

Phosphorus analysis in biological materials by PIXE

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Abstract

We have investigated aluminum abundance in biological material by INAA. However, this method exhibits higher value than original aluminum value by interference reaction ($^{28}\text{Si}(n,p)^{28}\text{Al}$, $^{31}\text{P}(n,\alpha)^{28}\text{Al}$) by silicon and phosphorus in sample. Therefore, the correction for both interference elements is necessary. LSC and PIXE methods as nuclear techniques were applied to the quantitative determination of both interference elements. In comparison with the values of 14 kinds of biological reference materials, the results by LSC method agreed with the certified or reference values. In PIXE method, we applied SAPIX method and comparative method to the element determination. The comparative method was showed good agreement with the reference values, other hand, and SAPIX method showed the lower results than about 20% for almost materials. This lower quantitative phenomenon was also found in case of heavy elements and the reliability of SAPIX method was doubted.