



International Tables for Crystallography, Volume I: X-ray Absorption Spectroscopy and Related Techniques, 1st Edition

An authoritative reference work for all levels of expertise



Edited by Bruce Bunker, Christopher Chantler, and Federico Boscherini

- **Print ISBN: 9781119433941**
- **Aug 2024**
- **Hardcover**
- **1088 pages**
- **List price: US \$450.00**

An essential resource

This volume is a must-have resource for the global XAS community of practitioners, beamline scientists, experts, and academics – as well as the novice user who wants to discover what XAS and XES can do for them and how they can use these techniques. A self-contained, authoritative reference work, it can also be used for training, learning, or teaching, providing practical guidance for readers of all experience levels.

Want more information on the volumes in the series International Tables for Crystallography? Visit <https://it.iucr.org>.

Please contact your local Wiley sales representative for any queries or to place your orders.

X-ray absorption spectroscopy and X-ray emission spectroscopy are complementary to crystallographic methods, particularly for materials science and the study of nanostructure and systems with partial disorder and partial local order, including solutions, gases, liquids, glasses, and powders.

This new, fully updated volume of International Tables for Crystallography has over 150 chapters contributed by a wide range of international experts, and is split into nine parts:

- **Part 1:** provides a brief overview and introduction to the background of X-ray absorption spectroscopy (XAS) and experimental facilities.
- **Part 2:** discusses the quantum theory of XAS and related approaches.
- **Part 3:** describes both standard and advanced experimental methods used in XAS, X-ray emission spectroscopy (XES) and related techniques.
- **Part 4:** covers both standard and more advanced pre-processing of data.
- **Part 5:** gives an extensive overview of the analysis of experimental data.
- **Part 6:** provides details of the major software packages for data collection, reduction and analysis.
- **Part 7:** outlines the importance in science, reporting and hypothesis testing of the exchange of input and processed output data, and data deposition. It also presents excerpts of tables of data and supplementary material for XAS, pre-edge studies, X-ray absorption near-edge spectroscopy (XANES) and X-ray absorption fine structure (XAFS) studies. These tables are also available in full as online supporting information.
- **Part 8:** explores a wide range of applications of XAS in fields including materials science, physics, chemistry, biology, earth sciences, catalysis and cultural heritage.
- **Part 9:** presents definitions of the terms and quantities used, as developed by the International Union of Crystallography's Commission on XAFS.

WILEY