

Characterization of individual aerosol particles using an x-ray microprobe

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The X-ray microprobe installed to the BL37XU in the SPring-8 has the capability to analyze trace elements less than 1 fg [1]. The microprobe system has been utilized for characterizing inorganic components of individual aerosol particles, and the results are being utilized to categorize particles according to their origin and the chemical transformation during the transportation [2]. Though the characterization of the particles is successfully carried out, the possibilities of the aggregation between the particles of different phases make the identification of their origin difficult. One of the practical ways to overcome the difficulty is to measure the x-ray diffraction (XRD) from the same region, and we have developed an experimental setup for micro XRD measurements.

In this presentation the setup of the microanalysis, principles of elemental quantification using x-ray fluorescence analysis and the results of applications will be discussed.

1) S. Hayakawa et al., Anal. Sci. 17s, i115 (2001).

2) C.-J. Ma et al., Atmospheric Environment 38, 1133(2004).