

Standard-free method for beard samples of very small quantity

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Abstract

We developed and reported standard-free methods for various samples such as hair, nail, urine, serum, sweat, snivel, tear and saliva, and they have been confirmed to be effective for addressing global environmental issues. It is expected that analyses of beard samples give us useful information about daily changes of elemental concentration in the body in comparison with the other samples. In this work, a quantitative method for untreated beard analysis based on the standard-free method has been developed. By means of the method, it becomes possible to quantitatively analyze extremely small quantity of beard samples, which are daily taken with ordinary electric shaver. The optimum conditions of washing samples have also been examined. It is found that some elements such as potassium, calcium and chlorine are lost by washing in distilled water and it is better to wash the sample in acetone. As a result, the standard-free method for beard samples has been successfully established and good accuracy and reproducibility were achieved.

Keywords : PIXE, beard, standard-free, small quantity, toxic element, human exposure