

# **Quantitative Analysis of Untreated Bio-samples for Monitoring Human Exposure to Heavy Metals –**

## **Quantitative Analysis of Untreated Nail Samples**

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### **Abstract**

In order to address global environmental issues, a standard-free method developed by ourselves has been successfully applied to various kinds of bio-samples. Especially, a method for untreated hairs has been applied in many polluted areas to study human exposure to toxic elements. In addition to hair, nail is expected to give us valuable information about human exposure to toxic elements. However, the analysis requires relatively large amounts of samples and laborious sample preparation techniques which necessitate internal standards. In this work, we have developed a quantitative method for untreated nail analysis based on the standard-free method. It requires neither large amounts of nails nor complicated target preparation procedure. Furthermore, it is perfectly free from any ambiguity in target preparation such as volatilization of certain elements and contamination of the sample during chemical ashing. The optimum conditions of irradiating nail samples are established, and accuracy and reproducibility of the present method are confirmed. It is found that ultrasonic washing in distilled water is effective for many nail samples preventing the loss of elements from the sample. It is also found that elemental concentration in nails strongly depends on their sampling positions.

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*Keywords:* PIXE, nail, standard-free, quantitative analysis, exposure, untreated