

highlight of the meeting, a trip across Lake Ontario from Toronto to Niagara, in a very odd way, helped with this problem. The boat was laid out with enormous quantities of exotic food and everybody duly filled themselves up. There then followed a crossing that was by anybody's standards horrendously rough. Most people on the boat were very ill and unfortunately three people were hospitalised after the journey. Some delegates felt well enough after getting off the boat to be amused by the name of the carrier (see photograph).

The idea was that after the crossing, delegates were to get on another boat (The Maid of the Mist) which was to give a unique approach to the base of Niagara Falls. Enthusiasm for this seemed to be low however,

and this part of the outing was cancelled. After a quick glimpse of the falls, everybody was bundled onto a coach and delivered straight back to Toronto where the conference dinner awaited them.

Whilst the outing did not quite work out as the organisers planned, most delegates (probably with at least three exceptions) were able to look back on the trip with some amusement, although tinged with concern for the more seriously affected. The meeting was an enormous success scientifically and the main entertainment event ensured that it will never be forgotten!

Trevor Forsyth

The Fourth Synchrotron Radiation School

UMIST - Daresbury Laboratory - University of Wales

5-17 January 1997

A fresh winter's day in Manchester was the starting point for the fourth Synchrotron Radiation School this January. The only problem about repeating things is that you have to reconcile trying something new with undoing something that has already worked. The timing, location, organisation and expanded programme of the Synchrotron Radiation School constituted a new departure. It proved that students will come to a northern city in the UK in the first week of a new year and work solidly from 9 in the morning often until 9 at night. The reward of course is that one week later they can work even longer hours at the Synchrotron Radiation Source at Daresbury Laboratory coping with practicals and data analysis!

Where the previous three Synchrotron Radiation Schools have been held at Keele University, the University of Manchester Institute of Science and Technology hosted the first week of lectures and tutorials of SRSIV. These were given in the Manchester Materials Science Centre under the watchful eye of Tony Ryan (who also directed students to the bright lights of Manchester after hours). Once Storage Rings, Crystalline Symmetry and Disorder had been set aside, students were introduced to Diffraction Theory including Magnetic Diffraction, the basis of Small Angle Scattering and Fibre Diffraction, the theory of XAFS and of Photoemission. The course programme then moved

on to Synchrotron Radiation X-ray and UV optics (crystals, mirrors and gratings) and detectors (solid state, wire and also electron varieties). This comprehensive background of theory and instrumentation provided the natural lead-in to the formal experimental arrangements now found at most SR centres. Experiments covered X-ray Diffraction both from powders, protein crystals and microcrystals; X-ray Scattering from polymers and bio-fibres; XAFS from materials and SEXAFS from single crystal surfaces; and last but not least gas phase photoabsorption and photoemission spectroscopy.

By this time the School had moved on to Daresbury Laboratory via a short tour of the English Peak District. This included appropriately enough a visit to Styal Mill - one of the best preserved examples of intensive 19th century factory life from the height of the Industrial Revolution - surely a foretaste of the synchrotron radiation experience to come! Practical sessions at the SRS were brought together by Bob Bilborrow and mirrored the principal diffraction, scattering and spectroscopy experiments featured previously in the lecture programme. Individual experiments were designed to introduce students to experimental procedure as well as to data handling. Following the example of a previous SR school, first thing each morning the SRS machine crew demonstrated the start up of the source from linac, to

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 Stribeck (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