

Low-level Elemental Analysis of Filters

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Analysis of filters using XRF is straight-forward: The filter is fixed into a sample cup and can conveniently be measured under vacuum in the XRF spectrometer. This analysis is usually done using ED-XRF, because the lower power guarantees that the sometimes very thin filters are not damaged during the measurement, which could possibly lead to false results.

However, it can be tricky to measure certain elements due to the configuration of most ED-XRF spectrometers. Low levels of heavier elements can be hard to achieve, if the excitation energy is not sufficient or sum peaks and escape peaks interfere with the signal. The characteristic lines of lighter elements of interest (S, P, Cl) often interfere with the L-lines of the X-ray tube, so measuring lower concentrations is challenging.

Using WD-XRF solves these problems, because the resolution is better and typical ED-XRF spectral effects are avoided. However, the high power can burn the filters. This last issue is cleared up when using a low power WD-XRF system. Here we demonstrate the analysis of low levels of Br and Cl using a 400W WD-XRF spectrometer, Bruker's S6 Jaguar.