

Synthesis of nanoparticles NaNbO_3 in borate glass

Nahed SAKLY

Tutor : Pr. Evelyne Fargin

Institut de Chimie de la Matière Condensée de Bordeaux (ICMCB), 87, avenue du Dr Albert
Schweitzer- 33608 PESSAC Cedex (France)- University of Bordeaux

Abstract :

Sodium Niobate NaNbO_3 present different crystalline phasis depending on the temperature, some of them showing nonlinear optical properties. NaNbO_3 nanoparticles are widely used in the field of nonlinear optics because of their stability under laser irradiation and have a huge interest in the nanomaterials science. Sodium Tetraborate Niobium Oxide glasses have been developed to synthesize these dielectric nanoparticles under heat treatment. These glasses have been made at different sodium concentrations to study the influence of the glass matrix on the nano-crystallites morphology size and crystalline phase. These size and crystalline phase have been determined by X-rays diffraction measurements. My first results allowed to obtain an estimation on the size, the form and the crystal lattice of nanoparticles. We also try to improve the capture of nanoparticles in order to observe them properly in a transmission electronic microscopy (TEM) to complete the size and morphology study.