

## **Physical quantitative analysis in In-air PIXE**

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### **Abstract**

A physical method of quantitative analysis in In-Air PIXE system has been developed. Among the three parameters required for performing a physical quantitative analysis, X-ray production cross sections were calculated by considering the effective energy of the proton beam after losing its energy through a Kapton foil and air. Detection efficiencies have been obtained, according to the method we established for In-Vacuum PIXE system, where effects of absorption of X-rays in air are incorporated into the detection efficiencies. As a result, it is confirmed that the present method give us quite accurate results in the analyses of actual soil, sediment and ash samples.

*Keywords* : PIXE, In-Air, Quantitative analysis, Detection efficiency, X-ray production cross section