

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).

Experts gather at SLS to discuss radiation damage to biological crystalline samples

The Fifth International Workshop on Radiation Damage to Biological Crystalline Samples (RD5) took place at the Paul Scherrer Institute (Swiss Light Source, SLS), Villingen, Switzerland, on 3–5 March 2008. More than 60 delegates from Europe, USA, Canada, Australia and Japan heard a wide range of talks covering many aspects of the effects of radiation on protein crystals and other biological samples. Session topics included the basic physics and chemistry of radiation damage processes, strategies to mitigate, correct for and exploit radiation damage effects, and the use of complementary spectroscopic methods to monitor specific damage to metal centres. The subject area of this year's workshop was extended to include radiation damage effects in electron microscopy and electron crystallography.

Delegates agreed that significant progress had been made in our understanding of radiation damage since the first meeting (RD1) in 1999 (*e.g.* the limiting dose for protein crystallography was now experimentally determined) and that radiation damage was rapidly becoming an issue of mainstream interest to the structural biology community. It was generally felt that the implementation of suitable software on synchrotron radiation beamlines to give a more accurate estimate of absorbed dose would be useful while current 'dose modes' based only on X-ray flux could be misleading. The twin approaches to minimizing radiation damage in crystallography by both minimizing the absorbed dose along with the possible use of scavengers to limit secondary radiation damage effects provoked discussion. It was apparent that the general crystallographic community was not fully aware of factors that might increase radiation damage; for example, metal salts in a crystallization solution will markedly increase the absorbed dose for the crystal.

In contrast, it was noted that radiation damage had the potential to be a useful tool, as in the emerging method of radiation-damage-induced phasing, and that complementary methods such as UV-visible absorption, fluorescence lifetime, Raman and X-ray absorption spectroscopies were highly desirable in order to monitor the effects of radiation damage on crystals.

Delegates also enjoyed a tour of the SLS and its macromolecular crystallography beamlines as well as an excellent conference dinner at Castle Hapsburg, where they were entertained by a lively retelling of the early legends and history of the Hapsburg Dynasty.



Delegates at RD5 at the SLS.

Daresbury's Molecular Biophysics group moves to Liverpool

The Molecular Biophysics group of Daresbury (<http://www.biophysics.dl.ac.uk>) joined the School of Biological Sciences at the University of Liverpool from 1 April 2008. The university has recently set up a major NMR facility for structural biology (<http://www.liv.ac.uk/bio/research/nmr/>), which is headed by Professor Lu-Yun Lian, who recently moved from the University of Manchester. The close proximity of Liverpool to Daresbury should help in maintaining continued links with the laboratory, where the group was founded in 1989.



From left: Gunter Grossmann, Michael Hough, Samar Hasnain, Svetlana Antonyuk and Richard Strange signing their contracts with the University of Liverpool. Gunter and Richard have been appointed as Lecturer and Senior Lecturer at the University, respectively.

Diamond chooses its new science directors

Diamond's current science directors, Dame Louise Johnson and Colin Norris, are to retire in the near future. Professor David Stuart has taken up the helm as the Director of Life Science while retaining his MRC Chair at Oxford for part of the time. For the physical science, Trevor Rayment takes up the position from 1 July 2008. The new team, like the previous science directors, are well known in the synchrotron world, and in their fields are accomplished scientists with tremendous records. Both started their synchrotron radiation career with the Synchrotron Radiation Source at Daresbury and have continued to play a central role with the development of synchrotron radiation including the ESRF and more recently Diamond. We wish them luck in taking Diamond forward into the next phase of science exploitation and success.



Dave Stuart (left) and Trevor Rayment (right) take up the Life Sciences and Physical Sciences Directorship, respectively.

current events

LCLS announces summer school for ultrafast X-ray science

The Linac Coherent Light Source (LCLS) announces a summer school for potential users. The Ultrafast X-ray Summer School, which runs on 17–20 June, will hinge upon participant-oriented discussion and interaction focused on the state-of-the-art science that the LCLS will set in motion.

X-ray free-electron lasers, of which the LCLS's is the first to come on-line, have properties traditionally utilized in the laser community, but because it generates X-rays it presents new opportunities. Techniques used in laser science and synchrotron X-ray science do not typically overlap, but the success of the LCLS will depend on the merging of these fields and the skill sets of each. LCLS X-rays are expected to provide instantaneous images of atomic and molecular structures, which require a camera with subnanometer spatial resolution and a shutter speed of less than a trillionth of a second. This will generate unique opportunities for capturing single bimolecular structures and collecting real-time movies of chemical, physical and biological transformations.

Interested applicants can find registration and program information at the workshop website (<http://www-conf.slac.stanford.edu/uxss/2008/>).

A synchrotron pioneer – Robert Pettifer

Readers of the *Journal of Synchrotron Radiation* will learn with great sadness of the recent death of Robert Pettifer, a pioneer of synchrotron science and XAFS.

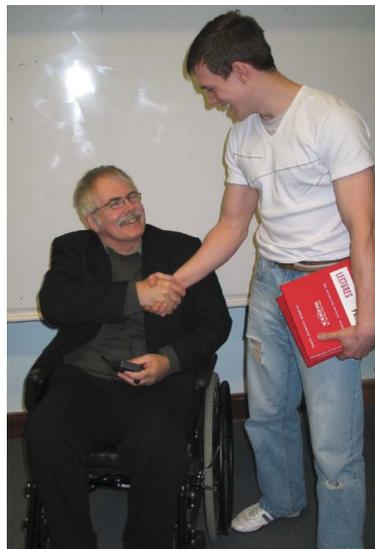
His scientific legacy is exceptionally wide-ranging and is characterized by the application of new techniques to his interests in both physical and life sciences. While his work covers topics as diverse as protein crystallography and magnetostriction, he is most widely recognized for his contribution to the experimental and theoretical development of extended X-ray absorption fine structure (EXAFS), which allows the atomic arrangement of matter to be unravelled by X-ray spectroscopy. The author himself learned a great deal from Robert about EXAFS in the late 1970s when he was the only true expert of the technique in the UK.

In the early days of synchrotron radiation, Robert developed instrumentation and techniques for X-ray spectroscopy at the NINA synchrotron radiation facility at Daresbury, and later at the SRS, where he worked on a diversity of projects including the optical luminescence following X-ray absorption and, more recently, the Borrmann effect.

Professor Malcolm Cooper, Head of Warwick's Physics Department, noted, "Robert came to the Department as Peter McMillan's research student in 1972 and remained here pursuing research in X-ray absorption spectroscopies thereafter. He became a Lecturer in 1978 and a Reader in 2002, retiring from ill health in January 2007. He will be remembered as one of the best physicists in the department; he had an interest and passion for the subject to which few of us could aspire and he was utterly determined to do only exciting and challenging science. This he achieved throughout his career in pioneering and developing EXAFS; there was no 'stamp collecting' of data! He is greatly missed."

Robert was a tremendous teacher of physics and took pride in being able to explain the most complex physics to the layperson, gaining many friends as a result. He will be remembered fondly by those of us who had the privilege of working with him, as a genuine enthusiast of science.

Robert had another passion, the game of cricket. He played for the Warwick University Staff Cricket Club from 1976 until 2004, a



Robert is congratulating a student on his excellent performance on the occasion of his early retirement in 2007. His enthusiasm for engaging with students is clear in the photograph.

sporting career of 28 years. In 1997, Robert became the captain of the Sunday team from which he stepped down during the 2004 season. He was the Player of the Year in 1992 and was among the select few all-rounders over a 30 year period of the club (1976–2007), when he had 6830 runs and 223 wickets to his credit.

Don Tole is remembered

Don Tole, who contributed so much to the early days of high-precision synchrotron radiation instrumentation, passed away on 2 March 2008. Don was born on 1 September 1921 in Newport Pagnall, England. He grew up in the town where his father worked as chief designer for Lagonda (now Aston Martin). As expected, Don followed in his father's footsteps and also gained employment as a designer for Aston Martin. The great engineering story began!

His engineering career took him into his first foray with optical instruments with a spell at Pullin Limited as a designer. The company made optical lenses and optical equipment in a base in High Wycombe. A further move to Specto Limited in Windsor followed, with Don designing cine movie cameras. It was while working at Specto that Don started Bird & Tole in 1948 with partner Fred Bird. Very sadly, Fred unexpectedly died from a heart attack some ten years later.

Bird & Tole initially designed and built photographic enlargers; however, diversification soon saw the talented team involved in work at the Royal Aircraft Establishment.

Don's first interaction with synchrotron radiation instrumentation was with Dr John West at NINA synchrotron radiation facility (SRF) at Daresbury in 1971. John West said, 'Don had a unique ability to translate our ideas into engineering reality, and a flair for elegant design, no mechanism being either over- or under-constrained. He always rose to the sometimes almost impossible requirements we presented, and at a price we could afford. He never failed to meet our requirements and often exceeded them.' He added, "It is notable that due to the excellence of Don's designs many of his instruments are still in use today around the world, and the first one, after finishing its tour of duty on the NINA SRF, is currently use at the ASTRID storage ring at Aarhus in Denmark where I still continue with atomic



Don Tole.

physics research.” Paul Murray, a design engineer himself and the founder of Instrument Design Technology Ltd who had interacted with Don Tole for over 25 years starting with early work at Daresbury, then with the Swiss-Norwegian beamline at the ESRF, said succinctly that ‘Don was a mechanical genius and a real gentleman, something to aspire to’.

Bill Peatman from BESSY also had very close cooperation with Don Tole, who designed and built nine monochromators, many of which are still in operation. Bill Peatman said, “Those of us who had the opportunity to develop a monochromator with Don enjoyed the one-on-one engagement that Don brought to his work. Each of us was granted an almost frightening degree of respect and focus with his goal of ascertaining what it was that we actually wanted. Often we weren’t so certain of this ourselves, mixing sometimes arbitrary wishes with basic requirements. Don’s strengths lay in sorting them out and finding a technical solution that was efficient, economical and, very often, elegant.” Howard Padmore from ALS, Berkeley, had substantial interaction with Don starting in 1981 with the start of the world’s first multi-GeV dedicated Synchrotron Radiation Source (SRS) at Daresbury. He commented, ‘I remember phoning Don many times to discuss something we were having a problem with, and usually, after telling him symptoms and what we had done, there would be a long wait, and then he would patiently explain why we had violated some sacred principle of operation or design; he was the high priest of mechanics talking to his unwashed devotees it seemed.’ He also recalled, “The design I really remember was not one of the projects I was associated with. On the next beamline to mine in the early days, Phil Woodruff, Dave King and others were waiting for the SEXAFS mono to arrive. This combined a hard and soft X-ray mono in one, with the many interchangeable crystals, gratings and mirrors. J.-C. Campuzano, Rob Jones and Alastair MacDowell were involved with commissioning at various points, and on one day I remember the mono installation, and looking in the mono for the first time. It was just unbelievable! It was like the most complicated clock you could imagine, just much much bigger. Don’s designs weren’t only just superbly functional, they were really works of art. All the shiny cross bars, tensor springs, Be-Cu clips and springs. The mono worked fine

as usual, but we weren’t too good at thermal analysis in those days, and I remember Alastair MacDowell melting the InSb crystals. We then decided that water-cooling would be a good idea! Don was a craftsman; his hobby was making clocks, and you could see the influence in every precision part of each mono. He was also a gentleman of the old school, a pleasure to deal with and a wonderful character to pass some time with.”

Ada Yonath wins the L’OREAL-UNESCO award for Women in Science

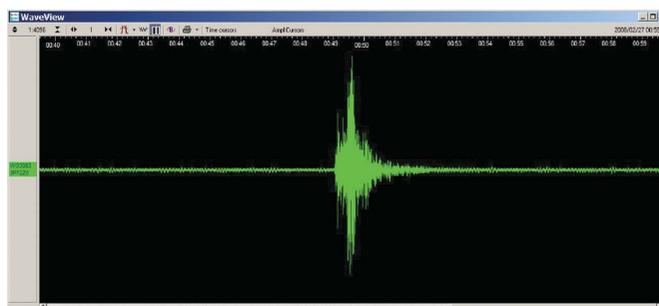
Ada Yonath from the Weizmann Institute in Israel has been honoured as the 2008 Laureate for Europe. She received the prize for her work involving structural studies of the ribosome protein-synthesizing system and the mode of action of antibiotics. The L’OREAL-UNESCO award for Women in Science was presented to Professor Ada Yonath on 6 March 2008, in a ceremony at the UNESCO headquarters in Paris. Each year the L’OREAL-UNESCO awards for Women in Science recognize five laureates, one from each of the five continents, who have contributed to the advancement of science. The 2008 awards were presented for the area of life sciences. The Laureates receive prizes of USD 100000 each. The aim of the award is to encourage the participation of women in scientific research. The Laureates serve as role models for future generations, encouraging young women around the world to follow in their footsteps.



Ada Yonath.

Diamond feels the earthquake

The Diamond beam sensed the earthquake that took place on 27 February 2008 in the UK. The main 10 s quake, which struck at 0056 GMT at a depth of 15.4 km (9.6 miles), was the biggest recorded example since one with a magnitude of 5.4 struck north Wales in 1984. The British Geological Survey (BGS) said the epicentre of the 5.2 magnitude quake was near Market Rasen, Lincolnshire, some 150 miles away from Diamond. Dr Brian Baptie, of the BGS, said, ‘An earthquake of this size, of magnitude five or thereabouts, will occur roughly every 10 to 20 years in the UK. So we can get these kinds of moderate to significant earthquakes of this size but they’re relatively rare.’



Diamond senses the earthquake.