

explanation. This might be one of the reasons why the book will probably not become a student textbook. But it certainly will serve as a special reference book not only for experts in ferroelectrics but also for graduate students under some guidance.

Terms used for some of the ferroelectric compounds are unfamiliar in English terminology or even wrong; e.g. the term 'lead and zirconium titanate' might perhaps be used in the Russian translation for $\text{Pb}(\text{ZrTi})\text{O}_3$, but the compound SbNbO_4 cannot be called a ferroelectric *perovskite*.

More than two thirds of the 359 references were published in Russian journals. According to Fridkin, the ferroelectric properties of Rochelle salt were discovered by Kurchatov. In fact, Kurchatov's papers were published in 1930 in German and Russian journals, whereas Volasek's reports appeared in 1921, 1922, 1924 in *Phys. Rev.*

The book is well presented. The diagrams are well set out, thoroughly marked and explained; the photographs are carefully selected and well reproduced.

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The physics and chemistry of liquid crystal devices.

Edited by G. J. SPROKEL. New York, London: Plenum Press, 1980. Price US\$42.50.

The possibility of using liquid crystals for displays was recognized just over ten years ago. Today the world production of LCDs (liquid crystal displays) is probably around fifty million per annum. This phenomenal growth may be traced to the fact that there was a need for a compact, low-power display and the LCD, which consumes only of the order of a $\mu\text{W cm}^{-2}$ of active display area, fulfilled that need. At present the demand is almost entirely for digital displays for watches, pocket calculators and portable electronic instruments, but already other formats, analogue displays and relatively simple matrix displays, are beginning to appear on the market and the future looks very promising indeed. However, in point of fact, is this remarkable trend likely to continue in the 80s?

As it turns out, many problems still remain to be understood and solved in order to improve the LCDs now being manufactured and to develop larger and more sophisticated displays. For example, what is the nature of the interaction between the liquid crystal and the substrate and what is its precise role in determining the surface anchoring properties? What are the relevant material and device parameters and how can they be modified to improve the performance? What are the limits of multiplexed addressing? What are the prospects for high information content LCDs, colour television screens, etc. — do we have to have a fresh breakthrough in technology and manufacture?

These are some of the many questions that have been considered in this book, a collection of papers presented at a symposium held at the IBM Research Laboratory, San Jose, California, on February 7 and 8, 1979. The authors are for the most part from well known laboratories that have been

actively concerned with the practical applications of liquid crystals — IBM, Bell Laboratories, Hewlett-Packard, Beckman, Tektronix, Texas Instruments, Hitachi, RSRE, Brown Boveri, Philips, etc. The contributions have been grouped under three broad headings, *Physics* (12 papers), *Devices* (6) and *Materials* (6), though, not surprisingly, there is considerable overlap in many cases. By and large the papers are of high standard and serve to focus attention on the variety of fascinating problems one has to come to grips with to make further progress in this field. The book is well produced and should be appreciated by anyone interested in this rapidly developing area of technology.

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Books Received

The following books have been received by the Editor. Brief and generally uncritical notices are given of works of marginal crystallographic interest; occasionally a book of fundamental interest is included under this heading because of difficulty in finding a suitable reviewer without great delay.

Synchrotron radiation research. Edited by H. WINICK and S. DONIACH. Pp. xx + 754. Plenum, 1980. Price US\$ 65.00. "The explosive growth of interest in this extraordinary tool constitutes a major event in the recent history of scientific instrumentation." With this observation, this book begins, and its size and weight well justify the remark. It is hardly a year ago that we commented [*Acta Cryst.* (1980), A36, 333] on another overview of synchrotron radiation, edited by Kunz. The present book is not any more up to date than Kunz (which consisted essentially of conference papers) but is a fuller and more coherent text. There is a 40-page chapter devoted to single-crystal diffraction, with over 60 references to original literature, and there are separate chapters on small-angle scattering, on EXAFS, and on topography, as well as many chapters on non-crystallographic matters.

Quasi-particles: ideas and principles of solid state physics. By M. I. KAGANOV and I. M. LIFSHITS. Pp. 96. Mir publishers, Moscow, London, 1980. Price 75p.

Physics in high magnetic fields. Edited by S. CHIKAZUMI and N. MIURA. Pp. x + 358. Springer-Verlag, 1981. Price DM 74.00, US\$43.70. This volume represents the proceedings of the international seminar held in Japan, in September 1980; it describes recent developments in semiconductor physics and high magnetic fields, both continuous and pulsed.

Ultrasoft X-ray microscopy: its application to biological and physical sciences. Edited by D. F. PARSONS. Pp. v + 402. New York Academy of Sciences, 1980. Price \$70.00. This book collects the papers presented at the conference, with this title, held in June 1979.