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A SIMPLE, ACCURATE, PRECISE, AND RAPID WAVELENGTH-DISPERSIVE X-RAY FLUORESCENCE SPECTROMETRIC TECHNIQUE FOR DETERMINING CESIUM IN POTASSIUM FELDSPAR

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Abstract

Potassium feldspar is known to contain substantial amounts of cesium. The paper proposes a simple, accurate, precise, rapid, and non-destructive wavelength-dispersive x-ray fluorescence spectrometric technique for determining cesium in potassium feldspar. The technique uses a sequential x-ray fluorescence spectrometer, 100 kV – 80 mA – 3 kW x-ray generator, rhodium x-ray tube, LiF 220 analysing crystal, fine (150 μm) collimator, air path, scintillation detector, and short counting times.

The accuracy of the technique is excellent (within 1 percent). The precision is also excellent (within 2 percent). The lower limit of detection is 8 ppm. The time taken for determining cesium in a batch of twentyfour samples of potassium feldspar, for a replication of four analyses per sample, by one operator, using a manual wavelength-dispersive x-ray fluorescence spectrometer, is only eight hours.

***Keywords**:* X-ray Fluorescence Spectrometry, WDXRFS, Cesium, Potassium feldspar.

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