



Fascinating research, or « what are they actually doing there? »

In these pages, we would like to present the Paul Scherrer Institute to an interested public in a generally comprehensible way. Here you can learn more about the research topics we are working on and the unique large-scale facilities we are using to find answers to a variety of scientific questions.

RESEARCH AT THE PAUL SCHERRER INSTITUTE ^[1]



The Paul Scherrer Institute is Switzerland's largest research centre for the natural and engineering sciences. Approximately 400 scientists at the Institute are investigating a large variety of scientific questions that can be grouped into three main

fields: « Matter and Material », « Human Health », and « Energy and Environment ». Most of these scientists use the Institute's unique large-scale research facilities in their work.

The scientific results gained at PSI help us understand the world around us by shedding light on the processes behind various physical and biological phenomena. At the same time, they constitute the basis for novel developments in technology and medicine. More about **Research at the Paul Scherrer Institute** ^[5].

FURTHER INFORMATION

Research at PSI can be divided into three fields:

Matter and Material ^[2]

Energy and Environment ^[3]

Human Health ^[4]

LARGE-SCALE FACILITIES AT THE PAUL SCHERRER INSTITUTE ^[6]



PSI operates several scientific large-scale facilities that allow experiments to be performed that are impossible in smaller laboratories. In many cases, it is these experiments that contribute decisive clues for solving a

FURTHER INFORMATION

The large-scale facilities at PSI:

Swiss light source SLS ^[7]

Neutron source SINQ ^[8]



particular scientific problem. The facilities are unique in Switzerland, and some of them are the only ones of their type or scale in the world.

In order to allow as many scientists as possible to benefit from the opportunities offered by PSI, the Institute provides access to the facilities within the framework of a User Service to researchers from universities, other research centres and industrial companies. Each year, about 2000 researchers in these categories perform experiments at the facilities. More about **Large-Scale Facilities at the Paul Scherrer Institute**^[12].

SwissFEL – PSI'S PROJECT OF THE FUTURE^[13]



Staying still usually has the same effect as taking a step backwards in today's fast-moving times – and this is particularly true for the sciences. As a result, scientists must have access to research infrastructure that will allow them to continue their top-level research at the international

level into the future. PSI is currently designing infrastructure of this type under the name SwissFEL. The aim of SwissFEL is to serve the needs of university and industrial research groups. More about **SwissFEL – PSI's project of the future**^[16]

Neutron source SNS

Muon Source SμS^[9]

Proton accelerators^[10]

Access to the large-scale facilities for external users:

User service PSI^[11]

FURTHER INFORMATION

Popular description of the project:

The future project SwissFEL^[14]

Information on the project website:

SwissFEL project website^[15]

CURRENT NEWS^[17]



Kooperation für perfekte Beschleunigung (in German)^[18]

7. February 2012

Mehr als 10'000 Einzelteile – alle auf den Tausendstelmmillimeter exakt – sollen bei der Zusammenarbeit zwischen dem Paul Scherrer Institut PSI und Oerlikon Mechatronics AG, Trübbach gebaut werden und am Ende für perfekte Beschleunigung im SwissFEL, dem geplanten Röntgenlaser des PSI sorgen. Für den SwissFEL-Linearbeschleuniger wird Oerlikon Mechatronics die sogenannten Kupfertassen herstellen (komplex geformte und hochpräzise Scheiben) und diese zu Hohlräumen (Kavitäten) zusammenfügen, in denen sich die nötigen beschleunigenden Kräfte erzeugen lassen.

This news release is only available in German.



Using heat for storing data^[19]

7. February 2012

An international research team has demonstrated a new way to record information on a magnetic medium without the use of a magnetic field. Instead, they found that they could record information using only a heat pulse. This method of recording might allow one to record Terabytes (1000s of Gigabytes) of information per second being 100s of times faster than present hard drive technology, and consumes much less energy by using heat without the need for a magnetic field. Using modern lithographic methods and x-ray microscopy, researchers from the Paul Scherrer

Institute contributed considerably to this work.



Kein Blick in die Kristallkugel^[20]

27. January 2012

Das Paul Scherrer Institut wird in Zusammenarbeit mit dem Weltenergieerat nachvollziehbare Modelle für zukünftige globale Energiesysteme entwickeln. In einem auf drei Jahre ausgelegten Projekt wollen PSI-Forscher um Stefan Hirschberg ein Modell entwickeln mit dem man Aussagen über zukünftige Energiesysteme machen kann. Das besondere daran ist, dass es sich um ein sogenanntes Open-Source-Modell handeln wird. D. h. Experten und andere Interessenten können einen Zugang zum Programm erhalten, sowie Informationen darüber, von genau welchen Annahmen die Forscher bei der Ausarbeitung ihres Modells ausgegangen sind. Das ist bei kommerziellen Anbietern von Prognosewerkzeugen nicht üblich.

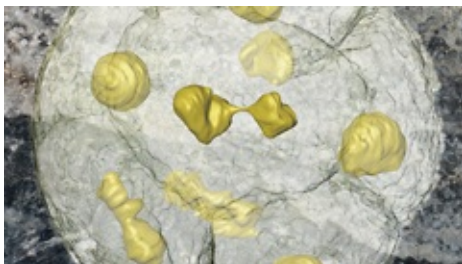
This news release is only available in German.



It works: Ultrafast magnetic processes observed 'live' using an X-ray laser^[21]

23. January 2012

In first-of-their-kind experiments performed at the American X-ray laser LCLS, a collaboration led by researchers from the Paul Scherrer Institute has been able to precisely follow how the magnetic structure of a material changes. The change of structure was initiated by a laser pulse, and investigated with the help of short X-ray pulses. It appears as if the structure begins to change 400 femtoseconds after the laser pulse strikes. Such investigations will be a major focus of research at the planned Swiss X-ray Laser, SwissFEL, at PSI.



Fossile Vorläufer der ersten Tiere^[22]

23. December 2011

Einzellige Organismen, die vor über einer halben Milliarde Jahre gelebt haben und deren Fossilien in China gefunden wurden, sind wohl die unmittelbaren Vorläufer der frühesten Tiere. Die amöbenartigen Einzeller haben sich in einer Weise in zwei, vier, acht usw. Zellen geteilt, wie es heute tierische (und menschliche) Embryonen tun. Die Forscher glauben, dass diese Organismen einem der ersten Schritte vom Einzeller zum Vielzeller in der Entwicklung richtiger Tiere entsprechen.

This news release is only available in German.

Older news can be found in the archive.^[23]

For media representatives

Are you a journalist and do you have general questions about PSI? Are you looking for images for an article on a research topic? PSI has an extensive **photo archive** from which we can send you appropriate material upon request. We will be happy to assist you in your search for scientists who, as **neutral experts**, will respond to your technical questions. Please get in touch with our contact for media representatives:

- **Media contacts**^[24]
- **Press releases**^[25]
- **Media mailing list**^[26]

For the general public

If, after visiting our Website, you would really like to know what our daily work routine is like – come and visit us. In the **psi forum visitor's centre**, we welcome adults and teenagers, either individually or in groups. **Homepage psi forum**^[27]

For parties of 12 persons and over, we offer a free-of-charge tour through our large-scale facilities, and for students we have founded the **student laboratory iLab**. School classes can visit us free of charge for a day, carry out experiments in the laboratory and then see from the large-scale facilities how the scientific principle studied at iLab is applied in routine research. **Homepage iLab**^[28]

URLs:

- [1] : <http://www.psi.ch/media/research-at-psi>
- [2] : <http://www.psi.ch/media/matter-and-material>
- [3] : <http://www.psi.ch/media/energy-and-environment>
- [4] : <http://www.psi.ch/media/human-health>
- [5] : <http://www.psi.ch/media/research-at-psi>
- [6] : <http://www.psi.ch/media/large-research-facilities>
- [7] : <http://www.psi.ch/media/swiss-light-source-sls>
- [8] : <http://www.psi.ch/media/neutron-source-sinq>
- [9] : <http://www.psi.ch/media/muon-source-ss>
- [10] : <http://www.psi.ch/media/proton-accelerators>
- [11] : <http://www.psi.ch/media/user-service-psi>
- [12] : <http://www.psi.ch/media/large-research-facilities>
- [13] : <http://www.psi.ch/media/swissfel-the-future-project>
- [14] : <http://www.psi.ch/media/swissfel-the-future-project>
- [15] : <http://www.psi.ch/swissfel/>
- [16] : <http://www.psi.ch/media/swissfel-the-future-project>
- [17] : <http://www.psi.ch/media/current-news>
- [18] : <http://www.psi.ch/media/kooperation-fuer-perfekte-beschleunigung-in-german>
- [19] : <http://www.psi.ch/media/using-heat-for-storing-data>
- [20] : <http://www.psi.ch/media/kein-blick-in-die-kristallkugel-in-german>
- [21] : <http://www.psi.ch/media/it-works-ultrafast-magnetic-processes-observed-live-using-an-x-ray-laser>
- [22] : <http://www.psi.ch/media/fossile-vorlaeufer-der-ersten-tiere-in-german>
- [23] : <http://www.psi.ch/media/current-news>
- [24] : <http://www.psi.ch>
- [25] : <http://www.psi.ch/media/current-news>
- [26] : <http://www.psi.ch>
- [27] : <http://www.psiforum.ch/>
- [28] : <http://www.psi.ch/ilab>

<http://www.psi.ch/media/public-and-media>