

TRACE ELEMENT ANALYSIS USING EDXRF WITH POLARIZED OPTICS

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Energy dispersive type of x-ray spectrometers are useful analytical tools for screening analysis, such as for environmental applications owing to compact and easy sample handling. However, the preparation of standard samples that match the “unknown” samples can be difficult for applications such as industrial waste and recycling raw materials, due to complicated sample matrices and no commercially available standards in many cases. Improved sensitivities for trace elements are also demanded for the environmental applications in the view point of performance of spectrometers.

Standardless analysis method using fundamental parameter (FP) method is a useful tool for screening analysis. However, unknown matrices of non-measuring elements can cause errors for samples containing organic materials.

We have developed an EDXRF spectrometer with polarized optics and new quantification software which estimates non-measuring sample matrices using scattering intensities and full profile fitting method combined with FP. The analyzed results using the new spectrometer gave accurate results for various kinds of samples with improved detection limits.

Results for environmental, pharmaceutical and biological applications will be presented.