International Union of Crystallography

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Co-editor of Acta Crystallographica

Professor D. H. Templeton, Lawrence Berkeley Laboratory, University of California, USA, has been appointed as a Co-editor of *Acta Crystallographica* to succeed Professor E. C. Lingafelter, who has been a Co-editor of the journal since 1975. Professor Templeton's full address is given on the inside front cover of *Acta Crystallographica.*

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Delays in Publication

Median publication time for full articles in *Acta Crystallographica* and *Journal of Applied Crystallography* (*JAC*), based on the elapsed time between final acceptance of manuscripts and their nominal date of publication, has been close to five months in Section A and *JAC* and four months in Section B in recent years. Short communications and short structural papers have experienced slightly shorter median publication times. It is deeply regretted that publication times will increase later this year to about eight months on average as a consequence of the reduced number of pages that can be published in 1981 without incurring an unsustainable loss, as large and unfavourable movements in international exchange rates have resulted in a substantial deficit in the publication of Volume 36 and have already nullified the effect of the increase in subscription rates for Volume 37. Various alternative procedures for the production of the journals are being investigated with the aim of reducing costs and reducing the effect of variations in exchange rates, and every effort will be made to return to normal publication schedules with least delay.

Book Review

Works intended for notice in this column should be sent direct to the Book-Review Editor (J. H. Robertson, School of Chemistry, University of Leeds, Leeds LS2 9JT, England). As far as practicable books will be reviewed in a country different from that of publication.

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Physics of nonlinear transport in semiconductors. Edited by DAVID K. FERRY, J. R. BARKER and C. JACOBONI. Pp. xx + 614. New York: Plenum Press, 1980. Price $65.00.

This book is the Proceedings of the NATO Advanced Study Institute on Physics of Nonlinear Electron Transport, held at Sogesta Conference Centre, Urbino, Italy, 16–26 July 1979. Studies on nonlinear transport in semiconductors were motivated by those on non-ohmic conduction in high electric field, in the 1950's. New devices resulted from the studies, in the 1960's. Now the development of highly integrated devices requires knowledge of nonlinearity in semiconductors.

The volume consists of lectures, theoretical and experimental, and seminars on modern topics. The first lecture develops theories of drift, diffusion and generation-recombination of hot carriers, discussing various scattering mechanisms. The second introduces the basic theory of the electronic energy band structure expressed in the bond-and-band language, and then the self-energy effect is discussed. The substance of the third lecture is a study of various electron–phonon interactions. From the one-electron Hamiltonian with potential perturbed by phonons, the total electron–phonon scattering-matrix element is derived in a general form. Particular cases are discussed in detail. The fourth and fifth lectures are on transport theories, semiclassical and quantum, respectively. The former gives a modified distribution function for hot electrons and a numerical method to derive the function. The latter discusses assumptions in a phenomenological Boltzmann transport theory, generalized distribution function, the master equation in the super-operator picture, the self-energy effect, many-body formulation and screening problems. We learn about carrier–carrier interaction and screening, and multiphonon scattering in the sixth and seventh lectures. The eighth is a review of experimental methods. Contents of the lecture extend over the DC method, microwave method, and optical methods, also describing the 'time-of-flight technique' to obtain drift velocity, drift time and detrapping time. In the ninth lecture, on hot-electron transport in a quantizing magnetic field, extensive experimental data are presented and discussed. The tenth theoretically discusses the electron distribution function in quantizing crossed fields. In the eleventh, hot-electron device effects are discussed. Photo-excitation and ultrafast optical processes are studied, related to hot carriers, in the twelfth, thirteenth and fourteenth lectures. The fifteenth, on nonequilibrium phonon processes, discusses nonthermal phonon distribution and phonon instability; they have a relation to acoustic or electric amplification. In the last lecture we study noise in semiconductors in the hot-carrier regime. Abundant data are given on noise temperatures and diffusion coefficients of carriers in a high electric field.

The above lectures form the first part of the text; the second part consists of seven seminars. Their themes are as follows. 1. *High-field transport of holes in elemental semiconductors*; 2. *Nonlinear transport in quasi-one-dimensional conductors*; 3. *Optical absorption of solids under laser*