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 Properties of Refractory Metals

Author Walter D. Wilkinson

Publisher Gordon & Breach Science Publishers, 1969

Pages 332

Price $27.50

Reviewer Charles H. Pitt

This monograph is one of a series developed through the joint efforts of the American Society for Metals and the U.S. Atomic Energy Commission for the purpose of emphasizing the role of metallurgy in nuclear technology. It is directed primarily toward technologists concerned with the applications of materials in the nuclear field. However, it could be of value as a reference for metallurgy students or to those engaged in research in the refractory metals field.

An in-depth treatment of the properties of refractory metals with particular emphasis on fabrication practices and the use of these metals in nuclear reactors is presented for the commonly used refractory metals; namely, V, Cr, Nb, Mo, Ta, and W. No treatment is made of the rarer and more expensive metals such as Re and Hf.

An introductory chapter is given on the relationship between the electronic and atomic structure and certain physical characteristics of the refractory metals. The section on irradiation effects and nuclear properties in this chapter should have been expanded considering the intended audience of the book.

Good use of references is made for the aid of the reader who wishes to delve further into the subject material. Much of the material arises from the author's own experience and technical reports made available through work at Argonne National Laboratory.

Chapters are included on corrosion, effects of interstitials, ductility and brittleness, mechanical and deformation characteristics, and heat treatment of the refractory metals. In certain parts of the book fundamental explanations of such things as dislocations and recrystallization are given, which are not necessary for the average reader.

In some parts of the book, particularly when discussing the metals and alloys themselves, the use of empirical data was plentiful which is of value to the individual concerned with working with the metals, but the reader may get the feeling that he is being deluged with data. However, attempts are made throughout the book to relate electronic structure to properties and some interesting correlations are made and explained.

All in all, the book is an excellent summary of the state-of-the-art of the commonly used refractory metals as of 1967 and contains information that cannot be readily found elsewhere. It should be of value to materials engineers and designers contemplating work with refractory metals and to scientists concerned with them. The book, as a whole, is well written and organized and is a worthwhile addition to the literature on refractory metals. A companion volume is planned by the same author which will have the title "Fabrication of Refractory Metals."

Charles H. Pitt is Associate Professor of Metallurgy at the University of Utah. He received a BS in Metallurgical Engineering from the University of Wisconsin (1951) and a PhD degree from the Metallurgy Department of the University of Utah (1959). He spent one year as a postdoctoral NSF fellow at the University of Cambridge (1960-61). He has done research in recrystallization of metals and alloys and in dislocation movements in metals. He is presently on sabbatical leave from the University of Utah working in the Metallurgy and Ceramics Department of Battelle-Northwest Laboratories at Richland, Washington.

Title The Careless Atom

Author Sheldon Novick

Publishers Houghton-Mifflin Company, Boston, Massachusetts, 1969

Pages 225 + front material

Cost $5.95

Reviewer John O. Mingle

In recent testimony on "The Environmental Effects of Producing Nuclear Power" before the Joint Committee on Atomic Energy of the