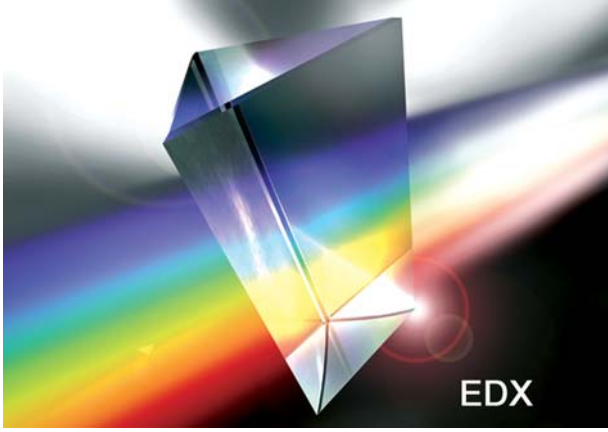
Application Note



Analysis of Food Products for Contamination

Description:
In order to provide a benefit to public health concern, Toxic elements and compounds have been tested in a variety of contaminated food products. As part of an ongoing Japanese mandate, to accurately test foods, the EDX provides a solution for testing if a food product contains as low as 0.5 ppm (and below) of Arsenic. Using a number of x-ray beam filters, the EDX 700/800 is able to increase the signal to noise ratio of specific elements.

Application Data
The following five (5) figures show various spectrums of elements in differing concentrations. In addition the benefit of using a primary beam filters are shown. All of these spectrum are acquired with the use of a primary beam filter. Notice how the spectrums are greatly enhanced through the use of a beam filter.

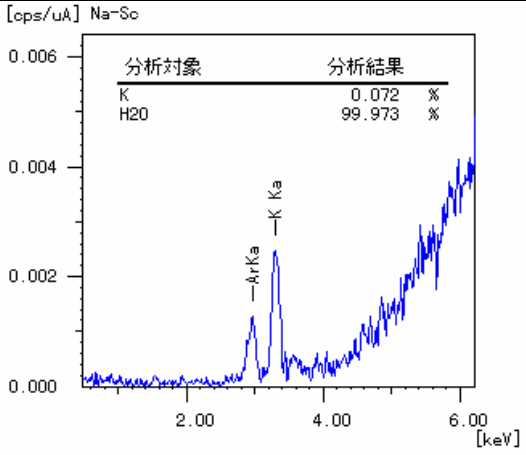


Fig.1 Qualitative and Quantitative Analysis of Oolong Tea Mixed KCN. This spectrum is obtained using an Aluminum Filter.

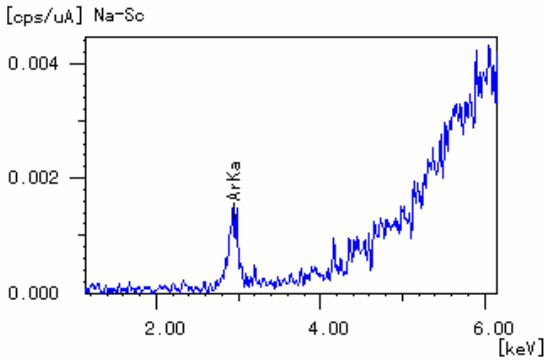


Fig. 2 Qualitative Analysis of pure Oolong Tea. This spectrum is obtained using an Aluminum Filter

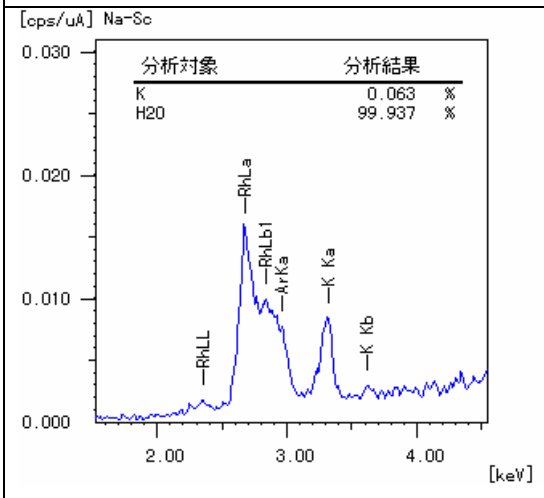


Fig.3 Qualitative and Quantitative Analysis of Oolong Tea Mixed KCN with No Filter

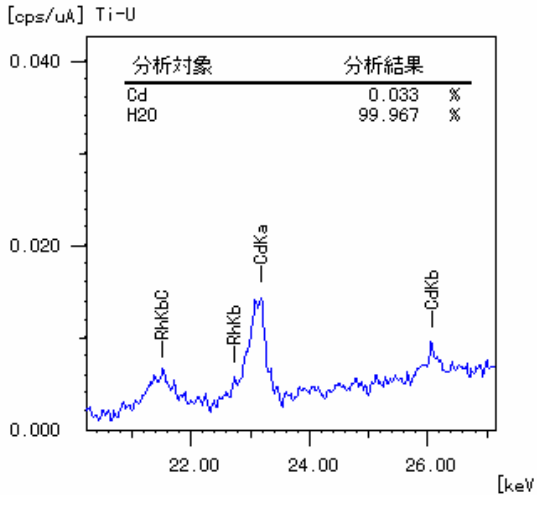


Fig.4 Qualitative and Quantitative Analysis of Oolong Tea Mixed Cd.

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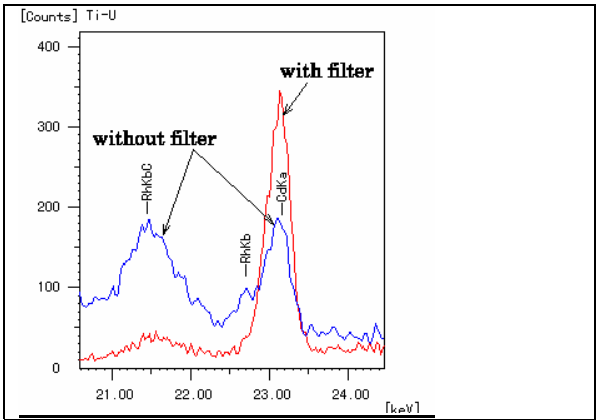

Fig.5 Qualitative and Quantitative analysis of Oolong Tea with and without an Aluminum Filter

Result Summary

Detection Limits

Element	*Measurement Time*	*Al Filter*	*Al Filter in Vacuum*	*No Filter*
K	40 Seconds	88 ppm	49 ppm	120 ppm
K	100 Seconds	56 ppm	31 ppm	76 ppm
K	1000 Seconds	18 ppm	10 ppm	24 ppm

Measuring Conditions: Result Summary

Quantitative Accuracy:

Samples were made with 0.39 % As. Semi-quantitative results, without the use of standards showed the following results.

Element	*Oolong Tea*	*Juice*	*Curry*
As	0.39 %	0.35 %	0.33 %
H_2O	99.61 %	99.65 %	99.67 %

Minimum Detection Limits:

The minimum detection limit of Arsenic with and without filters is shown in Table 1.

Measurement Times	With Ni Filter	Without Filter
40 Seconds	0.9 ppm	2.0 ppm
100 Seconds	0.6 ppm	1.3 ppm
1000 Seconds	0.19 ppm	0.4 ppm

Measuring Conditions :

Instrument	: EDX-700	Power	: 50 kV at 15 µA
X-ray Tube	: Rh	Dead Time	: 25 %
Filter	: Ni or Without	Measurement Diameter	: 10 mm
Atmosphere	: Air	Measurement Time	: 40 Seconds