

I was kindly invited by Randy and Ben Hsiao to talk in the *Polymers II: In Situ Scattering/Diffraction Characterization of Polymers* session about the work we have been doing at Daresbury on 16.1 with the extruder and to talk a little about the available software in the CCP13 suite. Due to the high number of powder diffraction users I thought it prudent if I also mentioned the CCP14 powder diffraction suite as well. The session I was involved with covered mainly extrusion and simultaneous studies of polymer crystallisation. We heard from Dr Mahendrasingam from Keele on their DL synchrotron studies as well as many U.S. and international contributors in the field. The full program can be found at <http://www.dxcicdd.com/99/default.htm> The discussion focused heavily on the use of synchrotron radiation to study polymer phase transitions before and during crystallisation

with work presented by Prof. J.M. Schultz, University of Delaware, Prof. B.S. Hsiao and myself to name a few.

Later that evening I looked up an old friend from my undergraduate days. He used to live in Birmingham, but moved to Denver about 4 years ago. He works for Bede and has always held a fascination for quantum mechanics; he is currently doing a great impression of the first spherical harmonic (physics joke) due to the rich food. We spent the evening of the conference dinner reminiscing about old times as the sun set over the mountains and we were bathed in the warm orange glow. It's hard work this. I will definitely be going back.

Patrick Fairclough  
University of Sheffield

### 8th Annual CCP13 Workshop, 15th –17th June 1999, St Andrews

This year saw a change in venue for the workshop which moved away from Daresbury to St Andrews in celebration of the Principal, Struther Arnott's 65th birthday and in honour of his contribution to fibre diffraction. John Squire who was retiring as chairman of CCP13, welcomed Trevor Forsyth as the new chairman and invited Prof. Arnott to begin the presentations with a plenary lecture entitled "Lessons for today and tomorrow from yesterday".

In this entertaining and informative talk, Prof. Arnott took us from a lesson in Scottish English to the more serious theme of the confidence in structures derived from fibre diffraction data. For example, collagen solved by crystallography shows no significant differences from the fibre work done fifteen years previously and oligonucleotide structures confirm the earlier results of fibre diffraction. The rest of the afternoon included talks on microfocus fibre diffraction experiments from Manfred Burghammer (ESRF) and a discussion of the opportunities for fibre diffraction on the new station 14.1 at the SRS, given by Liz Duke (Daresbury). The final talk of the day was given by Prof. Ian Ward (Leeds), who spoke about his work on elucidating the processes of fibre drawing and spinning, using data from both infra-red spectroscopy and X-ray diffraction. The day concluded with part one of the joint CCP13/NCD business meeting in which John Squire, in his role as editor of the CCP13 newsletter, *Fibre Diffraction*

*Review*, outlined the intention to scrutinize contributed articles more rigorously, using two referees per article. Greg Diakun updated the audience on developments in the NCD facility group and the requirements for microfocus experiments at Daresbury were discussed.

Richard Heenan (RAL) stepped into the breach to replace Gerald Stubbs (Vanderbilt) who had unfortunately been unable to leave the US due to the storms raging across the country. Richard described his procedures for modelling scattering from surfactant interfaces. Tim Wess (Stirling) described his work on uncovering the mechanism whereby elasticity in fibrillin occurs and was followed by Joseph Orgel (Stirling) who discussed the phasing of the meridional reflections from collagen. After coffee, Watson Fuller (Keele) described, in a complementary talk to Prof. Ward's, the small-angle scattering data collection techniques that the Keele group had developed to follow the processes of drawing and crystallisation in polymers. Anatoly Snigirev (ESRF) reported on developments in microfocus technology, particularly Fresnel optics and refractive optics, and their applications. Andy Hammersley (ESRF) discussed various user interface types employed in programs and their suitability in various applications. He then described the new "Files Series" interface in Fit2D, suitable for processing multiple data files.

Alan Windle (Cambridge) gave an account of work in his group on random co-polymers of PET and PEN. The slower crystallisation of these systems compared to the parent homopolymers made it easier to capture the characteristics of the crystallisation process. Adrian Rennie (King's College) described X-ray and neutron scattering experiments used to study phase transitions in the structure of dispersions of thin plate like colloidal particles. Mark Shotton (Daresbury and Imperial) giving his first account of his work as the CCP13 research assistant, described how the BSL/XOTOKO file format had been made more flexible, as well as other changes to the CCP13 suite. Andrew Miller (Stirling) rounded off the day's talks by highlighting the increased effectiveness of X-ray studies on biological fibres by the developments in synchrotron radiation. He went on to discuss aspects of the analysis of collagen diffraction patterns, in particular the background which appears to have a strong contribution from the unsampled molecular transform. On a very topical note, Andrew reminded the audience of work carried out in the 1960s which brought to light rearrangements of membrane lipids when cells keratinise and its bearing on recent work suggesting that X-ray diffraction patterns from keratin can be used to assess the propensity of patients to contract breast cancer.

Part two of the CCP13/NCD business meeting concerned the composition of the CCP13 Steering Committee. Tim Wess was re-elected and three others, Patrick Fairclough, Steve King and David Blundell were co-opted on to the committee. A series of short poster presentations followed: Sue Slawson (Daresbury) on the *DARTS* service, Colin Crook (Sheffield) on adhesives, Corinne Salou (Sheffield) on reflectivity of copolymer films, Hind Al-Khayat (Imperial) on insect flight muscle and Carlo Knupp (Imperial) on combined electron microscopy and X-ray diffraction of dog fish egg case.

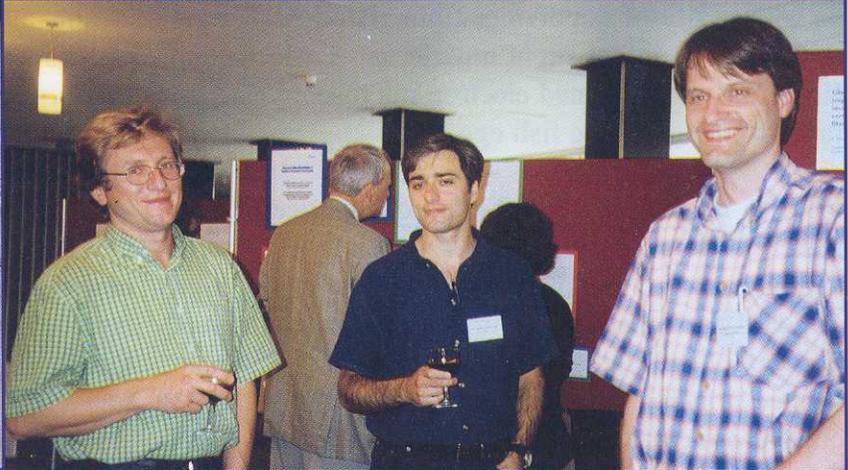
Prior to the bus leaving for the conference dinner, there was time for the poster session and the software demonstration. The dinner, which was of a very high standard, took place in the imposing surroundings of Lower College Hall, with portraits of the present and former principals of St Andrews looking on. The present principal was also there in person and Prof. Arnott gave an entertaining impromptu after dinner speech having been thanked for his hospitality by Trevor Forsyth. Prof. Arnott then presented the cheques to the winners of the poster competition.

These were Carlo Knupp (Imperial) in the biology category and Erno Klop (Akzo Nobel) in the synthetic polymer category.

Thursday morning began with an account by Tim Lodge (Minnesota) on the effects of solvent on block copolymers and their structure in solution. A systematic study of styrene-isoprene diblock copolymers dissolved in a series of di-alkyl phthalates was undertaken, using SAXS to reveal the symmetry of the structures and SANS to determine the selectivity of the solvent and its distribution within the structure. These experiments show that the effect of neutral solvent in stabilizing disordered states, suppresses the order-disorder transition more than has been predicted by theory. Tony Ryan (Sheffield) described experiments to elucidate reaction-induced phase separation in PPE. Peter Timmins (ILL) discussed the application of contrast variation neutron scattering experiments to troponin, one of the proteins making up the thin filament in muscle. John Squire continued the muscle theme, describing various approaches to finding the binding states of myosin to actin using combinations of electron microscopy, time-resolved SAXS and structures from single crystal studies. Athene Donald (Cambridge) ended the talks with a discussion of the properties of starch. Both SAXS and SANS were used to provide complementary information: SAXS to follow real-time processes and SANS to show the distribution of solvent.

Trevor Forsyth made his concluding remarks as the new chairman of CCP13, first stressing that the CCP13/NCD workshop was not just about fibre diffraction but encompassed a wide range of experimental techniques. He wished Professor Arnott a happy birthday and thanked him and the staff of St Andrews for their hospitality. Trevor also thanked John Squire for getting CCP13 off to such a good start and for his willingness to continue his involvement on the CCP13 steering committee and as editor of the *Fibre Diffraction Review*, the CCP13 newsletter. Trevor reminded the audience that the newsletter is open to articles from all and that a more rigorous refereeing procedure was to be put in place. Finally, Trevor thanked Alison Mutch and Sue Waller for all their work in making the workshop run smoothly and Mark Shotton presented them with bouquets.

Richard Denny  
Daresbury Laboratory



**Photographs of the 9th annual workshop:** The CCP13 Steering Committee meeting, delegates enjoy a lively poster viewing session, poster prizes are awarded by Professor Struther Arnott after the conference dinner.