Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Non-linear responses of glass formers under temperature modulation TAKASHI ODAGAKI, TAKAHIRO UENO, Tokyo Denki University, YASUO SARUYAMA, Kyoto Institute of Technology — The free energy landscape (FEL) approach to non-equilibrium systems has been shown to explain, in a unified manner, dynamic and thermodynamic characteristics observed in the vitrification process of super cooled liquids, and it is important to devise experiments which give information on the structure of the FEL. Here, we present a theoretical analysis of a new experimental technique which measures nonlinear responses under temperature modulation. Exploiting a simple model for glass formers, we first investigate dielectric relaxation when the temperature is subjected to a sudden change. We also report that three characteristic temperatures related to the glass transition can be determined from the analysis of the non-linear dielectric responses under oscillating temperature. Finally we discuss characteristic behavior of the frequency dependent diffusion constant, the intermediate scattering function and the generalized susceptibility under oscillating temperature.

Takashi Odagaki
Tokyo Denki University

Date submitted: 29 Nov 2012 Electronic form version 1.4