, earn them a "Peace" prize for the "Ig Nobel" awards, whose accolades are bestowed on those involved in improbable research

<http://www.swisster.ch/news/society/bottle-smashing-earns-swiss-team-ig-nobel-prize.html>



Upcoming Science and Technology Related Events

swissnexDay

December 10, 2009

http://www.sbf.admin.ch/htm/aktuell/swissnexday_en.html

Scientific Foreign Policy
Winterthur

QIP 2010 - Workshop on Quantum Information Processing

January 18 – 22, 2010

<http://www.qip2010.ethz.ch/>

Information Technology
ETH Zurich

4th Symposium Hydrogen and Energy

January 24 – 29, 2010

<http://www.empa.ch/plugin/template/empa/22/84405/-/l=2>

Sciences and Technology of Hydrogen & Energy
Wildhaus

Swiss Spatial Sciences Framework (S3F)

February 8 – 10, 2010

<http://www.s3f.ch>

Spatial and Urban Sciences
EPF Lausanne

ENTER2010 Lugano - eTourism: Horizons

February 10 – 12, 2010

<http://www.enter2010.org>

eTourism
University of Lugano, Lugano

IESS 1.0: First International Conference on Exploring Services Sciences

<http://iess.unige.ch>

February 17 – 19, 2010

Information Systems
Uni. Geneva

International Advanced Mobility Forum (IAMF)

March 9 – 10, 2010

<http://www.iamf.ch>

Hybrid, Electric Technologies, Fuel Cell
Geneva Palexpo

3rd European Conference for Clinical Nanomedicine-

May 9-10, 2010

<http://www.clinam.org/>

Nanomedicine
Messe Schweiz, Basel

Information Security and Cryptography- Fundamentals and Applications

June 14-17, 2010

<http://www.idrc.info>

Information security / Information technology
Sunstar Parkhotel Davos, Davos

9th European SOFC Forum

June 29-July 2, 2010

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

Solid oxide fuel cell
Kultur-und Kongresszentrum Luzern, Lucerne

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