

BOOK REVIEWS

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



High-Vacuum Technology: A Practical Guide

Author Marsbed H. Hablanian
Publisher Marcel Dekker, New York (1990)
Pages 432
Price \$99.75
Reviewer Russell DeYoung

Vacuum technology affects virtually every technological discipline today. Thus, this text fills an important need, which is to be a nonanalytical introduction to high-vacuum technology for engineers and technicians who want a general overview of the field. It emphasizes practical considerations of vacuum technology. For example, the book would be useful to graduate students wishing to understand the practical aspects of vacuum science quickly, while also gaining a general understanding of the wide variety of vacuum pumps and measurement techniques available to help them make intelligent choices when using vacuum technology with their specific research program. Because the book is not a design handbook, many details of particular systems are omitted.

The book begins with an overview of basic properties of gases in relation to vacuum systems with the practical considerations of outgassing and water vapor effects. References that allow the reader to explore the chapter topic further are given at the end of each chapter.

Next, the author presents fluid flow and pumping concepts. He gives a good overview of such important vacuum concepts as conductance, molecular flow, diffusion, and permeation of gases in solids. The next chapter describes techniques necessary to achieve high vacuum in actual systems, using theory to construct the complete vacuum system.

The focus then shifts to specific vacuum pumps. Course vacuum pumps are discussed first; a lengthy discussion of diffusion pumps follows. Remaining chapters deal with molecular pumps, cryogenic pumps, ultrahigh-vacuum techniques, vacuum gauges and analyzers, and, finally, methods of leak detection. The book also includes a helpful appendix that

provides vacuum formulas, a listing of vacuum standards, various vacuum conversion charts, and an especially interesting feature, a vapor pressure graph of common elements at various temperatures.

I found this text to be helpful as a basic overview of vacuum techniques, pumps, and measurement gauges. It is designed for the person who has a hands-on approach to vacuum technology.

One negative aspect of the book is its use of figures. There are numerous detailed figures such as mechanical drawings of pumps with no labels for the various important parts. Such figures are of little help to the reader and should be substantially revised in future editions.

The book is a welcome addition to the literature on the practical aspect of vacuum technology.

Russell DeYoung is a senior research scientist at the U.S. National Aeronautics and Space Administration Langley Research Center. His research interests involve laser development for space power-beaming applications. He is also involved in gas laser development and reactor pumped lasers.

Tritium and Helium-3 in Metals

Author Rainer Lasser
Publisher Springer-Verlag, Berlin (1989)
Pages 159
Price \$54.50
Reviewer James L. Anderson

This is a powerful little book that takes a great stride toward filling a gap in the literature. There are many books, reports, and conference proceedings devoted to metal hydrides. However, while much information on metal tritides