

Algar-Flynn-Oyamada synthesis of flavanols, the Bouis allene synthesis, the Brandt lithium hydride synthesis of aldehydes, the Darapsky amino acid synthesis, the Debus preparation of imidazoles, the Jones-Weedon synthesis of acetylenic aldehydes, the Kerp ketone reduction, the Landauer-Rydon triphenyl phosphite method for the preparation of alkyl halides, the Levinstein mustard gas synthesis, the Mayer diphenylamine-acridine synthesis, the Oddo synthesis of pyrrole ketones, the Robert chlorination reaction, the Täuber carbazole synthesis, the Vorländer diphenic acid synthesis, the Weil aryl aldehyde synthesis, the Werner aryl isothiocyanate synthesis, and a number of others, hardly detracts from the real value of this book, which to many users will consist mainly in its long overdue contribution to a more systematic and rational approach to organic reaction nomenclature. The omission of a number of more important name reactions, such as the Arens-Van Dorp synthesis of unsaturated aldehydes, the Bowman debenzoylation and dihydropyran methods for malonic ester-type syntheses, the Glaser synthesis of di-acetylenes, the Stork enamine alkylation and the Wagner-Jauregg reaction, is a little more disturbing, but the over-all coverage is so satisfactory that the book more than adequately fulfills the purpose for which it was written. May its consequences to the nomenclature of organic reactions be far-reaching and fruitful!

DEPARTMENT OF CHEMISTRY
THE UNIVERSITY OF KANSAS ALBERT W. BURGSTALLER
LAWRENCE, KANSAS

Tables of Constants and Numerical Data. Volume 12. Selected Constants Relative to Semiconductors. Established under the direction of P. AIGRAIN, Professeur, and M. BALKANSKI, Maître de Conférences, Faculté des Sciences de Paris. By C. BENOIT À LA GUILLAUME, R. COELHO, O. GARRETA, H. GUENOC, C. SÉBENNE and J. TAVERNIER. Pergamon Press Ltd., Headington Hill Hall, Oxford, England. 1961. i + 65 pp. 21.5 × 27.5 cm. Price, \$6.00.

The book is a compilation of numerical data describing the electronic and crystalline properties of roughly 80 semiconducting elements and compounds, chosen primarily on the basis of present or potential importance in semiconductor technology. Energy band structure, electron and hole effective masses and mobilities, crystal structure, magnetic, dielectric, thermal and elastic properties—some 20 to 30 physical constants in all—are tabulated for each material, to the extent that data are available. In the case of silicon and germanium there are additional tables of diffusion coefficients, binding energies, and solubility and segregation coefficients, for a number of impurity atoms. A literature reference is cited for each numerical constant listed, and there is an extensive supplementary bibliography as well. Explanatory textual material is presented in both French and English versions.

The information collected here is, for the most part, of relatively recent origin and is scattered widely in a voluminous international literature. Its compilation and critical evaluation would appear to have been a rather formidable task, which the authors have performed thoroughly and well. The data are presented in a convenient and adequately indexed format; the bibliography is unusually complete and is itself a valuable feature of the book. The volume should enjoy a very wide use indeed.

UNIVERSITY OF ROCHESTER
ROCHESTER, N. Y. DAVID DUTTON

Anodic Oxide Films. By L. YOUNG, British Columbia Research Council, University of British Columbia, Vancouver, British Columbia, Canada. Academic Press Inc., (London) Ltd., 17 Old Queen Street, London, S.W. 1, England. 1961. xiii + 377 pp. 16 × 23.5 cm. Price, \$11.00.

This is a satisfying book to read. It is well written, timely, provides good coverage of a field of current interest, contains pertinent illustrations, has few errors, and is well done from a mechanical point of view. Dr. Young has produced a suitable blend of theory and experiment.

The general characteristics of anodically produced oxides, the experimental methods of producing the oxides and of determining their characteristics—especially the film thickness, the theories of growth kinetics—are the concern of the first few chapters. Following this there is an extensive review of the work in this field on tantalum. This is one area of Young's own interest and shows the rather considerable attention he has given to it. There follows discussion on photo-effects, rectification, dielectric properties of anodic oxide films of the protective, high resistance, rectifying type, and on electrolytic capacitors. In all of the treatment the structural and mechanical character of the films are kept in mind. The final half of the book is concerned with the characteristics of anodic oxide films and of anodic processes of 33 metals, featuring aluminum and iron. The passivity phenomena, the postulates, and the models for passive behavior of iron are reviewed for the period starting with Faraday and continuing through 1960.

Related matters such as the structure and importance of the electrical double layer, adsorption, corrosion, semiconductor substrates, and other topics like these are introduced only where they serve to develop the main theme. Nonetheless there are numerous references given to these topics which point particularly to recent work and reviews. Also, there are two appendices with some more or less random thoughts of the author on the oxygen evolution reaction and on "electrochemical topics" such as electrode potentials, mixed potentials, etc.

As already implied this is a well organized book which should be very useful to those who want a critical review of the field or to those who need a good starting point to the literature of the field. It is not likely to start any controversy.

DEPARTMENT OF CHEMISTRY
UNIVERSITY OF TEXAS NORMAN HACKERMAN
AUSTIN 12, TEXAS

Scientific Foundations of Vacuum Technique. Second Edition. By SAUL DUSHMAN, Late Assistant Director, Research Laboratory, General Electric Company, Schenectady, New York. Revised by Members of the Research Staff, General Electric Research Laboratory. J. M. LAFFERTY, Editor. John Wiley and Sons, Inc., 440 Park Avenue South, New York 16, N. Y. 1962. xviii + 806 pp. 16 × 23.5 cm. Price, \$19.50.

The difficult problem of revising the classic and comprehensive first edition of "Scientific Foundations of Vacuum Technique" by Saul Dushman has been admirably handled by the revisers. To simplify the problem, a number of scientists with specialized knowledge from the General Electric Research Laboratory collaborated in the revision. With the advance of knowledge and vast accumulation of information in the vacuum field, it is unlikely that any one person today could have revised and improved the first edition. However, those who tackled the revision as a team effort have been able to do so.

The original plan of the book has been retained and a number of the sections of the first edition have been reprinted. Some less important material has been omitted to make room for the inclusion of new developments in the field.

The treatment of the kinetic theory is substantially the same as it appeared in Chapter 1 of the first edition. Even though there are a number of books on this subject, a treatise on vacuum technique would not be complete without a section on the kinetic theory. The treatment of the kinetic theory is concise and presented in a way to serve as background information for subsequent chapters.

In Chapter 2 the flow of gases through tubes and orifices is adequately covered. A new introductory section has been added summarizing the theoretical methods of flow analysis and describing the nature and boundaries of molecular flow, viscous flow and flow in the transition range. The chapter goes on as before to develop formulas for these flow regions applicable to various shapes of tubes and orifices. New material has been added dealing with corrections to be applied to short tubes and for junctions between tubes of different radii in the incompressible flow range. Additional material has been included on molecular flow through short