

The third, relatively short, chapter by Fleury is concerned with interacting pairs of excitations in condensed matter. As it turns out, the best understood examples are not to be found in the world of phonons but are provided by magnetic excitations in magnetic systems and a substantial part of this chapter is therefore devoted to such systems. The author also makes a brief excursion into the liquid state, one of the topics being roton pairs in liquid helium. In the opinion of the reviewer this is, however, no valid excuse for the average reader of *Acta Crystallographica* to refrain from enjoying this series of volumes.

The last contribution in this volume, by Lüthi, deals with manifestations of magnetoelastic interactions in crystalline solids containing localized magnetic ions.

Like the preceding volumes, this one is a mixture of theory and experimental results with some weighting towards theory, especially in the first chapter. Volume 3 covers to a large extent relatively special areas of lattice dynamics but should nevertheless be of great value to anyone interested in these particular areas.

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Dynamical properties of solids. Vol. 4. Disordered solids, optical properties. Edited by G. K. HORTON and A. A. MARADUDIN. Pp. viii + 478. Amsterdam: North Holland, 1980. Price US \$78.00, Dfl. 160.00.

This volume, the last one in the series, contains four contributions: *Vibrational properties of amorphous solids* by D. Weaire & P. C. Taylor; *Computer experiments and disordered solids* by W. M. Visscher & J. E. Gubernatis; *Morphic effects in lattice dynamics* by E. M. Anastassakis; *The absorption of infrared radiation by multiphonon processes in solids* by D. L. Mills, C. J. Duthler & M. Sparks. In this volume two of the contributions leave the field familiar to the common crystallographer – the crystalline solid – for a discussion of amorphous and disordered solids. The usual descriptions of dynamical properties in solids abound with concepts and theories that explicitly or implicitly make use of the translational symmetry of perfect crystals. Therefore, the (careless) person who enters the field of amorphous solids is bound to run into confusion when the vibrations no longer are governed by the safe and sound framework of a lattice. The first contribution of this volume, therefore, very appropriately, starts out with a short glossary of dangerous words, *i.e.* dangerous in the context of amorphous solids. Among these words there is also a description of the word *lattice* that might not satisfy the crystallographic purist: 'Strictly speaking, a lattice ought to be periodic but the loose application of this word to any infinite three-dimensional structure associated with condensed matter is a relatively

harmless indulgence.' Anyway, the chapter gives a condensed review of the fundamentals of dynamics in amorphous solids, and should be good as an introduction to the field. The second chapter, by Visscher & Gubernatis, also deals with disordered solids from a more theoretical point of view. The authors discuss the use of large digital computers to simulate disordered solids with the purpose of analysing their dynamical and related properties, as for example various transport properties. In chapter 3, Anastassakis gives a very thorough discussion of morphic effects in lattice dynamics, *i.e.* what happens to lattice dynamical properties when a crystal is subject to external forces. The author starts out with the group theory required for the discussion of morphic effects and proceeds with a very systematic discussion of the effect of various external forces (electric and magnetic fields, mechanical stress, temperature). The final, short chapter of this volume and of this series of volumes is concerned with multiphonon absorption processes and includes a review of recent experimental results and current theories to describe such processes.

The four volumes in this series complement the classical book on dynamical properties of crystals by Born & Huang by providing an insight into more recent developments and special applications, but they definitely do not replace it. There are simply too many authors with too diverse special interests represented in these four volumes to make the presentation of the subject fully coherent. This is not meant to imply that the books are not useful. On the contrary, all the four volumes in this series certainly deserve their place in the library wherever serious work on lattice dynamics is carried out.

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Books Received

The following books have been received by the Editor. Brief and generally uncritical notices are given of works of marginal crystallographic interest; occasionally a book of fundamental interest is included under this heading because of difficulty in finding a suitable reviewer without great delay.

X-ray diffraction by disordered and ordered systems. By D. W. L. HUKINS. Pp. ix + 164. Oxford: Pergamon, 1981. Price, US\$28.75. A review of this book, by F. Rousseaux, has been published in the July 1982 issue of *Acta Crystallographica*. Section B, page 2097.