

A new synchrotron endstation for nanofocus X-ray diffraction, imaging and fluorescence.

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The advent of high-brightness, third generation synchrotron sources and improvements in X-ray focusing optics has enabled new techniques for mineralogical investigations with nanometre spatial resolution.

At ID11, the Materials Science beamline at the European Synchrotron Radiation Facility (ESRF), a new end station, the “nanoscope”, has recently been built to provide real-space maps of the local lattice structure, crystal orientation and grain morphology, together with a classical diffraction and fluorescence approach.

Since Earth materials are often heterogeneous, X-ray nano-beam studies are valuable in unraveling this complexity. Spatial resolution down to 200 nm is achievable. This contribution will illustrate the application of the nano-focus station to the three following cases:

- *Structure determination of a single crystal fibre - the case of ferrierite;*
- *High temperature behaviour of Tremolite;*
- *3DXRD grain mapping of labradorite;*
- *Structure characterization of asbestos fibres found in human tissues.*