Biological and Medical Physics, Biomedical Engineering

Stephen P. Cramer

X-Ray Spectroscopy with Synchrotron Radiation

Fundamentals and Applications

The subject of this book is x-ray spectroscopy using synchrotron radiation. The first half of the book teaches synchrotron users to understand their instruments by discussing how synchrotron radiation is produced, processed by optics, and detected. The second half of the book describes the important spectroscopic techniques that use synchrotron x-rays. These include the popular EXAFS method, as well as more recently developed techniques such as X-ray magnetic circular dichroism (XMCD), resonant inelastic x-ray scattering (RIXS), and nuclear resonance vibrational spectroscopy (NRVS). Thanks to the detailed descriptions in the book, prospective users will be able to quickly begin working with these techniques and be able to write intelligient proposals for beam time. Along with plentiful illustrations, this work includes supplemental Mathematica notebooks, which can be used for some of the more complex calculations and as a teaching aid.

ISBN 978-3-030-28549-4

▶ springer.com