

synchrotron to storage ring. The final day of the Synchrotron School comprised research seminars from leading experimenters from throughout the UK SR community and concluded a series which had interspersed the course programme throughout the two weeks. Topics ranged from metal alloys to protein structures, from mineralogy to MBE microfabrication, from polymer chemistry to chemical crystallography and from Compact Storage Rings to the Future of Synchrotron Radiation.

All told, the fourth Synchrotron Radiation School

attracted between 40 and 50 students from the UK, the EU and from industry. Project leaders of most of the major SR teams currently exploiting the SRS - both from university and from Daresbury Laboratory - contributed to the lectures, tutorials and practicals. SRSIV was sponsored by EPSRC, CLRC and Oxford Instruments. It was organised by the University of Wales, Aberystwyth who also provided secretarial and administrative support.

Tony Ryan and Neville Greaves

6th Annual CCP13/NCD Workshop

The sixth annual workshop for the collaborative computational project for fibre diffraction (CCP13) and non-crystalline diffraction (NCD) was held at Daresbury on the 7th-8th of May. This year's meeting had a revised format, attracting 54 participants and retaining its high standard of presentations. Once again, the workshop covered the following major topics: synthetic polymers, hardware sources and detectors, software developments and biological systems. The talks were complemented with a poster session.

After the Chairman's introduction, Ben Hsiao (DuPont), the first keynote speaker, opened the meeting by describing the crystallisation of PET and a demonstration of the subsequent data analysis using the package XDPP. The session continued with Nick Terrill (UMIST) describing his latest work on the various structural intermediates during polymer extrusion, as studied by on-line SAXS/WAXS. Gareth Jones (Daresbury) then presented recent results on protein folding, using stopped flow processes, to measure the multi-wavelength CD, time resolved SAXS and time resolved fluorescence anisotropy, on millisecond time scales. Magdalena Ivanova (Florida State) concluded the session with a presentation on 2D background subtraction techniques on Filamentous Bacteriophage M13 patterns.

After lunch, Colin Nave (Daresbury) outlined a scenario of three possible station designs, for NCD, on Diamond by matching the source to the specimen. Richard Denny (Daresbury & Imperial College) then described the recent updates to the CCP13 programs and gave a live demonstration of the new graphical

user interfaces, XFIT, for 1D peak fitting and XFIX for 2D image manipulation. Dick Hilmer (dCode Software Tools) also presented an on-line demonstration of a software package for developing software graphically, using a combination of data flow and structure diagrams. Simon Dobson rounded off the day with an overview of the possibilities for the World Wide Web and the use of distributed objects, JAVA and CORBA. The day was concluded with a poster session followed by the conference dinner at the Daresbury Park Hotel.

The second day began with Sanjay Rastogi (Eindhoven) describing his work on enhanced chain mobility of UHMW-PE at low pressures and temperatures and its use for processing and welding. Norbert Striebeck (Hamburg) discussed the use of PV-WAVE in the analysis of image plate SAXS patterns of elongated fibres of thermoplastic elastomers. Michael Firenczi (NIMR) outlined his work on the molecular movement involved in muscle contraction using UV-light to photolyse caged-ATP and temperature jump to produce a tension change. Tony Ryan (UMIST) presented work on the crystallisation of cyclic ethers which gave crystals with an integral number of folds. Rob Lewis (Daresbury) explained the advantages of using SR for medical imaging compared to conventional radiography and went on to describe recent results on simultaneous X-ray diffraction and imaging. Ruth Cameron (Cambridge) then concluded the morning session by describing the importance of the biodegradable polymer polyglycolic acid in biomedical applications and the necessity of understanding its morphology.

After lunch, our final keynote speaker, Don Caspar

(Florida State), described a brief history of the development of the Tobacco Mosaic Virus structure which included cryoelectron microscopy, 3D image reconstruction and fibre diffraction using SR. Pierre Rizkallah (Daresbury) described his current work on the tetrameric/dimeric structure of Lectins and their importance in HIV research as anti-viral agents. Peter Williams (Kings College) gave the final talk by describing his work on the structure of PLB which has been identified as a convoluted bilayer in the form of a tetrapod, joined together as a diamond cubic lattice.

John Squire concluded the meeting by awarding the

prizes for the best poster presentations (as judged by D.Caspar, S.Rastogi and B.Hsiao) to Patrick Fairclough (UMIST) and Liam Welsh (Cambridge). A special vote of thanks was made to Val Matthews and Diane Travis for all the hard work and organisation that went into making the whole meeting run smoothly.

A fuller account of the talks/posters presented at this workshop may be read later in this volume or viewed on the World Wide Web at:

<http://www.dl.ac.uk/SRS/CCP13/workshop97>.

Geoff Mant

Third Fibre Diffraction Workshop Kentucky, USA, 5-8 October 1997

A group of fibre diffractionists gathered at Jenny Wiley State Park, Kentucky, USA, during 5-8 October 1997, for the "Third Fiber Diffraction Workshop." This was the third in a series of highly successful workshops, the first being held in Tennessee in 1989 and the second in Indiana in 1993. The emphasis of the workshops has been on methodology, since this is often not emphasised at other crystallographic and specialist meetings. In addition to the U.S. participants, there was a rather large turnout from the U.K., as well as one participant (Consiglia Tedesco) from Italy. The workshop was sponsored, as were the previous ones, by the du Pont Company.

Highlights of the workshop were descriptions of the uses of neutrons to study water structure around DNA (Trevor Forsyth) and bacteriophage structure (Magdalena Ivanova), and X-ray synchrotron radiation for microfocus and time-resolved studies (Watson Fuller and A. Mahendrasingam); as well as a description of the instrumentation and facilities for fibre diffraction at the SRS (Elizabeth Towns-Andrews). Gerald Stubbs used examples from virus structures determined by fibre diffraction to address the question: What are the limits of fibre diffraction analysis? He concluded that recent successes have not yet defined the limits of molecular replacement approaches in fibre diffraction, and that continued vigilance is needed in assessing the accuracy of structural results.

Hong Wang and Richard Denny updated us on software systems for processing fibre diffraction data. The various kinds and degrees of disorder present in fibre specimens, ways of modelling them, and their effects on diffraction data and structure determination were discussed by Rick Millane and Jon Eads.

The structures of a variety of synthetic polymers were described, including fluoropolymers (Soo-Young Park), polyamides (Kenn Gardner), and copolyester-amides (JaeDong Cho), as well as studies of variations in orientation and crystallinity of PET and LDPE both across container walls and during drawing.

The wide applicability of fibre diffraction techniques was illustrated by descriptions of various aspects of applications to viruses, bacteriophages, nucleic acids (Akella Radha), actin (Rebecca Page), amyloid (Mark Bartlam), polysaccharides (Victoria Finkenstadt), deoxy-hemoglobin (Xiang-Qi Mu), liquid crystals (George Mehl), and various synthetic polymer structures.

The meeting concluded with unanimous agreement to hold a fourth workshop, probably in the year 2000.

Rick Millane