**STUDY THE ARCHAEOLOGICAL GLASS IN SERBIA**

**BY RBS AND PIXE METHODS**

**P.L. Tuan1,2,\*), A. Doroshkevich1), T.V. Phuc3,4), N.T.B. My1,5), L.H. Khiem3,4), V.D. Cong1,3) Balvanović Roman6,7,8), Jovanović Zoran6),Mezentseva Zh.V1), Chepurchenko I.A. 1), M.N. Mirzayev1,9), Mita Сarmen10), Mardare Diana10),** [**Nicoleta Cornei**](mailto:ncornei@uaic.ro)**10)**

*1) Frank Laboratory of Neutron Physics, Joint Institute of Nuclear Research, Dubna,Russia;*

*2) Hanoi Irradiation Center, Vietnam Atomic Energy Institute, Hanoi, 129000, Viet Nam;*

*3) Institute of Physics, Vietnam Academy of Science and Technology, 10 Dao Tan, Ba Dinh, Hanoi,Viet Nam;*

*4) Graduate University for Science and Technology, Vietnam Academy of Science and Technology, 18 Hoang Quoc Viet, Cau Giay, Hanoi, 122100, Viet Nam;*

*5) Institute for Nuclear Science and Technology, Vietnam Atomic Energy Institute, Hanoi,Viet Nam;*

*6) National Museum Belgrade, Serbia;*

*7) University of Belgrade- Archaeology Department, Serbia;*

*8) National Museum Požarevac, Serbia;*

*9) National Center for Nuclear Research, Baku, Azerbaijan;*

*10) Alexandru Ioan Cuza” University of Iasi, Faculty of Physics, Iasi, Romania;*

**Abstract:**

Ion beam analytical techniques such as particle induced X-ray emission (PIXE) and Rutherford backscattering spectrometry (RBS) give information on elemental composition in the samples. RBS is a non-destructive analytical method based on the elastic scattering of ions from a target sample. By bombarding the samples with a high-energy ion beam, characteristic backscattered ions are collected, allowing the identification and the depth profile of elements present in the samples. PIXE involves irradiating the samples with a focused ion beam, inducing the emission of characteristic X-rays from the elements present. The emitted X-rays are detected and analyzed to identify the elemental constituents in the samples. All these techniques have one thing in common: they give only the atomic concentration of the sample and are not sensitive to the chemical state of the atoms. In this study, we apply the RBS and the PIXE techniques to collect elemental and chemical information on archaeological glass from Serbia. While discussing the results, comments will be made on the advantages and limitations of the different techniques.

***Keywords:*** IBA; RBS; PIXE; depth profile; archaeological glass;

***\*Corresponding author:*** [***phanluongtuan@gmail.com***](mailto:phanluongtuan@gmail.com)