

plenum
PUBLISHING CORPORATION

SEMICONDUCTING LEAD CHALCOGENIDES

By Yu. I. Ravich, B. A. Efimova, and I. A. Smirnov

A VOLUME IN MONOGRAPHS IN SEMI-
CONDUCTOR PHYSICS*

Edited by L. S. Stil'bans

Translated from Russian by **Albin Tybulewicz**,
Editor, "Soviet Physics—Semiconductors"

The value of lead chalcogenides as semi-conducting materials only serves to highlight the importance of this book, for it is the first full-scale presentation of theoretical and experimental data on these compounds. Much of the information in this work is either difficult or impossible to find elsewhere. As a result, scientists and engineers interested in lead chalcogenides will find this volume an indispensable sourcebook on such topics.

CONTENTS: Physicochemical properties • Optical and photoelectric properties • Electrical properties • Thermoelectric and thermal properties • Magnetic properties • Band structure and scattering mechanisms (theory and conclusions from experimental data) • Applications of lead chalcogenides • Appendices.

* Place your continuation order today for books in this series. It will ensure the delivery of new volumes **immediately** upon publication; you will be billed later. This arrangement is solely for your convenience and may be cancelled by you at any time.

Approx. 372 pages May 1970 \$30.00
SBN 306-30426-0

IMPURITY SPECTRA OF SOLIDS

Elementary Theory of
Vibrational Structure

By K. K. Rebane

Academy of Sciences of the USSR; Institute for Physics and Astronomy, Academy of Sciences of the Estonian SSR

Translated from Russian by **John S. Shier**
NASA Electronics Research Center, Cambridge, Mass.

The spectacular development of the solid-state laser linked with widespread interest in solid-state light sources in general has highlighted the need for this book. Offering the first self-contained elementary treatment of the effect of lattice vibrations on optical absorption, luminescence, and scattering in solids containing impurity centers, it also covers the related problems encountered in the Mössbauer effect—including the theory of Mössbauer spectra and the analogy between Mössbauer and vibronic spectra—and the Franck-Condon principle.

CONTENTS: The adiabatic approximation • Theory of quasilinear vibronic spectra of impurity centers • The relation between vibronic spectra and Mössbauer spectra • Vibronic spectra in improved versions of the theory • Infrared absorption and light scattering spectra • Appendices.

Approx. 250 pages May 1970 \$19.50
SBN 306-30416-3

plenum press/consultants bureau

Divisions of Plenum Publishing Corporation

114 Fifth Avenue, New York, N.Y. 10011

reactions are developed almost entirely within this context. The emphasis throughout is on the intuitive and experimental aspects.

Once a student has completed the main body of the text and the associated problems, he should have a "feeling" for how nuclear properties are measured and how these measurements contribute to our present understanding of nuclear structure. The problems at the end of each chapter are essential in successfully achieving this goal. This leads me, in fact, to the only criticism of the book, that is, the difficulty in extracting information for problem solution from some of the figures. The desire for maintaining both self-containment and brevity has led to a reduction in figure size that makes several of the graphs and diagrams awkward to use in any quantitative way. However, because Meyerhof is scrupulous in always giving references to other sources, this difficulty is minor and will not deter the serious student.

In summary, the author should be complimented for having written a concise and uncomplicated text.

HENRY S. VALK

Physics Chairman
University of Nebraska

Introduction to the Thermodynamics of Charged and Polarized Layers, Vol. 10

By A. Sanfeld

258 pp. Interscience, New York, 1968.
\$11.00

This book deals with a complex sub-domain of chemistry and physics, namely electrochemical phenomena in polarizable media and at interfaces. The approach is that of a generalized thermodynamics, in which local variables and local balance conditions are used to interrelate properties of interest.

Unlike most idealized treatments, A. Sanfeld specifically treats those systems where the permittivity depends upon the field strength. Among the topics treated are the distribution of ions and dipoles in an electric field; the relationship between pressure and other variables in a charged polarized system; the equilibrium properties and the distribution of potential, field and charge in a diffuse double layer; interfacial orientation, association and

dissociation in a diffuse double layer. In general the treatment is formal and thorough. Critical remarks pointing out the validity of an argument, or problems of interest, are interspersed throughout the text. Advantageous use is made of numerical examples in several instances. The references cited are useful and, I believe, essentially complete.

One of the two principal drawbacks is that the book is not really in English. By this I mean that the English is certainly understandable but contains enough grammatical errors and foreign word juxtapositions to make it irritating to read. The other is that the treatment is based on formal thermodynamics. Interest in the subject matter would be greatly increased if problems of physical interest were made the focus of study rather than the techniques of formal thermodynamics.

In all, despite the two minor demerits entered, I think Sanfeld's text is a very useful addition to the literature, and recommend it to all those interested in the properties of electrochemical systems.

STUART A. RICE

James Franck Institute
University of Chicago

NEW BOOKS

OPTICS

Holographie. By M. Francon. 124 pp. Masson et Cie, Paris, 1969. 40F

Gallium Arsenide Lasers. C. H. Gooch, ed. 333 pp. Interscience, New York, 1969. \$14.50

ELECTRICITY AND MAGNETISM

Magnetism and Metallurgy, Vols. 1, 2. A. Berkowitz, E. Kneller, eds. 512 pp. Academic, New York, 1970. \$29.50 and \$17.00

Principles of Applied Electricity. By A. M. Howatson. 371 pp. Chapman and Hall, London, 1970. \$12.00

FLUIDS, PLASMAS

Advances in Plasma Physics, Vol. 3. Albert Simon, William B. Thompson, eds. 249 pp. Interscience, New York, 1969. \$14.95

SOLIDS

Landolt-Börnstein. Crystal and Solid State Physics, Vol. 2: Elastic, Piezoelectric, Piezooptic, Electrooptic Constants, and Nonlinear Dielectric Susceptibilities of Crystals. K. H. Hellwege, A. M. Hellwege,

eds. 232 pp. Springer-Verlag, New York, 1969. \$37.40

Micromechanics of Flow in Solids. By John J. Gilman. 294 pp. McGraw-Hill, New York. 1969. \$15.00

ASTRONOMY, SPACE, GEOPHYSICS

Cosmic Electrodynamics. By John H. Pidington. 305 pp. Interscience, New York, 1969. \$18.50

Gravitation and the Universe. By Robert H. Dicke. 82 pp. American Philosophical Society, Philadelphia, 1970. \$2.50

Cosmic Ray Physics: Nuclear and Astrophysical Aspects. By Satio Hayakawa. 774 pp. Interscience, New York, 1969. \$39.50

THEORY AND MATHEMATICAL PHYSICS

Probability and Random Processes for Engineers and Scientists. By A. B. Clarke and R. L. Disney. 341 pp. Wiley, New York, 1970. \$9.95

Group Theory and Its Applications. Ernest M. Loeb, ed. 696 pp. Academic, New York, 1968. \$19.50

Applications of Group Theory in Quantum Mechanics. By M. I. Petrashen and E. D. Trifonov. (Trans. from Russian) 318 pp. MIT Press, Cambridge, Mass., 1969. \$12.50

Introduction to Potential Theory. By L. L. Helms. 282 pp. Interscience, New York, 1969. \$14.95

Integral Equation Methods. By C. D. Green. 243 pp. Barnes & Noble, New York, 1970. \$15.00

INSTRUMENTATION AND TECHNIQUE

Potassium-Argon Dating. By G. Brent Dalrymple, Marvin A. Lanphere. 258 pp. W. H. Freeman, San Francisco, 1969. \$7.50

Advances in Electronics and Electron Physics, Supplement 6: Electron Probe Microanalysis. A. J. Tousimis, L. Marton, eds. 450 pp. Academic, New York, 1969. \$22.50

Solid-State DC Motor Drives. Alexander Kusko, ed. 126 pp. MIT Press, Cambridge, Mass., 1969. \$6.00

Space-Time Nuclear Reactor Kinetics. By Weston M. Stacey, Jr. 186 pp. Academic, New York, 1969. \$13.00

Advances in Nuclear Science and Technology, Vol. 5. Ernest J. Henley, Jeffrey Lewins, eds. 379 pp. Academic Press, New York, 1969. \$21.00

Basic Nuclear Electronics. By Hai Hung Chiang. 342 pp. Wiley (Interscience), New York, 1969. \$14.95

HEAT, THERMODYNAMICS, STATISTICAL PHYSICS

Steam Tables: Thermodynamic Properties of Water Including Vapor, Liquid, and Solid Phases. By Joseph H. Keenan, Frederick G. Keyes, Philip C. Hill, Joan G. Moore. 162 pp. Wiley, New York, 1969. \$9.95

Thermodynamics and Statistical Mechan-

ics. By Lawrence M. Grossman. 323 pp. McGraw-Hill, New York, 1969. \$13.50

HISTORY AND PHILOSOPHY

The Quantum Physicists. By William Cropper. 257 pp. Oxford U. P., New York, 1970. \$4.00

The Shadow of the Telescope. By Gunter Buttmann. (Trans. from German) 219 pp. Scribners, New York, 1970. \$7.95

Biographical Memoirs of Fellows of the Royal Society, Vol. 15. 266 pp. The Royal Society, London, 1969. \$6.50

Physics In My Generation. By Max Born. (2nd edition) 166 pp. Springer-Verlag, New York, 1969. \$3.80

PHYSICS AND SOCIETY

Science Technology and Public Policy: A Selected and Annotated Bibliography, Vol. 11. Lynton K. Caldwell, ed. 544 pp. Indiana U., Bloomington, Ind., 1969.

Scene of Change: A Lifetime in American Science. By Warren Weaver. 226 pp. Scribners, New York, 1970. \$7.50

POPULARIZATIONS

Scientific American Resource Library: Readings in the Physical Sciences and Technology, Vols. 1-3. Freeman, San Francisco, 1969.

A History of Technology and Invention: Progress Through the Ages, Vol. 2. Maurice Daumas, ed. (Trans. from French) 694 pp. Crown, New York, 1969. \$10.00

A Guide to Superconductivity. David Fishlock, ed. 150 pp. American Elsevier, New York, 1970. \$7.00

MISCELLANY

International Physics and Astronomy Directory 1969-70. 802 pp. Benjamin, New York, 1969. Cloth \$35.00, paper \$12.50

The Invisible University: Postdoctoral Education in the United States. National Research Council. 310 pp. National Academy of Sciences, Washington, D. C., 1969. \$10.00

The Fundamental Constants and Quantum Electrodynamics. By B. N. Taylor, W. H. Parker and D. N. Langenberg. 353 pp. Academic Press, New York, 1969. \$5.00

In Honor of Philip M. Morse. Herman Feshbach and K. Uno Ingard, eds. 287 pp. MIT Press, Cambridge, Mass., 1969. \$20.00

Physics Literature: A Reference Manual. (2nd edition). By Robert H. Whitford. 272 pp. Scarecrow Press, Metuchen, N. J., 1968. \$8.50

The Politics of Weapons Innovation: The Thor-Jupiter Controversy. By Michael H. Armacost. 304 pp. Columbia Univ. Press, New York, 1969. \$10.00

Scientific Research in British Universities and Colleges 1968-1969, Vol. 1: Physical Sciences. Department of Education and Science and The British Council. 612 pp. British Information Services, New York, 1969. \$11.70 □

G
B

HIGH ENERGY COLLISIONS

Edited by **C. N. Yang**

1970 *Professional \$15.00/Prepaid \$12.00
532pp. Reference \$27.50/Prepaid \$22.00

Proceedings of the 3rd International Conference held at S.U.N.Y., Stony Brook, 1969

CONTRIBUTORS:

A. Lundby	A. Martin
F. Udo	H. A. Kastrup
G. Conforto	R. P. Feynman
J. Kirz	P. Sonderegger
T. M. Knael	W. D. Walker
P. Franzini	H. Cheng
L. W. Mo	G. C. Fox
M. Koshiba	R. Panvini
K. Gottfried	C. N. Yang

CODE NUMBER: 1395

FUNDAMENTAL INTERACTIONS AT HIGH ENERGY

Edited by **Timm Gudehus, Geoffrey Kaiser and Arnold Perlmutter**

1969 416pp. \$28.50/Prepaid \$22.50

Proceedings of the Coral Gables Conference, University of Miami, 1969

CONTRIBUTORS:

P. A. M. Dirac	R. Gatto
K. Symanzik	L. Brown
Ivan T. Todorov	R. J. Oakes
Claude Itzykson	G. Segre
V. P. Shelest	P. G. O. Freund
L. O'Riartaigh	D. Finkelstein
R. Eden	J. Weber
G. Veneziano	E. P. Wigner
M. Goldberger	H. R. Rubinstein
B. T. Feld	M. Gell-Mann
V. Barger	N. Cabibbo

L. Soloviev

CODE NUMBER: 1366

* Professional editions are available to individuals who warrant the volumes are for their own personal use, and who order directly from the publisher.

GORDON AND BREACH
Science Publishers, Inc.

150 Fifth Ave. • New York, N. Y. 10011