

The Fluorescence Microprobe at the LnlS

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At the Laboratório Nacional de Luz Síncrotron (LNLS) the microfocus fluorescence beamline will be operational in summer 1998. X-ray fluorescence with synchrotron radiation (SY-XRF) is an analytical method for determining the concentration of elements in the ppm level.

The use of synchrotron radiation instead of conventional x-ray tubes increase the sensitivity of the method substantial. This is due to the higher intensity, the spectral composition, beamfocusing and the decrease of background as a result of the polarization of the exciting spectrum.

The sample can be excited by the "white" spectrum or monoenergetic. The choice of the excitation conditions has a considerable influence for the detection limits. The quantification of the measurements is possible by different mathematical techniques, like Monte Carlo simulation, fundamental parameter programs or, if suitable standards are available, most easily with the calibration by standards.

The use of capillaries or mirror optics offers the possibility to examine sample with a spatial resolution of a few mm. One important function is the use of the setup as a scanning microprobe. A two dimensional scan over an unopened fluid inclusion is shown as example.