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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).

Queen opens Diamond Light Source

On 19 October 2007, Her Majesty The Queen, accompanied by His Royal Highness The Duke of Edinburgh, officially opened Diamond Light Source. Diamond represents a joint venture, co-funded by the UK Government *via* the UK's Science and Technology Facilities Council (STFC) (86%) and the Wellcome Trust (14%).

The Royal party toured the synchrotron machine, an incredible feat of science and engineering measuring over half a kilometre in circumference and covering an area over three times the footprint of Buckingham Palace. During the visit they were shown how the powerful light is produced and exploited, along with the range of science to which Diamond has already started to contribute. Since the first research scientists were welcomed to Diamond in January 2007, a wide variety of experiments have taken place.

Her Majesty unveiled a sculpture and plaque commissioned by Kent sculptor Paula Groves to mark the official launch of the facility. The Queen and the Duke of Edinburgh were also briefed on future research that is planned at Diamond in 2008, including a vivid example with some suitably royal connections. In the 21st century, cutting-edge synchrotron technology is helping to conserve the fabric of the legendary Tudor warship, the Mary Rose, which was built over 450 years ago in the reign of her ancestor Henry VIII. The research will guide future efforts to halt corrosion of the ship and preserve her for future generations to enjoy. The Queen and the Duke met many of the staff, scientists, engineers and technicians from Diamond who have helped create this world-class scientific facility at the Harwell Science and Innovation Campus.

Gerd Materlik, Chief Executive Officer of Diamond, said 'We feel extremely honoured by the Royal visit, which not only marks our official opening but also pays tribute to all those involved with the design, construction and now operation of Diamond. From the very beginning, we have placed great emphasis on the importance of community collaboration. Early in 2007 we welcomed our first academic users from universities across the UK, and in July an open day, attended by over 4000 people, allowed us to share with the local community in Oxfordshire the wide range of science that has started here: from research into the structure of medicine to the mapping of chemical composition of meteorites.'

Congratulating Diamond's staff and scientists on their achievements, the Prime Minister, Gordon Brown, sent a message saying 'Diamond Light Source is a superb example of the best of British science, a facility that is one of the best in the world. It will be used by our outstanding academic sector, and also by British industry to develop technologies in many of our key hi-tech industries. Biomedical, engineering and IT industries, to name just a few, will all benefit from its power. The Government will continue to fund the best of British science, and I look forward to many of our major scientific advances coming from Diamond in years to come.'

Professor Keith Mason, Chief Executive Officer of STFC, said 'Many of the everyday commodities we take for granted, from revolutionary drugs and surgical tools, to food and electronics, have been developed or improved using synchrotron light. The applications of this uniquely bright and intense light provide a wealth of direct benefits to society and the economy. Diamond represents the next generation of light sources in the UK, building on the heritage of the world's first dedicated synchrotron which was constructed in 1981 at our Daresbury Laboratory in Cheshire.'

Professor Mark Walport, Director of the Wellcome Trust, said 'We are proud to have supported the Diamond synchrotron from its conception to successful delivery. British science is world class. To keep it that way we need to ensure that the scientific community has access to world-class infrastructure such as Diamond. The Diamond synchrotron is already revealing the crystal structures of important biological molecules, some of which may serve as targets for future drug therapies. This is an exciting time for science.'

On a personal note, we take this opportunity to congratulate Gerd Materlik, Richard Walker and their team for this major accomplishment. Gerd also deserves congratulations on receiving an honorary CBE (Commander of the British Empire) in recognition for his contribution to Diamond.

Top: Gerd Materlik (CEO of Diamond, formerly from DESY, Hamburg) with the Queen and Duke of Edinburgh. On the right of the Duke is the Chair of the Diamond board, Sir David Cooksey. Bottom: Dr Richard Walker (Machine Director, formerly of Elettra and STFC Daresbury) introduces the Diamond team to the Duke of Edinburgh.

Three of the principal beamline scientists (from top to bottom: Fred Mosselmans, Nick Terril and Steve Collins), all previously station scientists at STFC Daresbury Laboratory, show the details of the facilities to the Royal party and discuss the science that will be conducted at early Diamond beamlines. Colin Norris, Physical Sciences Director, is in the centre of the top panel.

UK's research council creates Photon Science Department

On 27 November 2007, the UK's research council, the Science and Technology Facilities Council (STFC), decided to form a new Photon Science Department to coordinate the operation and development of STFC's light source facilities and associated science. The Photon Science Department pulls together the expertise in both the STFC's Central Laser Facility and the Synchrotron Radiation Department, and will be led by Professor Mike Dunne (currently Director, Central Laser Facility).

Professor Keith Mason, STFC's Chief Executive, explained 'The Science and Technology Facilities Council runs world-leading facilities and science programmes using state-of-the-art light sources. In addition to running and developing our existing facilities, one of the key tasks for this new team is to play a central role in a project to define a new type of light source. I believe that this is a great opportunity to develop a world-leading facility that builds on the expertise that we have in laser and synchrotron science. We want to ensure continued leadership and a clear strategic vision for the future.'

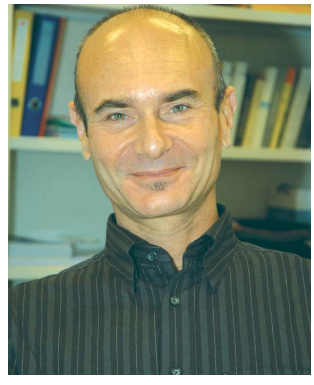
The new light source project will make use of combined accelerator and laser technology, building on the organization's exceptional track record over the last three decades in both of these technology areas, to provide ultra-short pulses to explore the dynamics of matter across many scientific disciplines.

Mike Dunne said 'The opportunity to combine the extremely high peak powers and ultra-short pulse lengths available from lasers with the huge average powers and spectral tuning ranges that accelerators can deliver has been recognized for some years. Recent advances in both fields offer even more exciting possibilities in the immediate future. The opinion of the UK and international user community will be critically important in determining the scientific priorities for the new department, and the new light source project. As such, we will be seeking detailed comments over the next few months,' he added.

Part of the consultation process on these new directions will include seeking opinion on the formation of a dedicated Research Institute for Photon Science. This will focus on the scientific exploitation of next-generation light sources such as Diamond, XFEL (the X-ray Free-Electron Laser), emerging laser facilities and the new UK light source project. Professor Dunne said "The purpose of the proposed institute is to bring together the university and facility communities to nurture this field within the UK. This will ensure best use is made of these exciting new developments across the world and maintain the UK's position as a leading player in the application of photon sources."

Francesco Sette is appointed the next Director General of ESRF

The Council of the European Synchrotron Radiation Facility (ESRF), at its meeting on 26–27 November in Grenoble, France, appointed Dr Francesco Sette as the next Director General of the ESRF. He will succeed Professor William Stirling, who is from the UK and whose eight-year term of office ends on 31 December 2008. Francesco Sette, an Italian born in 1957, holds a PhD in physics from the University of Rome. Previous Director Generals of the ESRF have come from France (Yves Petroff, 1993–2001) and Germany



Francesco Sette.

(Ruprecht Haensel, 1986–1992); the latter spearheaded the foundation phase of the ESRF.

Francesco Sette came to ESRF from the AT&T Bell Laboratories in Murray Hill, USA, in 1991 as a staff member. Later, as a group leader at the ESRF, he developed a new generation of inelastic X-ray scattering beamlines, which made possible the study of atomic motions and electronic properties of condensed matter at unprecedented energy resolution. Since 2001 Francesco has been the Physical Sciences Director of Research at the ESRF.

Shanghai shows its shiny synchrotron facility to protein scientists

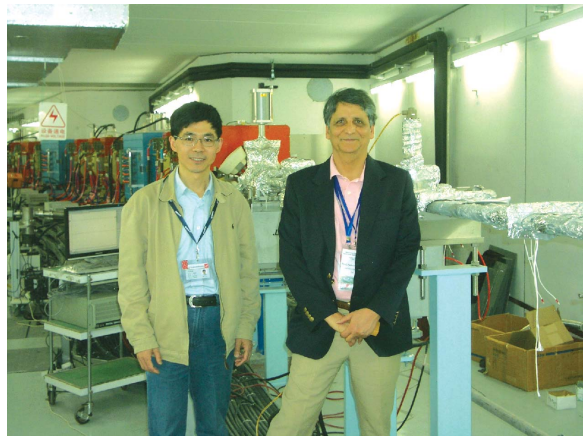
Early November saw a series of activities in Shanghai starting with the International Symposium on Synchrotron Radiation and Biology, which was catalyesd by UK–China partners with participation from colleagues from the University of Georgia and the Photon Factory. This symposium was followed by the 6th International Conference of Protein Science (TICPS), which is a Chinese meeting, usually held in Beijing, but held this year in Shanghai for the first time. Some 300 delegates attended the TICPS meeting of which 50 were international delegates.

The highlight of the meeting was a visit to the Shanghai Synchrotron Radiation Facility (SSRF), which is almost fully assembled in a stunningly attractive building on the Science Park in the PuDong district of Shanghai. The linac and booster ring are commissioned with successful extraction of beam achieved in late October. The storage-ring installation is almost complete. The commissioning of the storage ring is expected to start in January 2008 and user access is planned to begin in late 2008. The initial configuration will have seven beamlines, distributed equally across disciplines including a 6 mm minimum-gap in-vacuum undulator (period length 25 mm, $N = 80$, $K \simeq 2$) for protein crystallographic studies.

SSRF is an advanced third-generation synchrotron radiation facility with storage-ring energy of 3.5 GeV and a circumference of 432 m. The storage ring is a 20-cell design with four straight sections of 12 m and 16 straight sections of 6.5 m. Many of the straight sections

Delegates at the 6th TICPS conference in Shanghai.

The SSRF building housing the accelerator complex.



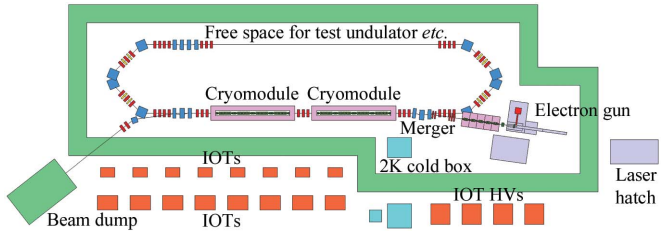
Samar Hasnain standing in the storage-ring tunnel with Jianhua He, Head of the Synchrotron Radiation Experiment Division. The long straight section is visible.

are scheduled to have two insertion devices, thus increasing the potential insertion-device beamlines to be close to 30. The storage ring will have a full energy injection from a 3.5 GeV booster synchrotron. The energy of the SSRF is higher than other recently commissioned third-generation sources including the Canadian Light Source, Diamond and Soleil and thus will provide unprecedented opportunities at the cutting edge of technology to the rapidly growing science community of China.

In addition to the storage-ring facility, the FEL project has also started. It will be accomplished in two phases: the first phase will be a soft X-ray test facility while the final phase will be a hard X-ray FEL users facility. The SXFEL will be a 10 nm cascaded-gain FEL high-harmonic-generation test facility whose construction is scheduled to start in January 2009. The FEL experiments on this test facility are scheduled for early 2012.

Photon Factory plans ERL activity

The Photon Factory, KEK, has proposed development of a 5 GeV Energy Recovery Linac (ERL) as a next-generation light source. A gradual development program is proposed starting with a compact ERL with an energy in the 60–200 MeV range. The work on the compact ERL is expected to start in 2008 and to contribute to the global research and development effort for ERL.



Compact ERL to be constructed at the Photon Factory.

NSLS-II gets a 'green light'

The National Synchrotron Light Source II (NSLS-II) project was bumped up from a 'far-term' to 'near-term' priority in the US Department of Energy (DOE) Office of Science's revision of its 2003 publication 'Facilities for the Future of Science: A Twenty-Year Outlook'. In 2003, NSLS-II was given a perfect score in the 'scientific

merit' criterion but placed among the 'far-term priorities' based on a lower score on the 'readiness-to-proceed' criterion. The NSLS-II project team submitted a revised proposal in 2004; the proposal was peer-reviewed by scientific leaders in the field worldwide, and a panel of accelerator experts reviewed its technical design. As a result of very positive reviews, the DOE decided to accelerate the project to a near-term priority. Mission Need for NSLS-II was approved in August 2005. In late October 2007, the Department has approved Critical Decision (CD-1) for the NSLS-II project at the Brookhaven National Laboratory. Project Engineering and Design will be initiated in FY 2007, with construction to begin in FY 2009, and commissioning of the facility to take place in FY 2014.

NSLS-II will replace both of the light sources at Brookhaven. The new 3 GeV 791.6 m-circumference ring will cover the needs of both the VUV/IR and X-ray communities currently catered for by two separate storage rings. NSLS-II is designed to deliver photons with average spectral brightness in the 2 keV to 10 keV energy range exceeding 10^{21} photons mm^{-2} mrad^{-2} s^{-1} (0.1% bandwidth)$^{-1}$. This cutting-edge performance requires the storage ring to support a very high current electron beam (I = 500 mA) with sub-nm rad horizontal emittance (down to 0.5 nm rad) and diffraction-limited vertical emittance at a wavelength of 1 Å (vertical emittance of 8 pm rad). The electron beam will be stable in its position (<10% of its size), angle (<10% of its divergence), dimensions (<10%) and intensity (±0.5% variation). The optimized storage-ring lattice consists of 30 DBA cells, with straight sections alternating in length between 6.6 m and 8.6 m, with low and high values of horizontal beta functions, respectively.

Patricia Dehmer becomes Director for Science Programs at US Office of Science

Dr Patricia Dehmer, well known in the synchrotron community, was appointed from a large and strong pool of applicants as Deputy Director for Science Programs at the Office of Science, US Department of Energy. The Office of Science also announced a new structure, which will now have three Deputy Directors: Deputy for Science Programs (serving as the Acting Director of the Office of Science whenever that position is vacant during changes in administration or leadership), Deputy for Resource Management, and Deputy for Operations, reporting to the Director, a political appointee confirmed by the US Senate. The Deputy Director for Science Programs will provide scientific and management oversight for the six program offices (basic energy sciences, biological and environmental sciences, fusion energy science, advanced scientific computing research, high-energy physics, and nuclear physics) by ensuring program activities are strategically conceived and executed; formulate and defend the Office of Science budget request; establish policies, plans and procedures related to the management of the program offices; ensure the research portfolio is integrated across the program offices with other DOE program offices and other Federal agencies; and represent the organization and make commitments for the department in discussions and meetings with high-level government and private sector officials.

Dr Dehmer has extensive experience in research and in administration. She held the position of Senior Scientist at Argonne National Laboratory, working in the field of atomic, molecular and optical physics. She was recruited in 1995 to the position of Associate Director for Basic Energy Sciences in the Office of Science. In her 12-year tenure in that position, the growth in breadth and sweep of her program has been remarkable, with the program budget rising from approximately USD 600M in FY 1994 to the President's request of USD 1.5B in FY 2008. During the period that she led the Basic Energy Sciences, the world's most powerful spallation neutron source was conceived and built. She has shepherded the construction of the Linac Coherent Light Source at the Stanford Linear Accelerator Center and the National Synchrotron Light Source II at Brookhaven National Laboratory.

We would like to join in congratulating Dr Dehmer to this new position within the Office of Science.

Persis Drell appointed as SLAC Director

Persis S. Drell has been named Director of the Stanford Linear Accelerator Center (SLAC), effective immediately, Stanford University President John Hennessy announced. Drell, a Professor of Physics at SLAC, has held a series of senior positions at the laboratory since 2002 and has served as Acting Director since September.

'The provost and I are extremely pleased that, after some considerable effort, we have prevailed upon Persis Drell to accept this position', Hennessy said. 'We firmly believe that there is no more qualified person to take the helm of SLAC. Persis is a renowned researcher who knows the history and workings of the lab like few others do.'

Persis Drell.

Drell, 51, becomes the fourth director of SLAC since its inception 45 years ago. DOE Under Secretary for Science, Dr Raymond L. Orbach, said "I congratulate Stanford University for making this worthy selection and thank Dr Drell for agreeing to accept this appointment. She is uniquely qualified to lead SLAC as it embarks on one of the most exciting and challenging transitions ever undertaken by a DOE National Laboratory, a transition that will see many changes in scientific focus and capabilities opening important new scientific opportunities at the laboratory. During Dr Drell's tenure as Acting Director, we have been impressed by both her vision of 'one lab' and her committed efforts to lead SLAC to achieve that vision. Now we look forward to working with Persis Drell and Stanford University as SLAC evolves to continue as a world leader in new areas of science and accelerator technology."

"SLAC was built with a single purpose: to probe the fundamental structure of matter with the world's largest electron accelerator", Drell said. "Fields of science and the laboratory programs have advanced remarkably in 45 years, but the principles of scientific excellence have not changed. The linac is now being retooled to be the injector for the world's first X-ray free-electron laser: the Linac Coherent Light Source (LCLS). The science delivered by LCLS, along with programs in particle physics, photon science and particle astrophysics and cosmology will ensure frontier science from the laboratory for decades to come. My goal as director is to position the laboratory to make a smooth transition to these exciting future scientific programs and continue the tradition of outstanding scientific achievement at the lab."