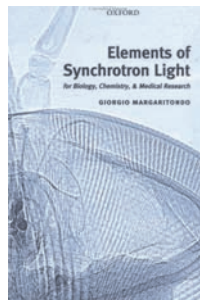


Elements of Synchrotron Light for Biology, Chemistry, and Medical Research

Giorgio Margaritondo
Oxford U. Press, New York, 2002.
\$100.00, \$55.00 paper (260 pp.).
ISBN 0-19-850930-8,
ISBN 0-19-850931-6 paper

Giorgio Margaritondo's goal in writing *Elements of Synchrotron Light for Biology, Chemistry, and Medical Research*, was, according to the preface,



to "present a simple, practical and broad picture of synchrotron light sources," specifically for "beginning or prospective synchrotron users in chemistry, the life sciences, medical research and related

fields." The author has achieved much of his goal in admirable fashion.

More than a decade ago, Margaritondo wrote *Introduction to Synchrotron Radiation* (Oxford U. Press, 1988), which is oriented toward physicists. Today, synchrotron light has grown from something used primarily by condensed matter physicists to a potent and often used tool for scientists from diverse fields and backgrounds. Thus, a book is needed that clearly explains the fundamentals of synchrotron light and what can be done with it. I know of no other book that has taken Margaritondo's latest approach—namely, to comprehensively survey synchrotron radiation applications for biologists, chemists, and physicists.

The challenge of the book is to avoid intimidating scientists from diverse fields while still satisfying the physicist's desire for comprehensive insight. Margaritondo uses technical sidebars to meet this challenge, which allows the reader to either skip the details or gain a deeper appreciation of the basic physics.

The formidably large and complex nature of synchrotron facilities can be a significant barrier for the beginner. Accordingly, the first chapter of the book starts with a brief "smart-tourist guide" to a synchrotron light facility. It then goes into beautiful explanation of the way in which relativity leads to the prominent characteristics of synchrotron radiation. A short second chapter explains the parts of a typical synchrotron facility.

The third chapter, nearly 60% of the text, is a survey of applications of synchrotron light. These applications, organized by method, are illustrated by copious figures referenced to original publications. The reader will find this part to be most useful as a handbook for finding a way to probe different kinds of specimens. The book concludes with a chapter on future light sources and another on future directions.

This first edition has more than its share of technical typographical errors. One hopes that these errors will be corrected in future editions. The book could also benefit from a good bibliography of relevant texts organized by technique. In addition, it would have been helpful had the book covered in more depth certain important topics that concern users, such as detectors, phasing and refinement methods in crystallography, and Rietveld refinement.

Even so, *Elements of Synchrotron Light for Biology, Chemistry, and Medical Research* is a useful guide to techniques and the literature. Margaritondo has a gift for explaining fundamentals in an intuitively accessible fashion that will be appreciated by both the novice synchrotron user and the experienced synchrotron physicist. This is not a book that explains any one technique in how-to, cookbook fashion. Rather, it surveys the broad range of synchrotron radiation methods to inform the reader about what can be done. I find myself frequently recommending it to others.

Sol M. Gruner
Cornell University
Ithaca, New York

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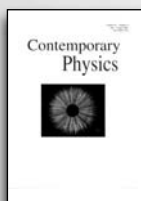
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