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Relationship between Fragility and Tg Changes on Confinement for Three Cyanurates EVELYN LOPEZ, SINDEE L. SIMON, Texas Tech University — The glass transition temperature (Tg) is known to deviate from the bulk when subjected to both thin film and nanopore confinement. Previous work from our laboratory has analyzed the effect of nanopore confinement on the Tg of three materials: a cyanurate trimer, an uncrosslinked polycyanurate, and a polycyanurate network. The results showed that the Tgs of the three materials decreased under confinement and that with increasing molecular weight and molecular stiffness, the Tg depression increased. However, recent studies have pointed to fragility, and not stiffness, as a key factor in determining how the materials Tg will be affected by confinement, with fragile polymers showing greater confinement effects. In this work, we analyze the effect of both nanopore and thin film confinement on Tg and calculate the fragilities of the three materials to determine the relationship between the two properties. Fragility is calculated from the dependence of Tg on the cooling rate, with a fast-scanning calorimeter used to extend the range of cooling rates.

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