

ETUDE DES PROPRIETES MECANIQUES DES VERRESOXYGENES ET OXYHALOGENES

BACHIRI Abdalkader

Soutenue en: 2012

Abstract : The rapid development of photonics technology requires increasingly efficient materials, suitable for photonic devices such as amplifiers and materials for high power lasers. The optical amplification based on the principle of the laser effect can be obtained in crystalline or glassy matrix through radiative emission of rare earth ions. The glasses are among the interesting matrices for transparency in a wide optical region and their ability to receive large amounts of rare earth ions. For this purpose, a new family of glasses stable oxide and halide in the ternary systems $\text{Sb}_2\text{O}_3\text{-PbCl}_2\text{-As}_2\text{O}_3$ and $\text{Sb}_2\text{O}_3\text{-PbCl}_2\text{-AgCl}$ has been developed. Several characterizations were made on two ternary systems. All properties changes almost linearly with the variation of the composition. The results obtained are similar to those of other work. It appears that the structure of these glasses is more open where the low values of mechanical properties. Because of these glasses good candidates in nonlinear optics. Differential scanning calorimetry has shown that certain compositions do not exhibit crystallization peaks where their high thermal stability. In this work, we also find the study of the devitrification of glasses in the ternary system oxyhalogenated $\text{Sb}_2\text{O}_3\text{-PbCl}_2\text{-AgCl}$ has been studied by differential scanning calorimetry. A single exothermic peak of recrystallization is observed beyond the glass transition temperature, which allows the application of relations Mehl-Avrami-Kolmogorov-Johnson. The use of non-isothermal procedures for determining the values of the Avrami exponent and activation energy E . The mechanism of crystal decay is discussed in relation to the observations in scanning electron microscopy.

Keywords : transparency, ternary systems, glasses, Differential scanning calorimetry, Thermal stability