turbulence in hybrid systems. Although the rates of switching attained here are usually not very great, hybrid systems are very convenient for studying this new class of nonlinear optical phenomena.

5. Optical switching; controlling light with light

It is specifically with these phenomena that the applied importance of optical bistability is associated. The main emphasis in chapter 5 is on an analysis of different designs for controlling the characteristics of a nonlinear optical resonator by an external optical signal. A theory of non-steady-state phenomena in a nonlinear resonator is presented, different designs of optical triggers, transistors, etc., are described.

6. Instabilities; non-steady state phenomena in the case of an unmodulated input signal

Instabilities, stochastic behavior of dynamical systems that are being intensively studied at present in different subfields of physics, are vividly and characteristically manifested in nonlinear optics.

Chapter 6 is, essentially, one of the first monographic reviews on this subject in world literature. A beautiful example of optical instability are the so-called regenerative pulsations of the intensity of laser radiation passing through a Fabry-Perot resonator filled with a medium with competing mechanisms of optical nonlinearity. Considerable theoretical and experimental material has been accumulated that demonstrates the regularities of the transition to chaos in nonlinear optical resonators and hybrid systems.

7. Towards the creation of practical devices

In this chapter, the results of investigations of optical bistability are considered from the point of view of developing elements of optical processors, with *parallel processing of information*. It is noted that from the point of view of fast action, optical logical elements are now already beyond competition; switching times of $\sim 10^{-12}$ s have been attained, and limiting values are $\sim 10^{-14}$ s. Rapid progress is seen in lowering the energy expended on switching. Quite a comprehensive compilation is given of data on cubic nonlinear susceptibilities of semiconducting materials which characterizes the possiblities available here.

The advances in the development of effective nonlinear materials, of various systems of controlling "light with light" make it possible to have a new attitude towards the prospects of optical computers. In evaluating these advances one should have in mind that we are dealing not only with a new elementary base, but also with a new architecture of computers; for optics parallel information processing is entirely natural.

In what has been said is contained one of the main reasons for the rapidly growing interest in optical bistability and its applications.

Undoubtedly the book under review will be met with great interest by specialists and by persons beginning work in this promising field of nonlinear optics.

1) The list of references is systematized according to authors and years. Nowadays one encounters ever less frequently this method of citing references; it is regarded to be uneconomic. And yet, how much more vivid and descriptive is such a picture of the development of science compared with the dry indications of the numbers of the "blind" (without citation of titles) references!

Crystal structures of silicates

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Usp. Fiz. Nauk **151**, 188–189 (January 1987)

Landolt-Börnstein. *Numerical Data and Functional Relationships in Science and Technology.* New Series, Group III: Crystal and Solid State Physics, V.7: Crystal Structure Data of Inorganic Compounds. Part d: Key Elements Si, Ge, Sn, Pb; B, Al, Ga, In, Tl, Be. d1: Key Elements Si, Ge, Sn, Pb. d1β: Key Element Si (Substance Numbers d1169...d2377). Springer-Verlag, Berlin; Heidelberg; New York; Tokyo; 1985, pp. 506.

The handbook being reviewed is the second part of the issue III/7d1 in the series devoted to crystal structures of inorganic compounds. The first volume of the issue III/7d1-1α, containing data on anhydrous complex oxides of silicon appeared at the beginning of 1985. In the present edition—1β—information is collected on silicates containing H_2O and (or) other simple or complex anions.

The materials listed in the handbook (1209 units) are listed according to the position in the periodic system of the elements of the cations of which they are composed.

The system of listing information in volume 7d1β is the same as in volume 7d1α, i.e., the reader is presented with the chemical formula of the material (the name of the mineral if it exists in nature); structural data which include the space group, the parameters of the elementary cell and the number of formula units within it; the structure type; the density; the method of obtaining information on the atomic structure of the material (x-ray diffraction, neutron diffraction, electron diffraction, NMR); the form of the sample (single crystal, powder).

This issue utilizes the system of references to primary sources common to the entire series, with the papers that had appeared prior to 1971 being provided with the code of the reference in the bibliographic volume of the present series (III/7g) published previously (1974), references to later publications are given directly in the text.

The handbook is undoubtedly of interest for specialists working in the various fields of solid state physics and chemistry.

Translated by G. M. Volkoff