

Elements of Modern X-ray Physics

Second Edition

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It is over a decade since the first edition of the bestseller *Elements of Modern X-ray Physics* was published. Given the immense level of interest in X-rays and their exploitation, there have been extensive developments in this field in the intervening years. In response to this progress, *Elements of Modern X-ray Physics* has been completely revised and updated and includes:

- A new chapter on X-ray imaging with an emphasis on recent progress
- A new chapter on the determination of the structure of non-crystalline materials, including liquids, glasses, polymers and bio-molecules
- Exercises and solutions at the end of most chapters

This new edition will appeal to students of courses in X-ray science, as well as biologists, materials scientists, chemists, geologists and physicists using synchrotron radiation in their research.

The availability of intense beams from modern sources has revolutionized the field of X-ray science. The capabilities of these new sources is exemplified on the front cover which shows the diffraction pattern from a crystal of the Photo Active Protein (PYP) obtained using a single pulse of X-rays lasting only 100 pico seconds from a synchrotron storage ring. This extremely short exposure time is contrasted on the back cover with the 1000 seconds or so it took von Laue to record one of the first ever X-ray diffraction patterns from a crystal of ZnS approximately a century ago.

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