in the uses of this technique other than as an element marker. Also a suggestive table of comparative potentialities of the different surface spectroscopies, assessed by a set of well known researchers in the field, is included.

The three chapters on defects have in common the utilization of electron microscopy. The influence of this technique on our present knowledge of defects in metal crystals is hard to overemphasize; however, its systematic application to other types of crystals has had to wait a longer time. In the present book, there are two reports dealing with the latter. The first, by J. E. Chisholm, analyses crystallographic shear planes in silicates (mostly by the direct lattice imaging technique) and the second, by L. W. Hobbs, deals with transmission electron microscopy of alkali halides. The latter, extending to almost half of the total length of the book, is a review of the technique as applied to that particular kind of material, supplemented by some examples of its application to the physics of point defects in alkali halides. The review of the technique is rather complete and includes good descriptions of preparation techniques and electron damage. A short, easily readable, summary of contrast theory makes the report more self-contained. Finally, there is a report by R. E. Smallman and P. S. Dobson on the behaviour of metal lattice vacancies during oxidation. Dislocation loops, visualized by electron microscopy, are used as landmarks for the study of the migration of point defects and this provides an example of the use of the electron microscope in the study of point defects.

In our opinion, an important purpose of this type of book should be the fostering of cross-interaction between physicists and chemists. There are fields, such as catalysis, in which this interaction is likely to be very fruitful. Almost all the reports of this book amply fulfil this requirement. In particular, authors should be well aware of their prospective audience in the utilization of their language. To this reviewer, with a physicist's point of view, this is well accomplished in the chemically biased papers and it seems quite likely that the same is true in reverse. In conclusion, the book is recommended at graduate and professional levels to researchers in the field of condensed matter, and is strongly recommended to people interested in problems at the borderline between physics and chemistry of materials.

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The theory of Brillouin zones and electronic states in crystals. Second, revised edition. By H. JONES. Pp. xii+285. Amsterdam: North Holland, 1975. Price U.S.$ 37.50, Dfl 90.00.

This book gives an account of what is essentially the basic mathematics of the solutions of the Schrödinger equation for a single electron in which the potential energy has the symmetry properties of a crystallographic space group.

Modifications to the text of the first edition include the welcome addition of short proofs of the basic theorems relating to irreducible representations as well as an instructive example of time-reversal symmetry, a simplified presentation of the theory of the double group and associated spin-orbit interaction, and a short introduction to the concept of the pseudo-potential.

The first edition of this book has been widely used in postgraduate courses on solid state physics for many years. The modifications to the text make the second, revised edition an even more suitable text book for postgraduates who are studying for the first time the theory of irreducible representations of space groups as applied to the calculation of energy bands.

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