Physico -Chemical nanomaterials science

Measurements of nano structures of the telluric g lass 70TeO 2 -5 (XO n) -10P 2 O 5 -10ZnO-5PbF 2 doped with ions of the rare e arth element Er 3 + ,

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The objective of the study was the structural analysis of the 70TeO 2 -5(XO n)-10P 2 O 5 -10ZnO-5PbF 2 (where X = Mg, Pb , Bi, Nb) tel lurite glasses doped with ions of the rare-earth elements: Er 3+ , based on the PALS (Positron Annihilation Lifetime Spectroscopy) method of measuring positron lifetimes [1] .
Values of positron lifetimes and the corresponding intensities may be connected with the sizes and number of structural nano defects, such as vacancies, mono-vacancies, dislocations or pores, the sizes of which range from a few angstroms to a few dozen nanometres.
Experimental positron lifetime spectrum revealed existence of two positron lifetime components τ 1 and τ 2. Their interpretation was based on two-state positron trapping model [2] where the physical parameters are the time s of annihilation processes and positron trapping rat es .

1. Filipecki J., Golis E., Reben M., Filipecka K., Kocela A., Wasylak J. Positron life time spectroscopy as a method to study of the defect degree materials with disordered structure // Optoelectronics and Advanced Materials – Rapid Communications – 2013.- **7** .– P.1029-1031

2. Filipecki J., Shpotyuk O., Ingram A., Kozdras A., Shpotyuk L., Hyla M. PAL spectroscopy as experimental probe for extended free-volume defects in inorganic glasses and ceramics // Journal of Physics and Chemistry of Solids- 2007.- **68** .- P.998-1002.