Study of the Niobium Phosphate glasses

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The phosphate glasses are intensively studied through several decades because of their potential technological applications due to some unique properties, i.e. low synthesis temperature, UV transmission or higher thermal expansion coefficient. They can be used in laser technologies, sealing waxes, as bioimplantates, composites and also storage of nuclear waste [1].

Binary phosphate glasses have relatively limited interval of chemical stability, because ultraphosphate glasses are hygroscopic and polyphosphate glasses can be prepared only in interval $\sim$35-50 mol

Niobium phosphate glasses were previously investigated [2] to obtain chemical resistant and thermal stable materials. However, in all previously studied compositions, PbO was added as a glass modifier; these glasses were very stable, and chemically resistant. The bridging oxygen is now bonded to Nb^{5+}, forming O-P-O-Nb-O- type chains. It was also shown that P-O type bonds are mostly found in terminal sites of the chain, while Nb-O bonds are located in the middle of the chains [3].

In this work were studied the 17 glass samples in four compositional lines - 1) xNb_2O_5-(50-x)ZnO-$50P_2O_5$ ($0 \leq x \leq 15$ mol

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