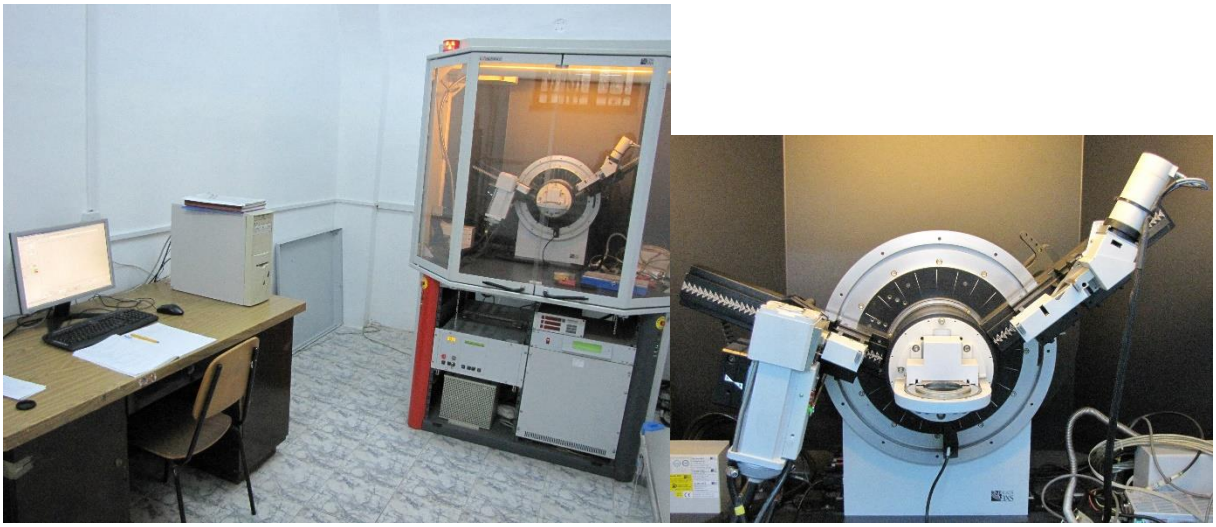
Contact person: Conf.dr. Daniel Andreica (daniel.andreica@phys.ubbcluj.ro)

STRUCTURAL ANALYSIS LABORATORY

X-Ray Diffractometer

X-ray diffraction (XRD) is a powerful nondestructive technique for characterizing crystalline materials. It provides information on crystal structure, phase, preferred crystal orientation (texture), and other structural parameters, such as average grain size, crystallinity, strain, and crystal defects.



Within the Ioan Ursu Institute we maintain and staff an X-ray diffraction laboratory, equipped with a D8X Advance X-ray diffraction equipment from Bruker (XRD). We can collect high quality data for a wide range of analysis objectives, including:

- Routine sample analysis: Phase identification and purity
- Quantitative phase analysis
- Crystal structure determination and Rietveld analysis
- Crystallite size determination via Scherrer or whole pattern fitting methods
- Non ambient experiments: 77K to 1200 K

Metallographic Microscope

The metallographic microscope in our laboratory allows us to view images of bulk and powder samples with a magnification of up to 100 times. The microscope is equipped with different light filters and a CCD camera, being capable of capturing digital images which can then be processed

using appropriate software. By using the metallographic microscope combined with image processing software we can determine the presence different phases in properly prepared bulk samples and particle sizes and shapes in powder samples.