

Abstract Submitted  
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**Connecting Thermodynamic Trends to the Polymer Glass Transition**<sup>1</sup> RONALD WHITE, JANE LIPSON, Dartmouth College — In studying glassy behavior the utility of measuring dynamic properties has been well established, while relating to thermodynamic properties is still a question. Which thermodynamic properties of a system have the potential to reveal its glassy nature? Are there patterns for example, in free volume, or pressure-related behavior, or molecular stiffness or other characteristics? If so, could trends in any of these properties predict the temperature ( $T_g$ ) of the glass transition? In this work we apply our simple locally correlated lattice (LCL) model equation of state to a sizeable sample of different polymers. Using the model, we require just a minimal amount of experimental data to deduce the underlying molecular parameters, and from this we generate a complete thermodynamic description of that system for analysis and comparison. As a result a number of interesting trends have emerged and in this talk we will discuss how they correlate with  $T_g$ .

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