

KEEPING UP WITH A FAST-MOVING TECHNOLOGY

Title Materials Science Research, Vol. 2

Editors H. W. Otte and S. R. Locke

Publisher Plenum Press, 1965

Pages xiv + 319

Price \$13.50

Reviewer Stan J. Paprocki

This book is a compilation of papers presented at the 1964 Southern Metals/Materials Conference on Advances in Aerospace Materials, held April 16 and 17, 1964, at Orlando, Florida. All the papers are of excellent quality reflecting a well-planned and -organized conference.

The purpose of the conference was "to identify materials processes and methods that show the greatest potential in future space technology and to define the gap between mission requirements and materials applications". A review of the papers reveals that this objective has been fulfilled. The collection is presented in two parts: One part includes papers concerned with fundamental problems, and the other covers those related to applied research. Although there is no direct literary bridge between the fundamental and applied papers, they are more than usually complementary in subject matter.

Part I of the book is concerned with some of the more important fundamental factors that influence material properties. The relationship of grain boundaries to properties of ceramic materials, the characterization of defect structures and their influence on oxide materials, the effects of irradiation on molybdenum, and the role of dislocations in deformed beryllium are some of the timely subjects covered.

In Part II, some of the more advanced applied research work on materials is presented. All subject matter is of current importance and will be required reading for anyone interested in keeping abreast of this fast-moving technology. The papers cover such subjects as ductile chromium, formable sandwich structures, arc-cast tungsten, graphite-base refractory composites, glass microtape, and lightweight aerospace materials.

In summary, this second volume of *Materials Science Research* must be counted as one of the better editions of books that embody a series of papers presented at a technical conference. Full credit should go to its editors, who also were involved in organizing the technical program of the conference. The book is recommended for both engineers and scientists who have a strong interest in materials science and research.

Stan J. Paprocki is a Manager of the Materials Engineering Department at Battelle Memorial Institute, Columbus, Ohio. For the past 15 years he has been concerned with materials problems related to nuclear technology. Currently he is the Vice-Chairman of the Materials Science and Technology Division of the American Nuclear Society. His BS and MS degrees are in metallurgical engineering from the University of Illinois.

Ed. note: For a variety of reasons, it is not the policy of Nuclear Applications to review a book that comprises the collected papers of a symposium, although we may announce such books, depending on the subject matter. Occasionally, when the collected papers result in a well-rounded book of unusual merit or of particular interest to our readers, we make an exception to this policy.

THE MOST COMPREHENSIVE WORK ON SCINTILLATORS...

Title The Theory and Practice of Scintillation Counting

Author J. B. Birks

Publisher Pergamon Press, Inc., 1964

Pages xx + 663

Price \$17.50

Reviewer R. B. Murray

The first use of the scintillation counter in its present form (a scintillator optically coupled to a sensitive photomultiplier tube) occurred in the late 1940's. A few years later, in 1953, a monograph of some 150 pages (*Scintillation Counters*) was published by J. B. Birks; it gives a fairly comprehensive review of the properties of scintillating materials known at that time and their applications to nuclear counting and spectroscopy. The explosive growth in the development and applications of scintillation counters in the last decade is reflected in the size and scope of the present treatise. This volume represents a thorough and encyclopedic treatment of the mechanism of the scintillation process in various media and the applications of the scintillation method to diverse problems of radiation detection and spectroscopy. This book stands as the most comprehensive work available on the subject of scintillators and their uses, and it is likely to remain so for some time.

As indicated in the title, the contents of the book can be divided into two principal categories: (a) the interactions of radiation with scintillation media and the ensuing processes, which result in the emission of a scintillation pulse, and (b) the technical and instrumental aspects of the use of scintillation counters for specific applications. Under category (a), four chapters (about one-fourth of the book) are devoted to the fundamental