

Notes and News

Announcements and other items of crystallographic interest will be published under this heading at the discretion of the Editorial Board. The notes (in duplicate) should be sent to the Executive Secretary of the International Union of Crystallography (J. N. King, International Union of Crystallography, 13 White Friars, Chester CH1 1NZ, England).

The Walter C. Hamilton Memorial Fund

The Walter C. Hamilton Memorial Fund has been established to provide assistance to one or more students, chosen each year, to work in the Chemistry Department at Brookhaven National Laboratory or for such other purposes related to chemical research as may be deemed appropriate by a committee appointed by Associated Universities, Inc. (operators of BNL), which will collect and administer the fund. The committee consists of Dr Gerhard Friedlander, Chairman (Department of Chemistry, Brookhaven National Laboratory, Upton, L. I., New York 11973, U.S.A.), Sidney C. Abrahams, David P. Shoemaker and Robert Thomas. Those wishing to participate in this memorial fund may send contributions to any committee member.

International Crystallography Conference on Diffraction Studies of Real Atoms and Real Crystals

This conference, sponsored by the Australian Academy of Science in association with the International Union of Crystallography, will be held in Melbourne, Australia, 19–23 August 1974. The subject matter of this meeting is arranged under 3 topics: 1. Real Atoms in Crystals; 2. Nature of Extended Defects in Solids; 3. Use of Dynamical Effects in the Study of Crystals.

The basic theme of the meeting is the study of the atomic structure of the solid state, considered in respect of different levels of organization – on the primary level, of the fine details of electron density associated with individual atoms and molecules (topic 1), and, on the secondary level, of the way in which atomic and molecular arrays differ from the ideal and hence form defects of various types in real crystals (topic 2). The third section of the meeting will deal with advances in diffraction procedures – particularly with reference to X-ray and electron diffraction. This section then

readily allows for association with the Eighth International Congress on Electron Microscopy, which will be held in Canberra, Australia, 25–31 August 1974.

Further information and copies of the *First Circular* may be obtained from The Secretary, International Crystallography Conference, Australian Academy of Science, P. O. Box 216, Civic Square, A.C.T. 2608, Australia.

International Union of Crystallography Inter-Congress Conference, 1974

The Commission on Crystallographic Apparatus of the International Union of Crystallography is organizing a specialist inter-Congress 'Conference on Anomalous Scattering' to take place at the Consejo Superior de Investigaciones Cientificas, Madrid, Spain, April 22–26, 1974.

The purpose of this conference is to assess the experimental and theoretical errors that arise in the measurement and interpretation of anomalous scattering of X-rays, neutrons and electrons. Topics under consideration include the accuracy of anomalous scattering measurement using characteristic X-radiation, continuous X-radiation, X-radiation at an absorption edge, neutrons and electrons; the effects of dispersion corrections on atomic parameters and the accuracy of the dispersion corrections; the application of anomalous scattering to structure determination; the probability of error in absolute configuration determination; the relation of absolute atomic arrangement to macroscopic tensorial properties; novel uses of anomalous scattering, such as Mössbauer effect and electron scattering; other applications of anomalous scattering.

Participation in the Conference, which will be limited to a total attendance of about 125 specialists for optimum discussion and interaction, is by invitation only. For further information, write to S. C. Abrahams, Bell Laboratories, Murray Hill, New Jersey 07974, U.S.A.

It is proposed to publish the proceedings of the Conference.

Book Reviews

Works intended for notice in this column should be sent direct to the Book-Review Editor (M. M. Woolfson, Physics Department, University of York, Heslington, York YO1 5DD, England). As far as practicable books will be reviewed in a country different from that of publication.

Optical properties of solids. Edited by F. ABELÈS. Pp. 1026, Figs. 421, Tables 43. Amsterdam: North Holland, 1972. Price £200.00 (ca. US \$62.50).

Our understanding of the basic physical properties of condensed matter has been considerably advanced in the past ten years by the study of the optical properties of solids. The present volume contains a number of detailed and tutorial discussions of various aspects of this subject by experts in the field. The level of treatment is suitable both for graduate students and for research workers. Eight more or less self-contained chapters are devoted to interactions of photons with various fundamental excitations in semicon-

ductors, metals and insulators, one to non-crystalline solids, and two to the further information obtainable from application of the modulated reflectance and photoelectric emission techniques to the study of solids.

On the whole it is an extremely useful book with a collection of thorough and well documented contributions, both as a source of information and of references, to all research workers in the field of solid state physics. The only criticism perhaps is that the large and, at the present time, extremely interesting field of light scattering in solids is not treated; and further that the time lapse between the time of writing and the date of publication inevitably makes the book a little out of date. With the exceptions of the chapters on magneto-optics and photoelectric emission, which have notes added

prior to publication, the references generally stop at 1968. This means that topics such as Weare's treatment of the energy gap in amorphous materials, Levine's bond-charge theory of non-linearities, the transient analysis of parametric amplification and short pulses, and the present experimental situation in the investigation of parametric processes are at best treated sketchily, if at all. However, the book is already 1026 pages long, and, as is hoped by the author, its qualities outweigh its defects and it is to be recommended.

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Infrared and Raman spectra of crystals. By G. TURRELL.

Pp. xii + 384, 101 Figs., 73 Tables. London: Academic Press, 1972. Price £8.50, \$26.50.

The study of infrared and Raman spectra of crystals has rightly attracted considerable attention in recent years from both chemists and physicists. Professor Turrell's book is an admirable account of the theory behind these spectra and their detailed interpretation for a variety of systems. In the first five chapters he gives a very clear and intelligible account of the normal modes of vibration of both molecules and crystals, and of their interaction with light. The description of the relevant group theory is particularly well presented. In the final three chapters he applies the formalism to the determination of interatomic forces in pure crystals, polymers and crystals containing defects.

The book should be particularly useful to students commencing optical work on normal modes of vibration, because the text is unusually clear and gives adequate detail for the student to follow.

Unfortunately the book cannot be recommended as providing a broadly based survey of the infrared and Raman spectra of crystals. There are many topics for which infrared and Raman spectra have and do provide vital results but which are not included. Polaritons are mentioned without any comment that they may be observed with Raman scattering techniques; interatomic forces in the perovskite lattice are discussed in detail without any reference to temperature dependent normal modes and phase transitions; no reference is made to work on electronic or magnetic excitations in crystals. The student's insight into Raman and infrared techniques would also have been greatly improved if the book had included a chapter on experimental techniques. In short the book would have been more appropriately titled, 'The theory of the infrared and Raman spectra of molecular crystals'.

The book, which will be of great use to many students, left this reviewer pondering how foolish we are to separate physicists and chemists from one another when we both have need of each other's insights. It is well produced, with clear diagrams and a good index.

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Chemical bonds in solids. Vol. 1. General problems and electron structure of crystals. Chemical bonds in solids. Vol. 2. Crystal structure, lattice properties and chemical bonds. Edited by N. N. SIROTA, Pp. xii + 163 (Vol. 1), xii + 133 (Vol. 2). New York: Consultants Bureau 1972. Price \$43.00 each.

These two volumes are the first of four volumes under the collective title *Chemical Bonds in Solids*, which are revised and reorganized translations of the two Russian books *Chemical Bonds in Crystals* and *Chemical Bonds in Semiconductors*. The original books were the published proceedings of a conference on 'Chemical Bonds' held in Minsk between 28th May and 3rd June 1967, plus a few specially incorporated extra papers. The English versions are direct translations from the Russian, except in the case of non-Russian authors where the original manuscripts were consulted.

Vol. 1 is divided into two parts, the first of which contains 16 papers mainly on semiconductors, including three on gallium arsenide, and transition-metal compounds. Most are concerned with the physical consequences of the type of chemical bonding between atoms. The second part contains 11 papers dealing with electron distributions in crystals, involving resonance spectra, reflexion spectra, some theoretical calculations and a neutron diffraction study of magnetic structures.

Similarly Vol. 2 is divided into three parts, the 12 papers of the first part being of most interest to crystallographers, containing papers on inorganic crystal structures together with papers on magnetic susceptibility, carrier mobility, band structure and radiation damage in various solid systems. The 10 papers of the second part are concerned with the lattice dynamics of crystals, involving neutron and X-ray diffraction techniques with theoretical calculations. Finally there are three papers on defects, elastic and thermal properties of crystals.

Since all the papers date from 1967 it is inevitable that they are at least five years out of date and no longer in the mainstream of research. The interest to crystallographers is very limited, the majority of the papers being of interest to solid state physicists and inorganic chemists working on solids. In view of this it can be concluded that both volumes will find a place in the reference libraries of research institutions working on these specialist research topics.

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Technik-Wörterbuch. Kristallografie. Englisch-Deutsch-Französisch-Russisch. 1. Auflage 1972. By K.-O. BACKHAUS, Pp. 132. Berlin: VEB Verlag, 1972. Price 20 DM.

This work is a technical dictionary covering 2042 words and phrases in the field of crystallography in the languages English, German, French and Russian.

The first section gives translations from English to the other three languages and to each English word or phrase