

PRESIDENT'S SELECTION

The Newsletter from the ETH Zurich President

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HIGHLIGHT

Urgent flood control model



Photo: VAW

Model test for the drainage structure in the Lyssbach tunnel at the VAW.

Yet again, floods have plagued the small town of Lyss in canton Berne. But a drainage tunnel may in future be able to avert such danger for the urban areas along the Lyssbach. The prototype of the sophisticated hydraulic structure is being tested at ETH Zurich's Laboratory of Hydraulics, Hydrology and Glaciology (VAW).

When it rains in Lyss, its inhabitants keep a watchful eye on the Lyssbach. The little river often bursts its banks within hours. On numerous occasions over the years, it has flooded built-up areas in the municipality of Lyss, causing a considerable amount of damage. The affected population has exerted increasing pressure on politicians. After the last inundation on August 29, 2007 it was clear that something had to be done.

Drainage tunnel necessary

The latest floods clearly showed that the present day capacity of the Lyssbach is too low and that the urban areas under threat can only be protected with a drainage tunnel. A 2.5 kilometer tunnel that would re-direct the water past Lyss has consequently been planned.

The project was developed by Lyssbach's local authorities. Canton Berne has been working intensively on detailed project planning in the wake of the 2007 floods. The respective model

tests are currently being conducted at ETH Zurich's Laboratory of Hydraulics, Hydrology and Glaciology (VAW). The aim of the tests on the 1:16 scale model is to study the efficiency of the drainage system and the drainage structure of the tunnel.

Testing the interaction

Flood control in Lyss involves several interconnected standard structures. "The model tests are designed to check the interaction of the structures", says VAW project supervisor Michael Pfister. The physical model has worked to date, and

important aspects, such as the swallowing capacity of the tunnel and the flow characteristics in the channel, can now be optimized thanks to the tests.

The VAW teaches and researches water and river engineering and glaciology. It also carries out commissioned work for the state and cantons, as well as for private companies. Model



Photo: Peter Berner

Lyss, August 29, 2007.

tests for Lyss will continue until November. Construction work is due to begin in spring 2009. The drainage tunnel is set to be operational by the end of 2011. For Lyss, the fear of flooding should then become a thing of the past.

Further information:

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EDITORIAL

Lively rankings

Dear Reader,



Rankings fuel discussion. They endeavor to quantify the quality of a university – which is no easy task.

You can argue long and hard about whether such rankings are useful for universities but, like it or not, rankings are taken into consideration and play a role in helping many young people to choose which university they would like to attend.

ETH Zurich is faced with a dilemma: it is not only looking to encourage potential Nobel Prize winners, but also wants to breed highly qualified engineers for the economy.

Our university has national responsibilities, while striving to ensure and maintain its leading global position. This is what makes the institution so appealing. It is a balancing act that can be maintained so long as ETH Zurich continues to be successful. I wish you all interesting reading.

R. Eichler

Prof. Dr. Ralph Eichler,
President of ETH Zurich

"QUOTE ... UNQUOTE"

"Seek out collaborations with people who are better than you!"

ETH Zurich Professor René Schwarzenbach's advice for newcomers on the occasion of his recent selection for the American Chemical Society's "Legends of Environmental Chemistry".

GENETIC ENGINEERING



Virus-stricken cassava (left), transgenic plant that stems the reproduction of the gemini pathogen (right).

Modifying manioc

Manioc, otherwise known as cassava, might be the most important staple food for many people but it is low in protein, iron and vitamin A and E, and highly susceptible to a destructive virus. A transgenetics project initiated by ETH Zurich, however, is set to eliminate these deficiencies.

Over 800 million people live off of products made from processed cassava every day, making the root vegetable the most important source of carbohydrates in tropical and subtropical areas after rice and maize. Despite its high carbohydrate, calcium and vitamin C content, however, the tuber lacks many substances that people need to survive.

The international project "BioCassava Plus" is designed to implant cassava with genes from other plant species and modify the nutritional qualities of the root vegetable. The protein content has already been increased from 1 to 3%. In addition to the accumulation of protein, an ETH Zurich team is also researching the control of the gemini virus, a fast-spreading scourge that plagues Africa. The scientists have implanted RNA molecules in the genome which stem the reproduction of the virus.

Info: www.pb.ethz.ch/research/cassava

NANOTECHNOLOGY

Nano made to measure

Flexible, broad and safe technology from ETH Zurich, commercialized through the spin-off, Nanograde, also opens up product innovations and improvements in traditional industrial sectors.

A world premiere based on ETH Zurich technology: the start-up company, Nanograde, facilitates the customer and application specific production of nanoparticles in freely selectable compositions – for the first time ever. Nanograde already sells 100-gram amounts of specific nanoparticles and is hoping that 100-kilogram amounts will soon become available.

Many conventional branches of industry have little experience of safely using the finest particles. Consequently, Nanograde also offers engineering support to encourage the transfer of knowledge to the economy. The company, Perlen Converting, serves as a prime example. Perlen Converting, the packaging specialist from Perlen in canton Lucerne, excels in the production of polymer film for the pharmaceutical and food industries.

Nano-coated film as bacteria killer

In order to improve the product, a certain percentage of antibacterial nanoparticles was – thanks to ETH Zurich technology – added to the existing polymer solution. This means that highly efficient, autosterilizing surfaces can be produced on a large scale.

The antibacterial film appears to be only the beginning of many innovations to come at the ETH Zurich spin-off, Nanograde. Its products are not only ideal for polymer films, but also for refining colors and textiles.

Info: www.nanograde.net

LATEST

Crisis competence

The newly-established competence center "Coping with Crises in Complex Socio-Economic Systems" is looking to assume a pioneering role in the field of crisis management. The center is supported by the ETH Zurich Foundation and ETH Zurich with a total of 1.4 million francs over three years.

New Vice-Presidents

The ETH Zurich Board has elected Roman Boutellier and Robert Perich to join ETH Zurich's management body. Boutellier will be Vice-President of Personnel and Resources; Perich will become Vice-President of Finance and Controlling. Gerhard Schmitt, Vice-President of Planning and Logistics since 1998, will assume the new role of Delegate for International Relations.



Research inspires

Around 15,000 visitors were enthralled by the second Researchers' Night held on September 26. Over 500 scientists presented their respective fields of research and invited the guests to participate in experiments set up between Bellevue and Zürichhorn.

IMAGE OF ETH ZURICH RESEARCH: MOLECULAR MACHINES



The fatty acid synthase is a highly complex molecular machine that produces fatty acids in the human cell in over 40 individual steps.

These steps are symbolized in the illustration by diagrams of the atomic structure of the fatty acid synthase that researchers from ETH Zurich's Institute of Molecular Biology and Biophysics have now determined with synchrotron light at the Paul Scherrer Institute.

FINAL WORD

Dance for terrific talents

The first ETH Zurich alumni charity ball was held recently. All proceeds from the event are to be channeled into a fund to support gifted Master's students.

The gala, held under the patronage of Rector Heidi Wunderli-Allenspach, was one marked by elegance. One important aspect of attire, however, is as yet left unanswered: TV meteorologist and ETH Zurich alumnus, Thomas Bucheli, confided that he had for years been the object of his sister's teasing for having the wardrobe of a "typical ETH Zurich student". Unfortunately, Bucheli kept the fashion particulars a secret.