

topics in physical properties and imperfections, purification and crystal growth and finishing with two chapters applying the full range of solid-state ideas to polymers and biological processes. Mathematical complexity is avoided as far as possible, and the editor has achieved a reasonably consistent narrative style. The individual contributions are often uneasy compromises between text-book treatments and reviews of their field. The reference are helpful, but those after 1970 are rare. Though the book gives an interesting blend of solid-state science, the price renders it impossible to recommend students to sample other than a library copy.

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### **Electron spin resonance of paramagnetic crystals.**

By L. A. SORIN and M. V. VLASOVA, translated from the Russian by P. GLUCK. Pp.xii + 254, Figs. 93, Tables 21. Originally published 1969. Translation: New York: Plenum, 1973. Price \$26.00.

The purpose of this book, as stated in the preface, is to 'generalize the physical principles of operation of paramagnetic amplifiers and the principles of developing suitable working substances'. The former aim is dealt with in a final chapter, but the bulk of the book is concerned with explaining the phenomenon of paramagnetic resonance,

relaxation processes and the effect of crystal fields on the energy-level schemes of impurity ions.

The basic theory of e.p.r. is carefully explained although the various observational conditions (*e.g.* adiabatic rapid passage) are not clearly categorized. A short and adequate introduction to group theory containing a useful collection of tables precedes the analysis of crystal-field splittings of energy levels. This analysis concentrates almost exclusively on the weak-field approximation appropriate to rare-earth ions. It is painstakingly presented and again a number of very useful tables are included. Dr M. E. Lines, in his foreword, tries to redress the imbalance of this section by outlining the implications of the strong-crystal-field case appropriate to many  $3d$  ions but necessarily the discussion is brief. There is a well presented chapter on line shapes and relaxation processes but no attempt is made to discuss experimental techniques.

The translation reads well although the style is inclined to be terse. The bibliography has not been updated since the date of the original Russian version (1969).

In summary, this book is too specialized (though not as detailed as the treatise by Abragam & Bleaney) to be recommended as a general introduction to the subject when compared with other texts but should be useful to those starting work in rare-earth systems and as a back-up text to a graduate course. The lack of an index limits its use as a reference book.

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