

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Influence of pressure on fast relaxation in glass-forming materials

VLADIMIR NOVIKOV, University of Tennessee, Chemical Department, 1420 Circle Dr., TN, 37996, LIANG HONG, ALEXANDER KISLIUK, Oak Ridge National Laboratory, Oak Ridge, TN 37831, ALEXEI SOKOLOV, University of Tennessee, Chemical Department, 1420 Circle Dr., Knoxville, TN, 37996 — The spectra of GHz-THz dynamics in glass forming materials have two main contributions: the boson peak and the fast relaxation that overlaps with the low-frequency flank of the boson peak. The nature of both contributions remains a subject of active discussions. Applying pressure helps to separate the temperature and volume effects on the fast dynamics. Although the boson peak under pressure was investigated recently by several groups, less attention was devoted to the fast relaxation. In this work we present the study of the fast relaxation measured in some molecular and polymeric glass formers under pressure by light (Raman and Brillouin) scattering. Different experimental conditions were applied: isothermal, isobaric, isokinetic, and isochoric. The results are analyzed within the frames of various theoretical models. In particular, we check in detail the predictions of the soft-potential model of glassy dynamics.

Vladimir Novikov
University of Tennessee, Chemical Department,
1420 Circle Dr., Knoxville, TN, 37996

Date submitted: 26 Nov 2010

Electronic form version 1.4