

## What can be performed by means of PIXE at NMCC?

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### Abstract

The Nationwide-common utilization for PIXE at NMCC has been carrying out since April 1993, and more than 100000 samples have been analyzed up to the present. PIXE has been applied to many studies in various research fields. As a result, the samples analyzed have diversified shapes, characters and compositions. In order to cope with these diversified samples, we have been continuously developing the methods of measurement, data analysis, sample preparation and quantitative analysis. Now, one of our catchphrases is “We’ll perform quantitative analysis of any kind of samples”. Especially, the standard-free method for quantitative analysis made it possible to quantitatively analyses infinitesimal samples, powdered samples and untreated bio samples which could not be well analyzed quantitatively in the past. It also allows us to carry out quantitative analysis of untreated samples, and it saves labor and time for procedure in target preparation. Moreover, “The powdered-internal-standard” is working miracle in analyses of high-Z-matrix-powdered samples such as soil, rock, ash, dust and aerosol.

The recent topics are as follows. In in-air PIXE, a physical method of quantitative analysis was established and the samples which has been difficult to be analyzed in vacuum can be quantitatively analyzed in in-air PIXE. Moreover, standard-free methods for various samples have been developed in in-air PIXE, and it becomes possible to quantitatively analyze the samples such as a drop of oil and living plants which have been difficult to be quantitatively analyzed by traditional methods. In in-vacuum PIXE, the standard-free method for organs taken from patients and experimental animals has been established and it becomes possible to quantitatively analyze very small organ samples of less than 1□g. These methods have already been applied to many practical studies.

**Keywords** : PIXE, Quantitative analysis, Standard-free, Internal standard, External standard, Living plant, Organ, Oil, Measuring system, In-air, Spectrum analysis, Small quantity, Clinical samples, Experimental animals, Environmental studies, Human exposure, Toxic elements, Powdered samples, High-Z, Untreated samples, Absorption curve, Efficiency