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current events

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After two million hours of user operation a British world-first bids farewell

Ian Munro finally switched off the Synchrotron Radiation Source at the Daresbury Laboratory on 4 August 2008 after 28 years of operation and two million hours of users beam for a wide-ranging science programme.

The SRS was a genuine world first, pioneering the way for the development of over 50 dedicated synchrotron radiation sources around the world. It was the first multi-GeV dedicated storage ring to be designed and implemented for synchrotron radiation research. It became the first synchrotron radiation laboratory to contribute directly to the first Nobel Prize for synchrotron radiation work when Sir John Walker won the Nobel Prize for Chemistry in 1997.

Since 1980, the SRS has played a key role in enabling and performing cutting-edge research in many areas of UK and international science. Over the last 28 years, SRS supported cutting-edge research in physics, chemistry and materials science and opened up many new areas of research in fields such as archaeology. Another aspect of SRS that stands out is the utilization of multiple techniques, *e.g.* SAXS/WAXS, PX/XAFS *etc.*

During its lifetime, the SRS has collaborated with almost every country active in scientific research. It had particularly close relationships with Japan, USA, the former Soviet Union, China, Brazil and several of the EU countries. It has hosted over 11000 users from academia, government laboratories and industry worldwide, leading to the publication of more than 8000 research papers in leading scientific journals. It helped bring communities together both nationally and internationally. Two examples of this are the creation of a very successful series of international conferences on XAFS (the first being held at Daresbury in March 1981 and the 14th in the series is planned for July 2009 in Italy) and the CCP4 (Collaborative Computation Project 4) for protein crystallography where the community has worked in an exemplary manner to help improve the quality of scientific results of this very powerful technique.

The formal closing ceremony, which took place at STFC Daresbury Laboratory on 4 August, was attended by leading figures of the SRS community and several of the former directors including David Jerry Thompson, Joan Bordas, David Norman, Phil Duke, Peter Lindley, Alan Leadbetter, John Helliwell, Jeff Worgan, Neville Greaves, Richard Walker, Keith Codling, Scott Hamilton and Samar Hasnain. Also in attendance were the senior officials of the STFC (Science and Technology Facilities Council which runs Daresbury Laboratory) including Chief Executive Professor Keith Mason. The closing ceremony was performed by Ian Munro, one of the original founders of the concept that synchrotron light could be used to perform science, and who was responsible for the plans for building the SRS and its operation. Of the closure, Ian said 'It is with immense pride and a great sense of achievement that I look back and contemplate the success of the SRS, not to mention the teamwork and expertise at Daresbury that went into building, maintaining and operating this great British scientific facility. Of course this is a sad occasion for me, but since the day the SRS was first switched on it has always been subject to a fixed life span and this day was always going to come. The SRS has kept the UK at the forefront of scientific research and now passes its baton onto the new Diamond Light Source in Oxfordshire, the UK's direct successor to the SRS. Diamond will continue

Photographs from the final day of the SRS. Top: Ian Munro with Professor Keith Mason, CEO of STFC. Middle: Ian Munro pressing the beam dump button. Bottom: staff giving a final salute to the SRS.

Some of the experimentalists who were using the last official multi-user beam on 2 August 2008 at 00:15 hours. The photograph was taken in the main control room in the early hours of the morning. The beam quality was very high, some 140 mA with 46 h of beam lifetime. It was no surprise that some 23 users were taking data on a variety of stations coming from as far away as Uppsala, Sweden.

to build on the positive legacy of synchrotron light research in this country.'

Professor Colin Whitehouse, STFC's Deputy Chief Executive and Director of Campus Strategy, said 'Though the SRS has gone, Daresbury Laboratory is growing. It is part of a burgeoning national science and innovation campus and the home of the Cockcroft Institute, a national centre for accelerator science and technology, amongst other world-class research facilities. The Government's recent announcement of £65M earmarked for Daresbury will provide two new additional science and technology gateway centres for computational science and engineering and detector systems. Daresbury will also continue its state-of-the-art accelerator science and technology research programmes based on the continuing operation of the energy-recovery linac prototype known as ALICE.'

Cornell plans to submit proposal for ERL

The particle accelerator known as the Energy Recovery Linac (ERL), now in planning stages at Cornell, was the topic of a lecture by Georg Hoffstaetter to the faculty and staff in Cornell's Research Division on 31 July 2008. A Cornell-built prototype beam injector, built with a grant from the National Science Foundation, saw its first successful beam on 7 July 2008. Researchers plan to submit the first part of a proposal for the full ERL this year, with hope for construction to begin in 2011.

The ERL would accelerate electrons to almost the speed of light in a linear accelerator (linac) made of two straight tubes about 1.3 km long, then feed them into the Cornell Electron Storage Ring. After a single rotation around the ring, the electrons would return to the linac, where their energy would be recovered and used to accelerate the next batch of electrons.

Meanwhile, at various points around the ring, the Cornell High Energy Synchrotron Source would convert the electrons into ultrabright ultrafast pulsing X-ray beams capable of imaging structures just a few atoms wide, and whose oscillations would be measured in femtoseconds.

'Building the ERL at Cornell makes sense from a historical and practical perspective', Hoffstaetter said. 'Many things in building accelerators were first done here at Cornell', he noted, including the 1934 construction of the first cyclotron by physicist Boyce McDaniel; the first accurate measurement of synchrotron radiation in 1952 by Cornell President Emeritus Dale Corson; and the first measurement of the synchrotron radiation spectrum in 1953 by the late Cornell Professor Emeritus of Physics Paul Hartman. 'All these developments need major technical equipment, and we have facilities on campus that can really build major technical components', Hoffstaetter said. Cornell also has the expertise to design and manage the equipment, as well as strong collaborative research centres that would benefit from its applications.

ESRF strengthen cooperation with Russia

The Kurchatov Institute in Moscow (Russia) and the European Synchrotron Radiation Facility (ESRF) in Grenoble (France) have made a step towards a closer collaboration between the scientific communities of these two institutes. A Memorandum of Understanding was signed on 11 June 2008 in Moscow to promote the different areas of this collaboration.

The memorandum foresees a joint research and development programme as well as exchange of scientists and scientific expertise with the aim of pushing forward common projects. In this framework the two institutes will also organize joint workshops and conferences.

PULSE organizes the Second Ultrafast X-ray Summer School

More than 100 participants from various countries and different scientific disciplines gathered for the Second Ultrafast X-ray Summer School at the Stanford Linear Accelerator Center (SLAC) from 17 to 20 June 2008. The summer school was organized by PULSE (Photon Ultrafast Laser Science and Engineering) with the aim of spreading information about the scientific background and opportunities that will become possible at the X-ray free-electron laser (XFEL) facilities with a special view to the new X-ray source, the Linac Coherent Light Source (LCLS). LCLS, which is planned to start operation in 2009, will be pushing frontiers in a wide area of disciplines such as

A team of UK scientists led by Professor Justin Wark participated in the PULSE workshop at Stanford.

atomic molecular and optical physics, materials and laser science, chemical dynamics, high-energy density science, magnetism and biological imaging. Kelly Gaffney (SLAC) who was chairing the sessions and introducing the speakers pointed out the importance of such an interdisciplinary and intellectually stimulating get-together for students and experts alike. Considering the diversity of topics, the invited lecturers found a pleasing balance between explaining the background of their specialist area and drawing attention to the prospect for cutting-edge research in ultrafast X-ray science at XFELs. The meeting concluded with a site tour of SLAC including the SSRL and LCLS.

The X-ray Pump-Probe (XPP) instrument proposal workshop followed (20–21 June) immediately after the PULSE Summer School with the purpose of informing prospective users of how to prepare proposals. XPP is one of four designed instruments on LCLS and will exploit X-ray scattering as a dominant tool for probing laser-induced structural changes. The first call for proposals is anticipated for December 2008 considering that LCLS will begin user operation with XPP in summer 2010. Details of the LCLS performance parameters and instruments were presented. Useful information about XPP and the presentations during the workshop can be obtained from the XPP web pages (http://lcls.slac.stanford.edu/xpp/).