Mechano-optical couplings in an oxynitride glass-ceramic

Alexis Duval∗†, Patrick Houizot†, and Tanguy Rouxel†

†Institut de Physique de Rennes – Universite de Rennes 1, Centre National de la Recherche Scientifique : UMR6251, Centre National de la Recherche Scientifique : UMR6251, Centre National de la Recherche Scientifique – France

Abstract

Oxynitride glasses were synthesized by conventional melting, quenching and annealing stages at temperatures ranging from 1500 to 1700 °C, in controlled atmosphere. Further heat treatments led to the crystallization of glass-ceramics with remarkable optical and mechanical properties. In such materials, controlling the atmosphere during elaboration allows to tune the atomic structure and to improve the mechanical performance. Glass-ceramics exhibiting mechano-optical couplings were obtained.

Keywords: oxynitride glasses, luminescence, glassceramics, mechanical properties, mechanoluminescence

∗Speaker
†Corresponding author: alexis.duval@univ-rennes1.fr