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Fragility of an Isochorically Confined Polymer Glass CHUAN ZHANG, YUNLONG GUO, RODNEY PRIESTLEY, Princeton University — When polymers are confined to the nanometer length-scale, the glass transition temperature (T_g) and its associated dynamics can deviate substantially from the bulk. As confined polymers continue to play an important role as enabling materials in technologies ranging from drug delivery to plastic electronics, a greater understanding of size effects on glass transition dynamics is warranted. Here, we present the effect of isochoric confinement on the dynamic fragility of a polymeric glass-former, *i.e.*, polystyrene (PS). Utilizing silica-capped PS nanospheres as a model system, the fictive temperature (T_f) and the isochoric heat capacity (C_v) are measured as a function of diameter *via* differential scanning calorimetry (DSC). By examining T_f as a function of cooling rate for each sample, the isochoric fragility (m_v) is obtained, which decreases significantly as the diameter of the nanospheres is reduced from 462 nm to 129 nm. Hence, the contribution of thermal effects on structural relaxation is reduced with isochoric confinement for PS geometrically restricted by silica. Furthermore, we explore the impact of chemical structure, *via* PS derivatives, on the observed confinement effect on the dynamic fragility.

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