Crystallography and Diffraction
Theory and Modern Methods of Analysis

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Aims

This course aims to introduce basic concepts in crystallography and provide practical experience in modern methods of diffraction data collection and analysis.

Learning Outcomes

By the end of this course students should be able to:

- Describe the symmetry of crystals including determination of space groups from diffraction data.
- Sketch the reciprocal lattice for monoclinic and orthogonal crystal lattices and explain the relationship between direct and reciprocal lattices.
- Describe the principles of diffraction methods as applied to crystalline solids, including the limitations and capabilities of diffraction methods.
- Describe the processes involved in data collection and structure determination from single crystal X-ray diffraction data.
- Describe and carry out X-ray diffraction data collection from powder samples.
- Perform Rietveld analysis on powder diffraction data and to interpret the results.
- Understand the concepts of electron diffraction.
- Describe the procedures for diffraction analysis of amorphous solids.

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