Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Qualitative change in structural dynamics of some glass-forming systems[1] VLADIMIR NOVIKOV, ALEXEI SOKOLOV, Univ of Tennessee, Knoxville — Analysis of temperature dependence of structural relaxation time $\tau(T)$ in supercooled liquids revealed a qualitatively distinct feature - a sharp, cusp-like maximum in the second derivative of log $\tau_\alpha(T)$ at some T_{max}. It suggests that the super-Arrhenius temperature dependence of $\tau_\alpha(T)$ in glass-forming liquids eventually crosses over to an Arrhenius behavior at $T<T_{max}$, and there is no divergence of $\tau_\alpha(T)$ at non-zero T. T_{max} can be above or below T_g, depending on sensitivity of $\tau(T)$ to change in liquid's density quantified by the exponent γ in the scaling $\tau_\alpha(T)$ ~$\exp(A/T\rho^{-\gamma})$. These results might turn the discussion of the glass transition to the new avenue – the origin of the limiting activation energy for structural relaxation at low T.

[1]The authors acknowledge the support from the NSF Chemistry program (grant CHE-1213444).

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Date submitted: 06 Nov 2015 Electronic form version 1.4