

STRUCTURAL STUDY AND CHEMICAL DURABILITY OF BIOGLASSES OF SYSTEM
NA₂O-CAO-P₂O₅-TiO₂

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Abstract: in our research, we tried to elaborate bioactive glasses that can be applied in the biomedical field. Our aim is focused on the study of the structure and properties of bioglasses, based phosphate dioxide of the quaternary system Na₂O-CaO-P₂O₅-TiO₂. The experimental results obtained show that the change of the dissolution rate versus time for the series of glasses TiO₂-Na₂O-CaO-P₂O₅, show a clear increase in chemical durability when increasing the content of TiO₂ to the detriment of Na₂O then followed by a decrease when the content of TiO₂ exceeds 2 mol%. The measurement of the density shows that the ionic radius of the oxygen remains nearly constant for all samples. The ternary diagram allowed us to locate our samples between the metaphosphate and pyrophosphate areas. In addition, the analysis by X-ray diffraction of glasses annealed at 600 ° C for 48h, indicates the appearance of a mixture of pyrophosphates and metaphosphates phases. Analyses by infrared spectroscopy confirm the results obtained in R-X and show that the I obtained glasses consist of groups pyrophosphate.et chains and / or rings meta phosphates.

Keywords: Phosphate boiglasses, chemical durability, structure