

Abstract Submitted  
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**The Effects of Pressure, Local Packing, and Chain Stiffness on the Polymer Glass Transition.**<sup>1</sup> JANE LIPSON, RONALD WHITE, Dartmouth Chemistry Department — We have recently shown that thermodynamic properties like free volume, energy, and entropy in the polymer melt state can be connected to the polymer's glass transition temperature,  $T_g$ . One of the strongest correlations we have observed is that relating  $T_g$  to polymer free volume. However, isochoric results on glassifying systems, which can be accessed by taking pressure-dependent measurements, reveal that free volume cannot be the only parameter to control the approach to the glass transition. We therefore turn to the effects of pressure, local packing, and chain stiffness. Up to this point we have focused on ambient pressure; we now apply our LCL model analysis to changes in dynamical behavior with  $T$ , or  $P$ . In addition we will correlate our LCL results with various measures of chain stiffness in the context of glassy behavior..

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