

Target and matrix problems in the determination of trace elements in wood material by PIXE

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Here, we present the analysis of wood to determine trace elements in tree rings. We have irradiated wood pieces directly, for thick target PIXE, and also thin samples obtained by chemical treatment of the wood material. Proton beam energies of 2.2 and 6.6 MeV were used to irradiate the targets. A controlled amount of Yttrium was added to the solution during sample preparation as an internal standard. This simplifies the normalization of our PIXE results and permits a minimization of errors in the determination of the solid angle and the proton total charge. A calibration of the PIXE results was performed by using a reference material from the National Institute of Standards and Technology (NIST). This allowed fitting some parameters used in the quantitative analysis program (TTPIXAN). Two problems related with thick target analysis were solved: high background radiation and the impossibility to monitor the beam current. The background was diminished by the deposition of a graphite layer