Micro X-ray Fluorescence (Micro-XRF) is a well established tool to determine the spatial distribution of major, minor and trace elements in a sample. It is widely used to investigate samples from different fields (biology, geology, life science, etc.). Most available micro-XRF spectrometers operate in air which does not allow the analysis of low-Z elements. In order to extend the analytical range down to light elements, a special micro-XRF spectrometer has been installed at the Atominstitut of the TU Wien [1].

Recently the spectrometer has been extended to confocal micro-XRF geometry by installing a second polycapillary X-ray optics (XOS) in front of the energy dispersive detector. Alignment of both optics is now fully automated using two xyz-stacks of attocube ANPx/z101 piezzo positioners. This allows the alignment process to be done under vacuum condition, like the measurements. In this work the modifications to the spectrometer, characterisation of the modified spectrometer and test measurements are presented.

The energy dependent size of the effective measurement volume (resolution) ranges from about 35x35x35 μm³ for ZrKα to about 85x85x85 μm³ for AlKα. The lower limits of detection are in the range of ppm. 3D scanning capabilities are demonstrated using a special test structure (microscopic Cu cross on an X-ray screen). An example application of the spectrometer is depth profiling of historic paint layers. Several test samples were measured.

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