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Enthalpy Recovery of Polymeric Glasses: Is the Theoretical Limiting Liquid Line Reached? QINGXIU LI, SINDEE SIMON, Texas Tech University — Glasses are inherently non-equilibrium materials, and consequently, their properties evolve toward equilibrium in a process known as structural recovery or physical aging. Recently, several authors have suggested that the equilibrium liquid line is not reached even when properties have ceased to evolve. In this work, we present measurements of the enthalpy recovery of polystyrene (PS) at temperatures ranging from the vicinity of glass transition temperature to 10 $^\circ$C below Tg (90 $^\circ$C), for aging times up to 200 days. The results are analyzed in the context of the TNM model of structural recovery. In addition, we analyze data in the literature to determine whether enthalpy recovery ceases prior to the material reaching the equilibrium liquid line obtained by extrapolation of the liquid line above Tg. The results suggest that, in fact, the liquid enthalpy line is reached at temperatures below Tg when equilibrium is reached, i.e., when properties cease to evolve.

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