

## **Method of quantitative analysis of fluorine in environmental samples using a pure-Ge detector**

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### **Abstract**

We recently developed and reported a three-detector measuring system making use of a pure-Ge detector combined with two Si(Li) detectors. The efficiency curve of the pure-Ge detector was determined as relative efficiencies to those of the existing Si(Li) detectors and accuracy of it was confirmed by analyzing a few samples whose elemental concentrations were known. It was found that detection of fluorine becomes possible by analyzing prompt  $\gamma$ -rays and the detection limit was found to be less than 0.1 ppm for water samples. In this work, a method of quantitative analysis of fluorine has been established in order to investigate environmental contamination by fluorine. This method is based on the fact that both characteristic x-rays from many elements and 110 keV prompt  $\gamma$ -rays from fluorine can be detected in the same spectrum. The present method is applied to analyses of a few environmental samples such as tealeaves, feed for domestic animals and human bone. The results are consistent with those obtained by other methods and it is found that the present method is quite useful and convenient for investigation studies on regional pollution by fluorine.