

MICRO-X-RAY FLUORESCENCE AS AN EXTENSION OF THE ANALYTICAL SCANNING ELECTRON MICROSCOPE

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Recent technological developments of both small-power X-ray tubes and focusing X-ray optics have enabled the construction of compact micro-focus X-ray sources which can be easily attached to a scanning electron microscope (SEM). With an X-ray spectrometer (at present available at the most SEM's) it is then possible to benefit – complementary to the electron probe microanalysis (EPMA) - from the analytical advantages resulting from the use of the X-ray fluorescence (XRF).

The new analytical figures of merit which can be gained by combining the two types of excitations, i.e. electrons and photons, in a SEM will be highlighted with practical examples.

With respect to the XRF quantitation it will be presented how the X-ray excitation spectra emitted by the X-ray source are characterized. Both the procedures of determination of the X-ray tube spectra and of the transmission function of the X-ray optics will be described.