

## CHAPTER OVERVIEW

### 4: X-ray Spectroscopy

XAS, or X-ray Absorption Spectroscopy, is a broadly used method to investigate atomic local structure as well as electronic states. Very generally, an X-ray strikes an atom and excites a core electron that can either be promoted to an unoccupied level, or ejected from the atom. Both of these processes will create a core hole. If the electron dissociates, this produces an excited ion as well as photoelectron and is studied by X-ray Photoelectron Spectroscopy (XPS).

[4.1: Physical Principles](#)

[4.2: Photoelectron Spectroscopy - Valence Ionization](#)

[4.3: Back to Basics](#)

[4.4: Experimental Details](#)

[4.5: X-ray Photoelectron \(XPS\) Spectroscopy](#)

[4.6: X-ray Absorption Spectroscopies](#)

[4.7: Experimental modes and Data Analysis](#)

[4.8: Introduction to X-ray Absorption Spectroscopy \(XAS\)](#)

[4.9: X-Ray Absorption Near Edge Structure \(XANES\)](#)

[4.10: X-ray absorption fine structure \(XAFS\)](#)

---

4: X-ray Spectroscopy is shared under a [CC BY-NC-SA 4.0](#) license and was authored, remixed, and/or curated by LibreTexts.