

# BOOK REVIEWS

Selection of books for review is based on the editors' opinions regarding possible reader interest and on the availability of the book to the editors. Occasional selections may include books on topics somewhat peripheral to the subject matter ordinarily considered acceptable.



**Title** Clustering Phenomena in Nuclei  
**Editor** International Conference of Atomic Energy Agency, Vienna 1969, P. O. Box 433, New York, N.Y. 10016  
**Publisher** Unipub, Inc., P. O. Box 433, New York, N.Y.  
**Pages** 345 front and rear material  
**Price** \$10.00  
**Reviewers** P. F. Zweifel and David Kaplan

The volume *Cluster Phenomena in Nuclei* is a Conference Proceedings consisting of 14 invited lectures and 53 contributed papers on both theoretical and experimental aspects of clustering phenomena in nuclei. In addition, there are a seminar on "Transformation Brackets" given by M. Moshinsky and an overall summary by L. Rosenfeld.

The conference is testimony to the fact that still another model of nuclear phenomena is coming of age. The cluster model provides a description of the behavior of light nuclei and is, in a sense, complementary to the shell model which has its greatest successes in the medium A region.

Historically, the cluster model (more specifically the  $\alpha$ -particle model of the nucleus), predates the shell models. The discovery of the neutron, the existence of closed shells, etc., led to the emphasis on the latter and the dormancy of the

former. For several reasons there has been a renewal of interest in the cluster model. The use of electrons and  $\Pi$ -mesons as nuclear probes has provided more sensitive tests of the cluster description of the nuclear states. Theoretical progress has been made in the description of nuclear reactions in terms of free clusters and their relative motion while various bound state properties of nuclei have been computed.

This work is primarily aimed at the specialist in nuclear structure, with nearly all the articles requiring an extensive mathematical background. Those members of the American Nuclear Society who are concerned with cross-section calculation or evaluation should find it a useful addition to their libraries, not because the cluster model is used extensively by cross-section calculators but rather as a general "cultural" addition. Like all conference proceedings, the volume suffers from lack of coherence and continuity, but this is compensated for by the fact that much up-to-date information, not elsewhere available, may be found here. Also, the quality of the individual contributions vary markedly, but the review papers by Wildermuth and summary by Rosenfeld are particularly worthy of mention, and could be read profitably by anyone as a useful introduction to the subject.

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*Michigan and from 1953-1968 was at KAPL. He received his BS from Carnegie Mellon and his PhD in Physics from Duke (in 1954). A past member of the USAEC's advisory committee on reactor physics and of the ANS board of directors, his research interests include reactor and nuclear physics, neutron transport theory, and applied mathematics. He is a fellow of both ANS and APS. David Kaplan is Associate Professor of Physics at Virginia Polytechnic Institute and State University. He received his PhD from Illinois Institute of Technology (in 1960). His research interests are in nuclear physics and magnetic interactions.*

**Title** Progress in Nuclear Energy, Series IX, Analytical Chemistry, Vol. 10  
**Editors** D. C. Stewart and H. A. Eliot  
**Publisher** Pergamon Press  
**Pages** 474  
**Price** \$23.90  
**Reviewer** Charles E. Pietri

There is little doubt that this book, the tenth volume in this series, will benefit that segment of the nuclear community concerned with the chemical analysis of highly radioactive materials in hot cells and gloved boxes. It will also be educational to management and others associated with remote analysis in understanding the complex and often-