

# 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.



## Springer Tracts in Modern Physics

*Authors* L. Koester and  
A. Steyerl

*Publisher* Springer-Verlag  
(1977)

*Pages* 135

*Reviewer* William Morris Farr

In a straightforward and highly readable manner, these two authors have managed to succinctly summarize a field of growing scientific concern: the physics of extremely low energy neutron interactions. From both theoretical and experimental viewpoints, they have reviewed recent developments in the production, scattering, and detection of neutrons with energies  $<10^{-4}$  eV. Their discussion of present and future experiments into basic nuclear properties places the theory and experiment into a context that makes for easy reading for newcomers to this field of physics. Included are some brand new, previously unpublished data. The orientation is more toward the physicist than the power plant engineer, and the reader will be disappointed if he or she defines an "application" as something other than the search for the neutron electric dipole moment or a more accurate measurement of its half-life against beta decay. However, if you have ever wondered what happens below the "1/v region," this is your opportunity to find out.

*William Morris Farr (BA, physics, Rice University, 1960; MS, nuclear science, University of Michigan, 1962; PhD, nuclear science, University of Michigan, 1966) is an*

*assistant professor of nuclear engineering at the University of Arizona. His interests lie in the field of controlled thermonuclear reactors and plasma instabilities.*

**Some Physical Dosimetry and Bio-medical Aspects of Californium-252**  
(Proceedings of an Educational Seminar, Karlsruhe, April 14-18, 1975)

*Publisher* Unipub, Inc.

*Pages* 280

*Price* \$18.00 (soft cover)

*Reviewer* Laurel L. Wilkening

Since  $^{252}\text{Cf}$  became commercially available in the late 1960's many diverse applications have been found for it. Californium-252 is relatively inexpensive, portable, and well-characterized. These attributes are continually leading to new applications in a variety of fields. In neutron activation analysis alone, portability and compact size mean applications never before possible in fields ranging from ocean-bottom prospecting to in-plant analysis of reactor fuel rods.

The purpose of the seminar was to permit scientists participating in the  $^{252}\text{Cf}$  loan program of the International Atomic Energy Agency (IAEA) to exchange information regarding their experiences with  $^{252}\text{Cf}$  in teaching and research. This soft-cover volume is a selection of 17 of the lectures presented at the seminar. Abstracts of other papers are included at the end of the book. The 17 are divided into four general topics: Physics and Spectra Experi-

ments, Dosimetry, Radiobiology and Medicine, and Educational Aspects. As might be expected for a meeting covering such a diverse and rapidly expanding subject, some applications are not covered. Nevertheless, the selections are varied enough to reflect the scope of applications.

There is a diversity of format and style among the papers. Some of the papers are in-depth reviews of rather specialized topics, e.g., "Helium-Jet Transport Technique Applied to a Californium-252 Source at the Temperature of Liquid Air," whereas others are relatively superficial surveys of several topics, e.g., "Use of Californium-252 Sources in India for Teaching and Research" or "Use of Californium-252 Sources in Hungary for Teaching and Research." Along with several others, the article by G. J. Lutz, "Activation Analysis with a Californium-252 Source," and the two-part article by C. H. Paine et al., "The Place of Californium-252 in the Treatment of Human Tumors," seem to this reviewer to strike a happy mean for this type of volume.

Most of the articles suffer from overuse of jargon, which is especially disconcerting in a book with an interdisciplinary scope. The result is that specialists are likely to read only the articles in their specialty. This would be unfortunate since one of the most valuable aspects of the book is information regarding the common problems of handling, storing, and using californium sources. Most articles, regardless of topic, give diagrams of their storage containers, irradiation chambers, and shields. Hence, individuals planning to use  $^{252}\text{Cf}$  for the first time can benefit from the experiences of others presented in this volume, especially with respect to constructing

storage facilities, personnel shields, collimators, etc. Of course, this book should not be the only source consulted by a new user of  $^{252}\text{Cf}$ . For example, the IAEA's manual *Californium-252 in Teaching and Research* (Technical Reports Series No. 159) presents necessary information in a more systematic manner.

In summary, this volume should

be quite useful to those planning to obtain a  $^{252}\text{Cf}$  source for the first time. Present users of  $^{252}\text{Cf}$  sources who are seeking to diversify their applications may also get some ideas from this book.

*Laurel L. Wilkening (PhD, chemistry, University of California at San*

*Diego) is assistant professor of planetary sciences at the University of Arizona. Trained as a chemist, her research involves application of nuclear and inorganic chemistry to problems in earth and planetary sciences. She has been using  $^{252}\text{Cf}$  since 1969 as a fission-fragment source in her study of radiation damage in meteorites and lunar rocks.*