

THE USE OF PRIMARY BEAM FILTERS

In sequential X-ray spectrometers primary beam filters can be used to optimize measuring conditions for specific applications. This cannot be done with fixed channels during simultaneous measurements.

The main applications are:

1. Suppression of interferences from the tube lines using copper filters:
 - when analysing the anode element in the sample (for example Rh in catalysts or precious metals using an X-ray tube with Rh anode)
 - when analysing Cd (Cd K-Alpha) which is interfered by Rh (Rh K-Beta)
2. Improvement of peak signal to background ratio increasing sensitivity by aluminium filters:
 - mainly in light matrix materials such as biological samples, plastics, fuels, coals etc.

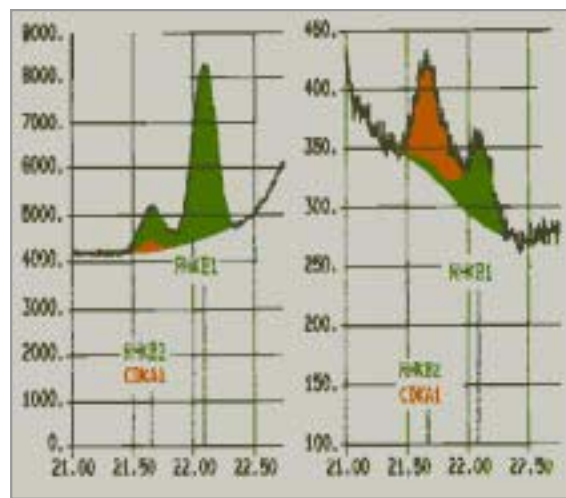


Fig. 1: Suppression of Rh K-Beta line by a copper filter (left scan without filter, right scan with copper filter)

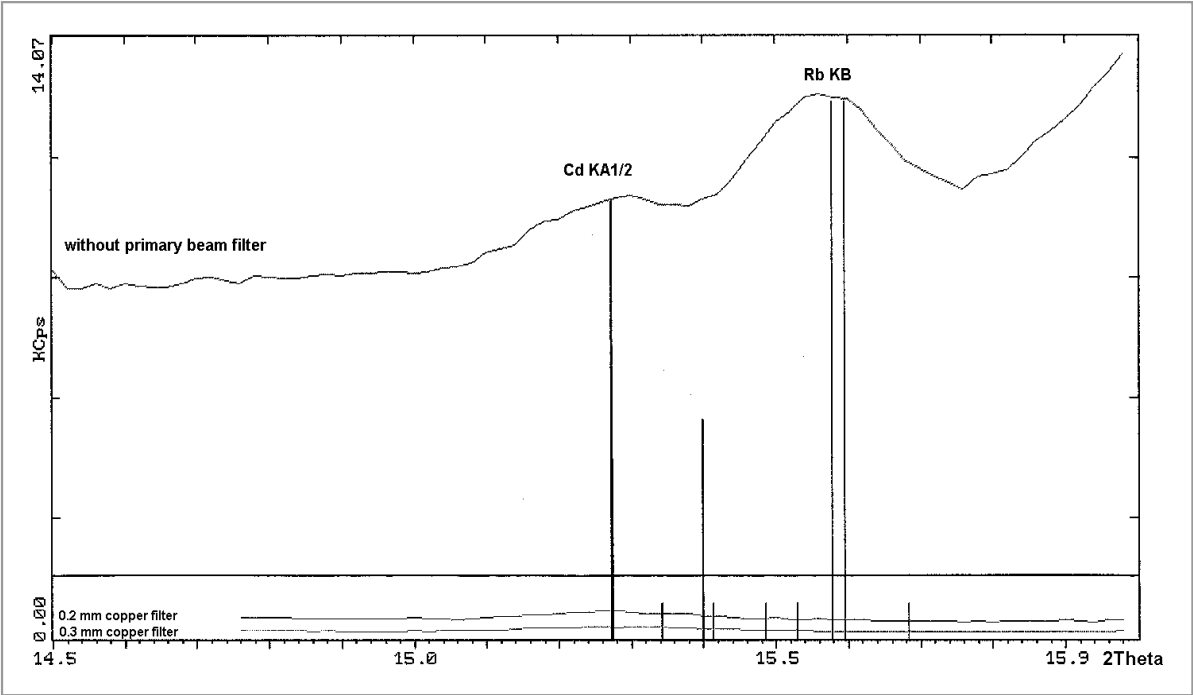


Fig. 2: Analysis of 70 ppm Cd in biological sample, without primary beam filter

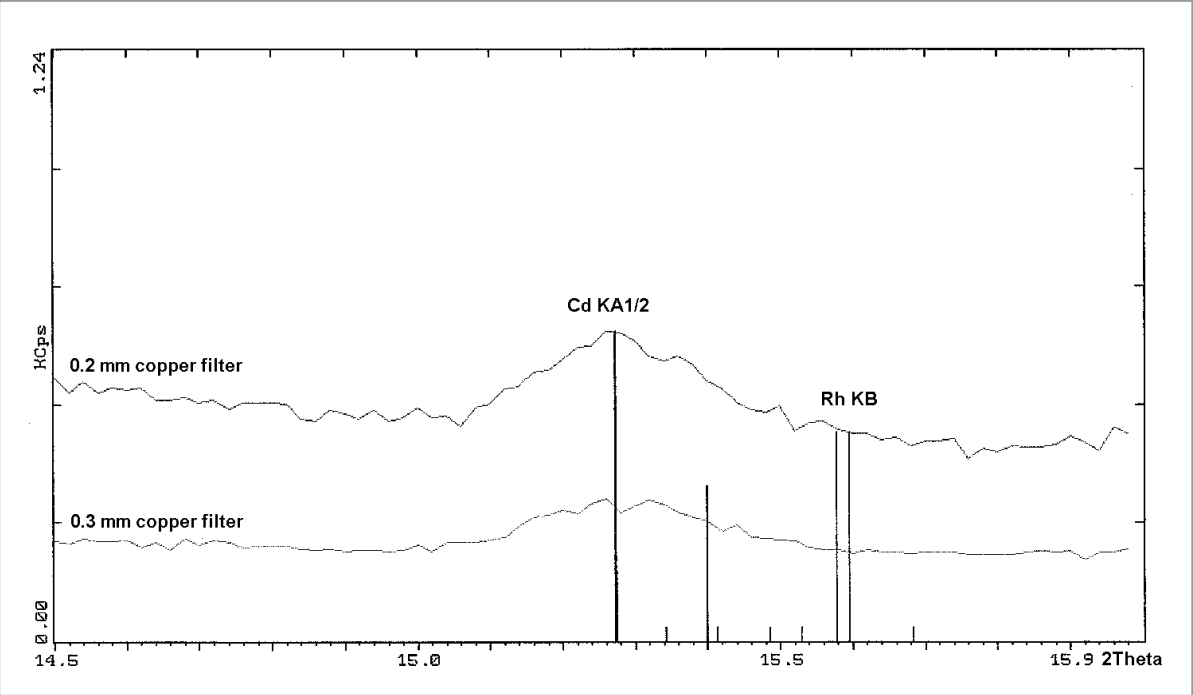


Fig. 3: Analysis of 70 ppm Cd in biological sample, with copper filter

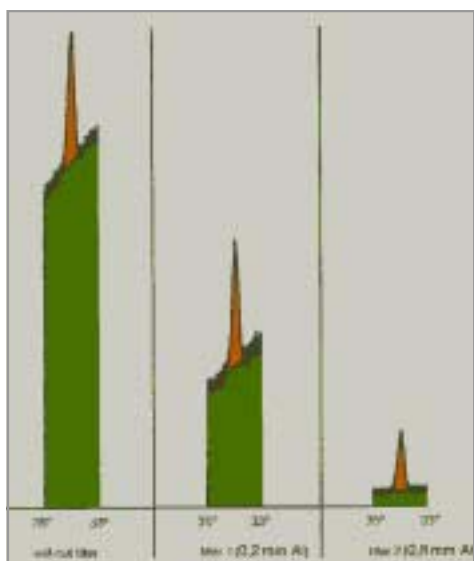


Fig. 4: Improvement of the signal to background ration by aluminium filters

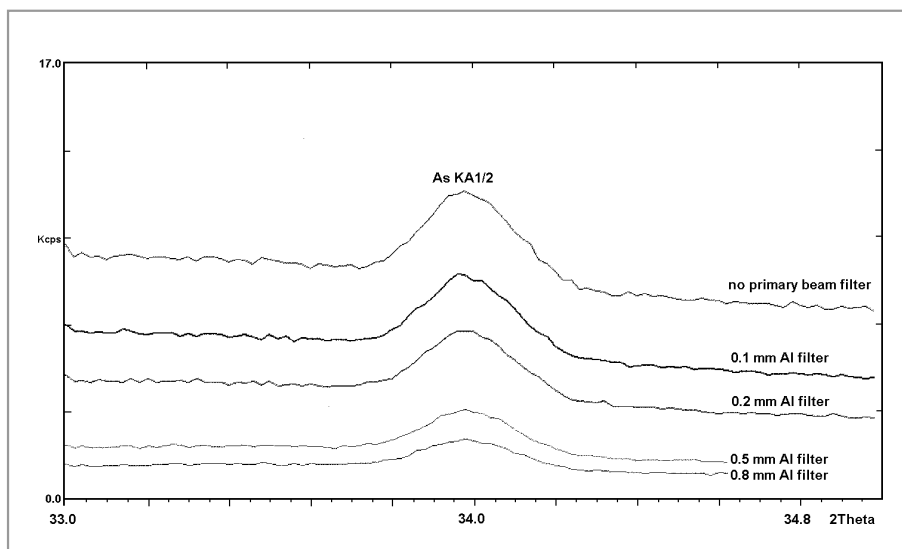


Fig. 5: Improvement of signal to background ratio using aluminium filters of different thicknesses, 20 ppm As in biological sample

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