database systems. Chem-X can be used to produce 2D or 3D plots of various properties for a set of candidate structures, and to analyse the results statistically.

ChemDBS-3D should be available in April 1990.

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Book Reviews

Works intended for notice in this column should be sent direct to the Book-Review Editor (R. O. Gould, Department of Chemistry, University of Edinburgh, West Mains Road, Edinburgh EH9 3JJ, Scotland). As far as practicable books will be reviewed in a country different from that of publication.

J. Appl. Cryst. (1990). **23**, 224

The physics of quasicrystals. Edited by *Paul J. Steinhardt* and *Stellan Ostlund.* Pp. xvi + 767. World Scientific Publishing, Singapore, 1987. (Distributed by J. Wiley.) Price £76.95 or US$ 111.55 (cloth), £34.20 (paper). ISBN 0971502275.

This 767 page book on quasicrystals consists of about ninety pages of original text, about thirty pages of references and a large number of reprints, some of which were, according to the flyleaf of the book, reproduced without permission. While there is some value in the collection, most of the papers involved are very accessible. Thus it is doubtful that any other than a very select few will wish to have this book.

Fivefold symmetry should not be possible for a true crystal lattice, yet Shechtman, Blech, Gratias & Cahn [*Phys. Rev. Lett.* (1984). **53**, No. 20, 1951–1953] did a study of rapidly cooled alloys of Al with 10–14 at.% Mn, Fe or Cr, which display icosahedral symmetry with the sharp peaks one would expect of a crystal. Fortunately there is a model which can explain this surprising result: the interaction of two incommensurate periods, based on the concept of Penrose tilings [*Bull. Inst. Math. Applic.* (1978). **10**, No. 7/8, 266–271]. This book first considers the geometric properties of quasilattices (3D quasiperiodic tilings), then the applicable group theory, the diffraction properties and structural models. The most useful reprints are in the fifth chapter, where competing models are considered for icosahedral symmetry. Multiple twinning, while not generally a full explanation of experimental results in this area, must be considered for each new case.

The second part of the book reviews physical properties of quasicrystals including Landau theory, stability, defects, electronic and magnetic properties. The book ends with an Appendix of the classic papers on Penrose tilings. If basic teaching materials are needed, we would recommend reproducing this Appendix and the first 33 pages of the book, which define the essential terminology.

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