

Contents

Contributors to Volume 4	v
Preface	vii
Contents of Volumes 1, 2, and 3	xi
Articles Planned for Future Volumes	xiii

Ferroelectrics and Antiferroelectrics

WERNER KÄNZIG, *General Electric Research Laboratory, Schenectady, New York*

I. Introduction	5
II. The Phenomenological Behavior of Ferroelectrics: Experimental	11
III. Thermodynamic Theory of Ferroelectric Crystals	68
IV. Optical Properties of Ferroelectrics in the Visible Range	88
V. Domain Structure and Hysteresis	97
VI. Thermodynamic Behavior of Antiferroelectrics: Experimental	124
VII. Thermodynamic Theory of Antiferroelectrics	141
VIII. Some Optical Properties of Antiferroelectrics	145
IX. Antiferroelectric Domains	147
X. The Static and Dynamic Structure of Ferroelectric and Antiferroelectric Crystals	148
XI. Isotope Effects	173
XII. Ferroelectricity and Antiferroelectricity of Solid Solutions	175
XIII. Molecular Models	180

Theory of Mobility of Electrons in Solids

FRANK J. BLATT, *Department of Physics and Astronomy, Michigan State University, East Lansing, Michigan*

I. Introduction	200
II. Statistics of Free Electrons	203
III. Boltzmann Equation	214
IV. Solution of the Boltzmann Equation for Nonspherical Energy Surfaces and Anisotropic Relaxation Times	271
V. Scattering Mechanisms	287
VI. Effects Arising from Lack of Thermal Equilibrium	357

The Orthogonalized Plane-Wave Method

TRUMAN O. WOODRUFF, *General Electric Research Laboratory, Schenectady, New York*

I. Description of the Method	367
II. Survey of Some Applications of the Method	378
III. Example: The Method Applied to Silicon Crystal	384

Bibliography of Atomic Wave FunctionsROBERT S. KNOX, *Institute of Optics, University of Rochester, New York*

I. Introduction	413
II. Alphabetical List of Atoms and Ions	416

Techniques of Zone Melting and Crystal GrowingW. G. PFANN, *Bell Telephone Laboratories, Murray Hill, New Jersey*

I. Introduction	424
II. The Distribution Coefficient and Normal Freezing	426
III. Principles of Zone Refining	437
IV. Practice of Zone Refining	456
V. Zone Leveling	468
VI. Methods of Perturbing the Concentration	472
VII. Temperature-Gradient Zone Melting	493
VIII. Crystal Growth and Dislocations	499
AUTHOR INDEX	522
SUBJECT INDEX	533