



No. III/09 - 30 September 2010

# PSI photon, neutron and muon user facilities newsletter

## Editorial



Joël Mesot

### PSI at the forefront of research

In today's fast-moving society, standing still is effectively synonymous with regression. This is also true for dynamic fields of scientific investigation. If the Paul Scherrer Institute, as a research laboratory of high in-

ternational standing, is to continue to

provide state-of-the-art scientific infrastructures beyond the coming 10-15 years, it must lay the foundation today for an internationally competitive future. The new X-ray laser project, known as SwissFEL, will extend PSI's unique platform of interdisciplinary and international facilities to serve research teams from universities and from industry. The SwissFEL is an essential part of PSI's strategic focus, and will establish Switzerland's leading position in scientific research for years to come. It will attract top scientists from all over the world and will enhance PSI's acknowledged position as a world-class research institute. Furthermore, the new high-tech facility will provide an incentive for Swiss industry, through which existing highly-qualified jobs can be maintained and new ones created.

*Joël Mesot* Director PSI

## New calls for proposals

**SLS:** Open call for PX beamlines. Deadline on October 15, 2009.

### See our call schedule

<<http://sls.web.psi.ch/view.php/users/experiments/proposals/opencalls/index.html>>

**SINQ/SμS:** Upcoming proposal submission deadlines:

- SINQ: November 15, 2009
- SμS: December 01, 2009

**More information** <[http://sinq.web.psi.ch/sinq/sinq\\_call.html](http://sinq.web.psi.ch/sinq/sinq_call.html)>

**An overview about all proposal submission deadlines of the PSI facilities can be obtained here** <<http://user.web.psi.ch/user/deadlines.html>> .

## Upcoming events

## SwissFEL Project overview

The SwissFEL project is progressing well. The baseline design of the 5.8 GeV linear accelerator and two undulator lines is nearly complete. This design is documented in the SwissFEL conceptual design report, presently under preparation. Among the special design features are: wavelength coverage from 1-70 Å, r.m.s. pulse length of less than 12 fs, 100 Hz pulse rate in both FEL lines and polarization control for soft X-rays. The technical R&D is moving ahead rapidly, with the first test facility (OBLA) in operation and the second one (250MeV Injector) under construction. The Scientific case report is completed and the presentation to the ETH board will be made at the end of 2009. It is foreseen that the project will be included in the «BFI Botschaft» to be discussed in Swiss parliament in 2011. A construction period of 4 years is planned, beginning 2012, with the goal to start the commissioning in early 2016.

## OBLA test facility

The electron gun, which determines the quality of the electron beam, is the most sensitive component in a linear accelerator like SwissFEL. Since the electron beam quality determines the total length of a FEL, particular effort is put in the electron gun development (i.e. the focus is on the first few meters of the accelerator). In January 2009, the commissioning of the SwissFEL electron gun test stand started. Just six months after production of the first beam, the electron beam quality required for the low charge operation mode (10 pC) of the SwissFEL was reached. This makes us confident that the new electron source concepts used can surpass beyond the required parameters. Lasing could then be obtained with shorter undulators - a step forward - which could decrease the investment costs of SwissFEL.

## 250MeV Injector

### October 12-13: Joint User Meeting **JUM@P 09**

<<http://user.web.psi.ch/jump09>>

This initiative will bring together the users of the three major facilities at PSI: SINQ, SLS, SμS. JUM@P '09 is a «by users, for users» meeting.

### Scientific programme

<[http://user.web.psi.ch/jump09/html/information\\_programme.shtml](http://user.web.psi.ch/jump09/html/information_programme.shtml)>

### 28-29 October 2009 & 11-13

**December 2009:** European XFEL Workshops, Grenoble, France & Budapest, Hungary  
**Information and Registration** <<http://www.xfel.eu/>>

**March 1-5, 2010:** Annual meeting of EuroFEL (European FEL consortium), Berlin, Germany

**Information and registration** <<http://www.iru-vx.eu/home/>>

**March 8-12, 2010:** ICANS XIX, Grindelwald, Switzerland

International Collaboration on Advanced Neutron Sources (ICANS-XIX)  
**Information and registration** <<http://icans.web.psi.ch/>>

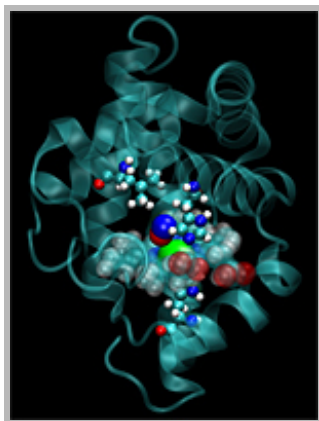


**SwissFEL Injector Facility** In order to study and optimize the SwissFEL injector, PSI is presently building a 250 MeV accelerator test facility driven by an S-Band (3 GHz) 2.6 cell RF photo cath-

ode, as foreseen in the SwissFEL baseline design. The test facility serves two main purposes. First, it allows experimental verification of the performance predicted by the simulation codes, and to consolidate the acceleration concept in view of SwissFEL. Second it is the optimal platform to develop and test the different components/systems and to optimize procedures necessary to operate the SwissFEL accelerator. The accelerator building is completed, and the accelerator hardware installation has started. The gun section will be commissioned by the end of 2009, while the entire accelerator will be available in autumn of 2010.

More Information are published on: [SwissFEL-Website](#)

## Scientific case SwissFEL



Scientific Case Based on the SwissFEL Science Workshop Series, the SwissFEL Science Case is now virtually finished. It is a colorful 100-page document, which is divided up into the following sections: Foreword, Scientific Challenges, Introduction and Project Overview, Ultrafast Magnetization Dynamics, Catalysis

and Solution Chemistry, Coherent Diffraction, Ultrafast Biochemistry, Time-Resolved Spectroscopy of Correlated Electron Materials Machine and Building, Appendices. Its official designation is „PSI Bericht Nr. 09-10«, and 500 copies will be printed within the next weeks and distributed to government agencies and university departments. It will also be available in electronic form via the PSI web page. The chairman of the editorial board, Bruce

## Facility news

### SwissFEL Industry Collaborations:

SwissFEL is actively collaborating with industry- some contacts have resulted from the SwissFEL Industry Day, which took place on May 4th 2009, and others originate from earlier cooperations of PSI with industry.

Potential projects in different areas are in discussion: HF Accelerating systems, Undulators, High Performance Computing, Visualization and Image Processing.

However, PSI is still seeking industry partners in several areas; therefore a list of areas of possible cooperation for SwissFEL is planned to be published via the PSI web page. Contact details will be provided.

### EC access programs at SLS/SINQ/SμS:

The amount of EC funding within the access programs NMI3/ELISA has significantly been cut by the EC. As a compensation PSI has decided to allocate own funds to support as many users as possible for the next

Patterson, would like to thank the many colleagues who contributed to this effort.

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months. Please note that this is not a permanent solution and we strongly hope that the EC will rise the available funding of the access programs in the next callperiod.

## Announcements

### PSI-Scientific Report 2008

Please download the online version of PSI's annual scientific report **here** <[http://www.psi.ch/jahresberichte\\_pdf\\_htm/PSI\\_Scientific\\_Report\\_2008\\_web.pdf](http://www.psi.ch/jahresberichte_pdf_htm/PSI_Scientific_Report_2008_web.pdf)> .

### Facility publications

Obtain a comprehensive list of publications sorted by different criteria:

- **SLS publications** <[http://sls.web.psi.ch/view.php/science/lsy/publications/lsy\\_publications.html](http://sls.web.psi.ch/view.php/science/lsy/publications/lsy_publications.html)>
- **SINQ & SμS publications** <[http://num.web.psi.ch/publ\\_all.htm](http://num.web.psi.ch/publ_all.htm)>

### September 2, 2009

NZZ press release "Eine Grossforschungsanlage für die Schweiz". This article reports about the PSI plans to realise the Swiss Free Electron Laser, SwissFEL.

**download the article (PDF)** 

### Proprietary research

A certain fraction of the beamtime at PSI research facilities is reserved for proprietary use. This is handled by **Technology Transfer PSI** <<http://www.psi.ch/industry/technology-transfer>> .

The following **directory** <<http://www.psi.ch/industry/randd-services>> lists services on offer by these facilities.

### Imprint

PSI Facility News addresses the users of the PSI large facilities and appears quarterly in English. Any feedback is highly welcome! **More information.** <<http://www.psi.ch/imprint>>

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