

## **Zetium X-Ray Fluorescence Spectrometer (Malvern PANalytical)**

Wavelength dispersive X-ray fluorescence (WD-XRF) spectrometers are typically employed for both routine and non-routine analyses of a wide range of materials such as ferrous and non-ferrous alloys, oils, slags and sinters, ores and minerals, thin films, glasses, powders, solutions, etc. The Malvern Panalytical Zetium belongs to the latest generation of XRF spectrometers. Bulk analysis of well-known samples and totally unknown samples can be carried out, the method offers the possibility to analyse very accurate, in a non-destructive way, a wide range of bulk materials, qualitatively as well as quantitatively. The Omnian application offers semi-quantitative analysis without standard samples. Quantitative measurements for silicate-based materials are done with the Super-Q software, which is periodically calibrated with certified international standards. The spectrometer is able to identify and quantify elements from Be (4) up to U (92), in a range from % to ppm level, depending on the element and the surrounding matrix. Accuracy and precision of the analyses is in most cases limited by the quality of the samples and the standards.

Technical insights:

4000W “Super Sharp X-ray Tube” (SST) with Rhodium Anode and a CHI-BLUE window coating for superior light element performance.

Duplex Xenon detector, Scintillation detector for elements heavier than Zn as well as two Flow (Argon/Methane) detectors for light and coarse elements.

Installed crystals LiF 200, LiF 220, Ge 111, PE 002 and PX-1.

Thermal stable cabinet with an integrated x-y-z sample changer and a high precision goniometer with Direct Optical Position Sensor (DOPS2).

SuperQ analytical software:

Omnian calibration for standardless analysis

Pro Trace calibration for quantitative trace element analysis

Calibration for fully quantitative analysis of silicate-based materials based on certified international standards