

Beam request at Bucharest TANDEM

Experiment title PIXE analysis of environmental samples (vegetation and water) using Si(Li) and Ge HP detectors

Experiment responsible

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Short presentation of the scientific project

Particle Induced X-ray Emission (PIXE) technique will be used to determine minor and trace elements in environmental samples to study the industrial impact on the environment in the frame of PNCDI II, No. 72-172/2008/ P2 project TIPSARMER: "High Precision Analytical Techniques applied in the environment pollution biomonitoring in Romania", as well as Joint Research Project IFIN-HH-JINR Dubna, Protocol No. 3871-4-08/10: "Nuclear And Related Analytical Techniques In Environmental Studies".

This experiment is a continuation of our previous PIXE application at the Tandem accelerator of IFIN-HH on environmental samples from different areas of interest. Vegetable samples as well as surface, drinking, underground and precipitation water will be investigated by using in parallel Si(Li) and Ge HP detectors.

The following elements will be determined: Al, P, S, Cl, K, Ca, Ti, Mn, Ni, Fe, Cu, Zn, As, Pb, Br, and Sr.

Quantitative analysis (elemental concentration determination) will be performed relative to appropriate reference materials targets prepared in a similar way with the investigated samples. Yttrium internal standard is used as beam monitor both for samples and reference standards.

Beam time request (unit=8ore)*: 9 Desired Period*: Oct.-Nov. 2011

Desired beam properties:

Type*: protons Energy (MeV)*: 3 Intensity* (p/nA): 0.5-1 nA on target

Vacuum Request*: 10^{-6} Torr

Special requirements for detectors, electronics, acquisition system:

DFN Tandem acquisition system (Canberra 100 MCA program); Beam line No. 5.

Minimal information needed for radiological risk evaluation:

- a) Source activity * : no radioactivity is induced
- b) Use of open sources * : -
- c) Estimation of the residual activity as a result of irradiation * : -
- d) Means of storage/transportation for irradiated targets * -

Data: 2011-07-10