**Selected chapters in X-Ray Diffraction (XRD)**

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IPCMS

X-ray diffraction (XRD) is a non-destructive analytical technique and relies on the nature of X-rays to obtain information about the structure of crystalline materials. A primary use of the technique is the identification and characterization of compounds based on their diffraction pattern. However, X-ray Diffraction provides also detailed information about the internal lattice of crystalline substances, including unit cell dimensions, bond-lengths, bond-angles, details of site-ordering and can be used to solve the crystal structure.

**Main Topics:**

* History, symmetry and formalism of XRD (refresher course)
* Experimental aspects
  + Laboratory diffractometers
  + Regulations in France (French Nuclear Safety Authority)
  + Introduction to Synchrotron beam
* Powder X ray diffraction
  + Le Bail and Rietveld Refinements
  + Microstructure
  + Ab initio crystal structure solution from powder diffraction data
* X-ray diffraction on single crystal
  + Data reduction
  + Structure solution and calculation of the electron density map
* X-ray diffraction on thin films
  + Investigations of epitaxial thin films (reflectivity, Φ-scan, reciprocal space mapping, …)
* Introduction to the Resonant X-Ray Scattering (REXS)
  + The anomalous factors
  + Data refinement

**Time:** 4, 7, 11, 18, 25 and 28 of April 2016 from 16:00 to 18:00

**Place:** Auditorium, Institut de Physique et Chimie des Matériaux de Strasbourg, 23, rue du Loess, 67034 Strasbourg.