

## ANALYSIS OF ELEMENTS IN ENVIRONMENTAL SAMPLES BY MICRO-XRF

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Micro-XRF is an effective tool for the qualitative and quantitative analysis of elements in environmental samples such as soil, air particulate, biological and medical samples and so on. The micro-XRF spectrometer consists of an X-ray tube with multi excitation sources, the doubly curved crystals (DCC), silicon drift detector (SDD) system, and position detection unit of micro-particle.

The micro-focus (approx.30 $\mu$ m) and high brightness X-ray tube is used in this system. The X-ray tube has three targets (Cr, W, Rh) on anode. The targets can be selected by moving the anode position.

Generally the capillary optics or DCC optics are used for focusing X-rays system on micro scale area. In capillary optics, X-rays can be focused but unnecessary continuous X-rays and characteristic X-rays are focused on a sample surface, too. However, in the DCC optics, the X-rays are not only focused but also monochromatized on a sample and then, the background should be reduced and should be improve lower limits of detection. For higher counting rate and higher peak to background ratio, SSDD is selected as a detector with large effective diameter.

Particles in atmosphere air and trace elements in glasses were measured and performance of this system was evaluated. The performed elemental mapping is done, also.

This study, thus, introduces the micro-XRF for environmental samples, and discusses the results obtained in our laboratory.