in the literature on deviations of the phonon distribution from the Planck distribution and direct measurements of the times of anharmonic decay in the phonon frequency function, and also discusses the possible causes of the deviation of the experimental results from the large number of theoretical hypotheses. The most noteworthy ones are the spectra of nonequilibrium phonons, which vary with time, and this demonstrates in an obvious manner the nature of phonon thermalization as a function of the frequency and the role played by the different regimes of phonon propagation (including also the effect of the crystal surface).

In the following Chap. 7 K. F. Frenk presents the bases for the optical detection of 29 cm^{-1} phonons in ruby with the aid of phonon generation both by metallic heaters and by optical excitation (utilizing also the "exotic" far–IR radiation for direct generation of phonons). The generation of phonons occurs in the transition $2\bar{A} \rightarrow \bar{E}$ (of the level of the excited Cr^{+3} ion in ruby split by the crystalline field), while detection is based on observing the inverse transition $\bar{E} \rightarrow 2\bar{A}$ by fluorescence. Using this technique spatial profiles of 29 cm^{-1} phonons were obtained and times of anharmonic decay were determined. A discussion is given of the influence of the processes of elastic and inelastic scattering of phonons both for the low-frequency limit, and for the high-frequency limit.

Resonance phenomena accompanying scattering of 29 cm^{-1} phonons by electron states of the Cr^{+3} ions in ruby excited by different methods are discussed in Chap. 8 written by A. A. Kaplyanskii and S. A. Basun. Multiple resonance scattering of phonons (the so-called radiative "imprisonment") occurs when the volume in which they are scattered is much greater than the meanfree path of a resonance quantum. The spatial diffusion of resonance phonon fluorescence enables one to regard multiple resonance scattering of phonons as a new phenomenon, with the kinetic properties of the phonons being analyzed both in the classical and in the quantum approximation. It is shown how the study of resonance imprisonment of phonons in ruby enables one to obtain rich information concerning different mechanisms of scattering of phonons by local electron states in crystals. The phenomenon of phonon imprisonment is of great interest not only for the problem of transport of acoustic phonons in crystals, but also for the general physics problems of resonance interaction of radiation with matter.

In Chap. 9 (L.V. Keldysh and N. N. Sibeldin) material is presented devoted to phenomena associated with the interaction of electron-hole drops (EHD) and excitons with the flux of nonequilibrium acoustic phonons. Nonequilibrium phonons determine in the case of powerful pumping the behavior of EHD—the spatial-temporal evolution of a cloud of EHD in the case of pulsed excitaton, the kinetics of condensation and recombination, the dimensions and concentrations of EHD. On the other hand, information is also obtained concerning the spectrum, propagation and relaxation of phonons.

Unfortunately there is no material in the book concerning the methods of generating and detecting nonequilibrium phonons by using superconducting detectors. However this material may be found in another book published in 1985 by Plenum Press (USA): "The Dynamics of Nonequilibrium Phonons" edited by Prof. W. Bron.

The book under review will certainly be of interest to scientists working in the field of optoelectonics, microelectronics and cryoelectronics.

On the whole the collective monograph "Nonequilibrium Phonons in Nonmetallic Crystals" gives a sufficiently complete idea concerning the present status of research in such a important and timely field of solid-state physics as the physics of phonons of terahertz and subterahertz range. One would welcome the publication of this book in Russian by the publishing house "Nauka," as this would make the book more accessible for the Soviet reader.

Crystal structure of intermetallides

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Landolt-Börnstein. *Numerical Data and Functional Relationships in Science and Technology.* New Series. Eds. K.-H. Hellwege and O. Madelung. Group III: Crystal Structure and Solid State Physics. Vol. 14: Structure Data of Elements and Intermetallic Phases. Subvol. b: Sulfides, Selenides, Tellurides. Pt. 1: Ag–Al–Cd–S...Cu–Te–Yb. Eds. B. Eisenmann and H. Schäfer, Springer-Verlag, Berlin; Heidelberg; New York; Tokyo, 1986. 504 pp.; Pt. 2: Dy–Er–Te...Te–Zr. Eds. B. Eisenmann and H. Schafer, Springer-Verlag, Berlin; Heidelberg; New York, Tokyo, 1986. 492 pp.

The two latest volumes of the well-known reference book are devoted to the atomic structure of intermetallic phases with reference to sulfides, selenides, and tellurides. This publication is a continuation and a supplement of the volume III/6 that was published in this series in 1971, and which included experimental data published up to 1967.

Naturally during the time elapsed since the publication of volume III/6 due to the ever-increasing interest in intermetallides the amount of information on the substances under discussion has significantly increased. As a result of this, the volume III/14 which contains information on more than 4000 substances, is divided into two subvolumes—III/14b1 and III/14b2.

The organization of the reference material in the book is

carried out in accordance with the principle utilized in volume III/6: all the materials are arranged alphabetically, in accordance with the general chemical formulas.

The information provided for the reader contains: structural data (space group, parameters of an elementary cell of crystal structure, their dependence on temperature and pressure, the number of formula units associated with a single elementary cell), the method of structural investigations that was used (radiograph, neutron diffraction, electron diffraction), the type of sample being studied (single crystal, polycrystals), methods of obtaining the samples (solid-phase synthesis, crystallization from a melt, etc.).

Among the undoubted merits of this publication one should list the inclusion in it of information on temperatures of phase transitions in the substances being examined and correspondingly on structures of different polymorphic modifications with an indication of the physical parameters (temperature, pressure), at which these modifications are stable. In a number of cases (basically for different solid solutions) phase diagrams of the state of the system are provided in a separate chapter. Also in a separate chapter a list is provided of minerals which are relevant to the substances being examined, together with their common names.

Compared with other volumes of the present series a more convenient location of the list of the original publications utilized in the review is provided at the end of the volume III/14b1 (previously all references to original sources were brought together in a separate reference volume).

All this makes the reference book a very convenient and very informative aid both in practical and in theoretical investigations which is of undoubted interest to a wide circle of specialists in the field of solid state physics.

Translated by G. M. Volkoff