BOOK REVIEW

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.

Biomedical Particle Accelerators

Author Waldemar H. Sharf

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Reviewer Lynn J. Verhey

This book was originally written in Polish in 1992, then translated into English by Oskar Chomicki, and finally edited for publication by Jeffrey Seibers. It represents an attempt to survey all common biomedical applications of particle accelerators. The survey includes radiotherapy with electron accelerators (primarily linacs), radiotherapy with protons, heavy ions, mesons, and neutrons using particle accelerators, synchrotron radiation sources, radioisotope production facilities, accelerators used in sterilization and preservation of food, and biomedical analysis using ion beams.

The title of the book, *Biomedical Particle Accelerators*, is misleading because the book does far more than survey the accelerators used in these applications. It also makes an honest effort to survey the applications themselves. As an example, in radiotherapy with electron accelerators, approximately 80 pages are devoted to a description of the accelerators, while over 150 pages are used to survey beam characteristics, typical uses, dosimetry methods, treatment planning concepts, radiation protection and control systems. While not complete, this survey of the field should be quite interesting to engineers and physicists who want to understand the vocabulary of the field and the basic concepts of treatment planning and beam delivery.

In a similar vein, the chapters that review nonconventional radiotherapy applications (particles other than photons and electrons), synchrotron radiation, isotope production, microbeam analysis methods, and food processing contain enough description of the applications so that biomedical physicists and engineers and accelerator physicists can learn important aspects of these fields.

The book is an interesting mix of accelerator technology and biomedical applications. Although the author has done a thorough job of researching the application areas, it would appear that he does not actively work in any of them, as indicated by a lack of the perspective that can only be achieved by constant immersion in a field. Nevertheless, he has researched the applications so well, one could easily justify the purchase of the book solely on the basis of the excellent bibliography. In addition, the book could be very helpful to those of us who are occasionally called on to lecture on subjects in which we are not experts. Overall, *Biomedical Particle Accelerators* should be a welcome addition to the library of resource books for physicists and engineers working in biomedical fields that use particle accelerators.

Lynn J. Verhey (PhD, experimental particle physics, University of Illinois, 1968) taught physics at the University of California–Los Angeles and performed experiments at Lawrence Berkeley Laboratory from 1968 to 1970. From 1970 to 1975 he taught physics at Harvard and performed experiments at Fermilab, and from 1975 to 1990 he worked on the development of proton radiotherapy at Massachusetts General Hospital (Harvard Medical School). He is currently chief of physics and vice-chair of the Department of Radiation Oncology at the University of California–San Francisco. His research interests lie in the development of new techniques for radiotherapy beam delivery, which can enhance the ratio of target dose to normal tissue dose.