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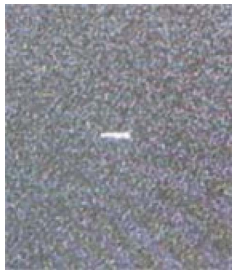
current events

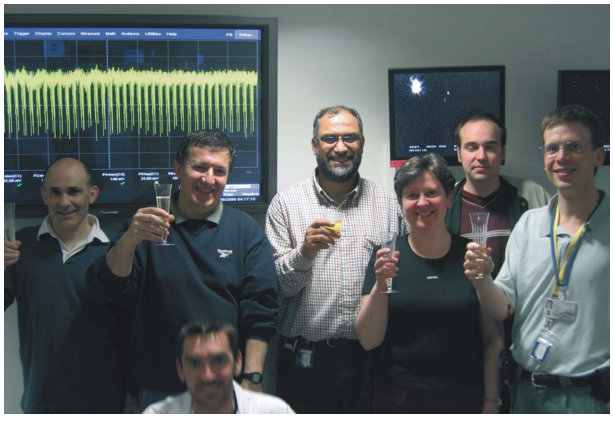
This section carries events of interest to the synchrotron radiation community. Works intended for this section should be sent direct to the Current-Events Editor (s.hasnain@dl.ac.uk).

First 2.75 GeV electron beam stored in the SOLEIL storage ring

SOLEIL, the new third-generation French synchrotron radiation source located at the Plateau de Saclay near Paris, accelerated and injected electrons in its storage ring for the first time, on 14 May 2006 at 2:00 a.m. These first tests went off well and the team were able to observe the first synchrotron radiation photons produced by the 2.75 GeV electrons. The first 2.75 GeV beam injection from the booster had started only a day before, around noon on 13 May. After 12 h spent on measurements and adjustments, the electrons made a full turn, and a second one and a third one with adjustments of the storage-ring parameters being very close to the theoretically predicted values. The first 2.75 GeV beam from the booster was extracted only on 6 May 2006. This rapid commissioning of SOLEIL has continued and the machine team were able to store the first electron beam in SOLEIL on 1 June 2006, at 2:30 a.m., with 1.3 MV power supplied by one of the two RF cavities of the cryomodule. A first burst of the beam from the booster was injected and stored in the ring for 16 min, with a 0.2 mA current. After a second impulsion injected into the ring, the storage of the beam lasted for 24 min, with a 0.3 mA current. The beam lifetime was about 45 min. On 6 June the beam current reached 17 mA.



First synchrotron radiation photons at SOLEIL.



Celebrating the stored beam on 1 June 2006 in the SOLEIL control room. Pictured are Fernand Ribeiro, Jean-Marc Filhol, Amor Nadji, Pascale Brunelle, Patrick Rommeluere, Laurent Nadolski and Jocelyn Labelle. In the background the image of the beam can be seen on the visible-light monitor.

A view of the SOLEIL buildings.

Commissioning of the 354 m-circumference SOLEIL storage ring will continue during the summer, where much of the effort will be dedicated to carrying out adjustments and tests allowing an increase in the beam intensity. It is expected that X-rays will be dispatched during the summer to the first beamline, called DIFFABS, dedicated to diffraction and absorption for the science of materials. Commissioning of the storage ring is expected to progress rapidly due to several factors, including the fact that all of the vacuum chambers are NEG-coated. The current commissioning has been carried out with ten small-aperture (10 mm) 5.5 m-long insertion-device chambers already in place, including the 10 m-long undulator. Four different types of insertion devices, including an in-vacuum undulator, U20, have been in place for this commissioning phase. By 2009, 23 beamlines, with 16 of them on insertion devices, are expected to start operation, serving a wide community of scientists from physical to biological science disciplines.

Diamond Light Source begins commissioning

On the night of 4 May 2006, the first beam of 700 MeV electrons completed a full orbit of Diamond's 561.6 m storage ring. On 7 May, 400 turns were achieved followed by a stored beam, and then at 2.00 a.m. on Tuesday 30 May 2006 Diamond's accelerator team achieved 2 mA of stored and accumulated beam at 700 MeV energy in the storage ring. This in turn allowed the first observation of synchrotron light. After the first injection, 70% injection efficiency was achieved rapidly on 21/22 May 2006. From 1 June the installation of the initial insertion devices for phase-1 beamlines began. A number of front-ends are already installed and partly commissioned.

The current commissioning has been undertaken at 700 MeV due to the unavailability of cooling water to the magnets. A major effort is underway to ensure that cooling water is available as soon as possible but certainly before the next commissioning period scheduled for September 2006. This is an essential milestone for the full energy, 3 GeV, commissioning of the storage ring and of course for the commissioning of phase-1 beamlines. Within less than 18 months, when the SRS is scheduled to close in December 2008, some 12 beamlines are expected to operate for routine user operation.

The DIAMOND machine team celebrate the first injection during the early hours of 5 May 2006. Dr Richard Walker, the Diamond Light Source Machine Director, is seen in the middle proposing the toast.

Delegates experiencing some of the Korean culture.

BESSY's free-electron laser project receives German Science Council's endorsement

In a statement issued on 22 May 2006 on large-scale research infrastructures, the German Science Council (Wissenschaftsrat) provided strong support for the BESSY free-electron laser (FEL) project. The Science Council had already endorsed the scientific programme in 2002. They recommended financing a three to four-year period to build a two-stage FEL cascade as a demonstrator. The concept of a second-generation FEL combines at-hand advanced technology in the field of superconducting linear accelerators with the use of high-power lasers. FELs accelerate densely packed electron bunches and guide them through long periodic magnetic structures (undulators). During this process, intensive laser-like light of selectable wavelength is created. In the BESSY design a laser pulse is superimposed on the accelerated electron bunches in the undulators, 'imprinting' its pulse shape onto the electrons. This 'seeding scheme' enables the production of short, controlled and reproducible pulses, which will be converted in several steps into the X-ray range.

Korea holds the Ninth International SRI Conference

The Ninth International Synchrotron Radiation Instrumentation Conference took place in Daegu, Korea, from 28 May to 2 June 2006. The conference was held in the impressive EXCO Centre, with several large lecture halls and a very large hall used for poster sessions and vendors' exhibitions. The conference was a major success, attracting some 800 delegates from 40 countries. The conference was organized by Pohang Accelerator Laboratory (PAL) and JASRI (Japan Synchrotron Radiation Research Institute) with Co-Chairs Sunggi Baik and Akira Kira, representing PAL and JASRI, respectively. The success of the meeting as much demonstrated the successful cooperation between the Japanese and Korean scientists as the scientific programme.

SRI has become the largest international forum for the synchrotron radiation science and technology community, seeking to promote international exchange and collaboration among all scientists and engineers around the world involved in the developments of new concepts, techniques and instruments related to the production and utilization of synchrotron radiation. As in the more recent meetings, the 9th SRI included several outstanding technical and methodological presentations, and there were several scientific presentations, the so-called science drivers for the technological developments. With this increased integration of synchrotron radiation science and synchrotron radiation technology, perhaps it is more appropriate to call this unique synchrotron radiation meeting 'Synchrotron Research and Innovation' conference.

The 800 or so delegates were not only treated to an excellent scientific programme but were also exposed to some of the Korean culture. On Friday, delegates were taken to the Pohang Light Source, set up by POSCO, a world-leading steel company, as part of the Pohang University of Science and Technology (POSTECH). POSCO itself was established in 1968, funded by Japanese reparations to Korea. POSTECH was established in 1986 as a research-oriented university, which decided to create PAL in 1988 and start the design and construction of a third-generation source, simply called Pohang Light Source (PLS). The major part (60%) of the construction cost (150 BWon, approximately USD 200M of the project came from POSCO with 60 BWon from the national government's Ministry of Science and Technology. PLS came into operation for public use with two beamlines in January 1995 and recently celebrated its tenth anniversary. Currently there are 27 beamlines in operation and four beamlines under construction. With the PLS operating at 2.5 GeV with full energy injection *via* a linac and many state-of-the-art beamlines in operation, it is not surprising that PLS is making a significant science impact in the international context. The operational budget of PLS has been mainly provided by the Science Ministry. The laboratory is now making plans to upgrade its 2.5 GeV linac and build an X-ray FEL at an approximate cost of USD 100M.

Sine Larsen (ESRF) and Samar Hasnain (Daresbury Laboratory) being shown the PLS facility by Drs Kyung Jin Kim and Huang-soon Lee. On the right of the PLS building can be seen the 2.5 GeV linac building.