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Современная кристаллография. (Contemporary crystallography). Том второй. **Структура кристаллов.** Б. К. Вайнштейн, В. М. Фридкин, В. Л. Инденбом. (Vol. 2. **Structure of crystals.** By B. K. VAINSHTEIN, V. M. FRIDKIN and V. L. INDENBOM.) Pp. 359. Moscow: Nauka, 1979. Price 3r 40k. Том третий. **Образование кристаллов.** А. А. Чернов, Е. И. Гиваргизов, Х. С. Багдасаров, Л. Н. Демьянец, В. А. Кузнецов, А. Н. Лобачев. (Vol. 3. **Crystal growth.** By A. A. CHERNOV, E. I. GIVARGIZOV, K. S. BAGDASAROV, L. N. DEMYANETS, V. A. KUZNETSOV and A. N. LOBACHEV.) Pp. 407. Moscow: Nauka, 1980. Price 3r 20k.

The second volume of *Contemporary crystallography*, entitled *Crystal structure*, has been written by high-class specialists in the field of structural studies: B. K. Vainshtein (chs. 1 and 2), V. M. Fridkin (chs. 3 and 4) and W. L. Indenbom (ch. 5). It provides a detailed study of the structural principles of both ideal and imperfect crystals. It is divided into five chapters.

In the first chapter the author gives the physico-chemical basis of atomic structure, particularly taking into consideration the electron structure of atoms. He also discusses in detail the problems of chemical bonding theory and crystal lattice energy as well as the geometrical laws of the atomic structure of crystals. The last section of this chapter is devoted to the subject of solid solution, the phenomenon of isomorphism and the explanation of modulated structures.

In the second chapter the author expounds the basis of organic crystallography. Besides considering small molecules, he discusses polymers, liquid crystals and biological substances. The reader can also find wide-ranging information on protein structure, nucleic acids and viruses. The text of this chapter is particularly well illustrated by many drawings and photographs.

The third chapter is devoted to fundamental information regarding electron energy spectra, Brillouin zones, the Fermi surface and energy band structure.

In the fourth chapter, the author presents the principle of lattice dynamics and treats the problem of phase transitions.

The fifth chapter deals mainly with the characteristic structure properties of imperfect crystals and with techniques for the direct imaging of defects.

In my opinion this second volume is very valuable. This is the first scientific description in world literature, in recent years, with so wide a review of the fundamental achievements of science on the atomic and electron structure of the solid state. From my point of view this book will be very helpful for lecturers, and for students who are interested in solid-state physics, or biophysics, as well as for those interested in chemistry, biochemistry and crystallography.

The third volume of *Contemporary crystallography*, entitled *Crystal growth*, has been written by six co-authors. It is devoted to the scientific and practical problems of crystal growth. The content of the book is divided into two chapters.

The first chapter, by A. A. Chernov, acquaints the reader in detail with the physico-chemical basis of crystallization processes. Problems considered, among others, are: phase equilibrium, surface energy, the origin of the epitaxial nucleus, the influence of impurities on growth processes, mass and heat transport during crystallization, and the kinetics and forms of crystal growth.

The second chapter is the work of the other five authors. It is devoted primarily to the methods of crystal growing. The authors discuss the physico-chemical laws of crystallization from the gas phase (vapour); they give attention to the role, in this process, of such factors as: the activity of the substrate surface, and the density of particle flux and material concentration in the medium. They also discuss the state of perfection of the crystal structure obtained in this way, under various physico-chemical conditions. Next there are described in detail methods of crystal growing in which physical condensation, crystallization by chemical reaction, and crystallization from vapour through liquid phase are used. In a further part of this chapter the reader can find a detailed consideration of crystallization from solutions and alloys. The authors also give descriptions of several techniques, taking into consideration the influence of various factors on the quality of the structures obtained.

The third volume is clearly written and contains many diagrams which add to its clarity. In my opinion, this is one of the best books on crystallization processes and on the methods for obtaining crystals published in recent years. The book is all the more valuable because of so much practical information which can be applied in research laboratories as well as in industry.

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Editor's note: The English language version of these books, published by Springer, is coming on to the market only a little behind the Russian text. Vols. 1 and 2 have been available for some months; Vols. 3 and 4 have been announced. The standard of production of the English language volumes is rather better than that of the Russian texts, and they are correspondingly more expensive: Vol. 1, DM 98.00, US \$43.60; Vol. 2, DM 114.00, US \$49.00; the English itself is virtually impeccable. It may be noted also that the authors have taken the opportunity, provided by the delay in translation and slightly later publication dates, to update their material significantly, here and there, in the English language volumes.