

## Investigation of $x(\text{Fe}_2\text{O}_3 \cdot \text{Ag}_2\text{O}) \cdot (100-x)[\text{P}_2\text{O}_5 \cdot \text{CaO}]$ glass samples by means of PIXE, PIGE and RBS methods

C. Andronache<sup>a</sup>, D. Racolta<sup>a</sup>, A. Pantelica<sup>b</sup>, D. Pantelica<sup>b</sup>, D.M. Mihai<sup>b</sup>, D. Iancu<sup>b</sup>,  
M. Balasoiu<sup>b,c</sup>

<sup>a</sup>Technical University of Cluj Napoca, North University Center of Baia Mare, Str. Victoriei 76  
430122, Baia Mare, Romania

<sup>b</sup>Horia Hulubei National Institute of Physics and Nuclear Engineering, Magurele, Romania

<sup>c</sup>Joint Institute for Nuclear Research, Dubna, Russian Federation

e-mail: [masha.balasoiu@gmail.com](mailto:masha.balasoiu@gmail.com); [apantel@ifin.nipne.ro](mailto:apantel@ifin.nipne.ro)

In the present work the preparation of new materials with vitreous structure, based on phosphorus and ferrum, and doped with silver, is reported. These materials have antibacterial and antifungal properties and can be used in controlled enclosures such as swimming pools, museums, polluted waters etc.

The obtained systems are new and detailed investigations of the resulted compounds are necessary [1-4].

First, for the confirmation of the compounds composition and stoichiometry, the proton induced X-ray Emission (PIXE), proton induced gamma-ray emission (PIGE) and Rutherford backscattering spectrometry (RBS) measurements with alpha beam on thick samples have been performed at the 3MV Tandetron of IFIN-HH, Magurele.

### References

- [1] C. Andronache, M. Balasoiu, O.L. Orelovich, A.V. Rogachev, A. Pantelica, D. Pantelica, P. Ionescu, L. Mihaly-Cozmuta, D. Racolta. On the structure of lithium-phosphate glasses doped with iron and vanadium ions, *International Balkan Workshop on Applied Physics and Materials Science*, 10-13, July, 2018, Constanta, Romania (S1 P49) p.66.
- [2] C. Andronache, M. Balasoiu, and D. Racolta, Magnetic Interaction Between Iron Particles in Lithium-Phosphate Systems, *Russian Journal of Physical Chemistry A* 91 (13), 198–201 (2017).
- [3] C. Andronache, M. Balasoiu, and D. Racolta, Structural properties of different phosphate glasses by EPR analysis, *AIP Conference Proceedings* 2071, 030004 (2019)
- [4] C. Andronache, M. Balasoiu, O.L. Orelovich, A.V. Rogachev, L. Mihaly-Cozmuta, A.-M. Balasoiu-Gaina, D. Racolta, On the structure of Lithium-Phosphate glasses doped with iron and vanadium ions, *Journal of Optoelectronics and Advanced Materials* 21(11-12) (2019).