PREFACE

The use of powder techniques in crystallography has expanded very considerably until last 10-15 years. This expansion has been driven by two factors: first the development of profile refinement techniques which have allowed structures of considerable complexity to be solved from powder data. Secondly, the increased availability of high quality, high resolution powder cameras especially at neutron and synchrotron sources.

For this reason the SERC Daresbury Laboratory organised a study weekend on March 1st-2nd, 1986 to review recent progress in instrumentation, in data analysis and in the general scope of modern powder methods. It is hoped that all these aspects are reflected in these proceedings. Several articles discuss questions of instrumentation, and accounts are available of new facilities at neutron sources at the Rutherford Laboratory UK and the Institut Laue-Langevin, France. Powder diffraction using synchrotron sources is developing rapidly and the proceedings include contributions from work at Daresbury UK, Brookhaven and Stanford USA and at HASYLAB in Germany. In all cases matters relating to line-shape and width are of crucial importance and receive careful attention. Design features which affect the stability and reproducibility of data are critical and special consideration is given by Hart & Parrish who discuss their recently implemented design at Stanford.

Two other features became clear during the meeting. The first concerned the complementarity of neutron and X-ray data – a point which will become increasingly important in the future; secondly, the demonstration especially in the papers of Fitch and Cheetham of the detail of structural information which can be yielded by profile refinement of powder data.

I am very grateful to the Daresbury Laboratory and to the Polar Solids Group of the Royal Society of Chemistry for sponsoring the study weekend on which these proceedings are based. The symposium owed much to the support of Dr D. J. Thompson and Professor P. J. Duke and to the organisational skills of Mrs Shirley Lowndes and her assistants at Daresbury.

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